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Mr. Gregory Rudloff
United States Environmental Protection Agency (USEPA)
Region 5
77 W. Jackson Blvd. LU-9J
Chicago, IL 60604

August 26, 2019

Subject: Final RCRA Facility Investigation Phase 3 Report for the Former Dow Hanging Rock Site, Ironton, OH EPA ID# OHR 000 157 727 and OHD 039 128 913

Dear Mr. Rudloff,

On behalf of The Dow Chemical Company, Jacobs, is submitting the Final RFI Phase 3 Report for your records.

This document complies data collected in 2017 and 2018 to identify potential source areas, update the Phase 1 and Phase 2 soil and groundwater risk assessments, develop a vapor intrusion risk assessment, and describe the conceptual model for VI potential to nearby structures.

This report has been finalized with the changes incorporated responding to USEPA comments. The changes made are described in the attached *Final Response to USEPA Comments on Draft Phase 3 RCRA Facility Investigation Report for the Former Dow Hanging Rock Site* letter dated August 26, 2019.

Please contact me at (513) 673-2201 and either Mr. Timothy King at (304) 747-3763 or Mr. Jerome Cibrik at (304) 747-7788 should you need anything further.

Sincerely,

Marie W. Chiller, Jacobs
Site Manager

Attachments: Final Response to USEPA Comments on Draft Phase 3 RCRA Facility Investigation Report for the Former Dow Hanging Rock Site letter

cc: Timothy King/The Dow Chemical Company
Jerome Cibrik/The Dow Chemical Company

Former Dow Hanging Rock Plant, Ironton, Ohio

RCRA Facility Investigation
Phase 3 Report

Final

August 2019

The Dow Chemical Company

Hanging Rock Plant, Ironton, Ohio

Document Title:	RCRA Facility Investigation Phase 3 Report
Revision:	Final
Date:	August 2019
Client Name:	The Dow Chemical Company
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Acronyms and Abbreviations

µg/kg	micrograms per kilograms
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
AmSty	American Styrenics
AOC	area of concern
APU	air purifying unit
bgs	below ground surface
CH2M	CH2M HILL Engineers, Inc.
CEM	conceptual exposure model
COC	constituent of concern
COPC	chemical of potential concern
DCE	dichloroethene
Dow	The Dow Chemical Company
DPT	direct-push technology
DQO	data quality objective
ELCR	excess lifetime cancer risk
GC/MS	gas chromatograph/mass spectrometer
HHRA	human health risk assessment
HI	hazard index
HQ	hazard quotient
HVAC	heating, ventilation, and air conditioning
IDW	investigation-derived waste
Jacobs	Jacobs Engineering Group Inc.
MCL	maximum contaminant level
PARCC	precision, accuracy, representativeness, comparability, and completeness
PCE	tetrachloroethene
PID	photoionization detector
PPE	personal protective equipment
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RFI	Resource Conservation and Recovery Act facility investigation
RSL	regional screening level
SHHRA	screening-level human health risk assessment
SIM	selective ion monitoring
site	Former Hanging Rock Plant, Ironton, Ohio
SSL	soil screening level

SVOC	semivolatile organic compound
SWMU	solid waste management unit
TAL	target analyte list
TCE	trichloroethene
TCR	target risk for carcinogens
THQ	target hazard quotient
UCL	upper confidence limit
USEPA	U.S. Environmental Protection Agency
VI	vapor intrusion
VISL	vapor intrusion screening level
VOC	volatile organic compound

1. Introduction

This Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) report describes the results of the Phase 3 RFI performed at The Dow Chemical Company's (Dow's) former Hanging Rock site (site) in Ironton, Ohio (**Figure 1-1**). RFI work is being conducted under the September 2016 Administrative Order on Consent between Dow and the U.S. Environmental Protection Agency (USEPA).

The Phase 3 RFI was developed based on the SWMU 1 conclusions presented in the *RCRA Facility Investigation Phase 2 Report for Dow Hanging Rock Plant* (Phase 2 RFI report; CH2M 2017a), which stated that volatile organic compounds (VOCs) in the Solid Waste Management Unit (SWMU) 1 area subsurface warranted additional investigation to assess potential vapor intrusion (VI) for the structures in the vicinity. Nearby structures investigated were Building 505, an office building located north of SWMU 1, Building 500, a warehouse located south of SWMU 1, and Building 501, a maintenance shop located northwest of SWMU 1. **Figure 1-2** shows the location of SWMU 1 and these buildings on the site.

SWMU 1 was identified during the preliminary assessment as a former flaring concrete pad holding a waste burning tank. Waste was burned in a tank using an aspiration system. Byproducts from the Styrofoam process containing styrene, partially polymerized polystyrene, and ethylbenzene were burned on the flaring pad. The pad was drained to the process sewer in that area of the site. The flaring pad reportedly operated from 1957 through 1968.

1.1 Investigation Stages and Previous Submittals

The RFI fieldwork was conducted in three stages: VI investigations conducted in August, additional VI investigations conducted in September 2017, and a source area investigation conducted in June 2018. In August 2017, CH2M (now Jacobs Engineering Group Inc. [Jacobs])[1] conducted exterior soil gas sampling around Buildings 500 and 505. Based on the soil gas sampling results, subslab soil gas, indoor air, and ambient air samples were collected in September 2017 in and around Buildings 500, 501, and 505 to further assess the VI potential.

The VI investigation results indicated that a tetrachloroethene (PCE) source, and to a lesser extent trichloroethene (TCE) source, representing a VI concern may be present near Building 505 and the northern extent of Building 500. Because it was unclear if SWMU 1 is the source of the VOCs detected in the soil gas and indoor air, an additional investigation work plan was developed to identify the source(s) contributing to VI.

Two work plans were developed for the investigation stages. The *RCRA Facility Investigation Phase 3 Work Plan for Dow Hanging Rock Facility* (CH2M, 2016) described the approach and procedures for the 2017 VI investigation. The *Additional Phase 3 RCRA Facility Investigation Work Plan for Dow Hanging Rock Facility* (CH2M, 2018a) presented the approach and procedures for the June 2018 source area investigation.

The results from the 2017 VI investigations were summarized in the *Dow Hanging Rock Facility Potential Vapor Intrusion Investigation Summary Technical Memorandum* (VI Summary TM; CH2M, 2017b), which was submitted to USEPA in October 2017. This TM is included in **Appendix A** and provides details on the field methods, findings, analytical results (discussed and presented in tables and on figures), and the next step recommendation to conduct a source investigation.

[1] On December 15, 2017, CH2M HILL Companies Ltd. and its subsidiaries including CH2M HILL Engineers, Inc. became part of Jacobs Engineering Group Inc.

1.2 Data Quality Objectives

The VI investigation data quality objectives (DQOs) were:

1) If soil gas concentrations are less than applicable soil gas-to-indoor air VI screening levels (VISLs), assuming a target risk for carcinogens (TCR) of 10^{-5} or a target hazard quotient (THQ) for non-carcinogens of 1, in samples collected in SWMU 1, no additional investigations will be performed at this site.
2) If soil gas concentrations are greater than applicable VISLs, assuming a TCR of 10^{-5} or a THQ of 1, in samples collected in SWMU 1, additional sampling will be considered. In addition, the cumulative risk associated with multiple chemicals will be evaluated.

Exterior soil gas, subslab soil gas, and indoor air concentrations detected in 2017 were greater than VISLs and additional sampling was conducted in June 2018. These DQOs have been met.

This report focuses on evaluating if the following source area investigation DQOs have been met:

3) Assess the potential significance of detected groundwater, soil, exterior soil gas, or utility manhole air concentrations by comparison with applicable screening levels, assuming a TCR of 1 x 10-5 or a THQ of 1.
4) Assess if a soil, groundwater, or interior source area can be identified as a definable area with elevated concentrations bounded by lower concentrations.
5) Assess if the investigation data spatial evaluation weight of evidence suggests a subsurface, groundwater, interior, or sewer gas source.

1.3 Interim Measures

On March 16, 2018, USEPA provided technical comments on the *Additional Phase 3 RCRA Facility Investigation Work Plan for Dow Hanging Rock Facility* (Additional Phase 3 Work Plan; CH2M 2018a) and requested short-term interim measures (i.e., air filtration, adjusting ventilation, alerting people inside the building to risk) be taken at Building 505 to protect plant workers using that building from VOC exposures, specifically PCE.

On March 20, 2018, Dow submitted the *Potential Vapor Intrusion Interim Measures Action Plan* (CH2M 2018b) to USEPA. This plan detailed measures to be conducted, performance monitoring objectives, plan, schedule, continued communications discussion, and long-term protectiveness next steps. Interim measures were completed by April 5, 2018, and documented in the *Interim Measures Action Summary Letter* (CH2M 2018c). This summary letter is included in **Appendix B**.

Interim measures completed included relocating workers, identifying and sealing floor cracks that could be vapor entry pathways, identified the use and storage of products containing PCE and TCE in the building, performed an indoor air survey using the HAPSITE gas chromatograph/mass spectrometer (GC/MS) to identify potential vapor entry points, evaluated the heating, ventilation, and air conditioning (HVAC) system, and placing two air purifying units (APUs) in rooms with sealed cracks and products containing VOCs.

The five planned indoor air sampling events (interim measures performance monitoring) have been conducted since the measures were completed. Sampling results are submitted to USEPA after each event. The Post-Interim Measures Indoor Air Analytical Data Submittals (CH2M 2018d; 2018e; 2018f; and Jacobs 2018; 2019) are provided in **Appendix B**.

1.4 Site Background

The site is an approximate 750-acre parcel located in southern Ohio between U.S. Route 52 and the Ohio River. Site history and setting are detailed in the *Final RCRA Facility Investigation Phase 1 Report*

(CH2M 2014a) and Phase 2 RFI report (CH2M 2017a). Dow does not own or operate the facility. Current owners include American Styrenics (AmSty), Lawrence Economic Development Corporation, and Duke Energy.

2. Phase 3 Field Investigation Summary

Fieldwork was conducted in accordance with the *RCRA Facility Investigation Phase 3 Work Plan for Dow Hanging Rock Facility* (CH2M 2016), Additional Phase 3 Work Plan (CH2M 2018a), and recommendations provided by USEPA's VI guidance (USEPA 2015). As discussed in Section 1.1, the RFI fieldwork was conducted in three stages. Sampling media and the laboratory analytical target analyte lists (TAL) for each stage were revised based on the findings from the previous stages. A summary of the investigation stage, media sampled, and laboratory methods and analyte list are as follows:

1) Stage one: August 2017 VI Investigation
    a) Media: Exterior soil gas sampling
    b) TAL: benzene, bromoform, ethylbenzene, naphthalene, PCE, and TCE
    c) Laboratory Method: USEPA Method TO-15
2) Stage two: September 2017 VI Investigation
    a) Media: Subslab soil gas and indoor air sampling
    b) TAL: benzene, PCE, TCE, 1,1-dichloroethene (1,1-DCE), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), *trans*-1,2-dichloroethene (*trans*-1,2-DCE), and vinyl chloride
    c) Subslab Soil Gas Laboratory Method: USEPA Method TO-15
    d) Indoor Air Laboratory Method: USEPA Method TO-15 SIM
3) Stage Three: June 2018 VI Source Area Investigation
    e) Media: Exterior soil gas, indoor air, sewer air, HAPSITE screening, surface and subsurface soil, grab groundwater and monitoring well sampling
    f) TAL: PCE, TCE, 1,1-DCE, *cis*-1,2-DCE, *trans*-1,2-DCE, and vinyl chloride
    g) Exterior Soil Gas and Sewer Air Laboratory Method: USEPA Method TO-15
    h) Indoor Air Laboratory Method: USEPA Method TO-15 SIM
    i) Soil and Groundwater Laboratory Method: USEPA Method SW8260B

During these stages, 20 exterior soil gas, 19 subslab soil gas, 21 indoor air, 2 ambient (outdoor) air, 2 sewer gas, 42 surface and 81 subsurface soil, 21 groundwater grab, and 1 ground monitoring well samples were collected. These investigation activities are discussed in the following sections.

Figure 2-1 shows these sample boring locations (soil gas, soil, and groundwater grab), subslab soil gas locations, indoor air locations, manholes where sewer gas was collected, and monitoring well MW-08. **Figure 2-2** shows the stage one, two, and three sample locations focused around SWMU 1.

2.1 Utility Clearance

Utility locating activities were conducted before starting intrusive work. The utility location was performed by a private utility locator using a combination of electromagnetic induction, ground penetrating radar, and videography instruments and information provided by AmSty. Utilities were marked using a combination of spray paint, pin flags, and paint pens. In June 2018, each sampling location was hand augured to 5 feet below ground surface (bgs) to confirm no utilities were in the path of drilling. The ground cover at the site included asphalt, concrete, and gravel.

2.2 Exterior Soil Gas Investigation

During stage 1, six exterior soil gas probes (SG-01 through SG-06) were installed along the southwest side of Building 505 and the north side of Building 500. During stage 3, 14 exterior soil gas probes (S01-

SG07 to S01-SG20) were installed around the perimeter Buildings 500, 501, and 505 (**Figure 2-2**). SG-01 through SG-06 were installed using a direct-push technology (DPT) drill rig. In 2018, hand auguring was performed to confirm utility clearance to 5 feet bgs. The probes were installed after auguring was compete.

The probes were installed at approximately 5 feet bgs, with the 6-inch screen between 4 and 5 feet bgs. For stage 1, the screened interval was set between 4.5 and 5 feet bgs. For stage 3, the screen interval was set between 4.2 and 4.8 feet bgs. Helium leak-checks were performed at each probe to monitor for correct installation and the absence of a direct connection between the soil gas sample inlet and ambient air before sample collection.

Exterior soil gas laboratory samples were collected 48 hours after probe installation, except for SG-14 and SG-15, which were sampled after 24-hours by field error. Samples were collected over 5 minutes in 1-liter evacuated stainless steel canisters. Following sample collection, the sampling equipment was removed and the boreholes were abandoned using bentonite slurry and restored to previous conditions.

2.3 Subslab Soil Gas Investigation

Nineteen sub-slab soil gas probes were installed and sampled in Buildings 500 (eight samples), 501 (three samples), and 505 (eight samples) in September 2017 (stage 2). Soil gas probes were installed by drilling through the concrete slab and installing Cox Colvin VAPOR PINS® flush with the slab. Following installation, a water dam leak-check was performed for each probe to ensure correct installation and the absence of a direct connection between the soil gas sample inlet and ambient air. Subslab soil gas samples were collected in 1-liter evacuated stainless steel canisters equipped with 5-minute flow controllers. Following sample collection, the VAPOR PINS® were left in place and VAPOR PIN® caps and covers were installed to close and protect the probes. In Building 505, the carpet was rolled back into place.

2.4 Indoor and Ambient Air Sampling

During stage 2, indoor air samples were collected in Building 500 (four samples), Building 501 (one sample), and Building 505 (five samples) at the locations shown in **Figure 2-1** to delineate target analyte extent in building air. The indoor air samples were collected throughout the buildings using 6-liter evacuated stainless steel canisters equipped with 8-hour flow controllers. The outdoor ambient air sample was collected by placing the canister outside and upwind of the buildings for the 8-hour period.

Indoor air sample collection resumed in April 2018 as performance monitoring for the interim measures completed in Building 505. Additional sampling locations were added for a total of 11 indoor air sampling locations (**Figure 2-3**). These 11 locations were sampled on the first day of stage 3 field event. The ambient air sample canisters were placed south-southwest of Building 505, on the fence surrounding Building 500.

2.5 HAPSITE

During stage 3, a portable GC/MS (i.e., HAPSITE) was used to screen indoor air, outdoor air, and vapor entry points inside Building 505 and exterior soil gas samples in the field.

The building HAPSITE survey was conducted under normal current conditions – the HVAC systems and APUs deployed as interim mitigation measures were operating. **Figure 2-3** shows the building layout and focused survey areas. The surveyed areas included areas where subslab soil gas and indoor air samples have been collected.

The HAPSITE was used to screen 12 exterior soil gas locations (SG07 through SG18) 24 hours after probe installation. Soil gas samples were collected in 1-liter Tedlar bags using a vacuum box (i.e., lung box) and analyzed onsite for the stage 3 TAL, except vinyl chloride. The HAPSITE provided real-time

data analysis to identify potential source areas outside of planned drilling locations and aid in the determination step-out sampling locations during the first week of the field event.

2.6 Sewer Gas Investigation

During stage 3, two sewer gas samples, SW01 and SW02, were collected from separate sewer manholes in the parking lot between Building 505 and Building 500. The samples were collected from the only access points (manholes) in the main sewer line that connects to Buildings 505 and 500. This is an elbow of the lead sewer line along 5th Street that services the three buildings along C Street: Buildings 500, 504, and 505. **Figure 2-1** shows the location of the manholes where samples were collected. The two (2) samples were collected using 6-liter evacuated stainless-steel canisters (i.e., SUMMA® canisters) equipped with 24-hour flow controllers. The SUMMA® canisters were anchored to the manhole cover and Teflon tubing was attached to the flow controller. The tubing was then lowered into the manhole to approximately 12 inches above the maximum liquid surface. Water was present in both manholes during the 24-hour sample collection period.

2.7 Soil Sampling

Soil samples had been previously collected near SWMU 1 as part of the Phase 1 and Phase 2 RFIs (SS-01 through SS-16). For the Phase 3, 27 soil borings were advanced using DPT (SS-07 through SS-43). Eleven exterior soil sampling locations were planned in Additional Phase 3 Work Plan (CH2M 2018a). The additional borings were completed to delineate potential source areas based on the HAPSITE soil gas data results and the expedited analytical results turnaround time for select samples (SS-17/GW01, SS-27/GW08, SS-28/GW09, SS-33 and SS-42).

Inside Building 505, four soil borings were planned in the western building section. Three additional borings were advanced in the eastern building warehouse section. Six of the seven borings inside Building 505 were advanced with a small 540MT rig that has limited cable height that can work and maneuver inside the Building 505 offices. Due to the small rig's restrictions, the boreholes hit refusal around 16 feet bgs. Location SS-37/GW15 was advanced with the normal DPT rig since this location is within the large open warehouse. This boring was advanced to approximately 30 feet below the building.

Soil samples were collected using Encore samplers. Three soil samples were collected per boring from the following approximate intervals: fine grained clay/silt (0 to 2 feet bgs), shallow subsurface in the bottom fine grained layer of silt and fine sand (6 to 10 feet bgs), and in the sand and gravel above the water table (21 to 29 feet bgs). The soil cores were logged in the field and screened for VOCs using a photoionization detector (PID). Boring logs are provided in **Appendix C**.

As seen on **Figure 2-2**, most locations were co-located to collect soil, groundwater grab, and soil gas samples from the same immediate area. For co-located soil gas locations, the soil gas probes were installed within a separate boring. A second boring was advanced within several feet of the soil gas probes for the soil and groundwater grab sample collection.

2.8 Groundwater Sampling

During the stage 2, soil boring VP-10 was advanced to collect groundwater grab samples from three depth intervals within the sand and gravel aquifer. For stage 3, 21 groundwater grab samples were collected from 22 co-located sample boring locations. GW-19 was purged dry and did not recover for sample collection. Four groundwater grab sample locations were beneath Building 505 (**Figure 2-2**).

Temporary monitoring wells with schedule 40 1-inch polyvinyl chloride (PVC) 10-foot screens were installed in most borings for groundwater grab sampling. Five locations were sampled using a retractable, 4-foot-long stainless-steel screen advanced to the boring bottom: GW-05, GW-06, GW-11, GW-14, and GW-22. The temporary monitoring wells were abandoned after sampling by pulling the well casings and back sealing the boreholes with hydrated bentonite chips.

Groundwater grab samples were collected from the top of the aquifer between 25 and 30 feet bgs. A peristaltic pump and polyethylene sampling tubing were used to purge and collect groundwater grab samples. Groundwater was purged until the sediment visually cleared up to the extent practical or purging lasted 15 minutes. Purge logs from the temporary well locations are provided in **Appendix C**.

Monitoring well MW08 was sampled during stage 3 using a peristaltic pump and polyethylene tubing using low-flow sample techniques. The MW08 purge log is provided in **Appendix C**.

2.9 Investigation-Derived Waste Management

Investigation-derived waste (IDW) generated during the 2017 VI investigation stages included solids (personal protective equipment [PPE] and soil cuttings) and decontamination water. IDW generated during the 2018 source area field stage included solids (PPE, acetate liners, and tubing and soil cuttings), and decontamination/purge water. IDW was contained in 55-gallon drums and stored onsite until pickup by the disposal company.

3. Hydrogeology

Geologic cross sections depicting the stratigraphy in the investigation area were constructed to help evaluate potential migration pathways for VOCs in soil, groundwater, and soil gas. The locations of the cross sections are shown on **Figure 3-1**. Cross section A-A' (**Figure 3-2**) runs west to east from near the southeast corner of Building 501 to the southeast corner of Building 505. Cross section B-B' (**Figure 3-3**) runs north to south from near the northeast corner of Building 501 through SWMU 1 to the north side of Building 500.

3.1 Geology

The facility is in the Ironton Plateau physiographic region of the Allegheny Plateau. The geology of the Ironton Plateau region consists of Pennsylvanian age sedimentary units of the Allegheny Formation and the Pleistocene age Minford Clay, silt-load, and sand and gravel (ODNR 2006).

The site stratigraphy consists of approximately 10 feet of finer-grained soils, i.e., clay, silt, and fine to medium sand, overlying the coarser-grained sand and gravel that comprise the regional aquifer. In June 2018, the geologist noted a saturated perched saturated zone approximately 6 to 10 feet bgs, within the upper silt and sand. The saturation is shown on the cross sections and is about 20 feet above the regional aquifer water table in the sand and gravel aquifer. The distinct shallow saturation was not observed in historical boring logs (SS02, SS05, and SS08). The geologist noted moist conditions in the silty fine sand zones encountered between 6.5 and 11 feet bgs and dry conditions in the silt and clay at these depths. These historical borings were drilled in December 2011, and the other borings were drilled in June 2018, so precipitation and subsequent infiltration could have differed for the two sampling events and affected the shallow saturation conditions.

3.2 Hydrogeology

The perched shallow saturated silt and sand overlie the unsaturated sand and gravel aquifer. Because there is no low-permeability confining layer underlying the perched saturated zone, the groundwater is likely held in place by capillary pressure, which is higher in the finer-grained soils than in the coarser-grained underlying sand and gravel. This capillary water is likely immobile, except for some downward migration into the underlying aquifer when the hydraulic head in the perched zone exceeds the capillary pressure of the soils. The portions of the shallow sand strata that are not saturated form permeable vadose zones through which soil gas could potentially migrate.

The water table in the sand and gravel aquifer occurs at a depth of approximately 26 to 29 feet bgs. There is a vadose zone approximately 15 to 20 feet thick between the water table and the shallow perched zone.

The February 2016 potentiometric surface map for the property, **Figure 3-4**, shows that groundwater in the Building 505 area flows to the southeast. Sitewide groundwater generally flows to the south-southeast toward the Ohio River.

4. Nature and Extent of Contamination

This section presents the combined Phase 3 RFI results. Analytical results were compared established USEPA screening criteria and Ohio recommended VI response action levels for indoor air. **Table 4-1** provides the screening levels used for each media.

The analytical data laboratory reports are provided in **Appendix D**. The analytical results were evaluated using the criteria of precision, accuracy, representativeness, comparability, and completeness (PARCC) as presented in the Addendum 3 Quality Assurance Project Plan for Dow Hanging Rock (CH2M 2018g). The PARCC evaluation determined that the data can be used for project decisions taking into consideration the validation flags applied to some samples. Further details on the PARCC review can be found in the data quality evaluation reports provided in **Appendix E**.

4.1 Exterior Soil Gas Results

The initial external soil gas sampling in August 2017 identified VOCs in the soil gas around Buildings 500 and 505 at concentrations above VISLs. Additional external soil gas sampling was performed in 2018 to try to delineate VOCs in the soil gas and to identify hot spots that could represent VOC sources in soil and groundwater. The soil gas sampling locations and the results for PCE and TCE are shown on **Figures 4-1** and **4-2**, respectively. **Table 4-2** provides the complete analytical data.

PCE was detected at all locations. The PCE soil gas concentrations ranged from 1,090 micrograms per cubic meter (µg/m^3) to 314,000 µg/m^3. As shown on **Figure 4-1**, most of the study area has PCE concentrations above the VISL of 5,800 µg/m^3. There are two general areas of elevated PCE in the soil gas (represented by 100,000 µg/m^3 contours), one near the southeast corner of Building 505, and the other near the west side of Building 505 and the northeast corner of Building 501.

There is one general area of elevated TCE soil gas concentrations, represented by the 5,000-µg/m^3 contour on **Figure 4-2**. It is near the west and southwest corner of Building 505 and southeast corner of Building 501. Detected concentrations ranged from 5.09 µg/m^3 to 12,000 µg/m^3 (**Table 4-2**). Daughter products cis-1,2 DCE, trans-1,2 DCE, 1,1-DCE, and vinyl chloride were only detected at SG-13 and SG-19, which are in the parking lot south of the corridor between Building 501 and 505. Vinyl chloride was detected above the 929 µg/m^3 VISL at SG-19. Benzene was detected above the VISL at SG-01, outside the northwest corner of Building 505.

4.2 Subslab Soil Gas Results

Subslab soil gas sampling was conducted in all three investigation area buildings (**Figure 4-1**). All seven analytes were detected in the subslab soil gas samples; however, only PCE and TCE were detected above VISLs (**Table 4-2**). The highest PCE and TCE concentration were detected at location B505-V15 (Building 505's southwest corner office) at concentrations of 296,000 µg/m^3 and 24,500 µg/m^3, respectively. PCE was detected above the VISL at seven of the eight locations in Building 505, but were detected less than VISLs in the northwest corner SV-16 location. TCE was detected above the VISL at three locations along the southern extent of Building 505 (SV-15, SV-14, and SV-12). **Figure 5 and 6** in the VI TM (**Appendix A**) show the subslab soil gas PCE and TCE, respectively, concentration ranges.

PCE was detected above the VISL at three locations in Building 500's northern extent (SV-02 through SV-04). TCE concentrations were below the VISL in Building 500. PCE and TCE were detected at concentrations below the VISLs in the Building 501 subslab samples.

4.3 Indoor Air Results

During stage 2, indoor air samples were collected inside all three investigation area buildings (**Figure 4-1**). During stage 3, indoor air samples were collected from Building 505. The indoor air results are presented in **Table 4-3**, including data from the Building 505 interim measure indoor air sampling events.

Benzene, PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride were detected in indoor air at Buildings 500, 501, and 505; however, 1,1-DCE was not detected. PCE was the only compound that was detected above VISLs, and it those concentrations were found in Building 505. PCE was detected at concentrations above the 175-µg/m^3 VISL at all five sample locations within Building 505. The highest PCE concentration was 326 µg/m^3 at B505-IA06, in Office R13 (**Figure 4-3**).

After the interim measures were performed (sealed identified cracks, added APUs, removed chemical spray cans from Office R6), the next air sampling results showed an immediate concentration decrease. Subsequent events show additional decreasing concentrations as concentrations continue to remain at low levels below the VISLs.

4.4 HAPSITE Results

During stage 3, the HAPSITE was used to collect indoor air samples from a snapshot in time throughout Building 505 and to screen soil gas probes. The indoor air survey did not indicate any new building usage or potential vapor entry points. Overall, they indicated that sealing the floor cracks and removing the chemical spray cans have reduced PCE concentrations.

The nine planned soil gas sampling locations (SG-07 through SG-15) were screened 24 hours after probe installation. **Table 4-4** presents the soil gas HAPSITE analytical results. The results created additional step out soil gas, soil, and groundwater sampling locations. Five additional soil gas locations were installed (SG-16 through SG-20). Additional soil borings were installed to investigate elevated soil gas concentrations northwest of Building 505 and in the parking lot southeast of Building 505. Soil and groundwater samples were collected from these areas to identify a potential source area indicated by the soil gas results.

While hand auguring to install SG-19, elevated PID readings were detected from the hole. A soil sample was collected from the 2- to 3-foot bgs interval at new soil boring SB-33 and sent to the laboratory for expedited results turnaround time. This finding prompted additional soil borings for soil and groundwater sampling to be installed south of Building 501 and in the northwest corner of Building 500.

An evaluation of the HAPSITE soil gas results (**Table 4-5**) compared to the analytical laboratory results (**Table 4-2**) shows that the HAPSITE readings were consistently lower than the laboratory results.

4.5 Sewer Gas

To evaluate if the sewer utility lines may be acting as a preferential vapor transport mechanism from soil and groundwater-to-indoor air, two vapor samples from sewer utility line manholes were collected. The manhole analytical data for PCE and TCE are shown on **Figures 4-1** and **4-2**, respectively. The analytical data are provided on **Table 4-2**.

PCE was detected in both manholes and TCE was detected from the manhole close to Building 500. The sewer lines are not located in areas of elevated soil concentrations. The sewer line from Building 505 extends south through the parking lot and then parallel to C Street. Elevated groundwater samples were found in Building 505's eastern parking lot.

4.6 Surface and Subsurface Soil Results

The Phase 1, Phase 2, and Phase 3 soil sample analytical results are all below the USEPA industrial soil Reginal Screening Levels (RSLs). The soil sample results are presented on **Table 4-4**. To identify potential source areas, the results are evaluated in three general depth intervals and on figures using color coding to indicate areas of more elevated concentrations.

The three general depth intervals used for data evaluation are: surface (0 to 2 feet bgs), shallow (5 to 10 feet bgs), and deep (21 to 29 feet bgs). The 0 to 2-foot interval represents surficial soil, the 5- to 10-foot interval generally represents soil immediately above or within the shallow perched saturated zone,

and the 21- to 29-foot interval represents the vadose zone/capillary fringe in the sand and gravel aquifer above where saturated soil was encountered.

Figures 4-4 through **4-9** show the PCE and TCE soil sampling results from these three intervals. During the Phase 1 and Phase 2 RFIs, soil was also sampled from the 3- to 6-foot bgs intervals. The figures depict the 0 to 2-foot bgs results for consistency with the Phase 3 RFI data. Phase 3 location SS-33 PCE results shown on the **Figure 4-4** are from 2- to 3-foot bgs interval, where the highest surficial soil concentration was detected. Soil borings advanced under Building 505 had limited depth; therefore, **Figures 4-8** and **4-9** present data from the 13- to 16-foot intervals under the building along with the deeper 210 to 29-foot intervals for the remaining borings.

The figures use generalized color coding to depict areas of higher concentrations, indicating potential source areas. Locations not highlighted do not have detections, or detections are below 50 micrograms per kilogram (µg/kg). Green highlights indicate detections between 50 and 99 µg/kg, blue highlights are for detections between 100 and 999 µg/kg, purple is for detections between 1,000 to 9,999 µg/kg, and orange (one location) has a detected PCE concentration of 35,000 µg/kg. Generally, areas with purple, blue, and the orange highlights indicate areas of higher concentrations that may be source areas.

4.6.1 Surface Soil

As shown on **Figure 4-4**, there are two surface soil locations where PCE concentrations were above 1,000 µg/kg: the northern side of SWMU 1 (SS-02), and an area just southeast of Building 501 (SS-33). There are other PCE detections at concentrations less than 100 µg/kg (green) at three locations beneath the Building 505 and at the southeast corner of SWMU 1.

TCE detected concentrations were much lower in surface soil. **Figure 4-5** shows only low-level detections with two green highlighted locations along the north side of SWMU 1 (SS-02) and in the southeast corner of Building 505 (SS-38).

4.6.2 Shallow Soil – Perched Saturated Zone

For the 5- to 10-foot bgs interval, which represents the vadose zone in the fine-grained soils above the shallow perched saturated zone, the highest PCE concentration was detected in boring SS-33 (1,400 µg/kg), located near the southeast corner of Building 501. As seen in **Figure 4-6**, adjacent to SS-33, there are several borings highlighted in blue (concentrations between 100 and 999 µg/kg) located around and within Building 505's southwest corner. In addition, location SS-02 (north side of SWMU 1) and a location in the northeastern portion of Building 505 (SS-36) are slightly elevated compared to other locations. Non-highlighted and green highlighted areas include north of Building 505, south of Building 501, the general parking lot and street area, and north of Building 500.

TCE was widely not detected in the 5- to 10-foot bgs interval (**Figure 4-7**). One location of higher concentration is SS-33 (94 µg/kg), which also has the highest detected PCE concentration.

4.6.3 Deep Soil – Vadose Zone Above Saturated Soil

Elevated PCE concentrations are more widespread in the 21- to 29-foot interval, which represents the vadose zone/capillary fringe above the water table in the sand and gravel aquifer. The highest PCE concentration (35,000 µg/kg) was detected in SS-37 located in the eastern portion of Building 505. PCE was detected above 1,000 µg/kg at four isolated locations (SS-26, SS-31, SS-32, and SS-40) between Buildings 500 and 505 (**Figure 4-8**).

TCE was widely not detected in the 5- to 10-foot bgs interval (**Figure 4-9**). The TCE detections highlighted on **Figure 4-9** generally correlate with the shaded purple and orange PCE locations (SS-26, SS-31, SS-37, and SS-40).

4.7 Groundwater Results

The stage 3 groundwater grab sample results are presented in **Table 4-5** along with analytical results from SWMU 1 monitoring well MW-08 and Phase 2 RFI groundwater grab sampling location VP-10. Detected PCE analytical results are above the maximum contaminant level (MCL) (5 µg/L). PCE was not detected at one location, the easternmost soil boring GW-13/SS-35 south of Building 501. The highest concentrations of PCE and TCE were detected at GW-07/SS-26. The groundwater PCE results are shown on **Figure 4-10**, and the TCE results are shown on **Figure 4-11**.

As shown on **Figure 4-10**, PCE concentrations greater than 50 µg/L start near the southeast corner of Building 501 and extend east-southeast through the parking lot, which is consistent with the sitewide groundwater flow direction.

TCE was detected above the 5-µg/L MCL in the central part of the study area, with the highest concentrations detected near the southwest corner of Building 505. The TCE plume was generally delineated to the MCL in the Building 500, 501, and 505 area.

The PCE and TCE results for the study area were incorporated into the sitewide plume maps that were included in the Phase 2 RFI report (**Figures 4-12** and **4-13**; CH2M 2017a). The site monitoring wells were sampled in November 2014 except for wells MW-8, MW-9, and MW-10, which were sampled in February 2016. The VP groundwater grab locations were sampled in 2015 and 2016.

Adding the PCE and TCE groundwater source area to the existing sitewide maps refined the area of highest concentrations but did not change the findings. As discussed in the Phase 2 RFI report, PCE, and TCE concentrations above MCLs are bound by downgradient monitoring wells.

4.8 Summary

The PCE soil gas, soil and groundwater grab results are depicted on cross sections A-A' and B-B' (**Figures 4-14** and **4-15**) to show the analytical results relative to the shallow fine-grained soils and the sand and gravel aquifer. Cross-section A-A' extends west to east from SS-33/GW-21/SG-19 to SS-38 at the southeast end of Building 505. Cross-section B-B' extends north to south from SS-34/SG-16 through Building 505 and SWMU 1 to SS-31/GW-11. Cross-section locations are shown on **Figure 3-1**.

The soil gas samples depicted on these cross-sections show the probe screened interval, between approximately 4.2 to 5 feet bgs, encounter the shallow sand strata above the perched saturated zone at most locations. This sand strata could act as permeable migration pathways for soil gas. The sand to fine sand is found at most boring locations between 4.2 and 5 feet bgs. In general, silt and clays are found to 5 feet under Building 505 and in some borings immediately adjacent to the building (SS-22 and SS-27). Since most soil gas probe screens were in contact with the sand strata, some results could be representative of soil gas migrating from soil source areas within the sand strata preferential pathways instead of localized soil source areas. For example, the area north of Building 505 on cross section B-B' (**Figure 4-15**) has elevated soil gas concentrations from probes with the sand strata. However, the surrounding soil and groundwater concentrations are not elevated, indicating the potential migration of soil gas from the elevated soil concentrations to the south and east.

Cross section A-A' shows the sample locations underneath Building 505. The SS-33/GW-21/SG-19 boring shows the elevated PCE concentration in upper fine grain soils, the associated soil gas concentration and lower concentration groundwater impacts. Soil boring SS-37/GW-15 shows the highest detected PCE concentration from the sand and gravel just above the shallow aquifer. Cross-section B-B' provides the vertical profile through the western section of Building 505, through the Phase 1 and 2 soil borings at SWMU 1 and ends just north of Building 500. The SS-02 soil boring shows the elevated soil concentrations in shallow soil. Soil borings SS-26/GW-07 and SS-29/GW-10 show higher impacts in the sand and gravel aquifer between Building 505 and SWMU 1.

For soil, the highest surface and shallow soil impacts are found on the west side of the study area. The deep soil and groundwater impacts have the highest concentrations on the east side of the study area.

5. Screening-Level Human Health Risk Assessment

As part of the Phase 3 RFI, this Screening-Level Human Health Risk Assessment (SLHHRA) was performed to identify chemicals of potential concern (COPCs) associated with exposure to VOCs in soil, groundwater, and exterior soil vapor by potential current and future receptor populations. In addition to identifying COPCs, the SLHHRA results are used to help assess whether the site requires further evaluation (e.g., a baseline risk assessment or additional data collection) or no further action with respect to human health risks associated with soil, groundwater, soil vapor under current and future industrial site use.

For SWMU 1, the SLHHRAs conducted during Phase I and Phase II RFIs identified no site-related soil COPCs present at levels that could pose risks above the target levels and indicated that no COPCs needed to be carried forward for subsequent phases of investigation. This SLHHRA was prepared to incorporate the Phase 3 soil, groundwater, and soil gas samples for VOCs.

The basic framework for this risk screening was derived from the USEPA *Risk Assessment Guidance for Superfund, Part A, Volume 1* (RAGS) and associated guidance documents (USEPA 1989, 1991a). This risk screening includes estimates of human health risks associated with exposure to soil, groundwater, and exterior soil gas for SWMU 1. The SLHHRA was performed in a phased approach, as described below.

5.1 Data Evaluation

Data evaluated in the SLHHRA included data used in the Human Health Risk Assessment (HHRA), including groundwater samples collected at SWMU 1 during the Phase II RFI and Phase 3 RFI; and exterior soil gas samples collected at SWMU 1 during the Phase 3 RFI. For this discussion, the SLHHRA focused on the VOC soil sampling results from discrete depths between 0 and 10 feet bgs since the Phase 1 and Phase 2 RFI risk assessments found no further evaluation is necessary for soils. However, an updated SLHHRA using soil samples collected at SWMU 1 during the Phase I, Phase II, and Phase 3 RFIs are summarized in the Technical Memorandum provided in **Appendix F.** including

A discussion of how the sampling data are grouped for SWMU 1 is provided in the following subsections. SWMU 1 sampling locations are shown on **Figure 2-1**.

5.1.1 Soil

The soil was evaluated in two data groupings: (1) surface soil samples collected from 0 to 2 feet bgs, and (2) surface and subsurface soil, referred to hereafter as “total soil,” collected from 0 to 10 feet bgs.

Soil samples collected in June 2018 were analyzed for the focused target list of VOCs (Section 4). The analytical dataset for the SWMU 1 samples used in the SLHHRA is included in **Appendix F**, **Table F-1**.

5.1.2 Groundwater

Groundwater samples collected from four grab locations, VP-11 through VP-14 during the Phase 2 RFI in October 2015, monitoring well MW08 during the Phase II RFI in February 2016, and monitoring well MW08 and 21 grab locations, GW01 through GW22, during the Phase 3 RFI in June 2018 were used in the SLHHRA. The groundwater dataset consists of 38 samples; samples from the Phase II RFI were analyzed for the focused target list of VOCs, SVOCs, and total metals presented in Table 2-2 of the *Final RCRA Facility Investigation Phase 2 Work Plan Dow Hanging Rock Facility* (CH2M 2014b). Samples from the Phase 3 RFI were analyzed for the focused target list of VOCs (see Section 4).

The analytical dataset for the groundwater samples used in the SLHHRA is included in **Appendix F**, **Table F-2**.

5.1.3 Exterior Soil Vapor

Exterior soil vapor samples collected from probe locations around Buildings 500 and 505 during the Phase 3 RFI in August 2017 and June 2018 were used in the SLHHRA. The exterior soil vapor dataset consists of 20 samples; samples were analyzed for the focused target list of VOCs (see Section 4).

The analytical dataset for the exterior soil vapor samples used in the SLHHRA is included in **Appendix F**, **Table F-3**.

5.1.4 Data Used in the HHRA

The data included in the SLHHRA were validated. The following bullets discuss how the qualified data were evaluated in the risk assessment:

- Rejected ("R" qualified) data were excluded from the risk screening.
- Estimated ("J" qualified) data were treated as detected concentrations in the risk screening.
- For duplicate samples, the maximum concentration between the two samples was used as the sample concentration.

Surface soil samples collected from 0 to 2 feet bgs were used to evaluate the current/future site worker and current/future trespasser exposure scenarios. Because future invasive activities may disturb soil in the shallow subsurface (0 to 10 feet bgs) and bring current subsurface soil to the ground surface where contact may occur, soil from the 0- to 10-foot interval ("total soil") was used to evaluate reasonably foreseeable future scenarios (i.e., construction worker and maintenance worker). Groundwater samples were used to evaluate potential current/future scenarios (i.e., VI) and future scenarios (i.e., offsite potable use). Only the shallowest groundwater samples are used in the evaluation of the VI scenario, therefore, samples from VP-10 from 45 and 76 feet bgs are not used. Exterior soil gas samples were used to evaluate potential current/future scenarios (i.e., VI).

5.2 Human Health Conceptual Exposure Model

The human health conceptual exposure model (CEM) presents an overview of site conditions, potential contaminant migration pathways, and exposure pathways to potential receptors. **Figure 7-1** shows the CEM of potential exposure pathways for SWMU 1. These pathways are described in further detail in the following paragraphs.

The facility is owned and operated by others (Section 1.4). AmSty's active facility operations are located in the northern portion of the site (see **Figure 1-2**). Facility buildings are used for manufacturing, warehouse, and office space. During the October 2010 site visit and the Phase 1 RFI fieldwork, it was observed that the area where the SWMU 1 former flaring pad was located had been converted to an asphalt-covered parking lot for Building 505. Currently, construction or excavation activities are not taking place at SWMU 1. When Dow sold the property to others, a requirement was placed on the deed to maintain non-residential land use and restrict potable groundwater use. Future land use is expected to remain industrial.

Potential current receptors include site workers and trespassers. The current receptors may come in contact with surface soil; exposure routes may include incidental ingestion, dermal contact, and inhalation of volatile and particulate emissions from the surface soil. Site workers may inhale volatile COPCs in groundwater and soil vapor that migrate into indoor air of buildings.

Potential future receptors include construction workers, in addition to the current receptors (site workers and trespassers). Future receptors may also come in contact with surface soil (incidental ingestion, dermal contact, and inhalation of volatile and particulate emissions from the surface soil). In addition, it is assumed the future site workers and construction workers could be exposed to subsurface soil if future industrial buildings or piping or other underground utilities are repaired or constructed at the site and the soil is reworked, bringing subsurface soil to the surface. Exposure routes for subsurface soil are the

same as those for current surface soil (incidental ingestion of the soil, dermal contact with the soil, and inhalation of volatile and particulate emissions from the soil).

Depth to groundwater is greater than 10 feet across the site; therefore, dermal contact is not a potential exposure route, with a discontinuous perched saturated zone at approximately 7 feet bgs. There is no current drinking water use of groundwater at the site. Five non-potable water supply wells are located onsite. The facility reports that Well 5 is used as needed for the wastewater treatment plant, and Well 2 is used for fire protection. The remaining three wells are not used. SWI supplies drinking water purchased from the City of Portsmouth, Ohio, to the facility and residents within the vicinity of the facility. This water is supplied from the City of Portsmouth's filtration plant located on the Ohio River approximately 15 miles upstream of the facility. According to Ohio Department of Natural Resources data, 10 privately owned wells are within 1 mile of the facility, and the use of these wells is unknown. For future use, potential exposure to groundwater may occur via potable use of offsite receptors.

In summary, potentially complete exposure pathways and scenarios related to the facility are:

- Current exposure pathways:
  - Trespassers: Exposure to surface soil (0- to 2-foot interval) through incidental ingestion, dermal contact, and inhalation of particulate and volatile emissions
  - Site workers: Exposure to surface soil (0- to 2-foot interval) through incidental ingestion, dermal contact, and inhalation of particulate and volatile emissions, groundwater through inhalation of VOCs that migrate into indoor air, and exterior soil vapor through inhalation of VOCs that migrate into indoor air
- Future exposure pathways include the following pathways and the following additional pathways:
  - Construction workers: Exposure to combined surface soil and subsurface soil (0- to 10-foot interval) during construction activities through incidental ingestion, dermal contact, and inhalation of particulate and volatile emissions
  - Maintenance workers: Exposure to combined surface soil and subsurface soil (0- to 10-foot interval) during subsurface utilities repair and maintenance through incidental ingestion, dermal contact, and inhalation of particulate and volatile emissions
- Potential future exposure pathway also evaluated includes:
  - Offsite Residents: Exposure to groundwater through potable use (ingestion, dermal contact, and inhalation of volatile emissions)

5.3 SLHHRA Approach

The SLHHRA was conducted in three steps. Step 1 identified COPCs in soil, groundwater, and exterior soil vapor by comparison to risk-based screening levels. The identified COPCs were evaluated in step 2 using maximum detected soil, groundwater, and exterior soil vapor concentrations and a risk ratio approach (USEPA 1991a) to determine whether concentrations pose risks to potential receptor populations above the USEPA risk management levels (target cancer risk of $1x10^{-6}$ to $1x10^{-4}$ and target noncancer hazard index of 1). A target cancer risk of $1x10^{-6}$ is used to make risk management decisions related to the VI exposure pathway. In step 3, the identified COPCs (in soil only) were evaluated using the 95 percent upper confidence limit (UCL) concentration and a risk ratio approach (USEPA 1991a) to determine whether concentrations pose risks to potential receptor populations above the USEPA risk management levels. A detailed description of the SLHHRA process is provided below.

5.3.1 Step 1

The COPC screening process was conducted for soil, groundwater, and exterior soil vapor on a site-specific basis for each data grouping. Surface soil and subsurface soil analytical results were screened against the industrial soil RSLs (USEPA 2018a). The industrial soil RSLs are used to identified COPCs for the receptors potentially exposed to soil (trespassers, construction workers, and maintenance workers

[CH2M 2011]). Groundwater results were screened against the tap water RSLs, which are used to identify COPCs for receptors potentially exposed to groundwater through potable use (offsite residents). Groundwater results were also screened against groundwater-to-indoor air VISLs (USEPA 2018b), which are used to identify COPCs for receptors potentially exposed to groundwater through VI to indoor air (site workers). Exterior soil vapor results were screened against soil vapor-to-indoor air VISLs (USEPA 2018b), which are used to identify COPCs for receptors potentially exposed to soil vapor through VI to indoor air (site workers).

The RSLs and VISLs for noncarcinogenic health endpoints were based on a target hazard quotient [HQ] of 0.1. The target HQ of 0.1 was used to account for the potential presence of multiple constituents affecting the same target organ (i.e., the cumulative HQ, called the hazard index [HI] will be less than 1). The RSLs and VISLs based on carcinogenic health endpoints were based on a target excess lifetime cancer risk (ELCR) of $1x10^{-6}$. The use of a target ELCR of $1x10^{-6}$ also accounts for the potential presence of multiple constituents (i.e., cumulative ELCR less than $1x10^{-4}$). For those constituents with more than one RSL (e.g., carcinogenic-based RSL, noncarcinogenic-based RSL), the lowest value was selected as the final RSL for that constituent. Detected constituents that had no RSL were compared to RSLs for surrogate chemicals, if available. Soil results were screened against the USEPA RSL for trivalent chromium as a surrogate for total chromium because available documentation indicates chromium has not been used in the manufacturing process at the facility. Trivalent chromium can occur naturally in soil, and it is unlikely that hexavalent chromium would be present in soil at the facility.

The detection limits for the nondetected constituents in soil and groundwater (i.e., those constituents never detected in the SWMU soil or groundwater samples) were compared to the screening levels discussed above and are provided in **Appendix F**, **Tables F-4** through **F-6**. For soil, no issues were identified for the detection limits for the VOCs. For groundwater, the detection limits for six analytes were greater than the tap water RSLs and two analytes had detection limits above the groundwater VISLs. Because these constituents were not detected in the groundwater samples, they were not identified as COPCs for further evaluation.

If the maximum detected concentration in soil, groundwater, or exterior soil vapor were greater than the appropriate screening value, the COPC was retained for further evaluation and the screening level risk evaluation proceeded to step 2.

5.3.2 Step 2

For COPCs retained for further evaluation following step 1, corresponding noncancer hazards and ELCRs were calculated on a site-specific basis using methods described below. No VOC COPCs were identified in soil. The tap water RSLs are used to estimate noncancer hazards and ELCRs for the receptors potentially exposed to groundwater through potable use (offsite residents). The groundwater VISLs and soil vapor VISLs are used to estimate noncancer hazards and ELCRs for the receptors potentially exposed to indoor are via migration from groundwater and soil vapor, respectively.

5.3.2.1 Noncancer Hazard Estimation Methods

For noncancer effects, the potential for a receptor to develop an adverse effect was estimated by comparing the predicted level of exposure for a particular chemical with the highest level of exposure that is considered protective (i.e., the screening level).

For chemicals identified as COPCs in step 1, a corresponding HQ was calculated using the following equation:

$$HQ = \frac{\text{Maximum detected media concentration x target hazard (i.e., 1)}}{\text{Risk-based Screening Level (i.e., RSL or VISL)}} \quad (1)$$

The maximum detected concentration (the same concentration that was used in step 1) was used in step 2. RSLs for noncarcinogenic effects were based on a target HQ of 1.

The individual constituent HQs were then summed to an area-specific HI to assess the potential for noncarcinogenic health effects posed by exposure to multiple constituents (USEPA 1986). The summation of individual constituent HQs to determine the HI assumes noncarcinogenic hazards associated with exposure to more than one constituent are additive. Synergistic or antagonistic interactions between constituents are not considered. The HI may be greater than 1 even if all the individual HQs are less than 1. An HI greater than 1 indicates there is some potential for adverse noncarcinogenic health effects associated with exposure to the constituents of concern. However, if the HI is greater than 1, the target organ/effect-specific HIs can be calculated (summing all HQs for constituents that affect the same target organ) to determine whether the HI for a specific target organ/effect is greater than 1. If the HI for each target organ/effect is not greater than 1, it can be assumed there is no unacceptable noncarcinogenic hazard to the receptor. If the cumulative corresponding HI by target organ/effect is greater than 1, then further action (e.g., data collection, additional data evaluation, and action) may be necessary.

5.3.2.2 Carcinogenic Risk Estimation

The potential for carcinogenic effects associated with exposure to site-related constituents was evaluated by estimating the ELCR. ELCR is the incremental increase in the probability of developing cancer during one's lifetime in addition to the background probability of developing cancer. For example, an individual exposed to a carcinogen with a calculated cancer risk of $2x10^{-6}$ indicates the probability of the individual getting cancer increases by 2 in 1 million above background levels.

Similar to the approach for noncarcinogenic hazard estimates for each sample location, constituent-specific ELCRs were calculated using a using a risk ratio approach (USEPA 1991a).

For chemicals identified as COPCs in step 1, chemical-specific ELCRs were calculated for each identified using the following equation:

$$\text{ELCR} = \frac{\text{Maximum detected concentration x target risk level (i.e., } 1x10^{-6})}{\text{Risk-based Screening Level (i.e., RSL or VISL)}} \quad (2)$$

RSLs for carcinogenic effects were based on a target ELCR of 1×10^{-6}. The individual constituent ELCRs at each SWMU then were summed to obtain a site-specific ELCR to assess the potential for carcinogenic health effects posed by exposure to multiple constituents (USEPA 1986). As described in the USEPA-approved work plan (CH2M 2011; 2014b; 2016; 2018a), if it is determined that cumulative risks are within USEPA's risk management range of $1x10^{-6}$ to $1x10^{-4}$ for carcinogenic compounds, and the cumulative HI is less than 1, then no further risk evaluation will be recommended (USEPA 1991b).

5.3.2.3 Step 3

In step 3, a corresponding risk level is calculated as discussed above for step 2; however, the 95 percent UCL was used as the concentration instead of the maximum detected concentration. However, this step is applicable only COPCs in soil and because no VOC COPCs were identified in soil, step 3 was not performed. However, step 3 was performed for the results of the SLHHRA for the VOC data combined with the SVOC and metals data that were collected in 2011 and 2015 (see **Appendix F**).

5.3.3 SLHHRA Results

Results of the SLHHRA for soil, groundwater, and external soil vapor are presented in **Table 5-1** through **5-7** and are summarized below.

5.3.3.1 Soil

The step 1 screening of surface soil and total soil is presented in **Table 5-1**. No VOCs were identified as COPCs in either surface soil or total soil. Therefore, step 2 was not performed for VOCs in soil.

5.3.3.2 Groundwater (Potable Use)

The step 1 screening of groundwater is presented in **Table 5-2**. Three VOCs (cis-1,2- DCE, PCE, and TCE) were identified as COPCs in groundwater for the potable use scenario.

The risk ratio calculations using the maximum COPC concentration (step 2) are provided in **Table 5-3**. The ELCR (1×10^{-4}) associated with groundwater at SWMU 1 is equal to the high end of USEPA's risk management range of 1×10^{-6} to 1×10^{-4}. This is primarily associated with PCE and TCE concentrations (ELCR = 3×10^{-5} and ELCR = 1×10^{-4}, respectively). The estimated cumulative noncancer HI for groundwater (266) is greater than the USEPA's threshold of 1. Target organ HIs greater than 1 are urinary (HI = 15, due to cis-1,2-DCE), nervous (HI = 68, due to PCE), ocular (HI = 68, due to PCE), developmental (HI = 182, due to TCE), and immune (HI = 182, due to TCE).

Currently, the groundwater is not used onsite for potable purposes and contact with groundwater does not occur (i.e., depth to groundwater is approximately 25 feet bgs). The depth to perched water, which is not used for potable purposes, however, is approximately 7 feet bgs. In addition, impacted water is not migrating offsite; therefore, future offsite residential exposure does not occur.

5.3.3.3 Groundwater (Vapor Intrusion)

The step 1 screening of groundwater for the VI pathway is presented in **Table 5-4**. Two VOCs (PCE and TCE) were identified as COPCs in groundwater for the VI scenario. The risk ratio calculations using the maximum COPC concentration (step 2) are provided in **Table 5-5**. The ELCR (1×10^{-5}) associated with groundwater VI at SWMU 1 is within USEPA's risk management range of 1×10^{-6} to 1×10^{-4} and equal to the DQO target risk level of 1×10^{-5}. The estimated cumulative noncancer HI for groundwater VI (step 3) is above USEPA's threshold of 1. Target organ HIs greater than 1 are developmental (HI = 2, due to TCE) and immune (HI = 2, due to TCE).

5.3.3.4 Exterior Soil Vapor (Vapor Intrusion)

The step 1 screening of soil vapor for the VI pathway is presented in **Table 5-6**. Three VOCs (PCE, TCE, and vinyl chloride) were identified as COPCs. The risk ratio calculations using the maximum COPC concentration (step 2) are provided in **Table 5-7**. The ELCR (3×10^{-4}) associated with soil vapor (VI) at SWMU 1 is above USEPA's risk management range of 1×10^{-6} to 1×10^{-4}, and greater than the DQO target risk level of 1×10^{-5}, due to PCE, TCE, and vinyl chloride. The estimated cumulative noncancer HI for soil vapor (95) is greater than USEPA's threshold of 1. Target organ HIs above 1 are nervous (HI = 54, due to PCE), ocular (HI = 54, due to PCE), developmental (HI = 41, due to TCE), and immune (HI = 41, due to TCE).

5.4 SLHHRA Summary and Conclusions

A summary of the risk estimates associated with maximum concentrations detected in soil, groundwater, and exterior soil vapor at SWMU 1, is provided in **Table 5-8**. No VOC COPCs were identified in soil (direct contact). Based on the results of this SLHHRA for soil exposure scenarios associated with current and anticipated future industrial land use at the facility, no further evaluation is necessary for direct contact exposure pathways for VOCs in soil at SWMU 1.

The estimated ELCR and noncancer hazard associated with COPCs for groundwater for potable use is above USEPA's risk management range for cancer risks and USEPA's noncancer threshold. Further evaluation of potable use is not warranted because the exposure pathway is incomplete for current onsite use and contaminated groundwater is not migrating offsite. Future land use is likely to stay industrial.

The estimated ELCR associated with COPCs for groundwater (VI pathway) is within USEPA's risk management range for cancer risks. The estimated noncancer hazard is greater than USEPA's noncancer threshold. Two target organ HIs (developmental and immune) are above 1 due to TCE in groundwater. The estimated ELCR and noncancer hazard associated with COPCs for exterior soil gas

(VI pathway) are greater than USEPA's risk management range for cancer risks and USEPA's noncancer threshold. The estimated ELCR in soil vapor are due to PCE, TCE, and vinyl chloride. Target organ HI are also due to PCE (nervous and ocular) and TCE (developmental and immune). Based on the exterior soil gas and groundwater concentrations, the VI pathway represents a potential risk to workers in the buildings in proximity to SWMU 1. A conceptual model for the VI potential is presented in Section 6.

6. Conceptual Model SWMU 1 Area

A conceptual model for the VI potential was constructed from the nature and extent evaluation findings to evaluate potential source areas. Although soil concentrations throughout the SWMU 1 area are below the USEPA industrial soil RSLs, areas of more elevated concentrations were identified and may be contributing to the VI source near and under the area buildings.

The conceptual model includes the following components:

- The shallow fine-grained soil unit consisting of clays, silts, and sands, approximately 10 feet thick.
- The shallow fine-grained soils are underlain by a coarser sand and gravel regional aquifer.
- The lower portion of the fine-grained soil unit is saturated; because there is no confining layer between the fine-grained soils and the more permeable sand and gravel unit, the saturation is likely held in place by capillary pressures of the fine-grained soil unit.
- PCE and TCE impacts indicate potential historical releases of chlorinated solvents from SWMU 1 and an area near the southeast corner of Building 501/southwest corner of Building 505. However, there are no records of historic releases in this area.
- Surface impacts may have migrated through the shallow fine-grained soils to the vadose zone and groundwater in the sand and gravel aquifer.
- The shallow fine-grained soil unit vadose zone developed high levels of constituent of concern (COC) soil vapor because the capillary saturation separates the fine-grained vadose zone from the sand and gravel vadose zone when the perched saturated zone is present.
- The soil vapor entered the subslab space and then the building through cracks and other openings; however, the indoor COCs were also affected by the use of chlorinated solvents in portions of the building. Stopping the use of the solvents resulted in a reduction of PCE concentrations in the building.
- The groundwater VOC plume does not extend offsite.

6.1 Potential Soil Vapor Sources

Based on the conceptual model, several potential sources of soil vapor were identified. The primary VOC appears to be PCE. When TCE is detected in a soil sample, ci-1,2-DCE is frequently detected, indicating that the TCE and cis-1,2-DCE are degradation products of the PCE.

Soil sources were found in two areas in the upper fine-grained soils and in three areas in the sand and gravel subsurface.

6.1.1 Shallow Soil (0-10 feet bgs)

The potential sources in the shallow soil represent previous impacts that remain absorbed in the shallow fine-grained unit.

6.1.1.1 SWMU 1

The surface soil sample from one soil boring (SS-02) on the north boundary of SWMU 1 contained 1,600 µg/kg PCE and 68 µg/kg TCE. This potential source appears to be isolated and small, as it is surrounded by seven borings at distances of 15 to 30 feet with PCE concentrations ranging from 3 µg/kg to non-detect (**Figure 4-4**). Cross section B-B' (**Figure 4-15**) also shows that SS-02 is an isolated area with significant impacts in the shallow soil.

6.1.1.2 Building 505 Southwest Area/Building 501 Southeast Area

The other shallow soil potential source is located near the southwest corner of Building 505 and southeast of Building 501. This potential source is represented by location SS-33, which contained 1,100 µg/kg PCE in surface soil and 1,400 µg/kg in shallow soil. This source appears to be delineated by surrounding borings in which neither PCE nor TCE was detected (**Figures 4-4** and **4-5**); however, most of these samples were run under a dilution. This potential source appears to extend down to at least the shallow capillary saturated zone in the shallow fined-grained unit; the 6- to 10-foot sample from SS-33 contained 1,400 µg/kg PCE and 95 µg/kg TCE. Cross section B-B' (**Figure 4-15**) shows concentrations decrease in the deeper soils and groundwater. Cis 1,2-DCE was also detected in the shallow soils at borings near this area (SS-22, SS-23, SS-33, and SS-42).

6.1.2 Subsurface Soil (14-29 feet bgs)

The potential sources in the subsurface soil represent impacts that migrated through the shallow fine-grained unit and reached the sand and gravel aquifer vadose zone. Most areas are Isolated locations and correlation between the shallow soil and subsurface soil sources is poor. This indicates that the current shallow soil sources may not be the sources for these subsurface impacts.

6.1.2.1 Building 505 Southwest Area

Soil boring SS-26 shows PCE and TCE impacts in the sand and gravel above the aquifer and has the highest detected groundwater PCE concentration. Groundwater sample GW-07 shows the highest detected PCE, TCE, and cis 1,2-DCE concentrations in the study area, and the PCE and TCE concentrations are above USEPA groundwater VISL (**Table 4-5**). Shallow soil at SS-26 is not impacted (**Figure 4-15**). SS-26 is located approximately 70 feet east of the shallow soil source are SS-33. The PCE concentration in the subsurface at SS-26 is approximately twice as high as in the SS-33 shallow source area. Other deep soil samples adjacent to SS-26 have low concentrations (**Figure 4-8**). SS-26 may be an isolated impacted area or could be residual sand and gravel impacts associated with the shallow impacts near SS-33.

6.1.2.2 Building 505 Southeast Area

The highest PCE soil concentration was detected in the 25- to 26-foot-sample from SS-37 at 35,000 µg/kg (**Figure 4-8**). The surrounding subsurface soil samples have significantly lower PCE concentrations (2 to 120 µg/kg), and the overlying shallow soil samples in the area fall within the same concentration range. The source of this high PCE concentration may be related to an isolated impact prior to the building construction.

6.1.2.3 South and East of SWMU 1

There are three subsurface soil locations located south and east of SWMU 1: SS-31, SS-32, and SS-40 (**Figure 4-8**). All three of these locations contained greater than 1,000 µg/kg PCE in the sand and gravel vadose zone a few feet above the water table. The PCE shallow soil concentrations at these locations are not detected or contain less than 100-µg/kg PCE. SS-15 adjacent to SS-31 had a lower, but overall more elevated PCE concentration than surrounding locations (**Figure 4-15**). These are isolated locations and contain both sand and gravel and groundwater elevated impacts.

6.1.3 Groundwater

Areas of higher groundwater impacts are located near SS-26, with groundwater samples from GW-07/ SS-26 and GW-10/SS-29 showing elevated PCE and TCE concentrations. PCE and TCE were detected above the Groundwater VISLs of 242 µg/L and 22 µg/L, respectively at GW-07. TCE was detected above the groundwater VISL at GW-10 and GW-20 (**Table 4-6**). These locations, along with GW-05, GW-09, and GW-13, also had the highest detected concentrations of cis-1,2-DCE indicating degradation of PCE is occurring in this area.

Downgradient locations with elevated PCE (GW-12, GW-16, GW-17, and GW-18 [detection above VISL]), show lower concentrations of TCE and a few low-level detections of cis 1,2-DCE. This indicates PCE is migrating from a source upgradient near the southwest corner of Building 505.

Groundwater grab samples with concentrations above VISLs are limited to the southwest corner of Building 505/southeast corner of Building 501 (GW-07, GW-10, and GW-20) and at one location in the Building 505 parking lot (GW-18). Downgradient groundwater concentrations are all below VISLs. However, given the depth of the water table, the concentrations slightly above VISLs, and the isolation of the shallow vadose zone by the shallow capillary saturated zone, groundwater in the aquifer is not likely contributing to the PCE or TCE vapor source.

6.2 Summary

Several impacted soil areas have been identified that are likely creating the VI potential:

- Area 1: Southeast corner of Building 501/Southwest Corner of Building 505
    - Shallow, deep, and groundwater impacts
    - PCE daughter products found at their highest concentrations
- Area 2: Under the eastern section of Building 505
    - Isolated deep soil and groundwater impacts
- Area 3: South of SWMU 1 adjacent to the north-central side of Building 500
    - Deep soil impacts
- Area 4: Two isolated locations east of SWMU 1 in the Building 505 eastern parking lot and on the northeast side of Building 500
    - Deep soil and groundwater impacts

These generalized areas of higher soil impacts are shown on Figure 6-1. Area 1 may represent the initial source area, with impacts still bound in the upper fine-grained soils (SS-33) and, approximately 70 feet east, there are deep soil impacts and a potential groundwater source area (SS-26/GW-07). This deep impacted area could be isolated, or, could be residual sand and gravel impacts associated with the shallow impacts at SS-33.

For areas 2, 3, and 4, the shallow soil concentrations were significantly lower than the deep soil impacts. The VOCs in the sand and gravel may represent previous impacts that migrated through the shallow fine-grained soils. But the shallow soils may have been disturbed and spread during construction activities, masking the original source area(s).

Overall, areas 1 and 2 are the most likely VI source areas for Building 505. Area 3 correlates with the elevated subslab soil gas found along the northern side of Building 500. The shallow impacts in area 1 appear to be moving away from Building 501, to east to northeast based on the soil gas results found in the upper sand strata.

Although several source areas have been identified, indoor air sampling was below VISLs for Building 500 and 501 and has been sustained below VISLs for Building 505 since the interim actions. The building use for 501 will likely remain the same – a maintenance shop. The Building use for 505 may remain the same (office and warehouse space), or potentially be converted completely into a warehouse. Use of Building 500, a warehouse, is unknown at this time. As of June 2019, it's not being used by the current owners. Because of land use restrictions associated with the property deeds, this land will likely stay industrial with potable water use restrictions in place.

7. Conclusions

The following DQOs were established for the investigation:

1) Assess the potential significance of detected groundwater, soil, exterior soil gas, or utility manhole air concentrations by comparison with applicable screening levels, assuming a TCR of 1 x 10-5 or a THQ of 1.
2) Assess if a soil, groundwater, or interior source area can be identified as a definable area with elevated concentrations bounded by lower concentrations.
3) Assess if the investigation data spatial evaluation weight of evidence suggests a subsurface, groundwater, interior, or sewer gas source.

7.1 DQO 1

This DQO was met. The analytical results were screened against the appropriate criteria (**Table 4-1**). PCE and TCE concentrations were greater than the applicable screening criteria in exterior soil gas, subslab soil gas, groundwater, and the first round of indoor air sampling (PCE only). Locations in or near Building 505 had the highest concentrations.

7.2 DQO 2

This DQO was met to the extent that is practical. Various areas of elevated PCE and TCE concentrations were identified but varied by depth. There is a discrepancy in the distribution of elevated concentrations in the shallow fine-grained soils and deeper sand and gravel aquifer. The elevated concentrations in groundwater were identified as a definable area bounded by lower concentrations.

7.3 DQO 3

This DQO was met. The weight of evidence suggests that there are several potential soil sources. The following areas have been identified:

- Area 1: Southeast corner of Building 501/Southwest Corner of Building 505
    - Shallow, deep, and groundwater impacts
    - PCE daughter products found at their highest concentrations
- Area 2: Under the eastern section of Building 505
    - Isolated deep soil and groundwater impacts
- Area 3: South of SWMU 1 adjacent to the north-central side of Building 500
    - Deep soil impacts
- Area 4: Several isolated locations east of SWMU 1 in the Building 505 eastern parking lot and on the northeast side of Building 500
    - Deep soil and groundwater impacts

Groundwater is also a potential source, but the groundwater concentrations are less than the soil concentration in the vadose zone above the water table. Sewer gas is not a potential source. Interior sources of PCE and TCE were identified during the interim measure actions. Since removal of spray cans containing PCE, indoor air concentrations have decreased and remained below VISLs.

7.4 Soils

Soils in the study area consist of approximately 10 feet of fine-grained soils (clays, silts, sands) overlying the coarser sand and gravel aquifer. Although there is no confining layer between these two units, the lower portion of the fine-grained soil (8 to 10 feet bgs) are generally saturated, even where sand directly overlies sand and gravel. This shallow perched zone is believed to be held in place by capillary forces in the sand and silt, which exceed those in the coarser sand and gravel. The perched water could migrate

8. References

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downward if groundwater recharge by infiltration or other mechanism raises the perched saturation above the capillary pressure in the shallow fine-grained soils.

The shallowest areas of elevated PCE (0 to 3 feet bgs) suggest two source areas: SWMU 1 and an area near the southeast corner of Building 501/southwest corner of Building 505 (SS-33). SS-33 also shows PCE impacts in the 6- to 8-foot bgs interval (the fine-grained soils above the perched saturated zone). Impacts in the subsurface sand and gravel and groundwater are also seen in the southwest corner of Building 505 (SS-26/GW-07 and GW-10). PCE degradation products (TCE and cis 1,2-DCE) are detected at their highest concentrations in this area. The highest PCE concentration was detected 25 to 26 feet bgs from the east end of Building 505 (SS-37). Other isolated PCE concentrations are found south of SWMU 1 and in the eastern section of the Building 505 parking lot.

The role of SWMU 1 as a current source is unclear. It is possible that the construction expansion of Building 505, Building 500 construction, and the paved parking lot/street disturbed and mixed some of the shallow soils during grading activities.

The highest PCE soil concentrations occurred in the sand and gravel vadose zone underlying the shallow perched saturated zone. Since the highest of these concentrations are greater than those in the shallower soil intervals, the VOCs in the sand and gravel may be related to previous impacts in the shallow fine-grained soils which may have been disturbed and spread during construction activities.

7.5 Groundwater

SWMU 1 appears to be the source of PCE in TCE in sitewide groundwater. The southwest corner of Building 505 SS-26/GW-07 show the highest groundwater impacts. This area and east towards the southeast corner of Building 501 have the highest detected concentrations of daughter products TCE and cis 1,2-DCE, indicating this is a potential source area where PCE is now degrading through natural attenuation. Elevated PCE concentrations are also found downgradient of this area throughout the eastern portion of the Building 505 parking lot. As groundwater migrates out of the SWMU 1 area, concentrations decrease downgradient and are delineated by downgradient site wells having concentrations below the MCL.

Given the depth of the water table, the concentrations slightly above VISLs, and the isolation of the shallow vadose zone by the shallow capillary saturated zone, groundwater in the aquifer is not likely contributing to the PCE or TCE vapor source.

7.6 Soil Vapor

The distribution of soil vapor in the study area is not consistent with the soil and groundwater results. As shown on **Figure 4-1**, areas with PCE soil gas concentrations greater than 100,000 µg/m^3 are located near the southeast corner of the Building 505, and near the western end of Building 505 extending the northwest around Building 501. The cause of the elevated soil gas PCE northwest of Building 505 is uncertain, as soil and groundwater concentrations in that area are low. Most soil gas probe screens were in contact with the sand strata between 4 and 5 feet bgs. This sand may be acting as a conduit for soil gas migration. The bottom of the shallow sand is generally separated from the sand and gravel by the perched saturated zone, so the shallow vadose zone may contain high concentrations of PCE.

Subslab soil gas elevated areas correlate with most soil source areas – southwest corner of Building 505, the eastern section of Building 505, and in the north-central portion of Building 500.

7.7 Indoor Air

The soil source areas identified are likely contributing to the subslab soil gas concentrations found under the area buildings. However, indoor air sampling detections were below VISLs for Building 500 and 501 and have been sustained below VISLs for Building 505 since the interim actions. Indoor air

concentrations reduced immediately after removing the open spray cans containing PCE inside the building.

7.8 Risk Assessment

The SWMU 1 SLHHRA was updated to incorporate data collected during the Phase 1, Phase 2, and Phase 3 RFIs. Soil exposure scenarios associated with current and anticipated future industrial land use at the facility require no further evaluation for direct contact exposure pathways in soil.

The estimated ELCR and noncancer hazard associated with COPCs for groundwater for potable use were greater than USEPA's risk management range for cancer risks and USEPA's noncancer threshold. However, further evaluation of potable use is not warranted because the exposure pathway is incomplete for current onsite use and contaminated groundwater is not migrating offsite. Future land use is likely to stay industrial and there are land use restrictions on the property for potable well installation and use.

The estimated ELCR associated with COPCs for groundwater (VI pathway) is within USEPA's risk management range for cancer risks. The estimated noncancer hazard is greater than USEPA's noncancer threshold due to PCE, TCE, and vinyl chloride. Based on the exterior soil gas and groundwater concentrations, the VI pathway represents a potential risk to workers in the buildings in proximity to SWMU 1. However, indoor air detected concentrations were below VISLs in Buildings 500 and 501 and have been below VISLs in Building 505 since enacting the interim measures.

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Tables

Table 4-1. Soil Gas, Indoor Air, Soil, and Groundwater Screening Levels

Phase 3 RCRA Facility Investigation, Dow Hanging Rock, Ironton, Ohio

Analyte	CAS Number	Soil Gas VISL at TCR = 1E-5 or THQ = 1	Indoor Air VISL at TCR = 1E-5 or THQ = 1	Ohio EPA's Indoor Air Recommended Response Action Levels TCR = 1E-5 or THQ = 1	Soil RSL at TCR = 1E-5 or THQ = 1	Drinking Water MCL (µg/L)	Groundwater VISL at TCR = 1E-5 or THQ = 1
Units		(µg/m^3)	(µg/m^3)		(mg/kg)	(µg/L)	(µg/L)
Tetrachloroethene	127-18-4	5,800	174	180	100,000	5	242
Trichloroethene	79-01-6	290	9	8.8	6,000	5	22
cis-1,2-Dichloroethene	156-59-2	NA	NA	NA	2,300,000	70	NA
trans-1,2-Dichloroethene	156-60-5	NA	NA	NA	23,000,000	100	NA
1,1-Dichloroethene	75-35-4	29,200	876	NA	1,000,000	7	821
Vinyl Chloride	75-01-4	929	28	28	1,700	2	25

Notes:

mg/kg = micrograms per kilogram

µg/L = micrograms per liter

µg/m^3 = micrograms per cubic meter

MCL = U.S. Environmental Protection Agency Maximum Contaminant Levels for drinking water

RSL = U.S. Environmental Protection Agency Regional Screening Level for Industrial Soil

TCR = target risk for carcinogens

THQ = target hazard quotient for non-carcinogens

VISL = U.S. Environmental Protection Agency Vapor Intrusion Screening Level (May 2016), based on an industrial exposure scenario and soil gas-to-indoor air attenuation factor of 0.03.

NA = not applicable, no screening level defined

Table 4-2. Exterior Soil Gas, Subslab Soil Gas, and Sewer Air Analytical Results

Phase 3 RFI Report, Dow Hanging Rock, Ironton, Ohio

Sample Location	Sample ID	Analyte USEPA VISL Unit Date	TETRACHLOROETHYLENE(PCE) 5800 µg/m3	TRICHLOROETHYLENE (TCE) 290 µg/m3	CIS-1,2-DICHLOROETHYLENE µg/m3	TRANS-1,2-DICHLOROETHENE µg/m3	1,1-DICHLOROETHENE 29200 µg/m3	Vinyl Chloride 929 µg/m3	Benzene 520 µg/m3	Bromoform 3700 µg/m3	Ethylbenzene 1600 µg/m3	Napthalene 120 µg/m3
Exterior Soil Gas												
Building 505												
S01-SG01	S01-SG01-081717	17 Aug 2017	**55000**	**12000**	NS	NS	NS	NS	**1000**	1500 U	620 U	1500 U
S01-SG02	S01-SG02-081717	17 Aug 2017	**100000**	**5800**	NS	NS	NS	NS	550 U	1800 U	750 U	1800 U
S01-SG03	S01-SG03-081717	17 Aug 2017	**62000**	**2000**	NS	NS	NS	NS	210 U	680 U	290 U	690 U
S01-SG04	S01-SG04-081717	17 Aug 2017	**31000**	**430**	NS	NS	NS	NS	140 U	450 U	190 U	460 U
S01-SG07	S01-SG07-060718	07 Jun 2018	**226000**	688 U	507 U	507 U	507 U	327 U	NS	NS	NS	NS
S01-SG07	S01-SGFD01-060718	07 Jun 2018	**253000**	1120 U	825 U	825 U	825 U	532 U	NS	NS	NS	NS
S01-SG08	S01-SG08-060618	06 Jun 2018	**15200**	53.4 U	39.4 U	39.4 U	39.4 U	25.4 U	NS	NS	NS	NS
S01-SG09	S01-SG09-060618	06 Jun 2018	**1090**	**5.08**	1.83 U	1.83 U	1.83 U	1.18 U	NS	NS	NS	NS
S01-SG10	S01-SG10-060618	06 Jun 2018	**10600**	**88.1**	20.7 U	20.7 U	20.7 U	13.4 U	NS	NS	NS	NS
S01-SG11	S01-SG11-060618	06 Jun 2018	**35200**	**109**	76.9 U	76.9 U	76.9 U	49.6 U	NS	NS	NS	NS
S01-SG12	S01-SG12-060718	07 Jun 2018	**119000**	**291**	204 U	204 U	204 U	132 U	NS	NS	NS	NS
S01-SG13	S01-SG13-060618	06 Jun 2018	**9830**	**656**	**448**	**45.2**	**40.8**	13.4 U	NS	NS	NS	NS
S01-SG16	S01-SG16-061918	19 Jun 2018	**314000**	1070 U	793 U	793 U	793 U	511 U	NS	NS	NS	NS
S01-SG17	S01-SG17-061918	19 Jun 2018	**41600**	109 U	80.1 U	80.1 U	80.1 U	51.6 U	NS	NS	NS	NS
S01-SG18	S01-SG18-061918	19 Jun 2018	**149000**	570 U	420 U	420 U	420 U	271 U	NS	NS	NS	NS
S01-SG19	S01-SG19-061918	19 Jun 2018	**78000**	**9460**	**42000**	**2820**	**456**	**1430**	NS	NS	NS	NS
Building 500												
S01-SG05	S01-SG05-081717	17 Aug 2017	**37000**	260 U	NS	NS	NS	NS	150 U	500 U	210 U	500 U
S01-SG05	S01-SG05-081717-FD	17 Aug 2017	**37000**	260 U	NS	NS	NS	NS	150 U	500 U	210 U	500 U
S01-SG15	S01-SG15-060718	07 Jun 2018	**12700**	54.3 U	40 U	40 U	40 U	25.8 U	NS	NS	NS	NS
S01-SG06	S01-SG06-081717	17 Aug 2017	**180000**	1700 U	NS	NS	NS	NS	1000 U	3300 U	1400 U	3300 U
S01-SG14	S01-SG14-060718	07 Jun 2018	**65600**	**1270**	86 U	86 U	86 U	55.5 U	NS	NS	NS	NS
S01-SG14	S01-SGFD02-060718	07 Jun 2018	**63800**	**1260**	215 U	215 U	215 U	139 U	NS	NS	NS	NS
S01-SG20	S01-SG20-061918	19 Jun 2018	**3420**	8.71 U	6.42 U	6.42 U	6.42 U	4.14 U	NS	NS	NS	NS
Sewer Air												
S01-SW01	S01-SW01-061918	19 Jun 2018	**148**	**10.7**	**14.3**	0.793 U	0.793 U	0.511 U	NS	NS	NS	NS
S01-SW02	S01-SW02-061918	19 Jun 2018	**255**	1.07 U	0.793 U	0.793 U	0.793 U	0.511 U	NS	NS	NS	NS
SubSlab Soil Gas												
Building 500												
S01-B500-SV01	S01-B500-SV01-090717	07 Sep 2017	**4570**	**135**	**36.4**	10.1 U	10.1 U	6.49 U	**15.3**	NS	NS	NS
S01-B500-SV02	S01-B500-SV02-090717	07 Sep 2017	**5910**	13.8 U	10.2 U	10.2 U	10.2 U	6.57 U	2.21 U	NS	NS	NS
S01-B500-SV03	S01-B500-SV03-090717	07 Sep 2017	**38800**	**217**	82.1 U	82.1 U	82.1 U	52.9 U	17.8 U	NS	NS	NS
S01-B500-SV04	S01-B500-SV04-090717	07 Sep 2017	**12700**	**12.6 J**	19.1 U	19.1 U	19.1 U	12.3 U	**4.98 J**	NS	NS	NS
S01-B500-SV05	S01-B500-SV05-090717	07 Sep 2017	**278**	2.7 U	1.99 U	1.99 U	1.99 U	1.29 U	**3.74**	NS	NS	NS
S01-B500-SV06	S01-B500-SV06-090717	07 Sep 2017	**4540**	13.8 U	10.2 U	10.2 U	10.2 U	6.57 U	**2.58 J**	NS	NS	NS
S01-B500-SV07	S01-B500-SV07-090717	07 Sep 2017	**172**	2.75 U	2.03 U	2.03 U	2.03 U	1.31 U	**1.11 J**	NS	NS	NS
S01-B500-SV08	S01-B500-SV08-090717	07 Sep 2017	**807**	**41.1**	**20.3**	**2.06**	2.03 U	1.31 U	**2.4**	NS	NS	NS
Building 501												
S01-B501-SV09	S01-B501-SV09-090817	08 Sep 2017	**142**	**232**	20.2 U	20.2 U	20.2 U	13 U	4.38 U	NS	NS	NS
S01-B501-SV10	S01-B501-SV10-090817	08 Sep 2017	**290**	**45.1**	**6.42 J**	18.9 U	18.9 U	12.4 U	4.09 U	NS	NS	NS
S01-B501-SV10	S01-HGR--090817-FD04	08 Sep 2017	**271**	**43.8**	19.9 U	19.9 U	19.9 U	12.8 U	4.31 U	NS	NS	NS
S01-B501-SV11	S01-B501-SV11-090817	08 Sep 2017	**406**	**27.1**	**2.78**	2 U	**0.908 J**	1.29 U	**1.19 J**	NS	NS	NS
Building 505												
S01-B505-SV12	S01-B505-SV12-090817	08 Sep 2017	**24500**	**1680**	**81.3**	**129**	40.4 U	26.1 U	8.72 U	NS	NS	NS
S01-B505-SV13	S01-B505-SV13-090717	07 Sep 2017	**64600**	**176 J**	163 U	163 U	163 U	105 U	35.1 U	NS	NS	NS
S01-B505-SV14	S01-B505-SV14-090817	08 Sep 2017	**98300**	**4410**	200 U	200 U	200 U	129 U	43.4 U	NS	NS	NS
S01-B505-SV15	S01-B505-SV15-090817	08 Sep 2017	**295000**	**23500**	**4360**	507 U	**213 J**	327 U	110 U	NS	NS	NS
S01-B505-SV15	S01-HGR--090817-FD03	08 Sep 2017	**296000**	**24500**	**4440**	523 U	**230 J**	337 U	113 U	NS	NS	NS
S01-B505-SV16	S01-B505-SV16-090817	08 Sep 2017	**766**	**39.7**	**12.1**	**1.42 J**	**8.21**	**2.22**	**3.45**	NS	NS	NS
S01-B505-SV17	S01-B505-SV17-090717	07 Sep 2017	**13100**	**18.8 J**	20.1 U	20.1 U	20.1 U	12.9 U	4.34 U	NS	NS	NS
S01-B505-SV18	S01-B505-SV18-090817	08 Sep 2017	**53000**	**100 J**	100 U	100 U	100 U	64.7 U	21.7 U	NS	NS	NS
S01-B505-SV19	S01-B505-SV19-090817	08 Sep 2017	**158000**	277 U	204 U	204 U	204 U	132 U	44.1 U	NS	NS	NS

VISL = vapor intrusion screening level

Bold text indicates a detection

Shading indicates a VISL exceedance

U - not detected, reporting limit shown

µg/m^3 - micrograms per cubic meter

J - estimated result

NS - not sampled

Table 4-3. Indoor and Outdoor Air Analytical Results

Vapor Intrusion Investigation Summary, Dow Hanging Rock, Ironton, Ohio

		Analyte	TETRACHLOROETHYLENE (PCE)	TRICHLOROETHYLENE (TCE)	CIS-1,2-DICHLOROETHYLENE	TRANS-1,2-	1,1-DICHLOROETHENE	VINYL CHLORIDE	Benzene
		USEPA Indoor Air RSL[a]	175	9	NA	NA	876	28	16
		Ohio EPA Response Action Level[b]	180	8.8	NA	NA	NA	28	NA
		Unit	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	
Sample Location	Sample ID	Date							
Outdoor Air									
S01-HGR-OA01	S01-HGR-OA01-090817	9/8/17	**0.068 J**	0.107 U	0.079 U	0.079 U	0.079 U	0.018U	**0.182 J**
S01-HGR-OA02	S01-HGR-OA02-041218	4/12/18	0.136 U	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U	NS
S01-HGR-OA03	S01-HER-OA-050418	5/4/18	**0.156**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U	NS
S01-HGR-OA03	S01-HER-OA03-060418	6/4/18	0.136 U	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U	NS
S01-HGR-OA03	S01-HER-OA03-081518	8/15/18	0.136 U	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U	NS
S01-HGR-OA01	S01-HGR-OA01-120718	12/7/18	**3.38**	**0.118**	0.079 U	**0.151**	0.079 U	0.051 U	NS
Indoor Air									
Building 505									
IA06	S01-B505-IA06-090817	9/8/17	**326**	**1.04**	**0.079**	**0.024 J**	0.079 U	0.018U	**0.725**
	S01-B505-IA06-041218	4/12/18	**30.2**	**0.559**	**0.17**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA06-050418	5/4/18	**11.7**	**0.242**	**0.079**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA06-060418	6/4/18	**5.51**	**0.183**	**0.099**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA06-081518	8/15/18	**1.99**	**0.124**	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA06-120718	12/7/18	**0.163**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U	NS
IA07	S01-B505-IA07-090817	9/8/17	**220**	**0.451**	**0.06 J**	**0.024 J**	0.079 U	0.018U	**0.569**
	S01-B505-IA07-041218	4/12/18	**15.9**	**0.597**	**0.111**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA07-050418	5/4/18	**12.6**	**0.408**	**0.083**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA07-060418	6/4/18	**1.85**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA07-081518	8/15/18	**1.55**	**0.150**	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA07-120718	12/7/18	**5.35**	**0.145**	**0.143**	**0.135**	0.079 U	0.051 U	NS
IA08	S01-B505-IA08-090817	9/8/17	**197**	**0.403**	**0.052 J**	0.079 U	0.079 U	0.018U	**0.549**
	S01-B505-IA08-050418	5/4/18	**6.64**	**0.220**	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA08-060418	6/4/18	**1.72**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA08-081518	8/15/18	**2.21**	**0.204**	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA08-120718	12/7/18	**2.86**	**0.145**	0.079 U	**0.186**	0.079 U	0.051 U	NS
IA09	S01-B505-IA09-090817	9/8/17	**268**	**0.543**	**0.067 J**	**0.028 J**	0.079 U	0.018U	**0.649**
	S01-HGR-090817-FD02	9/8/17	**262**	**0.527**	**0.071 J**	0.079 U	0.079 U	0.018U	**0.642**
	S01-B505-IA09-041218	4/12/18	**17.4**	**0.532**	**0.159**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA09-050418	5/4/18	**7.46**	**0.247**	**0.079**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-FD01-050418	5/4/18	**8.41**	**0.290**	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA09-060418	6/4/18	**1.97**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IAFD01-050420	6/4/18	**3.39**	**0.140**	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA09-081518	8/15/18	**1.67**	**0.129**	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA09-120718	12/7/18	**2.93**	**0.129**	0.079 U	**0.186**	0.079 U	0.051 U	NS
	S01-B505-FD01-120718	12/7/18	**3.33**	**0.113**	0.079 U	**0.163**	0.079 U	0.051 U	NS
IA10	S01-B505-IA10-090817	9/8/17	**324**	**1.00**	**0.099**	**0.024 J**	0.079 U	0.018U	**0.821**
	S01-B505-IA10-041218	4/12/18	**45.5**	**0.736**	**0.297**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA10-050418	5/4/18	**14.6**	**0.575**	**0.103**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA10-060418	6/4/18	**3.42**	**0.145**	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA10-081518	8/15/18	**1.79**	**0.145**	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA10-120718	12/7/18	**5.61**	**0.204**	**0.194**	**0.099**	0.079 U	0.051 U	NS
IA11	S01-B505-IA11-041218	4/12/18	**30.6**	**0.376**	**0.297**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA11-050418	5/4/18	**9.56**	**0.220**	**0.095**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA11-060418	6/4/18	**3.40**	**0.118**	**0.083**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA11-081518	8/15/18	**1.59**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-FD01-081518	8/15/18	**1.64**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA11-120718	12/7/18	**6.32**	**0.156**	**0.095**	**0.131**	0.079 U	0.051 U	NS
IA12	S01-B505-IA12-041218	4/12/18	**3.27**	**0.161**	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA12-041218-FD01	4/12/18	**3.36**	**0.167**	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA12-050418	5/4/18	**1.58**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA12-060418	6/4/18	**1.11**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA12-081518	8/15/18	**1.08**	**0.193**	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA12-120718	12/7/18	**3.01**	**0.150**	0.079 U	**0.155**	0.079 U	0.051 U	NS
IA13	S01-B505-IA13-050418	5/4/18	**19.0**	**0.177**	0.079 U	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA13-060418	6/4/18	**15.2**	**0.333**	**0.309**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA13-081518	8/15/18	**12**	**0.242**	**0.091**	**0.131**	0.079 U	0.051 U	NS
	S01-B505-IA13-120718	12/7/18	**19.7**	**0.430**	**0.436**	**0.274**	0.079 U	0.051 U	NS
IA14	S01-B505-IA14-050418	5/4/18	**8.21**	**0.193**	**0.230**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA14-060418	6/4/18	**20.8**	**0.548**	**1.05**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA14-081518	8/15/18	**7.66**	**0.263**	**0.333**	0.079 U	0.079 U	0.051 U	NS
	S01-B505-IA14-120718	12/7/18	**4.35**	**0.118**	**0.083**	**0.151**	0.079 U	0.051 U	NS
Building 500									
IA01	S01-B500- IA01-090817	9/8/2017	**1.36**	**0.07 J**	0.026 U	0.024 U	0.028 U	0.018 U	**0.243 J**
IA02	S01-B500- IA02-090817	9/8/2017	**1.07**	**0.059 J**	0.026 U	0.024 U	0.028 U	0.018 U	**0.265 J**
IA03	S01-B500- IA03-090817	9/8/2017	**0.325**	**0.446**	0.026 U	0.024 U	0.028 U	0.018 U	**0.24 J**
IA04	S01-B500- IA04-090817	9/8/2017	**0.502**	**0.129**	0.026 U	0.024 U	0.028 U	0.018 U	**0.233 J**
Building 501									
IA05	S01-B501- IA05-090817	9/8/2017	**5.85**	**0.134**	**0.222**	0.024 U	0.028 U	**0.041 J**	**0.316 J**
IA05	S01-HGR-090817-FD01 Duplicate	9/8/2017	**5.8**	**0.134**	**0.206**	0.024 U	0.028 U	**0.033 J**	**0.323 J**

Notes:

[a]: RSL is a risk-based screening level derived from the lowest of the cancer-based (TCR = 1 x 10^{-5}) or the noncancer-based (THQ = 1) industrial indoor air Regional Screening Levels (RSLs) [EPA, 2018], which ever is lower.

[b]: Ohio EPA response guidance provides an Accelerated Response Action Level for trichloroethylene (TCE) based on a THQ=1 and Chronic Response Action Levels for tetrachloroethylene (PCE)and vinyl chloride (based on a THQ=1 or TCR=1 x 10^{-5}). Source - Ohio EPA Guidance Document Recommendations Reguarding Response Action Levels and Timeframes for Common Contaminants of Concern at Vapor Intrusion Sites in Ohio (Ohio EPA, August 2016).

Bold text indicates a detection

Shading indicates a VISL exceedance

µg/m^3 - micrograms per cubic meter

J - estimated result

N/A - not applicable

TCR - target risk for carcinogens

THQ - target hazard quotient for non-carcinogens

U - not detected, reporting limit shown

VISL = vapor intrusion screening level

EPA, 2017. Regoional Screening Levels (RSLs). November. https://www.epa.gov/risk/regional-screening-levels-rsls

Table 4-4. HAPSITE Soil Gas Field Analytical Data

Phase 3 RCRA Facility Investigation, Dow Hanging Rock, Ironton, Ohio

Field ID	Location	Date/Time Sampled	Compound	Soil Gas Result (µg/m^3)	RL (µg/m^3)
HAP-SG-07DL	SG-07	6/6/2018 12:34	1,1-DCE	24000 U	24000.0
HAP-SG-07DL	SG-07	6/6/2018 12:34	trans-1,2-DCE	4800 U	4800.0
HAP-SG-07DL	SG-07	6/6/2018 12:34	cis-1,2,DCE	4800 U	4800.0
HAP-SG-07DL	SG-07	6/6/2018 12:34	TCE	6600 U	6600.0
HAP-SG-07DL	SG-07	6/6/2018 12:34	PCE	**94000**	8300.0
HAP-SG-08	SG-08	6/6/2018 13:10	1,1-DCE	2000 U	2000.0
HAP-SG-08	SG-08	6/6/2018 13:10	trans-1,2-DCE	40 U	40.0
HAP-SG-08	SG-08	6/6/2018 13:10	cis-1,2,DCE	40 U	40.0
HAP-SG-08	SG-08	6/6/2018 13:10	TCE	55 U	55.0
HAP-SG-08	SG-08	6/6/2018 13:10	PCE	**770**	69.0
HAP-SG-09	SG-09	6/6/2018 14:14	1,1-DCE	2 U	2.0
HAP-SG-09	SG-09	6/6/2018 14:14	trans-1,2-DCE	0.4 U	0.4
HAP-SG-09	SG-09	6/6/2018 14:14	cis-1,2,DCE	0.4 U	0.4
HAP-SG-09	SG-09	6/6/2018 14:14	TCE	0.55 U	0.6
HAP-SG-09	SG-09	6/6/2018 14:14	PCE	**38**	0.7
HAP-SG-10DL	SG-10	6/6/2018 11:54	1,1-DCE	24 U	24.0
HAP-SG-10DL	SG-10	6/6/2018 11:54	trans-1,2-DCE	4.8 U	4.8
HAP-SG-10DL	SG-10	6/6/2018 11:54	cis-1,2,DCE	4.8 U	4.8
HAP-SG-10DL	SG-10	6/6/2018 11:54	TCE	**20**	6.6
HAP-SG-10DL	SG-10	6/6/2018 11:54	PCE	**2500 E**	8.3
HAP-SG-10DL2	SG-10	6/6/2018 12:14	1,1-DCE	400 U	400.0
HAP-SG-10DL2	SG-10	6/6/2018 12:14	trans-1,2-DCE	81 U	81.0
HAP-SG-10DL2	SG-10	6/6/2018 12:14	cis-1,2,DCE	81 U	81.0
HAP-SG-10DL2	SG-10	6/6/2018 12:14	TCE	110 U	110.0
HAP-SG-10DL2	SG-10	6/6/2018 12:14	PCE	**2000**	140.0
HAP-SG-11DL	SG-11	6/5/2018 20:48	1,1-DCE	4800 U	4800
HAP-SG-11DL	SG-11	6/5/2018 20:48	trans-1,2-DCE	970 U	970
HAP-SG-11DL	SG-11	6/5/2018 20:48	cis-1,2,DCE	970 U	970
HAP-SG-11DL	SG-11	6/5/2018 20:48	TCE	1300 U	1300
HAP-SG-11DL	SG-11	6/5/2018 20:48	PCE	**15000**	1700
HAP-SG-12DL	SG-12	6/5/2018 20:09	1,1-DCE	4800 U	4800.0
HAP-SG-12DL	SG-12	6/5/2018 20:09	trans-1,2-DCE	970 U	970
HAP-SG-12DL	SG-12	6/5/2018 20:09	cis-1,2,DCE	970 U	970
HAP-SG-12DL	SG-12	6/5/2018 20:09	TCE	1300 U	1300
HAP-SG-12DL	SG-12	6/5/2018 20:09	PCE	**88000**	1700
HAP-SG-13	SG-13	6/6/2018 11:29	1,1-DCE	810 U	810.0
HAP-SG-13	SG-13	6/6/2018 11:29	trans-1,2-DCE	81 U	81.0
HAP-SG-13	SG-13	6/6/2018 11:29	cis-1,2,DCE	**200**	81.0
HAP-SG-13	SG-13	6/6/2018 11:29	TCE	**230**	110.0
HAP-SG-13	SG-13	6/6/2018 11:29	PCE	**3600**	140.0
HAP-SG-13R	SG-13	6/6/2018 15:00	1,1-DCE	810 U	810.0
HAP-SG-13R	SG-13	6/6/2018 15:00	trans-1,2-DCE	81 U	81.0
HAP-SG-13R	SG-13	6/6/2018 15:00	cis-1,2,DCE	**200**	81.0
HAP-SG-13R	SG-13	6/6/2018 15:00	TCE	110 U	110.0
HAP-SG-13R	SG-13	6/6/2018 15:00	PCE	**3600**	140.0
HAP-SG-14	SG-14	6/7/2018 14:25	1,1-DCE	4800 U	4800.0
HAP-SG-14	SG-14	6/7/2018 14:25	trans-1,2-DCE	970 U	970.0
HAP-SG-14	SG-14	6/7/2018 14:25	cis-1,2,DCE	970 U	970.0
HAP-SG-14	SG-14	6/7/2018 14:25	TCE	1300 U	1300.0
HAP-SG-14	SG-14	6/7/2018 14:25	PCE	**5700**	1700.0
HAP-SG-15DL	SG-15	6/7/2018 13:00	1,1-DCE	24 U	24.0
HAP-SG-15DL	SG-15	6/7/2018 13:00	trans-1,2-DCE	4.8 U	4.8
HAP-SG-15DL	SG-15	6/7/2018 13:00	cis-1,2,DCE	4.8 U	4.8
HAP-SG-15DL	SG-15	6/7/2018 13:00	TCE	6.6 U	6.6
HAP-SG-15DL	SG-15	6/7/2018 13:00	PCE	**4800**	8.3
HAP-SG-16	SG-16	6/7/2018 17:31	1,1-DCE	2400 U	2400.0
HAP-SG-16	SG-16	6/7/2018 17:31	trans-1,2-DCE	480 U	480.0
HAP-SG-16	SG-16	6/7/2018 17:31	cis-1,2,DCE	480 U	480.0
HAP-SG-16	SG-16	6/7/2018 17:31	TCE	660 U	660.0
HAP-SG-16	SG-16	6/7/2018 17:31	PCE	**3400**	830.0
HAP-SG-17	SG-17	6/7/2018 17:55	1,1-DCE	4800 U	4800.0

Table 4-4. HAPSITE Soil Gas Field Analytical Data

Phase 3 RCRA Facility Investigation, Dow Hanging Rock, Ironton, Ohio

Field ID	Location	Date/Time Sampled	Compound	Soil Gas Result ($\mu g/m^3$)	RL ($\mu g/m^3$)
HAP-SG-17	SG-17	6/7/2018 17:55	trans-1,2-DCE	970 U	970.0
HAP-SG-17	SG-17	6/7/2018 17:55	cis-1,2,DCE	970 U	970.0
HAP-SG-17	SG-17	6/7/2018 17:55	TCE	1300 U	1300.0
HAP-SG-17	SG-17	6/7/2018 17:55	PCE	**16000**	1700.0
HAP-SG-18	SG-18	6/7/2018 17:02	1,1-DCE	4800 U	4800.0
HAP-SG-18	SG-18	6/7/2018 17:02	trans-1,2-DCE	970 U	970.0
HAP-SG-18	SG-18	6/7/2018 17:02	cis-1,2,DCE	970 U	970.0
HAP-SG-18	SG-18	6/7/2018 17:02	TCE	1300 U	1300.0
HAP-SG-18	SG-18	6/7/2018 17:02	PCE	**32000**	1700.0

Notes:

DL = dilution

U = not detected above the reporting limit (shown)

RL = reporting limit

$\mu g/m^3$ = micrograms per cubic meter

Table 4-5. Surface and Subsurface Soil Analytical Results

Phase 3 RFI Report, Dow Hanging Rock, Ironton, Ohio

			Analyte	TETRACHLOROETHYLENE(PCE)	TRICHLOROETHYLENE (TCE)	CIS-1,2-DICHLOROETHYLENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	Vinyl Chloride
			USEPA Industrial Soil RSLs	100,000	6,000	2,300,000	23,000,000	1,000,000	1,700
			Unit	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Sample Location	Sample ID	Date							
S01-SS01	0-2	09 Dec 2011	**1 J**	6 U	**5 J**	**2 J**	6 U	6 U
S01-SS01	3-5	09 Dec 2011	**12**	**2 J**	**6**	5 U	5 U	5 U
S01-SS01	8-10	09 Dec 2011	**6**	5 U	5 U	5 U	5 U	5 U
S01-SS02	0-2	09 Dec 2011	**1600 J**	**68 J**	220 UJ	220 UJ	220 UJ	220 UJ
S01-SS02	3-5	09 Dec 2011	**55 J**	260 UJ	260 UJ	260 UJ	260 UJ	260 UJ
S01-SS02	8-10	09 Dec 2011	**320 J**	270 UJ	270 UJ	270 UJ	270 UJ	270 UJ
S01-SS02	21-23	09 Dec 2011	**1 J**	5 U	5 U	5 U	5 U	5 U
S01-SS03	0-2	12 Dec 2011	**1 J**	**3 J**	5 UJ	5 UJ	5 UJ	5 UJ
S01-SS03	3-5	12 Dec 2011	**17**	**2 J**	5 U	5 U	5 U	5 U
S01-SS03	8-10	12 Dec 2011	**4 J**	5 U	5 U	5 U	5 U	5 U
S01-SS03	13-15	12 Dec 2011	**3 J**	6 U	6 U	6 U	6 U	6 U
S01-SS04	0-2	12 Dec 2011	5 U	5 U	5 U	5 U	5 U	5 U
S01-SS04	3-5 Duplicate	12 Dec 2011	**1 J**	5 U	5 U	5 U	5 U	5 U
S01-SS04	3-5	12 Dec 2011	**1 J**	5 U	5 U	5 U	5 U	5 U
S01-SS04	8-10	12 Dec 2011	**4 J**	5 U	5 U	5 U	5 U	5 U
S01-SS05	0-2	12 Dec 2011	**3 J**	5 U	5 U	5 U	5 U	5 U
S01-SS05	3-5	12 Dec 2011	**4 J**	5 U	5 U	5 U	5 U	5 U
S01-SS05	8-10	12 Dec 2011	**5 J**	5 U	5 U	5 U	5 U	5 U
S01-SS05	21-23	12 Dec 2011	**20**	5 U	5 U	5 U	5 U	5 U
S01-SS06	0-2	12 Dec 2011	**2 J**	5 U	5 U	5 U	5 U	5 U
S01-SS06	3-5	12 Dec 2011	**2 J**	5 U	5 U	5 U	5 U	5 U
S01-SS06	8-10	12 Dec 2011	**8**	5 U	5 U	5 U	5 U	5 U
S01-SS06	13-15	12 Dec 2011	**10**	6 U	6 U	6 U	6 U	6 U
S01-SS07	0-2	12 Dec 2011	**2 J**	6 U	6 U	6 U	6 U	6 U
S01-SS07	3-5	12 Dec 2011	**3 J**	5 U	5 U	5 U	5 U	5 U
S01-SS07	8-10	12 Dec 2011	**4 J**	5 U	5 U	5 U	5 U	5 U
S01-SS08	0-2	12 Dec 2011	**4 J**	5 U	5 U	5 U	5 U	5 U
S01-SS08	3-5	12 Dec 2011	**70**	**2 J**	**1 J**	5 U	5 U	5 U
S01-SS08	0-2	12 Dec 2011	**4 J**	5 U	5 U	5 U	5 U	5 U
S01-SS08	3-5	12 Dec 2011	**70**	**2 J**	**1 J**	5 U	5 U	5 U
S01-SS08	8-10	12 Dec 2011	**97**	**3 J**	**3 J**	5 U	5 U	5 U
S01-SS08	21-23	12 Dec 2011	**2 J**	6 U	6 U	6 U	6 U	6 U
S01-SS09	0-2	12 Dec 2011	**53**	**3 J**	7 U	7 U	7 U	7 U
S01-SS09	3-5	12 Dec 2011	**33**	**4 J**	**3 J**	5 U	5 U	5 U
S01-SS09	8-10	12 Dec 2011	**21**	**1 J**	5 U	5 U	5 U	5 U
S01-SS10	0-2	06 Oct 2015	230 U	230 U	NS	NS	NS	NS
S01-SS10	3-5	06 Oct 2015	**73 J**	340 U	NS	NS	NS	NS
S01-SS10	8-9	06 Oct 2015	**170 J**	270 U	NS	NS	NS	NS
S01-SS10	27-28	06 Oct 2015	**3 J**	6 U	NS	NS	NS	NS
S01-SS11	0-2	06 Oct 2015	5 U	5 U	NS	NS	NS	NS
S01-SS11	3-4	06 Oct 2015	5 U	5 U	NS	NS	NS	NS
S01-SS11	8-10	06 Oct 2015	**38**	**1 J**	NS	NS	NS	NS
S01-SS11	28-29	06 Oct 2015	**5 J**	6 U	NS	NS	NS	NS
S01-SS12	0-2	06 Oct 2015	240 U	240 U	NS	NS	NS	NS
S01-SS12	3-5	06 Oct 2015	270 U	270 U	NS	NS	NS	NS
S01-SS12	5-6	06 Oct 2015	240 U	240 U	NS	NS	NS	NS
S01-SS12	8-10	06 Oct 2015	**62**	**6**	NS	NS	NS	NS
S01-SS12	23-24	06 Oct 2015	**2 J**	5 U	NS	NS	NS	NS
S01-SS12	HGR-100615-FD01	06 Oct 2015	**38 J**	**1 J**	NS	NS	NS	NS
S01-SS12	27-29	06 Oct 2015	**1 J**	5 U	NS	NS	NS	NS
S01-SS13	0-2	06 Oct 2015	**1 J**	5 U	NS	NS	NS	NS
S01-SS13	5-6	06 Oct 2015	**5**	5 U	NS	NS	NS	NS
S01-SS13	8-10	06 Oct 2015	**24**	5 U	NS	NS	NS	NS
S01-SS13	26-28	06 Oct 2015	**69 J**	**1 J**	NS	NS	NS	NS
S01-SS14	1-2	07 Oct 2015	**3 J**	5 U	NS	NS	NS	NS
S01-SS14	3-4	07 Oct 2015	**5**	5 U	NS	NS	NS	NS
S01-SS14	8-9	07 Oct 2015	**12**	6 U	NS	NS	NS	NS
S01-SS14	HGR-100715-FD01	07 Oct 2015	**2 J**	5 U	NS	NS	NS	NS
S01-SS14	27-28	07 Oct 2015	**16**	5 U	NS	NS	NS	NS
S01-SS15	1-2	07 Oct 2015	**9**	5 U	NS	NS	NS	NS
S01-SS15	4-5	07 Oct 2015	**22**	5 U	NS	NS	NS	NS
S01-SS15	8-9	07 Oct 2015	**46**	**3 J**	NS	NS	NS	NS

Table 4-5. Surface and Subsurface Soil Analytical Results

Phase 3 RFI Report, Dow Hanging Rock, Ironton, Ohio

		Analyte	TETRACHLOROETHYLENE(PCE)	TRICHLOROETHYLENE (TCE)	CIS-1,2-DICHLOROETHYLENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	Vinyl Chloride
		USEPA Industrial Soil RSLs	100,000	6,000	2,300,000	23,000,000	1,000,000	1,700
		Unit	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Sample Location	Sample ID	Date						
S01-SS15	27-28	07 Oct 2015	**880 J**	300 U	NS	NS	NS	NS
S01-SS16	1-2	07 Oct 2015	**18**	5 U	NS	NS	NS	NS
S01-SS16	3-4	07 Oct 2015	**79**	**3 J**	NS	NS	NS	NS
S01-SS16	8-9	07 Oct 2015	**60**	**4 J**	NS	NS	NS	NS
S01-SS16	27-28	07 Oct 2015	**94**	**4 J**	NS	NS	NS	NS
S01-SS17	1-2	05 Jun 2018	**6.1**	1.1 U	1.1 U	1.7 U	1.1 U	2.2 U
S01-SS17	8-9	05 Jun 2018	0.99 U	0.99 U	0.99 U	1.5 U	0.99 U	2 U
S01-SS17	25-26	05 Jun 2018	**12**	1 U	1 U	1.5 U	1 U	2 U
S01-SS18	1-2	12 Jun 2018	**7**	5 U	5 U	5 U	5 U	5 U
S01-SS18	7-8	12 Jun 2018	**39**	6 U	6 U	6 U	6 U	6 U
S01-SS18	25-26	12 Jun 2018	**18**	5 U	5 U	5 U	5 U	5 U
S01-SS19	1-2	14 Jun 2018	**3 J**	5 U	5 U	5 U	5 U	5 U
S01-SS19	6-7	14 Jun 2018	**10**	6 U	6 U	6 U	6 U	6 U
S01-SS19	23-24	14 Jun 2018	**2 J**	5 U	5 U	5 U	5 U	5 U
S01-SS20	1-2	12 Jun 2018	5 U	5 U	5 U	5 U	5 U	5 U
S01-SS20	6-7	12 Jun 2018	**10**	5 U	5 U	5 U	5 U	5 U
S01-SS20	25-26	12 Jun 2018	**31**	**1 J**	5 U	5 U	5 U	5 U
S01-SS21	1-2	07 Jun 2018	**12 J**	5 U	5 U	5 U	5 U	5 U
S01-SS21	6-7	07 Jun 2018	**25**	5 U	5 U	5 U	5 U	5 U
S01-SS21	6-7 Duplicate	07 Jun 2018	**18**	5 U	5 U	5 U	5 U	5 U
S01-SS21	14-15	07 Jun 2018	**38**	**1 J**	**1 J**	5 U	5 U	5 U
S01-SS22	1-2	11 Jun 2018	260 U	260 U	260 U	260 U	260 U	260 UJ
S01-SS22	6-7	11 Jun 2018	**190**	**15**	**4 J**	5 U	5 U	5 U
S01-SS22	22-23	11 Jun 2018	**150 J**	250 U	250 U	250 U	250 U	250 U
S01-SS23	1-2	07 Jun 2018	**2 J**	5 U	**33**	5 U	5 U	**1 J**
S01-SS23	4-5	07 Jun 2018	**65**	**6 J**	**6**	6 U	6 U	6 U
S01-SS23	9-10	07 Jun 2018	**210**	**22**	**18**	8 U	8 U	8 U
S01-SS23	15-16	07 Jun 2018	**45**	**2 J**	**0.9 J**	4 U	4 U	4 U
S01-SS24	1-2	07 Jun 2018	**50**	**1 J**	5 U	5 U	5 U	5 U
S01-SS24	6-7	07 Jun 2018	**93**	**5 J**	**2 J**	5 U	5 U	5 U
S01-SS24	15-16	07 Jun 2018	**39**	**2 J**	5 U	5 U	5 U	5 U
S01-SS25	0-1	08 Jun 2018	**29**	5 U	5 U	5 U	5 U	5 U
S01-SS25	8-9	08 Jun 2018	**49**	**2 J**	**1 J**	5 U	5 U	5 U
S01-SS25	13-14	08 Jun 2018	**13**	5 U	5 U	5 U	5 U	5 U
S01-SS26	1-2	12 Jun 2018	5 U	5 U	5 U	5 U	5 U	5 U
S01-SS26	6-7	12 Jun 2018	**7**	5 U	5 U	5 U	5 U	5 U
S01-SS26	22-23	12 Jun 2018	**2200**	**98 J**	200 U	200 U	200 U	200 U
S01-SS27	1-2	05 Jun 2018	**1.8 J**	**3**	1 U	1.5 U	1 U	2.1 U
S01-SS27	7-8	05 Jun 2018	**72**	1.2 U	1.2 U	1.8 U	1.2 U	2.3 U
S01-SS27	S01-SSFD01-060518	05 Jun 2018	**58**	1 U	1 U	1.5 U	1 U	2 U
S01-SS27	21-22	05 Jun 2018	**2**	1 U	1 U	1.6 U	1 U	2.1 U
S01-SS28	1-2	05 Jun 2018	63 U	63 U	63 U	95 U	63 U	130 U
S01-SS28	6-7	05 Jun 2018	**240**	64 U	64 U	95 U	64 U	130 U
S01-SS28	22-23	05 Jun 2018	**3.4**	1.7 U	1.7 U	2.5 U	1.7 U	3.4 U
S01-SS29	1-2	12 Jun 2018	**3**	1.1 U	1.1 U	1.6 U	1.1 U	2.1 U
S01-SS29	7-8	12 Jun 2018	**23**	**2.8**	**1.2**	1.6 U	1.1 U	2.2 U
S01-SS29	24-25	12 Jun 2018	**140**	**11**	**3.9**	1.6 U	1 U	2.1 U
S01-SS30	1-2	11 Jun 2018	250 U	250 U	250 U	250 U	250 U	250 UJ
S01-SS30	6-7	11 Jun 2018	**39**	5 U	5 U	5 U	5 U	5 U
S01-SS30	23-24	11 Jun 2018	**63**	**5 J**	**1 J**	5 U	5 U	5 U
S01-SS31	1-2	13 Jun 2018	**9**	5 U	5 U	5 U	5 U	5 U
S01-SS31	6-7	13 Jun 2018	**50**	**5 J**	**6**	6 U	6 U	6 U
S01-SS31	25-26	13 Jun 2018	**6700**	**340**	**190 J**	270 U	270 U	270 U
S01-SS32	1-2	13 Jun 2018	**12**	5 U	5 U	5 U	5 U	5 U
S01-SS32	6-7	13 Jun 2018	**13**	5 U	5 U	5 U	5 U	5 U
S01-SS32	23-24	13 Jun 2018	**1500 J**	**8**	5 U	5 U	5 U	5 U
S01-SS33	1-2	11 Jun 2018	**2 J**	5 U	**4 J**	5 U	5 U	5 U
S01-SS33	2-3	07 Jun 2018	**1100**	260 U	260 U	260 U	260 U	260 UJ
S01-SS33	7-8	11 Jun 2018	**1400**	**95 J**	**230 J**	**4 J**	5 U	5 U
S01-SS33	23-24	11 Jun 2018	**250**	**40**	**3 J**	5 U	5 U	5 U

Table 4-5. Surface and Subsurface Soil Analytical Results

Phase 3 RFI Report, Dow Hanging Rock, Ironton, Ohio

		Analyte	TETRACHLOROETHYLENE(PCE)	TRICHLOROETHYLENE (TCE)	CIS-1,2-DICHLOROETHYLENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	Vinyl Chloride
		USEPA Industrial Soil RSLs	100,000	6,000	2,300,000	23,000,000	1,000,000	1,700
		Unit	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Sample Location	Sample ID	Date						
S01-SS34	7-8	12 Jun 2018	**3 J**	5 U	5 U	5 U	5 U	5 U
S01-SS35	1-2	13 Jun 2018	6 U	6 U	6 U	6 U	6 U	6 U
S01-SS35	5-6	13 Jun 2018	6 U	6 U	6 U	6 U	6 U	6 U
S01-SS35	23-24	13 Jun 2018	**5 J**	5 U	**5 J**	5 U	5 U	5 U
S01-SS36	0-1	08 Jun 2018	**68**	5 U	5 U	5 U	5 U	5 U
S01-SS36	7-8	08 Jun 2018	**120 J**	**3 J**	**1 J**	5 U	5 U	5 U
S01-SS36	S01-SSFD01-060818D	08 Jun 2018	**35 J**	5 U	5 U	5 U	5 U	5 U
S01-SS36	15-16	08 Jun 2018	**11**	5 U	5 U	5 U	5 U	5 U
S01-SS37	1-2	14 Jun 2018	**25**	5 U	5 U	5 U	5 U	5 U
S01-SS37	6-7	14 Jun 2018	**77**	**1 J**	5 U	5 U	5 U	5 U
S01-SS37	25-26	14 Jun 2018	**35000**	**390**	300 U	300 U	300 U	300 U
S01-SS38	1-2	08 Jun 2018	**79**	**53**	**2 J**	5 U	5 U	5 U
S01-SS38	6-7	08 Jun 2018	**58 J**	5 U	5 U	5 U	5 U	5 U
S01-SS38	23-24	08 Jun 2018	**120**	5 U	5 U	5 U	5 U	5 U
S01-SS39	1-2	13 Jun 2018	**16**	5 U	5 U	5 U	5 U	5 U
S01-SS39	5-6	13 Jun 2018	**6**	6 U	6 U	6 U	6 U	6 U
S01-SS39	24-25	13 Jun 2018	**23**	5 U	5 U	5 U	5 U	5 U
S01-SS40	1-2	13 Jun 2018	5 U	5 U	5 U	5 U	5 U	5 U
S01-SS40	6-7	13 Jun 2018	**39**	5 U	5 U	5 U	5 U	5 U
S01-SS40	24-25	13 Jun 2018	**8900**	**65 J**	260 U	260 U	260 U	260 U
S01-SS41	1-2	13 Jun 2018	**20**	5 U	5 U	5 U	5 U	5 U
S01-SS41	6-7	13 Jun 2018	**40**	5 U	5 U	5 U	5 U	5 U
S01-SS41	25-26	13 Jun 2018	**3 J**	5 U	5 U	5 U	5 U	5 U
S01-SS42	1-2	11 Jun 2018	5 U	5 U	**6**	5 U	5 U	5 U
S01-SS42	6-8	11 Jun 2018	**2 J**	6 U	**38**	6 U	6 U	6 U
S01-SS42	23-24	11 Jun 2018	**900**	**130 J**	**100 J**	240 U	240 U	240 U
S01-SS43	1-2	14 Jun 2018	**3 J**	5 U	5 U	5 U	5 U	5 U
S01-SS43	5-6	14 Jun 2018	**4 J**	6 U	6 U	6 U	6 U	6 U
S01-SS43	24-25	14 Jun 2018	5 U	5 U	5 U	5 U	5 U	5 U

Notes:
RSL = regional screening level
Bold text indicates a detection
Shading indicates a VISL exceedance
U - not detected, reporting limit shown
µg/m^3 - micrograms per cubic meter
J - estimated result
NS - not sampled

Table 4-6. Groundwater Grab and Monitoring Well Analytical Results

Phase 3 RFI Report, Dow Hanging Rock, Ironton, Ohio

				Analyte	TETRACHLOROETHYLENE(PCE)	TRICHLOROETHYLENE (TCE)	CIS-1,2-DICHLOROETHYLENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	Vinyl Chloride
				USEPA MCL	5	5	70	100	7	2
				USEPA GW VISL	242	22			821	25
				Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Sample Location	Sample ID	Screen Length (ft)	Date							
MW08	MW08-GW-2636-021616	10	16 Feb 2016		**90**	**14**				
MW08	S01-MW08-2636-060918	10	09 Jun 2018		**51**	**5.8 J**	**1.9 J**	0.5 U	0.5 U	0.5 U
S01-GW01	S01-GW01-1828-060518	10	05 Jun 2018		**5.8 J**	0.5 U	0.5 U	0.75 U	0.5 U	1 U
S01-GW02	S01-GW02-2630-061418	10	14 Jun 2018		**37**	**3**	**0.6 J**	1 U	1 U	1 U
S01-GW03	S01-GW03-2630-061418	10	14 Jun 2018		**100**	**4**	**4**	1 U	1 U	1 U
S01-GW04	S01-GW04-2630-061418	10	14 Jun 2018		**14**	**1.3**	**0.5**	0.5 U	0.5 U	0.5 U
S01-GW05	S01-GW05-2830-060718	4	07 Jun 2018		**79**	**21**	**25**	1 U	1 U	1 U
S01-GW06	S01-GW06-2630-060818	4	08 Jun 2018		**38 J**	**5**	**3**	1 U	1 U	1 U
S01-GW07	S01-GW07-2630-061418	10	14 Jun 2018		***280***	***51 J***	**55 J**	2.5 U	2.5 U	2.5 U
S01-GW08	S01-GW08-1828-060518	10	05 Jun 2018		**61 J**	**4.1 J**	**1.2**	0.75 U	0.5 U	1 U
S01-GW08	S01-GWFD01-060518	10	05 Jun 2018		**37 J**	**3 J**	**1**	0.75 U	0.5 U	1 U
S01-GW09	S01-GW09-1828-060518	10	05 Jun 2018		**56**	**22**	**27**	0.75 U	0.5 U	1 U
S01-GW10	S01-GW10-2630-061418	10	14 Jun 2018		**200**	***34***	**35**	**0.4 J**	1 U	1 U
S01-GW10	S01-GWFD02-061418	10	14 Jun 2018		**210**	***38***	**35**	**0.4 J**	1 U	1 U
S01-GW11	S01-GW11-2630-061418	4	14 Jun 2018		**62**	**13**	**16**	1 U	1 U	1 U
S01-GW12	S01-GW12-2630-061418	10	14 Jun 2018		**200**	**2.4**	1 U	1 U	1 U	1 U
S01-GW13	S01-GW13-2630-061418	10	14 Jun 2018		0.5 U	**1.8**	**24**	**0.1 J**	0.5 U	0.5 U
S01-GW14	S01-GW14-2831-060818	4	08 Jun 2018		**44**	**2**	**1**	1 U	1 U	1 U
S01-GW15	S01-GW15-2630-061418	10	14 Jun 2018		**220**	**10**	**6.1**	2.5 U	2.5 U	2.5 U
S01-GW16	S01-GW16-2630-061418	10	14 Jun 2018		**200**	**11**	**4**	1 U	1 U	1 U
S01-GW17	S01-GW17-2630-061418	10	14 Jun 2018		**200**	**6.1**	**0.6 J**	2.5 U	2.5 U	2.5 U
S01-GW18	S01-GW18-2630-061418	10	14 Jun 2018		***270***	**3.4**	2.5 U	2.5 U	2.5 U	2.5 U
S01-GW20	S01-GW20-2630-061418	10	14 Jun 2018		**14**	***23***	**23**	0.5 U	0.5 U	0.5 U
S01-GW21	S01-GW21-2630-061418	10	14 Jun 2018		**57**	**16**	**2.1**	0.5 U	0.5 U	0.5 U
S01-GW21	S01-GWFD01-061418	10	14 Jun 2018		**56**	**16**	**2**	0.5 U	0.5 U	0.5 U
S01-GW22	S01-GW22-2630-061418	4	14 Jun 2018		**36**	**9**	**5**	1 U	1 U	1 U
VP10	VP10-GW-2529-112014	4	20 Nov 2014		**35**	**5.9**	NS	NS	NS	NS
VP10	VP10-GW-4549-111914	4	19 Nov 2014		**0.5 J**	**0.2 J**	NS	NS	NS	NS
VP10	VP10-GW-6569-111914	4	19 Nov 2014		**0.3 J**	0.5 U	NS	NS	NS	NS
VP10	VP10-GW-7680-111914	4	19 Nov 2014		**0.2 J**	0.5 U	NS	NS	NS	NS

Notes:
MCL = Maximum Contaminant Level
Bold text indicates a detection
Shading indicates a MCL exceedance
Shaded and italicized indicates VISL exceedance
U - not detected, reporting limit shown
µg/m^3 - micrograms per cubic meter
J - estimated result
NS - not sampled

Table 5-1. SWMU 1 Soil Step 1: Selection of Chemicals of Potential Concern (Industrial Exposure Scenario) - Volatile Organic Compounds Only

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Soil Type	CAS Number	Analyte	Minimum Detected Concentration		Maximum Detected Concentration		Units	Location of Maximum Detection	Frequency of Detection	Range of Detection Limits	Screening Level		Frequency of Exceedance	COPC Flag
Surface Soil	95-63-6	1,2,4-TRIMETHYLBENZENE	2.0E-03	J	2.0E-03	J	mg/kg	S01-SS07	1/8	0.005 - 0.22	1.8E+02	N	0/1	No
Surface Soil	591-78-6	2-HEXANONE	1.7E-02		1.7E-02		mg/kg	S01-SS07	1/9	0.009 - 0.44	1.3E+02	N	0/1	No
Surface Soil	67-64-1	ACETONE	8.0E-03	J	9.8E-02	J	mg/kg	S01-SS03	8/9	0.018 - 0.89	6.7E+04	N	0/8	No
Surface Soil	71-43-2	BENZENE	6.0E-04	J	3.0E-03	J	mg/kg	S01-SS07	4/16	0.005 - 0.24	5.1E+00	C	0/4	No
Surface Soil	108-86-1	BROMOBENZENE	4.0E-03	J	9.6E-02	J	mg/kg	S01-SS02	2/8	0.005 - 0.22	1.8E+02	N	0/2	No
Surface Soil	75-15-0	CARBON DISULFIDE	1.0E-03	J	1.4E-02		mg/kg	S01-SS07	5/9	0.005 - 0.22	3.5E+02	N	0/5	No
Surface Soil	108-90-7	CHLOROBENZENE	3.0E-03	J	3.0E-03	J	mg/kg	S01-SS04	1/9	0.005 - 0.22	1.3E+02	N	0/1	No
Surface Soil	156-59-2	CIS-1,2-DICHLOROETHYLENE	2.0E-03	J	3.3E-02		mg/kg	S01-SS23	5/35	0.001 - 0.26	2.4E+03	Sat	0/5	No
Surface Soil	110-82-7	CYCLOHEXANE	5.3E-02	J	5.3E-02	J	mg/kg	S01-SS02	1/9	0.005 - 0.22	1.2E+02	Sat	0/1	No
Surface Soil	100-41-4	ETHYLBENZENE	1.0E-03	J	1.0E+01		mg/kg	S01-SS12	4/16	0.005 - 0.24	2.5E+01	C	0/4	No
Surface Soil	179601-23-1	m,p-Xylene	2.0E-03	J	2.0E-03	J	mg/kg	S01-SS07	1/16	0.005 - 0.24	2.4E+02	N	0/1	No
Surface Soil	79-20-9	METHYL ACETATE	1.5E-01	J	1.5E-01	J	mg/kg	S01-SS02	1/9	0.005 - 0.22	2.9E+04	Sat	0/1	No
Surface Soil	78-93-3	METHYL ETHYL KETONE (2-BUTANONE)	9.0E-03	J	1.2E-02		mg/kg	S01-SS07	5/9	0.009 - 0.44	1.9E+04	N	0/5	No
Surface Soil	108-10-1	METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	5.0E-03	J	5.0E-03	J	mg/kg	S01-SS07	1/9	0.009 - 0.44	3.4E+03	Sat	0/1	No
Surface Soil	103-65-1	N-PROPYLBENZENE	1.0E-01	J	1.0E-01	J	mg/kg	S01-SS02	1/15	0.005 - 0.24	2.6E+02	Sat	0/1	No
Surface Soil	95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	4.5E-02	J	4.5E-02	J	mg/kg	S01-SS02	1/16	0.005 - 0.24	2.8E+02	N	0/1	No
Surface Soil	129-00-0	PYRENE	9.0E-03	J	4.4E+00		mg/kg	S01-SS09	9/9	0.019 - 0.19	2.3E+03	N	0/9	No
Surface Soil	135-98-8	SEC-BUTYLBENZENE	2.0E-03	J	6.7E-02	J	mg/kg	S01-SS02	2/8	0.005 - 0.22	1.5E+02	Sat	0/2	No
Surface Soil	127-18-4	TETRACHLOROETHYLENE(PCE)	1.0E-03	J	1.6E+00	J	mg/kg	S01-SS02	30/42	0.001 - 0.26	3.9E+01	N	0/30	No
Surface Soil	108-88-3	TOLUENE	2.0E-03	J	6.0E-03	J	mg/kg	S01-SS07	2/9	0.005 - 0.22	8.2E+02	Sat	0/2	No
Surface Soil	156-60-5	TRANS-1,2-DICHLOROETHENE	2.0E-03	J	2.0E-03	J	mg/kg	S01-SS01	1/35	0.0015 - 0.26	1.9E+03	Sat	0/1	No
Surface Soil	79-01-6	TRICHLOROETHYLENE (TCE)	1.0E-03	J	6.8E-02	J	mg/kg	S01-SS02	6/42	0.001 - 0.26	1.9E+00	N	0/6	No
Surface Soil	75-01-4	Vinyl chloride	1.0E-03	J	1.0E-03	J	mg/kg	S01-SS23	1/35	0.0021 - 0.26	1.7E+00	C	0/1	No

Soil Type	CAS Number	Analyte	Minimum Detected Concentration		Maximum Detected Concentration		Units	Location of Maximum Detection	Frequency of Detection	Range of Detection Limits	Screening Level		Frequency of Exceedance	COPC Flag
Total Soil	95-63-6	1,2,4-TRIMETHYLBENZENE	2.0E-03	J	2.0E-03	J	mg/kg	S01-SS07	1/27	0.005 - 0.27	1.8E+02	N	0/1	No
Total Soil	95-50-1	1,2-DICHLOROBENZENE	1.0E-03	J	4.0E-03	J	mg/kg	S01-SS08	4/27	0.005 - 0.27	3.8E+02	Sat	0/4	No
Total Soil	106-46-7	1,4-DICHLOROBENZENE	2.0E-03	J	2.0E-03	J	mg/kg	S01-SS05	1/27	0.005 - 0.27	1.1E+01	C	0/1	No
Total Soil	591-78-6	2-HEXANONE	5.0E-03	J	1.7E-02		mg/kg	S01-SS07	2/28	0.009 - 0.54	1.3E+02	N	0/2	No
Total Soil	67-64-1	ACETONE	8.0E-03	J	9.8E-02	J	mg/kg	S01-SS03	25/28	0.018 - 1.1	6.7E+04	N	0/25	No
Total Soil	71-43-2	BENZENE	5.0E-04	J	1.6E-01	J	mg/kg	S01-SS02	8/50	0.005 - 0.34	5.1E+00	C	0/8	No
Total Soil	108-86-1	BROMOBENZENE	4.0E-03	J	9.6E-02	J	mg/kg	S01-SS02	2/27	0.005 - 0.27	1.8E+02	N	0/2	No
Total Soil	75-25-2	BROMOFORM	1.0E-03	J	1.3E-01	J	mg/kg	S01-SS02	7/49	0.005 - 0.34	8.6E+01	C	0/7	No
Total Soil	75-15-0	CARBON DISULFIDE	1.0E-03	J	1.4E-02		mg/kg	S01-SS07	5/28	0.005 - 0.27	3.5E+02	N	0/5	No
Total Soil	108-90-7	CHLOROBENZENE	3.0E-03	J	3.0E-03	J	mg/kg	S01-SS04	1/28	0.005 - 0.27	1.3E+02	N	0/1	No
Total Soil	156-59-2	CIS-1,2-DICHLOROETHYLENE	1.0E-03	J	2.3E-01	J	mg/kg	S01-SS33	19/86	0.00099 - 0.27	2.4E+03	Sat	0/19	No
Total Soil	110-82-7	CYCLOHEXANE	5.3E-02	J	5.3E-02	J	mg/kg	S01-SS02	1/28	0.005 - 0.27	1.2E+02	Sat	0/1	No
Total Soil	100-41-4	ETHYLBENZENE	1.0E-03	J	2.1E+01		mg/kg	S01-SS12	9/50	0.005 - 2.7	2.5E+01	C	0/9	No
Total Soil	179601-23-1	m,p-Xylene	2.0E-03	J	9.0E-03		mg/kg	S01-SS13	2/50	0.005 - 0.34	2.4E+02	N	0/2	No
Total Soil	79-20-9	METHYL ACETATE	1.5E-01	J	1.5E-01	J	mg/kg	S01-SS02	1/28	0.005 - 0.27	2.9E+04	Sat	0/1	No
Total Soil	78-93-3	METHYL ETHYL KETONE (2-BUTANONE)	4.0E-03	J	1.2E-02		mg/kg	S01-SS07	9/28	0.009 - 0.54	1.9E+04	N	0/9	No
Total Soil	108-10-1	METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	5.0E-03	J	5.0E-03	J	mg/kg	S01-SS07	1/28	0.009 - 0.54	3.4E+03	Sat	0/1	No
Total Soil	103-65-1	N-PROPYLBENZENE	1.0E-01	J	1.0E-01	J	mg/kg	S01-SS02	1/49	0.005 - 0.34	2.6E+02	Sat	0/1	No
Total Soil	95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	3.0E-03	J	4.5E-02	J	mg/kg	S01-SS02	2/50	0.005 - 0.34	2.8E+02	N	0/2	No
Total Soil	129-00-0	PYRENE	9.0E-03	J	4.4E+00		mg/kg	S01-SS09	10/28	0.019 - 0.19	2.3E+03	N	0/10	No
Total Soil	135-98-8	SEC-BUTYLBENZENE	2.0E-03	J	6.7E-02	J	mg/kg	S01-SS02	2/27	0.005 - 0.27	1.5E+02	Sat	0/2	No
Total Soil	127-18-4	TETRACHLOROETHYLENE(PCE)	1.0E-03	J	1.6E+00	J	mg/kg	S01-SS02	91/108	0.00099 - 0.34	3.9E+01	N	0/91	No
Total Soil	108-88-3	TOLUENE	2.0E-03	J	6.1E-02	J	mg/kg	S01-SS02	4/28	0.005 - 0.27	8.2E+02	Sat	0/4	No
Total Soil	156-60-5	TRANS-1,2-DICHLOROETHENE	2.0E-03	J	4.0E-03	J	mg/kg	S01-SS33	2/86	0.0015 - 0.27	1.9E+03	Sat	0/2	No
Total Soil	79-01-6	TRICHLOROETHYLENE (TCE)	1.0E-03	J	9.5E-02	J	mg/kg	S01-SS33	27/108	0.00099 - 0.34	1.9E+00	N	0/27	No
Total Soil	75-01-4	Vinyl chloride	1.0E-03	J	1.0E-03	J	mg/kg	S01-SS23	1/86	0.002 - 0.27	1.7E+00	C	0/1	No

Note:
Dataset used to select soil chemicals of potential concern is provied in Table F-1.
Screening Level = USEPA Industrial Soil Regional Screening Level (RSL) based on TR = $1x10^{-6}$ or HQ = 0.1 (May 2018).
RSL value for m-xylene used as surrogate for m,p-xylene.

Surface Soil = 0-2 foot below ground surface samples
Total Soil = 0-10 foot below ground surface samples

CAS = Chemical Abstracts Service
COPC = chemical of potential concern are defined as chemicals with maximum detected concentrations greater than the screening level.
HQ = hazard quotient
J = estimated value
C = carcinogenic
mg/kg = milligrams per kilogram
N = noncarcinogenic
L = Screening level for lead is from the Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, USEPA, July 14, 1994.
SAT = Calculated RSL exceeds the saturation limit, therefore the saturation limit is used as screening level
SWMU = solid waste management unit
TR = target risk

Table 5-2. SWMU 1 Groundwater Step 1: Selection of Chemicals of Potential Concern (Potable Use)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

CAS Number	Analyte	Minimum Detected Concentration		Maximum Detected Concentration		Units	Location of Maximum Detection	Frequency of Detection	Range of Detection Limits	USEPA MCL	Frequency of MCL Exceedance	Screening Level		Frequency of Screening Level Exceedance	COPC Flag
156-59-2	CIS-1,2-DICHLOROETHYLENE	0.5		55	J	µg/L	S01-GW07	22/25	0.5 - 2.5	70	0/22	3.6	N	12/22	***Yes***
127-18-4	TETRACHLOROETHYLENE(PCE)	0.2	J	280		µg/L	S01-GW07	29/30	0.5 - 50	5	26/29	4.1	N	26/29	***Yes***
79-01-6	TRICHLOROETHYLENE (TCE)	0.2	J	51	J	µg/L	S01-GW07	27/30	0.5 - 5	5	16/27	0.28	N	26/27	***Yes***

Table 5-3. SWMU 1 Groundwater Step 2: Potable Use Risk Ratio Screening for Groundwater, Maximum Detected Concentration

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

					Tapwater RSL									
Analyte	Maximum Detected Concentration (Qualifier)		Location of Maximum Detection	Frequency of Detection	Carcinogenic	Noncarcinogenic	Acceptable Risk Level	Acceptable Hazard	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ/ Critical Effect	Cancer %	Non-cancer %
Volatile Organic Compounds (µg/L)													
CIS-1,2-DICHLOROETHYLENE	5.5E+01	(J)	S01-GW07	22/25	NA	3.6E+00	NA	1E+00	2E+01	NA	Urinary	0	6
TETRACHLOROETHYLENE(PCE)	2.8E+02		S01-GW07	29/30	1.1E+01	4.1E+00	1E-06	1E+00	7E+01	3E-05	Nervous, Ocular	20	26
TRICHLOROETHYLENE (TCE)	5.1E+01	(J)	S01-GW07	27/30	4.9E-01	2.8E-01	1E-06	1E+00	2E+02	1E-04	Developmental, Immune	80	69
												100	100
						Cumulative Corresponding Hazard Index[c]			**266**	**--**			
						Total Immune Hazard Index[d]			**182**	**--**			
						Total Urinary Hazard Index[d]			**15**	**--**			
						Total Nervous Hazard Index[d]			**68**	**--**			
						Total Ocular Hazard Index[d]			**68**	**--**			
						Total Developmental Hazard Index[d]			**182**				
						Cumulative Corresponding Cancer Risk[e]			--	**1E-04**			

Notes:

Dataset used to calculate groundwater risks is provided in Table F-2.

[a] $$\mathrm{HQ} = \frac{\text{Maximum detected soil concentration } \left(\frac{\mu g}{L}\right) \times \text{target hazard } (1.0)}{\text{Tap WaterRSL}\left(\frac{\mu g}{L}\right)}$$

[b] $$\mathrm{ELCR} = \frac{\text{Maximum detected concentration } \left(\frac{\mu g}{L}\right) \times \text{target risk level } (1 \times 10^{-6})}{\text{Tap Water RSL } \left(\frac{\mu g}{L}\right)}$$

[c] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[d] Total Target Organ/Critical Effect hazard indexes equals sum of corresponding hazard index for each constituent with similar target organ/critical effects.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

The residential exposure scenario is assessed in the this table.

Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites (USEPA, May 2018). [Online].
Available: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.

µg/L = micrograms per liter

ELCR = excess lifetime cancer risk

HQ = hazard quotient

J = estimated value

NA = not available/not applicable

Table 5-4. SWMU 1 Groundwater Step 1: Selection of Chemicals of Potential Concern (Vapor Intrusion)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

CAS Number	Analyte	Minimum Detected Concentration		Maximum Detected Concentration		Units	Location of Maximum Detection	Frequency of Detection	Range of Detection Limits	Screening Level		Frequency of Exceedance	COPC Flag
127-18-4	TETRACHLOROETHYLENE(PCE)	0.2	J	280		µg/L	S01-GW07	26/27	0.5 - 50	2.4E+01	N	23/29	***Yes***
79-01-6	TRICHLOROETHYLENE (TCE)	0.2	J	51	J	µg/L	S01-GW07	22/27	0.5 - 5	2.2E+00	C	23/27	***Yes***

Note:
Dataset used to select vapor intrusion chemicals of potential concern inlcludes MW-08, S01-GW01 to S01-GW18, SO1-GW20 to S01-GW22, and VP/D-10-GW-2529 (Table F-2).
Screening Level = EPA Vapor Intrusion Screening Level (VISL) Calculator [online] based on TR = $1x10^{-6}$ or HQ = 0.1 (May 2018).
Available: https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator.
The industrial exposure scenario is assessed in the this table.

CAS = Chemical Abstracts Service
COPC = chemical of potential concern are defined as chemicals with maximum detected concentrations greater than the screening level.
J = estimated value
NA = not applicable/not available
C = carcinogenic
N = noncarcinogenic
µg/L = micrograms per liter

Table 5-5. SWMU 1 Groundwater Step 2: Vapor Intrusion Risk Ratio Screening for Groundwater, Maximum Detected Concentration

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

					Soil Vapor VISL						
Analyte	**Maximum Detected Concentration (Qualifier)**		**Location of Maximum Detection**	**Frequency of Detection**	**Carcinogenic**	**Noncarcinogenic**	**Acceptable Risk Level**	**Acceptable Hazard**	**Corresponding Hazard Index[a]**	**Corresponding Cancer Risk[b]**	**Target Organ/ Critical Effect**
Volatile Organic Compounds (µg/L)											
TETRACHLOROETHYLENE(PCE)	2.8E+02		S01-GW07	26/27	6.5E+01	2.4E+02	1E-06	1E+00	1	4E-06	Nervous, Ocular
TRICHLOROETHYLENE (TCE)	5.1E+01	J	S01-GW07	22/27	7.4E+00	2.2E+01	1E-06	1E+00	2	7E-06	Developmental, Immune
						Cumulative Corresponding Hazard Index[c]			**3**	**--**	
						Total Nervous Hazard Index[d]			1	**--**	
						Total Ocular Hazard Index[d]			1		
						Total Develpmental Hazard Index[d]			**2**	**--**	
						Total Immune Hazard Index[d]			**2**	**--**	
						Cumulative Corresponding Cancer Risk[e]			--	1E-05	

Notes:

Dataset used to calculate vapor intrusion risks inlcludes MW-08, S01-GW01 to S01-GW18, SO1-GW20 to S01-GW22, and VP/D-10-GW-2529 (Table F-2).

[a] $$\mathrm{HQ} = \frac{\text{Maximum detected soil concentration } \left(\frac{\mu g}{L}\right) \times \text{target hazard } (1.0)}{\text{Groundwate VISL } \left(\frac{\mu g}{L}\right)}$$

[b] $$\mathrm{ELCR} = \frac{\text{Maximum detected concentration } \left(\frac{\mu g}{L}\right) \times \text{target risk level } (1 \times 10^{-6})}{\text{Groundwater VISL } \left(\frac{\mu g}{L}\right)}$$

[c] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[d] Total Target Organ/Critical Effect hazard indexes equals sum of corresponding hazard index for each constituent with similar target organ/critical effects.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

The industrial exposure scenario is assessed in the this table.

EPA Vapor Intrusion Screening Level On-Line Calculator (USEPA, May 2018). [Online].
Available: https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator.

µg/L = micrograms per liter

ELCR = excess lifetime cancer risk

HQ = hazard quotient

J = estimated value

Table 5-6.SWMU 1 Exterior Soil Vapor Step 1: Selection of Chemicals of Potential Concern (Vapor Intrusion)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

CAS Number	Analyte	Minimum Detected Concentration	Maximum Detected Concentration	Units	Location of Maximum Detection	Frequency of Detection	Range of Detection Limits	Screening Level (1)	Frequency of Exceedance	COPC Flag
75-35-4	1,1-DICHLOROETHENE	40.8	456	µg/m^3	S01-SG19-061918	2/14	0.519-234	2920 N	0/2	No
156-59-2	CIS-1,2-DICHLOROETHYLENE	448	42000	µg/m^3	S01-SG19-061918	2/14	0.539-243	NA	--	NA
127-18-4	TETRACHLOROETHYLENE(PCE)	1090	314000	µg/m^3	S01-SG16-061918	20/20	1.19-539	584 N	20/20	***Yes***
156-60-5	TRANS-1,2-DICHLOROETHENE	45.2	2820	µg/m^3	S01-SG19-061918	2/14	0.678-306	NA	--	NA
79-01-6	TRICHLOROETHYLENE (TCE)	5.08	12000	µg/m^3	S01-SG01-081717	11/20	0.881-398	29 N	10/11	***Yes***
75-01-4	VINYL CHLORIDE	1430	1430	µg/m^3	S01-SG19-061918	1/14	0.233-105	93 C	1/1	***Yes***

Note:
Dataset used to select soil vapor chemicals of potential concern is provied in Table F-3.

(1) Screening Level = Commercial soil gas values from EPA Vapor Intrusion Screening Level (VISL) Calculator [online] based on TR = 1x10^{-6} or HQ = 0.1 (May 2018).
Available: https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator.
The industrial exposure scenario is assessed in the this table.

CAS = Chemical Abstracts Service

COPC = chemical of potential concern are defined as chemicals with maximum detected concentrations greater than the screening level.

NA = not applicable/not available

C = carcinogenic
N = noncarcinogenic
µg/m^3 = micrograms per cubic meter

Table 5-7. SWMU 1 Exterior Soil Vapor Step 2: Vapor Intrusion Risk Ratio Screening for Exterior Soil Vapor, Maximum Detected Concentration

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

				Soil Vapor VISL						
Analyte	**Maximum Detected Concentration (Qualifier)**	**Location of Maximum Detection**	**Frequency of Detection**	**Carcinogenic**	**Noncarcinogenic**	**Acceptable Risk Level**	**Acceptable Hazard**	**Corresponding Hazard Index[a]**	**Corresponding Cancer Risk[b]**	**Target Organ/ Critical Effect**
Volatile Organic Compounds (µg/m^3)										
TETRACHLOROETHYLENE(PCE)	3.1E+05	S01-SG16-061918	20/20	1.6E+03	5.8E+03	1E-06	1E+00	54	2E-04	Nervous, Ocular
TRICHLOROETHYLENE (TCE)	1.2E+04	S01-SG01-081717	11/20	1.0E+02	2.9E+02	1E-06	1E+00	41	1E-04	Developmental, Immune
VINYL CHLORIDE	1.4E+03	S01-SG19-061918	1/14	9.3E+01	1.5E+04	1E-06	1E+00	0.1	2E-05	Liver
					Cumulative Corresponding Hazard Index[c]			**95**	**--**	
					Total Nervous Hazard Index[d]			**54**	**--**	
					Total Ocular Hazard Index[d]			**54**	**--**	
					Total Develpmental Hazard Index[d]			**41**	**--**	
					Total Immune Hazard Index[d]			**41**		
					Total Liver Hazard Index[d]			0.1	**--**	
					Cumulative Corresponding Cancer Risk[e]			--	**3E-04**	

Notes:

Dataset used to calculate soil risks is provied in Table F-3.

[a] $$\mathrm{HQ} = \frac{\text{Maximum detected soil concentration } \left(\frac{\mu g}{m3}\right) \times \text{target hazard } (1.0)}{\text{Soil Vapor VISL } \left(\frac{\mu g}{m3}\right)}$$

[b] $$\mathrm{ELCR} = \frac{\text{Maximum detected concentration } \left(\frac{\mu g}{m3}\right) \times \text{target risk level } (1 \times 10^{-6})}{\text{Soil Vapor VISL } \left(\frac{\mu g}{m3}\right)}$$

[c] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[d] Total Target Organ/Critical Effect hazard indexes equals sum of corresponding hazard index for each constituent with similar target organ/critical effects.

[e] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

The industrial exposure scenario is assessed in the this table.

EPA Vapor Intrusion Screening Level On-Line Calculator (USEPA, May 2018). [Online].
Available: https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator.

µg/m^3 = micrograms per cubic meter

ELCR = excess lifetime cancer risk

HQ = hazard quotient

Table 5-8. Summary of Cumulative Cancer Risks and Noncancer HIs for Soil, Groundwater, and Exterior Soil Vapor (Maximum Detected Concentration)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Media	Cumulative Cancer Risk	Primary Contributors to Cumulative Cancer Risk[a]	Cumulative Noncancer Hazard Index	Primary Contributors to Cumulative Noncancer Hazard Index[b]
Surface Soil - Industrial[c]	no COPCs identified			
Subsurface Soil - Industrial[c]	no COPCs identified			
Groundwater - Residential (Potable Use)	1E-04	Tetrachloroethylene (20%), Trichloroethene (80%)	266	Immune HI = 182, due to TCE; Urinary HI = 15, due to cis-1,2-DCE; Nervous HI = 68, due to PCE; Ocular HI = 68, due to PCE; Developmental HI = 182, due to TCE
Groundwater - Industrial (Vapor Intrusion)	1E-05	Tetrachloroethylene (38%), Trichloroethene (62%)	3	Immune HI = 2, due to TCE; Nervous HI = 1, due to PCE; Ocular HI = 1, due to PCE; Developmental HI = 2, due to TCE
Exterior Soil Vapor - Industrial (Vapor Intrusion)	3E-04	Tetrachloroethylene (62%), Trichloroethene (38%)	95	Immune HI = 41, due to TCE; Nervous HI = 54, due to PCE; Ocular HI = 54, due to PCE; Developmental HI = 41, due to TCE

[a] Primary contributors to cumulative cancer risk are chemicals of potential concern (COPCs) which contribute to a cumulative cancer risks of 1E-05 or greater.

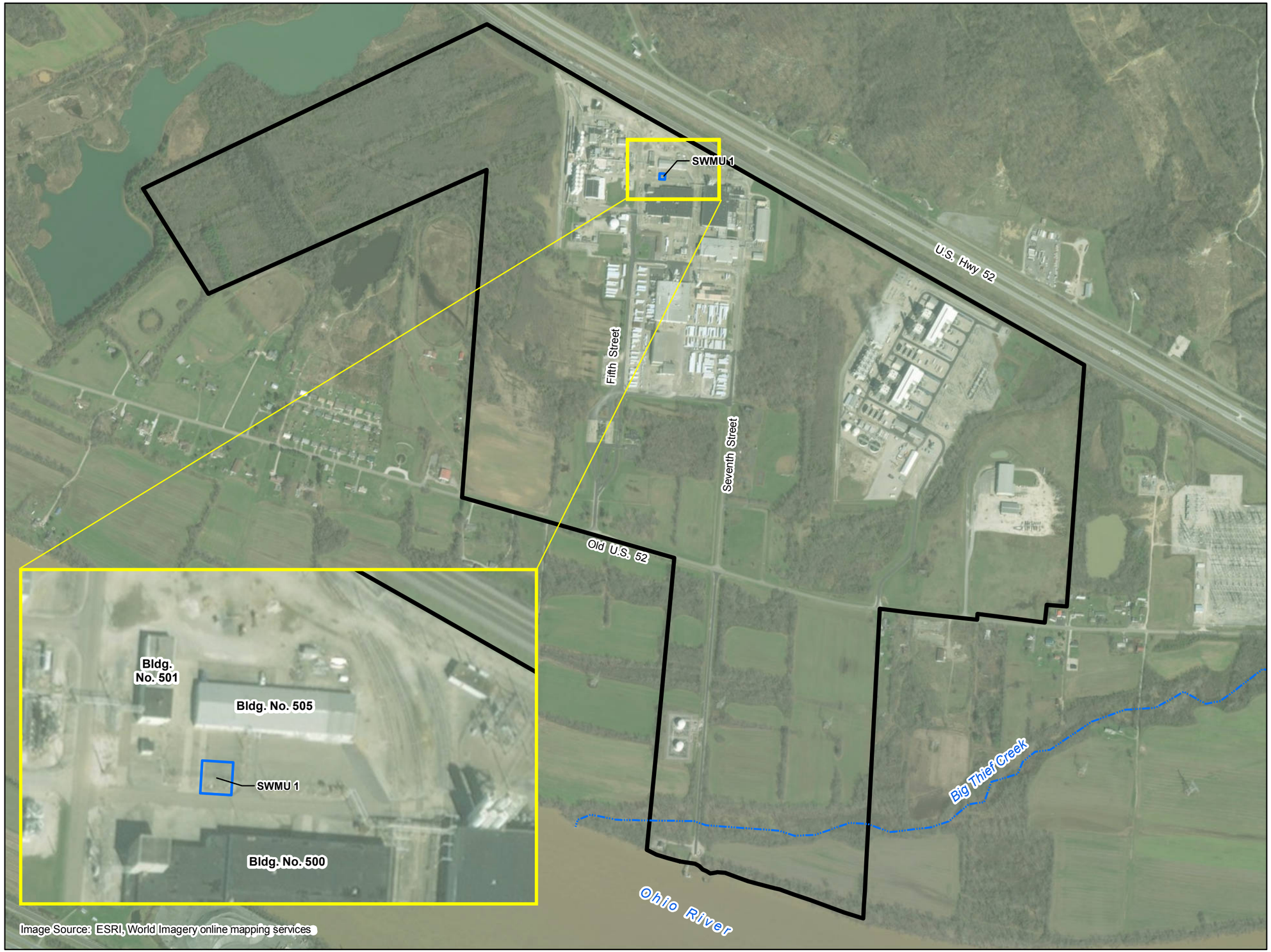
[b] Primary contributors to cumulative noncancer hazard index are COPCs that contribute to a target organ HI of 1 or greater.

[c] Evaluation of VOCs only. Surface soil and subsurface soil represent the 0-2 feet and 0-10 feet below ground surface sample depth intervals, respectively.

cis-1,2-DCE = cis-1,2-dichloroethylene
HI = Hazard Index
NA = not applicable
PCE = Tetrachloroethylene
TCE = Trichloroethylene

Figures

FIGURE 1-1
Site Location
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio



LEGEND

- Big Thief Creek
- SWMU
- Approximate Site Boundary

N

0 400 800

Feet

FIGURE 1-2
Site Features
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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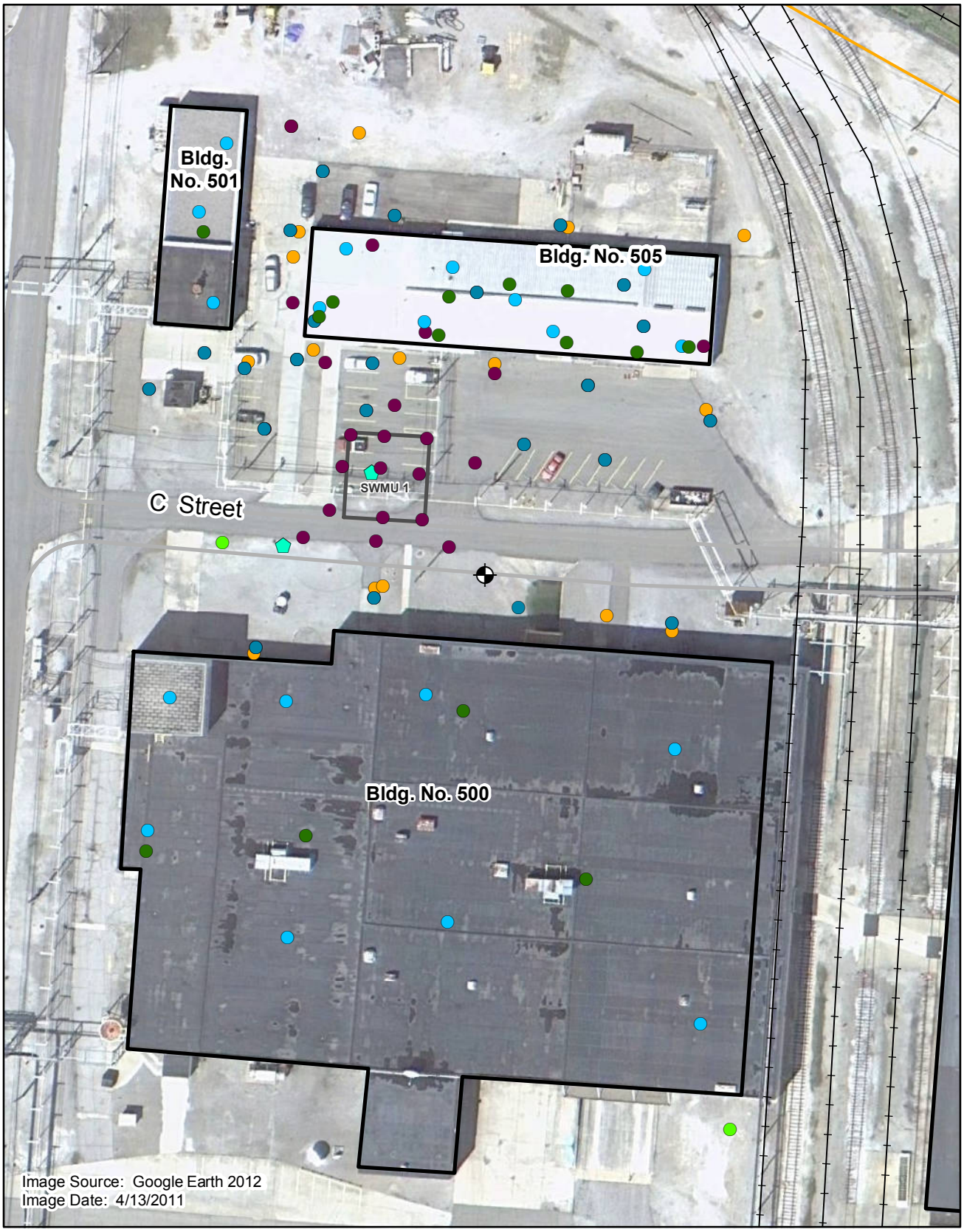

LEGEND

- Monitoring Well Location
- Soil Gas Sample Location
- Manhole/Sewer Gas Sample Location
- Groundwater Grab Sample Location
- Soil Sample Location
- Indoor Air Sample Location
- General Outdoor Air Sample Location
- Subslab Soil Gas Sample Location
- Edge of Road
- Building
- SWMU

N

0 40 80
Feet

FIGURE 2-1
Buildings 500, 501, and 505
Phase 3 RFI Sample Locations
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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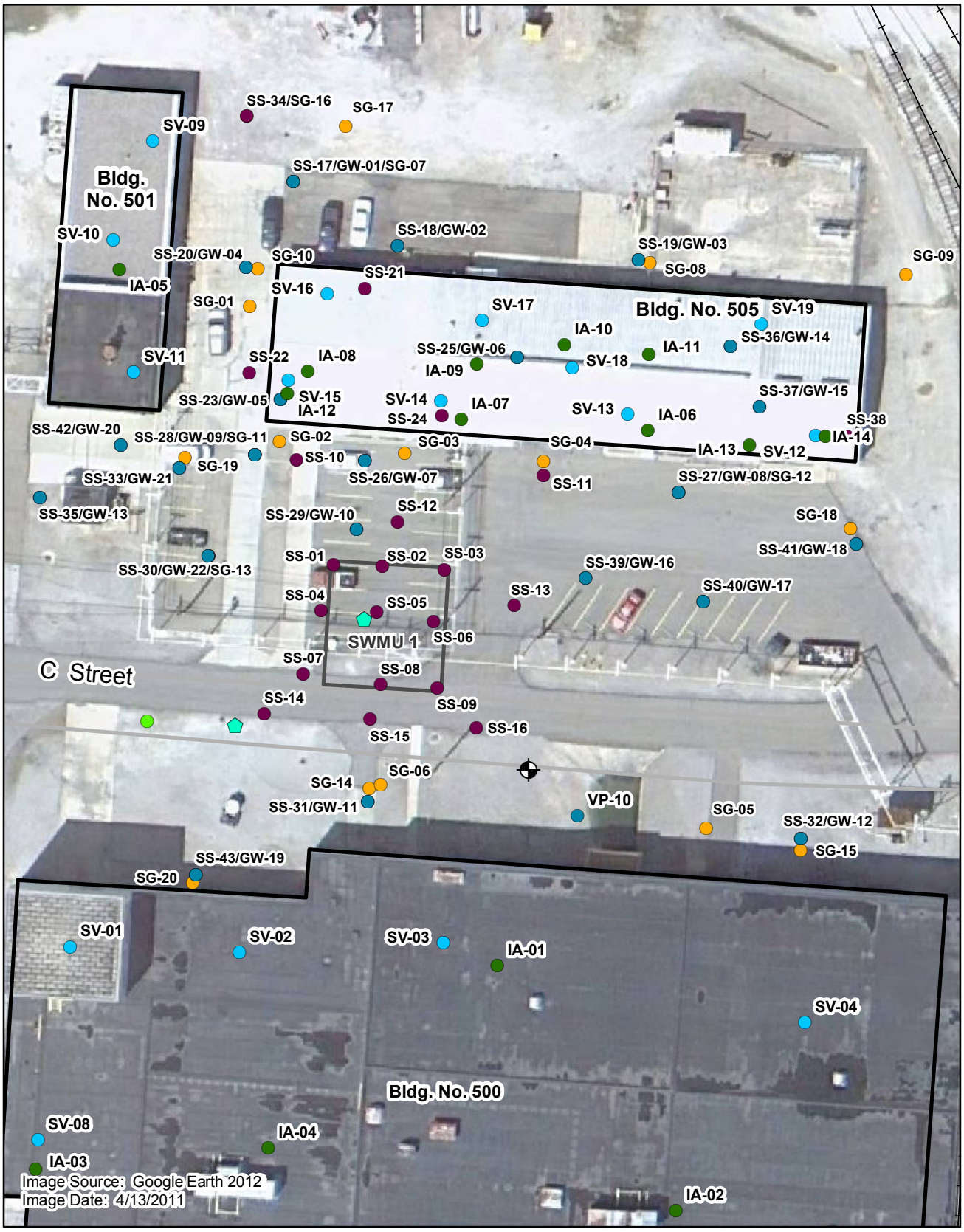
\\brooksidefiles\GIS_SHARE\ENBG\00_Proj\D\Dow_Chemical\Dow_Hanging_Rock_404798\MapFiles\Phase_3_Report\Fig2-1_Air_Samp_Locations_RFI_new.mxd



LEGEND

- Monitoring Well Location
- Soil Gas Sample Location
- Manhole/Sewer Gas Sample Location
- Groundwater Grab Sample Location
- Soil Sample Location
- Indoor Air Sample Location
- General Outdoor Air Sample Location
- Subslab Soil Gas Sample Location
- Edge of Road
- Building
- SWMU

N

0 27.5 55
Feet

FIGURE 2-2
Focused SWMU 1
Sample Locations
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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N

0 8 16 24

SCALE IN FEET
(APPROXIMATE)

OFF L8
OFF L9 (KITCHENETTE/ COFFEE ROOM)
OFF L10 (PROJECT FILE STORAGE AND LARGE COPIER)
OFF I14 (PLANT DRAWINGS STORAGE)
OFF L14
MEN'S ROOM
OFF L7
OFF L15 (CONFERENCE ROOM)
KITCHEN/ BREAKROOM
IA-09
LADIES' ROOM
OFF L6
IA-08
OFF L5
OFF L11
OFF L12
OFF L13
JANITOR
APU
IA-12
OFF L4 (STORAGE ROOM)
SEALED CRACK IN FLOOR
OFF L3
OFF L2
OFF L1
IA-07
CONFERENCE ROOM 16
OFF R10 (ELECTRICAL ROOM)
AEROSOL CAN USE AND STORAGE AREA
OFF R1
OFF R2
OFF R3
OFF R4
OFF R4A
IA-10
OFF R9
OFF R8
IA-11
OFF R6 (ELECTRONIC STORAGE/ MAINTENANCE SHOP)
APU
SEALED CRACK IN FLOOR
OFF R5 (PROCESS CONTROL PARTS STORAGE)
OFF R7 (COPY ROOM)
OFF R11
OFF R12
OFF R13
IA-06
OFF R14
SEALED GAP BETWEEN FLOOR AND FIRE WATER LINE RISER
STORE ROOM (WAREHOUSE SHELFING, SMALL PARTS, AEROSOL CANS, ETC.)
OFF R20
OFF R16
IA-13
OFF R15
STORE ROOM (EQUIPMENT, TOTES, PALLETS, SHELFING, ETC.)
OFF R19
OFF R18 (CLEANING SUPPLIES STORAGE)
IA-14
OFF R17 (BREAK ROOM AND RESTROOM)

Legend

- APU — AIR PURIFYING UNIT
- ● — INDOOR AIR SAMPLE
- GARAGE DOOR
- SURVEY AREAS

Figure 2-3
General HAPSITE Survey Areas
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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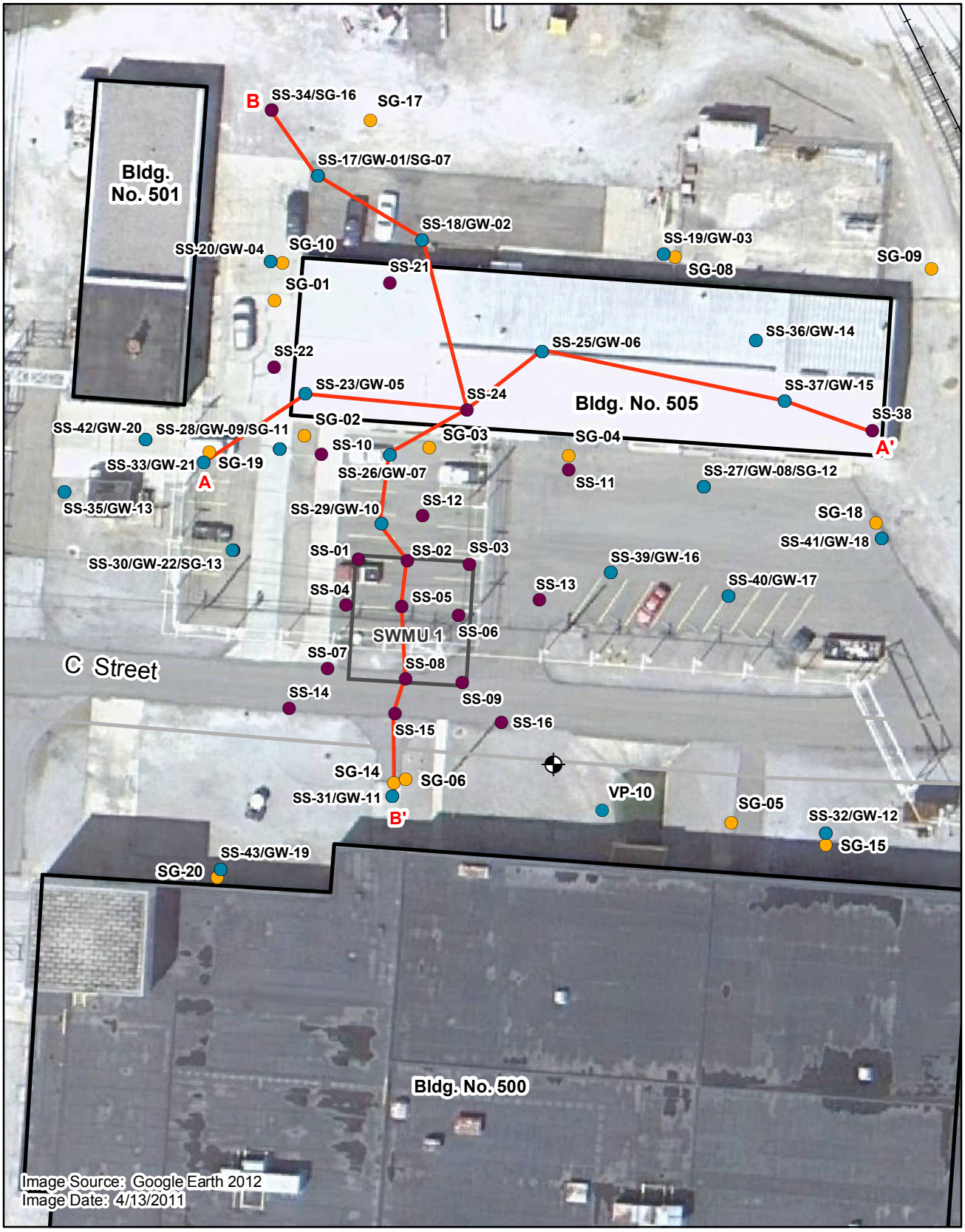

LEGEND

- Monitoring Well Location
- Groundwater Grab Sample Location
- Soil Sample Location
- Soil Gas Sample Location
- Cross Section Location
- Edge of Road
- Building
- SWMU

N

0 27.5 55
Feet

FIGURE 3-1
SWMU 1 Cross Section Locations
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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A

A'

BLDG 505

SS-33/GW-21

SS-23/GW-05

SS-24

SS-25/GW-06

SS-37/GW-15

SS-38

0

5

10

15

20

25

30

LEGEND

CLAY

SILT

SAND

SANDY GRAVEL

CONCRETE

PERCHED SATURATED ZONE

APPROX. WATER TABLE

Figure 3-2
Cross Section A - A'
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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B

B'

BLDG 505

SS-34

SS-17/GW-01

SS-18

SS-24

SS-26/GW-07

SS-29/GW-10

SS-02

SS-05

SS-08

SS-15

SS-31/
GW-11

0

5

10

15

20

25

30

?

?

LEGEND

CLAY

SILT

SAND

SANDY GRAVEL

CONCRETE

PERCHED SATURATED ZONE

APPROX. WATER TABLE

Figure 3-3
Cross Section B - B'
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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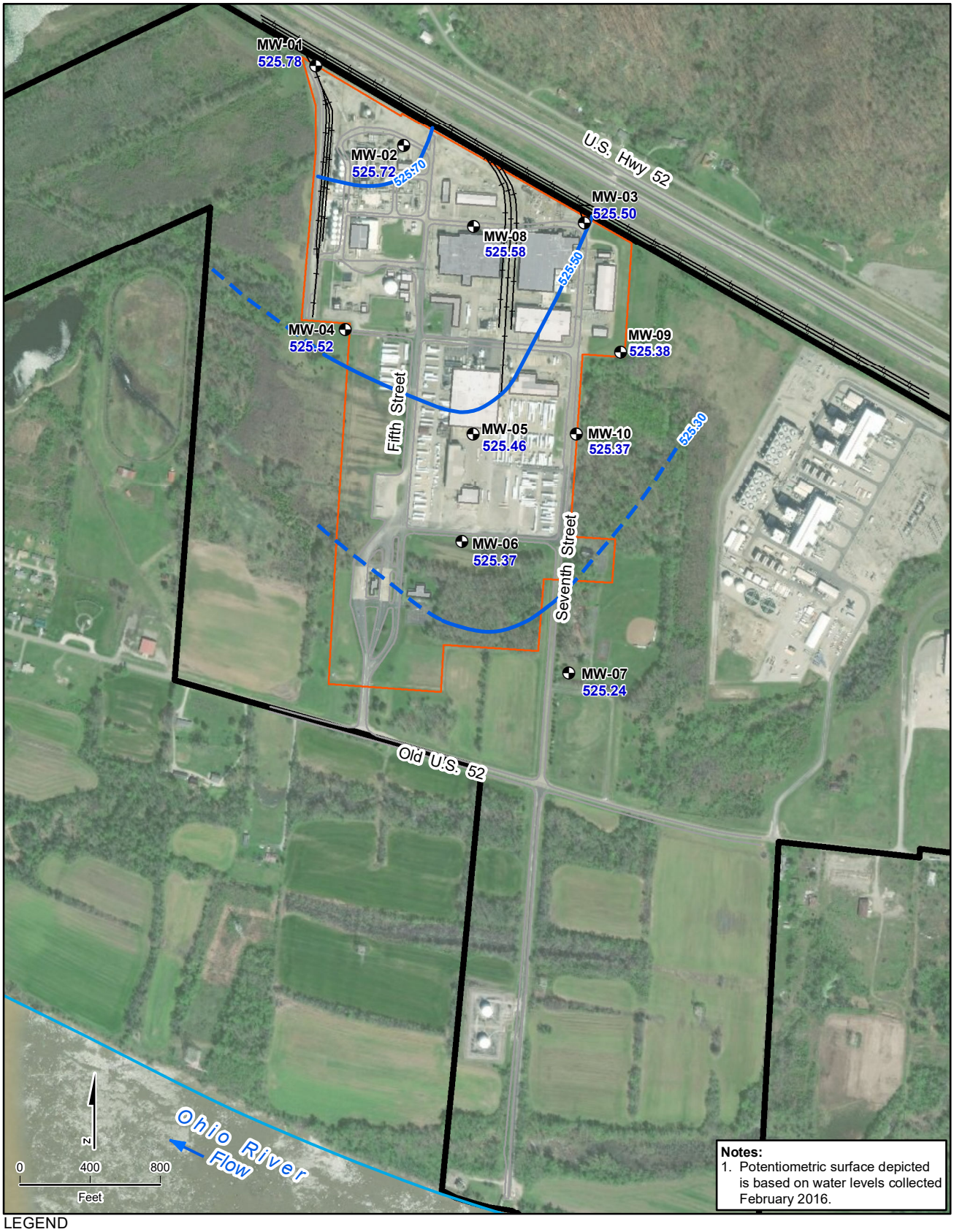

LEGEND

- Approximate Site Boundary
- Railroad
- Fence
- Edge of Road
- Building
- Monitoring Well
- River
- Groundwater Elevation Contour
- Inferred Groundwater Elevation Contour Outside the Area of Data

FIGURE 3-4
Potentiometric Surface Map
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

JACOBS

Notes:
1. All results are in µg/m^3
2. USEPA Vapor Intrusion Screening Level = 5,800 ug/m^3
3. PCE = Tetrachloroethylene
4. Dashed Contours are Inferred Contours Outside the Area of Data.

LEGEND

- Soil Gas Sample Location
- Manhole/Sewer Gas Location
- Sanitary Sewer Line
- Edge of Road
- Building
- SWMU

PCE Concentrations

- 10,000 µg/m^3
- 100,000 µg/m^3

N

0 25 50
Feet

FIGURE 4-1
SWMU 1 Soil Gas PCE Results
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

JACOBS

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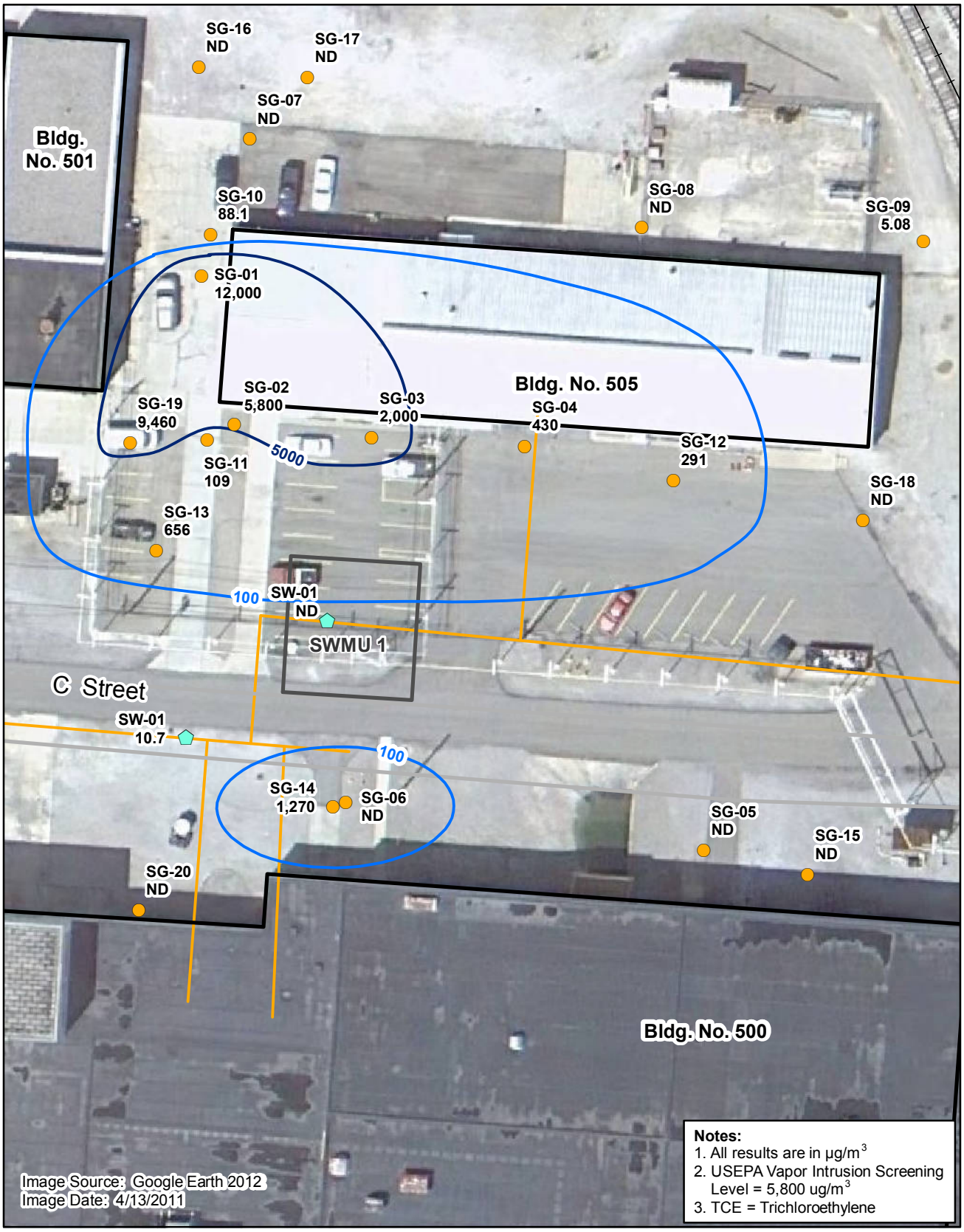

LEGEND

- Soil Gas Sample Location
- Manhole/Sewer Gas Location
- Sanitary Sewer Line
- Edge of Road
- Building
- SWMU

TCE Concentration

- 100 µg/m^3 (dashed where inferred)
- 5,000 µg/m^3 (dashed where inferred)

N

0 25 50
Feet

FIGURE 4-2
SWMU 1 Soil Gas TCE Results
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

JACOBS

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N

0 8 16 24

SCALE IN FEET
(APPROXIMATE)

Location	Date	PCE ug/m^3	TCE ug/m^3
IA08	9/8/17	197	0.403
	5/4/18	6.64	0.220
	6/4/18	1.72	0.107 U
	8/15/18	2.21	0.204
	12/7/18	2.86	0.145

Location	Date	PCE ug/m^3	TCE ug/m^3
IA09	9/8/17	268	0.543
	4/12/18	17.4	0.532
	5/4/18	8.41	0.290
	6/4/18	3.39	0.140
	8/15/18	1.67	0.129
	12/7/18	3.33	0.113

Location	Date	PCE ug/m^3	TCE ug/m^3
IA10	9/8/17	324	1.000
	4/12/18	45.5	0.736
	5/4/18	14.6	0.575
	6/4/18	3.42	0.145
	8/15/18	1.79	0.145
	12/7/18	5.61	0.204

Location	Date	PCE ug/m^3	TCE ug/m^3
IA11	4/12/18	30.6	0.376
	5/4/18	9.56	0.220
	6/4/18	3.40	0.118
	8/15/18	1.59	0.107 U
	12/7/18	6.32	0.156

OFF L8
OFF L9 (KITCHENETTE/ COFFEE ROOM)
OFF L10 (PROJECT FILE STORAGE AND LARGE COPIER)
OFF I14 (PLANT DRAWINGS STORAGE)
OFF L14
OFF L7
OFF L15 (CONFERENCE ROOM)
KITCHEN/ BREAKROOM
MEN'S ROOM
LADIES' ROOM
IA-09
OFF L6
IA-08
OFF L5
OFF L11
OFF L12
OFF L13
SEALED CRACK IN FLOOR
JANITOR
APU
IA-12
OFF L4 (STORAGE ROOM)
OFF L3
OFF L2
OFF L1
IA-07
CONFERENCE ROOM 16
OFF R10 (ELECTRICAL ROOM)
OFF R1
OFF R2
OFF R3
OFF R4
AEROSOL CAN USE AND STORAGE AREA
OFF R4A
IA-10
OFF R9
OFF R8
IA-11
SEALED CRACK IN FLOOR
OFF R6 (ELECTRONIC STORAGE/ MAINTENANCE SHOP)
APU
OFF R5 (PROCESS CONTROL PARTS STORAGE)
OFF R7 (COPY ROOM)
STORE ROOM (WAREHOUSE SHELFING, SMALL PARTS, AEROSOL CANS, ETC.)
OFF R20
STORE ROOM (EQUIPMENT, TOTES, PALLETS, SHELFING, ETC.)
OFF R19
OFF R18 (CLEANING SUPPLIES STORAGE)
IA-14
OFF R17 (BREAK ROOM AND RESTROOM)
OFF R11
OFF R12
OFF R13
IA-06
OFF R14
OFF R16
IA-13
OFF R15
SEALED GAP BETWEEN FLOOR AND FIRE WATER LINE RISER

Location	Date	PCE ug/m^3	TCE ug/m^3
IA12	4/12/18	3.27	0.161
	5/4/18	1.58	0.107 U
	6/4/18	1.11	0.107 U
	8/15/18	1.08	0.193
	12/7/18	3.01	0.150

Location	Date	PCE ug/m^3	TCE ug/m^3
IA07	9/8/17	220	0.451
	4/12/18	15.9	0.597
	5/4/18	12.6	0.408
	6/4/18	1.85	0.107 U
	8/15/18	1.55	0.150
	12/7/18	5.35	0.145

Location	Date	PCE ug/m^3	TCE ug/m^3
IA06	9/8/17	326	1.04
	4/12/18	30.2	0.559
	5/4/18	11.7	0.242
	6/4/18	5.51	0.183
	8/15/18	1.99	0.124
	12/7/18	0.163	0.107 U

Location	Date	PCE ug/m^3	TCE ug/m^3
IA14	5/4/18	8.21	0.193
	6/4/18	20.8	0.548
	8/15/18	7.66	0.263
	12/7/18	4.35	0.118

Location	Date	PCE ug/m^3	TCE ug/m^3
IA13	5/4/18	19.0	0.177
	6/4/18	15.2	0.333
	8/15/18	12	0.242
	12/7/18	19.7	0.430

Legend

APU AIR PURIFYING UNIT

INDOOR AIR SAMPLE

GARAGE DOOR

Notes:

µg/m^3 = MICROGRAMS PER CUBIC METER
SHADED DATA EXCEEDS THE SCREENING LEVEL
U = NOT DETECTED

Location	Date	PCE ug/m^3	TCE ug/m^3
Outdoor Air	9/8/17	0.068 J	0.107 U
	4/12/18	0.136 U	0.107 U
	5/4/18	0.156	0.107 U
	6/4/18	0.136 U	0.107 U
	8/15/18	0.136 U	0.107 U
	12/7/18	3.38	0.118

Analyte	Unit	Ohio EPA Response Action Level	USEPA Regional Screening Level
Tetrachloroethylene (PCE)	µg/m^3	180	175
Trichloroethylene (TCE)	µg/m^3	8.8	9

Figure 4-3
SWMU 1 Indoor Air PCE and TCE Analytical Results
Dow Hanging Rock Phase 3 RFI Report
Ironton, OH

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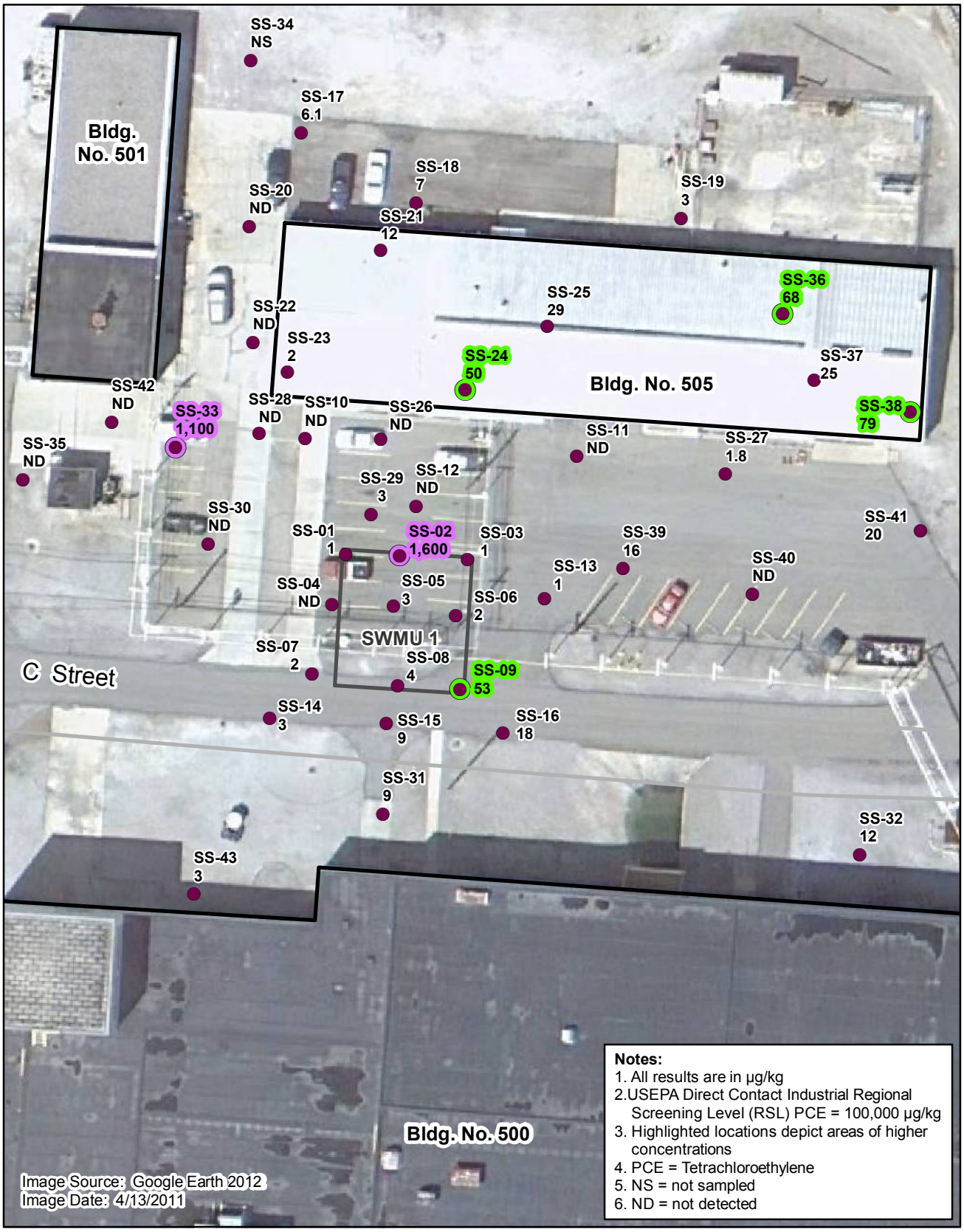
PW | DEN001 | DOCUMENTS - DEN1 WBG IMPERIAL SF | DESIGNS - SMALL PROJECTS | 693874 - DOW HANGING ROCK | DLV | F12_693874.dgn



LEGEND

- Soil Sample Location
- Locations highlighted green have detected concentrations between 50 µg/kg and 100 µg/kg
- Locations highlighted purple have detected concentrations above 1,000 µg/kg
- Edge of Road
- Building
- SWMU

N

0 25 50
Feet

FIGURE 4-4
SWMU 1 Soil PCE Results, 0 to 2 Feet
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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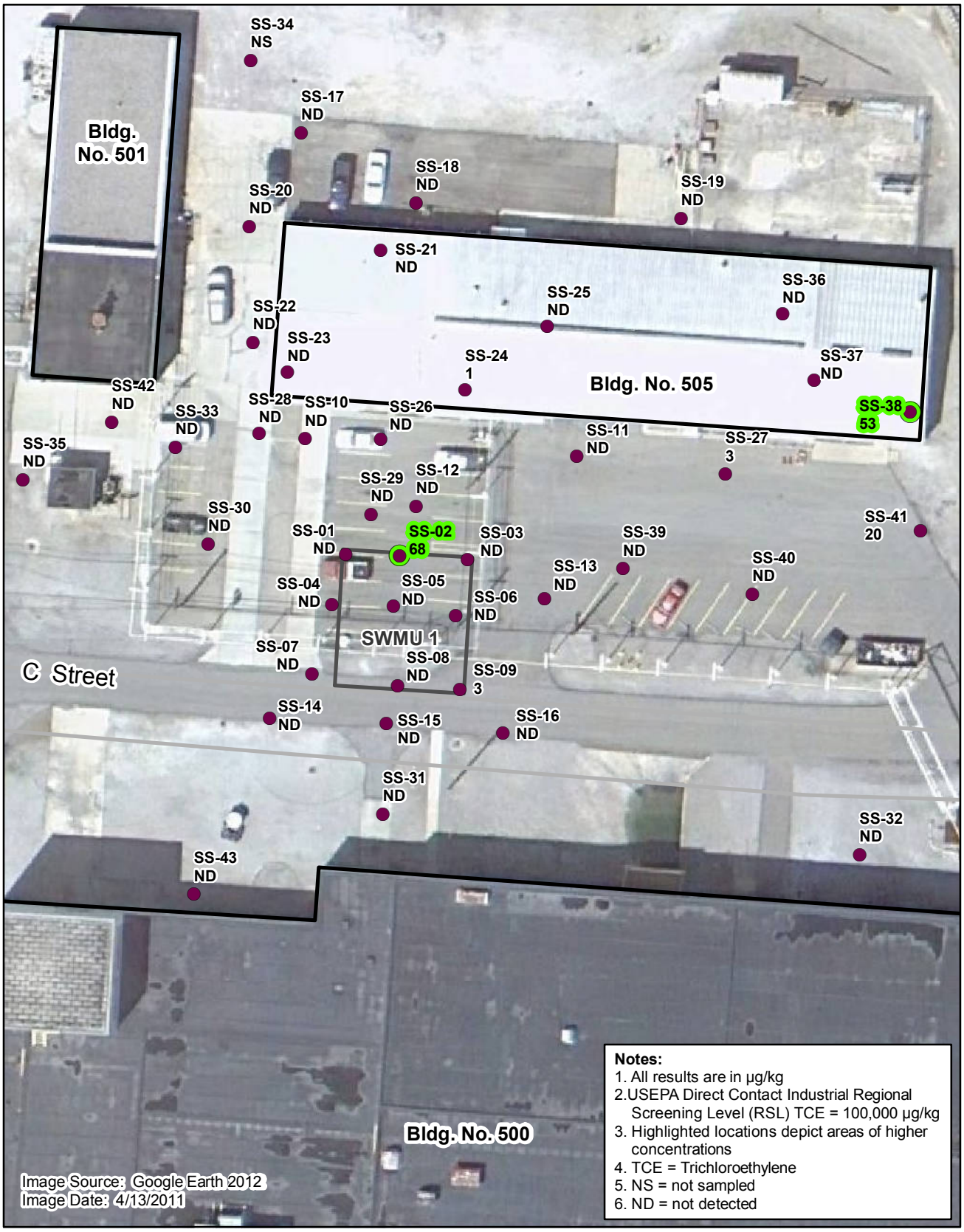

LEGEND

- Soil Sample Location
- Locations highlighted green have detected concentrations between 50 µg/kg and 100 µg/kg
- Edge of Road
- Building
- SWMU

N

0 25 50
Feet

FIGURE 4-5
SWMU 1 Soil TCE Results, 0 to 2 Feet
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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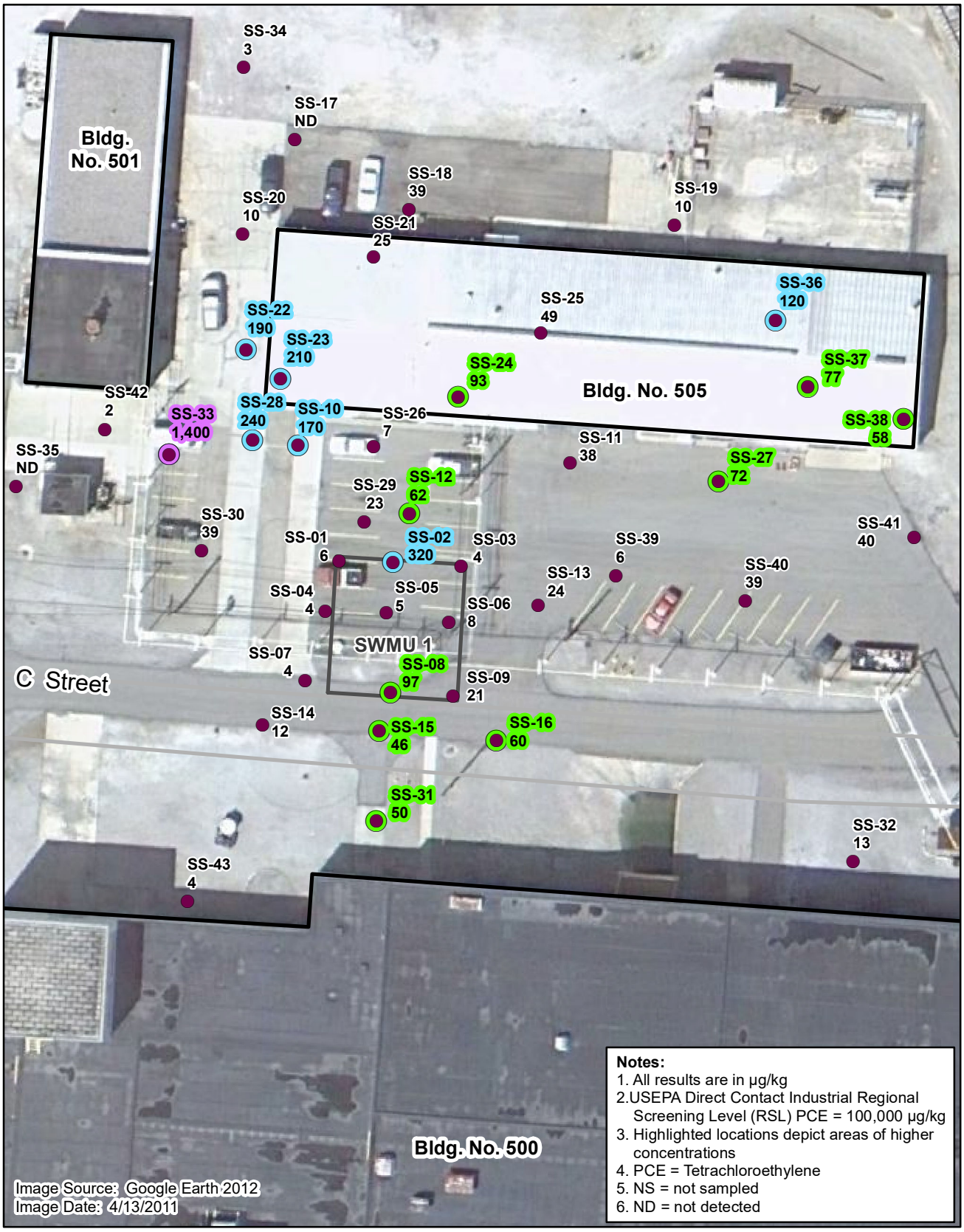

LEGEND

- Soil Sample Location
- Locations highlighted green have detected concentrations between 50 µg/kg and 99 µg/kg
- Locations highlighted blue have detected concentrations between 100 µg/kg and 999 µg/kg
- Locations highlighted purple have detected concentrations above 1000 µg/kg
- Edge of Road
- Building
- SWMU

N

0 25 50
Feet

FIGURE 4-6
SWMU 1 Soil PCE Results, 5 to 10 Feet
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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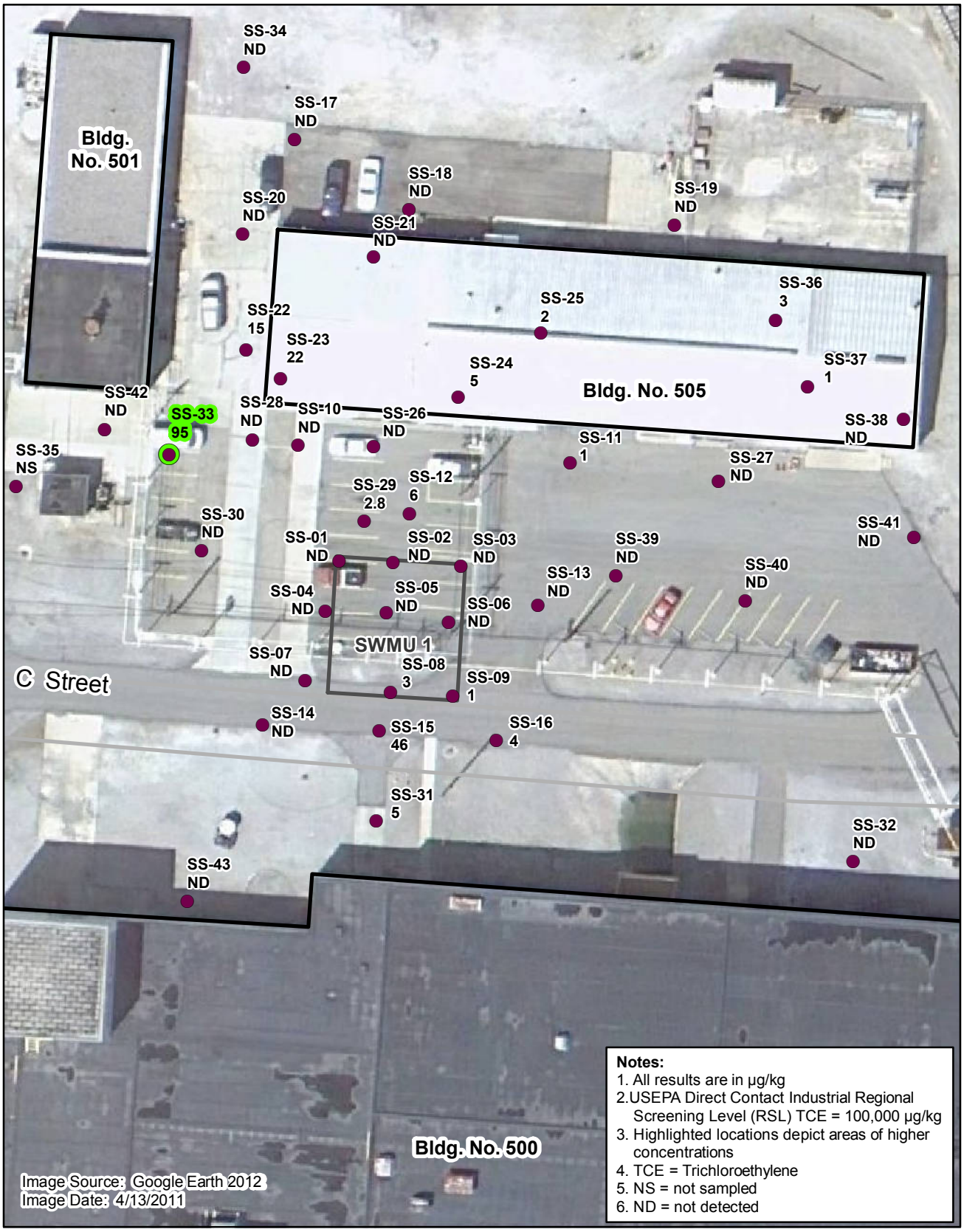

LEGEND

- Soil Sample Location
- Locations highlighted green have detected concentrations between 50 µg/kg and 99 µg/kg
- Edge of Road
- Building
- SWMU

N

0 25 50
Feet

FIGURE 4-7
SWMU 1 Soil TCE Results, 5 to 10 Feet
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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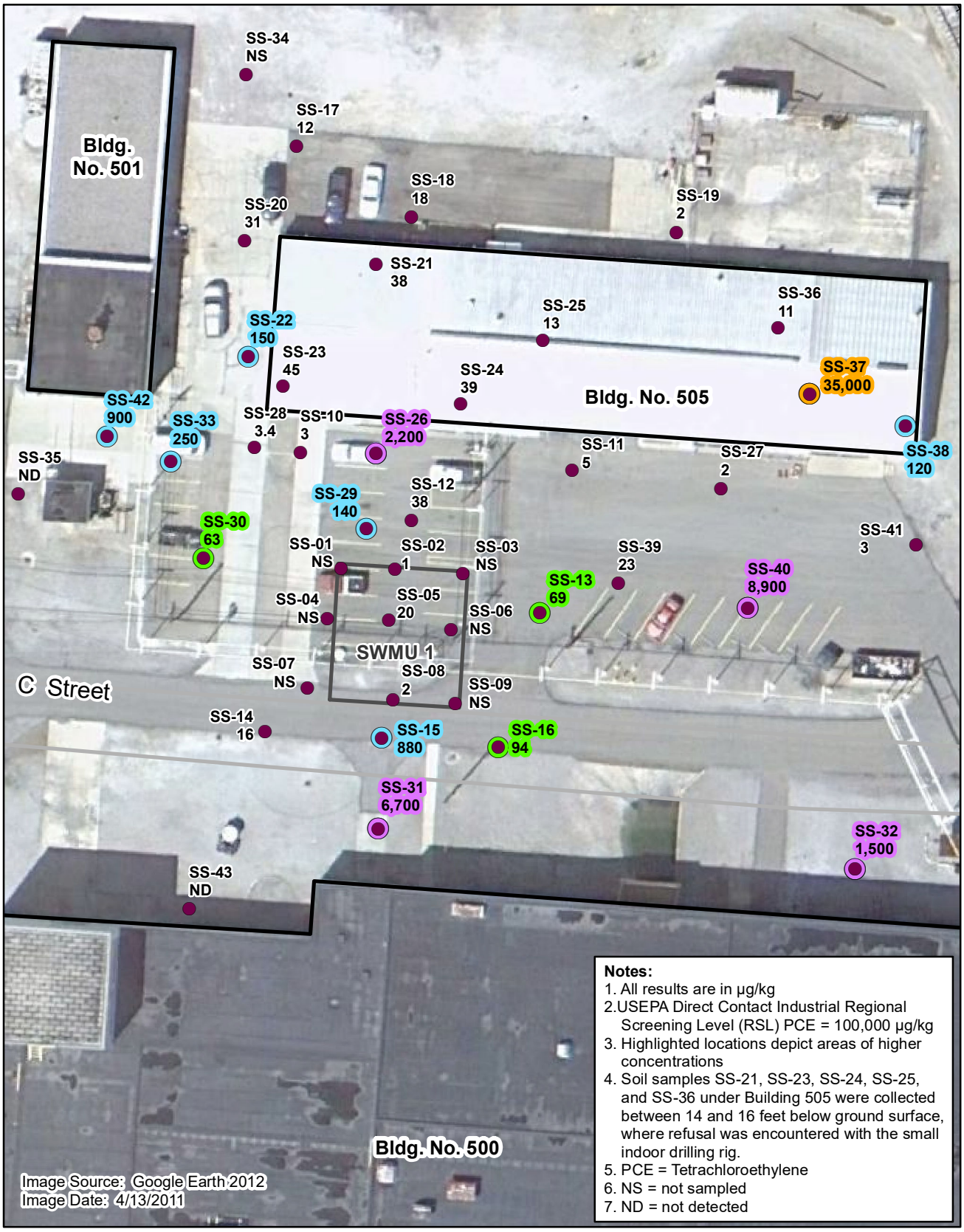

Notes:
1. All results are in µg/kg
2. USEPA Direct Contact Industrial Regional Screening Level (RSL) PCE = 100,000 µg/kg
3. Highlighted locations depict areas of higher concentrations
4. Soil samples SS-21, SS-23, SS-24, SS-25, and SS-36 under Building 505 were collected between 14 and 16 feet below ground surface, where refusal was encountered with the small indoor drilling rig.
5. PCE = Tetrachloroethylene
6. NS = not sampled
7. ND = not detected

LEGEND

- Soil Sample Location
- Locations highlighted green have detected concentrations between 50 µg/kg and 99 µg/kg
- Locations highlighted blue have detected concentrations between 100 µg/kg and 999 µg/kg
- Locations highlighted purple have detected concentrations between 1,000 µg/kg and 9,999
- Locations highlighted orange have detected concentrations at 35,000 µg/kg
- Edge of Road
- Building
- SWMU

N

0 25 50
Feet

FIGURE 4-8
SWMU 1 Soil PCE Results, 21 to 29 Feet
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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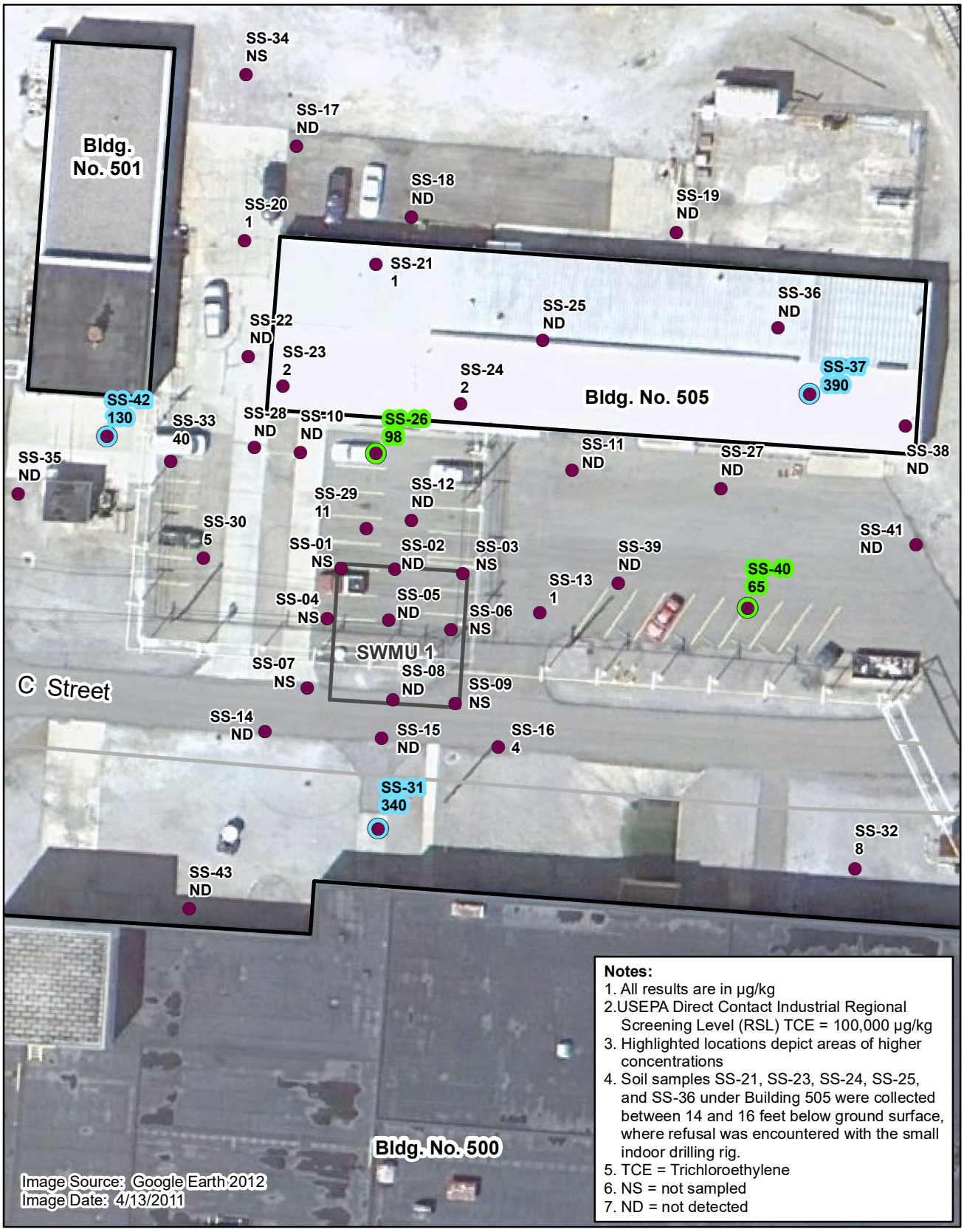

FIGURE 4-9
SWMU 1 Soil TCE Results, 21 to 29 Feet
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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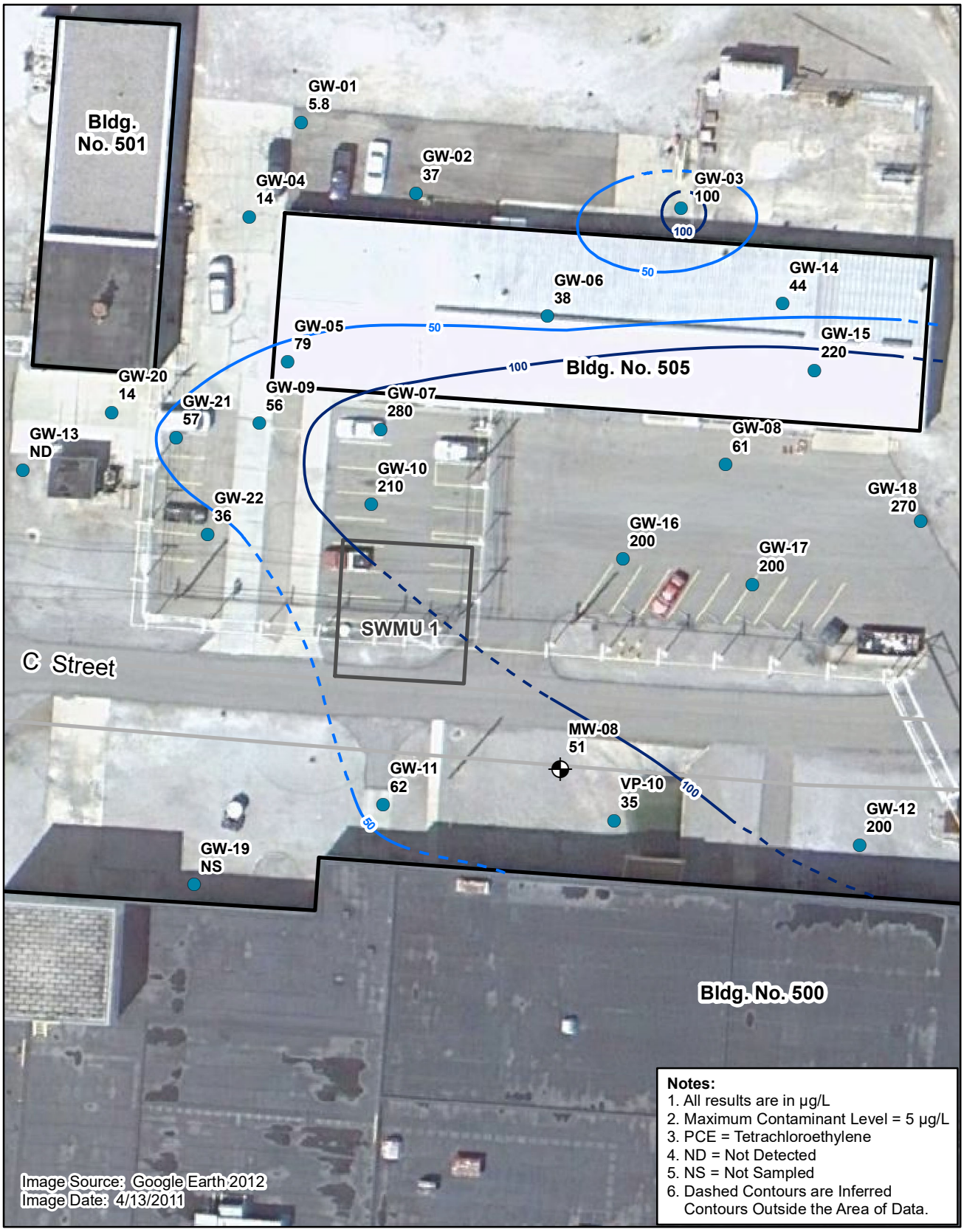

LEGEND

- Monitoring Well Location
- Groundwater Grab Sample Location
- Edge of Road
- Building
- SWMU

PCE Concentrations

- 50 µg/L
- 100 µg/L

N

0 25 50
Feet

FIGURE 4-10
SWMU 1 Groundwater Grab PCE Results
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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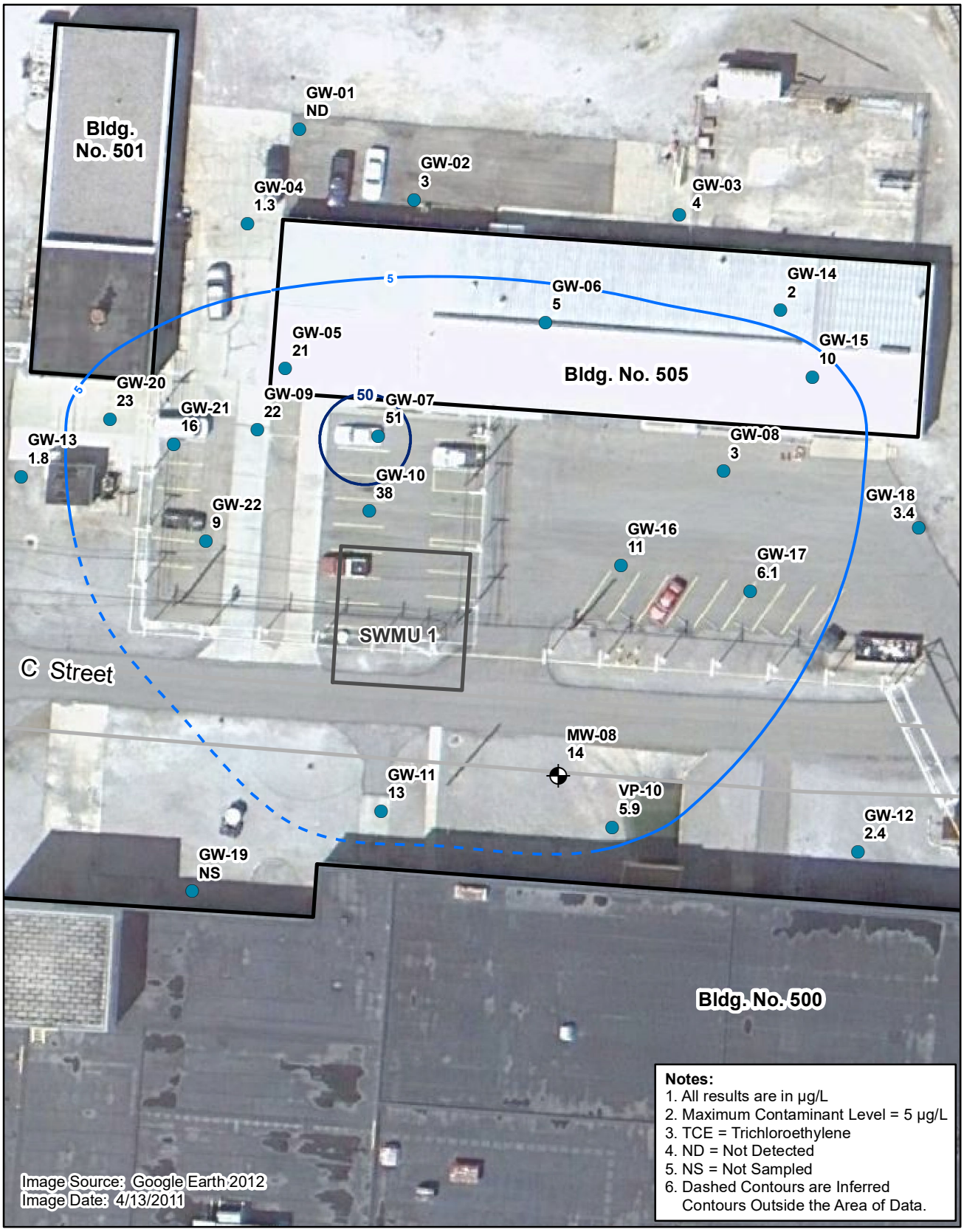

FIGURE 4-11
SWMU 1 Groundwater Grab TCE Results
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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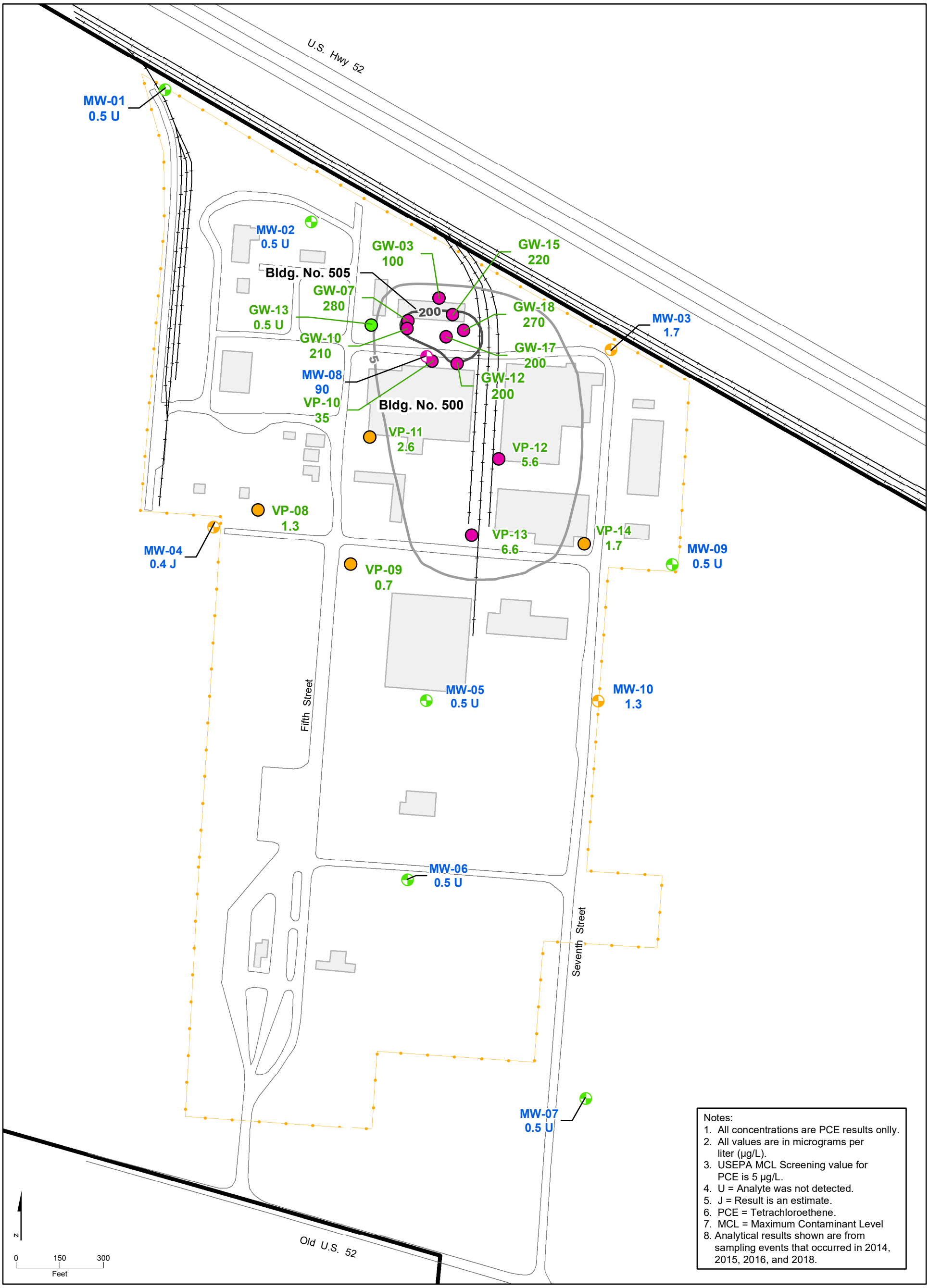

Notes:
1. All concentrations are PCE results onlly.
2. All values are in micrograms per liter (µg/L).
3. USEPA MCL Screening value for PCE is 5 µg/L.
4. U = Analyte was not detected.
5. J = Result is an estimate.
6. PCE = Tetrachloroethene.
7. MCL = Maximum Contaminant Level
8. Analytical results shown are from sampling events that occurred in 2014, 2015, 2016, and 2018.

LEGEND

- Approximate Site Boundary
- Building
- Railroad
- Fence
- Edge of Road
- Groundwater Grab Location with No Detections
- Groundwater Grab Location with Detections Below MCLs
- Groundwater Grab Location with Detections Above MCLs
- Monitoring Well with No Detections
- Monitoring Well with Detections Below MCLs
- Monitoring Well with Detections Above MCLs

Tetrachloroethene Values

- 5 µg/L
- 200 µg/L

FIGURE 4-12
PCE in Groundwater Sitewide

Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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\\BROOKSIDEFILES\GIS_SHARE\ENBG\00_PROJ\D\DOW_CHEMICAL\DOW_HANGING_ROCK_404798\MAPFILES\PHASE_3_REPORT\FIG4-13_SITEWIDE_GW_PCE_RESULTS_RFI.MXD AG017958 6/24/2019 4:27:13 PM

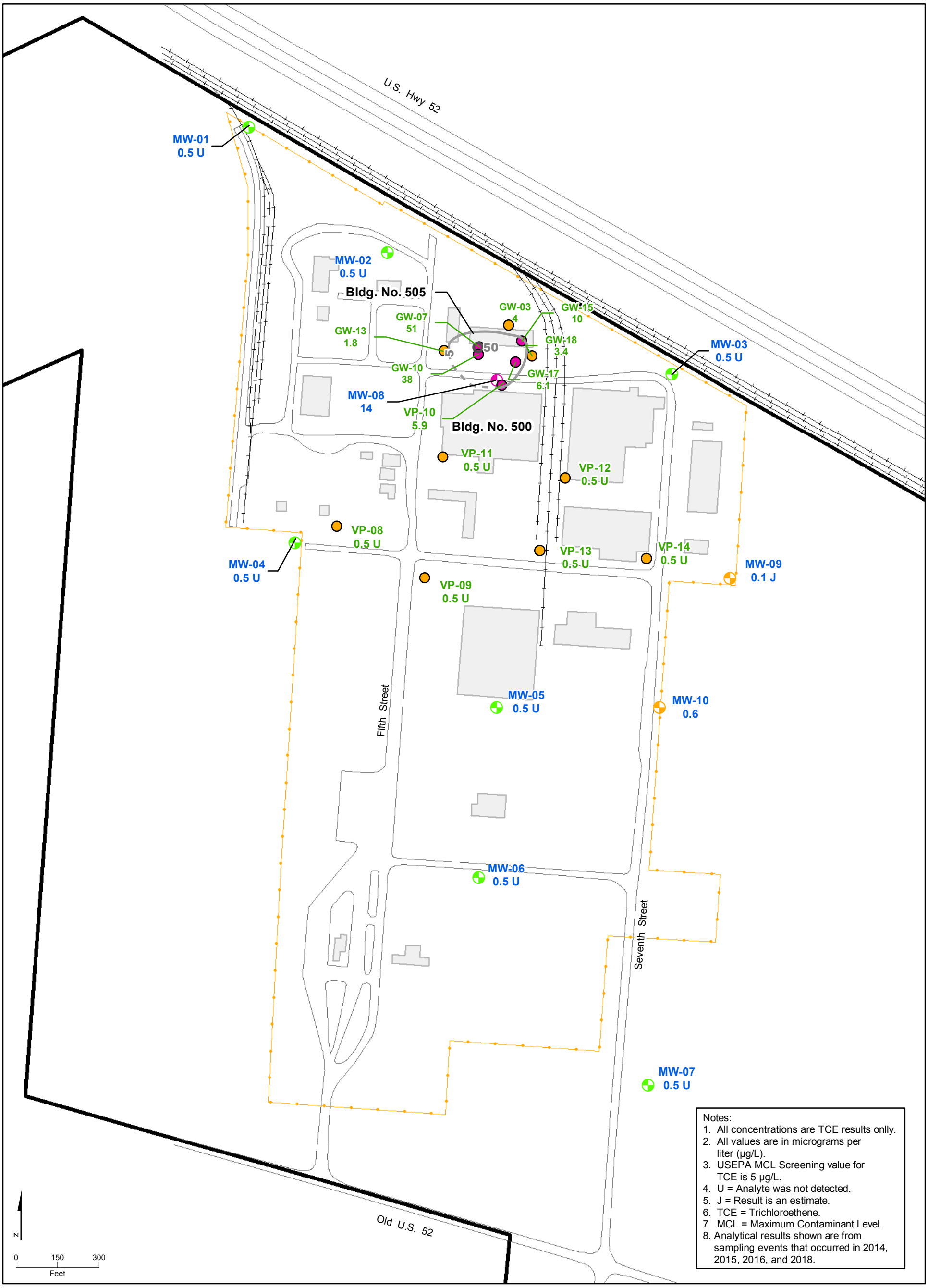

FIGURE 4-13
TCE in Groundwater Sitewide
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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A

A'

BLDG 505

SS-33/GW-21
SG-19
SS-23/GW-05
SS-24
SS-25/GW-06
SS-37/GW-15
SS-38

0
5
10
15
20
25
30

1,100
78,000
1,400
250
57
2
65
210
45
79
50
93
49
13
30
29
25
77
58
35,000
220
120

LEGEND

- CLAY
- SILT
- SAND
- SANDY GRAVEL
- CONCRETE
- PERCHED SATURATED ZONE
- APPROX. WATER TABLE
- SOIL GAS SAMPLE SCREEN
- SOIL SAMPLE INTERVAL
- GROUNDWATER SAMPLE INTERVAL (TEMPORARY SCREEN)
- 78,000 SOIL GAS SAMPLE µg/m³
- 250 SOIL SAMPLE PCE µg/kg
- 57 GROUNDWATER SAMPLE PCE µg/L

Figure 4-14
SWMU 1 Vertical Profile PCE Results Cross-Section A - A'
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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PW | DEN001 | DOCUMENTS - DEN1 WBG IMPERIAL SF | DESIGNS - SMALL PROJECTS | 693874 - DOW HANGING ROCK | DLV | F05_693874.dgn

B

B'

BLDG 505

SS-34
SG-16
SS-17/GW-01
SG-07
SS-18
SS-24
SG-03
SS-26/GW-07
SS-29/GW-10
SS-02
SS-05
SS-08
SS-15
SG-14
SG-06
SS-31/
GW-11

0
5
10
15
20
25
30

6
314,000
3
ND
12
5.8
253,000
39
18
37
7
50
62,000
93
39
ND
2,200
280
3
1,600
55
23
?
320
140
210
3
4
5
1
20
4
70
97
2
9
65,600
22
180,000
46
?
9
50
880
6,700
62

LEGEND

- CLAY
- SILT
- SAND
- SANDY GRAVEL
- CONCRETE
- ASPHALT
- PERCHED SATURATED ZONE
- APPROX. WATER TABLE
- SOIL GAS SAMPLE SCREEN
- SOIL SAMPLE INTERVAL
- GROUNDWATER SAMPLE INTERVAL (TEMPORARY SCREEN)
- 314,000 SOIL GAS SAMPLE µg/m³
- 12 SOIL SAMPLE PCE µg/kg
- 37 GROUNDWATER SAMPLE PCE µg/L

Figure 4-15
SWMU 1 Vertical Profile PCE Results
Cross Section B-B'
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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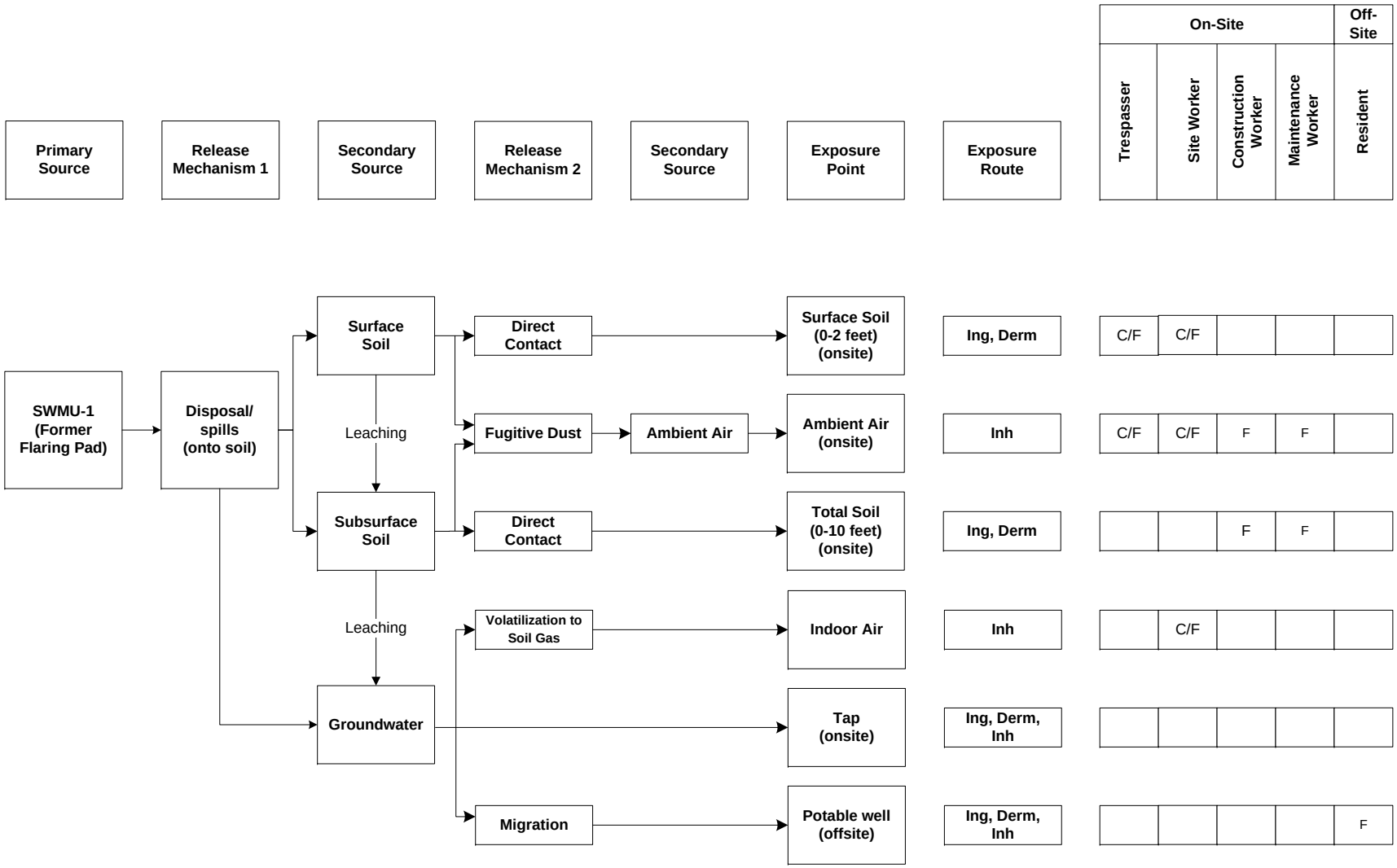
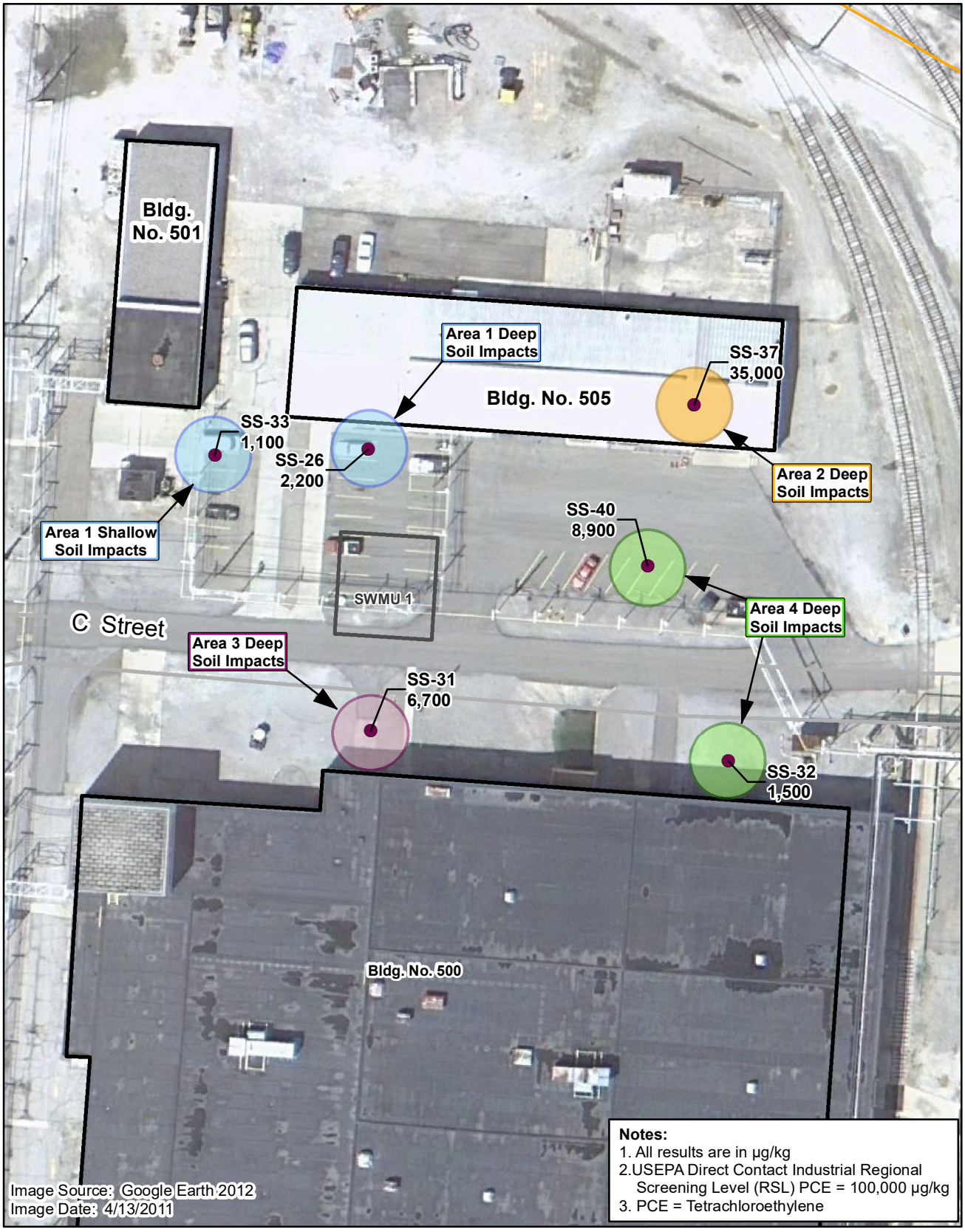


Figure 5-1
SWMU-1 Conceptual Exposure Model
Dow Hanging Rock Phase 3 RFI
Ironton, Ohio



LEGEND

- Soil Sample Location
- Edge of Road
- Building
- SWMU

Soil Impact Area:

- Area 1
- Area 2
- Area 3
- Area 4

N

0 30 60

Feet

Figure 6-1
Generalized Areas of Higher Soil PCE Concentrations
Dow Hanging Rock Phase 3 RFI Report
Ironton, Ohio

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Appendix A
Dow Hanging Rock Facility Potential Vapor Intrusion Investigation Summary Technical Memorandum, CH2M, October 2017

CH2M
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Mr. Gregory Rudloff
United States Environmental Protection Agency
Region 5
77 W. Jackson Blvd. LU-9J
Chicago, IL 60604

October 23, 2017

Subject: Submittal of Dow Hanging Rock Facility Potential Vapor Intrusion Investigation Summary Technical Memorandum for The Dow Chemical Company, Hanging Rock Plant, Ironton, OH, EPA ID# OHR 000 157 727 and OHD 039 128 913

Dear Mr. Rudloff,

On behalf of Mr. Timothy King of The Dow Chemical Company (Dow), CH2M is pleased to submit for your review the above referenced document for the Dow Hanging Rock Plant located in Ironton, Ohio. This document details the Phase 3 RCRA Facility Investigation (RFI) field activities completed in August and September 2017.

Please contact me at (513) 673-2201 or Mr. King at (304) 747-3763 should you have any questions during your review.

Sincerely,
CH2M

Marie W. Chiller
Site Manager

Attachment

cc: Timothy King/The Dow Chemical Company

Dow Hanging Rock Facility Potential Vapor Intrusion Investigation Summary Technical Memorandum

PREPARED FOR:	The Dow Chemical Company
PREPARED BY:	CH2M HILL
DATE:	October 2017
SITE NAME:	The Dow Chemical Company Hanging Rock Plant 925 County Road 1A Ironton, Ohio

Introduction

A vapor intrusion (VI) investigation was conducted to address volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) detected in soil and groundwater near Solid Waste Management Unit (SWMU) 1 at The Dow Chemical Company's (Dow) Hanging Rock Plant in Ironton, Ohio (Figure 1). Soil and groundwater at SWMU 1 were investigated during the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Phases 1 and 2. Phase 1 (soil) and Phase 2 (soil and groundwater) investigations results can be found in the RFI Reports (CH2M 2014; CH2M 2017).

Based on the results of the RFI Phases 1 and 2 soil and groundwater sampling, CH2M HILL (CH2M) collected exterior soil gas samples in August 2017 to evaluate the potential for VI – the migration of VOCs from the subsurface into buildings in proximity to SWMU 1. Based on the exterior soil gas sampling results, Dow proceeded with the next step of VI investigations. CH2M collected subslab soil gas, indoor air, and ambient air samples in September 2017 from Building 505, an office building north of SWMU 1, Building 500, a warehouse building that lies to the south, and Building 501, a maintenance shop located to the northwest (Figure 1). These buildings were the focus of the VI investigation.

SWMU 1 is a former flaring concrete pad holding a waste burning tank. Waste was burned in a tank using an aspiration system. Byproducts from the Styrofoam process containing styrene, partially polymerized polystyrene, and ethylbenzene were burned on the flaring pad. The pad was drained to the process sewer in that area of the site. The flaring pad reportedly operated from 1957 through 1968.

Phase 1 and Phase 2 Summary Results

Details of the RFI Phase 1 and 2 results have been provided in the RFI Phase 1 (CH2M 2014) and RFI Phase 2 (CH2M 2017) reports. In summary, several VOCs and SVOCs were detected in soil and several VOCs were detected in groundwater within and surrounding SWMU 1. Figure 2 shows the RFI soil and groundwater sampling locations. Soil detections were below the United States Environmental Protection Agency's (USEPA's) established industrial soil direct contact Regional Screening Levels (RSLs). Tetrachloroethene (PCE) and trichloroethene (TCE) were detected above the USEPA-established maximum contaminant levels (MCLs). PCE and TCE were also detected in several downgradient groundwater monitoring wells south and east of Building 500.

Based on these investigation findings, the Phase 2 RFI recommended a Phase 3 investigation to evaluate the VI potential to the buildings surrounding SWMU 1.

Field Investigation Summary

As discussed above, VI-related field sampling was conducted by CH2M in two stages and in accordance with recommendations provided by USEPA's VI guidance (USEPA 2015).

The following samples were collected in August 2017:

- 6 exterior soil gas samples, plus 1 field duplicate sample.

The following samples were collected in September 2017:

- 21 subslab soil gas samples
  - 8 sampling locations within Building 500
  - 3 sampling locations within Building 501 plus 1 field duplicate sample
  - 8 sampling locations within Building 505 plus 1 field duplicate sample
- 12 indoor air samples
  - 4 sampling locations within Building 500
  - 1 sampling location within Building 501 plus 1 field duplicate sample
  - 5 sampling locations within Building 505 plus 1 field duplicate sample
- 1 ambient (outdoor) air sample

Figure 2 presents the soil, groundwater, and VI investigation sampling locations. The August 2017 investigation was conducted in accordance with the Draft RCRA Facility Investigation Phase 3 Work Plan (Phase 3 Work Plan) (CH2M 2016). The following sections highlight the field sampling details for the first and second stages of the investigation. Attachment 1 provides the field forms.

Utility Locate

Prior to intrusive activities, the utilities at each exterior soil gas sampling location were cleared by a private utility locate service.

Exterior Soil Gas Probe Installation and Sampling

Six exterior soil gas probes were installed along the southwest side of Building 505 and the north side of Building 500 in shallow soil gas to delineate soil gas target analyte extent in proximity to SWMU 1 and the surrounding buildings (Figure 2). Due to the presence of an asphalt cover at the sampling locations, soil gas samples were collected from the 3 to 5 feet below ground surface [bgs] depth. This depth was chosen to avoid potential dilution with ambient air.

The soil gas probes were installed using a direct-push technology (DPT) drill rig. The probes were given at least 48 hours from installation to equilibrate before leak checking. Helium leak-checks were performed at each probe to ensure correct installation and the absence of a direct connection between the soil gas sample inlet and ambient air. Exterior soil gas samples were collected over 5 minutes in 1-liter evacuated stainless steel canisters. Following sample collection, the exterior soil gas probes were removed and the boreholes were abandoned and restored to previous conditions.

Soil gas samples were submitted for laboratory analysis of target analytes benzene, bromoform, ethylbenzene, naphthalene, PCE, and TCE by USEPA Method TO-15. The Draft Phase 3 RFI Work Plan (CH2M 2016) recommended these target analytes based on concentrations found in SWMU 1 soil and groundwater during the previous investigations and their volatilization potential.

Building Surveys

The results of the exterior soil gas sampling, discussed below, led to a second investigation stage in September 2017 involving subslab soil gas, indoor air, and ambient air sampling. Prior to conducting

interior sampling, visual building surveys and discussions with onsite staff were conducted in Building 500, 501, and 505 to document building characteristics and potentially identify information relevant to the VI pathway. The completed building survey forms for Buildings 500, 501, and 505 are presented in Attachment 2.

Subslab Soil Gas Probe Installation and Sampling

Nineteen subslab soil gas probes were installed in Buildings 500 (eight samples), 501 (three samples), and 505 (eight samples) at the locations shown in Figure 2 to delineate the extent of the target analytes in soil gas underneath the building concrete slabs. Soil gas probes were installed by drilling through the concrete slab and installing Cox Colvin VAPOR PINS® flush with the slab. Following installation, a water dam leak-check was performed for each probe to ensure correct installation and the absence of a direct connection between the soil gas sample inlet and ambient air. Subslab soil gas samples were collected in 1-liter evacuated stainless steel canisters equipped with 5-minute flow controllers. Following sample collection, the VAPOR PINS® were left in place and VAPOR PIN® caps and covers were installed to close and protect the probes. In Building 505, the carpet was rolled back into place.

The subslab soil gas samples were submitted for laboratory analysis of target analytes of benzene, 1,1-dichloroethene (1,1-DCE), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), *trans*-1,2-dichloroethene (*trans*-1,2-DCE), vinyl chloride, TCE, and PCE by USEPA Method TO-15. The soil gas target analyte list from the Draft Phase 3 RFI Work Plan (CH2M 2016) was revised based on the detections in exterior soil gas. Analytes not detected in exterior soil gas (bromoform, ethylbenzene, and naphthalene) were removed and TCE and PCE degradation daughter products (1,1-DCE, *cis*-1,2-DCE, *trans*-1,2-DCE, and vinyl chloride) were added.

Indoor and Ambient Air Sampling

Indoor air samples were collected in Building 500 (four samples), Building 501 (one sample), and Building 505 (five samples) at the locations shown in Figure 2 to delineate target analyte extent in building air. The indoor air samples were collected throughout the buildings using 6-liter evacuated stainless steel canisters equipped with 8-hour flow controllers. The outdoor ambient air sample was collected by placing the canister outside of the buildings for the 8-hour period. Indoor and ambient air samples were submitted for laboratory analysis of benzene, 1,1-DCE, *cis*-1,2-DCE, *trans*-1,2-DCE, vinyl chloride, TCE, and PCE by USEPA Method TO-15.

Data Evaluation

Sampling results from the two stages of the VI investigation were compared to USEPA risk-based screening levels to assess the potential for VI being a complete and significant pathway and requiring further investigation or action.

Exterior and subslab soil gas analytical results were compared to USEPA's commercial soil gas vapor intrusion screening levels (VISLs), which were obtained using USEPA's VISL Calculator (USEPA 2016a). VISLs are used to assess the potential for VI to be a concern requiring further investigation and are derived using industrial indoor air RSLs [USEPA, 2016b] that are based on a target carcinogenic risk (TCR) of 10^{-5} or a target hazard quotient (THQ) for non-carcinogens (THQ) of 1, whichever is lowest between the cancer and non-cancer values. Soil gas VISLs are derived in the VISL Calculator by dividing the RSL by the generic soil-gas-to-indoor-air attenuation factor of 0.03. The comparisons of exterior and subslab soil gas analytical results to the corresponding soil gas VISLs are presented in Tables 1 and 2, respectively.

Indoor air analytical results were compared to USEPA's industrial VISLs for indoor air (USEPA 2016b) and are presented at a TCR of 10^{-5} or a THQ of 1, whichever is lowest. The indoor air VISLs are based on the industrial indoor air RSLs (USEPA 2016b). The comparison of indoor air analytical results to the corresponding indoor air VISLs is presented in Table 3.

Exterior Soil Gas Sampling Results

Three of the target analytes, benzene, TCE, and PCE, were detected in exterior soil gas above the soil gas VISLs (Table 1). Bromoform, ethylbenzene, and naphthalene were not detected. Benzene was detected at one location (SG01) at a concentration of 1,000 micrograms per cubic meter (µg/m^3), which exceeds the 520-µg/m^3 VISL. The highest PCE concentration was 180,000 µg/m^3 at SG06, which exceeds the 5,800-µg/m^3 VISL. The highest TCE concentration was 12,000 µg/m^3 at SG01 which exceeds the 290-µg/m^3 VISL.

The magnitude of the PCE and TCE detected concentrations in exterior soil gas and surface/subsurface soil samples are shown in Figures 3 and 4, respectively. The location markers increase in size and saturation to depict the lowest to the highest detected concentration locations. These figures show the distribution of elevated soil gas and surface/subsurface soil concentrations relative to SWMU 1.

The Phase 3 Work Plan (CH2M 2016) stated the following Data Quality Objectives:

- If soil gas concentrations are less than applicable soil gas-to-indoor air VISLs, assuming a target risk for carcinogens (TCR) of 10^{-5} or a target hazard quotient for non-carcinogens (THQ) of 1 in samples collected in SWMU 1, no additional investigations will be performed at this site.
- If soil gas concentrations are greater than applicable VISLs, assuming a TCR of 10^{-5} or a THQ of 1, in samples collected in SWMU 1, additional sampling will be considered. In addition, the cumulative risk associated with multiple chemicals will be evaluated.

Due to the benzene, TCE, and PCE exceedances detected in exterior soil gas, Dow proceeded with subslab soil gas and indoor air sampling in Buildings 500, 501, and 505 to further evaluate the VI potential. Cumulative risks were not calculated because there were individual VISLs exceedances and Dow proceeded with additional sampling.

Subslab Soil Gas Sampling Results

All seven of the target analytes, benzene, 1,1-DCE, *cis*-1,2-DCE, *trans*-1,2-DCE, vinyl chloride, TCE, and PCE, were detected in subslab soil gas (Table 2). However, only detections of PCE and TCE exceeded the VISLs. The highest PCE concentration was 296,000 µg/m^3 at B505-V15, which exceeds the 5,800-µg/m^3 VISL. The highest TCE concentration was 24,500 µg/m^3 at B505-V15, which exceeds the 290-µg/m^3 VISL. Exceedances of soil gas VISLs for TCE and PCE varied by building.

In summary:

- Building 500: PCE was detected in exceedance of the soil gas VISL at three locations. TCE was not detected above the soil gas VISL.
- Building 501: Neither PCE nor TCE was detected above the soil gas VISLs.
- Building 505: PCE was detected in exceedance of the soil gas VISL at seven locations. TCE was detected in exceedance of the soil gas VISL at three locations.

The magnitudes of the subslab soil gas PCE and TCE detected concentrations are shown in Figures 5 and 6, respectively. The location markers increase in size and saturation to depict the lowest to the highest detected concentration locations. These figures show the distribution of elevated soil gas concentrations beneath the buildings.

Indoor Air Sampling Results

Benzene, *cis*-1,2-DCE, *trans*-1,2-DCE, vinyl chloride, TCE, and PCE were detected in indoor air at Buildings 500, 501, and 505; however, 1,1-DCE was not detected (Table 3). PCE was the only compound that exceeded VISLs, and it was only exceeded in Building 505. PCE was detected at concentrations above

the 175-µg/m^3 VISL at all five sample locations within Building 505. The highest PCE concentration was 326 µg/m^3 at B505-IA06.

Indoor air sampling locations where PCE concentrations exceed VISLs are highlighted with bold outer lines on Figure 5.

Ambient Air Sampling Results

During collection of the indoor air samples, one ambient air canister located on the southeast side of Building 500 also collected air samples (Figure 2). Benzene and PCE were detected at estimated (J-flag) concentrations in the outdoor ambient air sample. 1,1-DCE, *cis*-1,2-DCE, *trans*-1,2-DCE, vinyl chloride, and TCE were not detected. An outdoor chlorinated VOC source is not indicated based on the low or non-detect concentrations detected in ambient air sample (HGR-OA01; Table 3). The levels of benzene in indoor air versus outdoor air suggests a potential ambient source of benzene.

Building Survey Findings

The following general information was noted during the building surveys:

- Building 500
  - Use: unoccupied industrial warehouse used to store forklifts and Styrofoam
  - Construction: cinder block and metal construction on a concrete slab. Approximately 82,000 square feet (ft^2).
  - Floors: northeastern area has three floors; the rest of the building is one floor.
  - VOC Potential Sources: paints, construction vehicles, general machinery, and Styrofoam storage
  - Other notes: Building has high ceilings and is well ventilated
- Building 501
  - Use: occupied industrial warehouse and maintenance building used for equipment storage and maintenance
  - Construction: cinder block on a concrete slab. Approximately 4,800 ft^2.
  - Floors: one floor
  - VOC Potential Sources: spray paint and engine oils storage
  - Other notes:
    - Three floor drains – two in forklift shop located in the building's southern area and one in the tools repair and storage area located in the building's northern area.
    - One pipe cleanout was observed in the eastern wall in the break room.
    - Warehouse rolling door is typically kept open when the building is occupied.
- Building 505
  - Use:
    - Occupied office building
    - Maintenance/storage room in the building's eastern section used for tools and materials storage and equipment maintenance.
    - Outside storage area off the maintenance/storage room's north wall
  - Construction: cinder block and metal block on a concrete slab. The office area floors are vinyl tile or carpet. Approximately 9,300 ft^2.
  - Floors: one floor
  - VOC Potential Sources: oil, gasoline cans, and brake fluid storage; forklift storage
  - Other notes:
    - The maintenance/storage room was built approximately in the 1970s. The office area was added to the building approximately in the early 1990s.

- Storm drains are outside along the building's southern perimeter.

Summary

PCE and TCE had the highest VISL exceedance concentrations and greatest extent in exterior and subslab soil gas. Based on the range of PCE and TCE concentrations shown on Figures 3 through 6, the highest concentrations were found in the southwest corner of Building 505.

VISL PCE exceedances were found in seven of the eight subslab locations and all five indoor air locations sampled within Building 505. VISL PCE exceedances were also found in subslab locations along the northern extent of Building 500. VISL TCE exceedances were found three subslab locations along the southern extent of Building 505. There were no exceedances of TCE in indoor air.

The exterior and subslab soil gas investigation results indicate that a PCE source, and to a lesser extent TCE, representing a potential VI concern may be present near Building 505 and Building 500's northern extent that may be unrelated to SWMU 1. Based on the limited detections and no exceedances of VISLs in the subslab soil gas samples under Building 501, no source representing a potential VI concern is indicated.

The VI pathways at Buildings 500 and 501 are likely incomplete under current conditions because indoor air concentrations were below VISLs. The combined exterior and subslab soil gas and the indoor air analytical results indicate the VI pathway may be complete at Building 505.

Based on the investigation results, it is inconclusive that SWMU 1 is the source. Further investigation is recommended to delineate the source area.

Recommended Next Steps

Based on the results of this VI investigation, the following additional investigation steps are recommended:

- Further delineate TCE and PCE in the subsurface soil and groundwater to identify the source area
- Measure and characterize indoor air concentrations using a HAPSITE®
- Collect additional indoor air and subslab soil gas sample; some sample locations will be focused in the northern portion of Building 500 to assess temporal variability of the PCE concentrations in subslab soil gas
- Conduct a building survey to evaluate impacts from building use

CH2M will prepare a work plan for the recommended additional investigation.

References Cited

CH2M HILL (CH2M). 2014. *Final RCRA Facility Investigation Phase 1 Report, Dow Hanging Rock Facility, Ironton, Ohio*. USEPA ID OHD 039 128 913. September.

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U.S. Environmental Protection Agency (USEPA). 2016a. *Vapor Intrusion Screening Level (VISL) Calculator, Version 3.5.1, May 2016a RSLs*. May.

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Tables

Table 1. August 2017 Exterior Soil Gas Analytical Results Compared to Vapor Intrusion Screening Levels

Vapor Intrusion Investigation Summary, Dow Hanging Rock, Ironton, Ohio

Analyte	Unit	Soil Gas VISL[a]	Building 505								Building 500			
			Exterior Soil Gas											
			S01-SG01-081717		S01-SG02-081717		S01-SG03-081717		S01-SG04-081717		S01-SG05-081717		S01-SG05-081717 Duplicate		S01-SG06-081717	
Benzene	µg/m³	520	**1,000**	=	550	U	210	U	140	U	150	U	150	U	1,000	U
Bromoform	µg/m³	3,700	1,500	U	1,800	U	680	U	450	U	500	U	500	U	3,300	U
Ethylbenzene	µg/m³	1,600	620	U	750	U	290	U	190	U	210	U	210	U	1,400	U
Naphthalene	µg/m³	120	1,500	U	1,800	U	690	U	460	U	500	U	500	U	3,300	U
Tetrachloroethene	µg/m³	5,800	**55,000**	=	**100,000**	=	**62,000**	=	**31,000**	=	**37,000**	=	**37,000**	=	**180,000**	=
Trichloroethene	µg/m³	290	**12,000**	=	**5,800**	=	**2,000**	=	**430**	=	260	=	260	U	1,700	U

Table 2. September 2017 Subslab Soil Gas Analytical Results Compared to Vapor Intrusion Screening Levels

Vapor Intrusion Investigation Summary, Dow Hanging Rock, Ironton, Ohio

Analyte	Unit	Soil Gas VISL[a]	Building 500														Building 501								Building 505																	
			Subslab Soil Gas																																									
			S01-B500-SV01-090717		S01-B500-SV02-090717		S01-B500-SV03-090717		S01-B500-SV04-090717		S01-B500-SV05-090717		S01-B500-SV06-090717		S01-B500-SV07-090717		S01-B500-SV08-090717		S01-B501-SV09-090817		S01-B501-SV10-090817		S01-HGR--090817-FD04 Duplicate		S01-B501-SV11-090817		S01-B505-SV12-090817		S01-B505-SV13-090717		S01-B505-SV14-090817		S01-B505-SV15-090817		S01-B505-SV15-090817 Duplicate		S01-B505-SV16-090817		S01-B505-SV17-090717		S01-B505-SV18-090817		S01-B505-SV19-090817	
Benzene	µg/m³	520	15.3	=	2.21	U	17.8	U	4.98	J	3.74	=	2.58	J	1.11	J	2.4	=	4.38	U	4.09	U	4.31	U	1.19	J	8.72	U	35.1	U	43.4	U	110	U	113	U	3.45	=	4.34	U	21.7	U	44.1	U
Tetrachloroethylene	µg/m³	5,800	4570	=	**5,910**	=	**38,800**	=	**12,700**	=	278	=	4,540	=	172	=	807	=	142	=	290	=	271	=	406	=	**24,500**	=	**64,600**	=	**98,300**	=	**295,000**	=	**296,000**	=	766	=	**13,100**	=	**53,000**	=	**158,000**	=
Trichloroethylene	µg/m³	290	135	=	4.91	U	217	=	12.6	J	0.957	U	4.9	U	0.973	U	41.1	=	232	=	45.1	=	43.8	=	27.1	=	**1,680**	=	176	J	**4,410**	=	**23,500**	=	**24,500**	=	39.7	=	18.8	J	100	J	98.3	U
Dichloroethylene, 1,1-	µg/m³	29,200	2.85	U	2.89	U	23.3	U	5.39	U	0.563	U	2.88	U	0.575	U	0.575	U	5.71	U	5.35	U	5.63	U	0.908	J	11.4	U	46	U	56.7	U	213	J	230	J	8.21	=	5.67	U	28.3	U	57.9	U
Dichloroethylene, 1,2-cis-	µg/m³	NA	36.4	=	2.99	U	24.1	U	5.59	U	0.587	U	2.99	U	0.595	U	20.3	=	5.95	U	6.42	J	5.83	U	2.78	=	81.3	=	47.6	U	58.7	U	4,360	=	4,440	=	12.1	=	5.87	U	29.4	U	59.9	U
Dichloroethylene, 1,2-trans-	µg/m³	NA	3.72	U	3.77	U	30.4	U	7.06	U	0.737	U	3.76	U	0.749	U	2.06	=	7.49	U	6.98	U	7.37	U	0.737	U	129	=	60.3	U	74.1	U	188	U	193	U	1.42	J	7.41	U	37.1	U	75.7	U
Vinyl chloride	µg/m³	930	1.28	U	1.3	U	10.4	U	2.43	U	0.253	U	1.29	U	0.258	U	0.258	U	2.56	U	2.4	U	2.53	U	0.254	U	5.14	U	20.6	U	25.4	U	64.4	U	66.2	U	2.22	=	2.55	U	12.7	U	26.1	U

Table 3. September 2017 Outdoor and Indoor Air Analytical Results Compared to Vapor Intrusion Screening Levels

Vapor Intrusion Investigation Summary, Dow Hanging Rock, Ironton, Ohio

Analyte	Unit	Indoor Air VISL[a]		Building 500								Building 501				Building 505															
			Outdoor Air	*Indoor Air*																											
			S01-HGR-OA01-090817		S01-B500- IA01-090817		S01-B500- IA02-090817		S01-B500- IA03-090817		S01-B500- IA04-090817		S01-B501- IA05-090817		S01-HGR-090817-FD01 Duplicate		S01-B505- IA06-090817		S01-B505- IA07-090817		S01-B505- IA08-090817		S01-B505- IA09-090817		S01-HGR-090817-FD02 Duplicate		S01-B505- IA10-090817	
Benzene	µg/m³	16	0.182	J	0.243	J	0.265	J	0.24	J	0.233	J	0.316	J	0.323	=	0.725	=	0.569	=	0.549	=	0.649	=	0.642	=	0.821	=
Tetrachloroethylene	µg/m³	175	0.068	J	1.36	=	1.07	=	0.325	=	0.502	=	5.85	=	5.8	=	**326**	=	**220**	=	**197**	=	**268**	=	**262**	=	**324**	=
Trichloroethylene	µg/m³	9	0.038	U	0.07	J	0.059	J	0.446	=	0.129	=	0.134	=	0.134	=	1.04	=	0.451	=	0.403	=	0.543	=	0.527	=	1	=
Dichloroethylene, 1,1-	µg/m³	876	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U
Dichloroethylene, 1,2-cis-	µg/m³	NA	0.026	U	0.026	U	0.026	U	0.026	U	0.026	U	0.222	=	0.206	=	0.079	=	0.06	J	0.052	J	0.067	J	0.071	J	0.099	=
Dichloroethylene, 1,2-trans-	µg/m³	NA	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U	0.024	U	0.024	J	0.024	J	0.024	U	0.028	J	0.024	U	0.024	J
Vinyl Chloride	µg/m³	28	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.041	J	0.033	J	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U

Notes:

a : VISL is a risk-based screening level derived from the lowest of the cancer-based (TCR = 1 x 10-5) or the noncancer-based (THQ = 1) industrial indoor air Regional Screening Levels (RSLs) [EPA, 2016], which ever is lower and the soi-gas-to-indoor air attenuation factor of 0.03.

Bold text indicates a detection

Shading indicates a VISL exceedance

= - detected result

µg/m³ - micrograms per cubic meter

J - estimated result

N/A - not applicable

TCR - target risk for carcinogens

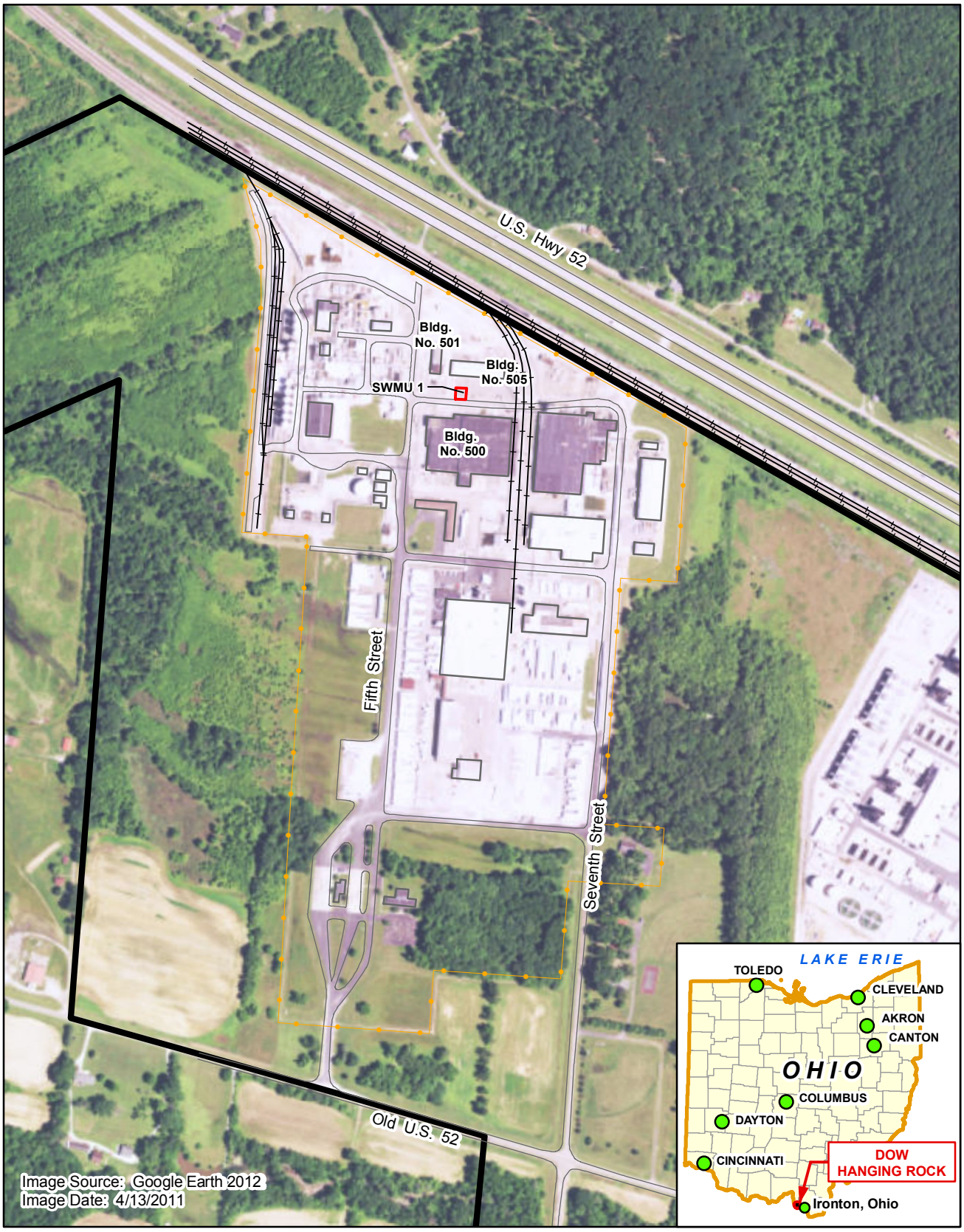
THQ - target hazard quotient for non-carcinogens

U - not detected, reporting limit shown

VISL = vapor intrusion screening level

EPA, 2016. Vapor Intrusion Screening levels (VISLs). May. https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-levels-visls

Figures



LEGEND

- Big Thief Creek
- SWMU
- Railroad
- Fence
- Edge of Road
- Building
- Approximate Site Boundary

N

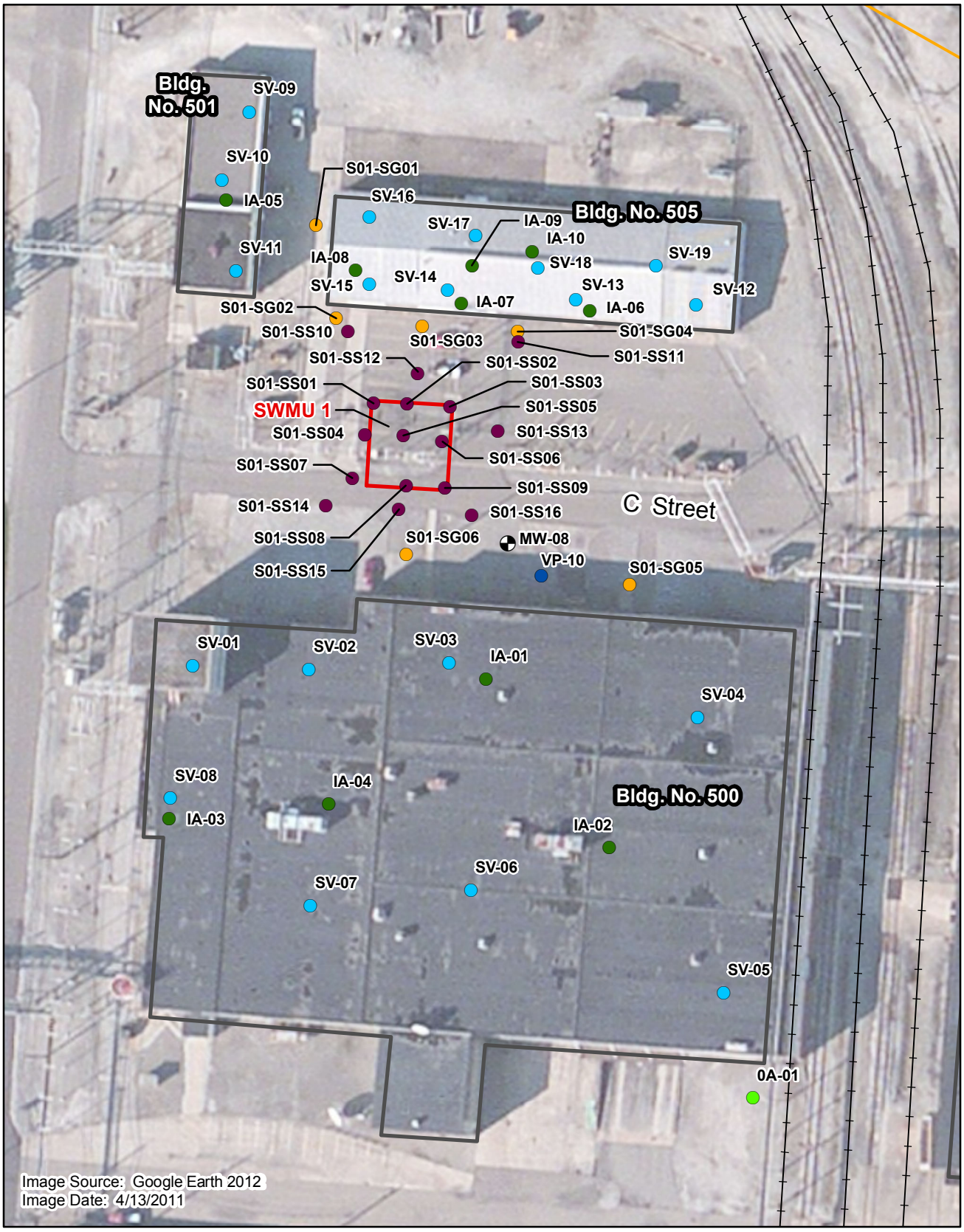
0 300 600

Feet

FIGURE 1
Facility and SWMU 1 Location
Dow Hanging Rock Facility
Ironton, Ohio

ch2m

\\canopus\Groups\GIS\00_Proj\D\DOW\Dow_Hanging_Rock_404798\MapFiles\SWMU_1_Investigation\Fig1_Location_Map.mxd



LEGEND

- Soil Boring Sample Location
- Indoor Air Sample Location
- Outdoor Air Sample Location
- Subslab Soil Gas Sample Location
- Exterior Soil Gas Sample Location
- Groundwater Grab Sample Location
- Monitoring Well
- SWMU
- Building

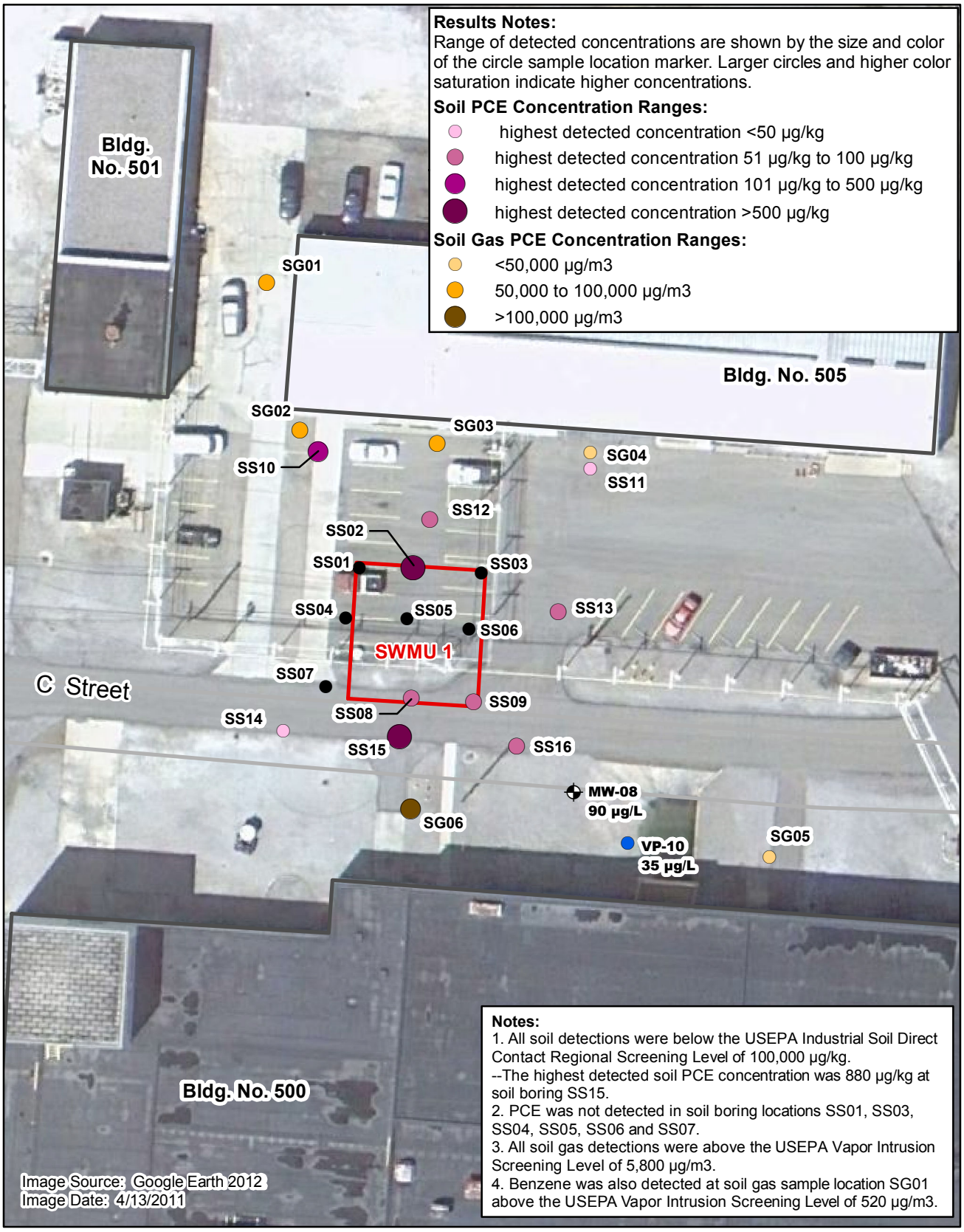
N

0 40 80
Feet

FIGURE 2
SWMU 1 Investigation Sample Locations
Dow Hanging Rock Facility
Ironton, Ohio

ch2m

\\canopus\Groups\GIS\00_Proj\D\DOW\Dow_Hanging_Rock_404798\MapFiles\SWMU_1_Investigation\Fig2_Investigation_Sampling.mxd



LEGEND

- Exterior Soil Gas Sampling Locations
- Surface and Subsurface Soil Sampling Locations
- PCE Not Detected at Sampling Locations
- Groundwater Grab Sample Location
- Monitoring Well
- Edge of Road
- Building
- SWMU

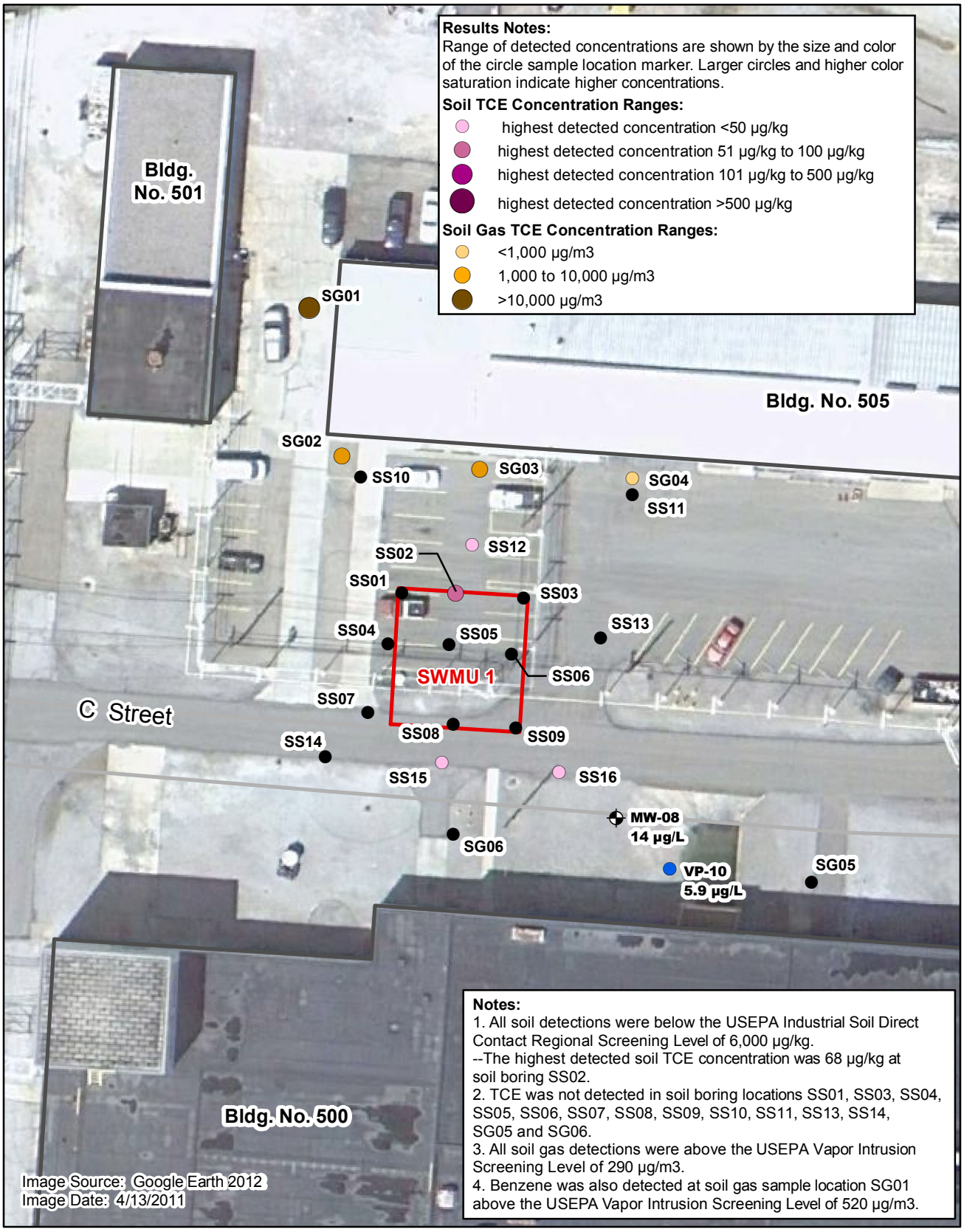
N

0 25 50
Feet

FIGURE 3
SWMU 1 Soil and Soil Gas PCE Concentration Ranges
Dow Hanging Rock Facility
Ironton, Ohio

ch2m

\\canopus\Groups\GIS\00_Proj\D\DOW\Dow_Hanging_Rock_404798\MapFiles\SWMU_1_Investigation\Fig3_SWMU_1_Soil_PCE_Results_100917.mxd



LEGEND

- Exterior Soil Gas Sampling Locations
- Surface and Subsurface Soil Sampling Locations
- TCE Not Detected at Sampling Locations
- Groundwater Grab Sample Location
- Monitoring Well
- Edge of Road
- Building
- SWMU

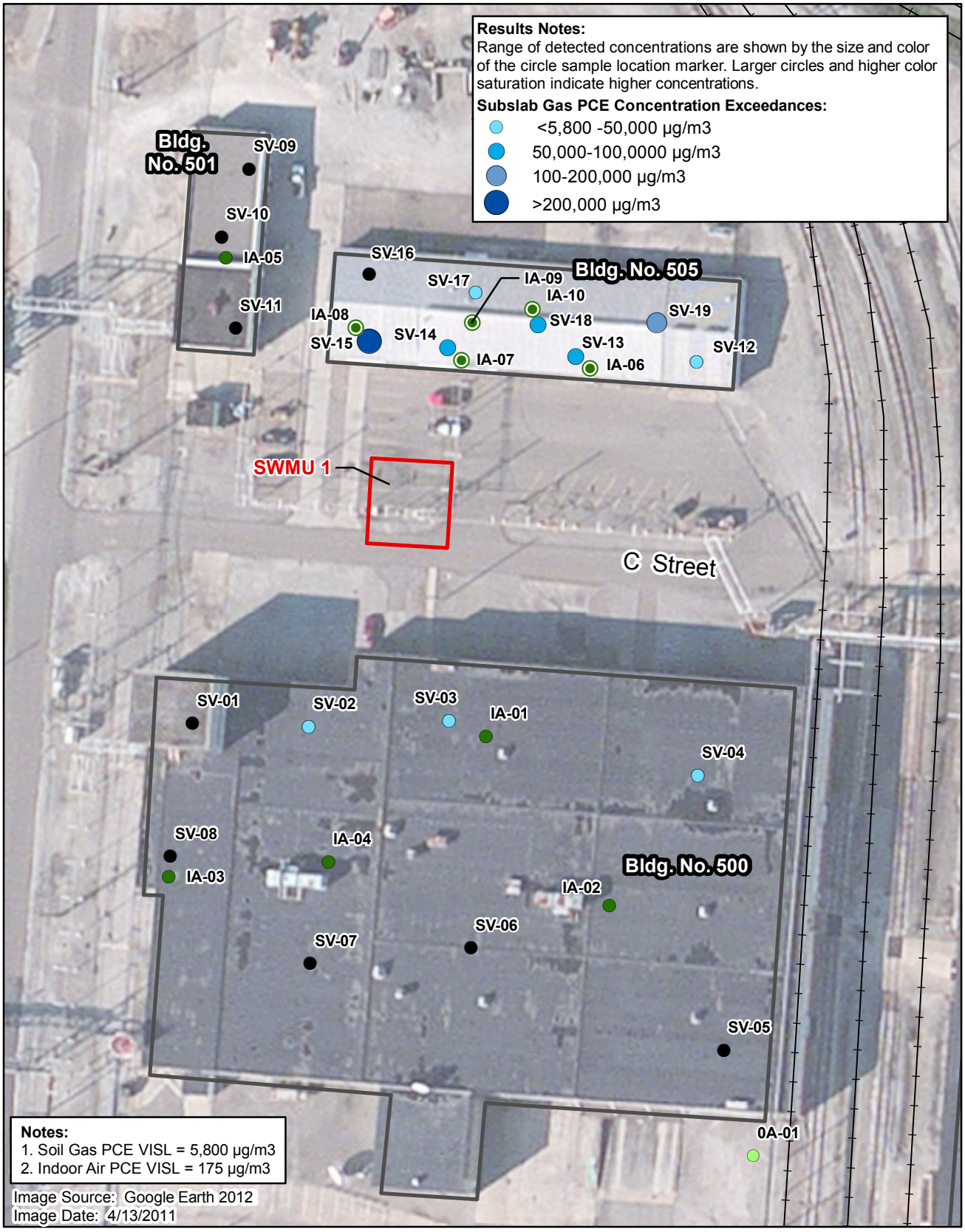
N

0 25 50
Feet

FIGURE 4
SWMU 1 Soil and Soil Gas TCE Concentration Ranges
Dow Hanging Rock Facility
Ironton, Ohio

ch2m

\\canopus\Groups\GIS\00_Proj\D\DOW\Dow_Hanging_Rock_404798\MapFiles\SWMU_1_Investigation\Fig4_SWMU_1_Soil_TCE_Results_100917.mxd



LEGEND

- Outdoor Air Sample Location
- Indoor Air Sample Location Below VISL
- Indoor Air Sample Exceeding VISL
- Subslab Soil Gas Sample Location Below VISL
- Subslab Soil Gas Sample Location Exceeding VISL
- Building
- SWMU

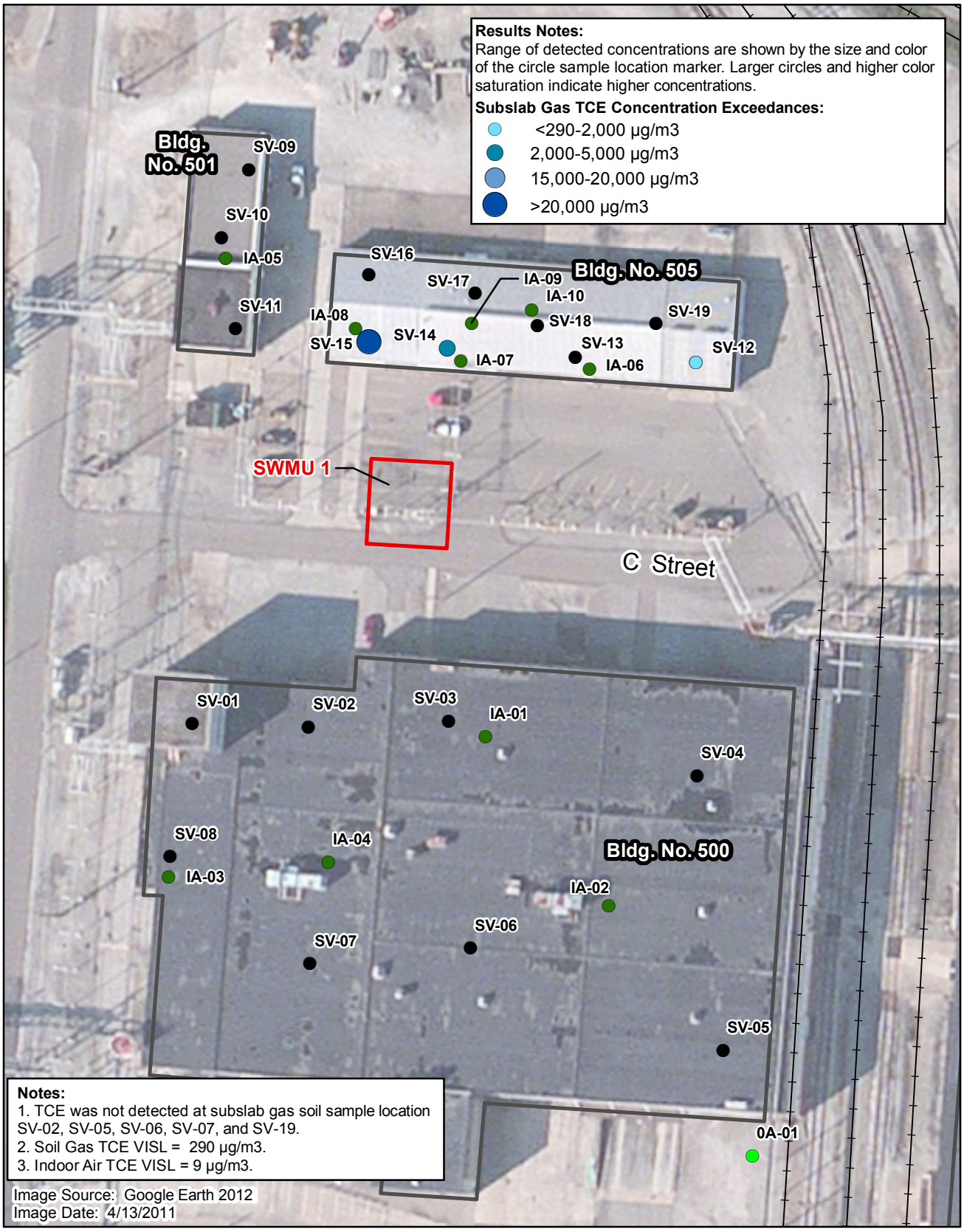
N

0 40 80
Feet

FIGURE 5
Building Subslab Soil Gas and Indoor Air PCE Concentration Ranges
Dow Hanging Rock Facility
Ironton, Ohio

ch2m

\\canopus\Groups\GIS\00_Proj\D\DOW\Dow_Hanging_Rock_404798\MapFiles\SWMU_1_Investigation\Fig5_Subslab_Soil_Gas_IA_PCE_100917.mxd



LEGEND

- Subslab Soil Gas Sample Location Below VISL
- Outdoor Air Sample Location
- Indoor Air Sample Location Below VISL
- Subslab Soil Gas Sample Location Exceeding VISL
- Building
- SWMU

N

0 40 80
Feet

FIGURE 6
Building Subslab Soil Gas and Indoor Air TCE Concentration Ranges
Dow Hanging Rock Facility
Ironton, Ohio

ch2m

\\canopus\Groups\GIS\00_Proj\D\DOW\Dow_Hanging_Rock_404798\MapFiles\SWMU_1_Investigation\Fig6_Subslab_Soil_Gas_IA_TCE_100917.mxd

Attachment 1
Field Forms

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Vapor Intrusion Best Practices
Exterior Soil Gas Probe Installation and Sampling Log - Canister Method

Project Info

Project Name: DOW- Hanging Rock
Project #: 693874
Sampler Name: B. Irish
Date: 8-17-17

Site

Identification: DOW- Hanging Rock
Address: Ironton OH
Site Information:
Describe ground cover: Concrete ~3" thick
Depth to groundwater (feet below ground surface): unknown
Describe vadose zone soil type(s): clay w/ traces of silty sand
Was a soil boring log completed? NO
Was a probe diagram completed? Yes

Soil Gas Probe Installation, Purging, Leak Checking, & Sampling Log

Sample location (describe and show in diagram)		West side of Bldg 505
Probe and Sample Identification (field ID)		SO1-SG01
Probe Installation	Date and time	8-15-17 @ 12:35
	Depth of hole drilled (feet below ground surface)	5'-2.5"
	Bottom of probe screen (feet below ground surface)	5'
	Length of probe screen (inches)	6"
	Width of probe screen (inches)	0.5"
	Dead volume - including screen, sand pack, and tubing (mL)	0.91L
1527 Manifold Leak Check	Leak check (sampling manifold) - Pass/No Pass	1532 Pass @
Probe Purge	Purge rate (mL/min)	200
	Purge start time	1536
	Purge vacuum (" Hg)	-0
	Purge completion time	1541
Helium Leak Check*	Leak check (% or ppmv helium)	Pass 0%

Field Analysis (optional)	GEM2000 - O2 (%)	2.1
	GEM2000 - CO2 (%)	4.6
	GEM2000 - CH4 (%)	00.0
	PID - Total VOCs (ppmv)	23.9
Canister Sampling	Canister ID	34001940
	Flow controller ID	7128
	Pressure gauge ID (optional)	—
	Sampling rate or period (mL/min or hours)	5 min
	Sample start date and time	8-17-17 @ 1542
	Initial canister pressure (" Hg)	-29.62
	Sampling vacuum (" Hg)	~~-4.65~~ WI 0
	Sample completion date and time	8-17-17 @ 1548
	Final canister pressure (" Hg)	-4.65

* The soil gas probe passes the helium leak check if the detected helium concentration is less than 1,000 ppm (0.1%). Do NOT collect a soil gas sample if the probe fails the helium leak test

Weather conditions during sampling:

He concentration in shroud: 88.8 %

Observations and Comments: Diff pressure: 0.008 "Hg

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Vapor Intrusion Best Practices
Exterior Soil Gas Probe Installation and Sampling Log - Canister Method

Project Info

Project Name: Dow - Hanging Rock
Project # : 693874
Sampler Name: B. Irish
Date: 8-15-17

Site

Identification: Dow- Hanging Rock
Address: Ironton, OH
Site Information:
Describe ground cover: ~~Ash~~ (VI) Asphalt
Depth to groundwater (feet below ground surface): unknown
Describe vadose zone soil type(s): clay w/ traces of silty sand
Was a soil boring log completed? NO
Was a probe diagram completed? Yes

Soil Gas Probe Installation, Purging, Leak Checking, & Sampling Log

Sample location (describe and show in diagram)		SW corner of Bldg 505
Probe and Sample Identification (field ID)		S01 - SG02
Probe Installation	Date and time	8-15-17 @ 1215
	Depth of hole drilled (feet below ground surface)	5' 2.5"
	Bottom of probe screen (feet below ground surface)	5'
	Length of probe screen (inches)	6"
	Width of probe screen (inches)	0.5"
	Dead volume - including screen, sand pack, and tubing (mL)	0.91 L
1452 Manifold Leak Check	Leak check (sampling manifold) - Pass/No Pass	14.57 @ Pass
Probe Purge	Purge rate (mL/min)	200
	Purge start time	1502
	Purge vacuum (" Hg)	0
	Purge completion time	1507
Helium Leak Check*	Leak check (% or ppmv helium)	Pass 0%

Field Analysis (optional)	GEM2000 - O2 (%)	6.8
	GEM2000 - CO2 (%)	6.1
	GEM2000 - CH4 (%)	00.0
	PID - Total VOCs (ppmv)	29.7
Canister Sampling	Canister ID	34000663
	Flow controller ID	7262
	Pressure gauge ID (optional)	—
	Sampling rate or period (mL/min or hours)	5 min
	Sample start date and time	8-17-17 @ 1508
	Initial canister pressure (" Hg)	-29.60
	Sampling vacuum (" Hg)	0
	Sample completion date and time	8-17-17 @ 1514
	Final canister pressure (" Hg)	-5.18

* The soil gas probe passes the helium leak check if the detected helium concentration is less than 1,000 ppm (0.1%). Do NOT collect a soil gas sample if the probe fails the helium leak test.

Weather conditions during sampling: 85°F mostly cloudy

Observations and Comments: Diff pressure: 0.004" Hg He concentration in shroud: 51.9

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Vapor Intrusion Best Practices
Exterior Soil Gas Probe Installation and Sampling Log - Canister Method

Project Info

Project Name: DOW - Hanging Rock
Project #: 693874
Sampler Name: B. Irwin
Date: 8-15-17

Site

Identification: DOW - Hanging Rock
Address: Ironton, OH
Site Information:
Describe ground cover: Asphalt
Depth to groundwater (feet below ground surface): unknown
Describe vadose zone soil type(s): clay w/ traces of silty sand
Was a soil boring log completed? No
Was a probe diagram completed? Yes

Soil Gas Probe Installation, Purging, Leak Checking, & Sampling Log

Sample location (describe and show in diagram)		South side of Bldg 505
Probe and Sample Identification (field ID)		SG1-SG703
Probe Installation	Date and time	8-15-17 @ 1130
	Depth of hole drilled (feet below ground surface)	5' 2.5"
	Bottom of probe screen (feet below ground surface)	5'
	Length of probe screen (inches)	6"
	Width of probe screen (inches)	0.5"
	Dead volume - including screen, sand pack, and tubing (mL)	0.91 L
Manifold Leak Check	Leak check (sampling manifold) - Pass/No Pass	Pass 1425
Probe Purge	Purge rate (mL/min)	200
	Purge start time	1433
	Purge vacuum (" Hg)	0
	Purge completion time	1438
Helium Leak Check*	Leak check (% or ppmv helium)	Pass 0%

1421

Field Analysis (optional)	GEM2000 - O2 (%)	~~0.00~~ (WI) 6.7
	GEM2000 - CO2 (%)	7.1
	GEM2000 - CH4 (%)	~~0.4~~ (WI) 0.00
	PID - Total VOCs (ppmv)	23.7
Canister Sampling	Canister ID	340008060
	Flow controller ID	8596
	Pressure gauge ID (optional)	—
	Sampling rate or period (mL/min or hours)	5 min
	Sample start date and time	8-17-17 @ 1440
	Initial canister pressure (" Hg)	-29.72
	Sampling vacuum (" Hg)	0
	Sample completion date and time	8-17-17 @ 1445
	Final canister pressure (" Hg)	-5.24

* The soil gas probe passes the helium leak check if the detected helium concentration is less than 1,000 ppm (0.1%). Do NOT collect a soil gas sample if the probe fails the helium leak test

Weather conditions during sampling: 85°, mostly cloudy

Observations and Comments: Diff pressure: 0.003 "Hg He concentration in shroud: 38.8 %

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Vapor Intrusion Best Practices
Exterior Soil Gas Probe Installation and Sampling Log - Canister Method

Project Info

Project Name: DOW - Hanging Rock Project #: 693871

Sampler Name: B. Irish Date: 8-17-17

Site

Identification: DOW - Hanging Rock

Address: Ironton, OH

Site Information:

Describe ground cover: Asphalt

Depth to groundwater (feet below ground surface): unknown

Describe vadose zone soil type(s): clay w/ traces silty sand

Was a soil boring log completed? No Was a probe diagram completed? Yes

Soil Gas Probe Installation, Purging, Leak Checking, & Sampling Log

Sample location (describe and show in diagram)		South side of Bldg 505
Probe and Sample Identification (field ID)		S01-SG04
Probe Installation	Date and time	8-15-17 @ 1052
	Depth of hole drilled (feet below ground surface)	5' 2.5"
	Bottom of probe screen (feet below ground surface)	5'
	Length of probe screen (inches)	6"
	Width of probe screen (inches)	0.5"
	Dead volume - including screen, sand pack, and tubing (mL)	0.91 L
1352 Manifold Leak Check	Leak check (sampling manifold) - Pass/No Pass	Pass @ 1400
Probe Purge	Purge rate (mL/min)	200
	Purge start time	1401
	Purge vacuum (" Hg)	0
	Purge completion time	1406
Helium Leak Check*	Leak check (% or ppmv helium)	Pass 0%

* The soil gas probe passes the helium leak check if the detected helium concentration is less than 1,000 ppm (0.1%) Do NOT collect a soil gas sample if the probe fails the helium leak test.

Field Analysis (optional)	GEM2000 - O2 (%)	10.3
	GEM2000 - CO2 (%)	4.3
	GEM2000 - CH4 (%)	00.0
	PID - Total VOCs (ppmv)	22.6
Canister Sampling	Canister ID	3400958
	Flow controller ID	7237
	Pressure gauge ID (optional)	—
	Sampling rate or period (mL/min or hours)	200
	Sample start date and time	8-17-17 @ 1410
	Initial canister pressure (" Hg)	-29.73
	Sampling vacuum (" Hg)	0
	Sample completion date and time	8-17-17 @ ~~1410~~ 1415 WL
	Final canister pressure (" Hg)	-7.31

Weather conditions during sampling: 88° mostly cloudy

Observations and Comments: Diff pressure: 0.002" Hg He concentration in shroud: 50.1%

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Vapor Intrusion Best Practices
Exterior Soil Gas Probe Installation and Sampling Log - Canister Method

Project Info

Project Name: Dow-Hanging Rock Project #: 693874
Sampler Name: B. Irish Date: 8-15-17

Site

Identification: Dow-Hanging Rock
Address: Ironton, OH
Site Information:
Describe ground cover: 3/4" gravel
Depth to groundwater (feet below ground surface): unknown
Describe vadose zone soil type(s): clay w/ traces of silty sand
Was a soil boring log completed? No Was a probe diagram completed? Yes

Soil Gas Probe Installation, Purging, Leak Checking, & Sampling Log

Sample location (describe and show in diagram)		S01-SG05 Between bldg 500 & 505
Probe and Sample Identification (field ID)		S01-SG-05
Probe Installation	Date and time	8-15-17 @0945
	Depth of hole drilled (feet below ground surface)	5' 2.5"
	Bottom of probe screen (feet below ground surface)	5'
	Length of probe screen (inches)	6"
	Width of probe screen (inches)	0.5"
	Dead volume - including screen, sand pack, and tubing (mL)	0.91 L
Manifold Leak Check	Leak check (sampling manifold) - Pass/No Pass	Pass
Probe Purge	Purge rate (mL/min)	200
	Purge start time	1325
	Purge vacuum (" Hg)	-1
	Purge completion time	1330
Helium Leak Check*	Leak check (% or ppmv helium)	Pass 0%

B10

Field Analysis (optional)	GEM2000 - O2 (%)	14.5	
	GEM2000 - CO2 (%)	0.3	
	GEM2000 - CH4 (%)	0.00	
	PID - Total VOCs (ppmv)	1.2	
Canister Sampling	Canister ID	Parent 34001103	FD 34000905
	Flow controller ID	7083	7083
	Pressure gauge ID (optional)	—	
	Sampling rate or period (mL/min or hours)	200 mL/min	
	Sample start date and time	8-17-17 @ 1335	
	Initial canister pressure (" Hg)	Parent -29.29	FD -29.61
	Sampling vacuum (" Hg)	-5	
	Sample completion date and time	8-17-17 @1348	
	Final canister pressure (" Hg)	Parent -4.64	FD -4.62

* The soil gas probe passes the helium leak check if the detected helium concentration is less than 1,000 ppm (0.1%). Do NOT collect a soil gas sample if the probe fails the helium leak test

Weather conditions during sampling: 85° mostly cloudy

Observations and Comments: Diff pressure: 0.008 "Hg. He concentration in shroud 50.9%

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Vapor Intrusion Best Practices
Exterior Soil Gas Probe Installation and Sampling Log - Canister Method

Project Info

Project Name: Dow-Hanging Rock Project #: 693874
Sampler Name: B. Irish Date: 8-17-17

Site

Identification: Dow-Hanging Rock
Address: Ironton, OH
Site Information:
Describe ground cover: 3/4" gravel over compacted soil
Depth to groundwater (feet below ground surface): "
Describe vadose zone soil type(s): clay w/ traces of silty sand
Was a soil boring log completed? No Was a probe diagram completed? Yes

Soil Gas Probe Installation, Purging, Leak Checking, & Sampling Log

Sample location (describe and show in diagram)		Bt. Bldg 500 & 505
Probe and Sample Identification (field ID)		S01-SG-06
Probe Installation	Date and time	8-15-17 @ 1017
	Depth of hole drilled (feet below ground surface)	5'2.5"
	Bottom of probe screen (feet below ground surface)	5'
	Length of probe screen (inches)	6"
	Width of probe screen (inches)	0.5
	Dead volume - including screen, sand pack, and tubing ~~(mL)~~ (L)	~~910~~ (wet) 0.91 L
1236 Manifold Leak Check	Leak check (sampling manifold) - Pass/No Pass	Pass
Probe Purge	Purge rate (mL/min)	200
	Purge start time	1240
	Purge vacuum (" Hg)	0
	Purge completion time	1245
Helium Leak Check*	Leak check (% or ppmv helium)	~~shrub~~ 38% / Purge Gas 0% Pass

Field Analysis (optional)	GEM2000 - O2 (%)	12.4
	GEM2000 - CO2 (%)	2.0
	GEM2000 - CH4 (%)	00.0
	PID - Total VOCs (ppmv)	81.7
Canister Sampling	Canister ID	34000620
	Flow controller ID	7501
	Pressure gauge ID (optional)	—
	Sampling rate or period (mL/min or hours)	5 min
	Sample start date and time	8-17-17 @ 1252
	Initial canister pressure (" Hg)	-29.64
	Sampling vacuum (" Hg)	0 to -1
	Sample completion date and time	8-17-17 @ 1257
	Final canister pressure (" Hg)	-6.72

* The soil gas probe passes the helium leak check if the detected helium concentration is less than 1,000 ppm (0.1%). Do NOT collect a soil gas sample if the probe fails the helium leak test.

Weather conditions during sampling: 85 °F, mostly cloudy

Observations and Comments: Diff pressure: 0.005 "Hg

REV. 11/15/11

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock

Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH

Condition of slab in the surrounding area: Good

Location ID: SOI-B500-SV01 Sample ID: SOI-B500-SV01-090717

Sample Location Description (Room Name/Number and surrounding, identifying features):

Side Storage - Bldg 500

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min

Start Time: 15:55

Purge Vacuum ("Hg): ~~10~~ AS 0

End Time: 16:00

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector			LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	22.0	O_2 (%):	O2 (%):	16.2
H_2S (ppm):	NA	LEL (%): 0	CO2 (%):	1.5
CO (ppm):	NA		CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L

Container ID: 872

Flow Controller ID: 0524

Sampling Rate (mL/min, hours): 218

Sampling Vacuum ("Hg): 0

Initial Pressure (" Hg): -29.45

Start Date and Time: 9/7/17 16:00

End Date and Time: 9/7/17 16:05

Final Pressure (" Hg): -4.65

Tedlar Bag

Tedlar Bag size (L):

Sampling Rate (mL/min):

Start Date and Time:

End Date and Time:

Sorbent Tube

Sorbent Tube type and size:

Sorbent Tube ID:

Initial Flow Rate (mL/min):

Calculated Sampling Volume:

Start Date and Time:

End Date and Time:

Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, low-mid 70s

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock

Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH

Condition of slab in the surrounding area: good

Location ID: SOL-BSDO-SVD2 Sample ID: SOL-BSOO-SVD2-090717

Sample Location Description (Room Name/Number and surrounding, identifying features):

Northeastern Room (Main Room)

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200

Start Time: 15:35

Purge Vacuum ("Hg): 0

End Time: 15:40

Probe Leak Check Result*:	Pass	Fail
	✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	3.4	O_2 (%):	16.0	O2 (%):	16.0
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	0.8
CO (ppm):	NA			CH4 (%):	

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L

Container ID: 1500

Flow Controller ID: 668

Sampling Rate (mL/min, hours): 219

Sampling Vacuum ("Hg): 0

Initial Pressure (" Hg): -29.42

Start Date and Time: 9/7/17 15:40

End Date and Time: 9/7/17 15:45

Final Pressure (" Hg): -4.72

Tedlar Bag

Tedlar Bag size (L):

Sampling Rate (mL/min):

Start Date and Time:

End Date and Time:

Sorbent Tube

Sorbent Tube type and size:

Sorbent Tube ID:

Initial Flow Rate (mL/min):

Calculated Sampling Volume:

Start Date and Time:

End Date and Time:

Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling:

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock
Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH
Condition of slab in the surrounding area: good condition
Location ID: SO1-B500-SV03 Sample ID: SO1-B500-SV03-090717
Sample Location Description (Room Name/Number and surrounding, identifying features):
Northeastern Room (Main Warehouse)

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min
Start Time: 13:17
Purge Vacuum ("Hg): 0
End Time: 13:22

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	13.6	O_2 (%):	16.2	O2 (%):	16.2
H_2S (ppm):	NA	LEL (%):	0.0	CO2 (%):	3.2
CO (ppm):	3.2 %			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1 L
Container ID: ~~05~~ 735
Flow Controller ID: 0595
Sampling Rate (mL/min, hours): 200 mL/min
Sampling Vacuum ("Hg):

Initial Pressure (" Hg): -29.40
Start Date and Time: 9/7/17 13:26
End Date and Time: 9/7/17 13:30
Final Pressure (" Hg): -4.83

Tedlar Bag

Tedlar Bag size (L): ~~1 L~~ AS
Sampling Rate (mL/min): ~~200 mL/min~~ AS

Start Date and Time: ~~9/7/17 13:17~~ AS
End Date and Time:

Sorbent Tube

Sorbent Tube type and size:
Sorbent Tube ID:
Initial Flow Rate (mL/min):
Calculated Sampling Volume:

Start Date and Time:
End Date and Time:
Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, mid-low 70s

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock

Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH

Condition of slab in the surrounding area: good

Location ID: SO1-B500-SV04 Sample ID: SO1-B500-SV04-090717

Sample Location Description (Room Name/Number and surrounding, identifying features):
North-Eastern Room (Main Warehouse

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.

Pass	Fail
✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min

Start Time: 13:44

Purge Vacuum ("Hg): 0

End Time: 13:49 ds

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	3.5	O_2 (%):	16.5	O2 (%):	16.5
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	2.5
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1 L

Container ID: 2141

Flow Controller ID: 886 @197mL/min

Sampling Rate (mL/min, hours): 200mL/min

Sampling Vacuum ("Hg): 0

Initial Pressure (" Hg): -29.42

Start Date and Time: 9/7/17 13:49

End Date and Time: 9/7/17 13:54

Final Pressure (" Hg): -3.91

Tedlar Bag

Tedlar Bag size (L):

Sampling Rate (mL/min):

Start Date and Time:

End Date and Time:

Sorbent Tube

Sorbent Tube type and size:

Sorbent Tube ID:

Initial Flow Rate (mL/min):

Calculated Sampling Volume:

Start Date and Time:

End Date and Time:

Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, low-mid 70s

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m

Project: Hanging Rock
Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH
Condition of slab in the surrounding area: good condition
Location ID: SG1-B500-SV05 Sample ID: SG1-B500-SV05-090717
Sample Location Description (Room Name/Number and surrounding, identifying features):

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min
Start Time: 14:04
Purge Vacuum ("Hg): 0
End Time: 14:09

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	2.0	O_2 (%):	19.5	O2 (%):	19.5
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	0
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L
Container ID: 1926
Flow Controller ID: 708
Sampling Rate (mL/min, hours): 2.18
Sampling Vacuum ("Hg):
Initial Pressure (" Hg): -29.47
Start Date and Time: 9/7/17 14:09
End Date and Time: 9/7/17 14:14
Final Pressure (" Hg): -4.71

Tedlar Bag

Tedlar Bag size (L):
Sampling Rate (mL/min):
Start Date and Time:
End Date and Time:

Sorbent Tube

Sorbent Tube type and size:
Sorbent Tube ID:
Initial Flow Rate (mL/min):
Calculated Sampling Volume:
Start Date and Time:
End Date and Time:
Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, low-mid 70s

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock

Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH

Condition of slab in the surrounding area: good condition

Location ID: SG1-B500-SV06 Sample ID: SG1-B500-SV06-090717

Sample Location Description (Room Name/Number and surrounding, identifying features):

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min

Start Time: 14:24

Purge Vacuum ("Hg): 0

End Time: 14:29

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	2.3	O_2 (%):	18.6	O2 (%):	18.6
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	0.5
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L

Container ID: 677

Flow Controller ID: 448

Sampling Rate (mL/min, hours): 198 mL/min

Sampling Vacuum ("Hg): 0

Initial Pressure (" Hg): -29.42

Start Date and Time: 9/7/17 14:30

End Date and Time: 9/7/17 14:34

Final Pressure (" Hg): -4.75

Tedlar Bag

Tedlar Bag size (L):

Sampling Rate (mL/min):

Start Date and Time:

End Date and Time:

Sorbent Tube

Sorbent Tube type and size:

Sorbent Tube ID:

Initial Flow Rate (mL/min):

Calculated Sampling Volume:

Start Date and Time:

End Date and Time:

Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, low-mid 70s

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock
Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH
Condition of slab in the surrounding area: good condition
Location ID: SOI-B500-SV07 Sample ID: SOI-B500-SV07-090717
Sample Location Description (Room Name/Number and surrounding, identifying features):

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min
Start Time: 14:43
Purge Vacuum ("Hg): 0
End Time: 14:48

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	2.0	O_2 (%):	20.0	O2 (%):	20.0
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	0
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L
Container ID: 564
Flow Controller ID: 603
Sampling Rate (mL/min, hours): 219 mL/min
Sampling Vacuum ("Hg): 0
Initial Pressure (" Hg): -29.44
Start Date and Time: 9/7/17 14:48
End Date and Time: 9/7/17 14:52
Final Pressure (" Hg): -4.73

Tedlar Bag

Tedlar Bag size (L):
Sampling Rate (mL/min):
Start Date and Time:
End Date and Time:

Sorbent Tube

Sorbent Tube type and size:
Sorbent Tube ID:
Initial Flow Rate (mL/min):
Calculated Sampling Volume:
Start Date and Time:
End Date and Time:
Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: sunny, low-mid 70s

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock

Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH

Condition of slab in the surrounding area: good condition

Location ID: SG1-B500-SV08 Sample ID: SG1-B500-SV08-090717

Sample Location Description (Room Name/Number and surrounding, identifying features):

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

✓ Pass - 2nd check with new canister

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min

Start Time: 15:03

Purge Vacuum ("Hg): 0

End Time: 15:08

Probe Leak Check Result*:	Pass	Fail
	✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	2.1	O_2 (%):	19.8	O2 (%):	19.8
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	0.3
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L

Container ID: ~~1946~~ AS 2172

Flow Controller ID: ~~596~~ AS 599

Sampling Rate (mL/min, hours): ~~215~~ AS 215

Sampling Vacuum ("Hg): 0

Initial Pressure (" Hg): ~~-29.42~~ -29.26 ✓ redeployed sample - can went below -1" Hg

Start Date and Time: 9/7/17 ~~15:08~~ AS 15:22

End Date and Time: 9/7/17 ~~15:13~~ AS 15:26

Final Pressure (" Hg): -4.57

Tedlar Bag

Tedlar Bag size (L):

Sampling Rate (mL/min):

Start Date and Time:

End Date and Time:

Sorbent Tube

Sorbent Tube type and size:

Sorbent Tube ID:

Initial Flow Rate (mL/min):

Calculated Sampling Volume:

Start Date and Time:

End Date and Time:

Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, low mid 70s

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: DOW - Hanging Rock

Sampler: EE, BI, AS

Sample Location Information

Property ID/Address: Bldg 501

Condition of slab in the surrounding area: Good

Location ID: SG1-B501-SV04 Sample ID: SG9-B501-SV04-040817

Sample Location Description (Room Name/Number and surrounding, identifying features):

Storage room - Gardening, tools hoses shovels

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200

Start Time: 1008

Purge Vacuum ("Hg): 0

End Time: 1600

Probe Leak Check Result*:	Pass	Fail
	✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	3.6	O_2 (%):	19.0	O2 (%):	19.0
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	0
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1L

Container ID: 1510

Flow Controller ID: 995

Sampling Rate (mL/min, hours): 210

Sampling Vacuum ("Hg): 0

Initial Pressure (" Hg): -29.41

Start Date and Time: 9/8/17 - 1607

End Date and Time: 9/3/17 - 1611

Final Pressure (" Hg): -9.41 "Hg

Tedlar Bag

Tedlar Bag size (L):

Sampling Rate (mL/min):

Start Date and Time:

End Date and Time:

Sorbent Tube

Sorbent Tube type and size:

Sorbent Tube ID:

Initial Flow Rate (mL/min):

Calculated Sampling Volume:

Start Date and Time:

End Date and Time:

Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, ~73°F

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m.

Project: DOW - Itmyring Rock

Sampler: EE, DI, AS.

Sample Location Information

Property ID/Address: Bldg 501

Condition of slab in the surrounding area: Good

Location ID: S01-B501-SV10 Sample ID: S01-B501-SV10-090817

Sample Location Description (Room Name/Number and surrounding, identifying features):
Break Room B501

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min

Start Time: 1541

Purge Vacuum ("Hg): ~~-29.52" Hg~~ 0 "Hg

End Time:

Probe Leak Check Result*:	Pass	Fail
	✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector					LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	4.1 ppm	O_2 (%):	~~18.3~~ N/A		O2 (%):	17.3
H_2S (ppm):	~~0~~ N/A	LEL (%):	0.0		CO2 (%):	0.0
CO (ppm):					CH4 (%):	0.0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L):	1L	Initial Pressure (" Hg):	-29.52
Container ID:	1919	Start Date and Time:	09/08/17 - 1541
Flow Controller ID:	0571	End Date and Time:	09/08/17 - 1550
Sampling Rate (mL/min, hours):	214	Final Pressure (" Hg):	-4.92" Hg
Sampling Vacuum ("Hg):	0		

Tedlar Bag

Tedlar Bag size (L):		Start Date and Time:	
Sampling Rate (mL/min):		End Date and Time:	

Sorbent Tube

Sorbent Tube type and size:		Start Date and Time:	
Sorbent Tube ID:		End Date and Time:	
Initial Flow Rate (mL/min):		Final Flow Rate (mL/min)	
Calculated Sampling Volume:			

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Clear skies, sunny 72°F

Additional Notes: Field Duplicate S01 - HGR - 090817 - FD04

Can ID: 794 Int P: -29.36" Hg

FC: 0571 Final P: -4.75" Hg

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock

Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH

Condition of slab in the surrounding area: good

Location ID: SO1-BSO1-SV11 Sample ID: SO1-BSO1-SV11-090817

Sample Location Description (Room Name/Number and surrounding, identifying features):
Maintenance Bldg.

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min

Start Time: 15:07

Purge Vacuum ("Hg): 0

End Time: 15:12

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	5.8	O_2 (%):	19.7	O2 (%):	19.7
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	0
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1 L

Container ID: 1511

Flow Controller ID: 561

Sampling Rate (mL/min, hours): 218

Sampling Vacuum ("Hg): 0

Initial Pressure (" Hg): -28.82

Start Date and Time: 9/8/17 15:13

End Date and Time: 9/8/17 15:18

Final Pressure (" Hg): -4.72

Tedlar Bag

Tedlar Bag size (L):

Sampling Rate (mL/min):

Start Date and Time:

End Date and Time:

Sorbent Tube

Sorbent Tube type and size:

Sorbent Tube ID:

Initial Flow Rate (mL/min):

Calculated Sampling Volume:

Start Date and Time:

End Date and Time:

Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling:

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock
Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH
Condition of slab in the surrounding area: good
Location ID: SOI-BSOS-SV12 Sample ID: SOI-BSOS-SV12-090817
Sample Location Description (Room Name/Number and surrounding, identifying features):

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min
Start Time: 08:54
Purge Vacuum ("Hg): 0
End Time: 08:59

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	140	O_2 (%):	19.2	O2 (%):	19.2
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	0.1
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L
Container ID: 878
Flow Controller ID: 885
Sampling Rate (mL/min, hours): 219
Sampling Vacuum ("Hg): 0

Initial Pressure (" Hg): -29.21
Start Date and Time: 9/8/17 08:59
End Date and Time: 9/8/17 09:03
Final Pressure (" Hg): -4.73

Tedlar Bag

Tedlar Bag size (L):
Sampling Rate (mL/min):

Start Date and Time:
End Date and Time:

Sorbent Tube

Sorbent Tube type and size:
Sorbent Tube ID:
Initial Flow Rate (mL/min):
Calculated Sampling Volume:

Start Date and Time:
End Date and Time:
Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, low-mid 50s

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock

Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH

Condition of slab in the surrounding area: good

Location ID: SO1-BSOS-SV13 Sample ID: SO1-BSOS-SV13-090717

Sample Location Description (Room Name/Number and surrounding, identifying features):

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min

Start Time: 16:32

Purge Vacuum ("Hg): 0

End Time: 16:37

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	21.9	O_2 (%):	17.7	O2 (%):	17.7
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	2.2
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L

Container ID: 2145

Flow Controller ID: 538

Sampling Rate (mL/min, hours): 218

Sampling Vacuum ("Hg): 0

Initial Pressure (" Hg): -29.48

Start Date and Time: 9/7/17 16:38

End Date and Time: 9/7/17 16:42

Final Pressure (" Hg): -4.78

Tedlar Bag

Tedlar Bag size (L):

Sampling Rate (mL/min):

Start Date and Time:

End Date and Time:

Sorbent Tube

Sorbent Tube type and size:

Sorbent Tube ID:

Initial Flow Rate (mL/min):

Calculated Sampling Volume:

Start Date and Time:

End Date and Time:

Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, low-mid 70s

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock
Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH
Condition of slab in the surrounding area: good
Location ID: S01-BSOS-SV-14 Sample ID: S01-BSOS-SV14-090817
Sample Location Description (Room Name/Number and surrounding, identifying features):

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min
Start Time: 09:33
Purge Vacuum ("Hg): 0
End Time: 09:38

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	30.6	O_2 (%):	13.7	O2 (%):	13.7
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	4.9
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L
Container ID: 849
Flow Controller ID: 690
Sampling Rate (mL/min, hours): 217
Sampling Vacuum ("Hg): 0
Initial Pressure (" Hg): -29.32
Start Date and Time: 9/8/17 09:38
End Date and Time: 9/8/17 09:42
Final Pressure (" Hg): -4.87

Tedlar Bag

Tedlar Bag size (L):
Sampling Rate (mL/min):
Start Date and Time:
End Date and Time:

Sorbent Tube

Sorbent Tube type and size:
Sorbent Tube ID:
Initial Flow Rate (mL/min):
Calculated Sampling Volume:
Start Date and Time:
End Date and Time:
Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, mid-high 90s

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock

Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH

Condition of slab in the surrounding area: good

Location ID: SO1-BSOS-SV15 Sample ID: SO1-BSOS-SV15-090817

Sample Location Description (Room Name/Number and surrounding, identifying features):

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min

Start Time: 10:00

Purge Vacuum ("Hg): 0

End Time: 10:05

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	107.3	O_2 (%):	13.8	O2 (%):	13.8
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	1.0
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L

Container ID: 864

Flow Controller ID: 0888

Sampling Rate (mL/min, hours): 220

Sampling Vacuum ("Hg): 0

Initial Pressure (" Hg): -29.36

Start Date and Time: 9/8/17 10:05

End Date and Time: 9/8/17 10:15

Final Pressure (" Hg): -5.39

Tedlar Bag

Tedlar Bag size (L):

Sampling Rate (mL/min):

Start Date and Time:

End Date and Time:

Sorbent Tube

Sorbent Tube type and size:

Sorbent Tube ID:

Initial Flow Rate (mL/min):

Calculated Sampling Volume:

Start Date and Time:

End Date and Time:

Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: sunny, mid-high 80s

Additional Notes: SO1-~~HGR~~AS=090817-FD03-~~SV~~AS

-HGR-

Can ID = 2087 FC ID = 0888

Pi = -29.44 Pf = -5.48

* a few droplets of moisture began coming up tubing near end of purge

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hangingrock

Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH

Condition of slab in the surrounding area: good

Location ID: SO1-B505-SV16 Sample ID: SO1-B505-SV16-090817

Sample Location Description (Room Name/Number and surrounding, identifying features):

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min

Start Time: 10:33

Purge Vacuum ("Hg): ~~-10:39~~ between -12 AS "& -4" (cycled back & forth)

End Time: 10:39

Probe Leak Check Result*:	Pass	Fail
	✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

* stopped at 10:36 started @10:37

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	6.3	O_2 (%):	20.0	O2 (%):	20.0
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	0
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L

Container ID: 1960

Flow Controller ID: 0996

Sampling Rate (mL/min, hours): 218

Sampling Vacuum ("Hg): -12 AS" to -4"

Initial Pressure (" Hg): -29.41

Start Date and Time: 9/8/17 10:40

End Date and Time: 9/8/17 10:46

Final Pressure (" Hg): -5.05

Tedlar Bag

Tedlar Bag size (L):

Sampling Rate (mL/min):

Start Date and Time:

End Date and Time:

Sorbent Tube

Sorbent Tube type and size:

Sorbent Tube ID:

Initial Flow Rate (mL/min):

Calculated Sampling Volume:

Start Date and Time:

End Date and Time:

Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, low 60s

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock
Sampler: B. Irish

Sample Location Information

Property ID/Address: Ironton, OH
Condition of slab in the surrounding area: good
Location ID: SOL-B505-SV17 Sample ID: SOL-B505-SV17-090717
Sample Location Description (Room Name/Number and surrounding, identifying features):

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min
Start Time: 16:58
Purge Vacuum ("Hg): 0
End Time: 17:03

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	5.8	O_2 (%):	19.5	O2 (%):	19.5
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	0.2
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L
Container ID: 818
Flow Controller ID: 693
Sampling Rate (mL/min, hours): 211
Sampling Vacuum ("Hg): 0
Initial Pressure (" Hg): -29.40
Start Date and Time: 9/7/17 17:04
End Date and Time: 9/7/17 17:08
Final Pressure (" Hg): -4.50

Tedlar Bag

Tedlar Bag size (L):
Sampling Rate (mL/min):
Start Date and Time:
End Date and Time:

Sorbent Tube

Sorbent Tube type and size:
Sorbent Tube ID:
Initial Flow Rate (mL/min):
Calculated Sampling Volume:
Start Date and Time:
End Date and Time:
Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, low-mid 70s

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock

Sampler: B. Prish

Sample Location Information

Property ID/Address: Ironton, OH

Condition of slab in the surrounding area: good

Location ID: SO1-BSOS-SV18 Sample ID: SO1-BSOS-SV18-090817

Sample Location Description (Room Name/Number and surrounding, identifying features):

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min

Start Time: 09:14

Purge Vacuum ("Hg): 0

End Time: 09:19

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector				LandTec GEM Landfill Gas Meter	
Total VOCs (ppm):	15.4	O_2 (%):	18.8	O2 (%):	18.8
H_2S (ppm):	NA	LEL (%):	0	CO2 (%):	1.6
CO (ppm):	NA			CH4 (%):	0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L

Container ID: 2090

Flow Controller ID: 857

Sampling Rate (mL/min, hours): 220

Sampling Vacuum ("Hg): 0

Initial Pressure (" Hg): -29.51

Start Date and Time: 9/8/17 09:19

End Date and Time: 9/8/17 09:23

Final Pressure (" Hg): -4.75

Tedlar Bag

Tedlar Bag size (L):

Sampling Rate (mL/min):

Start Date and Time:

End Date and Time:

Sorbent Tube

Sorbent Tube type and size:

Sorbent Tube ID:

Initial Flow Rate (mL/min):

Calculated Sampling Volume:

Start Date and Time:

End Date and Time:

Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, mid 50s

Additional Notes:

Subslab Soil Vapor Sampling Log

ch2m:

Project: Hanging Rock
Sampler: B. Wish

Sample Location Information

Property ID/Address: Ironton, OH
Condition of slab in the surrounding area: good
Location ID: SO1-BSO5-SV19 Sample ID: SO1-BSO5-SV19-090817
Sample Location Description (Room Name/Number and surrounding, identifying features):

Subslab Soil Vapor Probe Leak Checking and Sampling Log

Manifold Leak Check

Manifold leak check (procedure: ensure manifold holds pressure at -10 "Hg for 30 seconds). If using a pelican-case pump, open the lid during leak check to ensure all interior pieces are in-tact.	Pass	Fail
	✓	

Describe corrective measures taken to pass the manifold leak test:

Subslab Soil Vapor Probe Water Dam Leak Check and Purge Results

Purge rate (mL/Min): 200 mL/min
Start Time: 08:35
Purge Vacuum ("Hg): 0
End Time: 08:40

Probe Leak Check Result*:

Pass	Fail
✓	

*The subslab soil vapor probe passes the water dam leak check if there are no bubbles observed and the water level does not draw down during purge. Do NOT collect a subslab soil vapor sample if the leak check fails.

Field Analysis (required readings are determined on a project-specific basis. Fill in all that are necessary):

MiniRAE or MultiRAE Photoionization Detector

Total VOCs (ppm): 44.3 O_2 (%): ~~R~~ 18.1
H_2S (ppm): NA LEL (%): 0
CO (ppm): NA

LandTec GEM Landfill Gas Meter

O2 (%): ~~Gas~~ 18.1
CO2 (%): 2.6
CH4 (%): 0

Sampling Information

Evacuated Canister or Bottle-Vac

Container Size (L): 1-L
Container ID: 1923
Flow Controller ID: 672
Sampling Rate (mL/min, hours): 219
Sampling Vacuum ("Hg): 0

Initial Pressure (" Hg): -29.49
Start Date and Time: 9/8/17 08:40
End Date and Time: 9/8/17 08:44
Final Pressure (" Hg): -4.95

Tedlar Bag

Tedlar Bag size (L):
Sampling Rate (mL/min):

Start Date and Time:
End Date and Time:

Sorbent Tube

Sorbent Tube type and size:
Sorbent Tube ID:
Initial Flow Rate (mL/min):
Calculated Sampling Volume:

Start Date and Time:
End Date and Time:
Final Flow Rate (mL/min)

Weather Conditions and Additional Notes

Weather Conditions During Sampling: Sunny, low-mid 90s

Additional Notes:

Indoor, Outdoor, Crawlspace Air Sampling Log - Canister Method

Project: DOW - Hanging Rock

Building: 500 505 & 501

Field Sample ID	Location	Canister ID	Flow Controller ID	Initial Pressure ("Hg)	Start Date	Start Time	Check (6/20 hr)		End Date	End Time	Final Pressure ("Hg)
							Time	Pressure ("Hg)			
SO1-B500-IA01-090817	Bldg 500	1607	204	-29.22	9/8/17	07:32	14:23	-12.80	9/8/17	15:41	-9.92
SO1-B500-IA02-090817	Bldg 500	610	966	-29.87	9/8/17	07:40	14:21	-9.89	9/8/17	15:40	-6.67
SO1-B500-IA03-090817	Bldg 500	1712	27	-29.84	9/8/17	07:36	14:26	-10.64	9/8/17	15:37	-7.82
SO1-B500-IA04-090817	Bldg 500	1777	1	-29.85	9/8/17	07:38	14:25	-12.25	9/8/17	15:36	-9.69
SO1-B501-IA05-090817	Bldg 501	2107	478	-29.79	9/8/17	07:54	14:29	-10.50	9/8/17	15:20	-8.55
SO1-HGR-090817-FD01	Bldg 501	1572	127	-29.29	9/8/17	07:59	14:28	-10.14	9/8/17	15:20	-7.86
SO1-B505-IA06-090817	Bldg 505	2318	120	-29.70	9/8/17	08:07	14:33	-11.21	9/8/17	15:50	-8.12
SO1-B505-IA07-090817	Bldg 505	1695	21	-29.86	9/8/17	08:10	14:31	-10.05	9/8/17	15:54	-6.47
SO1-B505-IA08-090817	Bldg 505	1783	203	-29.80	9/8/17	08:12	14:30	-11.80	9/8/17	15:55	-8.45
SO1-B505-IA09-090817	Bldg 505	807	11	-29.21	9/8/17	08:05	1431	-10.58	9/8/17	15:52	-7.36

Weather Conditions

General weather conditions: Clear Skies Low 50's to 70°F

Temperature Range (indoor and outdoor): Indoor: 70°F Outdoor: 60 - 73°F

Was there significant precipitation within 12 hours prior to (or during) the sampling event? No significant precipitation

Indoor, Outdoor, Crawlspace Air Sampling Log - Canister Method

Project: DOW - Hanging Rock

Building: 500, 501 & 505

Field Sample ID	Location	Canister ID	Flow Controller ID	Initial Pressure ("Hg)	Start Date	Start Time	Check (6/20 hr)		End Date	End Time	Final Pressure ("Hg)
							Time	Pressure ("Hg)			
SO1-HGR-090817-FD2	Bldg 505	1790	112	-29.84	9/8/17	08:05	14:32	-9.52	9/8/17	15:52	-6.11
SO1-B505-IA10-090817-FD2	Bldg 505	2273	249	-29.60	9/8/17	08:15	14:32	-12.08	9/8/17	15:51	-9.05
SO1-HGR-OA01-090817	Bldg 505 (Bldg 500, Bldg 501)	1799	630	-29.84	9/8/17	07:58	14:30	-9.68	9/8/17	15:44	-6.84

Weather Conditions

General weather conditions: Clear skies, sunny

Temperature Range (indoor and outdoor): Indoor: 70's °F Outdoor: 60 - 73 °F

Was there significant precipitation within 12 hours prior to (or during) the sampling event? No significant precipitation

Attachment 2
Building Survey Forms

Building Survey Form for Vapor Intrusion Investigations

Property ID: Building 500

Site/Project Name: DOW - Hanging Rock

Date of Survey: 09/06/2017

Preparer(s): Elsy Escobar

Building Occupancy and Use

1. What is the estimated number of building occupants?

Unoccupied - Warehouse / Storage area

(Make general observations about age range and percentage of male to female ratio)

2. Are there any sensitive receptors in the building? (elderly, children, immuno-compromised, women of child bearing age, etc.)

None

3. How long have the current occupants occupied the building? -

4. What is the building type/use? Circle all that apply and describe.

Residential (single family, duplex, apartments) / Office / Strip Mall / Commercial / (Industrial) / Other:

Warehouse.

Describe building use (circle all that apply):

Residential / Manufacturing / (Storage) / Chemical Storage / Administrative / Instrumentation / Other:

5. What are the historical activities within the building (if different than above)?

Storage, former processing facility

Building Occupancy and Use - continued

Questions 6 - 8 are applicable to non-residential buildings only.

6. What type of work is performed within the building? Forklift storage, styrofoam storage

7. How many hours per day or week do workers spend in the building?

Varies → no work stations

8. Is the building accessed by the public? (Describe approximate number of persons, frequency of visits, and duration of visits.)

No

Building Construction

1. What year was the building constructed? ~1960's

2. Have there been additions to the building? If so, when? (Identify on building sketch)

None

3. What are the approximate dimensions of the building? 347 ft x 235 ft

4. What are the construction materials of the exterior of the building?

Cinder block & Metal

5. How many floors does the building have? Northeastern area (54ft x 60ft) - 3 floors. The rest 1 floor

Does the main floor sit on, below, or above grade? On-Grade (slab-on-grade)
(How many feet above or below grade?)

Number of floors at or above grade? 1

Number of floors below grade? None
(How many feet below grade?)

Building Construction - continued

6. Describe the basement (if present):

Does the building have a basement and/or crawl space? No

How many feet below grade? –

Approximate square footage: –

Approximate ceiling height (give range if varying height): –

Is the basement separated into multiple rooms? Describe (note use, if space is finished/unfinished):

–

Construction materials of walls (i.e. poured concrete, cinderblock, brick, etc.; are the walls covered with epoxy?):

–

Are significant cracks present in the walls? –

7. Describe the main floor:

Approximate square footage: ~ 82,000

Approximate ceiling height (give range if varying height): 26' - 19' storage & 12' offices/storage

Is the main floor separated into multiple rooms? old - Offices, ~~with~~ EE-9-6 Warehouse only

Bathroom areas (not in use)

Construction materials of walls (i.e. framing, siding, cinderblock, etc.):

Cinder block concrete, metal block

Building Construction - continued

8. Describe the building slab:

Construction materials of floor/slab: Concrete

Describe the floor coverings (epoxy paint, carpet, tile, etc.) None

If concrete slab, are expansion joints present? Railings on Southern area (metal)

Are they sealed/showing deterioration? Sealed

Are significant cracks present in the slab? ~~One~~ None significant There are small cracks on Concrete

Are there any penetrations in the slab? (utility conduits, etc.) None

Is there a subslab vapor/moisture barrier in place? No

Are any floor drains or sumps present? Is there standing water in them? No

Are there any subsurface vaults present? (if so describe and add locations to building sketch)

Yes, by ~~Southern~~ southeastern area of Bldg (see drawing) - 0.0 ppm

9. Does the building have a moisture/dampness problem? Damp / some water found inside

No / Rarely (less than 1 time per year) / Occasionally (1-2 times per year) / Frequently

10. Does the building ever flood?

No / Rarely (less than 1 time per year) / Occasionally (1-2 times per year) / Frequently

11. Is there a septic system? [ ] Yes [ ] Yes, but not in use [X] No

12. Is there irrigation or a private well? [ ] Yes [ ] Yes, but not in use [X] No

13. Type of ground cover outside: Grass / Concrete / Gravel / Asphalt / Other _____

14. Additional notes on building construction:

Bldg isolating material is visible. Bldg has leaks water puddles ~~could~~ were found in the ~~middle~~ center of warehouse when survey was conducted (9/6 - 9/7)

Existing Vapor Mitigation Systems

1. Has a radon or vapor mitigation system been installed in this building? (Show location on building sketch)

No

If yes: Installation Date: _____

Type of System: Passive Venting / Active Subslab Depressurization
Crack and Crevice Sealing / Dilution Ventilation Control / Other

Notes: _____

Air Flow Within the Building and Outdoor Air Exchange

1. Are there any areas of the building that are positively or negatively pressurized (look for doors not opening and/or closing properly, perceptible air flow, audible fan noises)?

No

2. Is there one HVAC zone or multiple zones? How many zones? Add thermostat locations to building floorplan, if available.

None

3. Type of ventilation system (circle all that apply):

Central Air Condition / (Mechanical Fans) / Bathroom Ventilation Fans / Individual Air Condition Units
Kitchen Range Hood Fan / Outside Air Intake / Industrial Floor Fans
Whole-Building Attic Exhaust Fan / Other: ~~None~~ Passive vents, Ceiling fans
Fresh air fans

4. Type of heating system (circle all that apply):

(Forced Hot Air) / Hot Air Radiation / Wood / Steam Radiation / Heat Pump / Individual Heater / Hot Water Radiation
Kerosene Heater / Fireplace / Electric Baseboard / Other: ~~None~~ & Bldg is unoccupied

5. Type of fuel utilized (circle all that apply):

(Natural Gas) / (Electric) / Fuel Oil / Wood / Coal / Solar / Kerosene / Other: _____

6. Are there any sources of outdoor air?

[ ]	Mechanical (AHU)	[✓]	Doors
[✓]	Windows	[✓]	Other Fresh air fans, rollup doors

Are windows/doors left open routinely (seasonal differences)? None

Evaluation of Potential Indoor VOC Sources

1. Are SDSs available for chemicals used with in the building? If possible, obtain a copy of the Table of Contents. List items in additional notes section (include approximate quantities and frequency).

[✓] Yes [ ] No

2. Do any of the products stored in the building contain VOCs? paints, vehicles, general machinery styrofoam

[✓] Yes [ ] No

3. Are any of the target analytes used in the building?

[ ] Yes [✓] No

If yes, is the usage confined to a specific room/area?

[ ] Yes [ ] No

N/A

4. Are pesticides used for indoor pest control?

[ ] Yes [ ] No Unknown

If yes: Name of product: _____

Frequency of use: _____

Has there been an application within the last 6 months? _____

5. Is smoking permitted inside the building?

[ ] Yes [✓] No

If yes, does smoking typically occur within a specific room/area?

[ ] Yes [ ] No Notes: -

How often? _____

Last time someone smoked in the building? _____

6. Has there been any remodeling or construction within the past 6 months (i.e. new carpeting/tiling, painting, additions, new furniture, etc.)

[ ] Yes [✓] No

Is there any planned for the near future? Unknown

[ ] Yes [ ] No

Evaluation of Potential Indoor VOC Sources - continued

7. Does the building have an attached garage or do vehicles regularly enter the space (example: a vehicle repair shop)?
[✓] Yes [ ] No
EE 9/6

8. Are gas-powered equipment or cans of gasoline/fuels stored in the building or attached garage?
[X] Yes [ ] No

Forklifts

9. Do building occupants dry clean their clothes? [ ] Yes [✓] No

If yes, how often? Weekly / Monthly / Infrequently (3-4 times a year)

10. Has there ever been a fire in the building? [ ] Yes [✓] No

11. Has there ever been a known chemical spill immediately outside or inside the building? Unknowns
[✓] Yes [ ] No

12. Was the building screened with a ppbRAE to identify indoor VOC sources? If yes, describe the results:
[✓] Yes [ ] No

- Meter reading : 0.0 ppb. Building is well ventilated
Ceiling is 26 ft
- Oil marks on the floor observed. Main Warehouse (east room)
EE 9/6
Trac Construction/machinery vehicles are stored here.

Evaluation of Potential Outside VOC Sources

1. Are there stationary sources nearby (i.e. gas stations, emission stacks, hazardous waste storage, etc.):
[ ] Yes [✓] No

2. Is there heavy vehicular traffic nearby (or other mobile sources)?
[ ] Yes [✓] No

Railroad at the border of property (north)

Building Survey Form for Vapor Intrusion Investigations

Property ID: Building 501

Site/Project Name: DOW - Hanging Rock

VI Sampling Event

Date of Survey: 09-06-2017

Preparer(s): Elsy A. Escobar

Building Occupancy and Use

1. What is the estimated number of building occupants?

Varies - 3 people most of the time (30 to 55 year old males)

(Make general observations about age range and percentage of male to female ratio)

2. Are there any sensitive receptors in the building? (elderly, children, immuno-compromised, women of child bearing age, etc.)

None

3. How long have the current occupants occupied the building? Based on work - Varies

4. What is the building type/use? Circle all that apply and describe.

Residential (single family, duplex, apartments) / Office / Strip Mall / Commercial / (Industrial) / Other:

Describe building use (circle all that apply):

Residential / Manufacturing / (Storage) / Chemical Storage / Administrative / Instrumentation / Other:

Maintenance / storage

5. What are the historical activities within the building (if different than above)?

Maintenance Bldg.

Building Occupancy and Use - continued

Questions 6 - 8 are applicable to non-residential buildings only.

6. What type of work is performed within the building? Equipment repair & fabricating

7. How many hours per day or week do workers spend in the building?

One person - 16 hours or less

8. Is the building accessed by the public? (Describe approximate number of persons, frequency of visits, and duration of visits.)

No

Building Construction

1. What year was the building constructed? ~1940's (mid to late 40's)

2. Have there been additions to the building? If so, when? (Identify on building sketch)

None

3. What are the approximate dimensions of the building? 120 ft x 40 ft

4. What are the construction materials of the exterior of the building?

Cinder block

5. How many floors does the building have? 1

Does the main floor sit on, below, or above grade? On-grade
(How many feet above or below grade?)

Number of floors at or above grade? 1

Number of floors below grade? None
(How many feet below grade?)

Building Construction - continued

6. Describe the basement (if present):

Does the building have a basement and/or crawl space? No

How many feet below grade?

Approximate square footage:

Approximate ceiling height (give range if varying height):

Is the basement separated into multiple rooms? Describe (note use, if space is finished/unfinished):

Construction materials of walls (i.e. poured concrete, cinderblock, brick, etc.; are the walls covered with epoxy?):

Are significant cracks present in the walls?

7. Describe the main floor:

Approximate square footage: 4,800 ft²

Approximate ceiling height (give range if varying height): 7ft (Breakroom) ~ 20-25' storage/maintenance

Is the main floor separated into multiple rooms? Yes: Main forklift maintenance area, breakroom, locker room Storage rooms

Construction materials of walls (i.e. framing, siding, cinderblock, etc.):

Cinder block

Building Construction - continued

8. Describe the building slab:

Construction materials of floor/slab: Concrete

Describe the floor coverings (epoxy paint, carpet, tile, etc.) None

ttc 9/8

If concrete slab, are expansion joints present? Yes

Are they sealed/showing deterioration? No

Are significant cracks present in the slab? No

Are there any penetrations in the slab? (utility conduits, etc.) Drains

Is there a subslab vapor/moisture barrier in place? No

Are any floor drains or sumps present? Is there standing water in them? Yes 2 drains

Are there any subsurface vaults present? (if so describe and add locations to building sketch)

No

9. Does the building have a moisture/dampness problem?

(No) Rarely (less than 1 time per year) / Occasionally (1-2 times per year) / Frequently

10. Does the building ever flood?

(No) Rarely (less than 1 time per year) / Occasionally (1-2 times per year) / Frequently

11. Is there a septic system? [ ] Yes [ ] Yes, but not in use [✓] No

12. Is there irrigation or a private well? [ ] Yes [ ] Yes, but not in use [✓] No

13. Type of ground cover outside: Grass / (Concrete) / Gravel / (Asphalt) / Other _____

14. Additional notes on building construction:

Existing Vapor Mitigation Systems

1. Has a radon or vapor mitigation system been installed in this building? (Show location on building sketch)

No

If yes: Installation Date: _____

Type of System: Passive Venting / Active Subslab Depressurization
Crack and Crevice Sealing / Dilution Ventilation Control / Other

Notes: _____

Air Flow Within the Building and Outdoor Air Exchange

1. Are there any areas of the building that are positively or negatively pressurized (look for doors not opening and/or closing properly, perceptible air flow, audible fan noises)?

None

2. Is there one HVAC zone or multiple zones? How many zones? Add thermostat locations to building floorplan, if available.

None. Electrical AC unit in breakroom only (AC/heater)

3. Type of ventilation system (circle all that apply):

Central Air Condition / (Mechanical Fans) / Bathroom Ventilation Fans / (Individual Air Condition Units) → breakroom
Kitchen Range ~~Hood Fan~~ / Outside Air Intake / Industrial Floor Fans
Whole-Building Attic Exhaust Fan / Other: _____

4. Type of heating system (circle all that apply):

(Forced Hot Air) / (Hot Air Radiation) / Wood / Steam Radiation / Heat Pump / Individual Heater / Hot Water Radiation
Kerosene Heater / Fireplace / Electric Baseboard / Other: _____

5. Type of fuel utilized (circle all that apply):

(Natural Gas) / (Electric) / Fuel Oil / Wood / Coal / Solar / Kerosene / Other: _____

6. Are there any sources of outdoor air?

[/]	Mechanical (AHU)	[/]	Doors
[/]	Windows	[ ]	Other

Are windows/doors left open routinely (seasonal differences)? Rolling door left open when workers are in (one area only). Rest of Bldg is generally closed

Evaluation of Potential Indoor VOC Sources

1. Are SDSs available for chemicals used with in the building? If possible, obtain a copy of the Table of Contents. List items in additional notes section (include approximate quantities and frequency).

[✓] Yes [✓ EE 9/8] No - main gate

2. Do any of the products stored in the building contain VOCs? Spray paint, WD-40, Oil (engine oil)

[✓ EE 9/8] Yes [✓] No

3. Are any of the target analytes used in the building?

[ ] Yes [✓] No

If yes, is the usage confined to a specific room/area?

[ ] Yes [ ] No

Products stored @ shop/storage areas of building (southern area) as well as areas next to breakroom

4. Are pesticides used for indoor pest control?

[ ] Yes [✓] No

If yes: Name of product: _____

Frequency of use: _____

Has there been an application within the last 6 months? _____

5. Is smoking permitted inside the building?

[ ] Yes [✓] No

If yes, does smoking typically occur within a specific room/area?

[ ] Yes [ ] No Notes: N/A

How often? _____

Last time someone smoked in the building? _____

6. Has there been any remodeling or construction within the past 6 months (i.e. new carpeting/tiling, painting, additions, new furniture, etc.)

[ ] Yes [✓] No

_____

_____

_____

Is there any planned for the near future?

[ ] Yes [✓] No

_____

_____

Evaluation of Potential Indoor VOC Sources - continued

7. Does the building have an attached garage or do vehicles regularly enter the space (example: a vehicle repair shop)?
☐ Yes ☑ No

8. Are gas-powered equipment or cans of gasoline/fuels stored in the building or attached garage?
☑ Yes ☐ No

They work on gas power equipment but not store in Bldg

9. Do building occupants dry clean their clothes? ☐ Yes ☑ No

If yes, how often? Weekly / Monthly / Infrequently (3-4 times a year)

10. Has there ever been a fire in the building? ☐ Yes ☑ No

11. Has there ever been a known chemical spill immediately outside or inside the building? ☑ Yes ☐ No
0.1 on the floor due to maintenance activities

12. Was the building screened with a ppbRAE to identify indoor VOC sources? If yes, describe the results:
☑ Yes ☐ No

0.2 to 0.4 ppm throughout the Building
(0.3 ppm - break room area)
- 0.1 WD-40 paints stored in Southern room (maintenance area)
0.1 marks on floor observed in maintenance area (southern room)

Evaluation of Potential Outside VOC Sources

1. Are there stationary sources nearby (i.e. gas stations, emission stacks, hazardous waste storage, etc.):
☐ Yes ☑ No

2. Is there heavy vehicular traffic nearby (or other mobile sources)?
☐ Yes ☑ No

Train trucks at the northern border of property

Building Survey Form for Vapor Intrusion Investigations

Property ID: Building 505

Site/Project Name: Dow - Hanging Rock

VI sampling event

Date of Survey: 09-06-2017

Preparer(s): Elsy A. Escobar

Building Occupancy and Use

1. What is the estimated number of building occupants?

8 persons. (Male, 25-55 years old)

(Make general observations about age range and percentage of male to female ratio)

2. Are there any sensitive receptors in the building? (elderly, children, immuno-compromised, women of child bearing age, etc.)

N/A

3. How long have the current occupants occupied the building?

4. What is the building type/use? Circle all that apply and describe.

Residential (single family, duplex, apartments) / (Office) / Strip Mall / Commercial / Industrial / Other:

Describe building use (circle all that apply):

Residential / Manufacturing / Storage / Chemical Storage / (Administrative) / Instrumentation / Other:

Offices, Storage room

5. What are the historical activities within the building (if different than above)?

Open maintenance shop (20-30 yrs Ago)

Building Occupancy and Use - continued

Questions 6 - 8 are applicable to non-residential buildings only.

6. What type of work is performed within the building? Store room, and office Bldg.

7. How many hours per day or week do workers spend in the building?

~ 8 to 9 Hours

8. Is the building accessed by the public? (Describe approximate number of persons, frequency of visits, and duration of visits.)

None

Building Construction

1. What year was the building constructed? ~ 1970

2. Have there been additions to the building? If so, when? (Identify on building sketch)

None

3. What are the approximate dimensions of the building? 239 ft x 59 ft

4. What are the construction materials of the exterior of the building?

Metal blocks Cinder block.

5. How many floors does the building have? 1

Does the main floor sit on, below, or above grade? On-grade
(How many feet above or below grade?)

Number of floors at or above grade? 1

Number of floors below grade? —
(How many feet below grade?)

Building Construction - continued

6. Describe the basement (if present):

Does the building have a basement and/or crawl space? No

How many feet below grade? –

Approximate square footage: –

Approximate ceiling height (give range if varying height): –

Is the basement separated into multiple rooms? Describe (note use, if space is finished/unfinished):

–

Construction materials of walls (i.e. poured concrete, cinderblock, brick, etc.; are the walls covered with epoxy?):

–

Are significant cracks present in the walls? –

7. Describe the main floor:

Approximate square footage: 9,300 ft^2

Approximate ceiling height (give range if varying height): Offices: 7 ft. Store Room: 12 to 16 ft

Is the main floor separated into multiple rooms? Yes

Office area, Storage Room, Conference Rooms, Bathrooms

Construction materials of walls (i.e. framing, siding, cinderblock, etc.):

Metal block, Cinder block

Building Construction - continued

8. Describe the building slab:

Construction materials of floor/slab: Concrete in store Room, Tile in breakroom Carpet in offices

Describe the floor coverings (epoxy paint, carpet, tile, etc.) Carpet, Tile (offices & breakroom)

If concrete slab, are expansion joints present? No

Are they sealed/showing deterioration? No

Are significant cracks present in the slab? No

Are there any penetrations in the slab? (utility conduits, etc.) storm drains outside the southern perimeter of Bldg 505

Is there a subslab vapor/moisture barrier in place? No

Are any floor drains or sumps present? Is there standing water in them? No / No

Are there any subsurface vaults present? (if so describe and add locations to building sketch)

None

9. Does the building have a moisture/dampness problem?

No / Rarely (less than 1 time per year) / (Occasionally (1-2 times per year)) / Frequently

10. Does the building ever flood?

(No) / Rarely (less than 1 time per year) / Occasionally (1-2 times per year) / Frequently

11. Is there a septic system? [ ] Yes [ ] Yes, but not in use [✓] No

12. Is there irrigation or a private well? [ ] Yes [ ] Yes, but not in use [✓] No

13. Type of ground cover outside: Grass / (Concrete) / Gravel / (Asphalt) / Other _____

14. Additional notes on building construction:

Existing Vapor Mitigation Systems

1. Has a radon or vapor mitigation system been installed in this building? (Show location on building sketch)

No

If yes: Installation Date: _____

Type of System: Passive Venting / Active Subslab Depressurization
Crack and Crevice Sealing / Dilution Ventilation Control / Other

Notes: _____

Air Flow Within the Building and Outdoor Air Exchange

1. Are there any areas of the building that are positively or negatively pressurized (look for doors not opening and/or closing properly, perceptible air flow, audible fan noises)?

No

2. Is there one HVAC zone or multiple zones? How many zones? Add thermostat locations to building floorplan, if available.

Multiple zones. HVAC (central) in offices and units in store room (EE office)

Individual units in some offices (southern offices of Bldg)

Central air in conference rooms.

3. Type of ventilation system (circle all that apply):

(Central Air Condition) (→ office area → conference room) / Mechanical Fans / Bathroom Ventilation Fans / (Individual Air Condition Units)
Kitchen Range Hood Fan / Outside Air Intake / Industrial Floor Fans
Whole-Building Attic Exhaust Fan / Other: Window units in store rooms

4. Type of heating system (circle all that apply):

(Forced Hot Air) / (Hot Air Radiation → conference rooms - breakroom) / Wood / Steam Radiation / Heat Pump / (Individual Heater → offices) / Hot Water Radiation
Kerosene Heater / Fireplace / Electric Baseboard / Other: _____

5. Type of fuel utilized (circle all that apply):

(Natural Gas) / (Electric) / Fuel Oil / Wood / Coal / Solar / Kerosene / Other: _____

6. Are there any sources of outdoor air?

☐	Mechanical (AHU)	☑	Doors
☐	Windows	☑	Other - Gates

Are windows/doors left open routinely (seasonal differences)? No - only in store room
Roller gate

Evaluation of Potential Indoor VOC Sources

1. Are SDSs available for chemicals used with in the building? If possible, obtain a copy of the Table of Contents. List items in additional notes section (include approximate quantities and frequency).

[✓] Yes [ ] No → in store room of Bldg 505 & Main gate

2. Do any of the products stored in the building contain VOCs? Oil, break fluids

[✓] Yes [ ] No

3. Are any of the target analytes used in the building? → not used often

[ ] Yes [✓] No

If yes, is the usage confined to a specific room/area?

[ ] Yes [ ] No

Store Room (use for maintenance, tools & materials storage)

(Gasoline cans & oils)

4. Are pesticides used for indoor pest control?

[ ] Yes [✓] No

If yes: Name of product: _____

Frequency of use: _____

Has there been an application within the last 6 months? _____

5. Is smoking permitted inside the building?

[ ] Yes [✓] No

If yes, does smoking typically occur within a specific room/area?

[ ] Yes [✓] No Notes: _____

How often? _____

Last time someone smoked in the building? _____

6. Has there been any remodeling or construction within the past 6 months (i.e. new carpeting/tiling, painting, additions, new furniture, etc.)

[ ] Yes [✓] No

_____

_____

_____

Is there any planned for the near future?

[ ] Yes [✓] No

_____

_____

Evaluation of Potential Indoor VOC Sources - continued

7. Does the building have an attached garage or do vehicles regularly enter the space (example: a vehicle repair shop)?
[ ] Yes [✓] No

8. Are gas-powered equipment or cans of gasoline/fuels stored in the building or attached garage?
[✓] Yes [ ] No

Forklifts (propane)

9. Do building occupants dry clean their clothes? [ ] Yes [✓] No

If yes, how often? Weekly / Monthly / Infrequently (3-4 times a year)

10. Has there ever been a fire in the building? [ ] Yes [✓] No

11. Has there ever been a known chemical spill immediately outside or inside the building?
[ ] Yes [✓] No

12. Was the building screened with a ppbRAE to identify indoor VOC sources? If yes, describe the results:
[✓] Yes [ ] No

0.1 ppm to 0.5 ppm throughout the entire Bldg.

Northern area: 0.3 - 0.5 ppm.

South eastern area: 0.1 - 0.2 ppm.

Evaluation of Potential Outside VOC Sources

1. Are there stationary sources nearby (i.e. gas stations, emission stacks, hazardous waste storage, etc.):
[ ] Yes [✓] No

2. Is there heavy vehicular traffic nearby (or other mobile sources)?
[ ] Yes [✓] No

Light traffic. Train rails in northern border of Bldgs.

Attachment 3
Data Quality Evaluation Technical Memorandum and Analytical Data Packages

TECHNICAL MEMORANDUM

Data Quality Evaluation for the Vapor Intrusion Investigation at the Dow Hanging Rock Facility, Ironton, Ohio

PREPARED FOR:	The Dow Chemical Corporation
PREPARED BY:	CH2M
DATE:	October 9, 2017

Introduction

This data quality evaluation (DQE) report assesses the data quality of analytical results for indoor air (IA), outdoor air (OA), and soil gas (SG) samples associated with the Dow Hanging Rock Facility in Ironton, Ohio. CH2M collected samples August 17 and September 7-8, 2017. Guidance for this DQE report came from the following: *Quality Assurance Project Plan Dow Hanging Rock, Ironton, Ohio* (QAPP) (*November 2011);* the *Quality Assurance Project Plan Addendum 2 (September 2016);* and, individual method requirements.

The analytical results were evaluated using the criteria of precision, accuracy, representativeness, comparability, and completeness (PARCC) as presented in the QAPP. This report is intended as a general data quality assessment designed to summarize data issues.

Analytical Data

This DQE report covers 25 SG, 10 indoor air IA, one OA, 3 SG field duplicates (FDs), and 2 IA FDs.
The samples were reported in two sample delivery groups (SDGs) identified as 320-30847-1 and L1731899.

Samples were collected and delivered to TestAmerica Laboratories, Inc. in Sacramento, California, and Alpha Analytical in Mansfield, Massachusetts. The SG samples were analyzed by the Method TO-15 and the IA/OA samples were analyzed by TO-15 SIM.

The SDGs were assessed by reviewing the following: (1) chain-of-custody documentation, (2) holding-time compliance, (3) calibration criteria, (4) method blanks, (5) laboratory control sample (LCS)/laboratory control sample duplicates (LCSD), (6) surrogate spike recoveries, (7) internal standard recoveries, (8) FD precision, and (9) required quality control (QC) samples at the specified frequencies.

Data flags were assigned according to the QAPP. Multiple flags are routinely applied to specific sample method/matrix/analyte combinations, but there will only be one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes matrix and blank sample impacts.

The data flags are those listed in the QAPP and defined as follows:

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

R = The sample result was rejected because of serious deficiencies in the ability to analyze the sample and meet the QC criteria. The presence or absence of the analyte could not be verified.

U = The analyte was analyzed for but was not detected above the reported sample quantitation limit.

UJ = The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Findings

The overall summaries of the data validation are contained in the following subsections. No data were qualified.

Holding Time and Preservation

All holding time and preservation criteria were met.

Calibration

Initial and continuing calibration analyses were performed as required by the method and met acceptance criteria.

Method Blanks

Method blanks were analyzed as required and were free of contamination.

Laboratory Control Samples

LCS/LCSDs were analyzed as required, and all accuracy and precision criteria were met.

Internal Standards

Internal standards were added to the samples and all acceptance criteria were met.

Surrogates

Surrogates were added to the samples and all acceptance criteria were met.

Field Duplicates

FDs were collected and analyzed, and all precision criteria were met.

Chain of Custody

Required procedures were followed, and the COCs were free of errors.

Overall Assessment

The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected and the resulting analytical data can be used to support the decision making process. The following summary highlights the PARCC findings for the above-defined events:

- Precision of the data was verified through the review of the field and laboratory data quality indicators that include FD, LCS/LCSD, and MS/MSD RPDs. Precision was acceptable.
- Accuracy of the data was verified through the review of the calibration data, LCS/LCSD, MS/MSD, internal standards and surrogate standard recoveries, as well as the evaluation of method blank data. Accuracy was acceptable.

- Representativeness of the data was verified through the sample's collection, storage, and preservation procedures and the verification of holding time compliance. The laboratory did not note any discrepancies with the sample's storage or preservation procedures. The data were reported from analyses within the USEPA-recommended holding time.
- Comparability of the data was verified using standard EPA analytical procedures and standard units for reporting. Results obtained are comparable to industry standards in that the collection and analytical techniques followed approved, documented procedures.
- Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. Completeness is expressed as the percentage of valid or usable measurements compared to planned measurements. Valid data are defined as all data that are not rejected for project use. The data were considered valid. The completeness goal of 95 percent was met for all methods/analytes.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 320-30847-1

Job Description: DOW Hanging Rock

For:
CH2M Hill, Inc.
400 E. Business Way
Suite 400
Cincinnati, OH 45241

Attention: Marie Chiller

Approved for release.
Lee Ann Heathcote
Project Manager II
8/25/2017 1:16 PM

Lee Ann Heathcote, Project Manager II
880 Riverside Parkway, West Sacramento, CA, 95605
leeann.heathcote@testamericainc.com
08/25/2017

cc: Ms. Shane Lowe

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Qualifiers

Air - GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job Narrative
320-30847-1

Receipt
The samples were received on 8/18/2017 9:30 AM; the samples arrived in good condition.

Receipt Exceptions
The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): S01-SG02-081717 (320-30847-2). The canister ID is 34000663, while the COC lists 34000633.

Air - GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: CH2M Hill, Inc.
Project/Site: DOW Hanging Rock

TestAmerica Job ID: 320-30847-1

Client Sample ID: S01-SG01-081717 — Lab Sample ID: 320-30847-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1000		450		ug/m3	355		TO-15	Total/NA
Tetrachloroethene	55000		960		ug/m3	355		TO-15	Total/NA
Trichloroethene	12000		760		ug/m3	355		TO-15	Total/NA

Client Sample ID: S01-SG02-081717 — Lab Sample ID: 320-30847-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	100000		1200		ug/m3	433		TO-15	Total/NA
Trichloroethene	5800		930		ug/m3	433		TO-15	Total/NA

Client Sample ID: S01-SG03-081717 — Lab Sample ID: 320-30847-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	62000		450		ug/m3	165		TO-15	Total/NA
Trichloroethene	2000		350		ug/m3	165		TO-15	Total/NA

Client Sample ID: S01-SG04-081717 — Lab Sample ID: 320-30847-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	31000		300		ug/m3	110		TO-15	Total/NA
Trichloroethene	430		240		ug/m3	110		TO-15	Total/NA

Client Sample ID: S01-SG05-081717 — Lab Sample ID: 320-30847-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	37000		330		ug/m3	120		TO-15	Total/NA

Client Sample ID: S01-SG05-081717-FD — Lab Sample ID: 320-30847-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	37000		330		ug/m3	120		TO-15	Total/NA

Client Sample ID: S01-SG06-081717 — Lab Sample ID: 320-30847-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	180000		2100		ug/m3	791		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: S01-SG01-081717

Lab Sample ID: 320-30847-1
Matrix: Air
Date Collected: 08/17/17 15:48
Date Received: 08/18/17 09:30
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**1000**		450		ug/m3			08/23/17 16:27	355
Bromoform	1500	U	1500		ug/m3			08/23/17 16:27	355
Ethylbenzene	620	U	620		ug/m3			08/23/17 16:27	355
Tetrachloroethene	**55000**		960		ug/m3			08/23/17 16:27	355
Trichloroethene	**12000**		760		ug/m3			08/23/17 16:27	355
Naphthalene	1500	U	1500		ug/m3			08/23/17 16:27	355

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*70 - 130*		*08/23/17 16:27*	*355*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*		*08/23/17 16:27*	*355*
Toluene-d8 (Surr)	*117*		*70 - 130*		*08/23/17 16:27*	*355*

Client Sample ID: S01-SG02-081717

Lab Sample ID: 320-30847-2
Matrix: Air
Date Collected: 08/17/17 15:14
Date Received: 08/18/17 09:30
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	550	U	550		ug/m3			08/23/17 17:19	433
Bromoform	1800	U	1800		ug/m3			08/23/17 17:19	433
Ethylbenzene	750	U	750		ug/m3			08/23/17 17:19	433
Tetrachloroethene	**100000**		1200		ug/m3			08/23/17 17:19	433
Trichloroethene	**5800**		930		ug/m3			08/23/17 17:19	433
Naphthalene	1800	U	1800		ug/m3			08/23/17 17:19	433

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*		*08/23/17 17:19*	*433*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 130*		*08/23/17 17:19*	*433*
Toluene-d8 (Surr)	*120*		*70 - 130*		*08/23/17 17:19*	*433*

Client Sample ID: S01-SG03-081717

Lab Sample ID: 320-30847-3
Matrix: Air
Date Collected: 08/17/17 14:45
Date Received: 08/18/17 09:30
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	210	U	210		ug/m3			08/23/17 18:11	165
Bromoform	680	U	680		ug/m3			08/23/17 18:11	165
Ethylbenzene	290	U	290		ug/m3			08/23/17 18:11	165
Tetrachloroethene	**62000**		450		ug/m3			08/23/17 18:11	165
Trichloroethene	**2000**		350		ug/m3			08/23/17 18:11	165
Naphthalene	690	U	690		ug/m3			08/23/17 18:11	165

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*70 - 130*		*08/23/17 18:11*	*165*
1,2-Dichloroethane-d4 (Surr)	*105*		*70 - 130*		*08/23/17 18:11*	*165*
Toluene-d8 (Surr)	*119*		*70 - 130*		*08/23/17 18:11*	*165*

Client Sample ID: S01-SG04-081717

Lab Sample ID: 320-30847-4
Matrix: Air
Date Collected: 08/17/17 14:15
Date Received: 08/18/17 09:30
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	140	U	140		ug/m3			08/23/17 19:02	110
Bromoform	450	U	450		ug/m3			08/23/17 19:02	110
Ethylbenzene	190	U	190		ug/m3			08/23/17 19:02	110
Tetrachloroethene	**31000**		300		ug/m3			08/23/17 19:02	110
Trichloroethene	**430**		240		ug/m3			08/23/17 19:02	110
Naphthalene	460	U	460		ug/m3			08/23/17 19:02	110

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*108*		*70 - 130*		*08/23/17 19:02*	*110*
1,2-Dichloroethane-d4 (Surr)	*103*		*70 - 130*		*08/23/17 19:02*	*110*
Toluene-d8 (Surr)	*121*		*70 - 130*		*08/23/17 19:02*	*110*

Client Sample ID: S01-SG05-081717

Lab Sample ID: 320-30847-5
Matrix: Air
Date Collected: 08/17/17 13:48
Date Received: 08/18/17 09:30
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	150	U	150		ug/m3			08/23/17 19:56	120
Bromoform	500	U	500		ug/m3			08/23/17 19:56	120
Ethylbenzene	210	U	210		ug/m3			08/23/17 19:56	120
Tetrachloroethene	**37000**		330		ug/m3			08/23/17 19:56	120
Trichloroethene	260	U	260		ug/m3			08/23/17 19:56	120
Naphthalene	500	U	500		ug/m3			08/23/17 19:56	120

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*70 - 130*		*08/23/17 19:56*	*120*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 130*		*08/23/17 19:56*	*120*
Toluene-d8 (Surr)	*121*		*70 - 130*		*08/23/17 19:56*	*120*

Client Sample ID: S01-SG05-081717-FD

Lab Sample ID: 320-30847-6
Matrix: Air
Date Collected: 08/17/17 13:48
Date Received: 08/18/17 09:30
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	150	U	150		ug/m3			08/23/17 20:47	120
Bromoform	500	U	500		ug/m3			08/23/17 20:47	120
Ethylbenzene	210	U	210		ug/m3			08/23/17 20:47	120
Tetrachloroethene	**37000**		330		ug/m3			08/23/17 20:47	120
Trichloroethene	260	U	260		ug/m3			08/23/17 20:47	120
Naphthalene	500	U	500		ug/m3			08/23/17 20:47	120

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*		*08/23/17 20:47*	*120*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 130*		*08/23/17 20:47*	*120*
Toluene-d8 (Surr)	*119*		*70 - 130*		*08/23/17 20:47*	*120*

Client Sample ID: S01-SG06-081717

Lab Sample ID: 320-30847-7

Date Collected: 08/17/17 12:57

Matrix: Air

Date Received: 08/18/17 09:30

Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1000	U	1000		ug/m3			08/23/17 21:37	791
Bromoform	3300	U	3300		ug/m3			08/23/17 21:37	791
Ethylbenzene	1400	U	1400		ug/m3			08/23/17 21:37	791
Tetrachloroethene	**180000**		2100		ug/m3			08/23/17 21:37	791
Trichloroethene	1700	U	1700		ug/m3			08/23/17 21:37	791
Naphthalene	3300	U	3300		ug/m3			08/23/17 21:37	791

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*70 - 130*		*08/23/17 21:37*	*791*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 130*		*08/23/17 21:37*	*791*
Toluene-d8 (Surr)	*119*		*70 - 130*		*08/23/17 21:37*	*791*

Default Detection Limits

Client: CH2M Hill, Inc.
Project/Site: DOW Hanging Rock

TestAmerica Job ID: 320-30847-1

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	RL	MDL	Units	Method
Benzene	1.3	0.25	ug/m3	TO-15
Bromoform	4.1	0.72	ug/m3	TO-15
Ethylbenzene	1.7	0.27	ug/m3	TO-15
Naphthalene	4.2	2.9	ug/m3	TO-15
Tetrachloroethene	2.7	0.35	ug/m3	TO-15
Trichloroethene	2.1	0.56	ug/m3	TO-15

Surrogate Summary

Client: CH2M Hill, Inc.
Project/Site: DOW Hanging Rock

TestAmerica Job ID: 320-30847-1

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	12DCE	TOL
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)
320-30847-1	S01-SG01-081717	111	101	117
320-30847-2	S01-SG02-081717	112	103	120
320-30847-3	S01-SG03-081717	110	105	119
320-30847-4	S01-SG04-081717	108	103	121
320-30847-5	S01-SG05-081717	110	104	121
320-30847-6	S01-SG05-081717-FD	107	106	119
320-30847-7	S01-SG06-081717	107	104	119
LCS 320-180799/3	Lab Control Sample	114	101	114
LCSD 320-180799/4	Lab Control Sample Dup	114	101	115
MB 320-180799/6	Method Blank	112	101	118

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 320-180799/6
Matrix: Air
Analysis Batch: 180799

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.3	U	1.3		ug/m3			08/23/17 13:19	1
Bromoform	4.1	U	4.1		ug/m3			08/23/17 13:19	1
Ethylbenzene	1.7	U	1.7		ug/m3			08/23/17 13:19	1
Tetrachloroethene	2.7	U	2.7		ug/m3			08/23/17 13:19	1
Trichloroethene	2.1	U	2.1		ug/m3			08/23/17 13:19	1
Naphthalene	4.2	U	4.2		ug/m3			08/23/17 13:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*112*		*70 - 130*		*08/23/17 13:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*		*08/23/17 13:19*	*1*
Toluene-d8 (Surr)	*118*		*70 - 130*		*08/23/17 13:19*	*1*

Lab Sample ID: LCS 320-180799/3
Matrix: Air
Analysis Batch: 180799

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	63.9	66.6		ug/m3		104	68 - 128
Bromoform	207	185		ug/m3		89	64 - 144
Ethylbenzene	86.8	75.2		ug/m3		87	76 - 136
Tetrachloroethene	136	121		ug/m3		89	56 - 138
Trichloroethene	107	114		ug/m3		106	64 - 127
Naphthalene	105	109		ug/m3		104	58 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*
Toluene-d8 (Surr)	*114*		*70 - 130*

Lab Sample ID: LCSD 320-180799/4
Matrix: Air
Analysis Batch: 180799

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	63.9	66.6		ug/m3		104	68 - 128	0	25
Bromoform	207	181		ug/m3		88	64 - 144	2	25
Ethylbenzene	86.8	73.8		ug/m3		85	76 - 136	2	25
Tetrachloroethene	136	118		ug/m3		87	56 - 138	2	25
Trichloroethene	107	113		ug/m3		106	64 - 127	0	25
Naphthalene	105	105		ug/m3		100	58 - 150	3	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*114*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 130*
Toluene-d8 (Surr)	*115*		*70 - 130*

QC Association Summary

Client: CH2M Hill, Inc.
Project/Site: DOW Hanging Rock

TestAmerica Job ID: 320-30847-1

Air - GC/MS VOA

Analysis Batch: 180799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-30847-1	S01-SG01-081717	Total/NA	Air	TO-15	
320-30847-2	S01-SG02-081717	Total/NA	Air	TO-15	
320-30847-3	S01-SG03-081717	Total/NA	Air	TO-15	
320-30847-4	S01-SG04-081717	Total/NA	Air	TO-15	
320-30847-5	S01-SG05-081717	Total/NA	Air	TO-15	
320-30847-6	S01-SG05-081717-FD	Total/NA	Air	TO-15	
320-30847-7	S01-SG06-081717	Total/NA	Air	TO-15	
MB 320-180799/6	Method Blank	Total/NA	Air	TO-15	
LCS 320-180799/3	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-180799/4	Lab Control Sample Dup	Total/NA	Air	TO-15	

Client Sample ID: S01-SG01-081717
Lab Sample ID: 320-30847-1
Date Collected: 08/17/17 15:48
Matrix: Air
Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		355	180799	08/23/17 16:27	AP1	TAL SAC

Client Sample ID: S01-SG02-081717
Lab Sample ID: 320-30847-2
Date Collected: 08/17/17 15:14
Matrix: Air
Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		433	180799	08/23/17 17:19	AP1	TAL SAC

Client Sample ID: S01-SG03-081717
Lab Sample ID: 320-30847-3
Date Collected: 08/17/17 14:45
Matrix: Air
Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		165	180799	08/23/17 18:11	AP1	TAL SAC

Client Sample ID: S01-SG04-081717
Lab Sample ID: 320-30847-4
Date Collected: 08/17/17 14:15
Matrix: Air
Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		110	180799	08/23/17 19:02	AP1	TAL SAC

Client Sample ID: S01-SG05-081717
Lab Sample ID: 320-30847-5
Date Collected: 08/17/17 13:48
Matrix: Air
Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		120	180799	08/23/17 19:56	AP1	TAL SAC

Client Sample ID: S01-SG05-081717-FD
Lab Sample ID: 320-30847-6
Date Collected: 08/17/17 13:48
Matrix: Air
Date Received: 08/18/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		120	180799	08/23/17 20:47	AP1	TAL SAC

Lab Chronicle

Client: CH2M Hill, Inc.
Project/Site: DOW Hanging Rock

TestAmerica Job ID: 320-30847-1

Client Sample ID: S01-SG06-081717

Date Collected: 08/17/17 12:57
Date Received: 08/18/17 09:30

Lab Sample ID: 320-30847-7

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		791	180799	08/23/17 21:37	AP1	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: CH2M Hill, Inc.
Project/Site: DOW Hanging Rock

TestAmerica Job ID: 320-30847-1

Laboratory: TestAmerica Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Oregon	NELAP	10	4040	01-28-18

Method Summary

Client: CH2M Hill, Inc.
Project/Site: DOW Hanging Rock

TestAmerica Job ID: 320-30847-1

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: CH2M Hill, Inc.
Project/Site: DOW Hanging Rock

TestAmerica Job ID: 320-30847-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-30847-1	S01-SG01-081717	Air	08/17/17 15:48	08/18/17 09:30
320-30847-2	S01-SG02-081717	Air	08/17/17 15:14	08/18/17 09:30
320-30847-3	S01-SG03-081717	Air	08/17/17 14:45	08/18/17 09:30
320-30847-4	S01-SG04-081717	Air	08/17/17 14:15	08/18/17 09:30
320-30847-5	S01-SG05-081717	Air	08/17/17 13:48	08/18/17 09:30
320-30847-6	S01-SG05-081717-FD	Air	08/17/17 13:48	08/18/17 09:30
320-30847-7	S01-SG06-081717	Air	08/17/17 12:57	08/18/17 09:30

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
VACORPIC100_00011	09/07/17	08/07/17	N2, Lot HOUSE	50 psi absolute	VACORPSTKCCV_00030	5 psi absolute	1,1,1-Trichloroethane	100 ppb v/v
							1,1,2,2-Tetrachloroethane	100 ppb v/v
							1,1,2-Trichloro-1,2,2-trifluoroethane	100 ppb v/v
							1,1,2-Trichloroethane	100 ppb v/v
							1,1-Dichloroethane	100 ppb v/v
							1,1-Dichloroethene	100 ppb v/v
							1,2,3-Trichlorobenzene	100 ppb v/v
							1,2,3-Trichloropropane	100 ppb v/v
							1,2,4-Trichlorobenzene	100 ppb v/v
							1,2,4-Trimethylbenzene	100 ppb v/v
							1,2-Dichloro-1,1,2,2-tetrafluoroethane	100 ppb v/v
							1,2-Dichlorobenzene	100 ppb v/v
							1,2-Dichloroethane	100 ppb v/v
							1,2-Dichloropropane	100 ppb v/v
							1,3,5-Trimethylbenzene	100 ppb v/v
							1,3-Dichlorobenzene	100 ppb v/v
							1,4-Dichlorobenzene	100 ppb v/v
							1,4-Dioxane	100 ppb v/v
							2-Butanone (MEK)	100 ppb v/v
							2-Chlorotoluene	100 ppb v/v
							2-Hexanone	100 ppb v/v
							2-Methyl-2-propanol	100 ppb v/v
							3-Chloro-1-propene	100 ppb v/v
							4-Ethyltoluene	100 ppb v/v
							4-Isopropyltoluene	100 ppb v/v
							4-Methyl-2-pentanone (MIBK)	100 ppb v/v
							Acetone	100 ppb v/v
							Acetonitrile	100 ppb v/v
							Acrolein	100 ppb v/v
							Acrylonitrile	100 ppb v/v
							Alpha Methyl Styrene	100 ppb v/v
							Benzene	100 ppb v/v
							Benzyl chloride	80 ppb v/v
							Bromoform	100 ppb v/v
							Bromomethane	100 ppb v/v
							Butadiene	100 ppb v/v
							Butane	100 ppb v/v
							C6 Range	100 ppb v/v
							Carbon disulfide	100 ppb v/v
							Carbon tetrachloride	100 ppb v/v
							Chlorobenzene	100 ppb v/v
							Chlorodibromomethane	100 ppb v/v
							Chlorodifluoromethane	100 ppb v/v
							Chloroethane	100 ppb v/v
							Chloroform	100 ppb v/v

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Chloromethane	100 ppb v/v
							cis-1,2-Dichloroethene	100 ppb v/v
							cis-1,3-Dichloropropene	100 ppb v/v
							Cyclohexane	100 ppb v/v
							Dibromomethane	100 ppb v/v
							Dichlorobromomethane	100 ppb v/v
							Dichlorodifluoromethane	100 ppb v/v
							Dodecane	100 ppb v/v
							Ethyl acetate	100 ppb v/v
							Ethyl ether	100 ppb v/v
							Ethylbenzene	100 ppb v/v
							Ethylene Dibromide	100 ppb v/v
							Hexachlorobutadiene	100 ppb v/v
							Hexane	100 ppb v/v
							Isooctane	100 ppb v/v
							Isopropylbenzene	100 ppb v/v
							m-Xylene & p-Xylene	200 ppb v/v
							Methyl methacrylate	100 ppb v/v
							Methyl tert-butyl ether	100 ppb v/v
							Methylene Chloride	100 ppb v/v
							n-Butanol	100 ppb v/v
							n-Butylbenzene	100 ppb v/v
							n-Decane	100 ppb v/v
							n-Heptane	100 ppb v/v
							n-Nonane	100 ppb v/v
							n-Octane	100 ppb v/v
							N-Propylbenzene	100 ppb v/v
							Naphthalene	100 ppb v/v
							Nonmethane Organic Compounds as Hexane	100 ppb v/v
							o-Xylene	100 ppb v/v
							Pentane	100 ppb v/v
							Propene	100 ppb v/v
							sec-Butylbenzene	100 ppb v/v
							Styrene	100 ppb v/v
							tert-Butylbenzene	100 ppb v/v
							Tetrachloroethene	100 ppb v/v
							Tetrahydrofuran	100 ppb v/v
							Toluene	100 ppb v/v
							Total VOC as Hexane	100 ppb v/v
							trans-1,2-Dichloroethene	100 ppb v/v
							trans-1,3-Dichloropropene	100 ppb v/v
							Trichloroethene	100 ppb v/v
							Trichlorofluoromethane	100 ppb v/v
							Undecane	100 ppb v/v
							Vinyl acetate	100 ppb v/v
							Vinyl bromide	100 ppb v/v
							Vinyl chloride	100 ppb v/v

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.VACORPSTKCCV_00030	12/18/17		Linde, Lot CC-230119		(Purchased Reagent)		1,1,1-Trichloroethane	1 ppm v/v
							1,1,2,2-Tetrachloroethane	1 ppm v/v
							1,1,2-Trichloro-1,2,2-trifluoroethane	1 ppm v/v
							1,1,2-Trichloroethane	1 ppm v/v
							1,1-Dichloroethane	1 ppm v/v
							1,1-Dichloroethene	1 ppm v/v
							1,2,3-Trichlorobenzene	1 ppm v/v
							1,2,3-Trichloropropane	1 ppm v/v
							1,2,4-Trichlorobenzene	1 ppm v/v
							1,2,4-Trimethylbenzene	1 ppm v/v
							1,2-Dichloro-1,1,2,2-tetrafluoroethane	1 ppm v/v
							1,2-Dichlorobenzene	1 ppm v/v
							1,2-Dichloroethane	1 ppm v/v
							1,2-Dichloropropane	1 ppm v/v
							1,3,5-Trimethylbenzene	1 ppm v/v
							1,3-Dichlorobenzene	1 ppm v/v
							1,4-Dichlorobenzene	1 ppm v/v
							1,4-Dioxane	1 ppm v/v
							2-Butanone (MEK)	1 ppm v/v
							2-Chlorotoluene	1 ppm v/v
							2-Hexanone	1 ppm v/v
							2-Methyl-2-propanol	1 ppm v/v
							3-Chloro-1-propene	1 ppm v/v
							4-Ethyltoluene	1 ppm v/v
							4-Isopropyltoluene	1 ppm v/v
							4-Methyl-2-pentanone (MIBK)	1 ppm v/v
							Acetone	1 ppm v/v
							Acetonitrile	1 ppm v/v
							Acrolein	1 ppm v/v
							Acrylonitrile	1 ppm v/v
							Alpha Methyl Styrene	1 ppm v/v
							Benzene	1 ppm v/v
							Benzyl chloride	0.8 ppm v/v
							Bromoform	1 ppm v/v
							Bromomethane	1 ppm v/v
							Butadiene	1 ppm v/v
							Butane	1 ppm v/v
							C6 Range	1 ppm v/v
							Carbon disulfide	1 ppm v/v
							Carbon tetrachloride	1 ppm v/v
							Chlorobenzene	1 ppm v/v
							Chlorodibromomethane	1 ppm v/v
							Chlorodifluoromethane	1 ppm v/v
							Chloroethane	1 ppm v/v
							Chloroform	1 ppm v/v
							Chloromethane	1 ppm v/v

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							cis-1,2-Dichloroethene	1 ppm v/v
							cis-1,3-Dichloropropene	1 ppm v/v
							Cyclohexane	1 ppm v/v
							Dibromomethane	1 ppm v/v
							Dichlorobromomethane	1 ppm v/v
							Dichlorodifluoromethane	1 ppm v/v
							Dodecane	1 ppm v/v
							Ethyl acetate	1 ppm v/v
							Ethyl ether	1 ppm v/v
							Ethylbenzene	1 ppm v/v
							Ethylene Dibromide	1 ppm v/v
							Hexachlorobutadiene	1 ppm v/v
							Hexane	1 ppm v/v
							Isooctane	1 ppm v/v
							Isopropylbenzene	1 ppm v/v
							m-Xylene & p-Xylene	2 ppm v/v
							Methyl methacrylate	1 ppm v/v
							Methyl tert-butyl ether	1 ppm v/v
							Methylene Chloride	1 ppm v/v
							n-Butanol	1 ppm v/v
							n-Butylbenzene	1 ppm v/v
							n-Decane	1 ppm v/v
							n-Heptane	1 ppm v/v
							n-Nonane	1 ppm v/v
							n-Octane	1 ppm v/v
							N-Propylbenzene	1 ppm v/v
							Naphthalene	1 ppm v/v
							Nonmethane Organic Compounds as Hexane	1 ppm v/v
							o-Xylene	1 ppm v/v
							Pentane	1 ppm v/v
							Propene	1 ppm v/v
							sec-Butylbenzene	1 ppm v/v
							Styrene	1 ppm v/v
							tert-Butylbenzene	1 ppm v/v
							Tetrachloroethene	1 ppm v/v
							Tetrahydrofuran	1 ppm v/v
							Toluene	1 ppm v/v
							Total VOC as Hexane	1 ppm v/v
							trans-1,2-Dichloroethene	1 ppm v/v
							trans-1,3-Dichloropropene	1 ppm v/v
							Trichloroethene	1 ppm v/v
							Trichlorofluoromethane	1 ppm v/v
							Undecane	1 ppm v/v
							Vinyl acetate	1 ppm v/v
							Vinyl bromide	1 ppm v/v
							Vinyl chloride	1 ppm v/v

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
VACORPIC100_00013	09/14/17	08/14/17	N2, Lot HOUSE	50 psi absolute	VACORPSTKCCV_00030	5 psi absolute	Benzene	100 ppb v/v
							Bromoform	100 ppb v/v
							Ethylbenzene	100 ppb v/v
							Naphthalene	100 ppb v/v
							Tetrachloroethene	100 ppb v/v
							Trichloroethene	100 ppb v/v
.VACORPSTKCCV_00030	12/18/17		Linde, Lot CC-230119		(Purchased Reagent)		Benzene	1 ppm v/v
							Bromoform	1 ppm v/v
							Ethylbenzene	1 ppm v/v
							Naphthalene	1 ppm v/v
							Tetrachloroethene	1 ppm v/v
							Trichloroethene	1 ppm v/v
VACORPIC2_00002	09/07/17	08/08/17	N2, Lot HOUSE	50 psi absolute	VACORPIC100_00011	1 psi absolute	1,1,1-Trichloroethane	2 ppb v/v
							1,1,2,2-Tetrachloroethane	2 ppb v/v
							1,1,2-Trichloro-1,2,2-trifluoroethane	2 ppb v/v
							1,1,2-Trichloroethane	2 ppb v/v
							1,1-Dichloroethane	2 ppb v/v
							1,1-Dichloroethene	2 ppb v/v
							1,2,3-Trichlorobenzene	2 ppb v/v
							1,2,3-Trichloropropane	2 ppb v/v
							1,2,4-Trichlorobenzene	2 ppb v/v
							1,2,4-Trimethylbenzene	2 ppb v/v
							1,2-Dichloro-1,1,2,2-tetrafluoroethane	2 ppb v/v
							1,2-Dichlorobenzene	2 ppb v/v
							1,2-Dichloroethane	2 ppb v/v
							1,2-Dichloropropane	2 ppb v/v
							1,3,5-Trimethylbenzene	2 ppb v/v
							1,3-Dichlorobenzene	2 ppb v/v
							1,4-Dichlorobenzene	2 ppb v/v
							1,4-Dioxane	2 ppb v/v
							2-Butanone (MEK)	2 ppb v/v
							2-Chlorotoluene	2 ppb v/v
							2-Hexanone	2 ppb v/v
							2-Methyl-2-propanol	2 ppb v/v
							3-Chloro-1-propene	2 ppb v/v
							4-Ethyltoluene	2 ppb v/v
							4-Isopropyltoluene	2 ppb v/v
							4-Methyl-2-pentanone (MIBK)	2 ppb v/v
							Acetone	2 ppb v/v
							Acetonitrile	2 ppb v/v
							Acrolein	2 ppb v/v
							Acrylonitrile	2 ppb v/v
							Alpha Methyl Styrene	2 ppb v/v
							Benzene	2 ppb v/v

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Benzyl chloride	1.6 ppb v/v
							Bromoform	2 ppb v/v
							Bromomethane	2 ppb v/v
							Butadiene	2 ppb v/v
							Butane	2 ppb v/v
							C6 Range	2 ppb v/v
							Carbon disulfide	2 ppb v/v
							Carbon tetrachloride	2 ppb v/v
							Chlorobenzene	2 ppb v/v
							Chlorodibromomethane	2 ppb v/v
							Chlorodifluoromethane	2 ppb v/v
							Chloroethane	2 ppb v/v
							Chloroform	2 ppb v/v
							Chloromethane	2 ppb v/v
							cis-1,2-Dichloroethene	2 ppb v/v
							cis-1,3-Dichloropropene	2 ppb v/v
							Cyclohexane	2 ppb v/v
							Dibromomethane	2 ppb v/v
							Dichlorobromomethane	2 ppb v/v
							Dichlorodifluoromethane	2 ppb v/v
							Dodecane	2 ppb v/v
							Ethyl acetate	2 ppb v/v
							Ethyl ether	2 ppb v/v
							Ethylbenzene	2 ppb v/v
							Ethylene Dibromide	2 ppb v/v
							Hexachlorobutadiene	2 ppb v/v
							Hexane	2 ppb v/v
							Isooctane	2 ppb v/v
							Isopropylbenzene	2 ppb v/v
							m-Xylene & p-Xylene	4 ppb v/v
							Methyl methacrylate	2 ppb v/v
							Methyl tert-butyl ether	2 ppb v/v
							Methylene Chloride	2 ppb v/v
							n-Butanol	2 ppb v/v
							n-Butylbenzene	2 ppb v/v
							n-Decane	2 ppb v/v
							n-Heptane	2 ppb v/v
							n-Nonane	2 ppb v/v
							n-Octane	2 ppb v/v
							N-Propylbenzene	2 ppb v/v
							Naphthalene	2 ppb v/v
							Nonmethane Organic Compounds as Hexane	2 ppb v/v
							o-Xylene	2 ppb v/v
							Pentane	2 ppb v/v
							Propene	2 ppb v/v
							sec-Butylbenzene	2 ppb v/v
							Styrene	2 ppb v/v

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							tert-Butylbenzene	2 ppb v/v
							Tetrachloroethene	2 ppb v/v
							Tetrahydrofuran	2 ppb v/v
							Toluene	2 ppb v/v
							Total VOC as Hexane	2 ppb v/v
							trans-1,2-Dichloroethene	2 ppb v/v
							trans-1,3-Dichloropropene	2 ppb v/v
							Trichloroethene	2 ppb v/v
							Trichlorofluoromethane	2 ppb v/v
							Undecane	2 ppb v/v
							Vinyl acetate	2 ppb v/v
							Vinyl bromide	2 ppb v/v
							Vinyl chloride	2 ppb v/v
.VACORPIC100_00011	09/07/17	08/07/17	N2, Lot HOUSE	50 psi absolute	VACORPSTKCCV_00030	5 psi absolute	1,1,1-Trichloroethane	100 ppb v/v
							1,1,2,2-Tetrachloroethane	100 ppb v/v
							1,1,2-Trichloro-1,2,2-trifluoroethane	100 ppb v/v
							1,1,2-Trichloroethane	100 ppb v/v
							1,1-Dichloroethane	100 ppb v/v
							1,1-Dichloroethene	100 ppb v/v
							1,2,3-Trichlorobenzene	100 ppb v/v
							1,2,3-Trichloropropane	100 ppb v/v
							1,2,4-Trichlorobenzene	100 ppb v/v
							1,2,4-Trimethylbenzene	100 ppb v/v
							1,2-Dichloro-1,1,2,2-tetrafluoroethane	100 ppb v/v
							1,2-Dichlorobenzene	100 ppb v/v
							1,2-Dichloroethane	100 ppb v/v
							1,2-Dichloropropane	100 ppb v/v
							1,3,5-Trimethylbenzene	100 ppb v/v
							1,3-Dichlorobenzene	100 ppb v/v
							1,4-Dichlorobenzene	100 ppb v/v
							1,4-Dioxane	100 ppb v/v
							2-Butanone (MEK)	100 ppb v/v
							2-Chlorotoluene	100 ppb v/v
							2-Hexanone	100 ppb v/v
							2-Methyl-2-propanol	100 ppb v/v
							3-Chloro-1-propene	100 ppb v/v
							4-Ethyltoluene	100 ppb v/v
							4-Isopropyltoluene	100 ppb v/v
							4-Methyl-2-pentanone (MIBK)	100 ppb v/v
							Acetone	100 ppb v/v
							Acetonitrile	100 ppb v/v
							Acrolein	100 ppb v/v
							Acrylonitrile	100 ppb v/v
							Alpha Methyl Styrene	100 ppb v/v
							Benzene	100 ppb v/v

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Benzyl chloride	80 ppb v/v
							Bromoform	100 ppb v/v
							Bromomethane	100 ppb v/v
							Butadiene	100 ppb v/v
							Butane	100 ppb v/v
							C6 Range	100 ppb v/v
							Carbon disulfide	100 ppb v/v
							Carbon tetrachloride	100 ppb v/v
							Chlorobenzene	100 ppb v/v
							Chlorodibromomethane	100 ppb v/v
							Chlorodifluoromethane	100 ppb v/v
							Chloroethane	100 ppb v/v
							Chloroform	100 ppb v/v
							Chloromethane	100 ppb v/v
							cis-1,2-Dichloroethene	100 ppb v/v
							cis-1,3-Dichloropropene	100 ppb v/v
							Cyclohexane	100 ppb v/v
							Dibromomethane	100 ppb v/v
							Dichlorobromomethane	100 ppb v/v
							Dichlorodifluoromethane	100 ppb v/v
							Dodecane	100 ppb v/v
							Ethyl acetate	100 ppb v/v
							Ethyl ether	100 ppb v/v
							Ethylbenzene	100 ppb v/v
							Ethylene Dibromide	100 ppb v/v
							Hexachlorobutadiene	100 ppb v/v
							Hexane	100 ppb v/v
							Isooctane	100 ppb v/v
							Isopropylbenzene	100 ppb v/v
							m-Xylene & p-Xylene	200 ppb v/v
							Methyl methacrylate	100 ppb v/v
							Methyl tert-butyl ether	100 ppb v/v
							Methylene Chloride	100 ppb v/v
							n-Butanol	100 ppb v/v
							n-Butylbenzene	100 ppb v/v
							n-Decane	100 ppb v/v
							n-Heptane	100 ppb v/v
							n-Nonane	100 ppb v/v
							n-Octane	100 ppb v/v
							N-Propylbenzene	100 ppb v/v
							Naphthalene	100 ppb v/v
							Nonmethane Organic Compounds as Hexane	100 ppb v/v
							o-Xylene	100 ppb v/v
							Pentane	100 ppb v/v
							Propene	100 ppb v/v
							sec-Butylbenzene	100 ppb v/v
							Styrene	100 ppb v/v

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							tert-Butylbenzene	100 ppb v/v
							Tetrachloroethene	100 ppb v/v
							Tetrahydrofuran	100 ppb v/v
							Toluene	100 ppb v/v
							Total VOC as Hexane	100 ppb v/v
							trans-1,2-Dichloroethene	100 ppb v/v
							trans-1,3-Dichloropropene	100 ppb v/v
							Trichloroethene	100 ppb v/v
							Trichlorofluoromethane	100 ppb v/v
							Undecane	100 ppb v/v
							Vinyl acetate	100 ppb v/v
							Vinyl bromide	100 ppb v/v
							Vinyl chloride	100 ppb v/v
..VACORPSTKCCV_00030	12/18/17		Linde, Lot CC-230119		(Purchased Reagent)		1,1,1-Trichloroethane	1 ppm v/v
							1,1,2,2-Tetrachloroethane	1 ppm v/v
							1,1,2-Trichloro-1,2,2-trifluoroethane	1 ppm v/v
							1,1,2-Trichloroethane	1 ppm v/v
							1,1-Dichloroethane	1 ppm v/v
							1,1-Dichloroethene	1 ppm v/v
							1,2,3-Trichlorobenzene	1 ppm v/v
							1,2,3-Trichloropropane	1 ppm v/v
							1,2,4-Trichlorobenzene	1 ppm v/v
							1,2,4-Trimethylbenzene	1 ppm v/v
							1,2-Dichloro-1,1,2,2-tetrafluoroethane	1 ppm v/v
							1,2-Dichlorobenzene	1 ppm v/v
							1,2-Dichloroethane	1 ppm v/v
							1,2-Dichloropropane	1 ppm v/v
							1,3,5-Trimethylbenzene	1 ppm v/v
							1,3-Dichlorobenzene	1 ppm v/v
							1,4-Dichlorobenzene	1 ppm v/v
							1,4-Dioxane	1 ppm v/v
							2-Butanone (MEK)	1 ppm v/v
							2-Chlorotoluene	1 ppm v/v
							2-Hexanone	1 ppm v/v
							2-Methyl-2-propanol	1 ppm v/v
							3-Chloro-1-propene	1 ppm v/v
							4-Ethyltoluene	1 ppm v/v
							4-Isopropyltoluene	1 ppm v/v
							4-Methyl-2-pentanone (MIBK)	1 ppm v/v
							Acetone	1 ppm v/v
							Acetonitrile	1 ppm v/v
							Acrolein	1 ppm v/v
							Acrylonitrile	1 ppm v/v
							Alpha Methyl Styrene	1 ppm v/v
							Benzene	1 ppm v/v
							Benzyl chloride	0.8 ppm v/v

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Bromoform	1 ppm v/v
							Bromomethane	1 ppm v/v
							Butadiene	1 ppm v/v
							Butane	1 ppm v/v
							C6 Range	1 ppm v/v
							Carbon disulfide	1 ppm v/v
							Carbon tetrachloride	1 ppm v/v
							Chlorobenzene	1 ppm v/v
							Chlorodibromomethane	1 ppm v/v
							Chlorodifluoromethane	1 ppm v/v
							Chloroethane	1 ppm v/v
							Chloroform	1 ppm v/v
							Chloromethane	1 ppm v/v
							cis-1,2-Dichloroethene	1 ppm v/v
							cis-1,3-Dichloropropene	1 ppm v/v
							Cyclohexane	1 ppm v/v
							Dibromomethane	1 ppm v/v
							Dichlorobromomethane	1 ppm v/v
							Dichlorodifluoromethane	1 ppm v/v
							Dodecane	1 ppm v/v
							Ethyl acetate	1 ppm v/v
							Ethyl ether	1 ppm v/v
							Ethylbenzene	1 ppm v/v
							Ethylene Dibromide	1 ppm v/v
							Hexachlorobutadiene	1 ppm v/v
							Hexane	1 ppm v/v
							Isooctane	1 ppm v/v
							Isopropylbenzene	1 ppm v/v
							m-Xylene & p-Xylene	2 ppm v/v
							Methyl methacrylate	1 ppm v/v
							Methyl tert-butyl ether	1 ppm v/v
							Methylene Chloride	1 ppm v/v
							n-Butanol	1 ppm v/v
							n-Butylbenzene	1 ppm v/v
							n-Decane	1 ppm v/v
							n-Heptane	1 ppm v/v
							n-Nonane	1 ppm v/v
							n-Octane	1 ppm v/v
							N-Propylbenzene	1 ppm v/v
							Naphthalene	1 ppm v/v
							Nonmethane Organic Compounds as Hexane	1 ppm v/v
							o-Xylene	1 ppm v/v
							Pentane	1 ppm v/v
							Propene	1 ppm v/v
							sec-Butylbenzene	1 ppm v/v
							Styrene	1 ppm v/v
							tert-Butylbenzene	1 ppm v/v

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Tetrachloroethene	1 ppm v/v
							Tetrahydrofuran	1 ppm v/v
							Toluene	1 ppm v/v
							Total VOC as Hexane	1 ppm v/v
							trans-1,2-Dichloroethene	1 ppm v/v
							trans-1,3-Dichloropropene	1 ppm v/v
							Trichloroethene	1 ppm v/v
							Trichlorofluoromethane	1 ppm v/v
							Undecane	1 ppm v/v
							Vinyl acetate	1 ppm v/v
							Vinyl bromide	1 ppm v/v
							Vinyl chloride	1 ppm v/v
VACORPLC40_00433	09/09/17	08/09/17	N2, Lot HOUSE LINE	50 psi absolute	VACORPSTKLCS_00018	2 psi absolute	Benzene	40 ppb v/v
							Bromoform	40 ppb v/v
							Ethylbenzene	40 ppb v/v
							Naphthalene	40 ppb v/v
							Tetrachloroethene	40 ppb v/v
							Trichloroethene	40 ppb v/v
.VACORPSTKLCS_00018	12/14/17		Linde, Lot CC-346218		(Purchased Reagent)		Benzene	1 ppm v/v
							Bromoform	1 ppm v/v
							Ethylbenzene	1 ppm v/v
							Naphthalene	1 ppm v/v
							Tetrachloroethene	1 ppm v/v
							Trichloroethene	1 ppm v/v
VAMSIS20_00029	09/09/17	08/09/17	N2, Lot Nitrogen	45 psi absolute	VAMSIS300_00019	3 psi absolute	1,2-Dichloroethane-d4 (Surr)	20 ppb v/v
							1,4-Difluorobenzene	20 ppb v/v
							4-Bromofluorobenzene (Surr)	20 ppb v/v
							Chlorobenzene-d5 (IS)	20 ppb v/v
							Chlorobromomethane (IS)	20 ppb v/v
							Toluene-d8 (Surr)	20 ppb v/v
.VAMSIS300_00019	06/05/18		Linde, Lot 24086333		(Purchased Reagent)		1,2-Dichloroethane-d4 (Surr)	300 ppb v/v
							1,4-Difluorobenzene	300 ppb v/v
							4-Bromofluorobenzene (Surr)	300 ppb v/v
							Chlorobenzene-d5 (IS)	300 ppb v/v
							Chlorobromomethane (IS)	300 ppb v/v
							Toluene-d8 (Surr)	300 ppb v/v

Method TO15

Volatile Organic Compounds (GC/MS) by Method TO15

FORM II
AIR - GC/MS VOA SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Matrix: Air Level: Low

GC Column (1): RTX-Volatil ID: 0.32(mm)

Client Sample ID	Lab Sample ID	DCA #	TOL #	BFB #
S01-SG01-081717	320-30847-1	101	117	111
S01-SG02-081717	320-30847-2	103	120	112
S01-SG03-081717	320-30847-3	105	119	110
S01-SG04-081717	320-30847-4	103	121	108
S01-SG05-081717	320-30847-5	104	121	110
S01-SG05-081717-FD	320-30847-6	106	119	107
S01-SG06-081717	320-30847-7	104	119	107
	MB 320-180799/6	101	118	112
	LCS 320-180799/3	101	114	114
	LCSD 320-180799/4	101	115	114

	QC LIMITS
DCA = 1,2-Dichloroethane-d4 (Surr)	70-130
TOL = Toluene-d8 (Surr)	70-130
BFB = 4-Bromofluorobenzene (Surr)	70-130

Column to be used to flag recovery values

FORM II TO-15

FORM III
AIR - GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Matrix: Air Level: Low Lab File ID: MS9082303.D

Lab ID: LCS 320-180799/3 Client ID:

COMPOUND	SPIKE ADDED (ug/m3)	LCS CONCENTRATION (ug/m3)	LCS % REC	QC LIMITS REC	#
Benzene	63.9	66.6	104	68-128	
Bromoform	207	185	89	64-144	
Ethylbenzene	86.8	75.2	87	76-136	
Tetrachloroethene	136	121	89	56-138	
Trichloroethene	107	114	106	64-127	
Naphthalene	105	109	104	58-150	

Column to be used to flag recovery and RPD values

FORM III TO-15

FORM III
AIR - GC/MS VOA LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Matrix: Air Level: Low Lab File ID: MS9082304.D

Lab ID: LCSD 320-180799/4 Client ID:

COMPOUND	SPIKE ADDED (ug/m3)	LCSD CONCENTRATION (ug/m3)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Benzene	63.9	66.6	104	0	25	68-128	
Bromoform	207	181	88	2	25	64-144	
Ethylbenzene	86.8	73.8	85	2	25	76-136	
Tetrachloroethene	136	118	87	2	25	56-138	
Trichloroethene	107	113	106	0	25	64-127	
Naphthalene	105	105	100	3	25	58-150	

Column to be used to flag recovery and RPD values

FORM III TO-15

FORM IV
AIR - GC/MS VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Lab File ID: MS9082306.D Lab Sample ID: MB 320-180799/6

Matrix: Air Heated Purge:(Y/N) N

Instrument ID: ATMS9 Date Analyzed: 08/23/2017 13:19

GC Column: RTX-Volatiles ID: 0.32(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-180799/3	MS9082303.D	08/23/2017 10:40
	LCSD 320-180799/4	MS9082304.D	08/23/2017 11:32
S01-SG01-081717	320-30847-1	MS9082307.D	08/23/2017 16:27
S01-SG02-081717	320-30847-2	MS9082308.D	08/23/2017 17:19
S01-SG03-081717	320-30847-3	MS9082309.D	08/23/2017 18:11
S01-SG04-081717	320-30847-4	MS9082310.D	08/23/2017 19:02
S01-SG05-081717	320-30847-5	MS9082311.D	08/23/2017 19:56
S01-SG05-081717-FD	320-30847-6	MS9082312.D	08/23/2017 20:47
S01-SG06-081717	320-30847-7	MS9082313.D	08/23/2017 21:37

FORM V
AIR - GC/MS VOA INSTRUMENT PERFORMANCE CHECK

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Lab File ID: MS9080901.D BFB Injection Date: 08/09/2017

Instrument ID: ATMS9 BFB Injection Time: 16:00

Analysis Batch No.: 178572

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	8.0 - 40.0% of mass 95	22.1	
75	30.0 - 66.0% of mass 95	48.2	
95	Base peak, 100% relative abundance	100.0	
96	5.0 - 9.0% of mass 95	6.4	
173	Less than 2.0% of mass 174	0.0	(0.0) 1
174	50.0 - 120.0% of mass 95	81.2	
175	4.0 - 9.0 % of mass 174	6.0	(7.4) 1
176	93.0 - 101.0% of mass 174	78.9	(97.2) 1
177	5.0 - 9.0% of mass 176	5.1	(6.4) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	IC 320-178572/4	MS9080904.D	08/09/2017	18:37
	IC 320-178572/5	MS9080905.D	08/09/2017	19:28
	IC 320-178572/6	MS9080906.D	08/09/2017	20:20
	IC 320-178572/7	MS9080907.D	08/09/2017	21:11
	IC 320-178572/8	MS9080908.D	08/09/2017	22:05
	IC 320-178572/9	MS9080909.D	08/09/2017	22:58
	ICIS 320-178572/10	MS9080910.D	08/09/2017	23:49
	IC 320-178572/11	MS9080911.D	08/10/2017	00:41
	IC 320-178572/13	MS9080913.D	08/10/2017	02:27
	ICV 320-178572/15	MS9080915.D	08/10/2017	04:12

FORM V
AIR - GC/MS VOA INSTRUMENT PERFORMANCE CHECK

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Lab File ID: MS9082301.D BFB Injection Date: 08/23/2017

Instrument ID: ATMS9 BFB Injection Time: 08:58

Analysis Batch No.: 180799

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	8.0 - 40.0% of mass 95	24.6	
75	30.0 - 66.0% of mass 95	50.6	
95	Base peak, 100% relative abundance	100.0	
96	5.0 - 9.0% of mass 95	6.6	
173	Less than 2.0% of mass 174	0.7	(0.9) 1
174	50.0 - 120.0% of mass 95	76.1	
175	4.0 - 9.0 % of mass 174	5.6	(7.4) 1
176	93.0 - 101.0% of mass 174	73.0	(95.9) 1
177	5.0 - 9.0% of mass 176	4.8	(6.6) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 320-180799/2	MS9082302.D	08/23/2017	09:49
	LCS 320-180799/3	MS9082303.D	08/23/2017	10:40
	LCSD 320-180799/4	MS9082304.D	08/23/2017	11:32
	MB 320-180799/6	MS9082306.D	08/23/2017	13:19
S01-SG01-081717	320-30847-1	MS9082307.D	08/23/2017	16:27
S01-SG02-081717	320-30847-2	MS9082308.D	08/23/2017	17:19
S01-SG03-081717	320-30847-3	MS9082309.D	08/23/2017	18:11
S01-SG04-081717	320-30847-4	MS9082310.D	08/23/2017	19:02
S01-SG05-081717	320-30847-5	MS9082311.D	08/23/2017	19:56
S01-SG05-081717-FD	320-30847-6	MS9082312.D	08/23/2017	20:47
S01-SG06-081717	320-30847-7	MS9082313.D	08/23/2017	21:37

FORM VIII
AIR - GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Sample No.: ICIS 320-178572/10 Date Analyzed: 08/09/2017 23:49

Instrument ID: ATMS9 GC Column: RTX-Volatiles ID: 0.32(mm)

Lab File ID (Standard): MS9080910.D Heated Purge: (Y/N) N

Calibration ID: 33418

		CBM		DFBZ		CBZd5	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		49695	12.32	189247	14.41	114449	20.32
UPPER LIMIT		69573	12.65	264946	14.74	160229	20.65
LOWER LIMIT		29817	11.99	113548	14.08	68669	19.99
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 320-178572/15		58072	12.32	219820	14.41	133541	20.32
CCVIS 320-180799/2		49366	12.33	190382	14.41	142191	20.32

CBM = Chlorobromomethane (IS)
DFBZ = 1,4-Difluorobenzene
CBZd5 = Chlorobenzene-d5 (IS)

Area Limit = 60%-140% of internal standard area
RT Limit = ± 0.33 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII TO-15

FORM VIII
AIR - GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Sample No.: CCVIS 320-180799/2 Date Analyzed: 08/23/2017 09:49

Instrument ID: ATMS9 GC Column: RTX-Volatiles ID: 0.32(mm)

Lab File ID (Standard): MS9082302.D Heated Purge: (Y/N) N

Calibration ID: 33418

		CBM		DFBZ		CBZd5	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		49366	12.33	190382	14.41	142191	20.32
UPPER LIMIT		69112	12.66	266535	14.74	199067	20.65
LOWER LIMIT		29620	12.00	114229	14.08	85315	19.99
LAB SAMPLE ID	CLIENT SAMPLE ID						
LCS 320-180799/3		53352	12.32	207544	14.41	150802	20.32
LCSD 320-180799/4		55111	12.32	214121	14.42	158575	20.32
MB 320-180799/6		51412	12.32	215755	14.41	154682	20.32
320-30847-1	S01-SG01-081717	51645	12.32	212959	14.41	155013	20.32
320-30847-2	S01-SG02-081717	48038	12.32	199713	14.41	145980	20.32
320-30847-3	S01-SG03-081717	45869	12.32	193837	14.41	139670	20.32
320-30847-4	S01-SG04-081717	45350	12.33	186339	14.41	137278	20.33
320-30847-5	S01-SG05-081717	44293	12.32	180617	14.41	131838	20.32
320-30847-6	S01-SG05-081717-FD	43698	12.32	182018	14.41	129441	20.33
320-30847-7	S01-SG06-081717	43085	12.32	178408	14.41	127916	20.33

CBM = Chlorobromomethane (IS)
DFBZ = 1,4-Difluorobenzene
DFBZ = 1,4-Difluorobenzene
CBZd5 = Chlorobenzene-d5 (IS)
Area Limit = 60%-140% of internal standard area
CBZd5 = Chlorobenzene-d5 (IS)
RT Limit = ± 0.33 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII TO-15

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Client Sample ID: S01-SG01-081717 Lab Sample ID: 320-30847-1

Matrix: Air Lab File ID: MS9082307.D

Analysis Method: TO-15 Date Collected: 08/17/2017 15:48

Sample wt/vol: 1.9(mL) Date Analyzed: 08/23/2017 16:27

Soil Aliquot Vol: Dilution Factor: 355

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 180799 Units: ug/m3

CAS NO.	COMPOUND NAME	RESULT	Q	RL	
71-43-2	Benzene	1000		450	
75-25-2	Bromoform	1500	U	1500	
100-41-4	Ethylbenzene	620	U	620	
127-18-4	Tetrachloroethene	55000		960	
79-01-6	Trichloroethene	12000		760	
91-20-3	Naphthalene	1500	U	1500	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	111		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	101		70-130
2037-26-5	Toluene-d8 (Surr)	117		70-130

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30847-1

SDG No.:

Client Sample ID: S01-SG02-081717 | Lab Sample ID: 320-30847-2

Matrix: Air | Lab File ID: MS9082308.D

Analysis Method: TO-15 | Date Collected: 08/17/2017 15:14

Sample wt/vol: 1.2(mL) | Date Analyzed: 08/23/2017 17:19

Soil Aliquot Vol: | Dilution Factor: 433

Soil Extract Vol.: | GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 180799 | Units: ug/m3

CAS NO.	COMPOUND NAME	RESULT	Q	RL	
71-43-2	Benzene	550	U	550	
75-25-2	Bromoform	1800	U	1800	
100-41-4	Ethylbenzene	750	U	750	
127-18-4	Tetrachloroethene	100000		1200	
79-01-6	Trichloroethene	5800		930	
91-20-3	Naphthalene	1800	U	1800	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	112		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	103		70-130
2037-26-5	Toluene-d8 (Surr)	120		70-130

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Client Sample ID: S01-SG03-081717 Lab Sample ID: 320-30847-3

Matrix: Air Lab File ID: MS9082309.D

Analysis Method: TO-15 Date Collected: 08/17/2017 14:45

Sample wt/vol: 3.33(mL) Date Analyzed: 08/23/2017 18:11

Soil Aliquot Vol: Dilution Factor: 165

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 180799 Units: ug/m3

CAS NO.	COMPOUND NAME	RESULT	Q	RL	
71-43-2	Benzene	210	U	210	
75-25-2	Bromoform	680	U	680	
100-41-4	Ethylbenzene	290	U	290	
127-18-4	Tetrachloroethene	62000		450	
79-01-6	Trichloroethene	2000		350	
91-20-3	Naphthalene	690	U	690	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	110		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	105		70-130
2037-26-5	Toluene-d8 (Surr)	119		70-130

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Client Sample ID: S01-SG04-081717 Lab Sample ID: 320-30847-4

Matrix: Air Lab File ID: MS9082310.D

Analysis Method: TO-15 Date Collected: 08/17/2017 14:15

Sample wt/vol: 5(mL) Date Analyzed: 08/23/2017 19:02

Soil Aliquot Vol: Dilution Factor: 110

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 180799 Units: ug/m3

CAS NO.	COMPOUND NAME	RESULT	Q	RL	
71-43-2	Benzene	140	U	140	
75-25-2	Bromoform	450	U	450	
100-41-4	Ethylbenzene	190	U	190	
127-18-4	Tetrachloroethene	31000		300	
79-01-6	Trichloroethene	430		240	
91-20-3	Naphthalene	460	U	460	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	108		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	103		70-130
2037-26-5	Toluene-d8 (Surr)	121		70-130

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Client Sample ID: S01-SG05-081717 Lab Sample ID: 320-30847-5

Matrix: Air Lab File ID: MS9082311.D

Analysis Method: TO-15 Date Collected: 08/17/2017 13:48

Sample wt/vol: 4.44(mL) Date Analyzed: 08/23/2017 19:56

Soil Aliquot Vol: Dilution Factor: 120

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 180799 Units: ug/m3

CAS NO.	COMPOUND NAME	RESULT	Q	RL	
71-43-2	Benzene	150	U	150	
75-25-2	Bromoform	500	U	500	
100-41-4	Ethylbenzene	210	U	210	
127-18-4	Tetrachloroethene	37000		330	
79-01-6	Trichloroethene	260	U	260	
91-20-3	Naphthalene	500	U	500	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	110		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	104		70-130
2037-26-5	Toluene-d8 (Surr)	121		70-130

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Client Sample ID: S01-SG05-081717-FD Lab Sample ID: 320-30847-6

Matrix: Air Lab File ID: MS9082312.D

Analysis Method: TO-15 Date Collected: 08/17/2017 13:48

Sample wt/vol: 4.44(mL) Date Analyzed: 08/23/2017 20:47

Soil Aliquot Vol: Dilution Factor: 120

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 180799 Units: ug/m3

CAS NO.	COMPOUND NAME	RESULT	Q	RL	
71-43-2	Benzene	150	U	150	
75-25-2	Bromoform	500	U	500	
100-41-4	Ethylbenzene	210	U	210	
127-18-4	Tetrachloroethene	37000		330	
79-01-6	Trichloroethene	260	U	260	
91-20-3	Naphthalene	500	U	500	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	107		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	106		70-130
2037-26-5	Toluene-d8 (Surr)	119		70-130

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-30847-1

SDG No.:

Client Sample ID: S01-SG06-081717 | Lab Sample ID: 320-30847-7

Matrix: Air | Lab File ID: MS9082313.D

Analysis Method: TO-15 | Date Collected: 08/17/2017 12:57

Sample wt/vol: 0.7(mL) | Date Analyzed: 08/23/2017 21:37

Soil Aliquot Vol: | Dilution Factor: 791

Soil Extract Vol.: | GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 180799 | Units: ug/m3

CAS NO.	COMPOUND NAME	RESULT	Q	RL	
71-43-2	Benzene	1000	U	1000	
75-25-2	Bromoform	3300	U	3300	
100-41-4	Ethylbenzene	1400	U	1400	
127-18-4	Tetrachloroethene	180000		2100	
79-01-6	Trichloroethene	1700	U	1700	
91-20-3	Naphthalene	3300	U	3300	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	107		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	104		70-130
2037-26-5	Toluene-d8 (Surr)	119		70-130

FORM VI
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1 Analy Batch No.: 178572

SDG No.:

Instrument ID: ATMS9 GC Column: RTX-Volatil ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2017 18:37 Calibration End Date: 08/10/2017 02:27 Calibration ID: 33418

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-178572/4	MS9080904.D
Level 2	IC 320-178572/5	MS9080905.D
Level 3	IC 320-178572/6	MS9080906.D
Level 4	IC 320-178572/7	MS9080907.D
Level 5	IC 320-178572/8	MS9080908.D
Level 6	IC 320-178572/9	MS9080909.D
Level 7	ICIS 320-178572/10	MS9080910.D
Level 8	IC 320-178572/11	MS9080911.D
Level 9	IC 320-178572/13	MS9080913.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Propylene	1.1810 0.9106	1.2070 0.8833	1.0664 0.7662	1.0044 0.6419	0.9453	Ave		0.9562				19.2		30.0			
Chlorodifluoromethane	2.3403 2.0078	2.4333 1.9579	2.1540 1.7000	2.1505 1.4238	2.1054	Ave		2.0303				15.3		30.0			
Dichlorodifluoromethane	3.0970 2.5068	3.0827 2.1906	2.7082 1.6156	2.6022 +++++	2.3886	Ave		2.5240				19.2		30.0			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	1.8545 1.6802	1.7333 1.6372	1.7502 1.4204	1.6781 1.1494	1.6876	Ave		1.6212				13.0		30.0			
Chloromethane	1.3028 1.0477	1.2504 1.0100	1.1580 0.9083	1.1488 0.7453	1.0922	Ave		1.0737				16.0		30.0			
n-Butane	2.2362 1.8332	2.1965 1.7777	2.0755 1.6062	1.9187 1.2939	1.8698	Ave		1.8675				15.8		30.0			
Vinyl chloride	1.3088 0.9554	1.1941 0.9365	1.1122 0.8475	0.9995 0.6894	0.9800	Ave		1.0026				18.4		30.0			
1,3-Butadiene	1.0870 0.8684	1.0742 0.8498	0.9198 0.7542	0.9564 0.6193	0.9048	Ave		0.8926				16.4		30.0			
Bromomethane	0.8551 0.7653	0.9304 0.7605	0.8502 0.6776	0.8135 0.5799	0.7913	Ave		0.7804				13.2		30.0			
Chloroethane	+++++ 0.5163	0.5702 0.5089	0.5620 0.4562	0.5196 0.3890	0.5442	Ave		0.5083				11.8		30.0			
Vinyl bromide	0.9901 0.8726	1.1034 0.8607	0.9504 0.7682	0.9169 0.6574	0.9168	Ave		0.8930				14.3		30.0			
Trichlorofluoromethane	2.9656 2.5719	3.1298 2.5170	2.7240 2.2265	2.7396 1.9017	2.6556	Ave		2.6035				14.2		30.0			
n-Pentane	2.6433 2.3542	2.8089 2.3048	2.5746 2.0250	2.5042 1.6931	2.4420	Ave		2.3722				14.3		30.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1 Analy Batch No.: 178572

SDG No.:

Instrument ID: ATMS9 GC Column: RTX-Volatil ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2017 18:37 Calibration End Date: 08/10/2017 02:27 Calibration ID: 33418

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Ethyl ether	+++++ 0.4726	+++++ 0.4619	0.4108 0.4168	0.5143 0.3457	0.4715	Ave		0.4419				12.5		30.0			
Acrolein	0.4372 0.4128	0.4640 0.4211	0.3844 0.3778	0.4293 0.3307	0.3911	Ave		0.4054				9.7		30.0			
Acetone	2.4621 1.9338	2.4313 1.9062	1.9561 1.6561	2.0702 1.4031	1.9548	Ave		1.9749				16.9		30.0			
1,1,2-Trichloro-1,2,2-trifluoroethane	2.2881 1.9182	+++++ 1.8843	2.1143 1.6666	2.0465 1.4207	1.9554	Ave		1.9117				14.0		30.0			
1,1-Dichloroethene	2.1728 1.8795	2.2143 1.8705	1.9829 1.6461	1.8946 1.4171	1.9273	Ave		1.8894				12.9		30.0			
Acetonitrile	+++++ 1.0455	+++++ 1.0350	1.1124 0.9121	1.1685 0.7737	1.0864	Ave		1.0191				13.2		30.0			
tert-Butyl alcohol (TBA)	+++++ 2.8278	+++++ 2.8003	+++++ 2.5087	3.1036 2.1646	2.9322	Ave		2.7229				12.3		30.0			
Allyl chloride	1.8039 1.6149	1.8189 1.5891	1.7879 1.3941	1.7161 1.1823	1.6464	Ave		1.6171				13.0		30.0			
Methylene Chloride	1.9980 1.4863	1.9816 1.4760	1.7605 1.2869	1.6072 1.0909	1.5564	Ave		1.5826				18.9		30.0			
Carbon disulfide	3.0038 2.5719	3.0856 2.5316	2.8947 2.2537	2.6608 1.9230	2.6355	Ave		2.6178				14.0		30.0			
Acrylonitrile	1.2264 1.0568	1.2217 1.0487	1.0892 0.9350	1.1439 0.8022	1.0411	Ave		1.0628				12.6		30.0			
Methyl-t-Butyl Ether (MTBE)	+++++ 2.8756	+++++ 2.8370	+++++ 2.5405	3.0860 2.1655	2.9253	Ave		2.7383				12.1		30.0			
trans-1,2-Dichloroethene	2.1060 1.7040	1.9655 1.6835	1.9327 1.5106	1.8206 1.2906	1.7555	Ave		1.7521				14.1		30.0			
C6 Range	9.8628 8.1604	9.9794 8.0219	9.4080 7.0747	8.5435 5.9807	8.4639	Ave		8.3884				15.5		30.0			
Hexane	1.8047 1.5260	1.7704 1.4920	1.7333 1.3124	1.6702 1.1086	1.6044	Ave		1.5580				14.7		30.0			
1,1-Dichloroethane	2.3363 2.0104	2.3443 1.9852	2.1603 1.7513	2.1328 1.4885	2.0501	Ave		2.0288				13.4		30.0			
Vinyl acetate	3.7460 2.9648	3.5382 2.9912	3.0103 2.7725	2.8805 2.4308	2.8038	Ave		3.0153				13.2		30.0			
2-Butanone (MEK)	0.6003 0.4973	0.6170 0.4945	0.5173 0.4388	0.5089 0.3733	0.4983	Ave		0.5051				14.6		30.0			
cis-1,2-Dichloroethene	1.2622 0.9856	1.2288 0.9942	1.1040 0.8784	1.0847 0.7380	1.0401	Ave		1.0351				15.8		30.0			
Ethyl acetate	3.9754 3.0521	3.8487 3.0082	3.5217 2.6554	3.2431 2.2221	3.1575	Ave		3.1871				17.3		30.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1 Analy Batch No.: 178572

SDG No.:

Instrument ID: ATMS9 GC Column: RTX-Volatil ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2017 18:37 Calibration End Date: 08/10/2017 02:27 Calibration ID: 33418

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Chloroform	2.3684 1.9934	2.3291 1.9601	2.1563 1.7544	2.0850 1.5025	2.0524	Ave		2.0224				13.4		30.0			
Tetrahydrofuran	+++++ 1.6260	+++++ 1.6021	1.7527 1.4254	1.7949 1.2007	1.6557	Ave		1.5797				13.0		30.0			
1,1,1-Trichloroethane	2.6232 2.2373	2.5418 2.2281	2.5236 1.9640	2.4429 1.6828	2.3131	Ave		2.2841				13.3		30.0			
Cyclohexane	0.3823 0.3559	0.4109 0.3524	0.3652 0.3338	0.3661 0.3015	0.3609	Ave		0.3588				8.4		30.0			
2,2,4-Trimethylpentane	2.1799 1.7441	2.1085 1.7303	1.9246 1.6298	1.8616 1.4919	1.7734	Ave		1.8271				12.0		30.0			
Carbon tetrachloride	0.6346 0.6000	0.6766 0.5875	0.6006 0.5449	0.6204 0.4960	0.5894	Ave		0.5945				8.7		30.0			
n-Butanol	+++++ 1.0435	+++++ 1.0258	+++++ 0.9355	1.1516 0.7998	1.1028	Ave		1.0098				12.5		30.0			
1,2-Dichloroethane	0.5072 0.4253	0.4742 0.4186	0.4416 0.3881	0.4516 0.3581	0.4206	Ave		0.4317				10.2		30.0			
Benzene	0.9589 0.7639	0.8689 0.7537	0.8254 0.7080	0.8016 0.6543	0.7650	Ave		0.7889				11.3		30.0			
n-Heptane	0.8398 0.6687	0.7942 0.6591	0.7679 0.6082	0.7213 0.5460	0.6841	Ave		0.6988				13.2		30.0			
Trichloroethene	0.4286 0.3528	0.4072 0.3469	0.3910 0.3253	0.3769 0.2969	0.3653	Ave		0.3656				11.2		30.0			
1,2-Dichloropropane	0.1543 0.1297	0.1510 0.1270	0.1323 0.1201	0.1321 0.1084	0.1255	Ave		0.1312				10.9		30.0			
Methyl methacrylate	0.3661 0.2867	0.3420 0.2853	0.2888 0.2676	0.2875 0.2434	0.2772	Ave		0.2938				12.8		30.0			
Bromodichloromethane	0.4521 0.3895	0.4311 0.3815	0.4124 0.3588	0.3984 0.3259	0.3799	Ave		0.3921				9.6		30.0			
Dibromomethane	0.3667 0.3017	0.3280 0.2999	0.3239 0.2826	0.3182 0.2558	0.3013	Ave		0.3087				10.1		30.0			
1,4-Dioxane	+++++ 0.1855	+++++ 0.1823	0.1795 0.1692	0.1929 0.1518	0.1766	Ave		0.1768				7.5		30.0			
NMOC as Hexane	1259.6 733.16	1100.3 704.32	924.35 620.07	874.78 489.65	783.26	Ave		8.3884				15.5		30.0			
Total VOC as Hexane (C6-C12)	1259.6 733.16	1100.3 704.32	924.35 620.07	874.78 489.65	783.26	Ave		8.3884				15.5		30.0			
4-Methyl-2-pentanone (MIBK)	1.0246 0.8698	0.9949 0.8752	0.9174 0.8104	0.9126 0.7372	0.8543	Ave		0.8885				9.9		30.0			
cis-1,3-Dichloropropene	0.5076 0.4391	0.5384 0.4326	0.4762 0.4068	0.4778 0.3721	0.4291	Ave		0.4533				11.4		30.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1 Analy Batch No.: 178572

SDG No.:

Instrument ID: ATMS9 GC Column: RTX-Volatil ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2017 18:37 Calibration End Date: 08/10/2017 02:27 Calibration ID: 33418

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
n-Octane	2.0063 1.5440	1.9357 1.5248	1.7298 1.3675	1.6179 1.2340	1.5119	Ave		1.6080				15.5		30.0			
Toluene	1.2862 0.9657	1.2151 0.9477	1.0938 0.8850	1.0766 0.8189	0.9822	Ave		1.0301				14.8		30.0			
trans-1,3-Dichloropropene	0.9540 0.7797	0.8785 0.7718	0.8299 0.7127	0.7702 0.6580	0.7455	Ave		0.7889				11.2		30.0			
1,1,2-Trichloroethane	0.6479 0.5180	0.6144 0.5201	0.5835 0.4728	0.5374 0.4370	0.5000	Ave		0.5368				12.6		30.0			
2-Hexanone	0.8178 0.7120	0.8012 0.7100	0.7166 0.6622	0.6842 0.6145	0.6450	Ave		0.7070				9.5		30.0			
Tetrachloroethene	+++++ 0.7681	0.9479 0.7609	0.8222 0.6997	0.7823 0.6449	0.7288	Ave		0.7694				11.7		30.0			
Dibromochloromethane	1.1868 1.0214	1.1261 1.0105	1.0492 0.9290	1.0151 0.8559	0.9580	Ave		1.0169				9.8		30.0			
1,2-Dibromoethane (EDB)	1.0342 0.8402	0.9910 0.8396	0.8878 0.7826	0.8647 0.7158	0.8024	Ave		0.8620				11.5		30.0			
Chlorobenzene	1.6294 1.2477	1.5530 1.2084	1.3896 1.0865	1.3389 0.9688	1.2304	Ave		1.2947				16.2		30.0			
n-Nonane	1.8124 1.6298	1.9280 1.5668	1.6357 1.3998	1.7008 1.1793	1.5491	Ave		1.6002				13.7		30.0			
Ethylbenzene	2.8018 2.1795	2.6557 2.1401	2.3865 1.9622	2.3066 1.8243	2.1206	Ave		2.2642				13.9		30.0			
m,p-Xylene	2.1718 1.6824	2.1548 1.6474	1.8779 1.5153	1.8330 1.4005	1.6857	Ave		1.7743				14.9		30.0			
o-Xylene	2.2431 1.7243	2.1270 1.7018	1.8950 1.5478	1.8413 1.4326	1.6978	Ave		1.8012				14.4		30.0			
Styrene	1.5881 1.3320	1.5120 1.2921	1.3899 1.1800	1.3763 1.0722	1.2373	Ave		1.3311				12.0		30.0			
Bromoform	1.1611 1.0102	1.1279 1.0051	1.0333 0.9317	0.9848 0.8661	0.9358	Ave		1.0062				9.3		30.0			
Isopropylbenzene	0.8644 0.6744	0.8038 0.6492	0.7207 0.5883	0.7191 0.5229	0.6709	Ave		0.6904				15.0		30.0			
1,1,2,2-Tetrachloroethane	1.4134 1.1220	1.3435 1.1006	1.1699 1.0070	1.1606 0.9153	1.0632	Ave		1.1440				13.6		30.0			
1,2,3-Trichloropropane	0.4732 0.3893	0.4723 0.3790	0.3747 0.3446	0.4019 0.3143	0.3800	Ave		0.3921				13.4		30.0			
n-Decane	1.6578 1.7855	1.8284 1.7311	1.4149 1.5745	1.6996 1.3936	1.6378	Ave		1.6359				9.3		30.0			
N-Propylbenzene	3.6230 2.9701	3.5512 2.8992	3.0327 2.6284	3.1432 2.3869	2.9120	Ave		3.0163				13.1		30.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1 Analy Batch No.: 178572

SDG No.:

Instrument ID: ATMS9 GC Column: RTX-Volatil ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2017 18:37 Calibration End Date: 08/10/2017 02:27 Calibration ID: 33418

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
4-Ethyltoluene	0.9795 0.8021	0.9630 0.7850	0.8077 0.6854	0.8524 0.6278	0.8163	Ave		0.8132				14.0		30.0			
1,3,5-Trimethylbenzene	1.2010 1.0125	1.1715 0.9489	1.0641 0.8457	1.0815 0.7582	1.0057	Ave		1.0099				14.2		30.0			
2-Chlorotoluene	+++++ 0.5939	0.7220 0.5672	0.6442 0.5042	0.6626 0.4474	0.6048	Ave		0.5933				14.8		30.0			
alpha-Methylstyrene	1.2002 1.0831	1.1492 1.0740	1.0230 0.9707	1.0706 0.8795	1.0076	Ave		1.0509				9.1		30.0			
tert-Butylbenzene	1.8797 1.6125	1.8960 1.5577	1.6099 1.4262	1.6684 1.3154	1.5750	Ave		1.6156				11.6		30.0			
1,2,4-Trimethylbenzene	1.2071 1.1328	1.3392 1.0976	1.0452 0.9802	1.2135 0.8747	1.1334	Ave		1.1138				12.3		30.0			
sec-Butylbenzene	3.3813 3.0475	3.3760 2.9462	2.9172 2.6906	3.0608 2.4440	2.9340	Ave		2.9775				10.0		30.0			
4-Isopropyltoluene	2.8512 2.6172	2.7340 2.5339	2.3725 2.3122	2.6072 2.1037	2.4353	Ave		2.5075				9.1		30.0			
1,3-Dichlorobenzene	1.5712 1.3001	1.5571 1.2755	1.2855 1.1689	1.3250 1.0494	1.2389	Ave		1.3080				12.8		30.0			
1,4-Dichlorobenzene	1.5686 1.3083	1.5631 1.2959	1.2122 1.1920	1.3353 1.0682	1.2445	Ave		1.3098				12.6		30.0			
Benzyl chloride	2.6377 2.4702	2.5913 2.4988	2.1365 2.3392	2.4299 2.1780	2.3299	Ave		2.4013				7.2		30.0			
Undecane	1.4316 1.8932	1.3209 1.8822	1.1917 1.7132	1.3316 1.5139	1.5366	Ave		1.5350				16.2		30.0			
n-Butylbenzene	1.2957 1.3254	1.2576 1.2827	1.0644 1.1643	1.2243 1.0520	1.2278	Ave		1.2104				8.1		30.0			
1,2-Dichlorobenzene	1.4602 1.2150	1.4740 1.1909	1.1742 1.0901	1.2731 0.9808	1.1614	Ave		1.2244				13.1		30.0			
Dodecane	+++++ 1.6505	+++++ 1.7546	+++++ 1.6244	0.9988 +++++	1.0731	Ave		1.4202				25.0		30.0			
1,2,4-Trichlorobenzene	+++++ 1.0495	+++++ 1.0752	+++++ 1.0144	0.7989 +++++	0.8749	Ave		0.9626				12.4		30.0			
Hexachlorobutadiene	0.9610 0.9530	0.8732 0.9346	0.7440 0.8565	0.7933 +++++	0.8021	Ave		0.8647				9.3		30.0			
Naphthalene	+++++ 2.6290	+++++ 2.7084	+++++ 2.6028	1.8223 +++++	2.0782	Ave		2.3681				16.6		30.0			
1,2,3-Trichlorobenzene	1.0889 1.0106	0.8959 1.0409	0.7578 0.9792	0.7680 +++++	0.8443	Ave		0.9232				13.6		30.0			
1,2-Dichloroethane-d4 (Surr)	1.4973 1.5250	1.5353 1.5386	1.5741 1.5105	1.5372 1.5495	1.5306	Ave		1.5331				1.4		30.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1 Analy Batch No.: 178572

SDG No.:

Instrument ID: ATMS9 GC Column: RTX-Volatil ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2017 18:37 Calibration End Date: 08/10/2017 02:27 Calibration ID: 33418

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Toluene-d8 (Surr)	0.4774 0.4473	0.4772 0.4401	0.4638 0.4358	0.4778 0.4136	0.4620	Ave		0.4550				4.9		30.0			
4-Bromofluorobenzene (Surr)	0.4883 0.4820	0.4874 0.4920	0.4736 0.4797	0.4890 0.4869	0.4892	Ave		0.4853				1.2		30.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1 Analy Batch No.: 178572

SDG No.:

Instrument ID: ATMS9 GC Column: RTX-Volatil ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2017 18:37 Calibration End Date: 08/10/2017 02:27 Calibration ID: 33418

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-178572/4	MS9080904.D
Level 2	IC 320-178572/5	MS9080905.D
Level 3	IC 320-178572/6	MS9080906.D
Level 4	IC 320-178572/7	MS9080907.D
Level 5	IC 320-178572/8	MS9080908.D
Level 6	IC 320-178572/9	MS9080909.D
Level 7	ICIS 320-178572/10	MS9080910.D
Level 8	IC 320-178572/11	MS9080911.D
Level 9	IC 320-178572/13	MS9080913.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PPB V/V)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Propylene	CBM	Ave	2939 107559	4206 219466	5055 422993	9461 1006606	22058	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Chlorodifluoromethane	CBM	Ave	5824 237147	8479 486490	10210 938464	20258 2232578	49128	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Dichlorodifluoromethane	CBM	Ave	7707 296081	10742 544313	12837 891887	24513 +++++	55736	0.200 10.0	0.296 20.0	0.400 40.0	0.800 +++++	2.00
1,2-Dichloro-1,1,2,2-tetrafluoroeth ane	CBM	Ave	4615 198454	6040 406794	8296 784142	15808 1802308	39378	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Chloromethane	CBM	Ave	3242 123749	4357 250968	5489 501436	10822 1168618	25485	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
n-Butane	CBM	Ave	5565 216524	7654 441716	9838 886701	18074 2029003	43629	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Vinyl chloride	CBM	Ave	3257 112840	4161 232692	5272 467830	9415 1081018	22867	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
1,3-Butadiene	CBM	Ave	2705 102565	3743 211160	4360 416368	9009 971036	21113	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Bromomethane	CBM	Ave	2128 90389	3242 188966	4030 374068	7663 909383	18464	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Chloroethane	CBM	Ave	+++++ 60979	1987 126446	2664 251855	4895 610057	12698	+++++ 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Vinyl bromide	CBM	Ave	2464 103069	3845 213865	4505 424065	8637 1030886	21392	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Trichlorofluoromethane	CBM	Ave	7380 303770	10906 625403	12912 1229104	25807 2982026	61965	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
n-Pentane	CBM	Ave	6578 278056	9788 572695	12204 1117857	23590 2654836	56982	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Ethyl ether	CBM	Ave	+++++ 55820	+++++ 114762	1947 230081	4845 542141	11002	+++++ 10.0	+++++ 20.0	0.400 40.0	0.800 100	2.00

FORM VI
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1 Analy Batch No.: 178572

SDG No.:

Instrument ID: ATMS9 GC Column: RTX-Volatil ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2017 18:37 Calibration End Date: 08/10/2017 02:27 Calibration ID: 33418

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PPB V/V)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Acrolein	CBM	Ave	1088 48753	1617 104630	1822 208541	4044 518608	9127	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Acetone	CBM	Ave	6127 228401	8472 473654	9272 914237	19501 2200238	45614	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
1,1,2-Trichloro-1,2,2-trifluoroethane	CBM	Ave	5694 226561	+++++ 468199	10022 920005	19278 2227697	45628	0.200 10.0	+++++ 20.0	0.400 40.0	0.800 100	2.00
1,1-Dichloroethene	CBM	Ave	5407 221992	7716 464762	9399 908732	17847 2222106	44972	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Acetonitrile	CBM	Ave	+++++ 123482	+++++ 257183	5273 503531	11007 1213215	25349	+++++ 10.0	+++++ 20.0	0.400 40.0	0.800 100	2.00
tert-Butyl alcohol (TBA)	CBM	Ave	+++++ 334000	+++++ 695816	+++++ 1384922	29236 3394198	68419	+++++ 10.0	+++++ 20.0	+++++ 40.0	0.800 100	2.00
Allyl chloride	CBM	Ave	4489 190745	6338 394851	8475 769590	16166 1853948	38416	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Methylene Chloride	CBM	Ave	4972 175551	6905 366757	8345 710400	15140 1710574	36316	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Carbon disulfide	CBM	Ave	7475 303774	10752 629032	13721 1244116	25065 3015347	61497	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Acrylonitrile	CBM	Ave	3052 124816	4257 260585	5163 516140	10776 1257855	24292	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Methyl-t-Butyl Ether (MTBE)	CBM	Ave	+++++ 339639	+++++ 704933	+++++ 1402479	29070 3395663	68259	+++++ 10.0	+++++ 20.0	+++++ 40.0	0.800 100	2.00
trans-1,2-Dichloroethene	CBM	Ave	5241 201263	6849 418300	9161 833886	17150 2023814	40962	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
C6 Range	CBM	Ave	24544 963844	34774 1993249	44595 3905501	80480 9378158	197496	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Hexane	CBM	Ave	4491 180235	6169 370736	8216 724515	15733 1738435	37437	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
1,1-Dichloroethane	CBM	Ave	5814 237458	8169 493262	10240 966762	20091 2334009	47838	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Vinyl acetate	CBM	Ave	9322 350175	12329 743232	14269 1530544	27134 3811622	65423	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
2-Butanone (MEK)	CBM	Ave	1494 58737	2150 122863	2452 242225	4794 585348	11627	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
cis-1,2-Dichloroethene	CBM	Ave	3141 116415	4282 247046	5233 484908	10218 1157206	24270	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Ethyl acetate	CBM	Ave	9893 360486	13411 747461	16693 1465862	30550 3484378	73676	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Chloroform	CBM	Ave	5894 235441	8116 487031	10221 968480	19641 2356049	47891	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Tetrahydrofuran	CBM	Ave	+++++ 192050	+++++ 398088	8308 786896	16908 1882792	38634	+++++ 10.0	+++++ 20.0	0.400 40.0	0.800 100	2.00

FORM VI
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1 Analy Batch No.: 178572

SDG No.:

Instrument ID: ATMS9 GC Column: RTX-Volatil ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2017 18:37 Calibration End Date: 08/10/2017 02:27 Calibration ID: 33418

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PPB V/V)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
1,1,1-Trichloroethane	CBM	Ave	6528 264257	8857 553637	11962 1084207	23012 2638761	53974	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Cyclohexane	DFBZ	Ave	3821 161060	5779 333414	6985 667039	13575 1588911	33858	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
2,2,4-Trimethylpentane	DFBZ	Ave	21785 789273	29652 1637230	36815 3257030	69035 7863654	166377	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Carbon tetrachloride	DFBZ	Ave	6342 271517	9515 555907	11488 1088926	23008 2614590	55299	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
n-Butanol	CBM	Ave	+++++ 123248	+++++ 254882	+++++ 516415	10848 1254162	25732	+++++ 10.0	+++++ 20.0	+++++ 40.0	0.800 100	2.00
1,2-Dichloroethane	DFBZ	Ave	5069 192479	6669 396053	8448 775667	16748 1887341	39462	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Benzene	DFBZ	Ave	9583 345694	12219 713161	15790 1414897	29725 3448736	71766	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
n-Heptane	DFBZ	Ave	8393 302590	11169 623633	14690 1215402	26748 2877900	64179	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Trichloroethene	DFBZ	Ave	4283 159648	5726 328290	7479 650096	13975 1564769	34275	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
1,2-Dichloropropane	DFBZ	Ave	1542 58698	2124 120188	2531 240054	4898 571423	11778	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Methyl methacrylate	DFBZ	Ave	3659 129747	4809 269966	5524 534791	10660 1283158	26008	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Bromodichloromethane	DFBZ	Ave	4518 176238	6062 360954	7888 717015	14774 1717539	35639	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Dibromomethane	DFBZ	Ave	3665 136520	4613 283783	6196 564830	11799 1348481	28264	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
1,4-Dioxane	DFBZ	Ave	+++++ 83963	+++++ 172505	3434 338103	7152 800313	16565	+++++ 10.0	+++++ 20.0	0.400 40.0	0.800 100	2.00
NMOC as Hexane	CBM	Ave	3134509 86594865	3834050 175004706	4381509 342305917	8240400 767807494	18276683	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Total VOC as Hexane (C6-C12)	CBM	Ave	3134509 86594865	3834050 175004706	4381509 342305917	8240400 767807494	18276683	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
4-Methyl-2-pentanone (MIBK)	DFBZ	Ave	10240 393619	13992 828113	17548 1619565	33840 3885896	80150	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
cis-1,3-Dichloropropene	DFBZ	Ave	5073 198705	7571 409339	9109 813049	17720 1961172	40259	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
n-Octane	CBZd 5	Ave	12439 421007	16837 872545	20544 1682800	37110 3962676	88829	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Toluene	DFBZ	Ave	12854 437024	17088 896704	20924 1768549	39925 4316178	92145	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
trans-1,3-Dichloropropene	CBZd 5	Ave	5915 212599	7641 441679	9856 877071	17666 2112927	43801	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00

FORM VI
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1 Analy Batch No.: 178572

SDG No.:

Instrument ID: ATMS9 GC Column: RTX-Volatil ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2017 18:37 Calibration End Date: 08/10/2017 02:27 Calibration ID: 33418

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PPB V/V)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
1,1,2-Trichloroethane	CBZd 5	Ave	4017 141255	5344 297617	6930 581829	12326 1403415	29376	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
2-Hexanone	CBZd 5	Ave	5070 194130	6969 406270	8511 814888	15694 1973439	37894	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Tetrachloroethene	CBZd 5	Ave	+++++ 209432	8245 435439	9765 861035	17944 2070856	42821	+++++ 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Dibromochloromethane	CBZd 5	Ave	7358 278516	9795 578258	12461 1143185	23284 2748417	56283	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
1,2-Dibromoethane (EDB)	CBZd 5	Ave	6412 229094	8620 480443	10544 963053	19834 2298753	47140	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Chlorobenzene	CBZd 5	Ave	10102 340202	13508 691500	16504 1336989	30711 3111183	72286	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
n-Nonane	CBZd 5	Ave	11237 444399	16770 896610	19427 1722595	39013 3787059	91015	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Ethylbenzene	CBZd 5	Ave	17371 594292	23100 1224680	28344 2414666	52907 5858258	124587	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
m,p-Xylene	CBZd 5	Ave	26930 917471	37486 1885406	44607 3729376	84088 8994806	198076	0.400 20.0	0.592 40.0	0.800 80.0	1.60 200	4.00
o-Xylene	CBZd 5	Ave	13907 470170	18501 973845	22506 1904690	42236 4600266	99751	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Styrene	CBZd 5	Ave	9846 363193	13152 739377	16507 1452143	31570 3443161	72694	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Bromoform	CBZd 5	Ave	7199 275459	9811 575191	12272 1146556	22588 2781144	54983	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Isopropylbenzene	CBZd 5	Ave	5359 183894	6992 371517	8559 723935	16495 1679186	39416	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
1,1,2,2-Tetrachloroethane	CBZd 5	Ave	8763 305925	11686 629816	13895 1239230	26622 2939250	62464	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
1,2,3-Trichloropropane	CBZd 5	Ave	2934 106151	4108 216857	4450 424112	9219 1009194	22326	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
n-Decane	CBZd 5	Ave	10278 486839	15904 990596	16804 1937589	38985 4475063	96225	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
N-Propylbenzene	CBZd 5	Ave	22462 809859	30889 1659032	36018 3234475	72098 7664837	171084	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
4-Ethyltoluene	CBZd 5	Ave	6073 218699	8376 449234	9593 843401	19551 2015947	47960	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
1,3,5-Trimethylbenzene	CBZd 5	Ave	7446 276080	10190 543026	12638 1040696	24808 2434819	59089	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
2-Chlorotoluene	CBZd 5	Ave	+++++ 161941	6280 324595	7651 620425	15198 1436605	35531	+++++ 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
alpha-Methylstyrene	CBZd 5	Ave	7441 295332	9996 614607	12150 1194474	24558 2824399	59196	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00

FORM VI
AIR - GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1 Analy Batch No.: 178572

SDG No.:

Instrument ID: ATMS9 GC Column: RTX-Volatil ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/09/2017 18:37 Calibration End Date: 08/10/2017 02:27 Calibration ID: 33418

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PPB V/V)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
tert-Butylbenzene	CBZd 5	Ave	11654 439678	16492 891409	19120 1755078	38268 4223994	92537	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
1,2,4-Trimethylbenzene	CBZd 5	Ave	7484 308878	11649 628094	12414 1206217	27834 2808858	66592	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
sec-Butylbenzene	CBZd 5	Ave	20964 830957	29365 1685974	34647 3310967	70208 7848353	172378	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
4-Isopropyltoluene	CBZd 5	Ave	17677 713635	23781 1449998	28178 2845306	59804 6755462	143076	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
1,3-Dichlorobenzene	CBZd 5	Ave	9741 354496	13544 729897	15268 1438367	30393 3370011	72786	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
1,4-Dichlorobenzene	CBZd 5	Ave	9725 356728	13596 741569	14397 1466890	30628 3430270	73118	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Benzyl chloride	CBZd 5	Ave	13083 538831	18032 1143935	20300 2302837	44588 5595293	109508	0.160 8.00	0.237 16.0	0.320 32.0	0.640 80.0	1.60
Undecane	CBZd 5	Ave	8876 516226	11489 1077074	14153 2108231	30544 4861328	90277	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
n-Butylbenzene	CBZd 5	Ave	8033 361384	10939 734002	12641 1432718	28083 3378068	72134	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
1,2-Dichlorobenzene	CBZd 5	Ave	9053 331306	12821 681504	13946 1341426	29202 3149470	68233	0.200 10.0	0.296 20.0	0.400 40.0	0.800 100	2.00
Dodecane	CBZd 5	Ave	+++++ 450030	+++++ 1004033	+++++ 1998908	22910 +++++	63045	+++++ 10.0	+++++ 20.0	+++++ 40.0	0.800 +++++	2.00
1,2,4-Trichlorobenzene	CBZd 5	Ave	+++++ 286178	+++++ 615281	+++++ 1248283	18324 +++++	51402	+++++ 10.0	+++++ 20.0	+++++ 40.0	0.800 +++++	2.00
Hexachlorobutadiene	CBZd 5	Ave	5958 259859	7595 534807	8836 1054040	18197 +++++	47124	0.200 10.0	0.296 20.0	0.400 40.0	0.800 +++++	2.00
Naphthalene	CBZd 5	Ave	+++++ 716848	+++++ 1549863	+++++ 3202994	41799 +++++	122096	+++++ 10.0	+++++ 20.0	+++++ 40.0	0.800 +++++	2.00
1,2,3-Trichlorobenzene	CBZd 5	Ave	6751 275558	7793 595636	9000 1204928	17616 +++++	49606	0.200 10.0	0.296 20.0	0.400 40.0	0.800 +++++	2.00
1,2-Dichloroethane-d4 (Surr)	CBM	Ave	74521 72050	72297 76459	74616 83384	72402 97188	71432	4.00 4.00	4.00 4.00	4.00 4.00	4.00 4.00	4.00
Toluene-d8 (Surr)	DFBZ	Ave	95421 80969	90693 83282	88725 87100	88599 87210	86691	4.00 4.00	4.00 4.00	4.00 4.00	4.00 4.00	4.00
4-Bromofluorobenzene (Surr)	CBZd 5	Ave	60544 52572	57293 56311	56251 59025	56083 62546	57483	4.00 4.00	4.00 4.00	4.00 4.00	4.00 4.00	4.00

Curve Type Legend:
Ave = Average ISTD

FORM VII
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Lab Sample ID: ICV 320-178572/15 Calibration Date: 08/10/2017 04:12

Instrument ID: ATMS9 Calib Start Date: 08/09/2017 18:37

GC Column: RTX-Volatiles ID: 0.32(mm) Calib End Date: 08/10/2017 02:27

Lab File ID: MS9080915.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Propylene	Ave	0.9562	0.8065		16.9	20.0	-15.7	30.0
Chlorodifluoromethane	Ave	2.030	1.631		16.1	20.0	-19.6	30.0
Dichlorodifluoromethane	Ave	2.524	2.070		16.4	20.0	-18.0	30.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	Ave	1.621	1.465		18.1	20.0	-9.7	30.0
Chloromethane	Ave	1.074	0.9053		16.9	20.0	-15.7	30.0
n-Butane	Ave	1.868	1.517		16.2	20.0	-18.8	30.0
Vinyl chloride	Ave	1.003	0.8655		17.3	20.0	-13.7	30.0
1,3-Butadiene	Ave	0.8926	0.7336		16.4	20.0	-17.8	30.0
Bromomethane	Ave	0.7804	0.7182		18.4	20.0	-8.0	30.0
Chloroethane	Ave	0.5083	0.4853		19.1	20.0	-4.5	30.0
Vinyl bromide	Ave	0.8930	0.7538		16.9	20.0	-15.6	30.0
Trichlorofluoromethane	Ave	2.604	2.299		17.7	20.0	-11.7	30.0
n-Pentane	Ave	2.372	1.957		16.5	20.0	-17.5	30.0
Ethyl ether	Ave	0.4419	0.4149		18.8	20.0	-6.1	30.0
Acrolein	Ave	0.4054	0.3736		18.4	20.0	-7.8	30.0
Acetone	Ave	1.975	1.580		16.0	20.0	-20.0	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	1.912	1.570		16.4	20.0	-17.9	30.0
1,1-Dichloroethene	Ave	1.889	1.498		15.9	20.0	-20.7	30.0
Acetonitrile	Ave	1.019	0.8778		17.2	20.0	-13.9	30.0
tert-Butyl alcohol (TBA)	Ave	2.723	2.642		19.4	20.0	-3.0	30.0
Allyl chloride	Ave	1.617	1.441		17.8	20.0	-10.9	30.0
Methylene Chloride	Ave	1.583	1.186		15.0	20.0	-25.1	30.0
Carbon disulfide	Ave	2.618	2.189		16.7	20.0	-16.4	30.0
Acrylonitrile	Ave	1.063	0.8913		16.8	20.0	-16.1	30.0
Methyl-t-Butyl Ether (MTBE)	Ave	2.738	2.552		18.6	20.0	-6.8	30.0
trans-1,2-Dichloroethene	Ave	1.752	1.503		17.2	20.0	-14.2	30.0
Hexane	Ave	1.558	1.210		15.5	20.0	-22.4	30.0
1,1-Dichloroethane	Ave	2.029	1.717		16.9	20.0	-15.4	30.0
Vinyl acetate	Ave	3.015	2.895		19.2	20.0	-4.0	30.0
2-Butanone (MEK)	Ave	0.5051	0.4282		17.0	20.0	-15.2	30.0
cis-1,2-Dichloroethene	Ave	1.035	0.8980		17.4	20.0	-13.2	30.0
Ethyl acetate	Ave	3.187	2.646		16.6	20.0	-17.0	30.0
Chloroform	Ave	2.022	1.759		17.4	20.0	-13.0	30.0
Tetrahydrofuran	Ave	1.580	1.358		17.2	20.0	-14.0	30.0
1,1,1-Trichloroethane	Ave	2.284	1.961		17.2	20.0	-14.1	30.0
Cyclohexane	Ave	0.3588	0.3131		17.5	20.0	-12.7	30.0
2,2,4-Trimethylpentane	Ave	1.827	1.567		17.1	20.0	-14.3	30.0
Carbon tetrachloride	Ave	0.5945	0.5241		17.6	20.0	-11.8	30.0
n-Butanol	Ave	1.010	0.9712		19.2	20.0	-3.8	30.0
1,2-Dichloroethane	Ave	0.4317	0.3676		17.0	20.0	-14.8	30.0

FORM VII
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Lab Sample ID: ICV 320-178572/15 Calibration Date: 08/10/2017 04:12

Instrument ID: ATMS9 Calib Start Date: 08/09/2017 18:37

GC Column: RTX-Volatiles ID: 0.32(mm) Calib End Date: 08/10/2017 02:27

Lab File ID: MS9080915.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Benzene	Ave	0.7889	0.6820		17.3	20.0	-13.5	30.0
n-Heptane	Ave	0.6988	0.5757		16.5	20.0	-17.6	30.0
Trichloroethene	Ave	0.3656	0.3228		17.7	20.0	-11.7	30.0
1,2-Dichloropropane	Ave	0.1312	0.1164		17.7	20.0	-11.3	30.0
Methyl methacrylate	Ave	0.2938	0.2613		17.8	20.0	-11.1	30.0
Bromodichloromethane	Ave	0.3921	0.3361		17.1	20.0	-14.3	30.0
1,4-Dioxane	Ave	0.1768	0.1757		19.9	20.0	-0.6	30.0
Dibromomethane	Ave	0.3087	0.2836		18.4	20.0	-8.1	30.0
NMOC as Hexane	Ave	832.2	630.2		1500	20.0	-24.3	30.0
Total VOC as Hexane (C6-C12)	Ave	832.2	630.2		1500	20.0	-24.3	30.0
4-Methyl-2-pentanone (MIBK)	Ave	0.8885	0.7707		17.3	20.0	-13.3	30.0
cis-1,3-Dichloropropene	Ave	0.4533	0.4289		18.9	20.0	-5.4	30.0
n-Octane	Ave	1.608	1.363		17.0	20.0	-15.2	30.0
Toluene	Ave	1.030	0.8927		17.3	20.0	-13.3	30.0
trans-1,3-Dichloropropene	Ave	0.7889	0.6476		16.4	20.0	-17.9	30.0
1,1,2-Trichloroethane	Ave	0.5368	0.4986		18.6	20.0	-7.1	30.0
2-Hexanone	Ave	0.7070	0.6523		18.4	20.0	-7.8	30.0
Tetrachloroethene	Ave	0.7694	0.7214		18.8	20.0	-6.2	30.0
Dibromochloromethane	Ave	1.017	0.9110		17.9	20.0	-10.4	30.0
1,2-Dibromoethane (EDB)	Ave	0.8620	0.7926		18.4	20.0	-8.1	30.0
Chlorobenzene	Ave	1.295	1.162		18.0	20.0	-10.2	30.0
n-Nonane	Ave	1.600	1.393		17.4	20.0	-13.0	30.0
Ethylbenzene	Ave	2.264	2.023		17.9	20.0	-10.6	30.0
m,p-Xylene	Ave	1.774	1.583		35.7	40.0	-10.8	30.0
o-Xylene	Ave	1.801	1.638		18.2	20.0	-9.1	30.0
Styrene	Ave	1.331	1.240		18.6	20.0	-6.8	30.0
Bromoform	Ave	1.006	0.9210		18.3	20.0	-8.5	30.0
Isopropylbenzene	Ave	0.6904	0.6064		17.6	20.0	-12.2	30.0
1,1,2,2-Tetrachloroethane	Ave	1.144	1.052		18.4	20.0	-8.1	30.0
1,2,3-Trichloropropane	Ave	0.3921	0.3467		17.7	20.0	-11.6	30.0
N-Propylbenzene	Ave	3.016	2.675		17.7	20.0	-11.3	30.0
4-Ethyltoluene	Ave	0.8132	0.6948		17.1	20.0	-14.6	30.0
1,3,5-Trimethylbenzene	Ave	1.010	0.9085		18.0	20.0	-10.0	30.0
2-Chlorotoluene	Ave	0.5933	0.5168		17.4	20.0	-12.9	30.0
alpha-Methylstyrene	Ave	1.051	0.9703		18.5	20.0	-7.7	30.0
tert-Butylbenzene	Ave	1.616	1.408		17.4	20.0	-12.8	30.0
1,2,4-Trimethylbenzene	Ave	1.114	1.015		18.2	20.0	-8.9	30.0
sec-Butylbenzene	Ave	2.978	2.700		18.1	20.0	-9.3	30.0
4-Isopropyltoluene	Ave	2.507	2.286		18.2	20.0	-8.8	30.0
1,3-Dichlorobenzene	Ave	1.308	1.184		18.1	20.0	-9.5	30.0
1,4-Dichlorobenzene	Ave	1.310	1.191		18.2	20.0	-9.1	30.0

FORM VII
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Lab Sample ID: ICV 320-178572/15 Calibration Date: 08/10/2017 04:12

Instrument ID: ATMS9 Calib Start Date: 08/09/2017 18:37

GC Column: RTX-Volatiles ID: 0.32(mm) Calib End Date: 08/10/2017 02:27

Lab File ID: MS9080915.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Benzyl chloride	Ave	2.401	1.808		15.1	20.0	-24.7	30.0
n-Butylbenzene	Ave	1.210	1.134		18.7	20.0	-6.3	30.0
1,2-Dichlorobenzene	Ave	1.224	1.123		18.3	20.0	-8.3	30.0
1,2,4-Trichlorobenzene	Ave	0.9626	0.8570		17.8	20.0	-11.0	30.0
Hexachlorobutadiene	Ave	0.8647	0.7396		17.1	20.0	-14.5	30.0
Naphthalene	Ave	2.368	2.113		17.8	20.0	-10.8	30.0
1,2,3-Trichlorobenzene	Ave	0.9232	0.8130		17.6	20.0	-11.9	30.0
1,2-Dichloroethane-d4 (Surr)	Ave	1.533	1.409		3.68	4.00	-8.1	30.0
Toluene-d8 (Surr)	Ave	0.4550	0.4446		3.91	4.00	-2.3	30.0
4-Bromofluorobenzene (Surr)	Ave	0.4853	0.4902		4.04	4.00	1.0	30.0

FORM VII
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Lab Sample ID: CCVIS 320-180799/2 Calibration Date: 08/23/2017 09:49

Instrument ID: ATMS9 Calib Start Date: 08/09/2017 18:37

GC Column: RTX-Volatiles ID: 0.32(mm) Calib End Date: 08/10/2017 02:27

Lab File ID: MS9082302.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Propylene	Ave	0.9562	0.9940		20.8	20.0	4.0	30.0
Chlorodifluoromethane	Ave	2.030	2.202		21.7	20.0	8.5	30.0
Dichlorodifluoromethane	Ave	2.524	2.632		20.9	20.0	4.3	30.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	Ave	1.621	1.661		20.5	20.0	2.4	30.0
Chloromethane	Ave	1.074	1.118		20.8	20.0	4.1	30.0
n-Butane	Ave	1.868	1.939		20.8	20.0	3.8	30.0
Vinyl chloride	Ave	1.003	1.028		20.5	20.0	2.6	30.0
1,3-Butadiene	Ave	0.8926	0.9446		21.2	20.0	5.8	30.0
Bromomethane	Ave	0.7804	0.8303		21.3	20.0	6.4	30.0
Chloroethane	Ave	0.5083	0.5609		22.1	20.0	10.3	30.0
Vinyl bromide	Ave	0.8930	0.9405		21.1	20.0	5.3	30.0
Trichlorofluoromethane	Ave	2.604	2.656		20.4	20.0	2.0	30.0
n-Pentane	Ave	2.372	2.559		21.6	20.0	7.9	30.0
Ethyl ether	Ave	0.4419	0.5135		23.2	20.0	16.2	30.0
Acrolein	Ave	0.4054	0.4633		22.9	20.0	14.3	30.0
Acetone	Ave	1.975	1.978		20.0	20.0	0.2	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	1.912	2.055		21.5	20.0	7.5	30.0
1,1-Dichloroethene	Ave	1.889	2.030		21.5	20.0	7.4	30.0
Acetonitrile	Ave	1.019	1.077		21.1	20.0	5.7	30.0
tert-Butyl alcohol (TBA)	Ave	2.723	3.158		23.2	20.0	16.0	30.0
Allyl chloride	Ave	1.617	1.730		21.4	20.0	7.0	30.0
Methylene Chloride	Ave	1.583	1.602		20.2	20.0	1.2	30.0
Carbon disulfide	Ave	2.618	2.808		21.4	20.0	7.2	30.0
Acrylonitrile	Ave	1.063	1.117		21.0	20.0	5.1	30.0
Methyl-t-Butyl Ether (MTBE)	Ave	2.738	2.921		21.3	20.0	6.7	30.0
trans-1,2-Dichloroethene	Ave	1.752	1.864		21.3	20.0	6.4	30.0
Hexane	Ave	1.558	1.651		21.2	20.0	5.9	30.0
1,1-Dichloroethane	Ave	2.029	2.152		21.2	20.0	6.0	30.0
Vinyl acetate	Ave	3.015	3.090		20.5	20.0	2.5	30.0
2-Butanone (MEK)	Ave	0.5051	0.5161		20.4	20.0	2.2	30.0
cis-1,2-Dichloroethene	Ave	1.035	1.086		21.0	20.0	4.9	30.0
Ethyl acetate	Ave	3.187	3.128		19.6	20.0	-1.9	30.0
Chloroform	Ave	2.022	2.135		21.1	20.0	5.6	30.0
Tetrahydrofuran	Ave	1.580	1.673		21.2	20.0	5.9	30.0
1,1,1-Trichloroethane	Ave	2.284	2.388		20.9	20.0	4.6	30.0
Cyclohexane	Ave	0.3588	0.3842		21.4	20.0	7.1	30.0
2,2,4-Trimethylpentane	Ave	1.827	1.825		20.0	20.0	-0.1	30.0
Carbon tetrachloride	Ave	0.5945	0.6362		21.4	20.0	7.0	30.0
n-Butanol	Ave	1.010	1.170		23.2	20.0	15.8	30.0
1,2-Dichloroethane	Ave	0.4317	0.4559		21.1	20.0	5.6	30.0

FORM VII
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Lab Sample ID: CCVIS 320-180799/2 Calibration Date: 08/23/2017 09:49

Instrument ID: ATMS9 Calib Start Date: 08/09/2017 18:37

GC Column: RTX-Volatiles ID: 0.32(mm) Calib End Date: 08/10/2017 02:27

Lab File ID: MS9082302.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Benzene	Ave	0.7889	0.8284		21.0	20.0	5.0	30.0
n-Heptane	Ave	0.6988	0.7057		20.2	20.0	1.0	30.0
Trichloroethene	Ave	0.3656	0.3927		21.5	20.0	7.4	30.0
1,2-Dichloropropane	Ave	0.1312	0.1398		21.3	20.0	6.6	30.0
Methyl methacrylate	Ave	0.2938	0.2974		20.2	20.0	1.2	30.0
Bromodichloromethane	Ave	0.3921	0.4152		21.2	20.0	5.9	30.0
1,4-Dioxane	Ave	0.1768	0.1920		21.7	20.0	8.5	30.0
Dibromomethane	Ave	0.3087	0.3232		20.9	20.0	4.7	30.0
NMOC as Hexane	Ave	832.2	792.3		1890	20.0	-4.8	30.0
Total VOC as Hexane (C6-C12)	Ave	832.2	792.3		1890	20.0	-4.8	30.0
4-Methyl-2-pentanone (MIBK)	Ave	0.8885	0.9591		21.6	20.0	7.9	30.0
cis-1,3-Dichloropropene	Ave	0.4533	0.4841		21.4	20.0	6.8	30.0
n-Octane	Ave	1.608	1.400		17.4	20.0	-12.9	30.0
Toluene	Ave	1.030	1.020		19.8	20.0	-1.0	30.0
trans-1,3-Dichloropropene	Ave	0.7889	0.7007		17.8	20.0	-11.2	30.0
1,1,2-Trichloroethane	Ave	0.5368	0.4583		17.1	20.0	-14.6	30.0
2-Hexanone	Ave	0.7070	0.6256		17.7	20.0	-11.5	30.0
Tetrachloroethene	Ave	0.7694	0.6736		17.5	20.0	-12.4	30.0
Dibromochloromethane	Ave	1.017	0.9022		17.7	20.0	-11.3	30.0
1,2-Dibromoethane (EDB)	Ave	0.8620	0.7599		17.6	20.0	-11.9	30.0
Chlorobenzene	Ave	1.295	1.086		16.8	20.0	-16.1	30.0
n-Nonane	Ave	1.600	1.435		17.9	20.0	-10.3	30.0
Ethylbenzene	Ave	2.264	1.928		17.0	20.0	-14.9	30.0
m,p-Xylene	Ave	1.774	1.482		33.4	40.0	-16.5	30.0
o-Xylene	Ave	1.801	1.535		17.0	20.0	-14.8	30.0
Styrene	Ave	1.331	1.175		17.7	20.0	-11.7	30.0
Bromoform	Ave	1.006	0.8881		17.7	20.0	-11.7	30.0
Isopropylbenzene	Ave	0.6904	0.6079		17.6	20.0	-12.0	30.0
1,1,2,2-Tetrachloroethane	Ave	1.144	1.001		17.5	20.0	-12.5	30.0
1,2,3-Trichloropropane	Ave	0.3921	0.3382		17.3	20.0	-13.7	30.0
N-Propylbenzene	Ave	3.016	2.635		17.5	20.0	-12.6	30.0
4-Ethyltoluene	Ave	0.8132	0.7222		17.8	20.0	-11.2	30.0
1,3,5-Trimethylbenzene	Ave	1.010	0.8774		17.4	20.0	-13.1	30.0
2-Chlorotoluene	Ave	0.5933	0.5146		17.3	20.0	-13.3	30.0
alpha-Methylstyrene	Ave	1.051	0.9579		18.2	20.0	-8.8	30.0
tert-Butylbenzene	Ave	1.616	1.408		17.4	20.0	-12.8	30.0
1,2,4-Trimethylbenzene	Ave	1.114	0.9856		17.7	20.0	-11.5	30.0
sec-Butylbenzene	Ave	2.978	2.669		17.9	20.0	-10.4	30.0
4-Isopropyltoluene	Ave	2.507	2.264		18.1	20.0	-9.7	30.0
1,3-Dichlorobenzene	Ave	1.308	1.143		17.5	20.0	-12.6	30.0
1,4-Dichlorobenzene	Ave	1.310	1.145		17.5	20.0	-12.6	30.0

FORM VII
AIR - GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Lab Sample ID: CCVIS 320-180799/2 Calibration Date: 08/23/2017 09:49

Instrument ID: ATMS9 Calib Start Date: 08/09/2017 18:37

GC Column: RTX-Volatiles ID: 0.32(mm) Calib End Date: 08/10/2017 02:27

Lab File ID: MS9082302.D Conc. Units: ppb v/v Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Benzyl chloride	Ave	2.401	2.076		13.8	16.0	-13.6	30.0
n-Butylbenzene	Ave	1.210	1.141		18.9	20.0	-5.7	30.0
1,2-Dichlorobenzene	Ave	1.224	1.064		17.4	20.0	-13.1	30.0
1,2,4-Trichlorobenzene	Ave	0.9626	0.9119		18.9	20.0	-5.3	30.0
Hexachlorobutadiene	Ave	0.8647	0.8024		18.6	20.0	-7.2	30.0
Naphthalene	Ave	2.368	2.357		19.9	20.0	-0.5	30.0
1,2,3-Trichlorobenzene	Ave	0.9232	0.9010		19.5	20.0	-2.4	30.0
1,2-Dichloroethane-d4 (Surr)	Ave	1.533	1.595		4.16	4.00	4.0	30.0
Toluene-d8 (Surr)	Ave	0.4550	0.5182		4.55	4.00	13.9	30.0
4-Bromofluorobenzene (Surr)	Ave	0.4853	0.5536		4.56	4.00	14.1	30.0

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-180799/6

Matrix: Air Lab File ID: MS9082306.D

Analysis Method: TO-15 Date Collected:

Sample wt/vol: 250(mL) Date Analyzed: 08/23/2017 13:19

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 180799 Units: ug/m3

CAS NO.	COMPOUND NAME	RESULT	Q	RL	
71-43-2	Benzene	1.3	U	1.3	
75-25-2	Bromoform	4.1	U	4.1	
100-41-4	Ethylbenzene	1.7	U	1.7	
127-18-4	Tetrachloroethene	2.7	U	2.7	
79-01-6	Trichloroethene	2.1	U	2.1	
91-20-3	Naphthalene	4.2	U	4.2	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	112		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	101		70-130
2037-26-5	Toluene-d8 (Surr)	118		70-130

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-180799/3

Matrix: Air Lab File ID: MS9082303.D

Analysis Method: TO-15 Date Collected:

Sample wt/vol: 250(mL) Date Analyzed: 08/23/2017 10:40

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 180799 Units: ug/m3

CAS NO.	COMPOUND NAME	RESULT	Q	RL	
71-43-2	Benzene	66.6		1.3	
75-25-2	Bromoform	185		4.1	
100-41-4	Ethylbenzene	75.2		1.7	
127-18-4	Tetrachloroethene	121		2.7	
79-01-6	Trichloroethene	114		2.1	
91-20-3	Naphthalene	109		4.2	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	114		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	101		70-130
2037-26-5	Toluene-d8 (Surr)	114		70-130

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 320-180799/4

Matrix: Air Lab File ID: MS9082304.D

Analysis Method: TO-15 Date Collected:

Sample wt/vol: 250(mL) Date Analyzed: 08/23/2017 11:32

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 180799 Units: ug/m3

CAS NO.	COMPOUND NAME	RESULT	Q	RL	
71-43-2	Benzene	66.6		1.3	
75-25-2	Bromoform	181		4.1	
100-41-4	Ethylbenzene	73.8		1.7	
127-18-4	Tetrachloroethene	118		2.7	
79-01-6	Trichloroethene	113		2.1	
91-20-3	Naphthalene	105		4.2	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	114		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	101		70-130
2037-26-5	Toluene-d8 (Surr)	115		70-130

AIR - GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Instrument ID: ATMS9 Start Date: 08/09/2017 16:00

Analysis Batch Number: 178572 End Date: 08/10/2017 04:12

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 320-178572/1		08/09/2017 16:00	1	MS9080901.D	RTX-Volatiles 0.32(mm)
IC 320-178572/4		08/09/2017 18:37	1	MS9080904.D	RTX-Volatiles 0.32(mm)
IC 320-178572/5		08/09/2017 19:28	1	MS9080905.D	RTX-Volatiles 0.32(mm)
IC 320-178572/6		08/09/2017 20:20	1	MS9080906.D	RTX-Volatiles 0.32(mm)
IC 320-178572/7		08/09/2017 21:11	1	MS9080907.D	RTX-Volatiles 0.32(mm)
IC 320-178572/8		08/09/2017 22:05	1	MS9080908.D	RTX-Volatiles 0.32(mm)
IC 320-178572/9		08/09/2017 22:58	1	MS9080909.D	RTX-Volatiles 0.32(mm)
ICIS 320-178572/10		08/09/2017 23:49	1	MS9080910.D	RTX-Volatiles 0.32(mm)
IC 320-178572/11		08/10/2017 00:41	1	MS9080911.D	RTX-Volatiles 0.32(mm)
IC 320-178572/13		08/10/2017 02:27	1	MS9080913.D	RTX-Volatiles 0.32(mm)
ICV 320-178572/15		08/10/2017 04:12	1	MS9080915.D	RTX-Volatiles 0.32(mm)

AIR - GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-30847-1

SDG No.:

Instrument ID: ATMS9 Start Date: 08/23/2017 08:58

Analysis Batch Number: 180799 End Date: 08/24/2017 00:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 320-180799/1		08/23/2017 08:58	1	MS9082301.D	RTX-Volatiles 0.32(mm)
CCVIS 320-180799/2		08/23/2017 09:49	1	MS9082302.D	RTX-Volatiles 0.32(mm)
LCS 320-180799/3		08/23/2017 10:40	1	MS9082303.D	RTX-Volatiles 0.32(mm)
LCSD 320-180799/4		08/23/2017 11:32	1	MS9082304.D	RTX-Volatiles 0.32(mm)
MB 320-180799/6		08/23/2017 13:19	1	MS9082306.D	RTX-Volatiles 0.32(mm)
320-30847-1		08/23/2017 16:27	355	MS9082307.D	RTX-Volatiles 0.32(mm)
320-30847-2		08/23/2017 17:19	433	MS9082308.D	RTX-Volatiles 0.32(mm)
320-30847-3		08/23/2017 18:11	165	MS9082309.D	RTX-Volatiles 0.32(mm)
320-30847-4		08/23/2017 19:02	110	MS9082310.D	RTX-Volatiles 0.32(mm)
320-30847-5		08/23/2017 19:56	120	MS9082311.D	RTX-Volatiles 0.32(mm)
320-30847-6		08/23/2017 20:47	120	MS9082312.D	RTX-Volatiles 0.32(mm)
320-30847-7		08/23/2017 21:37	791	MS9082313.D	RTX-Volatiles 0.32(mm)
ZZZZZ		08/23/2017 22:33	1		RTX-Volatiles 0.32(mm)
ZZZZZ		08/23/2017 23:30	1		RTX-Volatiles 0.32(mm)
ZZZZZ		08/24/2017 00:27	1		RTX-Volatiles 0.32(mm)

Summa Canister Dilution Worksheet

Client: CH2M Hill, Inc.

Job No.: 320-30847-1

Lab Sample ID	Canister Volume (L)	Preadjusted Pressure ("Hg)	Preadjusted Pressure (atm)	Preadjusted Volume (L)	Adjusted Pressure (psig)	Adjusted Pressure (atm)	Adjusted Volume (L)	Initial Volume (mL)	Dilution Factor	Final Dilution Factor	Date	Analyst
320-30847-3	1	0	1.00	1.00	29.4	3.00	3.00		3.00	3.00	08/23/17 16:30	VanOmmen, Shae R
320-30847-3	1	0	1.00	1.00	29.41	3.00	3.00		3.00	9.00	08/23/17 16:45	VanOmmen, Shae R
320-30847-4	1	0	1.00	1.00	29.41	3.00	3.00		3.00	3.00	08/23/17 16:50	VanOmmen, Shae R
320-30847-4	1	0	1.00	1.00	29.4	3.00	3.00		3.00	9.00	08/23/17 16:53	VanOmmen, Shae R
320-30847-5	1	0	1.00	1.00	29.41	3.00	3.00		3.00	3.00	08/23/17 16:57	VanOmmen, Shae R
320-30847-5	1	0	1.00	1.00	29.4	3.00	3.00		3.00	9.00	08/23/17 16:59	VanOmmen, Shae R
320-30847-6	1	0	1.00	1.00	29.4	3.00	3.00		3.00	3.00	08/23/17 17:02	VanOmmen, Shae R
320-30847-6	1	0	1.00	1.00	29.41	3.00	3.00		3.00	9.00	08/23/17 17:04	VanOmmen, Shae R

Formulae:

Preadjusted Volume (L) = (Preadjusted Pressure ("Hg) + 29.92 "Hg * Vol L) / 29.92 "Hg

Adjusted Volume (L) = (Adjusted Pressure (psig) + 14.7 psig * Vol L) / 14.7 psig

Dilution Factor = Adjusted Volume (L) / Preadjusted Volume (L)

Where:

29.92 "Hg = Standard atmospheric pressure in inches of Mercury (“Hg)

14.7 psig = Standard atmospheric pressure in pounds per square inch gauge (psig)

Shipping and Receiving Documents

TestAmerica Sacramento
880 Riverside Parkway

West Sacramento, CA 95605
phone 916.374.4378 fax 916.372.1059

Canister Samples Chain of Custody Record

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact Information	**Project Manager:**	**Samples Collected By:** B. Irish	COC No:
Company Name: CAZM	**Phone:**		1 of 1 COCs
Address: 1100 NE Circle Blvd	**Email:**		
City/State/Zip Corvallis, OR 97330			**For Lab Use Only:**
Phone: 541-768-3299	**Site Contact:**		Walk-in Client:
FAX:	**TA Contact:**		Lab Sampling:
Project Name: DOW - Hanging Rock	**Anaylsis Turnaround Time**		
Site/Location: Ironton, OH	Standard (Specific):		Job / SDG No.:
PO# 24018752	Rush (Specifiy):		(See below for Add'l Items)

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, 'Hg (Start)'	Canister Vacuum in Field, 'Hg (Stop)'	Flow Controller ID	Canister ID	TO-15 (Med / Std / Low / SIM)	MA-APH	EPA 3C	EPA 25C / 25.3	ASTM D-1946 / 1945 / 3588	EPA 15/16	TO-3	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)	Sample Specific Notes:
S01-SG01-081717	8-17-17	1542	1548	-29.62	-4.65	7128	34001940	X											X			
① S01-SG02-081717		1508	1514	-29.60	-5.18	7262	34000633	X											X			
S01-SG03-081717		1440	1445	-29.72	-5.24	8596	34000806	X											X			
S01-SG04-081717		1410	1415	-29.73	-7.31	7237	34000958	X											X			
S01-SG05-081717		1335	1348	-29.29	-4.64	7083	34001103	X											X			
S01-SG05-081717-FD		1335	1348	-29.61	-4.62	7083	34000905	X											X			
S01-SG06-081717		1252	1257	-29.64	-6.72	7501	34000620	X											X			

Temperature (Fahrenheit)			
Start	Interior	Ambient	
Stop			

Temperature (Fahrenheit)			
Start	Interior	Ambient	
Stop			

320-30847 Chain of Custody

Special Instructions/QC Requirements & Comments:
① Canister asset is 3400663 @ 8/18/17

Samples Shipped by: B. Irish	**Date / Time:** 8-17-17 1900	**Samples Received by:** [signature] Nelson 8/18/17 930	FAS
Samples Relinquished by:	**Date / Time:**	**Received by:**	
Relinquished by:	**Date / Time:**	**Received by:**	
Lab Use Only: **Shipper Name:**	**Opened by:**	**Condition:**	

Form No. CA-C-WI-003, Rev. 1, dated 05/10/2013

Login Sample Receipt Checklist

Client: CH2M Hill, Inc.

Job Number: 320-30847-1

Login Number: 30847
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	831139
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	-2: Canister ID does not match COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Lab Number:	L1731899
Client:	CH2MHILL 1100 NE Circle Blvd. Suite 300 Corvallis, OR 97330
ATTN:	Shane Lowe
Phone:	(314) 335-3024
Project Name:	HANGING ROCK
Project Number:	693874.01.RP
Report Date:	09/19/17

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1731899-01	S01-B500-SV01-090717	SOIL_VAPOR	IRONTON, OH	09/07/17 16:05	09/09/17
L1731899-02	S01-B500-SV02-090717	SOIL_VAPOR	IRONTON, OH	09/07/17 15:45	09/09/17
L1731899-03	S01-B500-SV03-090717	SOIL_VAPOR	IRONTON, OH	09/07/17 13:30	09/09/17
L1731899-04	S01-B500-SV04-090717	SOIL_VAPOR	IRONTON, OH	09/07/17 13:54	09/09/17
L1731899-05	S01-B500-SV05-090717	SOIL_VAPOR	IRONTON, OH	09/07/17 14:14	09/09/17
L1731899-06	S01-B500-SV06-090717	SOIL_VAPOR	IRONTON, OH	09/07/17 14:34	09/09/17
L1731899-07	S01-B500-SV07-090717	SOIL_VAPOR	IRONTON, OH	09/07/17 14:52	09/09/17
L1731899-08	S01-B500-SV08-090717	SOIL_VAPOR	IRONTON, OH	09/07/17 15:26	09/09/17
L1731899-09	S01-B501-SV09-090817	SOIL_VAPOR	IRONTON, OH	09/08/17 16:11	09/09/17
L1731899-10	S01-B501-SV10-090817	SOIL_VAPOR	IRONTON, OH	09/08/17 15:50	09/09/17
L1731899-11	S01-B501-SV11-090817	SOIL_VAPOR	IRONTON, OH	09/08/17 15:18	09/09/17
L1731899-12	S01-B505-SV12-090817	SOIL_VAPOR	IRONTON, OH	09/08/17 09:03	09/09/17
L1731899-13	S01-B505-SV13-090717	SOIL_VAPOR	IRONTON, OH	09/07/17 16:42	09/09/17
L1731899-14	S01-B505-SV14-090817	SOIL_VAPOR	IRONTON, OH	09/08/17 09:42	09/09/17
L1731899-15	S01-B505-SV15-090817	SOIL_VAPOR	IRONTON, OH	09/08/17 10:15	09/09/17
L1731899-16	S01-B505-SV16-090817	SOIL_VAPOR	IRONTON, OH	09/08/17 10:46	09/09/17
L1731899-17	S01-B505-SV17-090717	SOIL_VAPOR	IRONTON, OH	09/07/17 17:08	09/09/17
L1731899-18	S01-B505-SV18-090817	SOIL_VAPOR	IRONTON, OH	09/08/17 09:23	09/09/17
L1731899-19	S01-B505-SV19-090817	SOIL_VAPOR	IRONTON, OH	09/08/17 08:44	09/09/17
L1731899-20	S01-HGR--090817-FD03	SOIL_VAPOR	IRONTON, OH	09/08/17 10:15	09/09/17
L1731899-21	S01-HGR--090817-FD04	SOIL_VAPOR	IRONTON, OH	09/08/17 15:50	09/09/17
L1731899-22	S01-B500-IA01-090817	AIR	IRONTON, OH	09/08/17 15:41	09/09/17
L1731899-23	S01-B500-IA02-090817	AIR	IRONTON, OH	09/08/17 15:40	09/09/17
L1731899-24	S01-B500-IA03-090817	AIR	IRONTON, OH	09/08/17 15:37	09/09/17

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1731899-25	S01-B500-IA04-090817	AIR	IRONTON, OH	09/08/17 15:36	09/09/17
L1731899-26	S01-B501-IA05-090817	AIR	IRONTON, OH	09/08/17 15:20	09/09/17
L1731899-27	S01-B505-IA06-090817	AIR	IRONTON, OH	09/08/17 15:50	09/09/17
L1731899-28	S01-B505-IA07-090817	AIR	IRONTON, OH	09/08/17 15:54	09/09/17
L1731899-29	S01-B505-IA08-090817	AIR	IRONTON, OH	09/08/17 15:55	09/09/17
L1731899-30	S01-B505-IA09-090817	AIR	IRONTON, OH	09/08/17 15:52	09/09/17
L1731899-31	S01-B505-IA10-090817	AIR	IRONTON, OH	09/08/17 15:51	09/09/17
L1731899-32	S01-HGR-OA01-090817	AIR	IRONTON, OH	09/08/17 15:44	09/09/17
L1731899-33	S01-HGR-090817-FD01	AIR	IRONTON, OH	09/08/17 15:20	09/09/17
L1731899-34	S01-HGR-090817-FD02	AIR	IRONTON, OH	09/08/17 15:52	09/09/17

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

Case Narrative (continued)

Report Submission
This report replaces the one issued on September 14, 2017. The report has been revised to include Vinyl Chloride which was originally omitted.

Volatile Organics in Air
Canisters were released from the laboratory on September 6, 2017. The canister certification results are provided as an addendum.

Report Submission
All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample L1731899-01 through -21: Prior to sample analysis, the canisters were pressurized with UHP Nitrogen due to canister size. The pressurization resulted in a dilution of the samples. The reporting limits have been elevated accordingly.

Sample L1731899-01 through -04 and -06: The samples have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

Sample L1731899-09 and -10: The samples have elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the samples.

Sample L1731899-12 through -15, -17 through -20: The samples have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

Sample L1731899-21: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

Project Name:	HANGING ROCK	**Lab Number:**	L1731899
Project Number:	693874.01.RP	**Report Date:**	09/19/17

Case Narrative (continued)

TO15-SIM

Sample L1731899-27 and -31: The samples were diluted and re-analyzed to quantify the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

Sample Receipt

Flow controller ID number 0571 was used for samples S01-B501-SV10-090817 (L1731899-10) and its duplicate sample S01-HGR--090817 FD04 (L1731899-21). The flow controller information in the report is only assigned to one sample due to limitations of the form.

Flow controller ID number 0571 was used for samples S01-B505-SV15-090817 (L1731899-15) and its duplicate sample S01-HGR-090817-FD03 (L1731899-20). The flow controller information in the report is only assigned to one sample due to limitations of the form.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 09/19/17

AIR

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-01 D
Client ID: S01-B500-SV01-090717
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 00:48
Analyst: MB

Date Collected: 09/07/17 16:05
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	2.54	0.500	ND	6.49	1.28		12.69
1,1-Dichloroethene	ND	2.54	0.718	ND	10.1	2.85		12.69
trans-1,2-Dichloroethene	ND	2.54	0.939	ND	10.1	3.72		12.69
cis-1,2-Dichloroethene	9.17	2.54	0.745	36.4	10.1	2.95		12.69
Benzene	4.80	2.54	0.681	15.3	8.11	2.18		12.69
Trichloroethene	25.1	2.54	0.901	135	13.7	4.84		12.69
Tetrachloroethene	674	2.54	0.962	4570	17.2	6.52		12.69

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	101		60-140
Bromochloromethane	98		60-140
chlorobenzene-d5	100		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-02 D
Client ID: S01-B500-SV02-090717
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 08:25
Analyst: MB

Date Collected: 09/07/17 15:45
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	2.57	0.507	ND	6.57	1.30		12.87
1,1-Dichloroethene	ND	2.57	0.728	ND	10.2	2.89		12.87
trans-1,2-Dichloroethene	ND	2.57	0.952	ND	10.2	3.77		12.87
cis-1,2-Dichloroethene	ND	2.57	0.755	ND	10.2	2.99		12.87
Benzene	ND	2.57	0.691	ND	8.21	2.21		12.87
Trichloroethene	ND	2.57	0.914	ND	13.8	4.91		12.87
Tetrachloroethene	872	2.57	0.976	5910	17.4	6.62		12.87

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	90		60-140
Bromochloromethane	94		60-140
chlorobenzene-d5	95		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-03 D
Client ID: S01-B500-SV03-090717
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 02:20
Analyst: MB

Date Collected: 09/07/17 13:30
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	20.7	4.08	ND	52.9	10.4		103.7
1,1-Dichloroethene	ND	20.7	5.87	ND	82.1	23.3		103.7
trans-1,2-Dichloroethene	ND	20.7	7.67	ND	82.1	30.4		103.7
cis-1,2-Dichloroethene	ND	20.7	6.09	ND	82.1	24.1		103.7
Benzene	ND	20.7	5.57	ND	66.1	17.8		103.7
Trichloroethene	40.3	20.7	7.36	217	111	39.6		103.7
Tetrachloroethene	5720	20.7	7.86	38800	140	53.3		103.7

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	95		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	97		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-04 D
Client ID: S01-B500-SV04-090717
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 02:50
Analyst: MB

Date Collected: 09/07/17 13:54
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	4.82	0.949	ND	12.3	2.43		24.08
1,1-Dichloroethene	ND	4.82	1.36	ND	19.1	5.39		24.08
trans-1,2-Dichloroethene	ND	4.82	1.78	ND	19.1	7.06		24.08
cis-1,2-Dichloroethene	ND	4.82	1.41	ND	19.1	5.59		24.08
Benzene	1.56	4.82	1.29	4.98	15.4	4.12	J	24.08
Trichloroethene	2.34	4.82	1.71	12.6	25.9	9.19	J	24.08
Tetrachloroethene	1880	4.82	1.82	12700	32.7	12.3		24.08

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	95		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	95		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-05 D
Client ID: S01-B500-SV05-090717
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 03:22
Analyst: MB

Date Collected: 09/07/17 14:14
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	0.503	0.099	ND	1.29	0.253		2.513
1,1-Dichloroethene	ND	0.503	0.142	ND	1.99	0.563		2.513
trans-1,2-Dichloroethene	ND	0.503	0.186	ND	1.99	0.737		2.513
cis-1,2-Dichloroethene	ND	0.503	0.148	ND	1.99	0.587		2.513
Benzene	1.17	0.503	0.135	3.74	1.61	0.431		2.513
Trichloroethene	ND	0.503	0.178	ND	2.70	0.957		2.513
Tetrachloroethene	41.0	0.503	0.190	278	3.41	1.29		2.513

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	89		60-140
Bromochloromethane	94		60-140
chlorobenzene-d5	94		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-06 D
Client ID: S01-B500-SV06-090717
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 03:53
Analyst: MB

Date Collected: 09/07/17 14:34
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	2.57	0.506	ND	6.57	1.29		12.83
1,1-Dichloroethene	ND	2.57	0.726	ND	10.2	2.88		12.83
trans-1,2-Dichloroethene	ND	2.57	0.949	ND	10.2	3.76		12.83
cis-1,2-Dichloroethene	ND	2.57	0.753	ND	10.2	2.99		12.83
Benzene	0.808	2.57	0.689	2.58	8.21	2.20	J	12.83
Trichloroethene	ND	2.57	0.911	ND	13.8	4.90		12.83
Tetrachloroethene	670	2.57	0.972	4540	17.4	6.59		12.83

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	92		60-140
Bromochloromethane	96		60-140
chlorobenzene-d5	94		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-07 D
Client ID: S01-B500-SV07-090717
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 04:25
Analyst: MB

Date Collected: 09/07/17 14:52
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	0.511	0.101	ND	1.31	0.258		2.556
1,1-Dichloroethene	ND	0.511	0.145	ND	2.03	0.575		2.556
trans-1,2-Dichloroethene	ND	0.511	0.189	ND	2.03	0.749		2.556
cis-1,2-Dichloroethene	ND	0.511	0.150	ND	2.03	0.595		2.556
Benzene	0.348	0.511	0.137	1.11	1.63	0.438	J	2.556
Trichloroethene	ND	0.511	0.181	ND	2.75	0.973		2.556
Tetrachloroethene	25.4	0.511	0.194	172	3.47	1.32		2.556

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	95		60-140
Bromochloromethane	96		60-140
chlorobenzene-d5	97		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-08 D
Client ID: S01-B500-SV08-090717
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 04:58
Analyst: MB

Date Collected: 09/07/17 15:26
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	0.512	0.101	ND	1.31	0.258		2.56
1,1-Dichloroethene	ND	0.512	0.145	ND	2.03	0.575		2.56
trans-1,2-Dichloroethene	0.520	0.512	0.189	2.06	2.03	0.749		2.56
cis-1,2-Dichloroethene	5.13	0.512	0.150	20.3	2.03	0.595		2.56
Benzene	0.750	0.512	0.137	2.40	1.64	0.438		2.56
Trichloroethene	7.65	0.512	0.182	41.1	2.75	0.978		2.56
Tetrachloroethene	119	0.512	0.194	807	3.47	1.32		2.56

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	97		60-140
Bromochloromethane	97		60-140
chlorobenzene-d5	100		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-09 D
Client ID: S01-B501-SV09-090817
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 05:28
Analyst: MB

Date Collected: 09/08/17 16:11
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	5.10	1.00	ND	13.0	2.56		25.51
1,1-Dichloroethene	ND	5.10	1.44	ND	20.2	5.71		25.51
trans-1,2-Dichloroethene	ND	5.10	1.89	ND	20.2	7.49		25.51
cis-1,2-Dichloroethene	ND	5.10	1.50	ND	20.2	5.95		25.51
Benzene	ND	5.10	1.37	ND	16.3	4.38		25.51
Trichloroethene	43.1	5.10	1.81	232	27.4	9.73		25.51
Tetrachloroethene	20.9	5.10	1.93	142	34.6	13.1		25.51

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	96		60-140
Bromochloromethane	96		60-140
chlorobenzene-d5	96		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-10 D
Client ID: S01-B501-SV10-090817
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 05:59
Analyst: MB

Date Collected: 09/08/17 15:50
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	4.76	0.937	ND	12.2	2.40		23.79
1,1-Dichloroethene	ND	4.76	1.35	ND	18.9	5.35		23.79
trans-1,2-Dichloroethene	ND	4.76	1.76	ND	18.9	6.98		23.79
cis-1,2-Dichloroethene	1.62	4.76	1.40	6.42	18.9	5.55	J	23.79
Benzene	ND	4.76	1.28	ND	15.2	4.09		23.79
Trichloroethene	8.40	4.76	1.69	45.1	25.6	9.08		23.79
Tetrachloroethene	42.8	4.76	1.80	290	32.3	12.2		23.79

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	95		60-140
Bromochloromethane	96		60-140
chlorobenzene-d5	97		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-11 D
Client ID: S01-B501-SV11-090817
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 21:10
Analyst: MB

Date Collected: 09/08/17 15:18
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	0.504	0.099	ND	1.29	0.254		2.521
1,1-Dichloroethene	0.229	0.504	0.143	0.908	2.00	0.567	J	2.521
trans-1,2-Dichloroethene	ND	0.504	0.186	ND	2.00	0.737		2.521
cis-1,2-Dichloroethene	0.701	0.504	0.148	2.78	2.00	0.587		2.521
Benzene	0.373	0.504	0.135	1.19	1.61	0.431	J	2.521
Trichloroethene	5.04	0.504	0.179	27.1	2.71	0.962		2.521
Tetrachloroethene	59.8	0.504	0.191	406	3.42	1.30		2.521

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	92		60-140
Bromochloromethane	93		60-140
chlorobenzene-d5	95		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-12 D
Client ID: S01-B505-SV12-090817
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 23:16
Analyst: MB

Date Collected: 09/08/17 09:03
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	10.2	2.01	ND	26.1	5.14		50.92
1,1-Dichloroethene	ND	10.2	2.88	ND	40.4	11.4		50.92
trans-1,2-Dichloroethene	32.5	10.2	3.77	129	40.4	14.9		50.92
cis-1,2-Dichloroethene	20.5	10.2	2.99	81.3	40.4	11.9		50.92
Benzene	ND	10.2	2.73	ND	32.6	8.72		50.92
Trichloroethene	312	10.2	3.62	1680	54.8	19.5		50.92
Tetrachloroethene	3610	10.2	3.86	24500	69.2	26.2		50.92

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	94		60-140
Bromochloromethane	94		60-140
chlorobenzene-d5	96		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-13 D
Client ID: S01-B505-SV13-090717
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/14/17 08:22
Analyst: MB

Date Collected: 09/07/17 16:42
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	41.0	8.07	ND	105	20.6		204.9
1,1-Dichloroethene	ND	41.0	11.6	ND	163	46.0		204.9
trans-1,2-Dichloroethene	ND	41.0	15.2	ND	163	60.3		204.9
cis-1,2-Dichloroethene	ND	41.0	12.0	ND	163	47.6		204.9
Benzene	ND	41.0	11.0	ND	131	35.1		204.9
Trichloroethene	32.8	41.0	14.5	176	220	77.9	J	204.9
Tetrachloroethene	9530	41.0	15.5	64600	278	105.		204.9

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	91		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	96		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-14 D
Client ID: S01-B505-SV14-090817
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/14/17 00:50
Analyst: MB

Date Collected: 09/08/17 09:42
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	50.5	9.95	ND	129	25.4		252.5
1,1-Dichloroethene	ND	50.5	14.3	ND	200	56.7		252.5
trans-1,2-Dichloroethene	ND	50.5	18.7	ND	200	74.1		252.5
cis-1,2-Dichloroethene	ND	50.5	14.8	ND	200	58.7		252.5
Benzene	ND	50.5	13.6	ND	161	43.4		252.5
Trichloroethene	821	50.5	17.9	4410	271	96.2		252.5
Tetrachloroethene	14500	50.5	19.1	98300	342	130.		252.5

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	90		60-140
Bromochloromethane	91		60-140
chlorobenzene-d5	92		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-15 D
Client ID: S01-B505-SV15-090817
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/14/17 08:54
Analyst: MB

Date Collected: 09/08/17 10:15
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	128.	25.2	ND	327	64.4		641
1,1-Dichloroethene	53.8	128	36.3	213	507	144.	J	641
trans-1,2-Dichloroethene	ND	128.	47.4	ND	507	188.		641
cis-1,2-Dichloroethene	1100	128	37.6	4360	507	149.		641
Benzene	ND	128.	34.4	ND	409	110.		641
Trichloroethene	4370	128	45.5	23500	688	245.		641
Tetrachloroethene	43500	128	48.6	295000	868	330.		641

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	89		60-140
Bromochloromethane	93		60-140
chlorobenzene-d5	92		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-16 D
Client ID: S01-B505-SV16-090817
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 21:43
Analyst: MB

Date Collected: 09/08/17 10:46
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	0.868	0.510	0.100	2.22	1.30	0.256		2.552
1,1-Dichloroethene	2.07	0.510	0.144	8.21	2.02	0.571		2.552
trans-1,2-Dichloroethene	0.357	0.510	0.189	1.42	2.02	0.749	J	2.552
cis-1,2-Dichloroethene	3.04	0.510	0.150	12.1	2.02	0.595		2.552
Benzene	1.08	0.510	0.137	3.45	1.63	0.438		2.552
Trichloroethene	7.38	0.510	0.181	39.7	2.74	0.973		2.552
Tetrachloroethene	113	0.510	0.193	766	3.46	1.31		2.552

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	93		60-140
Bromochloromethane	94		60-140
chlorobenzene-d5	95		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-17 D
Client ID: S01-B505-SV17-090717
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 22:13
Analyst: MB

Date Collected: 09/07/17 17:08
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	5.06	0.997	ND	12.9	2.55		25.3
1,1-Dichloroethene	ND	5.06	1.43	ND	20.1	5.67		25.3
trans-1,2-Dichloroethene	ND	5.06	1.87	ND	20.1	7.41		25.3
cis-1,2-Dichloroethene	ND	5.06	1.48	ND	20.1	5.87		25.3
Benzene	ND	5.06	1.36	ND	16.2	4.34		25.3
Trichloroethene	3.49	5.06	1.80	18.8	27.2	9.67	J	25.3
Tetrachloroethene	1930	5.06	1.92	13100	34.3	13.0		25.3

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	95		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	97		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-18 D
Client ID: S01-B505-SV18-090817
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/14/17 01:50
Analyst: MB

Date Collected: 09/08/17 09:23
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	25.3	4.98	ND	64.7	12.7		126.3
1,1-Dichloroethene	ND	25.3	7.15	ND	100	28.3		126.3
trans-1,2-Dichloroethene	ND	25.3	9.35	ND	100	37.1		126.3
cis-1,2-Dichloroethene	ND	25.3	7.41	ND	100	29.4		126.3
Benzene	ND	25.3	6.78	ND	80.8	21.7		126.3
Trichloroethene	18.7	25.3	8.97	100	136	48.2	J	126.3
Tetrachloroethene	7820	25.3	9.57	53000	172	64.9		126.3

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	90		60-140
Bromochloromethane	91		60-140
chlorobenzene-d5	91		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-19 D
Client ID: S01-B505-SV19-090817
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/14/17 02:21
Analyst: MB

Date Collected: 09/08/17 08:44
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	51.5	10.2	ND	132	26.1		257.7
1,1-Dichloroethene	ND	51.5	14.6	ND	204	57.9		257.7
trans-1,2-Dichloroethene	ND	51.5	19.1	ND	204	75.7		257.7
cis-1,2-Dichloroethene	ND	51.5	15.1	ND	204	59.9		257.7
Benzene	ND	51.5	13.8	ND	165	44.1		257.7
Trichloroethene	ND	51.5	18.3	ND	277	98.3		257.7
Tetrachloroethene	23300	51.5	19.5	158000	349	132.		257.7

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	89		60-140
Bromochloromethane	92		60-140
chlorobenzene-d5	93		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-20 D
Client ID: S01-HGR--090817-FD03
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/14/17 07:49
Analyst: MB

Date Collected: 09/08/17 10:15
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	132.	25.9	ND	337	66.2		657.9
1,1-Dichloroethene	57.9	132	37.2	230	523	147.	J	657.9
trans-1,2-Dichloroethene	ND	132.	48.7	ND	523	193.		657.9
cis-1,2-Dichloroethene	1120	132	38.6	4440	523	153.		657.9
Benzene	ND	132.	35.3	ND	422	113.		657.9
Trichloroethene	4560	132	46.7	24500	709	251.		657.9
Tetrachloroethene	43600	132	49.9	296000	895	338.		657.9

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	92		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	100		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-21 D
Client ID: S01-HGR--090817-FD04
Sample Location: IRONTON, OH
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 09/13/17 22:43
Analyst: MB

Date Collected: 09/08/17 15:50
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	5.02	0.988	ND	12.8	2.53		25.08
1,1-Dichloroethene	ND	5.02	1.42	ND	19.9	5.63		25.08
trans-1,2-Dichloroethene	ND	5.02	1.86	ND	19.9	7.37		25.08
cis-1,2-Dichloroethene	ND	5.02	1.47	ND	19.9	5.83		25.08
Benzene	ND	5.02	1.35	ND	16.0	4.31		25.08
Trichloroethene	8.15	5.02	1.78	43.8	27.0	9.57		25.08
Tetrachloroethene	39.9	5.02	1.90	271	34.0	12.9		25.08

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	93		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	94		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-22
Client ID: S01-B500-IA01-090817
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/12/17 22:58
Analyst: RY

Date Collected: 09/08/17 15:41
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
Benzene	0.076	0.100	0.021	0.243	0.319	0.067	J	1
Trichloroethene	0.013	0.020	0.007	0.070	0.107	0.038	J	1
Tetrachloroethene	0.200	0.020	0.008	1.36	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	81		60-140
bromochloromethane	88		60-140
chlorobenzene-d5	83		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-23
Client ID: S01-B500-IA02-090817
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/12/17 23:33
Analyst: RY

Date Collected: 09/08/17 15:40
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
Benzene	0.083	0.100	0.021	0.265	0.319	0.067	J	1
Trichloroethene	0.011	0.020	0.007	0.059	0.107	0.038	J	1
Tetrachloroethene	0.158	0.020	0.008	1.07	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	80		60-140
bromochloromethane	88		60-140
chlorobenzene-d5	81		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-24
Client ID: S01-B500-IA03-090817
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/13/17 00:42
Analyst: RY

Date Collected: 09/08/17 15:37
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
Benzene	0.075	0.100	0.021	0.240	0.319	0.067	J	1
Trichloroethene	0.083	0.020	0.007	0.446	0.107	0.038		1
Tetrachloroethene	0.048	0.020	0.008	0.325	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	77		60-140
bromochloromethane	87		60-140
chlorobenzene-d5	76		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-25
Client ID: S01-B500-IA04-090817
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/13/17 01:16
Analyst: RY

Date Collected: 09/08/17 15:36
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
Benzene	0.073	0.100	0.021	0.233	0.319	0.067	J	1
Trichloroethene	0.024	0.020	0.007	0.129	0.107	0.038		1
Tetrachloroethene	0.074	0.020	0.008	0.502	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	77		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	75		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-26
Client ID: S01-B501-IA05-090817
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/13/17 01:51
Analyst: RY

Date Collected: 09/08/17 15:20
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	0.016	0.020	0.007	0.041	0.051	0.018	J	1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
cis-1,2-Dichloroethene	0.056	0.020	0.007	0.222	0.079	0.026		1
Benzene	0.099	0.100	0.021	0.316	0.319	0.067	J	1
Trichloroethene	0.025	0.020	0.007	0.134	0.107	0.038		1
Tetrachloroethene	0.862	0.020	0.008	5.85	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	79		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	86		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-27
Client ID: S01-B505-IA06-090817
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/13/17 02:25
Analyst: RY

Date Collected: 09/08/17 15:50
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	0.006	0.020	0.006	0.024	0.079	0.024	J	1
cis-1,2-Dichloroethene	0.020	0.020	0.007	0.079	0.079	0.026		1
Benzene	0.227	0.100	0.021	0.725	0.319	0.067		1
Trichloroethene	0.193	0.020	0.007	1.04	0.107	0.038		1
Tetrachloroethene	50.6	0.020	0.008	343	0.136	0.054	E	1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	84		60-140
bromochloromethane	87		60-140
chlorobenzene-d5	82		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-27 D
Client ID: S01-B505-IA06-090817
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/13/17 07:42
Analyst: RY

Date Collected: 09/08/17 15:50
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	48.1	0.040	0.016	326	0.271	0.108		2

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	82		60-140
bromochloromethane	89		60-140
chlorobenzene-d5	85		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-28
Client ID: S01-B505-IA07-090817
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/13/17 02:59
Analyst: RY

Date Collected: 09/08/17 15:54
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	0.006	0.020	0.006	0.024	0.079	0.024	J	1
cis-1,2-Dichloroethene	0.015	0.020	0.007	0.060	0.079	0.026	J	1
Benzene	0.178	0.100	0.021	0.569	0.319	0.067		1
Trichloroethene	0.084	0.020	0.007	0.451	0.107	0.038		1
Tetrachloroethene	32.4	0.020	0.008	220	0.136	0.054		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	78		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	81		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-29
Client ID: S01-B505-IA08-090817
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/13/17 03:34
Analyst: RY

Date Collected: 09/08/17 15:55
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
cis-1,2-Dichloroethene	0.013	0.020	0.007	0.052	0.079	0.026	J	1
Benzene	0.172	0.100	0.021	0.549	0.319	0.067		1
Trichloroethene	0.075	0.020	0.007	0.403	0.107	0.038		1
Tetrachloroethene	29.0	0.020	0.008	197	0.136	0.054		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	85		60-140
bromochloromethane	87		60-140
chlorobenzene-d5	83		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-30
Client ID: S01-B505-IA09-090817
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/13/17 04:08
Analyst: RY

Date Collected: 09/08/17 15:52
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	0.007	0.020	0.006	0.028	0.079	0.024	J	1
cis-1,2-Dichloroethene	0.017	0.020	0.007	0.067	0.079	0.026	J	1
Benzene	0.203	0.100	0.021	0.649	0.319	0.067		1
Trichloroethene	0.101	0.020	0.007	0.543	0.107	0.038		1
Tetrachloroethene	39.5	0.020	0.008	268	0.136	0.054		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	80		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	81		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-31
Client ID: S01-B505-IA10-090817
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/13/17 04:43
Analyst: RY

Date Collected: 09/08/17 15:51
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	0.006	0.020	0.006	0.024	0.079	0.024	J	1
cis-1,2-Dichloroethene	0.025	0.020	0.007	0.099	0.079	0.026		1
Benzene	0.257	0.100	0.021	0.821	0.319	0.067		1
Trichloroethene	0.187	0.020	0.007	1.00	0.107	0.038		1
Tetrachloroethene	52.6	0.020	0.008	357	0.136	0.054	E	1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	79		60-140
bromochloromethane	85		60-140
chlorobenzene-d5	78		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-31 D
Client ID: S01-B505-IA10-090817
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/13/17 08:14
Analyst: RY

Date Collected: 09/08/17 15:51
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	47.8	0.040	0.016	324	0.271	0.108		2

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	81		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	84		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-32
Client ID: S01-HGR-OA01-090817
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/12/17 22:23
Analyst: RY

Date Collected: 09/08/17 15:44
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
Benzene	0.057	0.100	0.021	0.182	0.319	0.067	J	1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	0.010	0.020	0.008	0.068	0.136	0.054	J	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	88		60-140
bromochloromethane	99		60-140
chlorobenzene-d5	89		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-33
Client ID: S01-HGR-090817-FD01
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/13/17 05:17
Analyst: RY

Date Collected: 09/08/17 15:20
Date Received: 09/09/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	0.013	0.020	0.007	0.033	0.051	0.018	J	1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
cis-1,2-Dichloroethene	0.052	0.020	0.007	0.206	0.079	0.026		1
Benzene	0.101	0.100	0.021	0.323	0.319	0.067		1
Trichloroethene	0.025	0.020	0.007	0.134	0.107	0.038		1
Tetrachloroethene	0.856	0.020	0.008	5.80	0.136	0.054		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	82		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	89		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP
Lab Number: L1731899
Report Date: 09/19/17

SAMPLE RESULTS

Lab ID: L1731899-34
Client ID: S01-HGR-090817-FD02
Sample Location: IRONTON, OH
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/13/17 05:52
Analyst: RY

Date Collected: 09/08/17 15:52
Date Received: 09/09/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
cis-1,2-Dichloroethene	0.018	0.020	0.007	0.071	0.079	0.026	J	1
Benzene	0.201	0.100	0.021	0.642	0.319	0.067		1
Trichloroethene	0.098	0.020	0.007	0.527	0.107	0.038		1
Tetrachloroethene	38.6	0.020	0.008	262	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	79		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	81		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 09/12/17 21:20

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 22-34 Batch: WG1040958-4								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 09/12/17 13:22

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-10 Batch: WG1040959-4								
Chlorodifluoromethane	ND	0.200	0.063	ND	0.707	0.221		1
Propylene	ND	0.500	0.093	ND	0.861	0.160		1
Propane	ND	0.500	0.114	ND	0.902	0.206		1
Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230		1
Chloromethane	ND	0.200	0.096	ND	0.413	0.198		1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.200	0.042	ND	1.40	0.293		1
Methanol	ND	5.00	0.736	ND	6.55	0.964		1
Vinyl chloride	ND	0.200	0.039	ND	0.511	0.101		1
1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177		1
Butane	ND	0.200	0.044	ND	0.475	0.105		1
Bromomethane	ND	0.200	0.070	ND	0.777	0.270		1
Chloroethane	ND	0.200	0.077	ND	0.528	0.202		1
Ethyl Alcohol	ND	5.00	0.542	ND	9.42	1.02		1
Dichlorofluoromethane	ND	0.200	0.057	ND	0.842	0.241		1
Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306		1
Acrolein	ND	0.500	0.114	ND	1.15	0.261		1
Acetone	ND	1.00	0.165	ND	2.38	0.392		1
Acetonitrile	ND	0.200	0.076	ND	0.336	0.128		1
Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234		1
iso-Propyl Alcohol	ND	0.500	0.084	ND	1.23	0.206		1
Acrylonitrile	ND	0.500	0.079	ND	1.09	0.171		1
Pentane	ND	0.200	0.048	ND	0.590	0.140		1
Ethyl ether	ND	0.200	0.059	ND	0.606	0.179		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
tert-Butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182		1

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 09/12/17 13:22

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-10 Batch: WG1040959-4								
Methylene chloride	ND	0.500	0.062	ND	1.74	0.216		1
3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107		1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.200	0.051	ND	1.53	0.392		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312		1
Methyl tert butyl ether	ND	0.200	0.045	ND	0.721	0.163		1
Vinyl acetate	ND	1.00	0.057	ND	3.52	0.200		1
2-Butanone	ND	0.500	0.052	ND	1.47	0.154		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Ethyl Acetate	ND	0.500	0.131	ND	1.80	0.472		1
Chloroform	ND	0.200	0.045	ND	0.977	0.221		1
Tetrahydrofuran	ND	0.500	0.061	ND	1.47	0.179		1
2,2-Dichloropropane	ND	0.200	0.058	ND	0.924	0.269		1
1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
Isopropyl Ether	ND	0.200	0.066	ND	0.836	0.274		1
Ethyl-Tert-Butyl-Ether	ND	0.200	0.052	ND	0.836	0.215		1
1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311		1
1,1-Dichloropropene	ND	0.200	0.072	ND	0.908	0.325		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296		1
Cyclohexane	ND	0.200	0.066	ND	0.688	0.226		1
Tertiary-Amyl Methyl Ether	ND	0.200	0.080	ND	0.836	0.332		1
Dibromomethane	ND	0.200	0.048	ND	1.42	0.338		1

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 09/12/17 13:22

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-10 Batch: WG1040959-4								
1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322		1
Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439		1
1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281		1
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1
2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308		1
Methyl Methacrylate	ND	0.500	0.147	ND	2.05	0.602		1
Heptane	ND	0.200	0.055	ND	0.820	0.227		1
cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338		1
4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249		1
trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315		1
1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364		1
Toluene	ND	0.200	0.063	ND	0.754	0.237		1
1,3-Dichloropropane	ND	0.200	0.078	ND	0.924	0.359		1
2-Hexanone	ND	0.200	0.060	ND	0.820	0.248		1
Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636		1
1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599		1
Butyl Acetate	ND	0.500	0.114	ND	2.38	0.542		1
Octane	ND	0.200	0.042	ND	0.934	0.197		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1
1,1,1,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363		1
Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241		1
p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604		1
Bromoform	ND	0.200	0.052	ND	2.07	0.541		1
Styrene	ND	0.200	0.080	ND	0.852	0.340		1

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 09/12/17 13:22

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-10 Batch: WG1040959-4								
1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
o-Xylene	ND	0.200	0.063	ND	0.869	0.274		1
1,2,3-Trichloropropane	ND	0.200	0.077	ND	1.21	0.462		1
Nonane (C9)	ND	0.200	0.064	ND	1.05	0.338		1
Isopropylbenzene	ND	0.200	0.043	ND	0.983	0.211		1
Bromobenzene	ND	0.200	0.079	ND	0.793	0.313		1
o-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252		1
n-Propylbenzene	ND	0.200	0.056	ND	0.983	0.275		1
p-Chlorotoluene	ND	0.200	0.076	ND	1.04	0.396		1
4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381		1
1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287		1
tert-Butylbenzene	ND	0.200	0.040	ND	1.10	0.221		1
1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341		1
Decane (C10)	ND	0.200	0.048	ND	1.16	0.282		1
Benzyl chloride	ND	0.200	0.065	ND	1.04	0.334		1
1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383		1
1,4-Dichlorobenzene	ND	0.200	0.042	ND	1.20	0.251		1
sec-Butylbenzene	ND	0.200	0.073	ND	1.10	0.401		1
p-Isopropyltoluene	ND	0.200	0.061	ND	1.10	0.334		1
1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369		1
n-Butylbenzene	ND	0.200	0.064	ND	1.10	0.351		1
1,2-Dibromo-3-chloropropane	ND	0.200	0.074	ND	1.93	0.719		1
Undecane	ND	0.200	0.053	ND	1.28	0.338		1
Dodecane (C12)	ND	0.200	0.056	ND	1.39	0.393		1
1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454		1

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 09/12/17 13:22

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-10 Batch: WG1040959-4								
Naphthalene	ND	0.200	0.043	ND	1.05	0.223		1
1,2,3-Trichlorobenzene	ND	0.200	0.043	ND	1.48	0.320		1
Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781		1

Project Name: HANGING ROCK
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Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 09/13/17 14:28

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 11-21 Batch: WG1041293-4								
Vinyl chloride	ND	0.200	0.039	ND	0.511	0.101		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1

Lab Control Sample Analysis

Batch Quality Control

Project Name: HANGING ROCK

Project Number: 693874.01.RP

Lab Number: L1731899

Report Date: 09/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 22-34 Batch: WG1040958-3								
Vinyl chloride	87		-		70-130	-		25
1,1-Dichloroethene	101		-		70-130	-		25
trans-1,2-Dichloroethene	89		-		70-130	-		25
cis-1,2-Dichloroethene	94		-		70-130	-		25
Benzene	80		-		70-130	-		25
Trichloroethene	90		-		70-130	-		25
Tetrachloroethene	119		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: HANGING ROCK

Project Number: 693874.01.RP

Lab Number: L1731899

Report Date: 09/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-10 Batch: WG1040959-3								
Chlorodifluoromethane	85		-		70-130	-		
Propylene	105		-		70-130	-		
Propane	87		-		70-130	-		
Dichlorodifluoromethane	86		-		70-130	-		
Chloromethane	95		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	97		-		70-130	-		
Methanol	87		-		70-130	-		
Vinyl chloride	95		-		70-130	-		
1,3-Butadiene	102		-		70-130	-		
Butane	82		-		70-130	-		
Bromomethane	94		-		70-130	-		
Chloroethane	96		-		70-130	-		
Ethyl Alcohol	90		-		70-130	-		
Dichlorofluoromethane	87		-		70-130	-		
Vinyl bromide	94		-		70-130	-		
Acrolein	87		-		70-130	-		
Acetone	96		-		70-130	-		
Acetonitrile	85		-		70-130	-		
Trichlorofluoromethane	96		-		70-130	-		
iso-Propyl Alcohol	101		-		70-130	-		
Acrylonitrile	95		-		70-130	-		
Pentane	86		-		70-130	-		
Ethyl ether	87		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

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Report Date: 09/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-10 Batch: WG1040959-3								
1,1-Dichloroethene	96		-		70-130	-		
tert-Butyl Alcohol	91		-		70-130	-		
Methylene chloride	98		-		70-130	-		
3-Chloropropene	102		-		70-130	-		
Carbon disulfide	91		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	95		-		70-130	-		
trans-1,2-Dichloroethene	86		-		70-130	-		
1,1-Dichloroethane	84		-		70-130	-		
Methyl tert butyl ether	87		-		70-130	-		
Vinyl acetate	97		-		70-130	-		
2-Butanone	94		-		70-130	-		
cis-1,2-Dichloroethene	98		-		70-130	-		
Ethyl Acetate	104		-		70-130	-		
Chloroform	98		-		70-130	-		
Tetrahydrofuran	91		-		70-130	-		
2,2-Dichloropropane	89		-		70-130	-		
1,2-Dichloroethane	96		-		70-130	-		
n-Hexane	96		-		70-130	-		
Isopropyl Ether	88		-		70-130	-		
Ethyl-Tert-Butyl-Ether	88		-		70-130	-		
1,1,1-Trichloroethane	94		-		70-130	-		
1,1-Dichloropropene	92		-		70-130	-		
Benzene	92		-		70-130	-		

Lab Control Sample Analysis

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-10 Batch: WG1040959-3								
Carbon tetrachloride	97		-		70-130	-		
Cyclohexane	96		-		70-130	-		
Tertiary-Amyl Methyl Ether	88		-		70-130	-		
Dibromomethane	91		-		70-130	-		
1,2-Dichloropropane	96		-		70-130	-		
Bromodichloromethane	99		-		70-130	-		
1,4-Dioxane	101		-		70-130	-		
Trichloroethene	97		-		70-130	-		
2,2,4-Trimethylpentane	98		-		70-130	-		
Methyl Methacrylate	115		-		70-130	-		
Heptane	98		-		70-130	-		
cis-1,3-Dichloropropene	105		-		70-130	-		
4-Methyl-2-pentanone	100		-		70-130	-		
trans-1,3-Dichloropropene	92		-		70-130	-		
1,1,2-Trichloroethane	100		-		70-130	-		
Toluene	95		-		70-130	-		
1,3-Dichloropropane	90		-		70-130	-		
2-Hexanone	102		-		70-130	-		
Dibromochloromethane	101		-		70-130	-		
1,2-Dibromoethane	98		-		70-130	-		
Butyl Acetate	94		-		70-130	-		
Octane	91		-		70-130	-		
Tetrachloroethene	94		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

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Lab Number: L1731899

Report Date: 09/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-10 Batch: WG1040959-3								
1,1,1,2-Tetrachloroethane	90		-		70-130	-		
Chlorobenzene	97		-		70-130	-		
Ethylbenzene	97		-		70-130	-		
p/m-Xylene	98		-		70-130	-		
Bromoform	101		-		70-130	-		
Styrene	98		-		70-130	-		
1,1,2,2-Tetrachloroethane	103		-		70-130	-		
o-Xylene	101		-		70-130	-		
1,2,3-Trichloropropane	90		-		70-130	-		
Nonane (C9)	92		-		70-130	-		
Isopropylbenzene	92		-		70-130	-		
Bromobenzene	91		-		70-130	-		
o-Chlorotoluene	90		-		70-130	-		
n-Propylbenzene	89		-		70-130	-		
p-Chlorotoluene	88		-		70-130	-		
4-Ethyltoluene	97		-		70-130	-		
1,3,5-Trimethylbenzene	98		-		70-130	-		
tert-Butylbenzene	94		-		70-130	-		
1,2,4-Trimethylbenzene	103		-		70-130	-		
Decane (C10)	92		-		70-130	-		
Benzyl chloride	107		-		70-130	-		
1,3-Dichlorobenzene	99		-		70-130	-		
1,4-Dichlorobenzene	98		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: HANGING ROCK
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-10 Batch: WG1040959-3								
sec-Butylbenzene	93		-		70-130	-		
p-Isopropyltoluene	87		-		70-130	-		
1,2-Dichlorobenzene	98		-		70-130	-		
n-Butylbenzene	96		-		70-130	-		
1,2-Dibromo-3-chloropropane	94		-		70-130	-		
Undecane	101		-		70-130	-		
Dodecane (C12)	116		-		70-130	-		
1,2,4-Trichlorobenzene	108		-		70-130	-		
Naphthalene	96		-		70-130	-		
1,2,3-Trichlorobenzene	97		-		70-130	-		
Hexachlorobutadiene	101		-		70-130	-		

Lab Control Sample Analysis

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Report Date: 09/19/17

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 11-21 Batch: WG1041293-3								
Vinyl chloride	97		-		70-130	-		
1,1-Dichloroethene	97		-		70-130	-		
trans-1,2-Dichloroethene	87		-		70-130	-		
cis-1,2-Dichloroethene	94		-		70-130	-		
Benzene	99		-		70-130	-		
Trichloroethene	99		-		70-130	-		
Tetrachloroethene	92		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 22-34 QC Batch ID: WG1040958-5 QC Sample: L1731899-23 Client ID: S01-B500-IA02-090817						
Vinyl chloride	ND	ND	ppbV	NC		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC		25
Benzene	0.083J	0.082J	ppbV	NC		25
Trichloroethene	0.011J	0.012J	ppbV	NC		25
Tetrachloroethene	0.158	0.158	ppbV	0		25
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1040959-5 QC Sample: L1731899-01 Client ID: S01-B500-SV01-090717						
Vinyl chloride	ND	ND	ppbV	NC		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
cis-1,2-Dichloroethene	9.17	8.69	ppbV	5		25
Benzene	4.80	4.52	ppbV	6		25
Trichloroethene	25.1	23.8	ppbV	5		25
Tetrachloroethene	674	651	ppbV	3		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 11-21 QC Batch ID: WG1041293-5 QC Sample: L1731899-12 Client ID: S01-B505-SV12-090817						
Vinyl chloride	ND	ND	ppbV	NC		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	32.5	29.5	ppbV	10		25
cis-1,2-Dichloroethene	20.5	21.2	ppbV	3		25
Benzene	ND	ND	ppbV	NC		25
Trichloroethene	312	306	ppbV	2		25
Tetrachloroethene	3610	3660	ppbV	1		25

Project Name: HANGING ROCK

Project Number: 693874.01.RP

Lab Number: L1731899

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Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1731899-01	S01-B500-SV01-090717	0524	SV200	09/06/17	248667		-	-	-	Pass	218	217	0
L1731899-01	S01-B500-SV01-090717	872	1.0L Can	09/06/17	248667	L1730889-02	Pass	-29.5	-5.8	-	-	-	-
L1731899-02	S01-B500-SV02-090717	0668	SV200	09/06/17	248667		-	-	-	Pass	219	216	1
L1731899-02	S01-B500-SV02-090717	1500	1.0L Can	09/06/17	248667	L1730889-02	Pass	-29.5	-5.6	-	-	-	-
L1731899-03	S01-B500-SV03-090717	0595	SV200	09/06/17	248667		-	-	-	Pass	219	217	1
L1731899-03	S01-B500-SV03-090717	735	1.0L Can	09/06/17	248667	L1730889-02	Pass	-29.5	-5.9	-	-	-	-
L1731899-04	S01-B500-SV04-090717	0886	SV200	09/06/17	248667		-	-	-	Pass	197	210	6
L1731899-04	S01-B500-SV04-090717	2141	1.0L Can	09/06/17	248667	L1730889-02	Pass	-29.5	-4.9	-	-	-	-
L1731899-05	S01-B500-SV05-090717	0708	SV200	09/06/17	248667		-	-	-	Pass	218	222	2
L1731899-05	S01-B500-SV05-090717	1926	1.0L Can	09/06/17	248667	L1730889-02	Pass	-29.5	-5.6	-	-	-	-
L1731899-06	S01-B500-SV06-090717	0448	Flow 1	09/06/17	248667		-	-	-	Pass	198	203	2
L1731899-06	S01-B500-SV06-090717	677	1.0L Can	09/06/17	248667	L1730889-02	Pass	-29.5	-5.8	-	-	-	-
L1731899-07	S01-B500-SV07-090717	0603	SV200	09/06/17	248667		-	-	-	Pass	219	220	0
L1731899-07	S01-B500-SV07-090717	564	1.0L Can	09/06/17	248667	L1730241-02	Pass	-29.5	-5.8	-	-	-	-
L1731899-08	S01-B500-SV08-090717	0599	SV200	09/06/17	248667		-	-	-	Pass	215	212	1

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Lab Number: L1731899

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Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1731899-08	S01-B500-SV08-090717	2172	1.0L Can	09/06/17	248667	L1730889-02	Pass	-29.5	-5.6	-	-	-	-
L1731899-09	S01-B501-SV09-090817	0995	SV200	09/06/17	248667		-	-	-	Pass	210	215	2
L1731899-09	S01-B501-SV09-090817	1510	1.0L Can	09/06/17	248667	L1730889-02	Pass	-29.5	-5.2	-	-	-	-
L1731899-10	S01-B501-SV10-090817	0571	SV200	09/06/17	248667		-	-	-	Pass	214	209	2
L1731899-10	S01-B501-SV10-090817	1919	1.0L Can	09/06/17	248667	L1730889-02	Pass	-29.5	-5.8	-	-	-	-
L1731899-11	S01-B501-SV11-090817	0861	SV200	09/06/17	248667		-	-	-	Pass	218	213	2
L1731899-11	S01-B501-SV11-090817	1511	1.0L Can	09/06/17	248667	L1730889-02	Pass	-29.0	-5.9	-	-	-	-
L1731899-12	S01-B505-SV12-090817	0885	SV200	09/06/17	248667		-	-	-	Pass	219	214	2
L1731899-12	S01-B505-SV12-090817	878	1.0L Can	09/06/17	248667	L1730889-02	Pass	-29.5	-5.6	-	-	-	-
L1731899-13	S01-B505-SV13-090717	0538	SV200	09/06/17	248667		-	-	-	Pass	218	218	0
L1731899-13	S01-B505-SV13-090717	2145	1.0L Can	09/06/17	248667	L1730889-02	Pass	-29.5	-5.6	-	-	-	-
L1731899-14	S01-B505-SV14-090817	0690	SV200	09/06/17	248667		-	-	-	Pass	217	214	1
L1731899-14	S01-B505-SV14-090817	849	1.0L Can	09/06/17	248667	L1730241-02	Pass	-29.4	-5.6	-	-	-	-
L1731899-15	S01-B505-SV15-090817	0888	SV200	09/06/17	248667		-	-	-	Pass	220	130	51
L1731899-15	S01-B505-SV15-090817	864	1.0L Can	09/06/17	248667	L1730241-02	Pass	-29.4	-5.9	-	-	-	-

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Project Number: 693874.01.RP

Lab Number: L1731899

Report Date: 09/19/17

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1731899-16	S01-B505-SV16-090817	0996	SV200	09/06/17	248667		-	-	-	Pass	218	215	1
L1731899-16	S01-B505-SV16-090817	1960	1.0L Can	09/06/17	248667	L1730241-02	Pass	-29.4	-5.8	-	-	-	-
L1731899-17	S01-B505-SV17-090717	0693	SV200	09/06/17	248667		-	-	-	Pass	211	213	1
L1731899-17	S01-B505-SV17-090717	818	1.0L Can	09/06/17	248667	L1730241-02	Pass	-29.5	-5.2	-	-	-	-
L1731899-18	S01-B505-SV18-090817	0857	SV200	09/06/17	248667		-	-	-	Pass	220	217	1
L1731899-18	S01-B505-SV18-090817	2090	1.0L Can	09/06/17	248667	L1730241-02	Pass	-29.5	-5.6	-	-	-	-
L1731899-19	S01-B505-SV19-090817	0672	sv200	09/06/17	248667		-	-	-	Pass	219	214	2
L1731899-19	S01-B505-SV19-090817	1923	1.0L Can	09/06/17	248667	L1730241-02	Pass	-29.5	-5.6	-	-	-	-
L1731899-20	S01-HGR--090817-FD03	0859	SV200	09/06/17	248667		-	-	-	Pass	219	211	4
L1731899-20	S01-HGR--090817-FD03	2087	1.0L Can	09/06/17	248667	L1730889-02	Pass	-29.5	-5.9	-	-	-	-
L1731899-21	S01-HGR--090817-FD04	794	1.0L Can	09/06/17	248667	L1730241-02	Pass	-29.5	-5.6	-	-	-	-
L1731899-22	S01-B500-IA01-090817	0204	Flow 5	09/07/17	248745		-	-	-	Pass	9.5	7.6	22
L1731899-22	S01-B500-IA01-090817	1607	6.0L Can	09/07/17	248745	L1731156-03	Pass	-29.5	-10.7	-	-	-	-
L1731899-23	S01-B500-IA02-090817	0966	Flow 5	09/07/17	248745		-	-	-	Pass	10.0	9.7	3
L1731899-23	S01-B500-IA02-090817	610	6.0L Can	09/07/17	248745	L1731156-02	Pass	-29.5	-7.4	-	-	-	-

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Lab Number: L1731899

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Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1731899-24	S01-B500-IA03-090817	0027	Flow 5	09/07/17	248745		-	-	-	Pass	9.1	8.9	2
L1731899-24	S01-B500-IA03-090817	1712	6.0L Can	09/07/17	248745	L1731156-01	Pass	-29.5	-8.5	-	-	-	-
L1731899-25	S01-B500-IA04-090817	0001	Flow 5	09/07/17	248745		-	-	-	Pass	9.2	8.5	8
L1731899-25	S01-B500-IA04-090817	1777	6.0L Can	09/07/17	248745	L1731131-10	Pass	-29.5	-10.0	-	-	-	-
L1731899-26	S01-B501-IA05-090817	0478	Flow 5	09/07/17	248745		-	-	-	Pass	9.4	9.1	3
L1731899-26	S01-B501-IA05-090817	2107	6.0L Can	09/07/17	248745	L1731131-09	Pass	-29.5	-9.0	-	-	-	-
L1731899-27	S01-B505-IA06-090817	0120	Flow 5	09/07/17	248745		-	-	-	Pass	9.5	8.8	8
L1731899-27	S01-B505-IA06-090817	2318	6.0L CAN	09/07/17	248745	L1731131-03	Pass	-29.5	-8.8	-	-	-	-
L1731899-28	S01-B505-IA07-090817	0021	Flow 5	09/07/17	248745		-	-	-	Pass	10.0	10.2	2
L1731899-28	S01-B505-IA07-090817	1695	6.0L Can	09/07/17	248745	L1731131-06	Pass	-29.5	-7.2	-	-	-	-
L1731899-29	S01-B505-IA08-090817	0203	Flow 5	09/07/17	248745		-	-	-	Pass	9.3	8.6	8
L1731899-29	S01-B505-IA08-090817	1783	6.0L Can	09/07/17	248745	L1731131-08	Pass	-29.5	-8.8	-	-	-	-
L1731899-30	S01-B505-IA09-090817	0011	Flow 5	09/07/17	248745		-	-	-	Pass	9.5	9.0	5
L1731899-30	S01-B505-IA09-090817	807	6.0L Can	09/07/17	248745	L1731131-01	Pass	-29.5	-8.0	-	-	-	-
L1731899-31	S01-B505-IA10-090817	0249	Flow 5	09/07/17	248745		-	-	-	Pass	9.3	8.5	9

Project Name: HANGING ROCK

Lab Number: L1731899

Project Number: 693874.01.RP

Report Date: 09/19/17

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1731899-31	S01-B505-IA10-090817	2273	6.0L Can	09/07/17	248745	L1731131-04	Pass	-29.5	-9.7	-	-	-	-
L1731899-32	S01-HGR-OA01-090817	0630	Flow 5	09/07/17	248745		-	-	-	Pass	10.0	9.5	5
L1731899-32	S01-HGR-OA01-090817	1799	6.0L Can	09/07/17	248745	L1731131-05	Pass	-29.5	-8.1	-	-	-	-
L1731899-33	S01-HGR-090817-FD01	0127	Flow 5	09/07/17	248745		-	-	-	Pass	10.0	9.7	3
L1731899-33	S01-HGR-090817-FD01	1572	6.0L Can	09/07/17	248745	L1731131-07	Pass	-29.5	-8.4	-	-	-	-
L1731899-34	S01-HGR-090817-FD02	0112	Flow 5	09/07/17	248745		-	-	-	Pass	10.0	10.0	0
L1731899-34	S01-HGR-090817-FD02	1790	6.0L Can	09/07/17	248745	L1731131-02	Pass	-29.5	-6.5	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1730241

Project Number: CANISTER QC BAT **Report Date:** 09/19/17

Air Canister Certification Results

Lab ID: L1730241-02
Client ID: CAN 2092 SHELF 7
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/29/17 18:37
Analyst: RY

Date Collected: 08/28/17 16:00
Date Received: 08/29/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	0.063	ND	0.707	0.221		1
Propylene	ND	0.500	0.093	ND	0.861	0.160		1
Propane	ND	0.500	0.114	ND	0.902	0.206		1
Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230		1
Chloromethane	ND	0.200	0.096	ND	0.413	0.198		1
Freon-114	ND	0.200	0.042	ND	1.40	0.293		1
Methanol	1.53	5.00	0.736	2.00	6.55	0.964	J	1
Vinyl chloride	ND	0.200	0.039	ND	0.511	0.101		1
1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177		1
Butane	ND	0.200	0.044	ND	0.475	0.105		1
Bromomethane	ND	0.200	0.070	ND	0.777	0.270		1
Chloroethane	ND	0.200	0.077	ND	0.528	0.202		1
Ethanol	ND	5.00	0.542	ND	9.42	1.02		1
Dichlorofluoromethane	ND	0.200	0.057	ND	0.842	0.241		1
Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306		1
Acrolein	ND	0.500	0.114	ND	1.15	0.261		1
Acetone	ND	1.00	0.165	ND	2.38	0.392		1
Acetonitrile	ND	0.200	0.076	ND	0.336	0.128		1
Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234		1
Isopropanol	ND	0.500	0.084	ND	1.23	0.206		1
Acrylonitrile	ND	0.500	0.079	ND	1.09	0.171		1
Pentane	ND	0.200	0.048	ND	0.590	0.140		1
Ethyl ether	ND	0.200	0.059	ND	0.606	0.179		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
Tertiary butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1730241

Project Number: CANISTER QC BAT **Report Date:** 09/19/17

Air Canister Certification Results

Lab ID: L1730241-02 Date Collected: 08/28/17 16:00

Client ID: CAN 2092 SHELF 7 Date Received: 08/29/17

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Methylene chloride	ND	0.500	0.062	ND	1.74	0.216		1
3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107		1
Freon-113	ND	0.200	0.051	ND	1.53	0.392		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312		1
Methyl tert butyl ether	ND	0.200	0.045	ND	0.721	0.163		1
Vinyl acetate	ND	1.00	0.057	ND	3.52	0.200		1
2-Butanone	ND	0.500	0.052	ND	1.47	0.154		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Ethyl Acetate	ND	0.500	0.131	ND	1.80	0.472		1
Chloroform	ND	0.200	0.045	ND	0.977	0.221		1
Tetrahydrofuran	ND	0.500	0.061	ND	1.47	0.179		1
2,2-Dichloropropane	ND	0.200	0.058	ND	0.924	0.269		1
1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
Diisopropyl ether	ND	0.200	0.066	ND	0.836	0.274		1
tert-Butyl Ethyl Ether	ND	0.200	0.052	ND	0.836	0.215		1
1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311		1
1,1-Dichloropropene	ND	0.200	0.072	ND	0.908	0.325		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296		1
Cyclohexane	ND	0.200	0.066	ND	0.688	0.226		1
tert-Amyl Methyl Ether	ND	0.200	0.080	ND	0.836	0.332		1
Dibromomethane	ND	0.200	0.048	ND	1.42	0.338		1
1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322		1
Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439		1
1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1730241

Project Number: CANISTER QC BAT **Report Date:** 09/19/17

Air Canister Certification Results

Lab ID: L1730241-02 Date Collected: 08/28/17 16:00

Client ID: CAN 2092 SHELF 7 Date Received: 08/29/17

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1
2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308		1
Methyl Methacrylate	ND	0.500	0.147	ND	2.05	0.602		1
Heptane	ND	0.200	0.055	ND	0.820	0.227		1
cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338		1
4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249		1
trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315		1
1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364		1
Toluene	ND	0.200	0.063	ND	0.754	0.237		1
1,3-Dichloropropane	ND	0.200	0.078	ND	0.924	0.359		1
2-Hexanone	ND	0.200	0.060	ND	0.820	0.248		1
Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636		1
1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599		1
Butyl acetate	ND	0.500	0.114	ND	2.38	0.542		1
Octane	ND	0.200	0.042	ND	0.934	0.197		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1
1,1,1,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363		1
Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241		1
p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604		1
Bromoform	ND	0.200	0.052	ND	2.07	0.541		1
Styrene	ND	0.200	0.080	ND	0.852	0.340		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
o-Xylene	ND	0.200	0.063	ND	0.869	0.274		1
1,2,3-Trichloropropane	ND	0.200	0.077	ND	1.21	0.462		1
Nonane	ND	0.200	0.064	ND	1.05	0.338		1
Isopropylbenzene	ND	0.200	0.043	ND	0.983	0.211		1
Bromobenzene	ND	0.200	0.079	ND	0.793	0.313		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1730241

Project Number: CANISTER QC BAT **Report Date:** 09/19/17

Air Canister Certification Results

Lab ID: L1730241-02 Date Collected: 08/28/17 16:00

Client ID: CAN 2092 SHELF 7 Date Received: 08/29/17

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252		1
n-Propylbenzene	ND	0.200	0.056	ND	0.983	0.275		1
4-Chlorotoluene	ND	0.200	0.076	ND	1.04	0.396		1
4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381		1
1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287		1
tert-Butylbenzene	ND	0.200	0.040	ND	1.10	0.221		1
1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341		1
Decane	ND	0.200	0.048	ND	1.16	0.282		1
Benzyl chloride	ND	0.200	0.065	ND	1.04	0.334		1
1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383		1
1,4-Dichlorobenzene	ND	0.200	0.042	ND	1.20	0.251		1
sec-Butylbenzene	ND	0.200	0.073	ND	1.10	0.401		1
p-Isopropyltoluene	ND	0.200	0.061	ND	1.10	0.334		1
1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369		1
n-Butylbenzene	ND	0.200	0.064	ND	1.10	0.351		1
1,2-Dibromo-3-chloropropane	ND	0.200	0.074	ND	1.93	0.719		1
Undecane	ND	0.200	0.053	ND	1.28	0.338		1
Dodecane	ND	0.200	0.056	ND	1.39	0.393		1
1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454		1
Naphthalene	ND	0.200	0.043	ND	1.05	0.223		1
1,2,3-Trichlorobenzene	ND	0.200	0.043	ND	1.48	0.320		1
Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781		1

	Results	**Qualifier**	**Units**	**RDL**	**Dilution Factor**
Tentatively Identified Compounds					
No Tentatively Identified Compounds					

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1730241
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1730241-02
Client ID: CAN 2092 SHELF 7
Sample Location:
Date Collected: 08/28/17 16:00
Date Received: 08/29/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	79		60-140
Bromochloromethane	84		60-140
chlorobenzene-d5	76		60-140

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1730241

Project Number: CANISTER QC BAT **Report Date:** 09/19/17

Air Canister Certification Results

Lab ID: L1730241-02
Client ID: CAN 2092 SHELF 7
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/29/17 18:37
Analyst: RY

Date Collected: 08/28/17 16:00
Date Received: 08/29/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	0.006	ND	0.989	0.030		1
Chloromethane	ND	0.200	0.048	ND	0.413	0.099		1
Freon-114	ND	0.050	0.005	ND	0.349	0.035		1
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,3-Butadiene	ND	0.020	0.006	ND	0.044	0.013		1
Bromomethane	ND	0.020	0.008	ND	0.078	0.031		1
Chloroethane	ND	0.020	0.007	ND	0.053	0.019		1
Acetone	ND	1.00	0.133	ND	2.38	0.316		1
Trichlorofluoromethane	ND	0.050	0.008	ND	0.281	0.045		1
Acrylonitrile	ND	0.500	0.015	ND	1.09	0.033		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
Methylene chloride	ND	0.500	0.250	ND	1.74	0.869		1
Freon-113	ND	0.050	0.006	ND	0.383	0.046		1
Halothane	ND	0.050	0.008	ND	0.404	0.065		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
Methyl tert butyl ether	ND	0.200	0.004	ND	0.721	0.014		1
2-Butanone	ND	0.500	0.025	ND	1.47	0.073		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
Chloroform	ND	0.020	0.006	ND	0.098	0.029		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Carbon tetrachloride	ND	0.020	0.008	ND	0.126	0.050		1
1,2-Dichloropropane	ND	0.020	0.006	ND	0.092	0.028		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1730241

Project Number: CANISTER QC BAT **Report Date:** 09/19/17

Air Canister Certification Results

Lab ID: L1730241-02 Date Collected: 08/28/17 16:00

Client ID: CAN 2092 SHELF 7 Date Received: 08/29/17

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	0.008	ND	0.134	0.054		1
1,4-Dioxane	ND	0.100	0.050	ND	0.360	0.180		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
cis-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036		1
4-Methyl-2-pentanone	ND	0.500	0.042	ND	2.05	0.172		1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036		1
1,1,2-Trichloroethane	ND	0.020	0.009	ND	0.109	0.049		1
Toluene	ND	0.050	0.025	ND	0.188	0.094		1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068		1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1
1,1,1,2-Tetrachloroethane	ND	0.020	0.004	ND	0.137	0.028		1
Chlorobenzene	ND	0.100	0.008	ND	0.461	0.037		1
Ethylbenzene	ND	0.020	0.007	ND	0.087	0.030		1
p/m-Xylene	ND	0.040	0.009	ND	0.174	0.039		1
Bromoform	ND	0.020	0.015	ND	0.207	0.155		1
Styrene	ND	0.020	0.008	ND	0.085	0.034		1
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048		1
o-Xylene	ND	0.020	0.008	ND	0.087	0.035		1
Isopropylbenzene	ND	0.200	0.046	ND	0.983	0.226		1
4-Ethyltoluene	ND	0.020	0.010	ND	0.098	0.048		1
1,3,5-Trimethybenzene	ND	0.020	0.005	ND	0.098	0.025		1
1,2,4-Trimethylbenzene	ND	0.020	0.007	ND	0.098	0.034		1
Benzyl chloride	ND	0.200	0.037	ND	1.04	0.192		1
1,3-Dichlorobenzene	ND	0.020	0.007	ND	0.120	0.042		1
1,4-Dichlorobenzene	ND	0.020	0.008	ND	0.120	0.048		1
sec-Butylbenzene	ND	0.200	0.047	ND	1.10	0.258		1
p-Isopropyltoluene	ND	0.200	0.048	ND	1.10	0.263		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1730241
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1730241-02
Client ID: CAN 2092 SHELF 7
Sample Location:
Date Collected: 08/28/17 16:00
Date Received: 08/29/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
1,2-Dichlorobenzene	ND	0.020	0.007	ND	0.120	0.042		1
n-Butylbenzene	ND	0.200	0.045	ND	1.10	0.247		1
1,2,4-Trichlorobenzene	ND	0.050	0.010	ND	0.371	0.074		1
Naphthalene	ND	0.050	0.012	ND	0.262	0.063		1
1,2,3-Trichlorobenzene	ND	0.050	0.019	ND	0.371	0.141		1
Hexachlorobutadiene	ND	0.050	0.011	ND	0.533	0.117		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	83		60-140
bromochloromethane	87		60-140
chlorobenzene-d5	84		60-140

Project Name:

Lab Number: L1730889

Project Number: CANISTER QC BAT

Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1730889-02
Client ID: CAN 804 SHELF 4
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 09/01/17 16:52
Analyst: RY

Date Collected: 08/31/17 16:00
Date Received: 09/01/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	0.063	ND	0.707	0.221		1
Propylene	ND	0.500	0.093	ND	0.861	0.160		1
Propane	ND	0.500	0.114	ND	0.902	0.206		1
Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230		1
Chloromethane	ND	0.200	0.096	ND	0.413	0.198		1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.200	0.042	ND	1.40	0.293		1
Vinyl chloride	ND	0.200	0.039	ND	0.511	0.101		1
1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177		1
Butane	ND	0.200	0.044	ND	0.475	0.105		1
Bromomethane	ND	0.200	0.070	ND	0.777	0.270		1
Chloroethane	ND	0.200	0.077	ND	0.528	0.202		1
Ethyl Alcohol	ND	5.00	0.542	ND	9.42	1.02		1
Dichlorofluoromethane	ND	0.200	0.057	ND	0.842	0.241		1
Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306		1
Acrolein	ND	0.500	0.114	ND	1.15	0.261		1
Acetone	ND	1.00	0.165	ND	2.38	0.392		1
Acetonitrile	ND	0.200	0.076	ND	0.336	0.128		1
Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234		1
iso-Propyl Alcohol	ND	0.500	0.084	ND	1.23	0.206		1
Acrylonitrile	ND	0.500	0.079	ND	1.09	0.171		1
Pentane	ND	0.200	0.048	ND	0.590	0.140		1
Ethyl ether	ND	0.200	0.059	ND	0.606	0.179		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
tert-Butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182		1
Methylene chloride	ND	0.500	0.062	ND	1.74	0.216		1

Project Name:

Lab Number: L1730889

Project Number: CANISTER QC BAT

Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1730889-02
Client ID: CAN 804 SHELF 4
Sample Location:

Date Collected: 08/31/17 16:00
Date Received: 09/01/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107		1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.200	0.051	ND	1.53	0.392		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312		1
Methyl tert butyl ether	ND	0.200	0.045	ND	0.721	0.163		1
Vinyl acetate	ND	1.00	0.057	ND	3.52	0.200		1
2-Butanone	ND	0.500	0.052	ND	1.47	0.154		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Ethyl Acetate	ND	0.500	0.131	ND	1.80	0.472		1
Chloroform	ND	0.200	0.045	ND	0.977	0.221		1
Tetrahydrofuran	ND	0.500	0.061	ND	1.47	0.179		1
2,2-Dichloropropane	ND	0.200	0.058	ND	0.924	0.269		1
1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
Isopropyl Ether	ND	0.200	0.066	ND	0.836	0.274		1
Ethyl-Tert-Butyl-Ether	ND	0.200	0.052	ND	0.836	0.215		1
1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311		1
1,1-Dichloropropene	ND	0.200	0.072	ND	0.908	0.325		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296		1
Cyclohexane	ND	0.200	0.066	ND	0.688	0.226		1
Tertiary-Amyl Methyl Ether	ND	0.200	0.080	ND	0.836	0.332		1
Dibromomethane	ND	0.200	0.048	ND	1.42	0.338		1
1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322		1
Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439		1
1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281		1
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1

Project Name:

Lab Number: L1730889

Project Number: CANISTER QC BAT

Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1730889-02
Client ID: CAN 804 SHELF 4
Sample Location:

Date Collected: 08/31/17 16:00
Date Received: 09/01/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308		1
Methyl Methacrylate	ND	0.500	0.147	ND	2.05	0.602		1
Heptane	ND	0.200	0.055	ND	0.820	0.227		1
cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338		1
4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249		1
trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315		1
1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364		1
Toluene	ND	0.200	0.063	ND	0.754	0.237		1
1,3-Dichloropropane	ND	0.200	0.078	ND	0.924	0.359		1
2-Hexanone	ND	0.200	0.060	ND	0.820	0.248		1
Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636		1
1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599		1
Butyl Acetate	ND	0.500	0.114	ND	2.38	0.542		1
Octane	ND	0.200	0.042	ND	0.934	0.197		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1
1,1,1,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363		1
Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241		1
p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604		1
Bromoform	ND	0.200	0.052	ND	2.07	0.541		1
Styrene	ND	0.200	0.080	ND	0.852	0.340		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
o-Xylene	ND	0.200	0.063	ND	0.869	0.274		1
1,2,3-Trichloropropane	ND	0.200	0.077	ND	1.21	0.462		1
Nonane (C9)	ND	0.200	0.064	ND	1.05	0.338		1
Isopropylbenzene	ND	0.200	0.043	ND	0.983	0.211		1
Bromobenzene	ND	0.200	0.079	ND	0.793	0.313		1
o-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252		1

Project Name:

Lab Number: L1730889

Project Number: CANISTER QC BAT

Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1730889-02
Client ID: CAN 804 SHELF 4
Sample Location:

Date Collected: 08/31/17 16:00
Date Received: 09/01/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
n-Propylbenzene	ND	0.200	0.056	ND	0.983	0.275		1
p-Chlorotoluene	ND	0.200	0.076	ND	1.04	0.396		1
4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381		1
1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287		1
tert-Butylbenzene	ND	0.200	0.040	ND	1.10	0.221		1
1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341		1
Decane (C10)	ND	0.200	0.048	ND	1.16	0.282		1
Benzyl chloride	ND	0.200	0.065	ND	1.04	0.334		1
1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383		1
1,4-Dichlorobenzene	ND	0.200	0.042	ND	1.20	0.251		1
sec-Butylbenzene	ND	0.200	0.073	ND	1.10	0.401		1
p-Isopropyltoluene	ND	0.200	0.061	ND	1.10	0.334		1
1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369		1
n-Butylbenzene	ND	0.200	0.064	ND	1.10	0.351		1
1,2-Dibromo-3-chloropropane	ND	0.200	0.074	ND	1.93	0.719		1
Undecane	ND	0.200	0.053	ND	1.28	0.338		1
Dodecane (C12)	ND	0.200	0.056	ND	1.39	0.393		1
1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454		1
Naphthalene	ND	0.200	0.043	ND	1.05	0.223		1
1,2,3-Trichlorobenzene	ND	0.200	0.043	ND	1.48	0.320		1
Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781		1

	Results	**Qualifier**	**Units**	**RDL**	**Dilution Factor**
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Project Name:

Lab Number: L1730889

Project Number: CANISTER QC BAT

Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1730889-02
Client ID: CAN 804 SHELF 4
Sample Location:

Date Collected: 08/31/17 16:00
Date Received: 09/01/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	65		60-140
Bromochloromethane	76		60-140
chlorobenzene-d5	69		60-140

Project Name:

Lab Number: L1730889

Project Number: CANISTER QC BAT

Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1730889-02
Client ID: CAN 804 SHELF 4
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/01/17 16:52
Analyst: RY

Date Collected: 08/31/17 16:00
Date Received: 09/01/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Propylene	ND	0.500	0.034	ND	0.861	0.059		1
Dichlorodifluoromethane	ND	0.200	0.006	ND	0.989	0.030		1
Chloromethane	ND	0.200	0.048	ND	0.413	0.099		1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.050	0.005	ND	0.349	0.035		1
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,3-Butadiene	ND	0.020	0.006	ND	0.044	0.013		1
Bromomethane	ND	0.020	0.008	ND	0.078	0.031		1
Chloroethane	ND	0.020	0.007	ND	0.053	0.019		1
Ethyl Alcohol	ND	5.00	0.157	ND	9.42	0.296		1
Vinyl bromide	ND	0.200	0.023	ND	0.874	0.101		1
Acetone	ND	1.00	0.133	ND	2.38	0.316		1
Trichlorofluoromethane	ND	0.050	0.008	ND	0.281	0.045		1
iso-Propyl Alcohol	ND	0.500	0.153	ND	1.23	0.376		1
Acrylonitrile	ND	0.500	0.015	ND	1.09	0.033		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
tert-Butyl Alcohol	ND	0.500	0.018	ND	1.52	0.055		1
Methylene chloride	ND	0.500	0.250	ND	1.74	0.869		1
3-Chloropropene	ND	0.200	0.020	ND	0.626	0.063		1
Carbon disulfide	ND	0.200	0.063	ND	0.623	0.196		1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.050	0.006	ND	0.383	0.046		1
Halothane	ND	0.050	0.008	ND	0.404	0.065		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
Methyl tert butyl ether	ND	0.200	0.004	ND	0.721	0.014		1
Vinyl acetate	ND	1.00	0.027	ND	3.52	0.095		1

Project Name:

Lab Number: L1730889

Project Number: CANISTER QC BAT

Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1730889-02
Client ID: CAN 804 SHELF 4
Sample Location:

Date Collected: 08/31/17 16:00
Date Received: 09/01/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
2-Butanone	ND	0.500	0.025	ND	1.47	0.073		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
Ethyl Acetate	ND	0.500	0.020	ND	1.80	0.072		1
Chloroform	ND	0.020	0.006	ND	0.098	0.029		1
Tetrahydrofuran	ND	0.500	0.037	ND	1.47	0.109		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
n-Hexane	ND	0.200	0.033	ND	0.705	0.116		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Carbon tetrachloride	ND	0.020	0.008	ND	0.126	0.050		1
Cyclohexane	ND	0.200	0.030	ND	0.688	0.103		1
Dibromomethane	0.012	0.200	0.010	0.085	1.42	0.071	J	1
1,2-Dichloropropane	ND	0.020	0.006	ND	0.092	0.028		1
Bromodichloromethane	ND	0.020	0.008	ND	0.134	0.054		1
1,4-Dioxane	ND	0.100	0.050	ND	0.360	0.180		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
2,2,4-Trimethylpentane	ND	0.200	0.027	ND	0.934	0.126		1
Heptane	ND	0.200	0.032	ND	0.820	0.131		1
cis-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036		1
4-Methyl-2-pentanone	ND	0.500	0.042	ND	2.05	0.172		1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036		1
1,1,2-Trichloroethane	ND	0.020	0.009	ND	0.109	0.049		1
Toluene	ND	0.050	0.025	ND	0.188	0.094		1
2-Hexanone	ND	0.200	0.030	ND	0.820	0.123		1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068		1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1
1,1,1,2-Tetrachloroethane	ND	0.020	0.004	ND	0.137	0.028		1

Project Name:

Lab Number: L1730889

Project Number: CANISTER QC BAT

Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1730889-02
Client ID: CAN 804 SHELF 4
Sample Location:

Date Collected: 08/31/17 16:00
Date Received: 09/01/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Chlorobenzene	ND	0.100	0.008	ND	0.461	0.037		1
Ethylbenzene	ND	0.020	0.007	ND	0.087	0.030		1
p/m-Xylene	ND	0.040	0.009	ND	0.174	0.039		1
Bromoform	ND	0.020	0.015	ND	0.207	0.155		1
Styrene	ND	0.020	0.008	ND	0.085	0.034		1
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048		1
o-Xylene	ND	0.020	0.008	ND	0.087	0.035		1
1,2,3-Trichloropropane	ND	0.020	0.006	ND	0.121	0.036		1
Isopropylbenzene	ND	0.200	0.046	ND	0.983	0.226		1
Bromobenzene	ND	0.200	0.009	ND	0.793	0.036		1
4-Ethyltoluene	ND	0.020	0.010	ND	0.098	0.048		1
1,3,5-Trimethylbenzene	ND	0.020	0.005	ND	0.098	0.025		1
1,2,4-Trimethylbenzene	ND	0.020	0.007	ND	0.098	0.034		1
Benzyl chloride	ND	0.200	0.037	ND	1.04	0.192		1
1,3-Dichlorobenzene	ND	0.020	0.007	ND	0.120	0.042		1
1,4-Dichlorobenzene	ND	0.020	0.008	ND	0.120	0.048		1
sec-Butylbenzene	ND	0.200	0.047	ND	1.10	0.258		1
p-Isopropyltoluene	ND	0.200	0.048	ND	1.10	0.263		1
1,2-Dichlorobenzene	ND	0.020	0.007	ND	0.120	0.042		1
n-Butylbenzene	ND	0.200	0.045	ND	1.10	0.247		1
1,2,4-Trichlorobenzene	ND	0.050	0.010	ND	0.371	0.074		1
Naphthalene	ND	0.050	0.012	ND	0.262	0.063		1
1,2,3-Trichlorobenzene	ND	0.050	0.019	ND	0.371	0.141		1
Hexachlorobutadiene	ND	0.050	0.011	ND	0.533	0.117		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	73		60-140
bromochloromethane	81		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1731131
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1731131-01
Client ID: CAN 807
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/05/17 17:42
Analyst: RY

Date Collected: 09/01/17 16:00
Date Received: 09/05/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	0.008	0.020	0.007	0.043	0.107	0.038	J	1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	86		60-140
bromochloromethane	93		60-140
chlorobenzene-d5	88		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1731131
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1731131-02
Client ID: CAN 1790
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/05/17 18:14
Analyst: RY

Date Collected: 09/01/17 16:00
Date Received: 09/05/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	83		60-140
bromochloromethane	88		60-140
chlorobenzene-d5	84		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1731131
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1731131-03
Client ID: CAN 2318
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/05/17 18:47
Analyst: RY

Date Collected: 09/01/17 16:00
Date Received: 09/05/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	79		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	82		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1731131
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1731131-04
Client ID: CAN 2273
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/05/17 19:20
Analyst: RY

Date Collected: 09/01/17 16:00
Date Received: 09/05/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	78		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	81		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1731131
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1731131-05
Client ID: CAN 1799
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/05/17 19:52
Analyst: RY

Date Collected: 09/01/17 16:00
Date Received: 09/05/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	77		60-140
bromochloromethane	84		60-140
chlorobenzene-d5	78		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1731131
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1731131-06
Client ID: CAN 1695
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/05/17 20:25
Analyst: RY

Date Collected: 09/01/17 16:00
Date Received: 09/05/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	74		60-140
bromochloromethane	84		60-140
chlorobenzene-d5	75		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1731131
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1731131-07
Client ID: CAN 1572
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/05/17 20:57
Analyst: RY

Date Collected: 09/01/17 16:00
Date Received: 09/05/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	74		60-140
bromochloromethane	83		60-140
chlorobenzene-d5	78		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1731131
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1731131-08
Client ID: CAN 1783
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/05/17 21:30
Analyst: RY

Date Collected: 09/01/17 16:00
Date Received: 09/05/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	77		60-140
bromochloromethane	84		60-140
chlorobenzene-d5	78		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1731131
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1731131-09
Client ID: CAN 2107
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/05/17 22:02
Analyst: RY

Date Collected: 09/01/17 16:00
Date Received: 09/05/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	75		60-140
bromochloromethane	83		60-140
chlorobenzene-d5	77		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1731131
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1731131-10
Client ID: CAN 1777
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/05/17 22:35
Analyst: RY

Date Collected: 09/01/17 16:00
Date Received: 09/05/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	78		60-140
bromochloromethane	84		60-140
chlorobenzene-d5	80		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1731156
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1731156-01
Client ID: CAN 1712
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/05/17 23:08
Analyst: RY

Date Collected: 09/01/17 16:00
Date Received: 09/05/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	72		60-140
bromochloromethane	81		60-140
chlorobenzene-d5	75		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1731156
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1731156-02
Client ID: CAN 610
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/05/17 23:40
Analyst: RY

Date Collected: 09/01/17 16:00
Date Received: 09/05/17
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	77		60-140
bromochloromethane	84		60-140
chlorobenzene-d5	79		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1731156
Report Date: 09/19/17

Air Canister Certification Results

Lab ID: L1731156-03
Client ID: CAN 1607
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 09/06/17 00:13
Analyst: RY

Date Collected: 09/01/17 16:00
Date Received: 09/05/17
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	72		60-140
bromochloromethane	82		60-140
chlorobenzene-d5	75		60-140

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
N/A	Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1731899-01A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-02A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-03A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-04A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-05A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-06A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-07A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-08A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-09A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-10A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-11A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-12A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-13A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-14A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-15A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-16A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-17A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-18A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-19A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-20A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-21A	Canister - 1 Liter	N/A	NA			Y	Present/Intact		TO15-LL(30)
L1731899-22A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1731899-23A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)

*Values in parentheses indicate holding time in days

Project Name: HANGING ROCK
Project Number: 693874.01.RP

Lab Number: L1731899
Report Date: 09/19/17

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1731899-24A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1731899-25A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1731899-26A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1731899-27A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1731899-28A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1731899-29A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1731899-30A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1731899-31A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1731899-32A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1731899-33A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1731899-34A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)

*Values in parentheses indicate holding time in days

Project Name:	HANGING ROCK	**Lab Number:**	L1731899
Project Number:	693874.01.RP	**Report Date:**	09/19/17

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: DU Report with 'J' Qualifiers

Project Name:	HANGING ROCK	**Lab Number:**	L1731899
Project Number:	693874.01.RP	**Report Date:**	09/19/17

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: NPW and SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
EPA 9012B: NPW: Total Cyanide
EPA 9050A: NPW: Specific Conductance
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
SM 2540D: TSS
EPA 3005A NPW
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E.**

Mansfield Facility:

Drinking Water
EPA 200.7: Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1** Hg.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

OHIO VAP

AIR ANALYSIS

PAGE 1 OF 4

ALPHA ANALYTICAL
CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 9/9/17

ALPHA Job #: L1731899

Client Information

Client: CH2M
Address: 300 Hunter Ave Ste 305
St. Louis, MO 63124
Phone: 314-335-3024
Fax: 314-421-3927
Email: Shane.Lowe@CH2M.Com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Dow-Hanging Rock
Project Location: Ironton, OH
Project #: 693874.01.RP
Project Manager: Marie Chiller
ALPHA Quote #:

Turn-Around Time

☐ Standard ☑ RUSH (only confirmed if pre-approved!)

Date Due: 5 day TAT Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☑ EMAIL (standard pdf report)
☐ Additional Deliverables:

Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #: 693874.01.RP

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☐

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS TO-15	TO-15 SIM	APH Subtract Non-petroleum HCs ☐	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
-01	S01-B500-SV01-090717	9/7/17	~~15:55~~ 16:00	~~16:00~~ 16:05	-29.45	-4.65	SV	BI, EE, AS	1L	872	0524	✓					
-02	S01-B500-SV02-090717	9/7/17	15:40	15:45	-29.42	-4.72	SV	BI EE AS	1L	1500	668	✓					
-03	S01-B500-SV03-090717	9/7/17	13:26	13:30	-29.40	-4.83	SV	BI EE AS	1L	735	595	✓					
-04	S01-B500-SV04-090717	9/7/17	13:49	13:54	-29.42	-3.91	SV	BI EE AS	1L	2141	886	✓					
-05	S01-B500-SV05-090717	9/7/17	14:09	14:14	-29.47	-4.71	SV	BI EE AS	1L	1926	708	✓					
-06	S01-B500-SV06-090717	9/7/17	14:30	14:34	-29.42	-4.75	SV	BI EE AS	1L	677	448	✓					
-07	S01-B500-SV07-090717	9/7/17	14:48	14:52	-29.44	-4.73	SV	BI EE AS	1L	564	603	✓					
-08	S01-B500-SV08-090717	9/7/17	15:22	15:26	-29.26	-4.57	SV	BI EE AS	1L	2172	599	✓					
-09	S01-B501-SV09-090817	9/8/17	16:07	16:11	-29.41	-4.41	SV	BI EE AS	1L	1510	995	✓					
-10	S01-B501-SV10-090817	9/8/17	15:41	15:50	-29.52	-4.92	SV	BI EE AS	1L	1919	571	✓					

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
Amanda Sellers CH2M	16:55 9/8/17	Fedex	9/9/17 10:07
Fedex			

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Form No: 101-02 Rev: (25-Sep-15)

AIR ANALYSIS

PAGE 2 OF 4

CHAIN OF CUSTODY

ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 9/9/17

ALPHA Job #: L1731899

Client Information

Client: CH2M
Address: 300 Hunter Ave Ste 305
St Louis MO 63124
Phone: 314-335-3024
Fax: 314-421-3927
Email: Shane.Lowe@CH2M.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Dow-Hanging Rock
Project Location: Ironton, OH
Project #: 693874.01.RP
Project Manager: Marie Chiller
ALPHA Quote #:

Turn-Around Time

☐ Standard ☑ RUSH (only confirmed if pre-approved!)
Date Due: 5-day TAT Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☑ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #: 693874.01.RP

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☐

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS TO-15	TO-15 SIM	APH Subtract Non-petroleum HCs ☐	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
-11	SO1-B501-SV11-090817	9/8/17	15:13	15:18	-28.82	-4.72	SV	AS BI EE	1L	1511	861	✓					
-12	SO1-B505-SV12-090817	9/8/17	8:59	9:03	-29.21	-4.73	SV	AS BI EE	~~878~~ 1L 878 as	878	885	✓					
-13	SO1-B505-SV13-090717	9/7/17	16:38	16:42	-29.48	-4.78	SV	AS BI EE	1L	2145	538	✓					
-14	SO1-B505-SV14-090817	9/8/17	9:38	9:42	-29.32	-4.78	SV	AS BI EE	1L	849	690	✓					
-15	SO1-B505-SV15-090817	9/8/17	10:05	10:15	-29.36	-5.39	SV	AS BI EE	1L	864	888	✓					
-16	SO1-B505-SV16-090817	9/8/17	10:40	10:46	-29.41	-5.05	SV	AS BI EE	1L	1960	996	✓					
-17	SO1-B505-SV17-090717	9/7/17	17:04	17:08	-29.40	-4.50	SV	AS BI EE	1L	818	693	✓					
-18	SO1-B505-SV18-090817	9/8/17	9:19	9:23	-29.51	-4.75	SV	AS EE BI	1L	2090	857	✓					
-19	SO1-B505-SV19-090817	9/8/17	8:40	8:44	-29.49	-4.95	SV	AS EE BI	1L	1923	672	✓					
-20	SO1-HGR-090817-FD03	9/8/17	10:05	10:15	-29.44	-5.48	SV	AS EE BI	1L	2087	888	✓					

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
Amanda Sellers CH2M Fedex	16:55 9/8/17	Fedex	9/9/17 10:07

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Form No: 101-02 Rev: (25-Sep-15)

AIR ANALYSIS

PAGE 3 OF 4

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 9/9/17

ALPHA Job #: L1731899

Client Information

Client: CH2M
Address: 300 Hunter Ave Ste 305
St Louis MO 63124
Phone: 314-335-3024
Fax: 314-421-3927
Email: Shane.Lowe@CH2M.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Dow-Hanging Rock
Project Location: Ironton, OH
Project #: 693874.01.RP
Project Manager: Marie Chiller
ALPHA Quote #:

Turn-Around Time

☐ Standard ☑ RUSH (only confirmed if pre-approved!)
Date Due: 5 day TAT Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☑ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #: 693874.01.RP

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☐

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS TO-15	TO-15 SIM	APH ☐ Subtract Non-petroleum HCs	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
-21	SO1-HGR-090817-FD04	9/8/17	15:41	15:50	-29.36	-4.75	SV	AS BI EE	1L	794	571	✓					
-22	SO1-B500-1A01-090817	9/8/17	7:32	15:41	-29.88	-9.92	AA	AS BI EE	6L	1607	204	✓					
-23	SO1-B500-1A02-090817	9/8/17	7:40	15:40	-29.89	-6.67	AA	AS BI EE	6L	610	966	✓					
-24	SO1-B500-1A03-090817	9/8/17	7:36	15:37	-29.84	-7.82	AA	AS BI EE	6L	1712	27	✓					
-25	SO1-B500-1A04-090817	9/8/17	7:38	15:36	-29.85	-9.69	AA	AS BI EE	6L	1777	1	✓					
-26	SO1-B501-1A05-090817	9/8/17	7:59	15:20	-29.79	-8.55	AA	AS BI EE	6L	2107	478	✓					
-27	SO1-B505-1A06-090817	9/8/17	8:07	15:50	-29.70	-8.12	AA	AS BI EE	6L	2318	120	✓					
-28	SO1-B505-1A07-090817	9/8/17	8:10	15:54	-29.86	-6.47	AA	AS BI EE	6L	1695	21	✓					
-29	SO1-B505-1A08-090817	9/8/17	8:12	15:55	-29.80	-8.45	AA	AS BI EE	6L	1783	203	✓					
-30	SO1-B505-1A09-090817	9/8/17	8:05	15:52	-29.81	-7.36	AA	AS BI EE	6L	807	11	✓					

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
Amanda K Sellers CH2M Fedex	16:55 9/8/17	[illegible]	9/9/17 10:07

Form No: 101-02 Rev: (25-Sep-15)

AIR ANALYSIS

PAGE 4 OF 4

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 9/9/17

ALPHA Job #: L1731899

Client Information

Client: CH2M
Address: 300 Hunter Ave Ste 305
St Louis MO 63124
Phone: 314-335-3024
Fax: 314-421-3927
Email: Shane.Lowe@CH2M.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: DAW - Hanging Rock
Project Location: Ironton, OH
Project #: 693874.01.RP
Project Manager: Marie Chiller
ALPHA Quote #:

Turn-Around Time

☐ Standard ☑ RUSH (only confirmed if pre-approved!)
Date Due: 5 day TAT Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☑ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #: 693874.01.RP

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☐

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-15	TO-15 SIM	APH Subtract Non-petroleum HCs ☐	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
-31	SO1-B505-1A10-090817	9/8/17	8:15	15:51	-29.60	-9.05	AA	AS BI EE	6L	2273	249	✓					
-32	SO1-HGR-0A01-090817	9/8/17	7:58	15:44	-29.84	-6.84	AA	AS BI EE	6L	1799	630	✓					
-33	SO1-HGR-090817-FD01	9/8/17	7:59	15:20	-29.29	-7.86	AA	AS BI EE	6L	1572	127	✓					
-34	SO1-HGR-090817-FD02	9/8/17	8:05	15:52	-29.84	-6.11	AA	AS BI EE	6L	1790	112	✓					

ANALYSIS

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
Amanda Sellers CH2M Fedex	16:55 9/8/17	Fedex	9/9/17 10:07

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Form No: 101-02 Rev: (25-Sep-15)

Appendix B
Interim Measures Action Summary Letter and Post Interim Measures Indoor Air Analytical Data Submittals

CH2M
1880 Waycross Road
Cincinnati, OH 45240
513-530-5520
www.ch2m.com

Mr. Gregory Rudloff
United States Environmental Protection Agency
Region 5
77 W. Jackson Blvd. LU-9J
Chicago, IL 60604

April 19, 2018

Subject: Interim Measures Action Summary Letter for The Dow Chemical Company, Hanging Rock Plant, Ironton, OH EPA ID# OHR 000 157 727 and OHD 039 128 913

Dear Mr. Rudloff,

On behalf of Mr. Timothy King of The Dow Chemical Company (Dow), CH2M is submitting this summary letter to document the short-term interim measures completed in Building 505 at the Dow Hanging Rock Plant in Ironton, Ohio.

During the United States Environmental Protection Agency's (USEPA) review of the Additional Phase 3 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan (Phase 3 Work Plan; CH2M 2018a), USEPA requested immediate interim measures be taken to protect plant workers using Building 505 from volatile organic compound (VOC) exposures, specifically tetrachloroethene (PCE). Elevated PCE indoor air concentrations were observed, although a potential indoor source was suspected. On March 16, 2018, USEPA provided technical comments on the Phase 3 Work Plan and requested short-term interim measures (i.e., air filtration, adjusting ventilation, alerting people inside the building to risk) be taken at Building 505.

On March 20, 2018, Dow submitted the Dow Hanging Rock Facility Potential Vapor Intrusion Interim Measures Action Plan (IM Action Plan; CH2M 2018b) to USEPA. The IM Action Plan detailed measures to be conducted, performance monitoring objectives, plan, and schedule, continued communications discussion, and long-term protectiveness next steps.

Interim Measures Completed

The IM measures completed follow the IM Action Plan and are discussed below and documented in photographs included in Attachment 1.

Between March 22 and April 5, 2018, the following actions were completed:

- Relocated the Building 505 office worker to a temporary work space trailer placed in the Building 505 parking lot.
- Placed a notice on the building outside doors that include the following statements: "…tetrachloroethylene (PCE) has been detected in indoor air at a concentration above USEPA's indoor air criteria. Entry into this building is restricted to only those personnel approved by the Site Leader." Photographs of the notice are included in Attachment 1.

- Performed a visual building survey that identified three potential vapor entry pathways: A crack in the slab in the southwest corner storage room and in an interior electronic parts storage room, and a gap around the fire water riser pipe, a 6-inch-diameter pipe that comes through the floor.

  These were sealed on April 4, 2018, using the high-performance polyurethane sealant Sikaflex®-1C SL. Plumbers putty and a plastic o-ring were used to fill the gap around the fire water pipe before the sealant was applied. Photographs of the cracks/gaps before and after sealing are included in Attachment 1.

- Identified storage and use inside the building of several products containing site-related VOCs PCE and trichloroethene (TCE) as the first ingredient. Photographs of the products and their two storage locations are included in Attachment 1.

  Two of these products, CRC Heavy Duty Degreaser (contains PCE and TCE) and Share Corporation Non-Flammable Safety Solvent (contains TCE) are stored and used in the interior electronic parts storage room to clean equipment. A partially used Share Corporation Non-Flammable Safety Solvent aerosol can was found with the extension spray-tube attached. A ppbRAE 3000 photoionization detector (PID) placed near the end of the extension tube measured elevated VOC levels at around 300 parts per billion (ppb). Dow requested that these products be removed from this interior room and not be used inside the building.

  More products were found in the large storage area on the east side of the building. This area included various equipment, parts, chemicals, etc. Aerosol cans, apparently unused, were stored here without the spray tube attached.

- Performed an indoor air VOC survey using the HAPSITE Gas Chromatograph/Mass Spectrometer (HAPSITE) to identify potential indoor background sources, gain an understanding of the indoor air concentrations' spatial variability, and identify potential vapor entry points. HAPSITE data are provided in Table 1. Results are discussed in the summary section below. Photographs are included in Attachment 1.

- Performed a visual survey of the heating, ventilation, and air conditioning (HVAC) system. Results are discussed in the summary section below. Photographs are included in Attachment 1.

- Placed two air purifying units (APUs) in rooms with the sealed cracks and where potential indoor sources (open and used aerosol cans) were identified – the southwest corner storage room and the interior electronic parts storage room. The APUs are Airpura C600 Air Purifiers for Chemical Removal that include a 26-pound activated carbon pre-filter. Photographs of the units inside the rooms are included in Attachment 1.

Building Survey and HAPSITE Survey Summary

Building 505 is split up into three main sections:

- The western addition, which contains offices or storage rooms around the exterior and interior offices and a conference room

- The original central structure, which contains exterior offices, storage areas, and a conference room and interior offices, storage areas, lunchroom, and bathrooms

- The eastern addition, which includes two large storeroom areas that have shelving units throughout one side and larger equipment/chemical storage on the other site. Garage doors are located on the north and south ends of the storeroom. Offices, a small storage room, a kitchen, and a bathroom are located in the southeast corner.

Occupied building use mainly occurred in the central and eastern sections. The central and western sections have a suspended ceiling and a combined attic space. One central interior electronic parts storage room has a raised floor with removable tiles suspended approximately 1 foot above the slab. The eastern storeroom area has an open ceiling to the roofline and is separated from the central section by drywall and insulation.

HVAC Survey Summary

The HVAC survey identified multiple split-system air-source heat pump units providing air conditioning to the middle offices/rooms inside the western and central sections of Building 505. Most perimeter offices/rooms have individual through-wall air conditioning units that heat, cool, and recirculate air in the rooms. The storeroom area in the eastern section has a roof vent and garage doors, with heating units suspended from the ceiling structure.

The interior split-system indoor air handling units are suspended from the roof structure and are in an open attic space above the suspended ceilings. Photos in Attachment 1 show how the air handling systems share a common attic space and a continuous ridge vent at the roof center. The ridge vent dampers were usually closed in the above ceiling areas, but normal infiltration and leakage maintain some attic ventilation.

Overall, adjustment of the HVAC system would mainly affect the interior rooms (conference room, lunchroom, restrooms, storage areas, unoccupied offices, etc.) within the western and central building sections. The units in each exterior room only recirculate the air. Air ventilates and mixes within the entire attic space above the western and central sections and, to a lesser extent, with the eastern storeroom area.

Adjustments to the HVAC system were not made and will be further evaluated after reviewing the indoor air analytical data and discussions with AmSty.

HAPSITE Survey Summary

The HAPSITE provides short-duration/high-resolution measurements of VOCs in air. The HAPSITE was placed on a cart and used to take measurements from room air to sample the breathing zone typical for an office worker (generally, 3 to 6 feet above ground surface). The HAPSITE was calibrated for PCE, TCE, 1,1-dichloroethene (DCE), trans-1,2-DCE, cis-1,2-DCE, and vinyl chloride. HAPSITE reporting limits were below the USEPA vapor intrusion screening levels (VISLs) and Ohio EPA commercial indoor air accelerated response action levels (Ohio EPA 2016). The breathing-zone indoor air detections in the short-duration HAPSITE samples were below these screening and action levels. The HAPSITE breathing zone results are presented in the Table 1.

Breathing-zone indoor air samples were collected from 15 locations throughout the building as well as one outdoor location. The elevated PCE concentrations found in the 8-hour air canister samples collected in September 2017 were not observed in the HAPSITE samples collected in March 2018.

Results for PCE in indoor air were relatively uniform throughout the building and ranged from 1.4 to 10 micrograms per cubic meter ($\mu g/m^3$), with the highest concentration detected in the interior computer parts storage room near the open aerosol cans (Attachment 1, Photograph 37). TCE was only detected in the interior electronic parts storage room (6.5 $\mu g/m^3$) near the aerosol cans and a small exterior room containing the fire water riser pipe before the gap was sealed (1.4 $\mu g/m^3$) (Table 1). As noted above, at least one aerosol can containing TCE appeared to have been used based on the ppbRAE 3000 PID readings of the spray extension tube.

The ppbRAE 3000 PID was then used to identify potential locations where VOCs may enter the building through the slab. Multiple locations were checked, including floor drains in the east storeroom area,

under sinks, near aerosol cans, the breathing zone in offices, conference rooms, storage areas, etc. The following areas had PID readings between 30 and 600 ppb: The crack in the slab in the southwest corner storage room (around 400 ppb), the crack in the interior electronic parts storage room (approximately 30 ppb), the gap around the fire water riser pipe (around 600 ppb), and at the sprayer end of an open aerosol can (approximately 300 ppb).

The two floor cracks were also sampled with the HAPSITE. Samples collected from both cracks (PP-1 and PP-2) showed elevated concentrations of PCE (1,800 and 770 µg/m^3, respectively) and TCE (140 and 5.6 µg/m^3, respectively), which suggests that these serve as potential vapor entry points. The air in the enclosed space between the slab and the elevated floor in interior electronic parts storage room (i.e., approximately a foot above the cracks) was also sampled (PP-2). PCE and TCE concentrations (130 and 5.6 µg/m^3, respectively) in this space were detected.

Overall Findings Summary

Observations made and data collected during the building survey identified several potential VOC sources/pathways.

Potential building use sources:

- Used aerosol spray cans containing TCE and PCE found in a central interior electronic parts storage room
- Storage of aerosol spray cans containing TCE and PCE in the eastern storeroom

Potential VOC pathways into the building:

- Crack in the slab in the southwest corner storage room
- Crack in the slab under the raised floor in the central interior electronic parts storage room
- Gap in the slab around the fire water pipe riser located in a small exterior room

As discussed previously, actions have been taken to mitigate these sources. The cracks/gap have been sealed, the aerosol spray cans have been removed from the central interior electronic parts storage room, and APUs have been placed. The aerosol cans containing PCE and TCE remained in the eastern storage area; however, these products have likely not been used, which would minimize the amount of PCE and TCE off-gassing.

Air ventilates and mixes within the entire attic space above the suspended ceiling in the western and central building sections and, to a lesser extent, with the eastern storeroom area. Several heat pump HVAC systems heat, cool, and exchange air the interior rooms (conference room, lunchroom, restrooms, storage areas, unoccupied offices, etc.) within the western and central building sections. Individual wall units only recirculate the air in the exterior rooms. Adjustments may be made to the HVAC system at a later date.

Interim Measures Performance Monitoring Update

The first Indoor air sampling was conducted on April 12, 2018, within 10 days of the interim measures being completed on April 5, 2018. Six indoor air samples, one duplicate, and one outside/ambient air sample were collected. Four of the six indoor air samples were collected from previous sampling locations. The other two samples were collected in the rooms where the cracks were sealed and APUs were placed.

The canisters were shipped to Alpha Analytical located in Mansfield, Massachusetts, and analyzed for PCE, TCE, 1,1-DCE, trans-1,2-DCE, cis-1,2-DCE, and vinyl chloride by USEPA Method TO-15. Dow

requested a 7-day turnaround time for the analytical results. Dow will provide the analytical data to USEPA within 5 business days of receiving the results, which will be by April 30, 2018.

Performance Monitoring Schedule

The monitoring schedule provides for two sampling events within the first 30 days and continues monitoring during the seasonal peaks of summer and winter to monitor the effects of HVAC use and seasonal operation changes. The interim measures performance monitoring schedule is provided in Table 2.

The 1-month post-sampling event will be conducted the week of April 30, 2018.

Please contact me at (513) 673-2201 or Mr. King at (304) 747-3763 should you have any questions or comments.

Sincerely,

CH2M

Marie W. Chiller
Site Manager

Attachments

cc: Timothy King/The Dow Chemical Company

Tables

Table 1. HAPSITE Analytical Results for Building 505

Hanging Rock Facility, Ironton, Ohio

Sample Name	Sample Location	Sample Type	Breathing Zone?	Date/Time Sampled	Compound	Reporting Limit (µg/m^3)	Result (µg/m^3)
IA-1	Central exterior conference room	IA	Yes	3/22/2018 3:34	Vinyl Chloride	1.3	1.3 U
IA-1	Central exterior conference room	IA	Yes	3/22/2018 3:34	1,1-DCE	0.4	0.4 U
IA-1	Central exterior conference room	IA	Yes	3/22/2018 3:34	trans-1,2-DCE	0.4	0.4 U
IA-1	Central exterior conference room	IA	Yes	3/22/2018 3:34	cis-1,2,DCE	0.4	0.4 U
IA-1	Central exterior conference room	IA	Yes	3/22/2018 3:34	TCE	0.6	0.55 U
IA-1	Central exterior conference room	IA	Yes	3/22/2018 3:34	PCE	0.7	**2.3**
IA-2	Southwest corner storage area	IA	Yes	3/22/2018 3:45	Vinyl Chloride	1.3	1.3 U
IA-2	Southwest corner storage area	IA	Yes	3/22/2018 3:45	1,1-DCE	0.4	0.4 U
IA-2	Southwest corner storage area	IA	Yes	3/22/2018 3:45	trans-1,2-DCE	0.4	0.4 U
IA-2	Southwest corner storage area	IA	Yes	3/22/2018 3:45	cis-1,2,DCE	0.4	0.4 U
IA-2	Southwest corner storage area	IA	Yes	3/22/2018 3:45	TCE	0.6	0.55 U
IA-2	Southwest corner storage area	IA	Yes	3/22/2018 3:45	PCE	0.7	**1.6**
IA-3	Southwest office (adjacent room)	IA	Yes	3/22/2018 4:14	Vinyl Chloride	1.3	1.3 U
IA-3	Southwest office (adjacent room)	IA	Yes	3/22/2018 4:14	1,1-DCE	0.4	0.4 U
IA-3	Southwest office (adjacent room)	IA	Yes	3/22/2018 4:14	trans-1,2-DCE	0.4	0.4 U
IA-3	Southwest office (adjacent room)	IA	Yes	3/22/2018 4:14	cis-1,2,DCE	0.4	0.4 U
IA-3	Southwest office (adjacent room)	IA	Yes	3/22/2018 4:14	TCE	0.6	0.55 U
IA-3	Southwest office (adjacent room)	IA	Yes	3/22/2018 4:14	PCE	0.7	**2.5**
IA-4	Women's restroom, contains a shower	IA	Yes	3/22/2018 4:22	Vinyl Chloride	1.3	1.3 U
IA-4	Women's restroom, contains a shower	IA	Yes	3/22/2018 4:22	1,1-DCE	0.4	0.4 U
IA-4	Women's restroom, contains a shower	IA	Yes	3/22/2018 4:22	trans-1,2-DCE	0.4	0.4 U
IA-4	Women's restroom, contains a shower	IA	Yes	3/22/2018 4:22	cis-1,2,DCE	0.4	0.4 U
IA-4	Women's restroom, contains a shower	IA	Yes	3/22/2018 4:22	TCE	0.6	0.55 U
IA-4	Women's restroom, contains a shower	IA	Yes	3/22/2018 4:22	PCE	0.7	**1.9**
IA-5	Central interior computer parts storage room	IA	Yes	3/22/2018 4:32	Vinyl Chloride	1.3	1.3 U
IA-5	Central interior computer parts storage room	IA	Yes	3/22/2018 4:32	1,1-DCE	0.4	0.4 U
IA-5	Central interior computer parts storage room	IA	Yes	3/22/2018 4:32	trans-1,2-DCE	0.4	0.4 U
IA-5	Central interior computer parts storage room	IA	Yes	3/22/2018 4:32	cis-1,2,DCE	0.4	0.4 U
IA-5	Central interior computer parts storage room	IA	Yes	3/22/2018 4:32	TCE	0.6	**6.5**
IA-5	Central interior computer parts storage room	IA	Yes	3/22/2018 4:32	PCE	0.7	**10**
IA-6	Central exterior small room with fire water pipe riser	IA	Yes	3/22/2018 4:51	Vinyl Chloride	1.3	1.3 U
IA-6	Central exterior small room with fire water pipe riser	IA	Yes	3/22/2018 4:51	1,1-DCE	0.4	0.4 U
IA-6	Central exterior small room with fire water pipe riser	IA	Yes	3/22/2018 4:51	trans-1,2-DCE	0.4	0.4 U
IA-6	Central exterior small room with fire water pipe riser	IA	Yes	3/22/2018 4:51	cis-1,2,DCE	0.4	0.4 U
IA-6	Central exterior small room with fire water pipe riser	IA	Yes	3/22/2018 4:51	TCE	0.6	**1.4**
IA-6	Central exterior small room with fire water pipe riser	IA	Yes	3/22/2018 4:51	PCE	0.7	**3.2**
IA-7	Warehouse (SW) by PCE spray cans	IA	Yes	3/22/2018 5:00	Vinyl Chloride	1.3	1.3 U
IA-7	Warehouse (SW) by PCE spray cans	IA	Yes	3/22/2018 5:00	1,1-DCE	0.4	0.4 U

Table 1. HAPSITE Analytical Results for Building 505

Hanging Rock Facility, Ironton, Ohio

Sample Name	Sample Location	Sample Type	Breathing Zone?	Date/Time Sampled	Compound	Reporting Limit ($\mu g/m^3$)	Result ($\mu g/m^3$)
IA-7	Warehouse (SW) by PCE spray cans	IA	Yes	3/22/2018 5:00	trans-1,2-DCE	0.4	0.4 U
IA-7	Warehouse (SW) by PCE spray cans	IA	Yes	3/22/2018 5:00	cis-1,2,DCE	0.4	0.4 U
IA-7	Warehouse (SW) by PCE spray cans	IA	Yes	3/22/2018 5:00	TCE	0.6	0.55 U
IA-7	Warehouse (SW) by PCE spray cans	IA	Yes	3/22/2018 5:00	PCE	0.7	**4.4**
IA-8	Small southeast corner breakroom and bathroom	IA	Yes	3/22/2018 5:11	Vinyl Chloride	1.3	1.3 U
IA-8	Small southeast corner breakroom and bathroom	IA	Yes	3/22/2018 5:11	1,1-DCE	0.4	0.4 U
IA-8	Small southeast corner breakroom and bathroom	IA	Yes	3/22/2018 5:11	trans-1,2-DCE	0.4	0.4 U
IA-8	Small southeast corner breakroom and bathroom	IA	Yes	3/22/2018 5:11	cis-1,2,DCE	0.4	0.4 U
IA-8	Small southeast corner breakroom and bathroom	IA	Yes	3/22/2018 5:11	TCE	0.6	0.55 U
IA-8	Small southeast corner breakroom and bathroom	IA	Yes	3/22/2018 5:11	PCE	0.7	**3.6**
IA-9	Warehouse (NW)	IA	Yes	3/22/2018 5:22	Vinyl Chloride	1.3	1.3 U
IA-9	Warehouse (NW)	IA	Yes	3/22/2018 5:22	1,1-DCE	0.4	0.4 U
IA-9	Warehouse (NW)	IA	Yes	3/22/2018 5:22	trans-1,2-DCE	0.4	0.4 U
IA-9	Warehouse (NW)	IA	Yes	3/22/2018 5:22	cis-1,2,DCE	0.4	0.4 U
IA-9	Warehouse (NW)	IA	Yes	3/22/2018 5:22	TCE	0.6	0.55 U
IA-9	Warehouse (NW)	IA	Yes	3/22/2018 5:22	PCE	0.7	**8.7**
IA-10	Warehouse (NE)	IA	Yes	3/22/2018 5:32	Vinyl Chloride	1.3	1.3 U
IA-10	Warehouse (NE)	IA	Yes	3/22/2018 5:32	1,1-DCE	0.4	0.4 U
IA-10	Warehouse (NE)	IA	Yes	3/22/2018 5:32	trans-1,2-DCE	0.4	0.4 U
IA-10	Warehouse (NE)	IA	Yes	3/22/2018 5:32	cis-1,2,DCE	0.4	0.4 U
IA-10	Warehouse (NE)	IA	Yes	3/22/2018 5:32	TCE	0.6	0.55 U
IA-10	Warehouse (NE)	IA	Yes	3/22/2018 5:32	PCE	0.7	**3.1**
IA-11	Central interior office, adjacent to computer parts room	IA	Yes	3/22/2018 5:53	Vinyl Chloride	1.3	1.3 U
IA-11	Central interior office, adjacent to computer parts room	IA	Yes	3/22/2018 5:53	1,1-DCE	0.4	0.4 U
IA-11	Central interior office, adjacent to computer parts room	IA	Yes	3/22/2018 5:53	trans-1,2-DCE	0.4	0.4 U
IA-11	Central interior office, adjacent to computer parts room	IA	Yes	3/22/2018 5:53	cis-1,2,DCE	0.4	0.4 U
IA-11	Central interior office, adjacent to computer parts room	IA	Yes	3/22/2018 5:53	TCE	0.6	0.55 U
IA-11	Central interior office, adjacent to computer parts room	IA	Yes	3/22/2018 5:53	PCE	0.7	**5.5**
IA-12	Central main kitchen/breakroom	IA	Yes	3/22/2018 6:03	Vinyl Chloride	1.3	1.3 U
IA-12	Central main kitchen/breakroom	IA	Yes	3/22/2018 6:03	1,1-DCE	0.4	0.4 U
IA-12	Central main kitchen/breakroom	IA	Yes	3/22/2018 6:03	trans-1,2-DCE	0.4	0.4 U
IA-12	Central main kitchen/breakroom	IA	Yes	3/22/2018 6:03	cis-1,2,DCE	0.4	0.4 U
IA-12	Central main kitchen/breakroom	IA	Yes	3/22/2018 6:03	TCE	0.6	0.55 U
IA-12	Central main kitchen/breakroom	IA	Yes	3/22/2018 6:03	PCE	0.7	**1.9**
IA-13	Exterior northwestern conference room	IA	Yes	3/22/2018 6:14	Vinyl Chloride	1.3	1.3 U
IA-13	Exterior northwestern conference room	IA	Yes	3/22/2018 6:14	1,1-DCE	0.4	0.4 U
IA-13	Exterior northwestern conference room	IA	Yes	3/22/2018 6:14	trans-1,2-DCE	0.4	0.4 U
IA-13	Exterior northwestern conference room	IA	Yes	3/22/2018 6:14	cis-1,2,DCE	0.4	0.4 U

Table 1. HAPSITE Analytical Results for Building 505

Hanging Rock Facility, Ironton, Ohio

Sample Name	Sample Location	Sample Type	Breathing Zone?	Date/Time Sampled	Compound	Reporting Limit ($\mu g/m^3$)	Result ($\mu g/m^3$)
IA-13	Exterior northwestern conference room	IA	Yes	3/22/2018 6:14	TCE	0.6	0.55 U
IA-13	Exterior northwestern conference room	IA	Yes	3/22/2018 6:14	PCE	0.7	**1.4**
IA-14	Central exterior south office	IA	Yes	3/22/2018 6:28	Vinyl Chloride	1.3	1.3 U
IA-14	Central exterior south office	IA	Yes	3/22/2018 6:28	1,1-DCE	0.4	0.4 U
IA-14	Central exterior south office	IA	Yes	3/22/2018 6:28	trans-1,2-DCE	0.4	0.4 U
IA-14	Central exterior south office	IA	Yes	3/22/2018 6:28	cis-1,2,DCE	0.4	0.4 U
IA-14	Central exterior south office	IA	Yes	3/22/2018 6:28	TCE	0.6	0.55 U
IA-14	Central exterior south office	IA	Yes	3/22/2018 6:28	PCE	0.7	**3.5**
IA-15	Central exterior small electrical room	IA	Yes	3/22/2018 6:39	Vinyl Chloride	1.3	1.3 U
IA-15	Central exterior small electrical room	IA	Yes	3/22/2018 6:39	1,1-DCE	0.4	0.4 U
IA-15	Central exterior small electrical room	IA	Yes	3/22/2018 6:39	trans-1,2-DCE	0.4	0.4 U
IA-15	Central exterior small electrical room	IA	Yes	3/22/2018 6:39	cis-1,2,DCE	0.4	0.4 U
IA-15	Central exterior small electrical room	IA	Yes	3/22/2018 6:39	TCE	0.6	0.55 U
IA-15	Central exterior small electrical room	IA	Yes	3/22/2018 6:39	PCE	0.7	**1.4**
OA-1	Outside, south of building	OA	Yes	3/22/2018 6:48	Vinyl Chloride	1.3	1.3 U
OA-1	Outside, south of building	OA	Yes	3/22/2018 6:48	1,1-DCE	0.4	0.4 U
OA-1	Outside, south of building	OA	Yes	3/22/2018 6:48	trans-1,2-DCE	0.4	0.4 U
OA-1	Outside, south of building	OA	Yes	3/22/2018 6:48	cis-1,2,DCE	0.4	0.4 U
OA-1	Outside, south of building	OA	Yes	3/22/2018 6:48	TCE	0.6	0.55 U
OA-1	Outside, south of building	OA	Yes	3/22/2018 6:48	PCE	0.7	0.69 U
PP-1	Crack in slab, southwest corner storage room	PP	No	3/22/2018 3:56	Vinyl Chloride	1.3	1.3 U
PP-1	Crack in slab, southwest corner storage room	PP	No	3/22/2018 3:56	1,1-DCE	0.4	**0.84**
PP-1	Crack in slab, southwest corner storage room	PP	No	3/22/2018 3:56	trans-1,2-DCE	0.4	0.4 U
PP-1	Crack in slab, southwest corner storage room	PP	No	3/22/2018 3:56	cis-1,2,DCE	0.4	**35 E**
PP-1	Crack in slab, southwest corner storage room	PP	No	3/22/2018 3:56	TCE	0.6	**140 E**
PP-1	Crack in slab, southwest corner storage room	PP	No	3/22/2018 3:56	PCE	0.7	**1800 E**
PP-2	Under raised floor, central interior computer parts storage room	PP	No	3/22/2018 4:42	Vinyl Chloride	1.3	1.3 U
PP-2	Under raised floor, central interior computer parts storage room	PP	No	3/22/2018 4:42	1,1-DCE	0.4	0.4 U
PP-2	Under raised floor, central interior computer parts storage room	PP	No	3/22/2018 4:42	trans-1,2-DCE	0.4	0.4 U
PP-2	Under raised floor, central interior computer parts storage room	PP	No	3/22/2018 4:42	cis-1,2,DCE	0.4	0.4 U
PP-2	Under raised floor, central interior computer parts storage room	PP	No	3/22/2018 4:42	TCE	0.6	**5.6**
PP-2	Under raised floor, central interior computer parts storage room	PP	No	3/22/2018 4:42	PCE	0.7	**130**
PP-3	Crack in slab, central interior computer parts storage room	PP	No	3/22/2018 5:43	Vinyl Chloride	1.3	1.3 U
PP-3	Crack in slab, central interior computer parts storage room	PP	No	3/22/2018 5:43	1,1-DCE	0.4	0.4 U
PP-3	Crack in slab, central interior computer parts storage room	PP	No	3/22/2018 5:43	trans-1,2-DCE	0.4	0.4 U
PP-3	Crack in slab, central interior computer parts storage room	PP	No	3/22/2018 5:43	cis-1,2,DCE	0.4	0.4 U
PP-3	Crack in slab, central interior computer parts storage room	PP	No	3/22/2018 5:43	TCE	0.6	**6.7**
PP-3	Crack in slab, central interior computer parts storage room	PP	No	3/22/2018 5:43	PCE	0.7	**770 E**

Table 1. HAPSITE Analytical Results for Building 505

Hanging Rock Facility, Ironton, Ohio

Sample Name	Sample Location	Sample Type	Breathing Zone?	Date/Time Sampled	Compound	Reporting Limit ($\mu g/m^3$)	Result ($\mu g/m^3$)

Notes:

$\mu g/m^3$ = micrograms per cubic meter

bold text indicates a detection

DCE = dichloroethylene

E = Exceeded the HAPSITE calibration range

IA = Indoor air

OA = Outdoor air

PCE = tetrachloroethylene

PP = Potential pathway

TCE = trichloroethylene

U = Not detected

Table 2. Interim Measures Performance Monitoring Indoor Air Sample Collection Timeframes

Hanging Rock Facility, Ironton, OH

Performance Monitoring Indoor Air Sampling Event	Timeframe – Starts from April 5, 2018 – Completing the Interim Measure Actions	2018 Sample by Date
Initial Post Sampling	Within 10 calendar days	April 15
1-month Post Sampling	Within 30 calendar days	May 5
2.5-month Post Sampling	Within 10 weeks	June 14
4-month Post Sampling	Within 20 weeks	August 23
8-month Post Sampling	Within 36 weeks	December 13

Attachment 1

Hanging Rock Facility - Building 505
Photolog Interim Mitigation Actions

Photo 1	Door Notices	**Date Taken:**	3/22/2018	**View Direction:**	
Description:	Door notices				

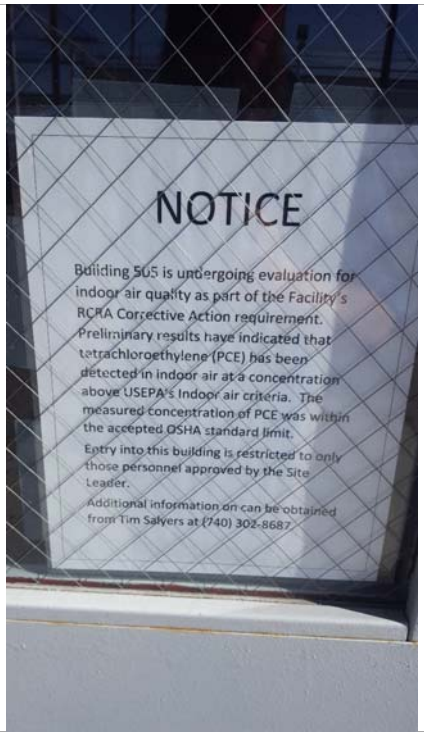

Photo 2:	Notice Posting	**Date Taken:**	3/22/2018	**View Direction:**	
Description:	Door notice closeup				

Photo 3:	Before	**Date Taken:**	4/4/2018	**View Direction:**	
Description:	Crack where wall was removed to open up southwest corner room-Before				

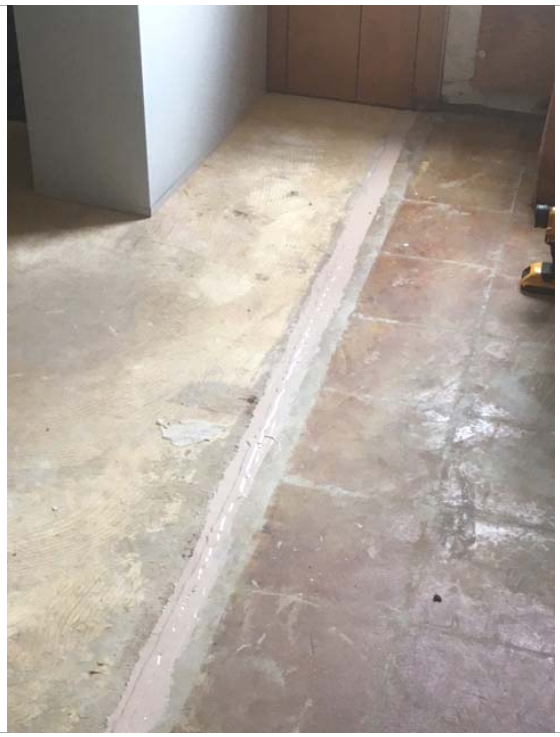

Photo 4:	After sealing	**Date Taken:**	4/4/2018	**View Direction:**	
Description:	Crack where wall was removed to open up southwest corner room-After				

Photo 5:	Before	**Date Taken:**	4/4/2018	**View Direction:**	
Description:	Crack below raised floor in interior computer parts room-Before				

Photo 6:	After Sealing	**Date Taken:**	4/4/2018	**View Direction:**	
Description:	Crack below raised floor in interior computer parts room-After				

Photo 7:	Before	**Date Taken:**	4/4/2018	**View Direction:**	
Description:	Fire water riser pipe - before				

Photo 8:	After Sealing	**Date Taken:**	4/4/2018	**View Direction:**	
Description:	Fire water riser pipe - after				

Photo 9:	Chemical Use	**Date Taken:**	3/23/2018	**View Direction:**	
Description:	Interior computer prats room aerosol can, CRC Heavy Duty Degreaser				

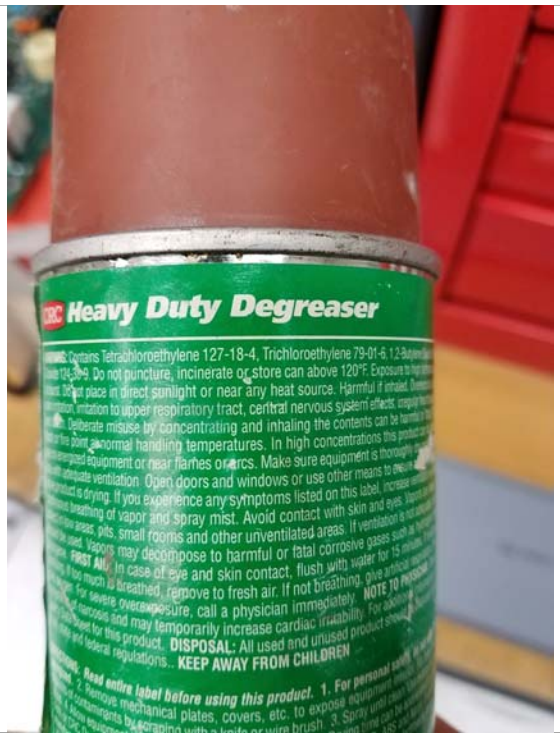

Photo 10:	Chemical Use	**Date Taken:**	3/23/2018	**View Direction:**	
Description:	CRC Heavy Duty Degreaser = PCE and TCE				

Photo 11:	Chemical Use	**Date Taken:**	3/22/2018	**View Direction:**	
Description:	Interior computer parts room aerosol can, Share Corporation Non-Flammable Safety Solvent				

Photo 12:	Chemical Use	**Date Taken:**	3/22/2018	**View Direction:**	
Description:	Share Corporation Non-Flammable Safety Solvent = TCE				

Photo 13:	Chemical Use-Before	**Date Taken:**	3/22/2018	**View Direction:**	
Description:	Interior Computer Parts Room, spray cans storage and use area - Before				

Photo 14:	Chemical Use-After	**Date Taken:**	4/12/2018	**View Direction:**	
Description:	Interior Computer Parts Room, spray can storage and use area - After				

Photo 15:	Chemical Use	**Date Taken:**	3/22/2018	**View Direction:**	
Description:	Warehouse (SW), Mac's Brake Parts Cleaner				

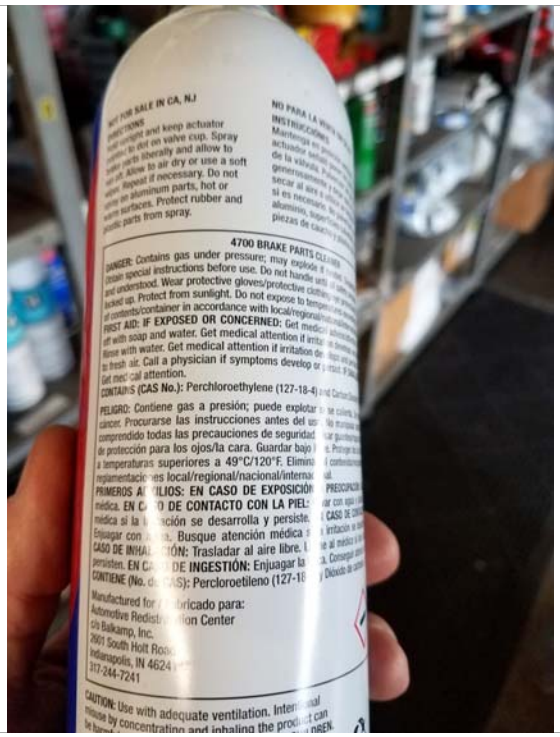

Photo 16:	Chemical Use	**Date Taken:**	3/22/2018	**View Direction:**	
Description:	Mac's Brake Parts Cleaner = PCE				

Photo 17:	Chemical Use	**Date Taken:**	3/22/2018	**View Direction:**	
Description:	Warehouse (SW), Chesterton 273 Cleaner				

Photo 18:	Chemical Use	**Date Taken:**	3/22/2018	**View Direction:**	
Description:	Chesterton 273 Cleaner = PCE				

Photo 19:	Warehouse storage	**Date Taken:**	4/12/2018	**View Direction:**	
Description:	Warehouse shelving storage				

LEFT BLANK

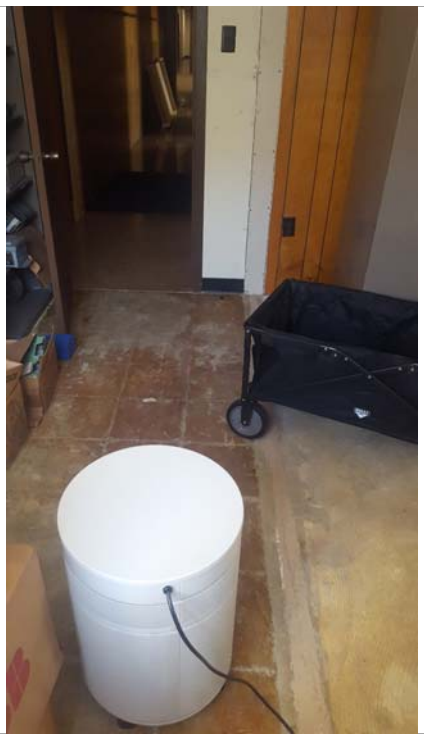

Photo 20:	APU Locations	**Date Taken:**	4/12/2018	**View Direction:**	
Description:	APU in southwest corner storage room				

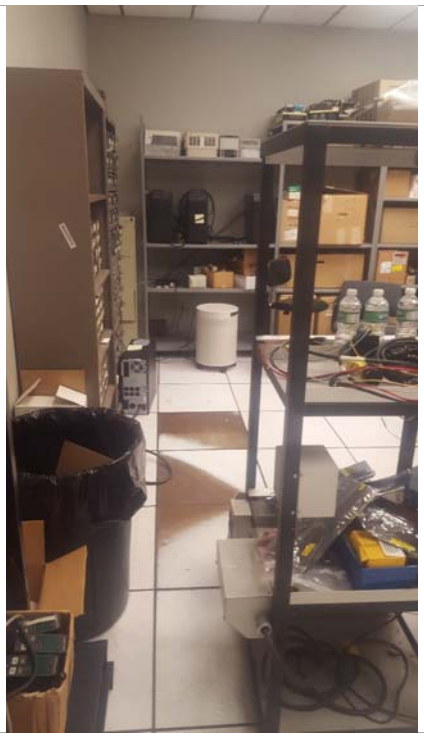

Photo 21:	APU Locations	**Date Taken:**	4/12/2018	**View Direction:**	
Description:	APU in interior computer parts storage room with raised floor				

Hanging Rock Facility - Building 505
Photolog HVAC

Photo 22:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	East
Description:	SW outside building corner showing through-wall air conditioner units				

Photo 23:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	East
Description:	SE outside building corner, showing through-wall air units, storeroom entry door and garage door, and SE corner breakroom through-wall unit				

Photo 24:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	West
Description:	Gas-fired unit heater in eastern storeroom				

Photo 25:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	West
Description:	Ridge vent full length of eastern storeroom				

Photo 26:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	West
Description:	Electric unit heater in eastern storeroom				

Photo 27:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	Northeast
Description:	Central interior computer parts storage room HVAC ceiling arrangement				

Photo 28:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	East
Description:	Split-system heat pumps in attic serving core areas				

Photo 29:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	North
Description:	Attic split-system indoor air handling unit, typical unit				

Photo 30:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	West
Description:	South Central Exterior Conference 16 split-system heat pump air handler				

Photo 31:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	North
Description:	Wall thermostat and humdistat serving core area				

Photo 32:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	Northeast
Description:	Northwestern exterior conference room served by split-system heat pump				

Photo 33:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	West
Description:	Through-wall air conditioning unit found in exterior rooms				

Photo 34:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	East
Description:	Split-system outdoor heat pump units, servicing central building section				

Photo 35:	HVAC Survey	**Date Taken:**	3/22/2018	**View Direction:**	West
Description:	Split-system outdoor heat pump units servicing western building section				

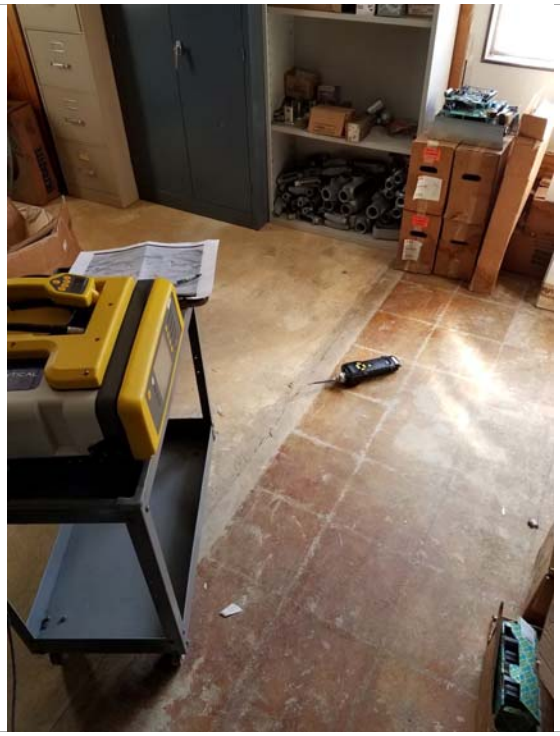

Photo 36:	HAPSITE Survey	**Date Taken:**	3/22/2018	**View Direction:**	W		
Description:	Southwest corner storeroom, HAPSITE breathing zone sample collection and PID screening near the floor crack					**HAPSITE ID**	PP-1

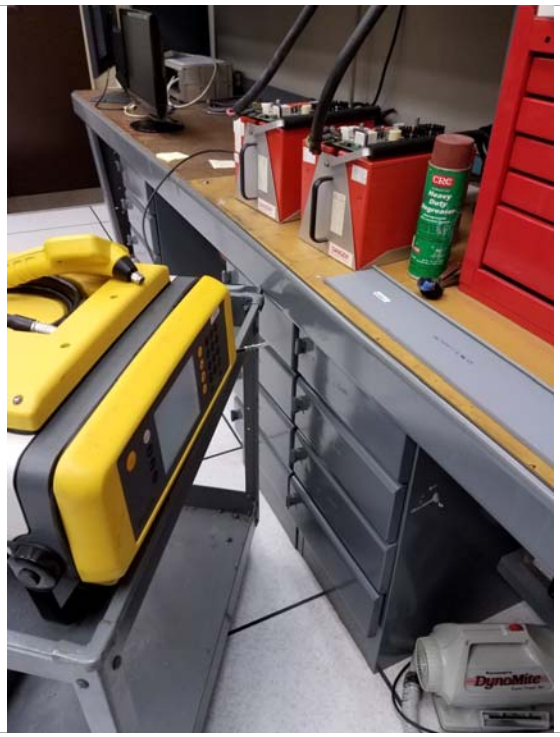

Photo 37:	HAPSITE Survey	**Date Taken:**	3/22/2018	**View Direction:**	SW		
Description:	Interior computer parts storage room, HAPSITE breathing zone sample collection near the recently used can of CRC Heavy Duty Degreaser					**HAPSITE ID**	IA-5

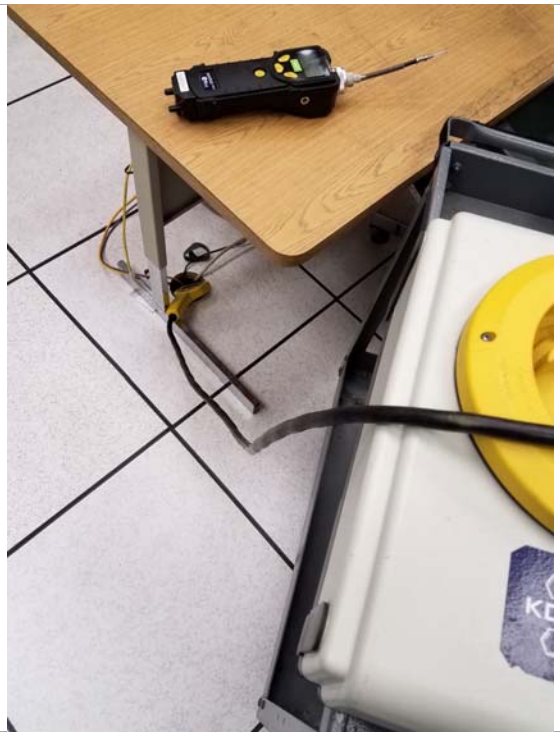

Photo 38:	HAPSITE Survey	**Date Taken:**	3/22/2018	**View Direction:**			
Description:	Interior computer parts storage room, HAPSITE sample collection of air under the raised floor though a cord opening in the floor raised tile					**HAPSITE ID**	PP-2

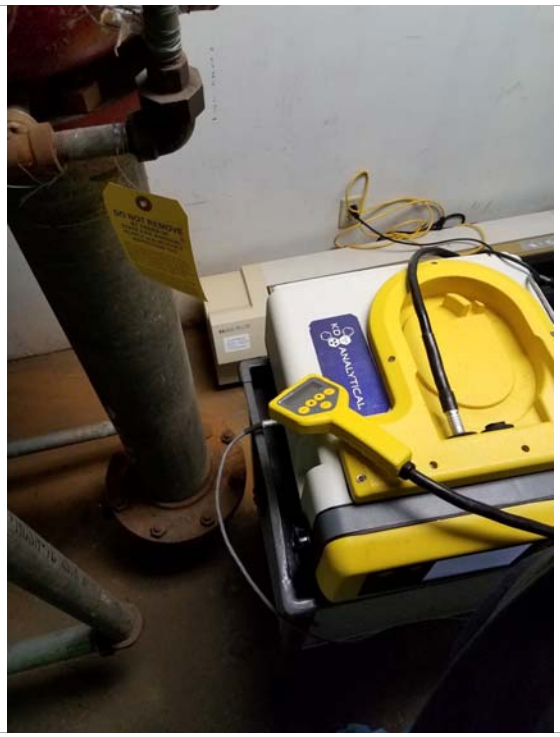

Photo 39:	HAPSITE Survey	**Date Taken:**	3/22/2018	**View Direction:**	S		
Description:	HAPSITE sample collection adjacent to the fire water pipe riser in a small exterior room					**HAPSITE ID**	IA6

Photo 40:	HAPSITE Survey	**Date Taken:**	3/22/2018	**View Direction:**	N		
Description:	Warehouse (SW corner) shelving unit HAPSITE sample collection near spray cans with PCE					**HAPSITE ID**	IA-7

CH2M
1880 Waycross Road
Cincinnati, OH 45240
513-530-5520
www.ch2m.com

Mr. Gregory Rudloff
United States Environmental Protection Agency (USEPA)
Region 5
77 W. Jackson Blvd. LU-9J
Chicago, IL 60604

April 26, 2018

Subject: One-Week Post Interim Measures Indoor Air Analytical Data Submittal for the Hanging Rock Plant, Ironton, OH EPA ID# OHR 000 157 727 and OHD 039 128 913

Dear Mr. Rudloff,

On behalf of Mr. Timothy King of The Dow Chemical Company, CH2M HILL, Inc. is submitting the 1-week post short-term interim measures completed indoor air sampling analytical results at Building 505, Hanging Rock Plant in Ironton, Ohio.

The 1-week post indoor air detections were below the Ohio Environmental Protection Agency response guidance accelerated response and chronic response action levels and below the USEPA vapor intrusion screening levels.

The indoor air sampling was conducted on April 12, 2018, within 10 days of the interim measures being completed on April 5, 2018. Six indoor air samples, one duplicate, and one outside/ambient air sample were collected. Four of the six indoor air samples were collected from previous sampling locations. The other two samples were collected in the rooms where the cracks were sealed, aerosol cans were placed for use, and APUs were operating – the southwest corner storage room and the interior electronic parts maintenance/storage room. The canisters were shipped to Alpha Analytical located in Mansfield, Massachusetts, and analyzed for PCE, TCE, 1,1-DCE, trans-1,2-DCE, cis-1,2-DCE, and vinyl chloride by USEPA Method TO-15 SIM. The 1-month post-sampling event will be conducted the week of April 30, 2018.

Attached are the laboratory analytical data package, the unvalidated data tabulated with previous results, and a figure showing the data and sample locations within the building.

Please contact me at (513) 673-2201 or Mr. King at (304) 747-3763 should you have any questions or comments.

Sincerely,

Marie W. Chiller, CH2M HILL Inc.
Site Manager

Attachments

cc: Timothy King/The Dow Chemical Company

Table 1. Building 505 September 2017 and April 2018 Outdoor and Indoor Air Analytical Results

Vapor Intrusion Investigation Summary, Dow Hanging Rock, Ironton, Ohio

Analyte	Unit	Ohio EPA Response Action Level[a]	Indoor Air RSL[b]	*Outdoor Air*				**Building 505** *Indoor Air*																									
								IA-06				IA-07				IA-08		IA-09						IA-10				IA-11		IA-12			
				S01-HGR-OA01-090817		S01-HGR-OA02-041218		S01-B505- IA06-090817		S01-B505- IA06-041218		S01-B505- IA07-090817		S01-B505- IA07-041218		S01-B505- IA08-090817		S01-B505- IA09-090817		S01-HGR-090817-FD02 Duplicate		S01-B505- IA09-041218		S01-B505- IA10-090817		S01-B505- IA10-041218		S01-B505-IA11-041218		S01-B505-IA12-041218		S01-B505-IA12-041218-FD01 (Duplicate)	
Tetrachloroethylene	µg/m^3	180	175	**0.068**	J	0.136	U	**326**	=	**30.2**	=	**220**	=	**15.9**	=	**197**	=	**268**	=	**262**	=	**17.4**	=	**324**	=	**45.5**	=	**30.6**	=	**3.27**	=	**3.36**	=
Trichloroethylene	µg/m^3	8.8	9	0.038	U	0.107	U	**1.04**	=	**0.559**	=	**0.451**	=	**0.597**	=	**0.403**	=	**0.543**	=	**0.527**	=	**0.532**	=	**1**	=	**0.736**	=	**0.376**	=	**0.161**	=	**0.167**	=
Dichloroethylene, 1,1-	µg/m^3	NA	876	0.028	U	0.079	U	0.028	U	0.079	U	0.028	U	0.079	U	0.028	U	0.028	U	0.028	U	0.079	U	0.028	U	0.079	U	0.079	U	0.079	U	0.079	U
Dichloroethylene, 1,2-cis-	µg/m^3	NA	NA	0.026	U	0.079	U	**0.079**	=	**0.170**	=	**0.06**	J	**0.111**	=	**0.052**	J	**0.067**	J	**0.071**	J	**0.159**	=	**0.099**	=	**0.297**	=	**0.297**	=	0.079	U	0.079	U
Dichloroethylene, 1,2-trans-	µg/m^3	NA	NA	0.024	U	0.079	U	**0.024**	J	0.079	U	0.024	J	0.079	U	0.024	U	**0.028**	J	0.024	U	0.079	U	**0.024**	J	0.079	U	0.079	U	0.079	U	0.079	U
Vinyl Chloride	µg/m^3	28	28	0.018	U	0.051	U	0.018	U	0.051	U	0.018	U	0.051	U	0.018	U	0.018	U	0.018	U	0.051	U	0.018	U	0.051	U	0.051	U	0.051	U	0.051	U

Notes:

The April 2018 data are preliminary. This data has not yet been validated.

[a]: Ohio EPA response guidance provides an Accelerated Response Action Level for trichloroethylene (TCE) based on a THQ=1 and Chronic Response Action Levels for tetrachloroethylene (PCE)and vinyl chloride (based on a THQ=1 or TCR=1 x 10^{-5}). Source - Ohio EPA Guidance Document Recommendations Reguarding Response Action Levels and Timeframes for Common Contaminants of Concern at Vapor Intrusion Sites in Ohio (Ohio EPA, August 2016).

[b]: RSL is a risk-based screening level derived from the lowest of the cancer-based (TCR = 1 x 10^{-5}) or the noncancer-based (THQ = 1) industrial indoor air Regional Screening Levels (RSLs) [EPA, 2018], which ever is lower.

Bold text indicates a detection

Shading indicates a VISL exceedance

= - detected result

µg/m^3 - micrograms per cubic meter

J - estimated result

N/A - not applicable

TCR - target risk for carcinogens

THQ - target hazard quotient for non-carcinogens

U - not detected, reporting limit shown

VISL = vapor intrusion screening level

EPA, 2017. Regoional Screening Levels (RSLs). November. https://www.epa.gov/risk/regional-screening-levels-rsls

N

0 8 16 24

SCALE IN FEET
(APPROXIMATE)

PCE: Sept. 268; Apr. 17.4
TCE: Sept. 0.543; Apr. 0.532

PCE: Sept. 324; Apr. 45.5
TCE: Sept. 1.0; Apr. 0.736

AEROSOL CAN USE AND STORAGE AREA

Apr. Only
PCE: 30.6
TCE: 0.376

OFF L8

OFF L9 (KITCHENETTE/ COFFEE ROOM)

OFF L10 (PROJECT FILE STORAGE AND LARGE COPIER)

OFF I14 (PLANT DRAWINGS STORAGE)

OFF L14

OFF R1

OFF R2

OFF R3

OFF R4

OFF R4A

OFF L7

OFF L6

OFF L15 (CONFERENCE ROOM)

KITCHEN/ BREAKROOM

IA-09

MEN'S ROOM

LADIES' ROOM

IA-10

OFF R9

OFF R8

IA-11

SEALED CRACK IN FLOOR

OFF R6 (ELECTRONIC STORAGE/ MAINTENANCE SHOP)

APU

OFF R5 (PROCESS CONTROL PARTS STORAGE)

STORE ROOM (WAREHOUSE SHELFING, SMALL PARTS, AEROSOL CANS, ETC.)

STORE ROOM (EQUIPMENT, TOTES, PALLETS, SHELFING, ETC.)

OFF R19

OFF R20

OFF R7 (COPY ROOM)

Sept. Only
PCE: 197
TCE: 0.403

IA-08

OFF L5

OFF L11

OFF L12

OFF L13

SEALED CRACK IN FLOOR

JANITOR

APU

IA-12

OFF L4 (STORAGE ROOM)

Apr. Only
PCE: 3.36
TCE: 0.167

CONFERENCE ROOM 16

OFF L3

OFF L2

OFF L1

IA-07

OFF R10 (ELECTRICAL ROOM)

OFF R11

OFF R12

OFF R13

IA-06

OFF R14

OFF R16

OFF R15

OFF R18 (CLEANING SUPPLIES STORAGE)

OFF R17 (BREAK ROOM AND RESTROOM)

PCE: Sept. 220; Apr. 15.9
TCE: Sept. 0.451; Apr. 0.597

PCE: Sept. 325; Apr. 30.2
TCE: Sept. 1.04; Apr. 0.559

SEALED GAP BETWEEN FLOOR AND FIRE WATER LINE RISER

Legend

APU AIR PURIFYING UNIT

INDOOR AIR SAMPLE

GARAGE DOOR

Analyte	Unit	Ohio EPA Response Action Level	USEPA Regional Screening Level
Tetrachloroethylene (PCE)	µg/m³	180	175
Trichloroethylene (TCE)	µg/m³	8.8	9

Figure 1
Building 505 Layout and PCE and TCE Indoor Sampling Air Results
Hanging Rock Facility
Ironton, OH

JACOBS

www.alphalab.com

Lab Number: L1812962

Client: Jacobs

ATTN: Marie Chiller

Project Name: DOW HANGING ROCK

Project Number: 693874.01.RR

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Sample Delivery Group Information

Sample Delivery Group Summary

Alpha Job Number : L1812962

Account Name : CH2M / Dow Chemical Company
Project Number : 693874.01.RR
Project Name : DOW HANGING ROCK

Received : 13-APR-2018
Reviewer : Bethany Bedard

Delivery Information

Samples Delivered By : Express Ship
FedEx (780501168738)

Chain of Custody : Present

Cooler Information

Cooler	Seal/Seal#	Preservation	Temperature(°C)	Additional Information
N/A	Present/Intact/00			

Condition Information

All samples on COC received? **YES**

Extra samples received? **NO**

Are there any sample container discrepancies? **NO**

Are there any discrepancies between sample labels & COC? **YES**
L1812962-05: FC 0946 vs. FC 0949

Are samples in appropriate containers for requested analysis? **YES**

Are samples properly preserved for requested analysis? **NO**

Are samples within holding time for requested analysis? **YES**

All sampling equipment returned? **YES**

Volatile Organics/VPH

Reagent Water Vials Frozen by Client? **NA**

LIMS Chain of Custody

ALPHA ANALYTICAL LABORATORIES, INC.
LOGIN CHAIN OF CUSTODY REPORT
Apr 24 2018, 03:31 pm

Login Number: L1812962
Account: DOW-CH2M CH2MHILLProject: 693874.01.RR
Received: 13APR18 Due Date: 23APR18

Sample #	Client ID	Mat	PR	Collected
L1812962-01	S01-HGR-OA02-041218	10	S0	12APR18 16:12
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. A2-DPKG-FULL Package Due Date: 04/20/18				
A2-DPKG-FULL,CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM				
L1812962-02	S01-B505-IA06-041218	10	S0	12APR18 16:15
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 04/20/18				
CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM				
L1812962-03	S01-B505-IA10-041218	10	S0	12APR18 16:17
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 04/20/18				
CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM				
L1812962-04	S01-B505-IA11-041218	10	S0	12APR18 16:18
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 04/20/18				
CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM				
L1812962-05	S01-B505-IA12-041218	10	S0	12APR18 16:22
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 04/20/18				
CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM				
L1812962-06	S01-B505-IA12-041218-FD01	10	S0	12APR18 16:22
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 04/20/18				
CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM				
L1812962-07	S01-B505-IA07-041218	10	S0	12APR18 16:21
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 04/20/18				

ALPHA ANALYTICAL LABORATORIES, INC.
LOGIN CHAIN OF CUSTODY REPORT
Apr 24 2018, 03:31 pm

Login Number: L1812962
Account: DOW-CH2M CH2MHILLProject: 693874.01.RR
Received: 13APR18 Due Date: 23APR18

Sample #	Client ID	Mat	PR	Collected

CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM

L1812962-08 S01-B505-IA09-041218 10 S0 12APR18 16:19
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 04/20/18

CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM

Logged By: Chris Anderson

Container Tracking

ALPHA ANALYTICAL LABORATORIES
Container Tracking Report

Container ID	Type	Status	Transaction Date	From Response	From Location	From Operator	To Response	To Location	To Operator

Chain of Custody

AIR ANALYSIS

PAGE 1 OF 1

ALPHA ANALYTICAL — CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 4/13/18

ALPHA Job #: L1812962

Client Information

Client: ~~Jacobs CH2M~~ / Dow
Address: 1080 Waycross Rd
Cincinatti, OH 45420
Phone: 513-673-2201
Fax:
Email: Marie.Chiller@CH2M.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Dow Hanging Rock
Project Location: Ironton, OH
Project #: 643874.01.RR
Project Manager: Marie Chiller
ALPHA Quote #:

Turn-Around Time

☐ Standard ☒ RUSH (only confirmed if pre-approved)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☒

ANALYSIS

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-15	TO-15 SIM	APH (subset non-petroleum HCs ☐)	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
812962-01	SOI-HGR-0A02-041218	4/12/18	0812		-29.50"	-6.03"	AA	PK	6L	602	0948						
-07	SOI-B505-IA06-041218		0815		-29.16"	-6.07"				1533	0062						
-03	SOI-B505-IA10-041218		0818		-29.05"	-5.71"				753	80						
-04	SOI-B505-IA11-041218		0819		-29.32"	-5.81"				1551	0258						(PK)
	~~SOI-B505-IA09-041218~~		0821		~~-29.13"~~	~~-6.57"~~				~~986~~	~~0968~~						
-05	SOI-B505-IA12-041218		0825		-29.59					946	945						
-06	SOI-B505-IA12-041218-FD01		0825		-29.70"					594	618						
-07	SOI-B505-IA07-041218		0824		-29.46"	-4.82"				986	0968						
-08	SOI-B505-IA09-041218		0821		-29.13"	-6.57"				1634	341						

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
Patrick Kish FedEx	4/12/18	FedEx Ken Beals AMC	4/13/18 10:44

Form No: 101-02 Rev: (25-Sep-15)

Organics

GC/MS VOA
Air Analysis
Selective Ion Monitoring

Initial Calibration

Response Factor Report Airpiano 2

Method Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Method File : TSIM180325.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Mon Mar 26 12:18:08 2018
Response Via : Initial Calibration

Calibration Files
0.02=R253194.D 0.04=R253195.D 0.1 =R253196.D 0.2 =R253197.D 0.5 =R253198.D 1.0 =R253199.D
5.0 =R253200.D 10.0=R253201.D 20.0=R253202.D 50.0=R253203.D

		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
1)	I	bromochloromethane	----------ISTD----------											
2)		propylene				0.665	0.614	0.588	0.544	0.539	0.580	0.518	0.5783	8.66
3)		dichlorodifluorome...			1.960	2.299	2.137	1.968	1.925	1.803	2.048	1.820	1.9949	8.24
4)	C	chloromethane			0.939	1.087	0.999	0.951	0.899	0.861	0.896	0.780	0.9265	9.92
5)		Freon-114	2.860	2.682	2.557	3.083	2.838	2.745	2.626	2.519	2.683	2.334	2.6927	7.69
6)	C	vinyl chloride	1.137	1.048	0.997	1.222	1.113	1.075	1.019	0.974	1.028	0.893	1.0505	8.78
7)	C	1,3-butadiene	0.750	0.730	0.639	0.800	0.743	0.702	0.673	0.654	0.691	0.597	0.6979	8.59
8)	C	bromomethane	0.973	0.909	0.878	1.045	0.953	0.923	0.880	0.841	0.883	0.766	0.9051	8.40
9)	C	chloroethane	0.583	0.539	0.489	0.592	0.547	0.524	0.496	0.476	0.498	0.429	0.5172	9.64
10)		ethanol					0.760	0.675	0.629	0.590	0.648	0.544	0.6408	11.59
11)	C	vinyl bromide	0.882	0.831	0.794	0.978	0.884	0.864	0.827	0.790	0.839	0.731	0.8420	7.92
12)	C	acrolein		0.585	0.463	0.497	0.433	0.309	0.395	0.379	0.402	0.349	0.4237	19.58
13)		acetone				1.245	1.441	1.002	1.160	0.872	1.246	1.048	1.1447	16.45
14)		trichlorofluoromet...	2.024	1.865	1.790	2.196	2.551	1.943	2.337	1.814	1.992	2.095	2.0605	11.77
15)		isopropyl alcohol				1.902	1.885	1.121	0.966	0.907	1.107	1.012	1.2714	33.95#
16)	C	acrylonitrile			0.527	0.636	0.594	0.489	0.518	0.516	0.561	0.515	0.5445	9.00
17)	C	1,1-dichloroethene	1.473	1.308	1.253	1.552	1.412	1.380	1.313	1.281	1.378	1.271	1.3622	7.08
18)		tertiary butyl alc...				1.460	1.338	1.238	1.262	1.204	1.413	1.328	1.3205	7.07
19)	C	methylene chloride					1.086	1.049	0.981	0.953	1.019	0.937	1.0039	5.75
20)	C	3-chloropropene	1.024	0.845	0.827	0.995	0.921	0.902	0.879	0.872	0.950	0.880	0.9095	6.99
21)	C	carbon disulfide			2.249	2.642	2.378	2.316	2.256	2.239	2.475	2.356	2.3639	5.82
22)		Freon 113	1.663	1.530	1.438	1.760	1.609	1.573	1.514	1.502	1.655	1.576	1.5819	5.91
23)		trans-1,2-dichloro...	1.259	1.157	1.123	1.391	1.267	1.237	1.196	1.170	1.270	1.184	1.2253	6.28
24)	C	1,1-dichloroethane	1.608	1.496	1.428	1.764	1.619	1.576	1.512	1.464	1.581	1.449	1.5497	6.54
25)	C	MTBE	1.891	1.754	1.667	2.073	1.909	1.859	1.831	1.811	1.983	1.857	1.8634	6.08
26)	C	vinyl acetate					1.420	1.373	1.442	1.505	1.782	1.702	1.5374	10.80
27)	C	2-butanone				1.802	1.653	1.587	1.574	1.540	1.679	1.552	1.6267	5.71
28)		cis-1,2-dichloroet...	1.220	1.125	1.078	1.325	1.217	1.180	1.145	1.115	1.204	1.114	1.1722	6.19
29)		Ethyl Acetate				0.236	0.237	0.228	0.249	0.250	0.282	0.268	0.2501	7.71
30)	C	chloroform	1.827	1.660	1.568	1.944	1.788	1.744	1.685	1.651	1.814	1.693	1.7375	6.25
31)		Tetrahydrofuran				1.033	0.975	0.943	0.817	0.796	0.898	0.835	0.8995	9.85

Response Factor Report Airpiano 2

Method Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Method File : TSIM180325.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Mon Mar 26 12:18:08 2018
Response Via : Initial Calibration

Calibration Files
0.02=R253194.D 0.04=R253195.D 0.1 =R253196.D 0.2 =R253197.D 0.5 =R253198.D 1.0 =R253199.D
5.0 =R253200.D 10.0=R253201.D 20.0=R253202.D 50.0=R253203.D

		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
32)	C	1,2-dichloroethane	1.290	1.196	1.130	1.351	1.243	1.202	1.169	1.127	1.212	1.128	1.2047	6.14
33)	I	1,4-difluorobenzene	ISTD											
34)	C	hexane			0.475	0.576	0.526	0.514	0.506	0.500	0.553	0.541	0.5238	6.14
35)	s	1,2-dichloroethane-D4	0.322	0.322	0.321	0.321	0.318	0.317	0.315	0.313	0.309	0.309	0.3168	1.61
36)	C	1,1,1-trichloroethane	0.728	0.688	0.640	0.793	0.731	0.710	0.686	0.673	0.730	0.710	0.7089	5.85
37)	C	benzene			1.124	1.008	1.224	1.119	1.082	1.040	1.017	1.088	1.022	1.0806	6.41
38)	C	carbon tetrachloride	0.713	0.647	0.626	0.774	0.716	0.700	0.686	0.678	0.755	0.743	0.7039	6.60
39)		cyclohexane			0.483	0.591	0.546	0.529	0.509	0.500	0.542	0.519	0.5275	6.29
40)		dibromomethane	0.687	0.532	0.433	0.506	0.450	0.432	0.421	0.411	0.453	0.442	0.4767	17.39
41)	C	1,2-dichloropropane	0.490	0.436	0.404	0.485	0.443	0.432	0.422	0.410	0.450	0.437	0.4409	6.43
42)		bromodichloromethane	0.865	0.747	0.742	0.913	0.845	0.825	0.805	0.792	0.865	0.841	0.8241	6.51
43)	C	1,4-dioxane			0.187	0.237	0.218	0.211	0.220	0.217	0.254	0.244	0.2236	9.51
44)	C	trichloroethene	0.461	0.414	0.392	0.474	0.440	0.431	0.425	0.428	0.479	0.466	0.4410	6.47
45)	C	2,2,4-trimethylpen...			1.539	1.879	1.742	1.703	1.677	1.652	1.817	1.735	1.7179	6.02
46)		heptane			0.558	0.678	0.634	0.608	0.601	0.589	0.650	0.629	0.6184	6.09
47)	C	cis-1,3-dichloropr...	0.568	0.529	0.509	0.633	0.589	0.575	0.585	0.584	0.646	0.628	0.5846	7.50
48)	C	4-methyl-2-pentanone				0.879	0.841	0.833	0.849	0.836	0.929	0.904	0.8674	4.35
49)		trans-1,3-dichloro...	0.549	0.503	0.491	0.606	0.575	0.558	0.574	0.577	0.653	0.637	0.5724	9.03
50)	C	1,1,2-trichloroethane	0.440	0.423	0.386	0.488	0.448	0.437	0.429	0.422	0.463	0.449	0.4386	6.17
51)	I	chlorobenzene-D5	ISTD											
52)	C	toluene			5.376	5.011	6.127	5.601	5.510	5.404	5.314	5.721	5.277	5.4823	5.76
53)	s	toluene-D8	3.828	3.783	3.792	3.811	3.797	3.788	3.768	3.761	3.673	3.570	3.7570	2.07
54)		2-hexanone				3.310	3.255	3.315	3.529	3.546	4.006	3.791	3.5359	7.87
55)		dibromochloromethane	3.108	2.861	2.700	3.397	3.141	3.080	3.124	3.155	3.538	3.356	3.1460	7.84
56)	C	1,2-dibromoethane	2.981	2.785	2.660	3.309	3.069	2.979	3.000	2.998	3.291	3.108	3.0180	6.59
57)	C	tetrachloroethene	2.294	2.119	1.999	2.490	2.283	2.235	2.245	2.279	2.593	2.549	2.3087	8.10
58)		1,1,1,2-tetrachlor...	2.118	2.016	1.873	2.386	2.179	2.147	2.174	2.180	2.441	2.372	2.1885	7.95
59)	C	chlorobenzene	4.486	3.956	3.727	4.764	4.377	4.282	4.295	4.268	4.664	4.411	4.3230	7.08
60)	C	ethylbenzene	6.597	6.258	5.912	7.464	6.914	6.852	6.863	6.858	7.446	6.858	6.8022	6.94
61)	C	m+p-xylene	5.224	4.751	4.492	5.672	5.295	5.281	5.459	5.459	6.044	5.536	5.3213	8.30

Method Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Method File : TSIM180325.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
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Response Via : Initial Calibration

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5.0 =R253200.D 10.0=R253201.D 20.0=R253202.D 50.0=R253203.D

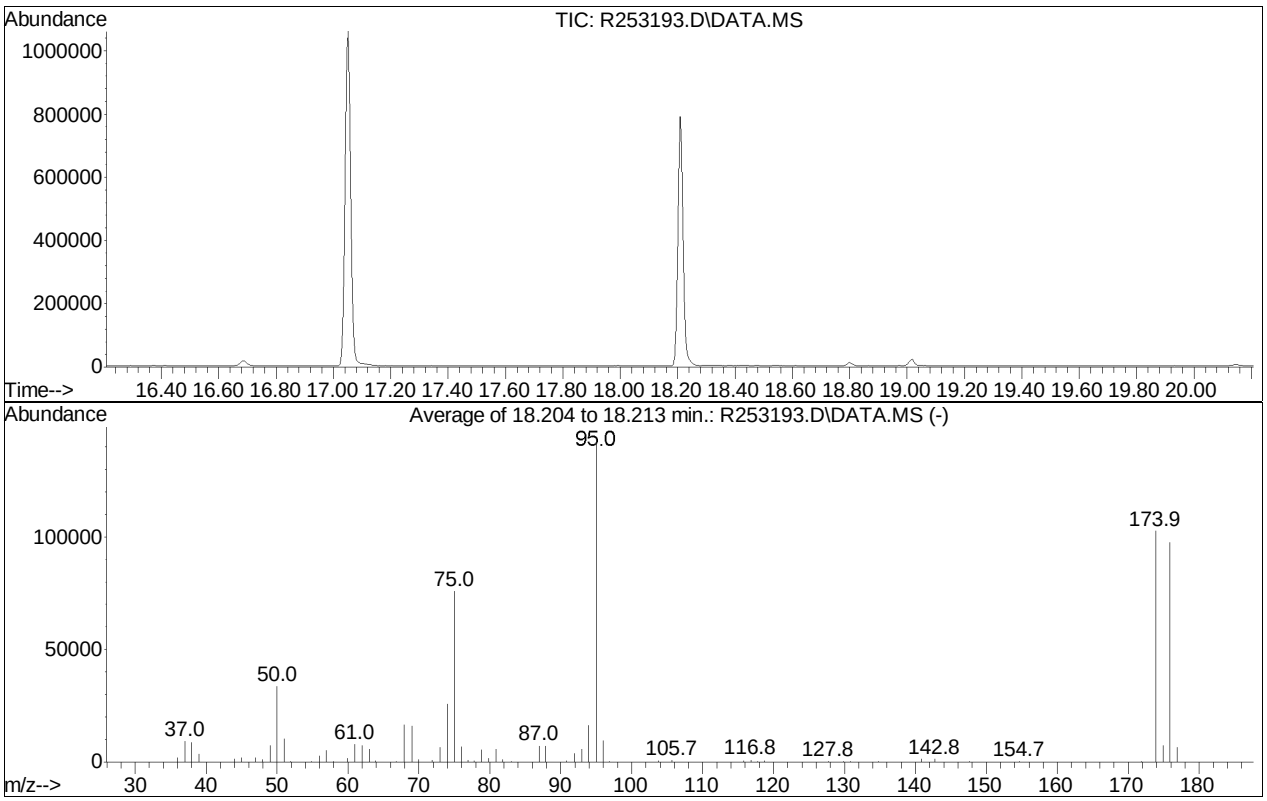
		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
62)	C	bromoform	2.604	2.424	2.260	2.901	2.725	2.699	2.883	3.043	3.537	3.421	2.8497	14.17
63)	C	styrene	3.647	3.343	3.156	4.030	3.827	3.831	4.041	4.078	4.475	4.162	3.8590	10.18
64)	C	1,1,2,2-tetrachlor...	4.299	4.072	3.886	4.932	4.623	4.508	4.708	4.786	5.388	4.618	4.5820	9.38
65)	C	o-xylene	5.307	4.917	4.684	5.880	5.438	5.441	5.673	5.778	6.463	5.602	5.5182	9.03
66)		1,2,3-trichloropro...	3.182	3.136	2.794	3.620	3.377	3.304	3.340	3.343	3.665	3.483	3.3244	7.56
67)	s	bromofluorobenzene	1.890	1.905	1.928	1.945	1.968	1.992	2.033	2.039	2.038	2.004	1.9741	2.83
68)	C	isopropylbenzene				7.127	6.686	6.675	6.893	6.881	7.504	6.781	6.9353	4.24
69)		bromobenzene	3.848	3.384	3.327	4.145	3.869	3.797	3.924	3.932	4.361	4.153	3.8740	8.34
70)		4-ethyl toluene	5.152	5.163	5.173	6.983	6.844	7.006	7.644	7.740	8.342	7.552	6.7599	17.53
71)		1,3,5-trimethylben...	4.394	4.339	4.358	6.175	5.839	5.776	6.250	6.325	6.840	6.296	5.6592	16.60
72)		tert-butylbenzene				6.040	5.745	5.805	6.446	6.627	7.351	5.978	6.2847	9.08
73)		1,2,4-trimethylben...	4.102	4.086	4.228	5.755	5.692	5.783	6.512	6.733	7.560	6.172	5.6623	21.01
74)	C	Benzyl Chloride				3.804	3.962	4.240	5.424	5.657	6.471	6.189	5.1066	21.44
75)		1,3-dichlorobenzene	3.002	2.922	2.999	4.023	3.958	4.026	4.565	4.707	5.206	4.828	4.0236	20.49
76)	C	1,4-dichlorobenzene	3.242	2.959	3.092	4.004	4.085	4.127	4.693	4.874	5.418	4.855	4.1350	20.25
77)		sec-butylbenzene				0.840	0.815	0.828	0.919	0.928	1.012	0.859	0.8859	7.99
78)		p-isopropyltoluene				6.709	6.575	6.733	7.680	7.809	8.535	7.520	7.3658	9.83
79)		1,2-dichlorobenzene	2.981	2.854	2.871	3.796	3.790	3.779	4.279	4.413	4.821	4.517	3.8102	18.74
80)		n-butylbenzene				5.787	6.221	6.916	7.839	7.933	8.440	7.484	7.2314	13.35
81)	C	1,2,4-trichloroben...		1.456	1.887	2.592	3.004	2.989	4.018	4.358	4.642	4.308	3.2507	35.26#
82)		naphthalene		2.509	3.480	5.642	7.127	7.058	8.519	8.899	8.748	8.346	6.7032	35.15#
83)		1,2,3-trichloroben...		0.799	1.444	1.847	2.593	2.506	3.546	3.795	3.863	3.969	2.7069	43.01#
84)	C	hexachlorobutadiene		1.832	1.863	2.403	2.416	2.402	3.108	3.378	3.594	3.646	2.7380	25.89

(#) = Out of Range

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253193.D
Acq On : 25 Mar 2018 9:42 pm
Operator : AIRPIANO2:AR
Sample : WG1100531-1
Misc : WG1100531
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Mon Mar 26 12:18:08 2018



AutoFind: Scans 1812, 1813, 1814; Background Corrected with Scan 1805

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	23.7	33656	PASS
75	95	30	66	53.5	75832	PASS
95	95	100	100	100.0	141829	PASS
96	95	5	9	6.7	9553	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	72.5	102760	PASS
175	174	4	9	7.1	7334	PASS
176	174	93	101	94.9	97517	PASS
177	176	5	9	6.8	6644	PASS

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253194.D
Acq On : 25 Mar 2018 10:16 pm
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.02
Misc : WG1100531
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 26 07:46:43 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	274523	10.000	ppbV	0.00
Standard Area = 273176			Recovery = 100.49%			
33) 1,4-difluorobenzene	12.738	114	623210	10.000	ppbV	0.00
Standard Area = 626263			Recovery = 99.51%			
51) chlorobenzene-D5	17.048	54	141893	10.000	ppbV	0.00
Standard Area = 143934			Recovery = 98.58%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.414	65	200583	10.205	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.05%			
53) toluene-D8	15.410	98	543179	10.160	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.60%			
67) bromofluorobenzene	18.210	95	268124	9.295	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 92.95%			
Target Compounds						Qvalue
2) propylene	4.282	41	590M6	0.039	ppbV	
3) dichlorodifluoromethane	4.390	85	1143	0.022	ppbV	92
4) chloromethane	4.627	50	619M6	0.025	ppbV	
5) Freon-114	4.785	85	1570	0.022	ppbV	97
6) vinyl chloride	4.952	62	624	0.022	ppbV #	56
7) 1,3-butadiene	5.169	54	412	0.022	ppbV #	42
8) bromomethane	5.560	94	534	0.022	ppbV	82
9) chloroethane	5.823	64	320M4	0.024	ppbV	
10) ethanol	6.071	31	8761	0.508	ppbV	97
11) vinyl bromide	6.327	106	484M4	0.021	ppbV	
12) acrolein	6.535	56	413	0.038	ppbV #	1
13) acetone	6.751	43	11494	0.361	ppbV #	97
14) trichlorofluoromethane	6.910	101	1111	0.017	ppbV	98
15) isopropyl alcohol	7.110	45	12175	0.459	ppbV	98
16) acrylonitrile	7.358	53	387	0.027	ppbV #	85
17) 1,1-dichloroethene	7.766	61	809	0.022	ppbV #	88
18) tertiary butyl alcohol	7.950	59	951	0.027	ppbV #	83
19) methylene chloride	7.934	49	833	0.031	ppbV	97
20) 3-chloropropene	8.086	41	562M4	0.023	ppbV	
21) carbon disulfide	8.277	76	1869	0.030	ppbV #	1
22) Freon 113	8.277	101	913	0.022	ppbV	94
23) trans-1,2-dichloroethene	9.106	61	691	0.021	ppbV #	89
24) 1,1-dichloroethane	9.352	63	883	0.021	ppbV #	82

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253194.D
Acq On : 25 Mar 2018 10:16 pm
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.02
Misc : WG1100531
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 26 07:46:43 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
25) MTBE	9.502	73	1038	0.021	ppbV #	45
26) vinyl acetate	9.570	43	1264	0.032	ppbV #	80
27) 2-butanone	9.912	43	1523	0.035	ppbV #	89
28) cis-1,2-dichloroethene	10.344	61	670	0.021	ppbV #	87
29) Ethyl Acetate	10.672	61	121	0.018	ppbV #	49
30) chloroform	10.691	83	1003	0.022	ppbV #	92
31) Tetrahydrofuran	11.264	42	449	0.020	ppbV	97
32) 1,2-dichloroethane	11.536	62	708	0.022	ppbV #	65
34) hexane	10.588	57	733	0.023	ppbV #	55
36) 1,1,1-trichloroethane	11.823	97	908	0.021	ppbV #	88
37) benzene	12.335	78	1645	0.025	ppbV #	87
38) carbon tetrachloride	12.509	117	889	0.021	ppbV #	91
39) cyclohexane	12.651	56	725	0.023	ppbV #	80
40) dibromomethane	13.238	93	856	0.033	ppbV	96
41) 1,2-dichloropropane	13.260	63	611M4	0.023	ppbV	
42) bromodichloromethane	13.478	83	1078	0.021	ppbV #	93
43) 1,4-dioxane	13.630	88	246	0.018	ppbV	92
44) trichloroethene	13.532	130	575	0.022	ppbV	94
45) 2,2,4-trimethylpentane	13.554	57	2099	0.020	ppbV #	76
46) heptane	13.837	43	867	0.023	ppbV #	93
47) cis-1,3-dichloropropene	14.497	75	708	0.019	ppbV #	56
48) 4-methyl-2-pentanone	14.587	43	948	0.018	ppbV #	93
49) trans-1,3-dichloropropene	15.057	75	684	0.019	ppbV #	53
50) 1,1,2-trichloroethane	15.238	97	549	0.021	ppbV	99
52) toluene	15.500	91	1704	0.022	ppbV	96
54) 2-hexanone	15.789	43	836	0.017	ppbV #	82
55) dibromochloromethane	15.916	129	882	0.020	ppbV #	92
56) 1,2-dibromoethane	16.133	107	846	0.020	ppbV	99
57) tetrachloroethene	16.530	166	651	0.020	ppbV	98
58) 1,1,1,2-tetrachloroethane	17.072	131	601	0.019	ppbV #	95
59) chlorobenzene	17.086	112	1273	0.021	ppbV #	86
60) ethylbenzene	17.372	91	1872	0.019	ppbV	94
61) m+p-xylene	17.505	91	2965	0.038	ppbV	98
62) bromoform	17.596	173	739	0.018	ppbV	94
63) styrene	17.786	104	1035	0.018	ppbV	96
64) 1,1,2,2-tetrachloroethane	17.867	83	1220	0.018	ppbV	97
65) o-xylene	17.867	91	1506	0.019	ppbV	92
66) 1,2,3-trichloropropane	17.967	75	903M3	0.019	ppbV	
68) isopropylbenzene	18.296	105	1754	0.018	ppbV	97
69) bromobenzene	18.386	77	1092	0.020	ppbV	98

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253194.D
Acq On : 25 Mar 2018 10:16 pm
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.02
Misc : WG1100531
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 26 07:46:43 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

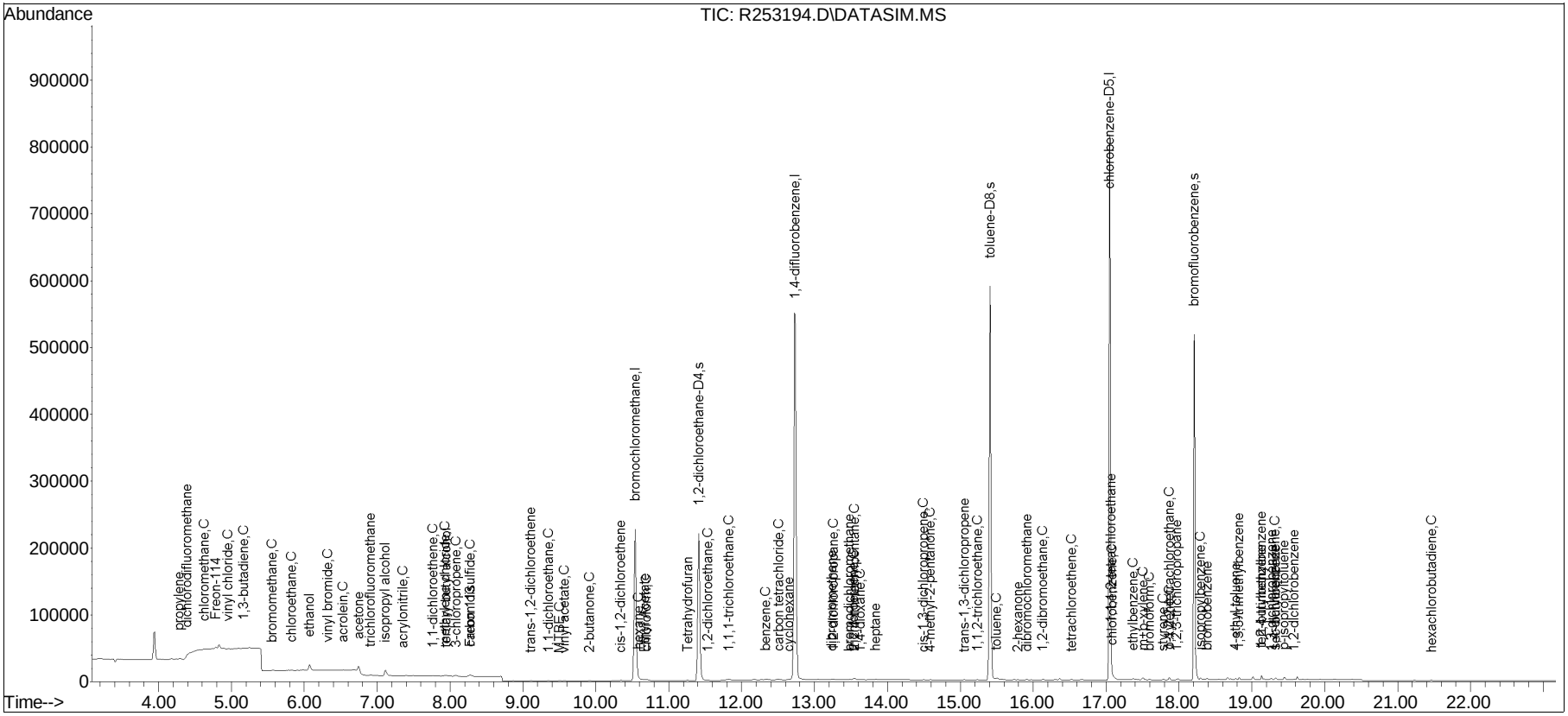
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.777	105	1462	0.013	ppbV #	94
71) 1,3,5-trimethylbenzene	18.825	105	1247	0.014	ppbV #	94
72) tert-butylbenzene	19.134	119	1371	0.015	ppbV	92
73) 1,2,4-trimethylbenzene	19.134	105	1164M3	0.013	ppbV	
74) Benzyl Chloride	19.253		0	N.D.		
75) 1,3-dichlorobenzene	19.272	146	852	0.013	ppbV #	85
76) 1,4-dichlorobenzene	19.320	146	920	0.014	ppbV #	81
77) sec-butylbenzene	19.329	105	1740	0.013	ppbV	96
78) p-isopropyltoluene	19.439	119	1346	0.012	ppbV	98
79) 1,2-dichlorobenzene	19.582	146	846	0.014	ppbV #	87
80) n-butylbenzene	19.763		0	N.D.		
81) 1,2,4-trichlorobenzene	21.041		0	N.D.		
82) naphthalene	21.159		0	N.D.		
83) 1,2,3-trichlorobenzene	21.416		0	N.D.		
84) hexachlorobutadiene	21.470	225	511	0.012	ppbV #	83

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0325SIM_ICAL\R253200.D

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253194.D
Acq On : 25 Mar 2018 10:16 pm
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.02
Misc : WG1100531
ALS Vial : 5 Sample Multiplier: 1

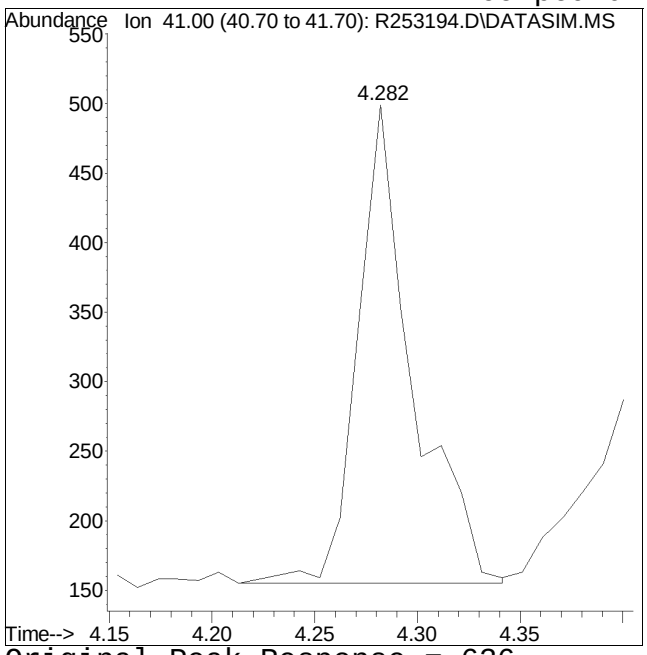
Quant Time: Mar 26 07:46:43 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration



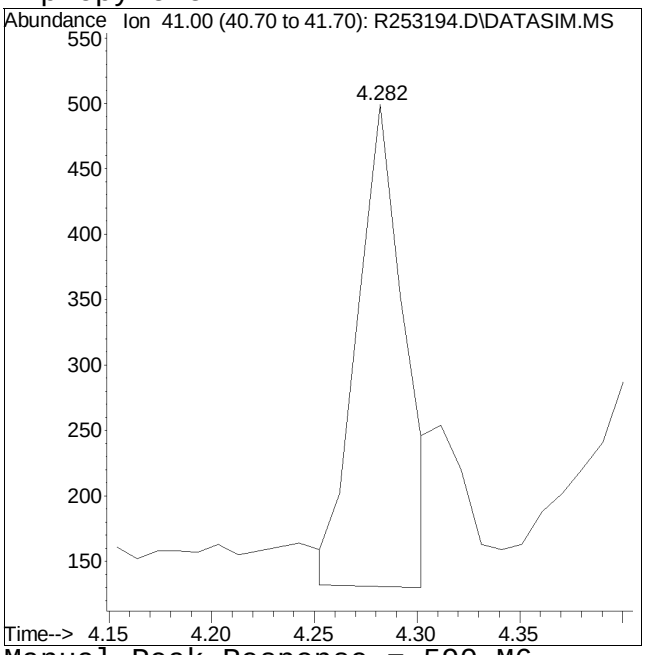
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253194.D
Date Inj'd : 3/25/2018 10:16 pm
Sample : ITO15-SIMSTD0.02
Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #2: propylene



Original Peak Response = 636



Manual Peak Response = 590 M6

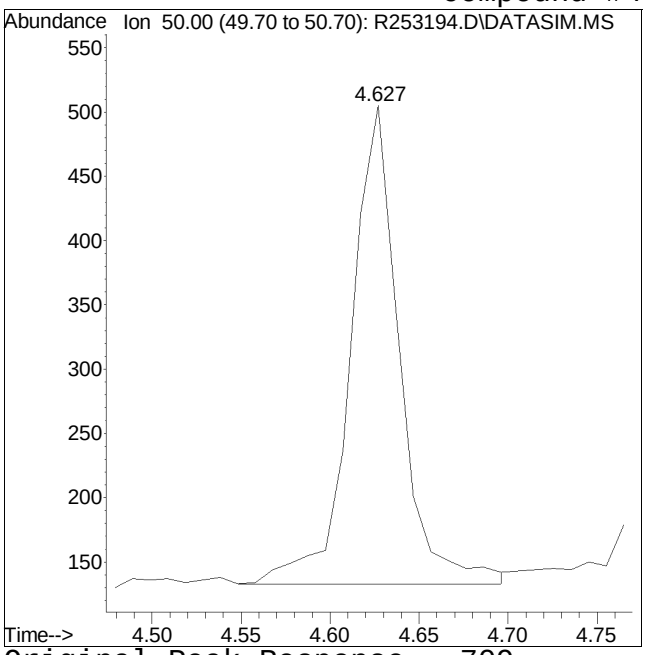
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

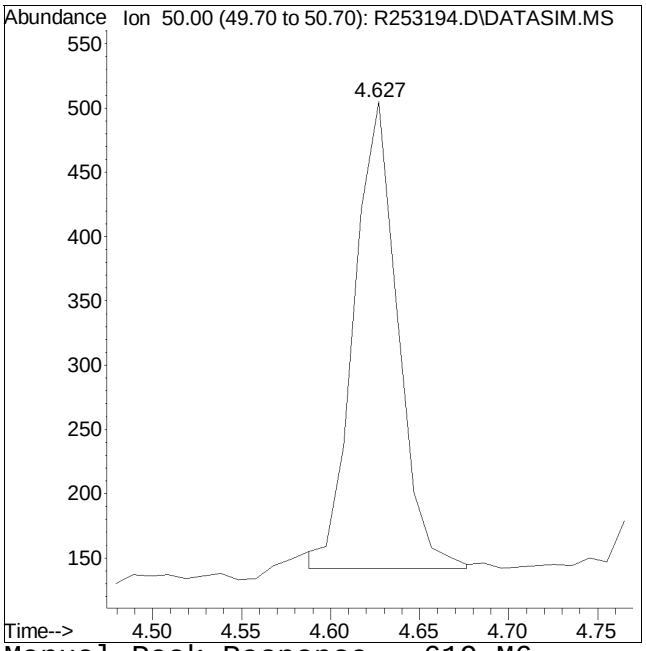
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253194.D
Date Inj'd : 3/25/2018 10:16 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #4: chloromethane



Original Peak Response = 709



Manual Peak Response = 619 M6

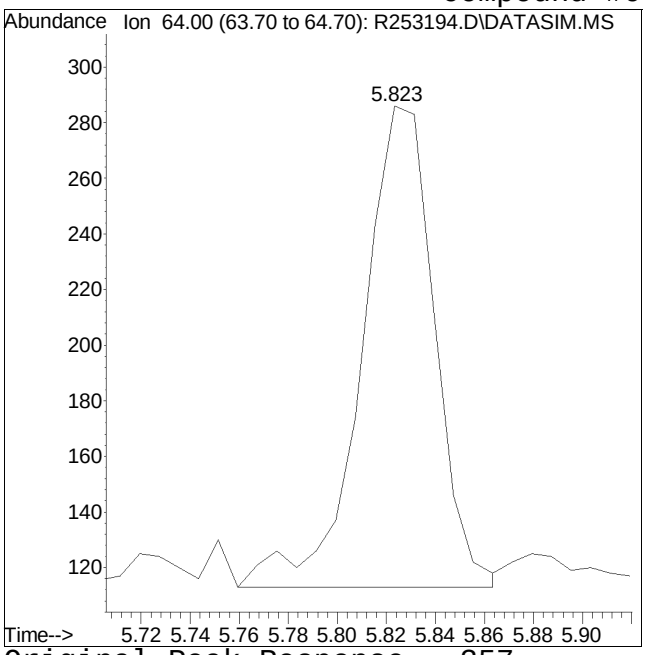
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

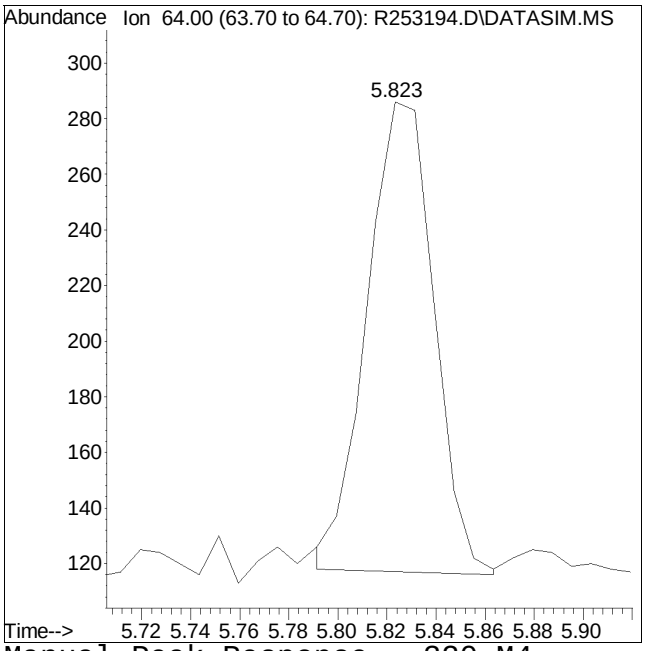
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253194.D
Date Inj'd : 3/25/2018 10:16 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #9: chloroethane



Original Peak Response = 357



Manual Peak Response = 320 M4

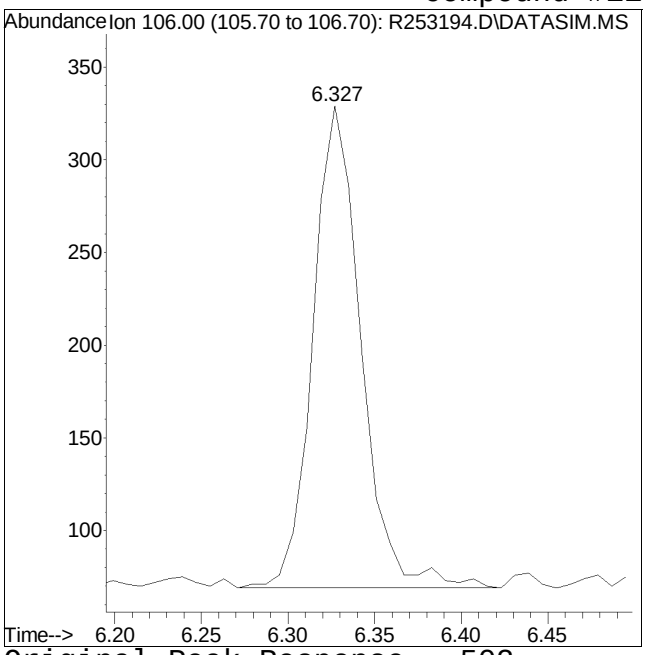
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

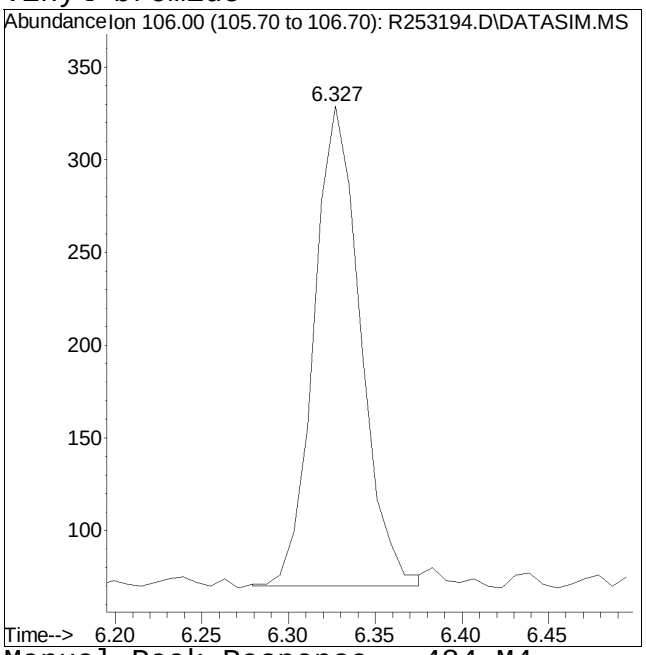
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253194.D
Date Inj'd : 3/25/2018 10:16 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #11: vinyl bromide



Original Peak Response = 502



Manual Peak Response = 484 M4

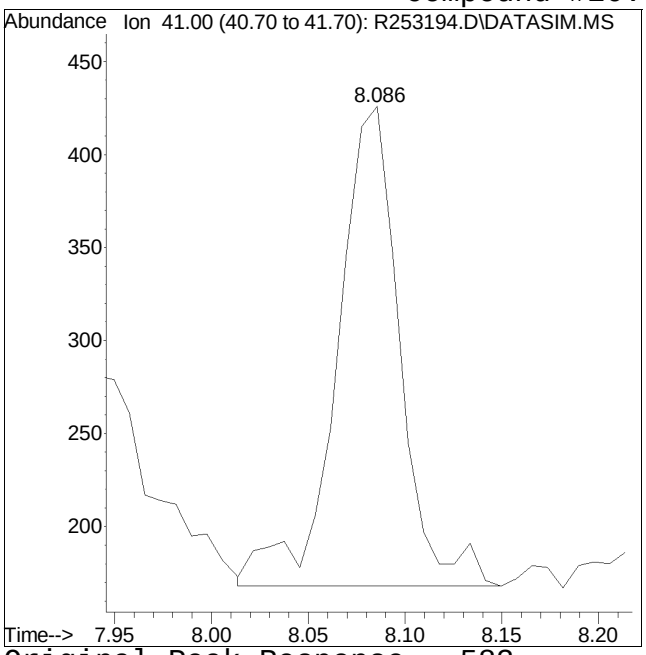
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

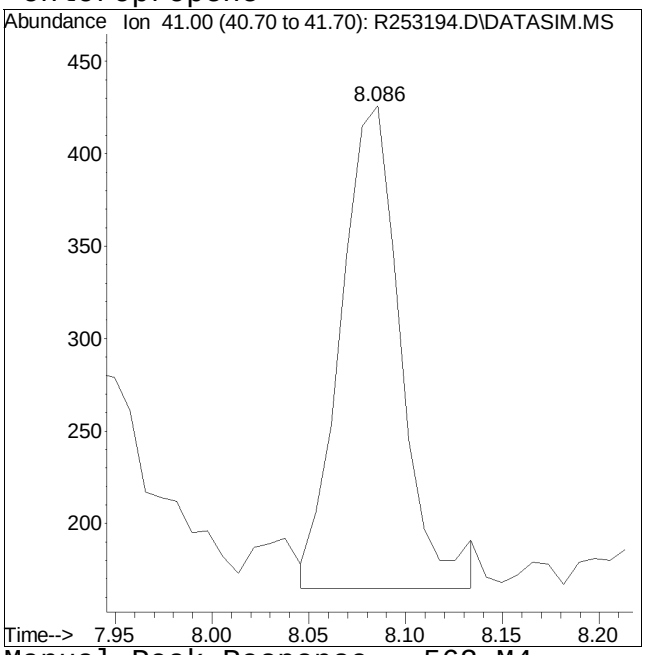
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253194.D
Date Inj'd : 3/25/2018 10:16 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #20: 3-chloropropene



Original Peak Response = 583



Manual Peak Response = 562 M4

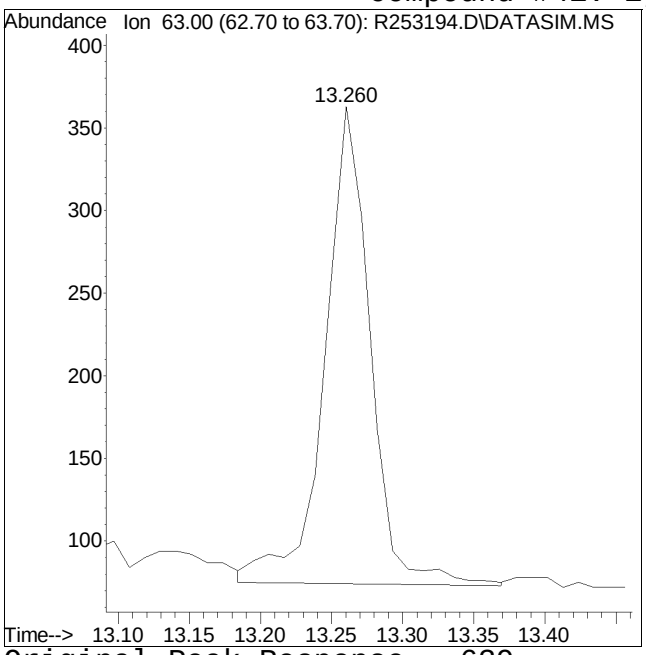
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

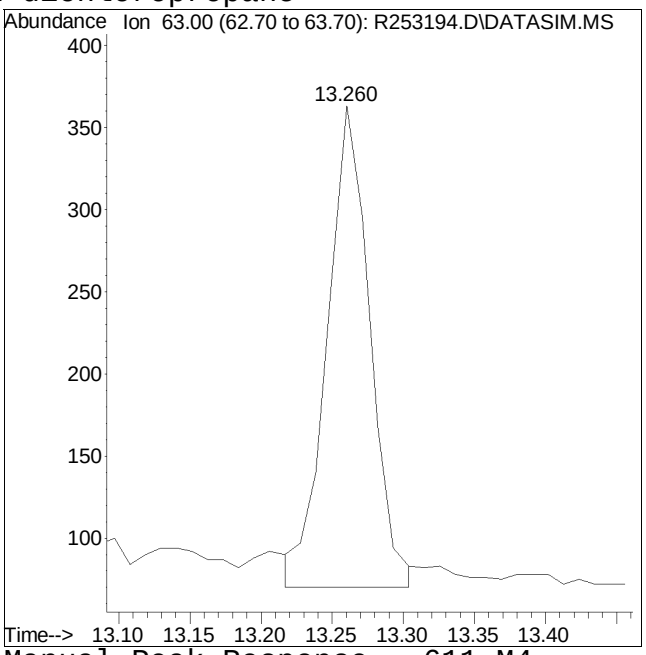
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253194.D
Date Inj'd : 3/25/2018 10:16 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #41: 1,2-dichloropropane



Original Peak Response = 639



Manual Peak Response = 611 M4

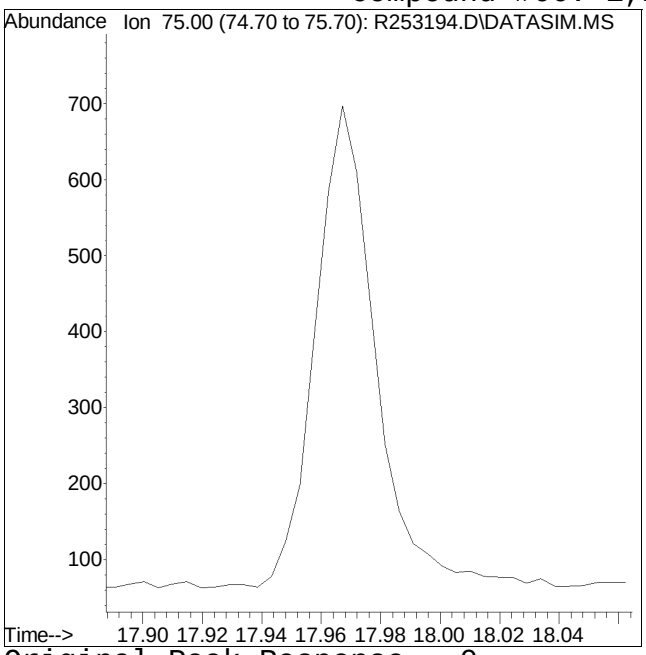
M4 = Poor automated baseline construction.

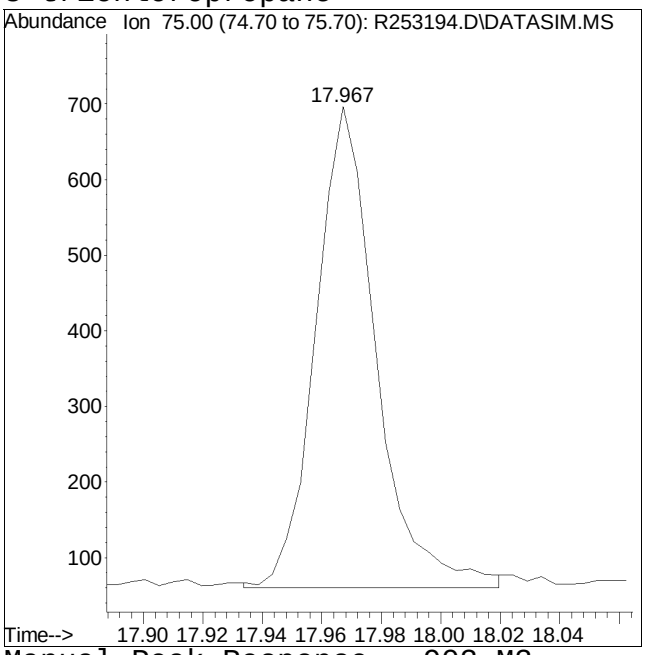
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253194.D
Date Inj'd : 3/25/2018 10:16 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #66: 1,2,3-trichloropropane





Original Peak Response = 0 Manual Peak Response = 903 M3

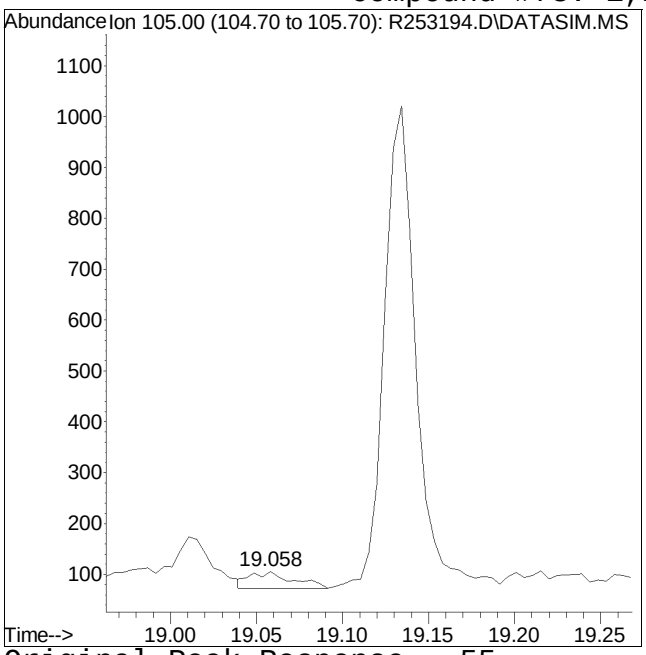
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

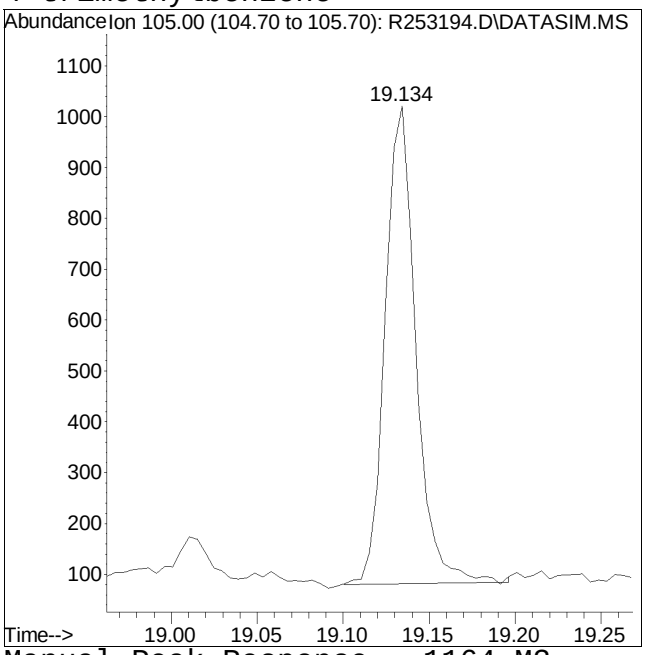
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253194.D
Date Inj'd : 3/25/2018 10:16 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #73: 1,2,4-trimethylbenzene



Original Peak Response = 55



Manual Peak Response = 1164 M3

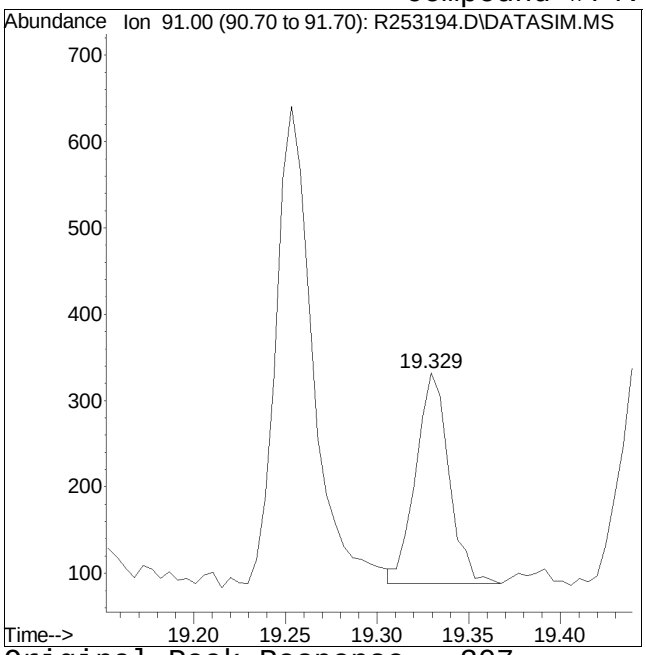
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

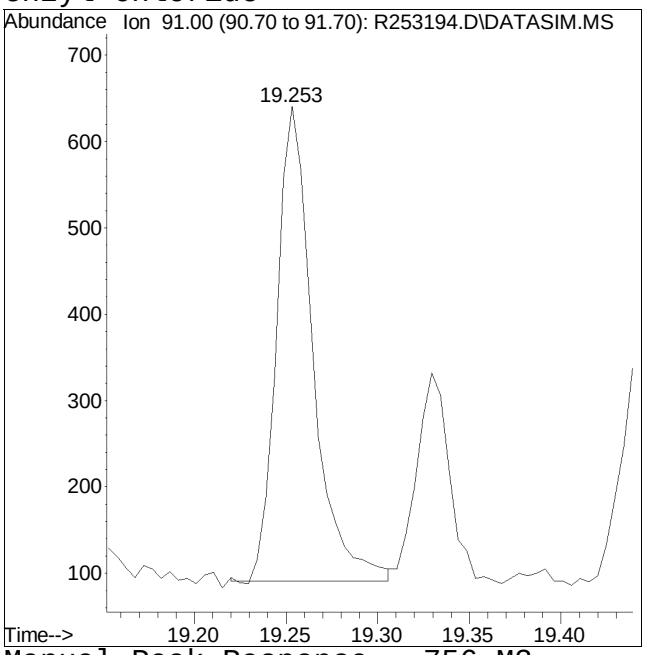
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253194.D
Date Inj'd : 3/25/2018 10:16 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #74: Benzyl Chloride





Original Peak Response = 307 Manual Peak Response = 756 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253195.D
Acq On : 25 Mar 2018 10:50 pm
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.04
Misc : WG1100531
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 26 07:54:31 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	273792	10.000	ppbV	0.00
Standard Area = 273176			Recovery = 100.23%			
33) 1,4-difluorobenzene	12.738	114	619703	10.000	ppbV	0.00
Standard Area = 626263			Recovery = 98.95%			
51) chlorobenzene-D5	17.048	54	141101	10.000	ppbV	0.00
Standard Area = 143934			Recovery = 98.03%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.414	65	199670	10.216	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.16%			
53) toluene-D8	15.410	98	533764	10.040	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.40%			
67) bromofluorobenzene	18.210	95	268728	9.368	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 93.68%			
Target Compounds						Qvalue
2) propylene	4.282	41	830M6	0.056	ppbV	
3) dichlorodifluoromethane	4.390	85	2261	0.043	ppbV	98
4) chloromethane	4.627	50	1289	0.052	ppbV #	84
5) Freon-114	4.785	85	2937	0.041	ppbV	98
6) vinyl chloride	4.962	62	1148	0.041	ppbV #	73
7) 1,3-butadiene	5.169	54	800	0.043	ppbV #	68
8) bromomethane	5.568	94	996	0.041	ppbV	86
9) chloroethane	5.823	64	590	0.043	ppbV #	78
10) ethanol	6.071	31	10209	0.593	ppbV	97
11) vinyl bromide	6.327	106	910	0.040	ppbV	95
12) acrolein	6.535	56	641	0.059	ppbV #	1
13) acetone	6.751	43	14402	0.454	ppbV #	97
14) trichlorofluoromethane	6.910	101	2042	0.032	ppbV	98
15) isopropyl alcohol	7.110	45	13482	0.510	ppbV #	97
16) acrylonitrile	7.358	53	613	0.043	ppbV #	90
17) 1,1-dichloroethene	7.758	61	1433	0.040	ppbV	91
18) tertiary butyl alcohol	7.942	59	1607	0.047	ppbV #	90
19) methylene chloride	7.934	49	1326	0.049	ppbV	99
20) 3-chloropropene	8.086	41	925	0.038	ppbV	91
21) carbon disulfide	8.277	76	2860	0.046	ppbV #	1
22) Freon 113	8.277	101	1676	0.040	ppbV	95
23) trans-1,2-dichloroethene	9.113	61	1267	0.039	ppbV #	88
24) 1,1-dichloroethane	9.352	63	1638	0.040	ppbV	88

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253195.D
Acq On : 25 Mar 2018 10:50 pm
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.04
Misc : WG1100531
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 26 07:54:31 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
25) MTBE	9.495	73	1921	0.038	ppbV #	66
26) vinyl acetate	9.570	43	1966	0.050	ppbV #	88
27) 2-butanone	9.905	43	2081	0.048	ppbV #	93
28) cis-1,2-dichloroethene	10.344	61	1232	0.039	ppbV	96
29) Ethyl Acetate	10.672	61	221	0.032	ppbV #	59
30) chloroform	10.691	83	1818	0.039	ppbV #	94
31) Tetrahydrofuran	11.254	42	972	0.043	ppbV	98
32) 1,2-dichloroethane	11.536	62	1310	0.041	ppbV #	84
34) hexane	10.588	57	1264	0.040	ppbV #	49
36) 1,1,1-trichloroethane	11.823	97	1705	0.040	ppbV #	94
37) benzene	12.335	78	2787	0.043	ppbV #	88
38) carbon tetrachloride	12.509	117	1605	0.038	ppbV #	96
39) cyclohexane	12.651	56	1311	0.042	ppbV #	91
40) dibromomethane	13.238	93	1319	0.051	ppbV	99
41) 1,2-dichloropropane	13.260	63	1080	0.041	ppbV #	80
42) bromodichloromethane	13.478	83	1852	0.037	ppbV #	96
43) 1,4-dioxane	13.619	88	459	0.034	ppbV	94
44) trichloroethene	13.532	130	1025	0.039	ppbV	97
45) 2,2,4-trimethylpentane	13.554	57	3998	0.038	ppbV #	86
46) heptane	13.837	43	1512	0.041	ppbV #	97
47) cis-1,3-dichloropropene	14.497	75	1311	0.036	ppbV #	71
48) 4-methyl-2-pentanone	14.587	43	1815	0.034	ppbV #	93
49) trans-1,3-dichloropropene	15.048	75	1248	0.035	ppbV #	67
50) 1,1,2-trichloroethane	15.238	97	1049	0.039	ppbV	95
52) toluene	15.500	91	3034	0.040	ppbV	98
54) 2-hexanone	15.780	43	1431	0.029	ppbV #	88
55) dibromochloromethane	15.907	129	1615	0.037	ppbV	98
56) 1,2-dibromoethane	16.133	107	1572	0.037	ppbV	97
57) tetrachloroethene	16.530	166	1196	0.038	ppbV	94
58) 1,1,1,2-tetrachloroethane	17.067	131	1138	0.037	ppbV	94
59) chlorobenzene	17.086	112	2233	0.037	ppbV	93
60) ethylbenzene	17.372	91	3532	0.036	ppbV	98
61) m+p-xylene	17.500	91	5363	0.070	ppbV	100
62) bromoform	17.596	173	1368	0.034	ppbV	93
63) styrene	17.786	104	1887	0.033	ppbV	94
64) 1,1,2,2-tetrachloroethane	17.867	83	2298	0.035	ppbV	96
65) o-xylene	17.867	91	2775	0.035	ppbV	100
66) 1,2,3-trichloropropane	17.967	75	1770M2	0.038	ppbV	
68) isopropylbenzene	18.296	105	3217	0.033	ppbV	98
69) bromobenzene	18.386	77	1910	0.034	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253195.D
Acq On : 25 Mar 2018 10:50 pm
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.04
Misc : WG1100531
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 26 07:54:31 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

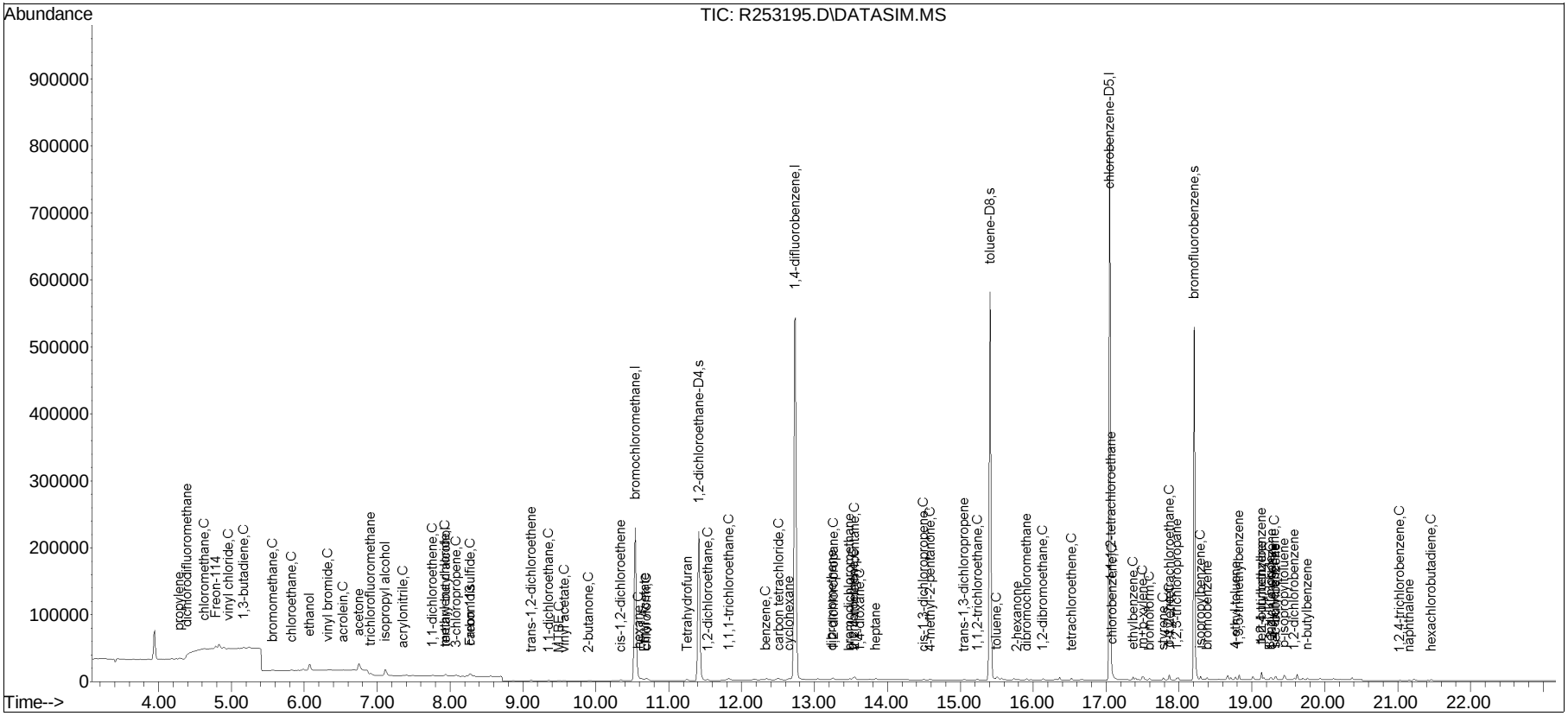
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.777	105	2914	0.027	ppbV #	95
71) 1,3,5-trimethylbenzene	18.825	105	2449	0.028	ppbV #	99
72) tert-butylbenzene	19.134	119	2611	0.029	ppbV	94
73) 1,2,4-trimethylbenzene	19.134	105	2306	0.025	ppbV	94
74) Benzyl Chloride	19.253	91	1541	0.020	ppbV	91
75) 1,3-dichlorobenzene	19.268	146	1649	0.026	ppbV #	89
76) 1,4-dichlorobenzene	19.315	146	1670	0.025	ppbV #	81
77) sec-butylbenzene	19.329	105	3436	0.026	ppbV	99
78) p-isopropyltoluene	19.439	119	2570	0.024	ppbV	96
79) 1,2-dichlorobenzene	19.582	146	1611	0.027	ppbV #	92
80) n-butylbenzene	19.763	91	1936M4	0.018	ppbV	
81) 1,2,4-trichlorobenzene	21.030	180	822M1	0.014	ppbV	
82) naphthalene	21.159	128	1416M1	0.012	ppbV	
83) 1,2,3-trichlorobenzene	21.416		0	N.D.		
84) hexachlorobutadiene	21.459	225	1034	0.024	ppbV #	77

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0325SIM_ICAL\R253200.D

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253195.D
Acq On : 25 Mar 2018 10:50 pm
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.04
Misc : WG1100531
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 26 07:54:31 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

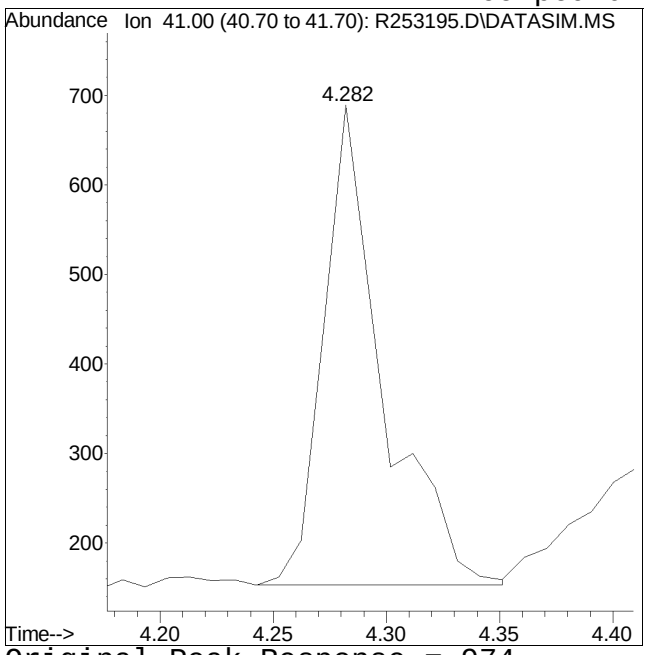


Manual Integration/Negative Proof Report

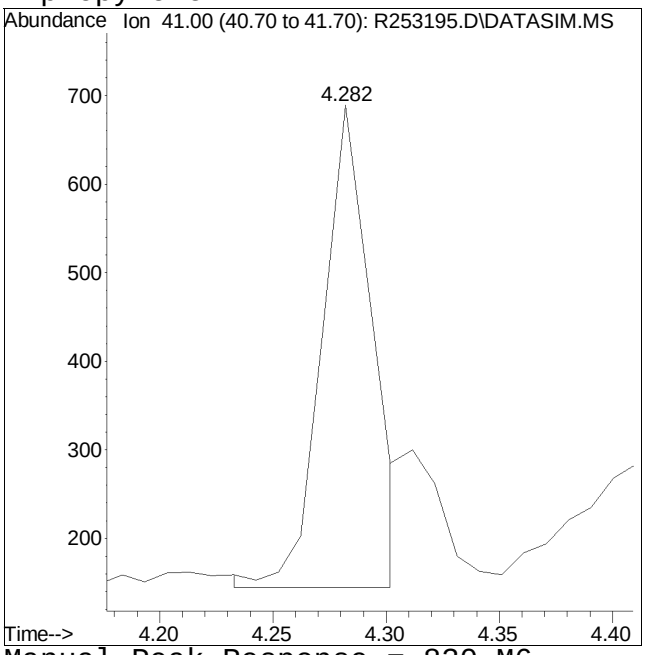
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253195.D
Date Inj'd : 3/25/2018 10:50 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #2: propylene



Original Peak Response = 974



Manual Peak Response = 830 M6

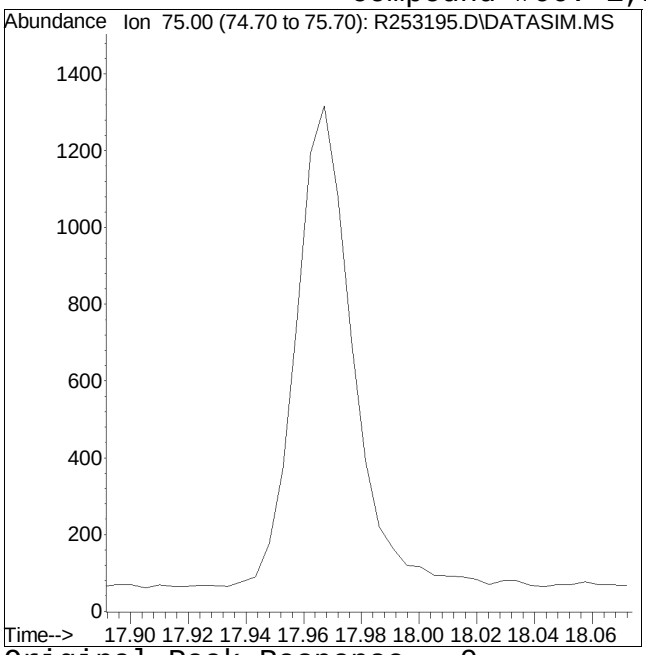
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

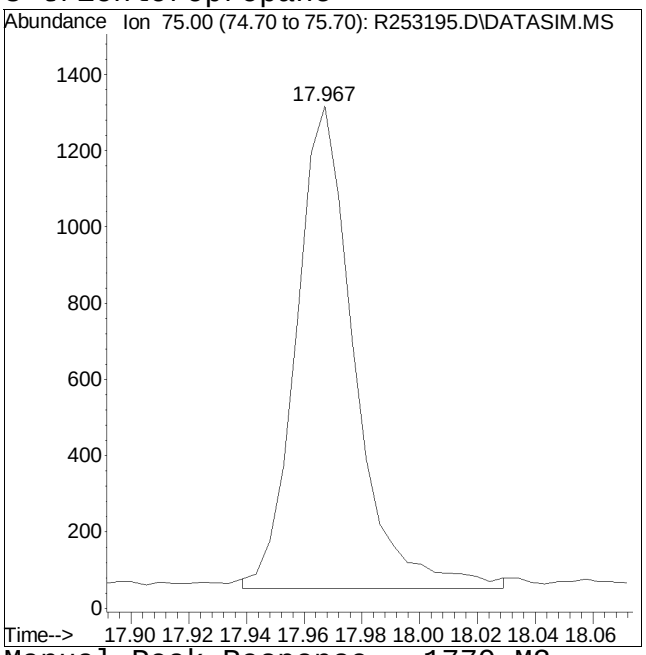
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253195.D
Date Inj'd : 3/25/2018 10:50 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #66: 1,2,3-trichloropropane



Original Peak Response = 0



Manual Peak Response = 1770 M2

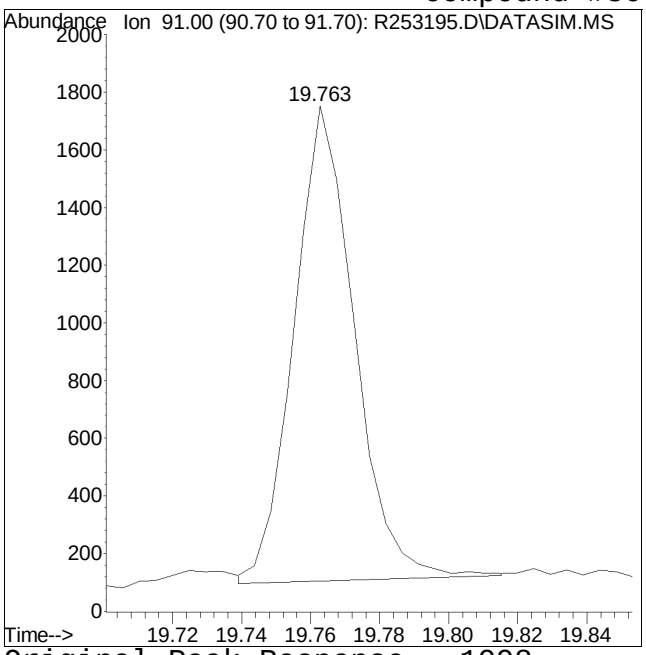
M2 = Peak not found by automatic integration algorithm.

Manual Integration/Negative Proof Report

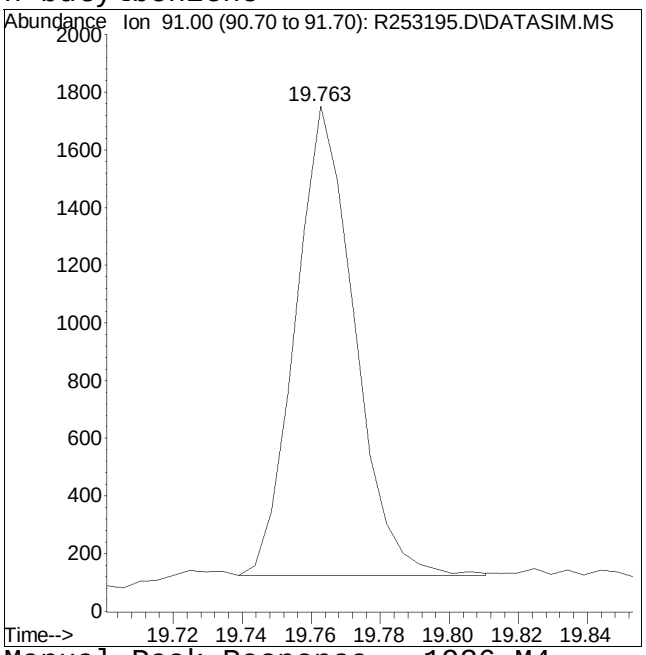
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253195.D
Date Inj'd : 3/25/2018 10:50 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #80: n-butylbenzene



Original Peak Response = 1998



Manual Peak Response = 1936 M4

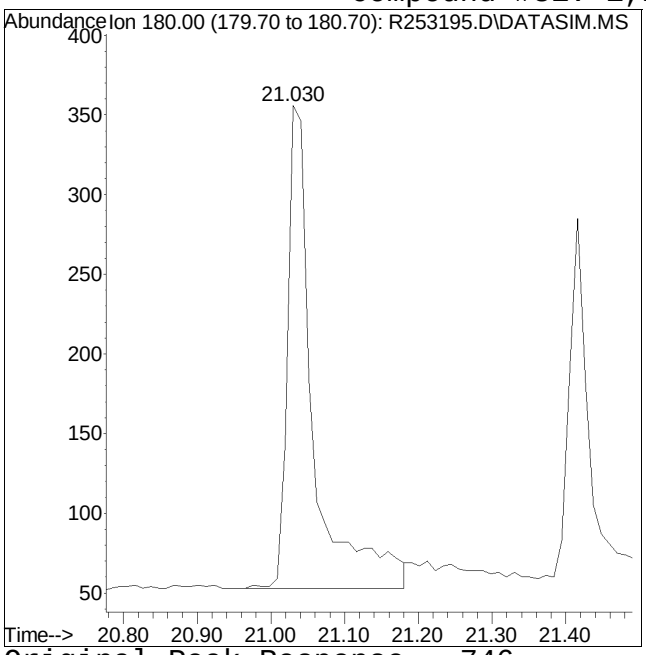
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

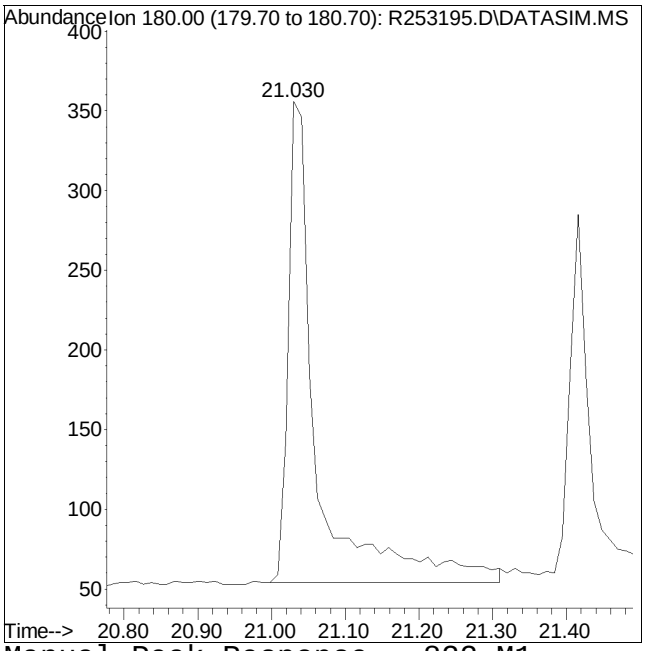
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253195.D
Date Inj'd : 3/25/2018 10:50 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #81: 1,2,4-trichlorobenzene



Original Peak Response = 746



Manual Peak Response = 822 M1

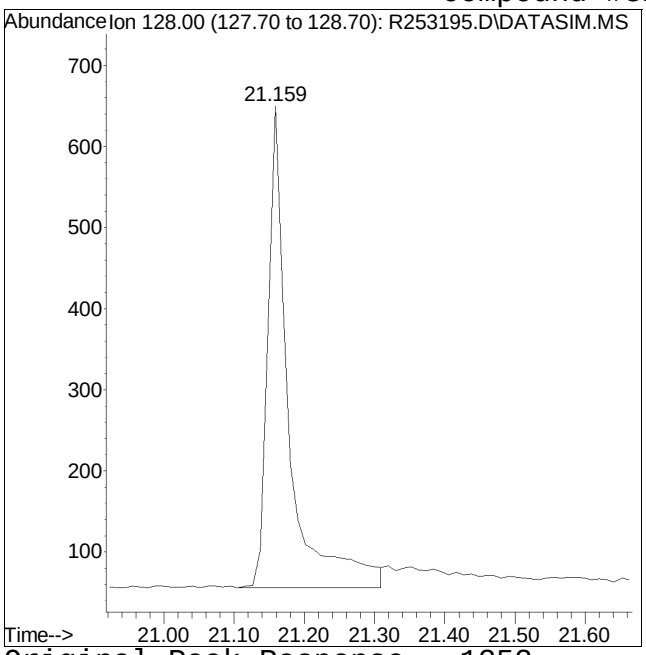
M1 = Split or tailing peak, auto integration stopped early resulting in false low area count.

Manual Integration/Negative Proof Report

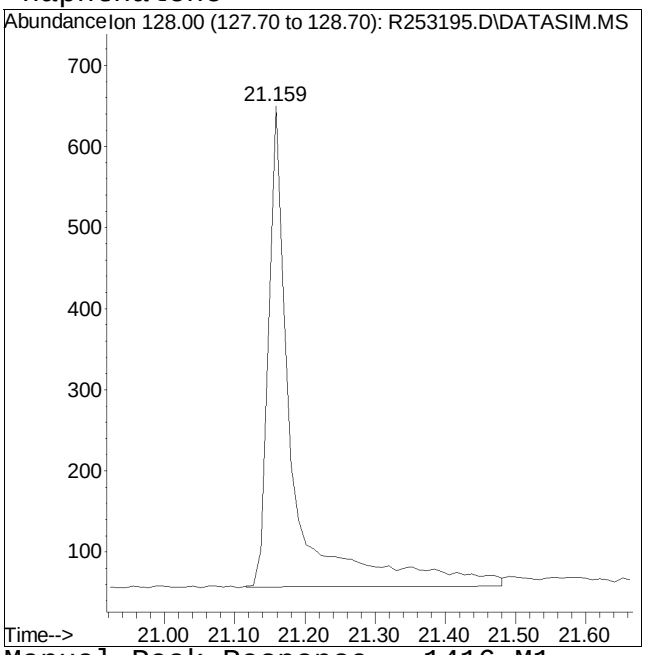
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253195.D
Date Inj'd : 3/25/2018 10:50 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #82: naphthalene



Original Peak Response = 1252



Manual Peak Response = 1416 M1

M1 = Split or tailing peak, auto integration stopped early resulting in false low area count.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253196.D
Acq On : 25 Mar 2018 11:28 pm
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.1
Misc : WG1100531
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 26 12:06:01 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	271595	10.000	ppbV	0.00
Standard Area = 273176			Recovery = 99.42%			
33) 1,4-difluorobenzene	12.738	114	616369	10.000	ppbV	0.00
Standard Area = 626263			Recovery = 98.42%			
51) chlorobenzene-D5	17.048	54	140719	10.000	ppbV	0.00
Standard Area = 143934			Recovery = 97.77%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.414	65	197940	10.182	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.82%			
53) toluene-D8	15.410	98	533634	10.065	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.65%			
67) bromofluorobenzene	18.210	95	271259	9.482	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.82%			
Target Compounds						Qvalue
2) propylene	4.282	41	1684M6	0.114	ppbV	
3) dichlorodifluoromethane	4.390	85	5324	0.102	ppbV	99
4) chloromethane	4.627	50	2550	0.104	ppbV	89
5) Freon-114	4.785	85	6944	0.097	ppbV	99
6) vinyl chloride	4.952	62	2707	0.098	ppbV #	88
7) 1,3-butadiene	5.169	54	1735	0.095	ppbV	94
8) bromomethane	5.567	94	2384	0.100	ppbV	94
9) chloroethane	5.823	64	1328	0.099	ppbV	91
10) ethanol	6.071	31	14545	0.852	ppbV	95
11) vinyl bromide	6.327	106	2157	0.096	ppbV	96
12) acrolein	6.535	56	1258	0.117	ppbV #	1
13) acetone	6.743	43	25245	0.802	ppbV #	99
14) trichlorofluoromethane	6.910	101	4861	0.077	ppbV	99
15) isopropyl alcohol	7.102	45	16902	0.645	ppbV	98
16) acrylonitrile	7.350	53	1432	0.102	ppbV #	95
17) 1,1-dichloroethene	7.758	61	3403	0.095	ppbV	96
18) tertiary butyl alcohol	7.926	59	3577	0.104	ppbV	92
19) methylene chloride	7.934	49	2857	0.107	ppbV	98
20) 3-chloropropene	8.085	41	2246	0.094	ppbV	96
21) carbon disulfide	8.277	76	6109	0.100	ppbV #	1
22) Freon 113	8.277	101	3905	0.095	ppbV	99
23) trans-1,2-dichloroethene	9.113	61	3049	0.094	ppbV	92
24) 1,1-dichloroethane	9.352	63	3879	0.094	ppbV	95

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253196.D
Acq On : 25 Mar 2018 11:28 pm
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.1
Misc : WG1100531
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 26 12:06:01 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	9.488	73	4527	0.091	ppbV	#	90
26) vinyl acetate	9.570	43	3792	0.097	ppbV	#	92
27) 2-butanone	9.898	43	4353	0.102	ppbV	#	96
28) cis-1,2-dichloroethene	10.344	61	2927	0.094	ppbV		98
29) Ethyl Acetate	10.663	61	560	0.083	ppbV		82
30) chloroform	10.691	83	4259	0.093	ppbV		96
31) Tetrahydrofuran	11.245	42	2247	0.101	ppbV		96
32) 1,2-dichloroethane	11.536	62	3068	0.097	ppbV	#	92
34) hexane	10.588	57	2929	0.094	ppbV	#	40
36) 1,1,1-trichloroethane	11.823	97	3944	0.093	ppbV		96
37) benzene	12.346	78	6214	0.097	ppbV		99
38) carbon tetrachloride	12.509	117	3861	0.091	ppbV		97
39) cyclohexane	12.651	56	2980	0.095	ppbV		93
40) dibromomethane	13.238	93	2668	0.103	ppbV		100
41) 1,2-dichloropropane	13.260	63	2492	0.096	ppbV	#	90
42) bromodichloromethane	13.489	83	4576	0.092	ppbV	#	92
43) 1,4-dioxane	13.608	88	1150M1	0.085	ppbV		
44) trichloroethene	13.532	130	2415	0.092	ppbV		98
45) 2,2,4-trimethylpentane	13.554	57	9486	0.092	ppbV		93
46) heptane	13.837	43	3438	0.093	ppbV	#	97
47) cis-1,3-dichloropropene	14.497	75	3135	0.087	ppbV	#	86
48) 4-methyl-2-pentanone	14.569	43	4183	0.080	ppbV	#	99
49) trans-1,3-dichloropropene	15.048	75	3024	0.086	ppbV	#	82
50) 1,1,2-trichloroethane	15.238	97	2380	0.090	ppbV		94
52) toluene	15.500	91	7052	0.093	ppbV		99
54) 2-hexanone	15.771	43	3584	0.072	ppbV	#	95
55) dibromochloromethane	15.907	129	3799	0.086	ppbV		98
56) 1,2-dibromoethane	16.133	107	3743	0.089	ppbV		98
57) tetrachloroethene	16.530	166	2813	0.089	ppbV		93
58) 1,1,1,2-tetrachloroethane	17.067	131	2636	0.086	ppbV		98
59) chlorobenzene	17.086	112	5245	0.087	ppbV		94
60) ethylbenzene	17.372	91	8320	0.086	ppbV		97
61) m+p-xylene	17.510	91	12641	0.165	ppbV		99
62) bromoform	17.596	173	3180	0.078	ppbV		96
63) styrene	17.786	104	4441	0.078	ppbV		98
64) 1,1,2,2-tetrachloroethane	17.867	83	5468	0.083	ppbV		99
65) o-xylene	17.867	91	6591	0.083	ppbV		99
66) 1,2,3-trichloropropane	17.967	75	3932M2	0.084	ppbV		
68) isopropylbenzene	18.296	105	7907	0.082	ppbV		99
69) bromobenzene	18.386	77	4682	0.085	ppbV		97

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253196.D
Acq On : 25 Mar 2018 11:28 pm
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.1
Misc : WG1100531
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 26 12:06:01 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

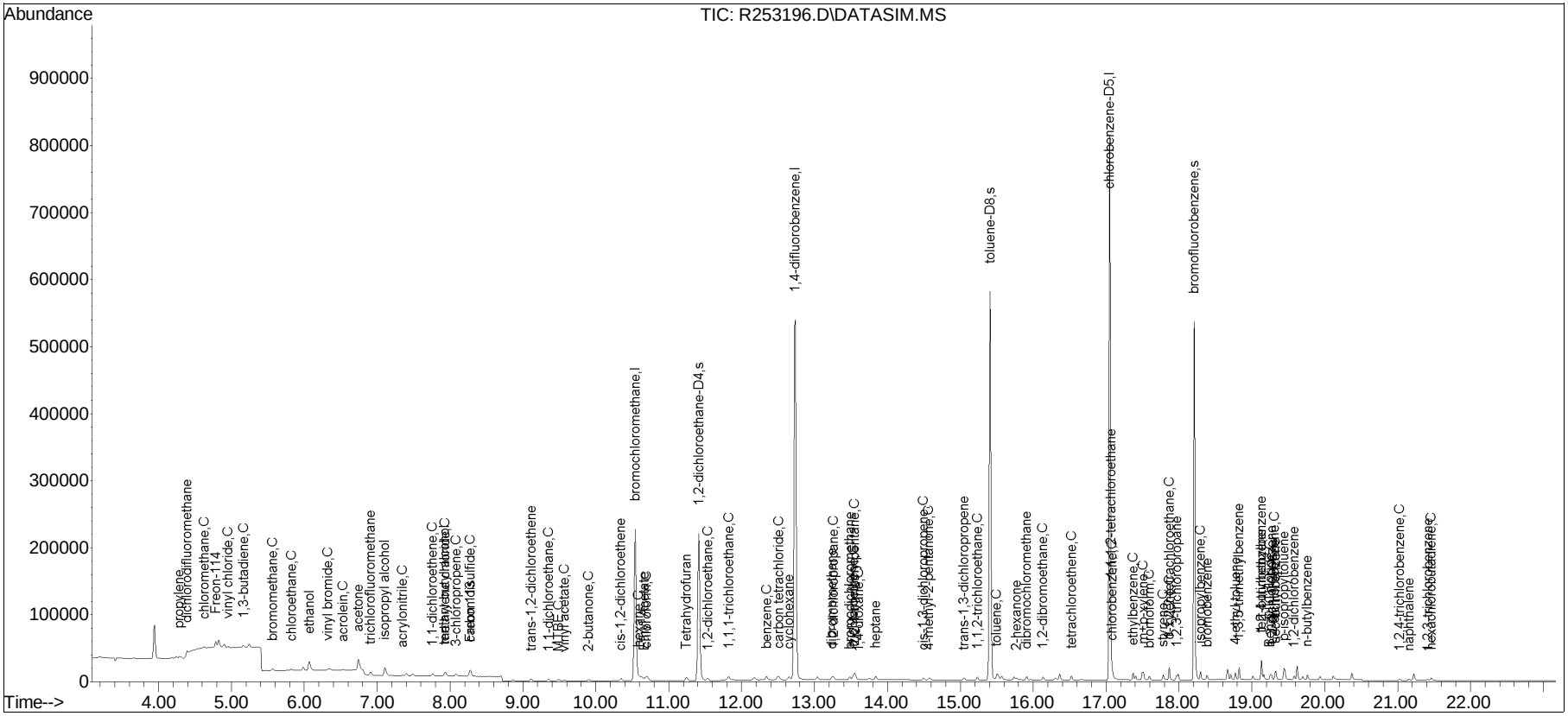
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.777	105	7280	0.068	ppbV #	96
71) 1,3,5-trimethylbenzene	18.825	105	6133	0.070	ppbV #	94
72) tert-butylbenzene	19.129	119	6585	0.073	ppbV	99
73) 1,2,4-trimethylbenzene	19.129	105	5950	0.065	ppbV	94
74) Benzyl Chloride	19.248	91	3921	0.051	ppbV	98
75) 1,3-dichlorobenzene	19.267	146	4220	0.066	ppbV	97
76) 1,4-dichlorobenzene	19.315	146	4351M3	0.066	ppbV	
77) sec-butylbenzene	19.329	105	8690	0.067	ppbV	99
78) p-isopropyltoluene	19.439	119	6595	0.061	ppbV	97
79) 1,2-dichlorobenzene	19.582	146	4040	0.067	ppbV	96
80) n-butylbenzene	19.763	91	5396	0.049	ppbV	100
81) 1,2,4-trichlorobenzene	21.030	180	2656M1	0.047	ppbV	
82) naphthalene	21.159	128	4897M1	0.041	ppbV	
83) 1,2,3-trichlorobenzene	21.416	180	2032M1	0.041	ppbV	
84) hexachlorobutadiene	21.459	225	2622	0.060	ppbV #	84

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0325SIM_ICAL\R253200.D

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253196.D
Acq On : 25 Mar 2018 11:28 pm
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.1
Misc : WG1100531
ALS Vial : 5 Sample Multiplier: 1

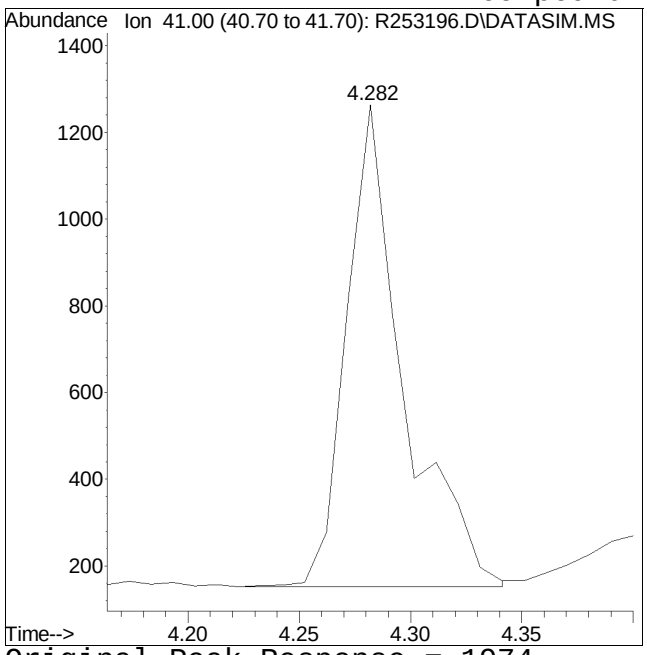
Quant Time: Mar 26 12:06:01 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration



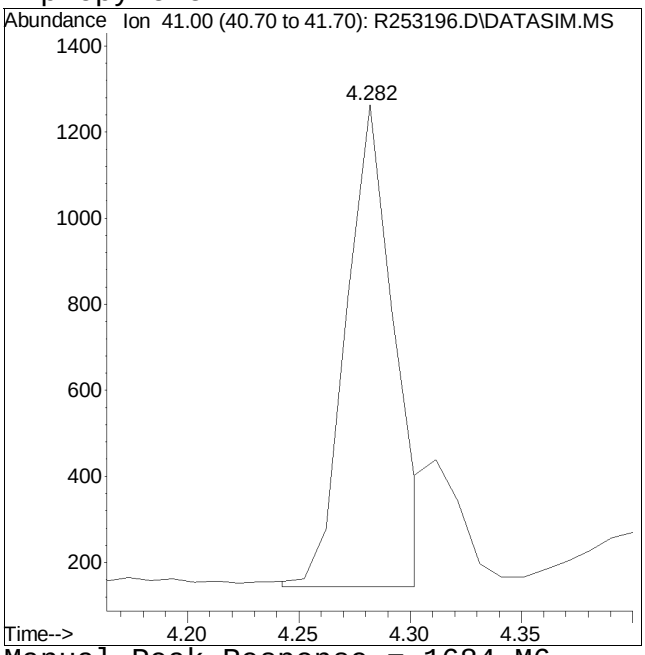
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253196.D
Date Inj'd : 3/25/2018 11:28 pm
Sample : ITO15-SIMSTD0.1
Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #2: propylene



Original Peak Response = 1974



Manual Peak Response = 1684 M6

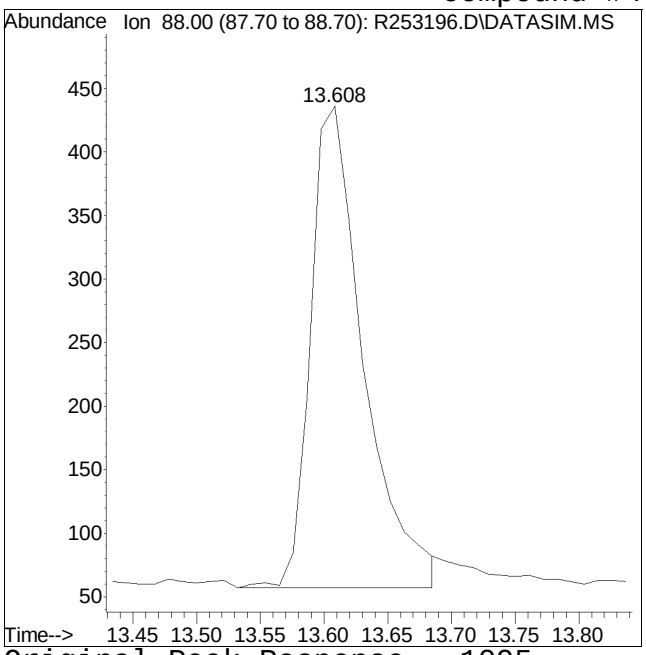
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

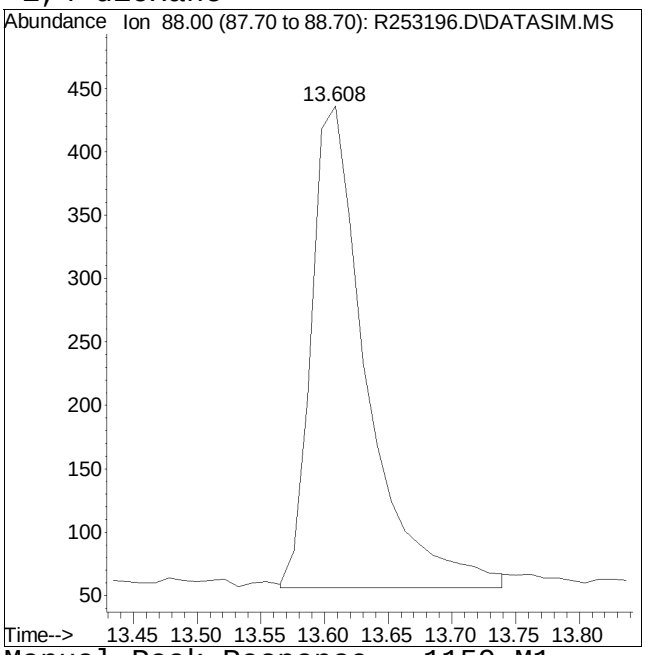
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253196.D
Date Inj'd : 3/25/2018 11:28 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #43: 1,4-dioxane



Original Peak Response = 1095



Manual Peak Response = 1150 M1

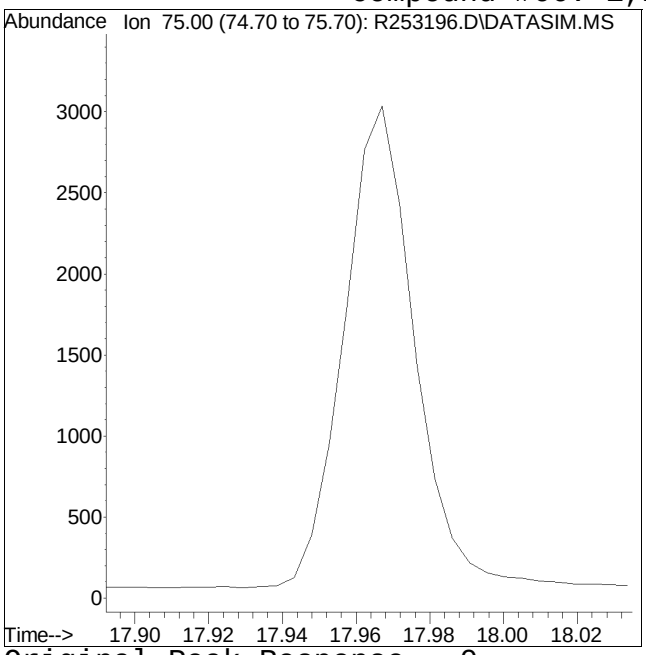
M1 = Split or tailing peak, auto integration stopped early resulting in false low area count.

Manual Integration/Negative Proof Report

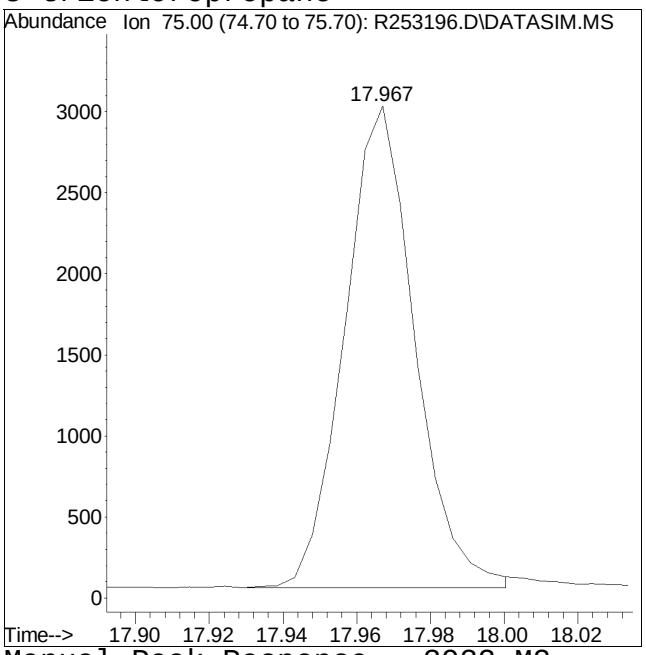
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253196.D
Date Inj'd : 3/25/2018 11:28 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #66: 1,2,3-trichloropropane



Original Peak Response = 0



Manual Peak Response = 3932 M2

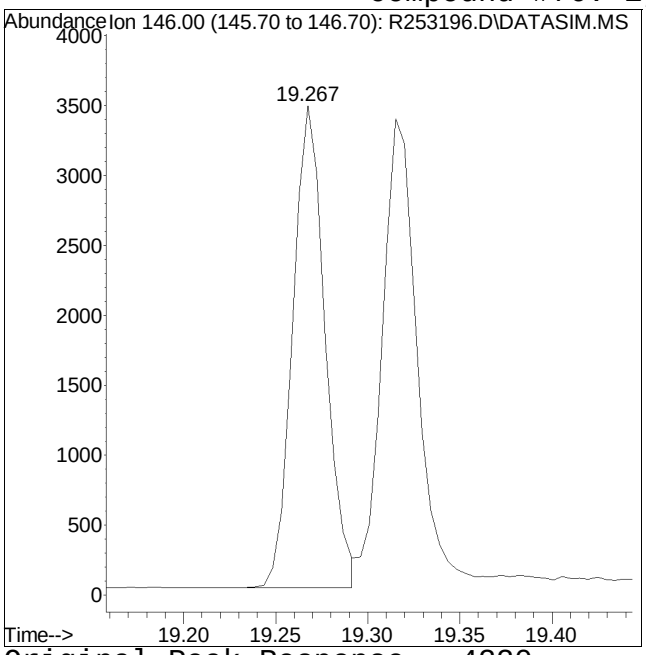
M2 = Peak not found by automatic integration algorithm.

Manual Integration/Negative Proof Report

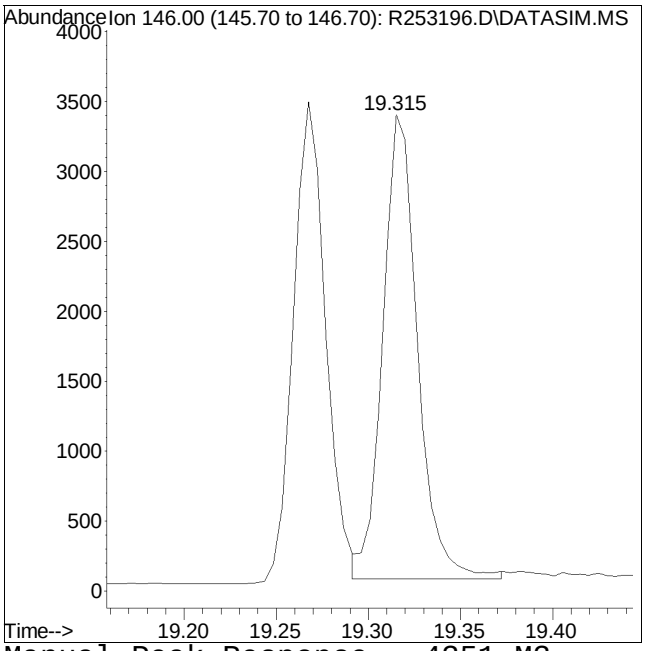
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253196.D
Date Inj'd : 3/25/2018 11:28 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #76: 1,4-dichlorobenzene



Original Peak Response = 4220



Manual Peak Response = 4351 M3

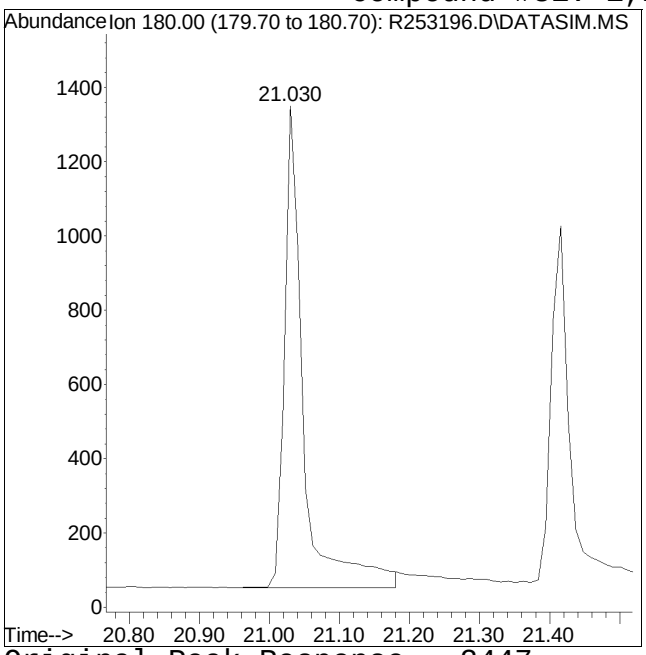
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

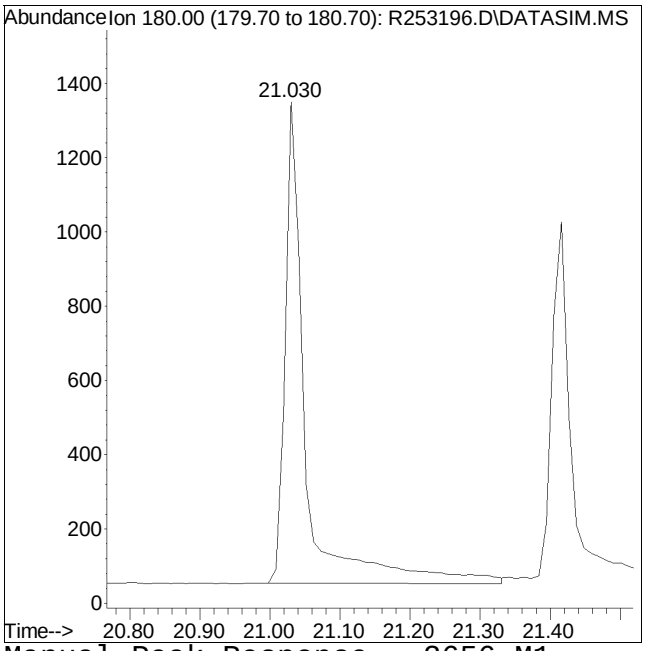
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253196.D
Date Inj'd : 3/25/2018 11:28 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #81: 1,2,4-trichlorobenzene



Original Peak Response = 2447



Manual Peak Response = 2656 M1

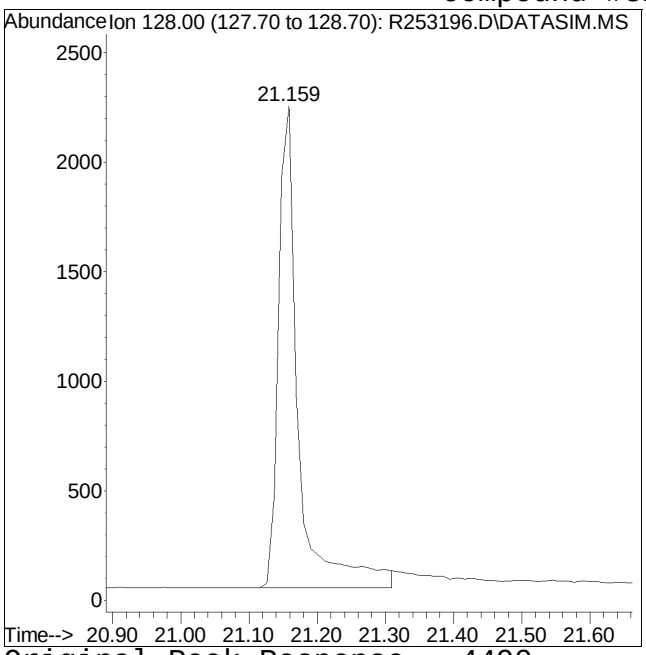
M1 = Split or tailing peak, auto integration stopped early resulting in false low area count.

Manual Integration/Negative Proof Report

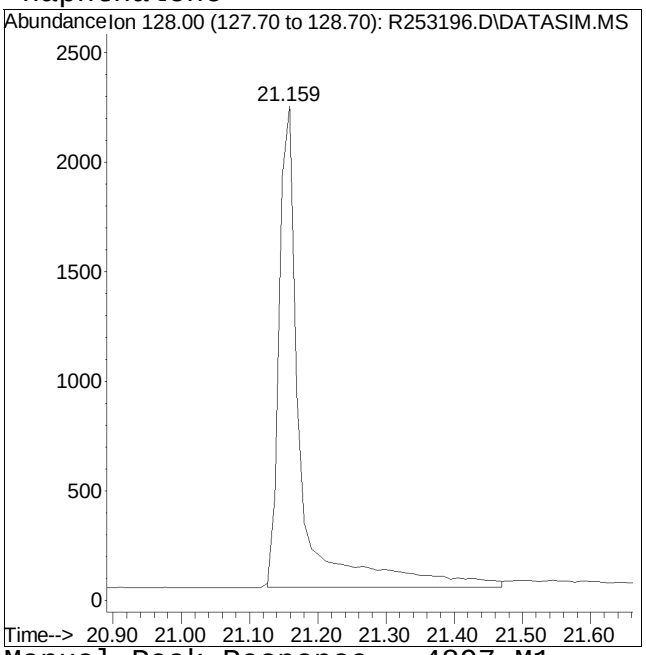
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253196.D
Date Inj'd : 3/25/2018 11:28 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #82: naphthalene



Original Peak Response = 4490



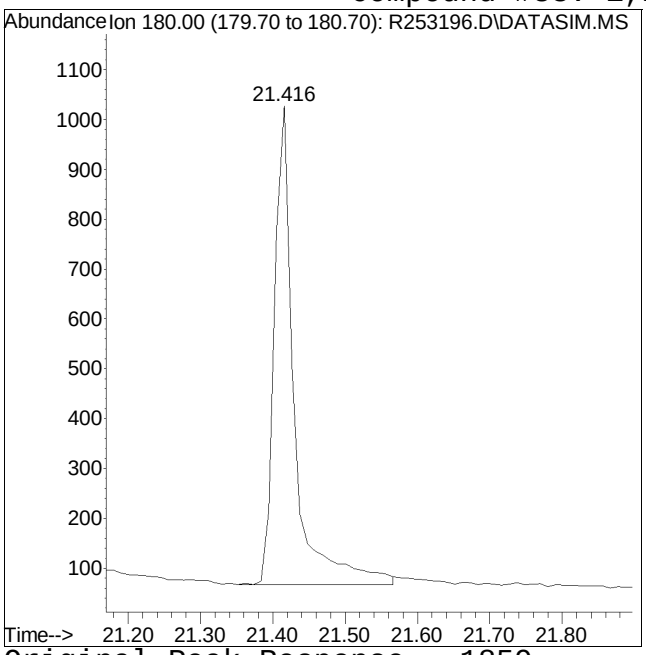
Manual Peak Response = 4897 M1

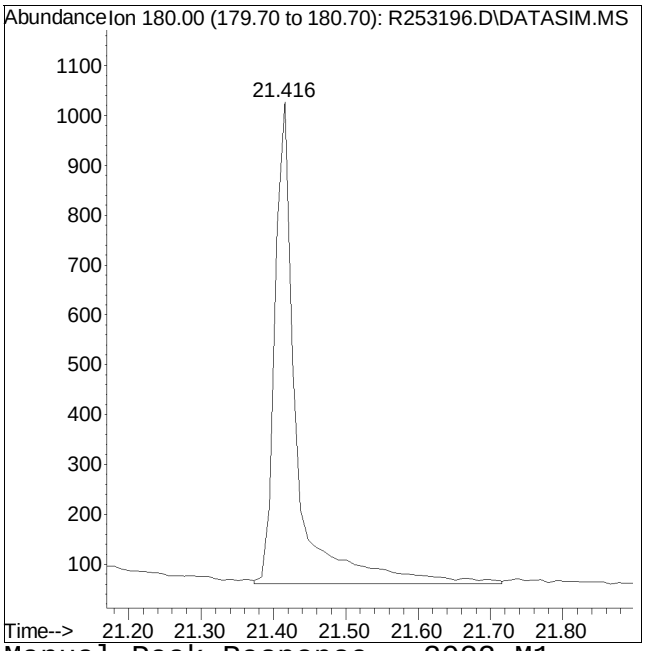
M1 = Split or tailing peak, auto integration stopped early resulting in false low area count.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR2\2018QMethod : TSIM180325.M
Data File : R253196.D Operator : AIRPIANO2:AR
Date Inj'd : 3/25/2018 11:28 pm Instrument : Airpiano 2
Sample : ITO15-SIMSTD0.1 Quant Date : 3/26/2018 7:25 am

Compound #83: 1,2,3-trichlorobenzene





Original Peak Response = 1859 Manual Peak Response = 2032 M1
M1 = Split or tailing peak, auto integration stopped early resulting in false low area count.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253197.D
Acq On : 26 Mar 2018 12:02 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.2
Misc : WG1100531
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 26 12:07:34 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	269601	10.000	ppbV	0.00
Standard Area = 273176			Recovery = 98.69%			
33) 1,4-difluorobenzene	12.738	114	614874	10.000	ppbV	0.00
Standard Area = 626263			Recovery = 98.18%			
51) chlorobenzene-D5	17.048	54	140230	10.000	ppbV	0.00
Standard Area = 143934			Recovery = 97.43%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.414	65	197478	10.183	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.83%			
53) toluene-D8	15.410	98	534366	10.114	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.14%			
67) bromofluorobenzene	18.210	95	272732	9.567	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 95.67%			
Target Compounds						Qvalue
2) propylene	4.282	41	3583M6	0.244	ppbV	
3) dichlorodifluoromethane	4.390	85	12395	0.239	ppbV	100
4) chloromethane	4.627	50	5859	0.242	ppbV	92
5) Freon-114	4.785	85	16623	0.235	ppbV	99
6) vinyl chloride	4.952	62	6589	0.240	ppbV	96
7) 1,3-butadiene	5.169	54	4311	0.238	ppbV	89
8) bromomethane	5.560	94	5633	0.237	ppbV	98
9) chloroethane	5.823	64	3193	0.239	ppbV	95
10) ethanol	6.063	31	26264	1.549	ppbV	99
11) vinyl bromide	6.327	106	5276	0.237	ppbV	99
12) acrolein	6.527	56	2681	0.252	ppbV #	1
13) acetone	6.735	43	33572	1.074	ppbV #	98
14) trichlorofluoromethane	6.910	101	11839	0.188	ppbV	99
15) isopropyl alcohol	7.102	45	25640	0.985	ppbV	98
16) acrylonitrile	7.350	53	3429	0.246	ppbV	96
17) 1,1-dichloroethene	7.766	61	8371	0.236	ppbV	96
18) tertiary butyl alcohol	7.918	59	7875	0.231	ppbV #	90
19) methylene chloride	7.934	49	6546	0.248	ppbV	99
20) 3-chloropropene	8.086	41	5364	0.226	ppbV	95
21) carbon disulfide	8.277	76	14244	0.234	ppbV #	50
22) Freon 113	8.277	101	9488	0.232	ppbV	99
23) trans-1,2-dichloroethene	9.113	61	7501	0.233	ppbV	94
24) 1,1-dichloroethane	9.352	63	9512	0.233	ppbV	99

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253197.D
Acq On : 26 Mar 2018 12:02 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.2
Misc : WG1100531
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 26 12:07:34 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	9.475	73	11179	0.226	ppbV		96
26) vinyl acetate	9.564	43	8509	0.219	ppbV		97
27) 2-butanone	9.884	43	9717	0.229	ppbV	#	99
28) cis-1,2-dichloroethene	10.344	61	7144	0.231	ppbV		97
29) Ethyl Acetate	10.653	61	1273	0.190	ppbV		96
30) chloroform	10.691	83	10484	0.231	ppbV		99
31) Tetrahydrofuran	11.226	42	5570	0.253	ppbV		92
32) 1,2-dichloroethane	11.536	62	7286	0.231	ppbV		96
34) hexane	10.588	57	7083	0.228	ppbV	#	45
36) 1,1,1-trichloroethane	11.823	97	9758	0.231	ppbV		98
37) benzene	12.335	78	15057	0.235	ppbV		98
38) carbon tetrachloride	12.509	117	9519	0.226	ppbV		99
39) cyclohexane	12.651	56	7268	0.232	ppbV		96
40) dibromomethane	13.238	93	6224	0.240	ppbV		99
41) 1,2-dichloropropane	13.260	63	5964	0.230	ppbV		96
42) bromodichloromethane	13.478	83	11227	0.227	ppbV		100
43) 1,4-dioxane	13.587	88	2913	0.216	ppbV		92
44) trichloroethene	13.532	130	5833	0.223	ppbV		99
45) 2,2,4-trimethylpentane	13.554	57	23109	0.224	ppbV		97
46) heptane	13.837	43	8341	0.226	ppbV		99
47) cis-1,3-dichloropropene	14.497	75	7785	0.216	ppbV		94
48) 4-methyl-2-pentanone	14.560	43	10815	0.207	ppbV		98
49) trans-1,3-dichloropropene	15.048	75	7447	0.211	ppbV	#	91
50) 1,1,2-trichloroethane	15.229	97	5997	0.227	ppbV		98
52) toluene	15.500	91	17184	0.227	ppbV		99
54) 2-hexanone	15.762	43	9284	0.188	ppbV	#	98
55) dibromochloromethane	15.907	129	9526	0.217	ppbV		99
56) 1,2-dibromoethane	16.133	107	9280	0.221	ppbV		100
57) tetrachloroethene	16.521	166	6983	0.222	ppbV		97
58) 1,1,1,2-tetrachloroethane	17.067	131	6691	0.220	ppbV		98
59) chlorobenzene	17.086	112	13361	0.222	ppbV		98
60) ethylbenzene	17.367	91	20933	0.218	ppbV		99
61) m+p-xylene	17.510	91	31818	0.416	ppbV		98
62) bromoform	17.591	173	8136	0.201	ppbV		100
63) styrene	17.786	104	11303	0.199	ppbV		99
64) 1,1,2,2-tetrachloroethane	17.867	83	13832	0.209	ppbV		98
65) o-xylene	17.862	91	16491	0.207	ppbV		97
66) 1,2,3-trichloropropane	17.962	75	10152	0.217	ppbV		98
68) isopropylbenzene	18.296	105	19989	0.207	ppbV		100
69) bromobenzene	18.381	77	11625	0.211	ppbV		98

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253197.D
Acq On : 26 Mar 2018 12:02 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.2
Misc : WG1100531
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 26 12:07:34 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

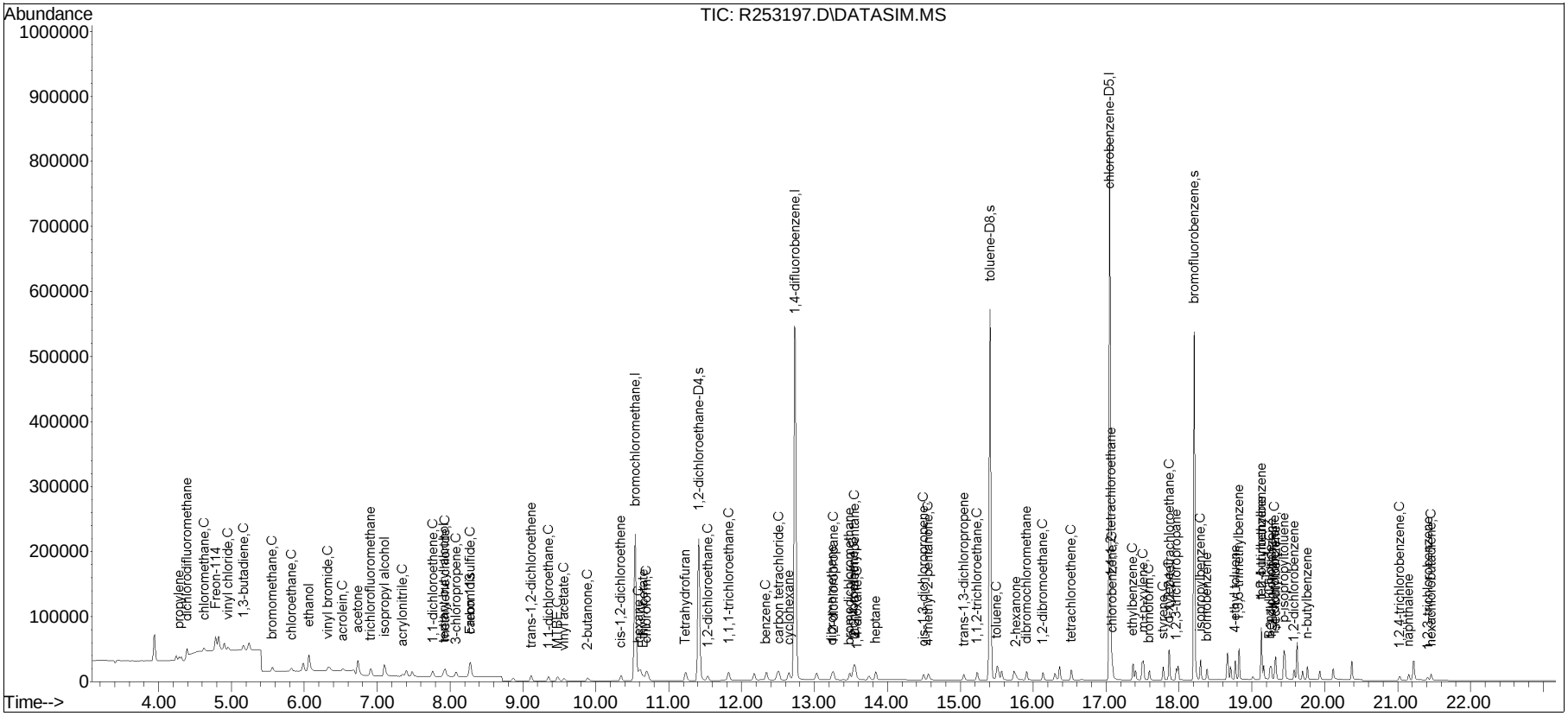
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) 4-ethyl toluene	18.772	105	19584	0.183	ppbV	#	98
71) 1,3,5-trimethylbenzene	18.825	105	17319	0.198	ppbV		93
72) tert-butylbenzene	19.129	119	16941	0.187	ppbV		100
73) 1,2,4-trimethylbenzene	19.129	105	16140	0.177	ppbV		96
74) Benzyl Chloride	19.249	91	10668	0.140	ppbV		100
75) 1,3-dichlorobenzene	19.268	146	11284	0.176	ppbV		98
76) 1,4-dichlorobenzene	19.315	146	11230	0.171	ppbV		93
77) sec-butylbenzene	19.329	105	23555	0.183	ppbV		98
78) p-isopropyltoluene	19.439	119	18815	0.175	ppbV		97
79) 1,2-dichlorobenzene	19.582	146	10646	0.177	ppbV		98
80) n-butylbenzene	19.763	91	16231	0.148	ppbV		100
81) 1,2,4-trichlorobenzene	21.030	180	7269M1	0.129	ppbV		
82) naphthalene	21.148	128	15823M1	0.132	ppbV		
83) 1,2,3-trichlorobenzene	21.416	180	5181	0.104	ppbV		98
84) hexachlorobutadiene	21.459	225	6739	0.155	ppbV	#	90

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0325SIM_ICAL\R253200.D

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253197.D
Acq On : 26 Mar 2018 12:02 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.2
Misc : WG1100531
ALS Vial : 6 Sample Multiplier: 1

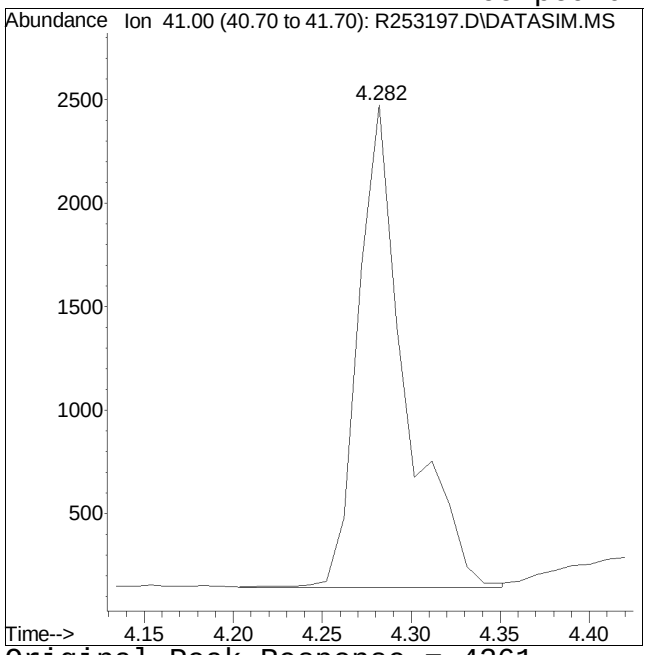
Quant Time: Mar 26 12:07:34 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration



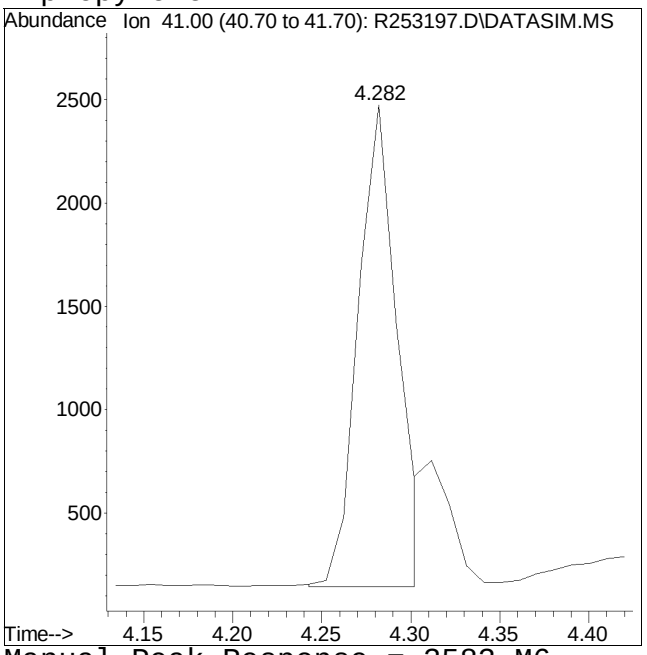
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253197.D
Date Inj'd : 3/26/2018 12:02 am
Sample : ITO15-SIMSTD0.2
Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #2: propylene



Original Peak Response = 4261



Manual Peak Response = 3583 M6

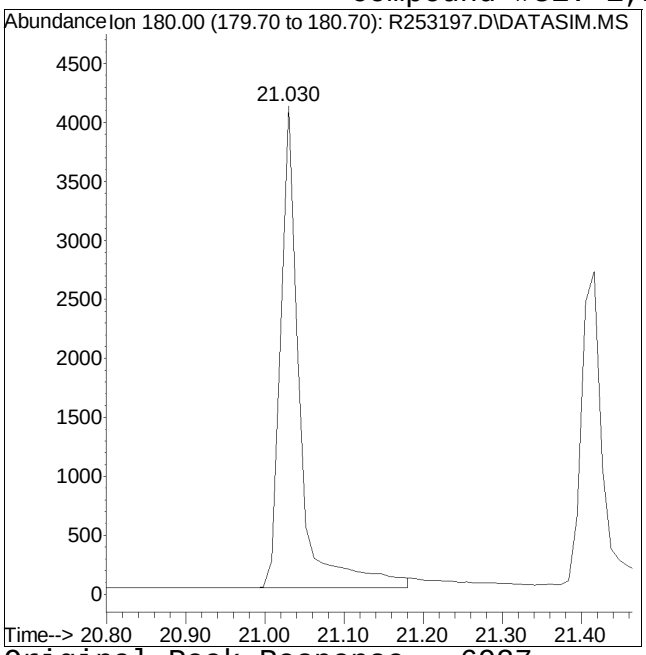
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

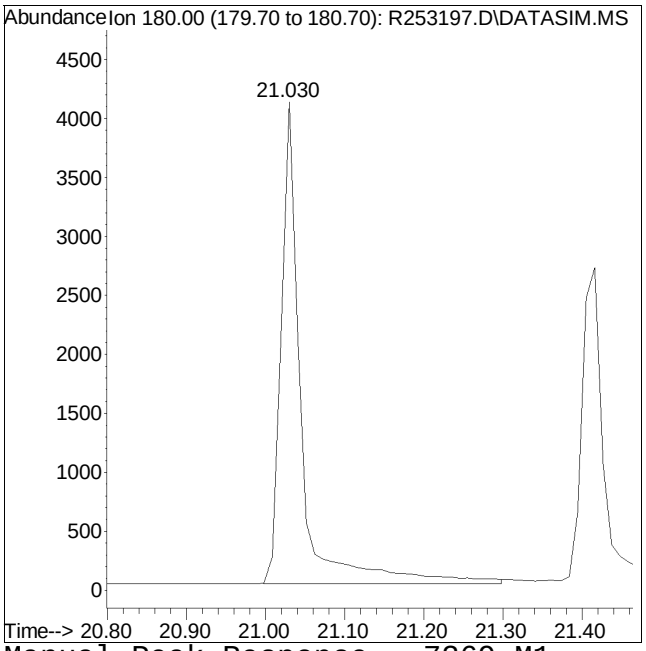
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253197.D
Date Inj'd : 3/26/2018 12:02 am
Sample : ITO15-SIMSTD0.2

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #81: 1,2,4-trichlorobenzene



Original Peak Response = 6927



Manual Peak Response = 7269 M1

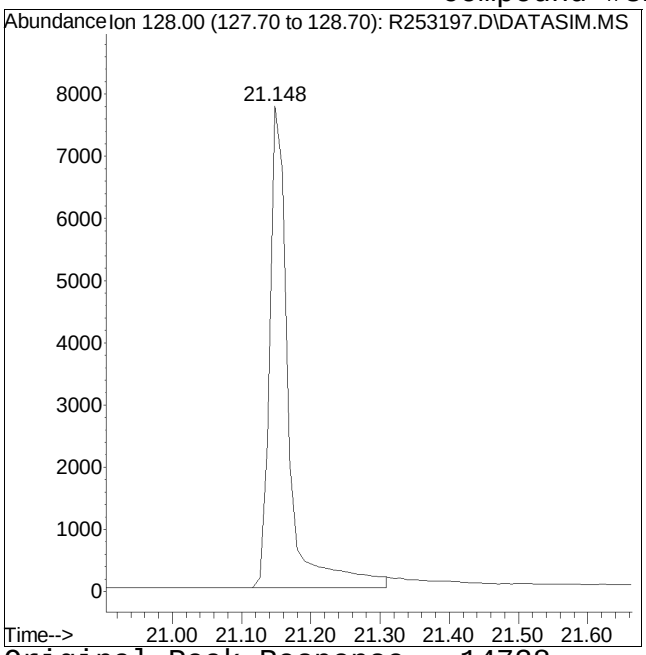
M1 = Split or tailing peak, auto integration stopped early resulting in false low area count.

Manual Integration/Negative Proof Report

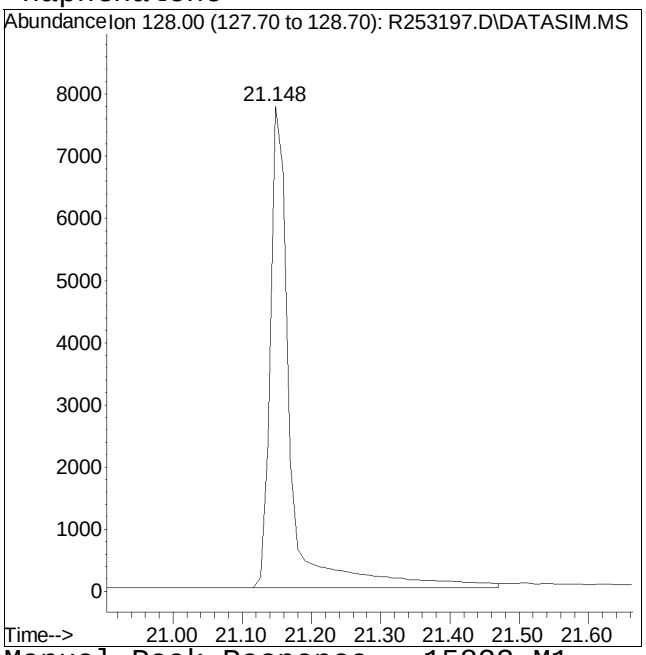
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253197.D
Date Inj'd : 3/26/2018 12:02 am
Sample : ITO15-SIMSTD0.2

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #82: naphthalene



Original Peak Response = 14738



Manual Peak Response = 15823 M1

M1 = Split or tailing peak, auto integration stopped early resulting in false low area count.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253198.D
Acq On : 26 Mar 2018 12:37 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.5
Misc : WG1100531
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 26 12:09:27 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	268569	10.000	ppbV	0.00
Standard Area = 273176			Recovery = 98.31%			
33) 1,4-difluorobenzene	12.738	114	614223	10.000	ppbV	0.00
Standard Area = 626263			Recovery = 98.08%			
51) chlorobenzene-D5	17.048	54	140697	10.000	ppbV	0.00
Standard Area = 143934			Recovery = 97.75%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.414	65	195543	10.094	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.94%			
53) toluene-D8	15.409	98	534194	10.077	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.77%			
67) bromofluorobenzene	18.210	95	276924	9.682	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 96.82%			
Target Compounds						Qvalue
2) propylene	4.282	41	8239M6	0.564	ppbV	
3) dichlorodifluoromethane	4.390	85	28691	0.555	ppbV	100
4) chloromethane	4.627	50	13413	0.556	ppbV	95
5) Freon-114	4.785	85	38115	0.540	ppbV	99
6) vinyl chloride	4.952	62	14949	0.546	ppbV	99
7) 1,3-butadiene	5.169	54	9974	0.552	ppbV	82
8) bromomethane	5.559	94	12791	0.541	ppbV	99
9) chloroethane	5.823	64	7339	0.551	ppbV	95
10) ethanol	6.055	31	51015	3.021	ppbV	99
11) vinyl bromide	6.327	106	11868	0.534	ppbV	99
12) acrolein	6.519	56	5813	0.548	ppbV #	44
13) acetone	6.718	43	96754	3.107	ppbV #	98
14) trichlorofluoromethane	6.910	101	34261	0.546	ppbV	100
15) isopropyl alcohol	7.086	45	63291	2.441	ppbV	100
16) acrylonitrile	7.342	53	7974	0.573	ppbV	98
17) 1,1-dichloroethene	7.758	61	18957	0.538	ppbV	99
18) tertiary butyl alcohol	7.901	59	17962	0.530	ppbV	95
19) methylene chloride	7.933	49	14585	0.554	ppbV	97
20) 3-chloropropene	8.077	41	12372	0.524	ppbV	98
21) carbon disulfide	8.277	76	31929	0.527	ppbV #	82
22) Freon 113	8.277	101	21607	0.531	ppbV	99
23) trans-1,2-dichloroethene	9.113	61	17010	0.530	ppbV	92
24) 1,1-dichloroethane	9.352	63	21741	0.535	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253198.D
Acq On : 26 Mar 2018 12:37 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.5
Misc : WG1100531
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 26 12:09:27 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	9.468	73	25634	0.521	ppbV		100
26) vinyl acetate	9.557	43	19071	0.493	ppbV		100
27) 2-butanone	9.871	43	22193	0.525	ppbV		99
28) cis-1,2-dichloroethene	10.343	61	16342	0.531	ppbV		99
29) Ethyl Acetate	10.644	61	3183	0.476	ppbV		94
30) chloroform	10.691	83	24013	0.530	ppbV		99
31) Tetrahydrofuran	11.207	42	13096	0.597	ppbV		92
32) 1,2-dichloroethane	11.536	62	16697	0.532	ppbV		99
34) hexane	10.588	57	16140	0.519	ppbV	#	60
36) 1,1,1-trichloroethane	11.823	97	22444	0.532	ppbV		98
37) benzene	12.335	78	34362	0.538	ppbV		99
38) carbon tetrachloride	12.509	117	21989	0.522	ppbV		99
39) cyclohexane	12.650	56	16765	0.536	ppbV		99
40) dibromomethane	13.238	93	13811	0.534	ppbV		99
41) 1,2-dichloropropane	13.260	63	13615	0.525	ppbV		97
42) bromodichloromethane	13.489	83	25941	0.524	ppbV	#	95
43) 1,4-dioxane	13.576	88	6706	0.497	ppbV		93
44) trichloroethene	13.532	130	13513	0.518	ppbV		99
45) 2,2,4-trimethylpentane	13.554	57	53511	0.520	ppbV		98
46) heptane	13.837	43	19483M4	0.528	ppbV		
47) cis-1,3-dichloropropene	14.497	75	18089	0.503	ppbV		96
48) 4-methyl-2-pentanone	14.551	43	25828	0.495	ppbV		98
49) trans-1,3-dichloropropene	15.048	75	17673	0.502	ppbV		94
50) 1,1,2-trichloroethane	15.229	97	13773	0.522	ppbV		96
52) toluene	15.500	91	39399	0.518	ppbV		100
54) 2-hexanone	15.753	43	22899	0.461	ppbV	#	99
55) dibromochloromethane	15.907	129	22099	0.503	ppbV		99
56) 1,2-dibromoethane	16.132	107	21593	0.512	ppbV		100
57) tetrachloroethene	16.521	166	16063	0.508	ppbV		97
58) 1,1,1,2-tetrachloroethane	17.067	131	15327	0.501	ppbV		98
59) chlorobenzene	17.086	112	30791	0.510	ppbV		98
60) ethylbenzene	17.367	91	48640	0.504	ppbV		100
61) m+p-xylene	17.510	91	74500	0.970	ppbV		97
62) bromoform	17.595	173	19173	0.473	ppbV		98
63) styrene	17.781	104	26919	0.473	ppbV		99
64) 1,1,2,2-tetrachloroethane	17.867	83	32520	0.491	ppbV		100
65) o-xylene	17.867	91	38252	0.479	ppbV		99
66) 1,2,3-trichloropropane	17.962	75	23755	0.506	ppbV		99
68) isopropylbenzene	18.295	105	47032	0.485	ppbV		99
69) bromobenzene	18.386	77	27218	0.493	ppbV		98

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253198.D
Acq On : 26 Mar 2018 12:37 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.5
Misc : WG1100531
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 26 12:09:27 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

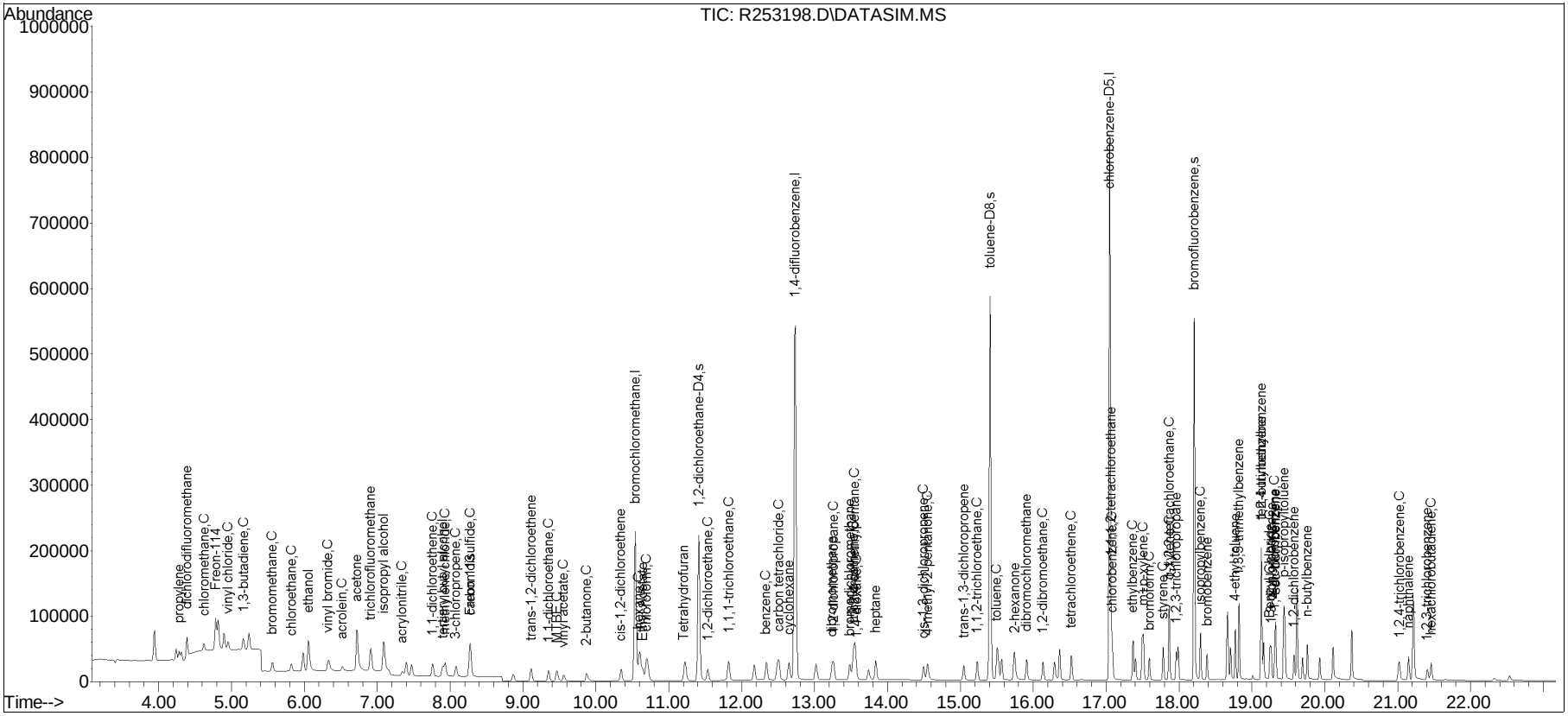
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) 4-ethyl toluene	18.772	105	48149	0.448	ppbV		98
71) 1,3,5-trimethylbenzene	18.825	105	41075	0.467	ppbV		95
72) tert-butylbenzene	19.129	119	40416	0.446	ppbV		99
73) 1,2,4-trimethylbenzene	19.129	105	40039	0.437	ppbV		94
74) Benzyl Chloride	19.248	91	27869	0.365	ppbV		99
75) 1,3-dichlorobenzene	19.267	146	27841	0.433	ppbV		98
76) 1,4-dichlorobenzene	19.315	146	28736	0.435	ppbV		95
77) sec-butylbenzene	19.324	105	57304	0.443	ppbV		97
78) p-isopropyltoluene	19.439	119	46255	0.428	ppbV		98
79) 1,2-dichlorobenzene	19.582	146	26664	0.443	ppbV		97
80) n-butylbenzene	19.758	91	43761	0.397	ppbV		95
81) 1,2,4-trichlorobenzene	21.030	180	21136M1	0.374	ppbV		
82) naphthalene	21.148	128	50140M1	0.418	ppbV		
83) 1,2,3-trichlorobenzene	21.405	180	18240M1	0.366	ppbV		
84) hexachlorobutadiene	21.459	225	16997	0.389	ppbV	#	92

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0325SIM_ICAL\R253200.D

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253198.D
Acq On : 26 Mar 2018 12:37 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD0.5
Misc : WG1100531
ALS Vial : 6 Sample Multiplier: 1

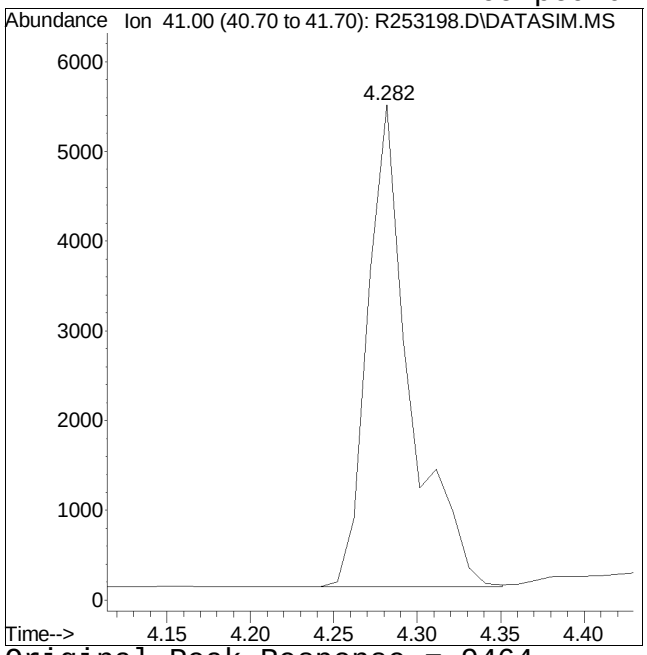
Quant Time: Mar 26 12:09:27 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration



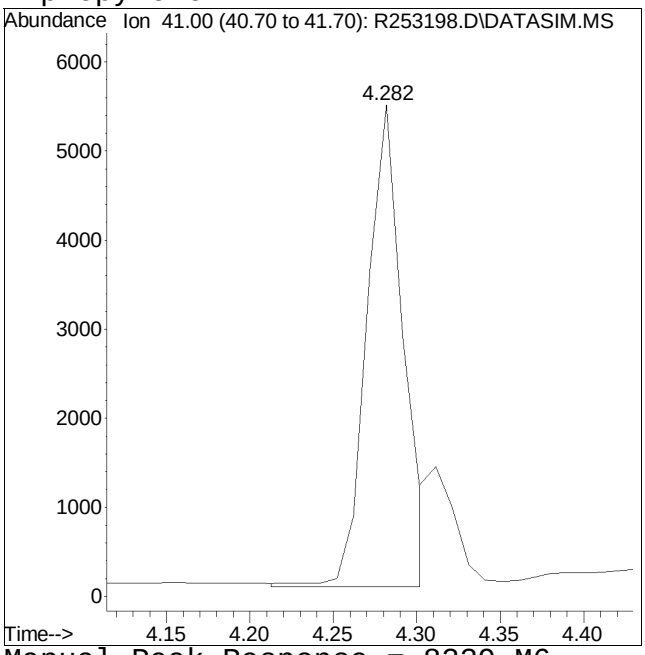
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253198.D
Date Inj'd : 3/26/2018 12:37 am
Sample : ITO15-SIMSTD0.5
Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #2: propylene



Original Peak Response = 9464



Manual Peak Response = 8239 M6

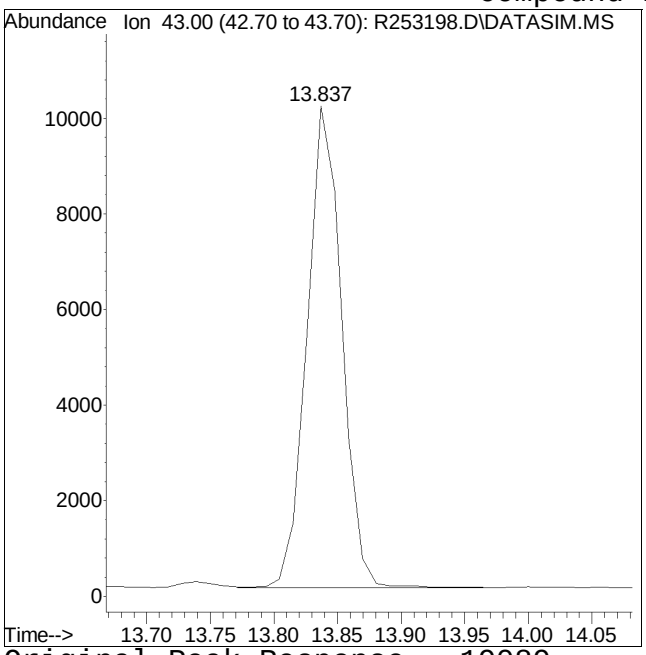
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

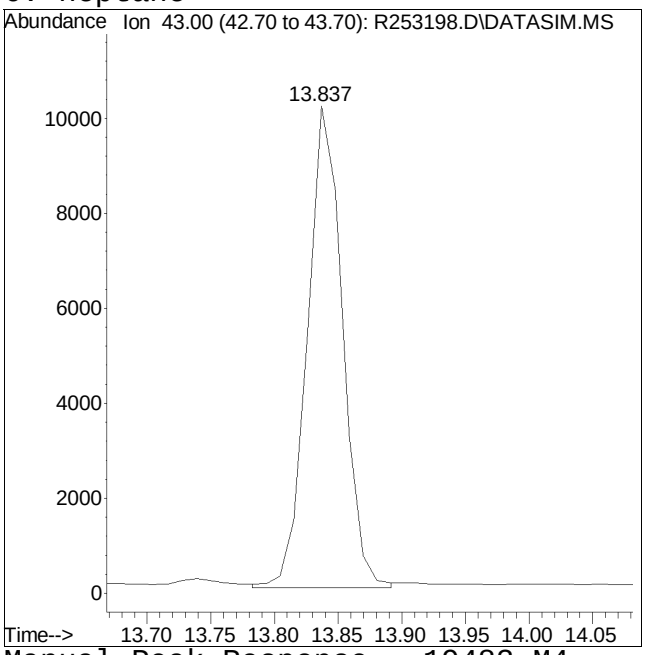
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253198.D
Date Inj'd : 3/26/2018 12:37 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #46: heptane



Original Peak Response = 19089



Manual Peak Response = 19483 M4

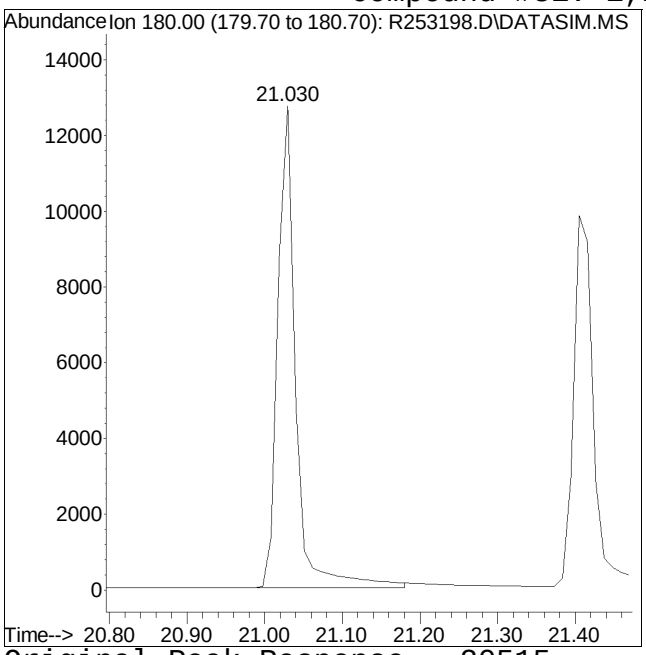
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

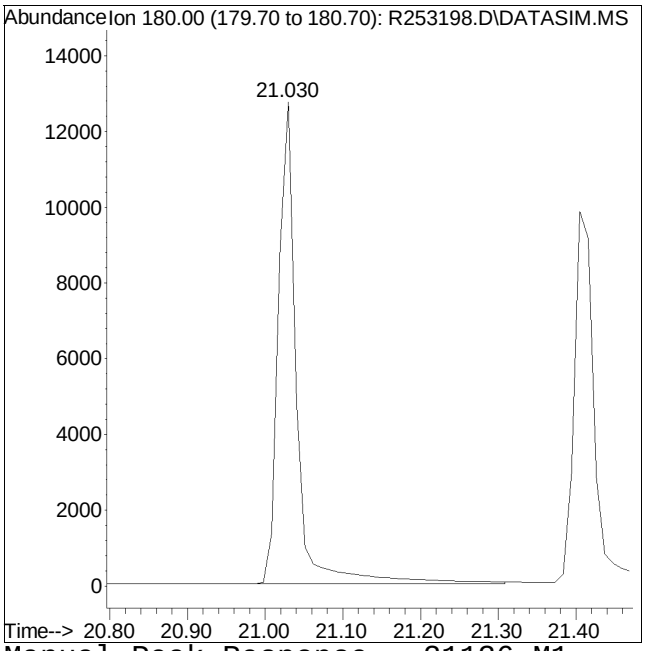
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253198.D
Date Inj'd : 3/26/2018 12:37 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #81: 1,2,4-trichlorobenzene



Original Peak Response = 20515



Manual Peak Response = 21136 M1

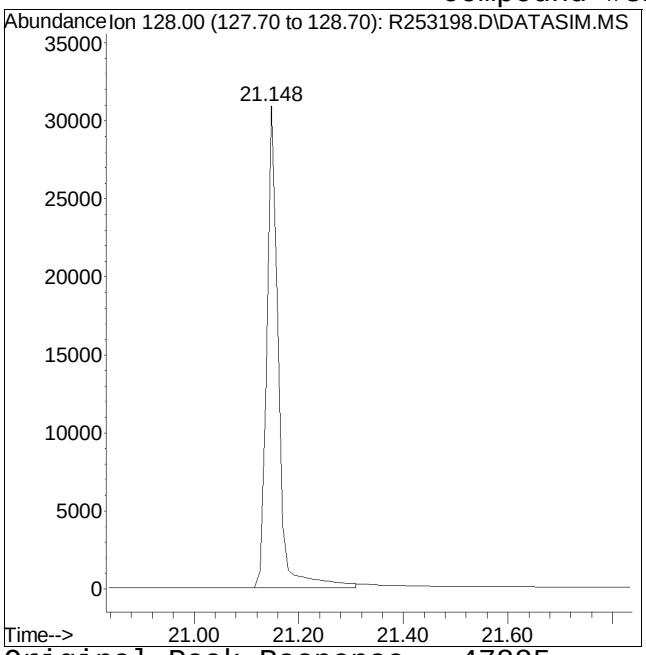
M1 = Split or tailing peak, auto integration stopped early resulting in false low area count.

Manual Integration/Negative Proof Report

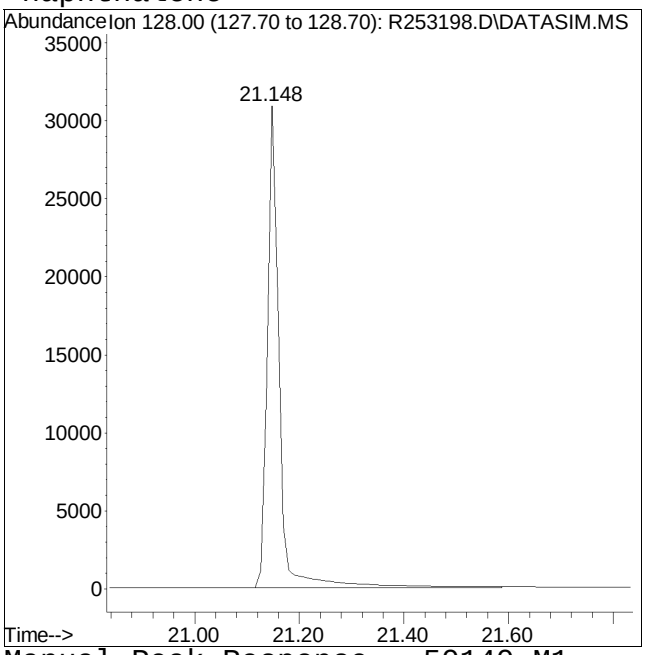
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253198.D
Date Inj'd : 3/26/2018 12:37 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #82: naphthalene



Original Peak Response = 47885



Manual Peak Response = 50140 M1

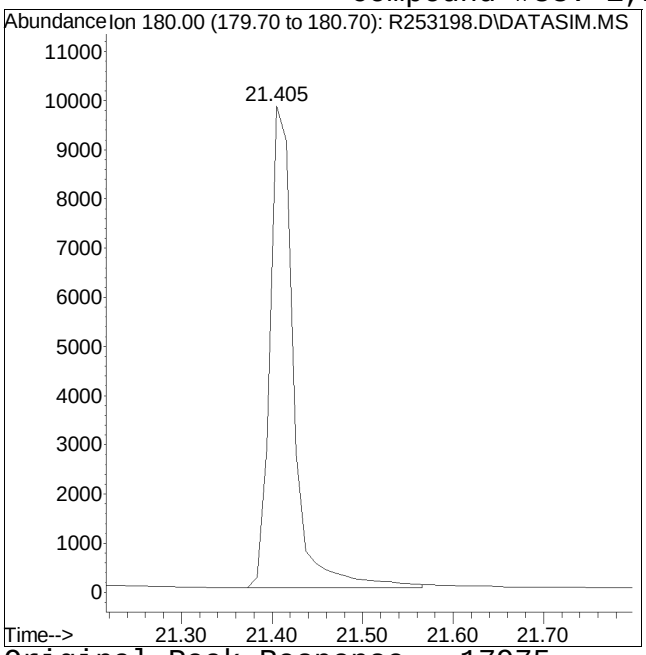
M1 = Split or tailing peak, auto integration stopped early resulting in false low area count.

Manual Integration/Negative Proof Report

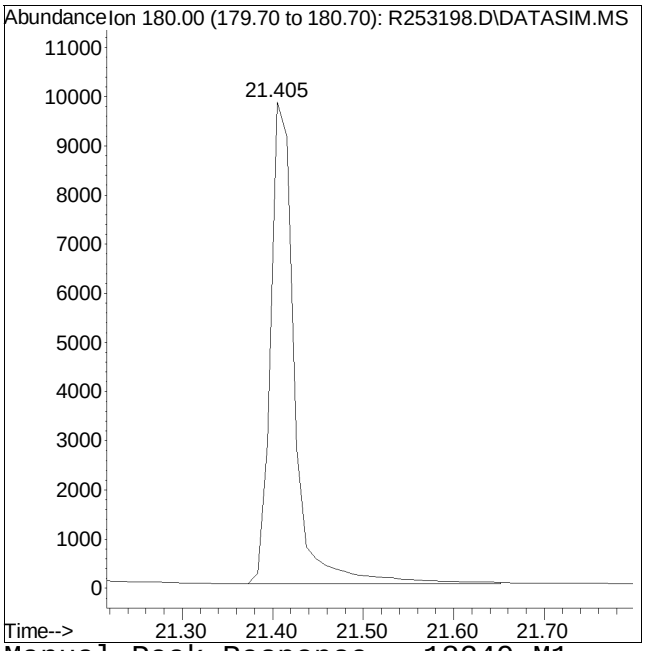
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253198.D
Date Inj'd : 3/26/2018 12:37 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #83: 1,2,3-trichlorobenzene



Original Peak Response = 17975



Manual Peak Response = 18240 M1

M1 = Split or tailing peak, auto integration stopped early resulting in false low area count.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253199.D
Acq On : 26 Mar 2018 1:14 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD1.0
Misc : WG1100531
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 26 12:10:05 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.531	49	270190	10.000	ppbV	0.00
Standard Area = 273176			Recovery = 98.91%			
33) 1,4-difluorobenzene	12.738	114	618035	10.000	ppbV	0.00
Standard Area = 626263			Recovery = 98.69%			
51) chlorobenzene-D5	17.048	54	141310	10.000	ppbV	0.00
Standard Area = 143934			Recovery = 98.18%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.414	65	195794	10.045	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.45%			
53) toluene-D8	15.410	98	535253	10.053	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.53%			
67) bromofluorobenzene	18.205	95	281526	9.800	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.00%			
Target Compounds						Qvalue
2) propylene	4.282	41	15890M6	1.081	ppbV	
3) dichlorodifluoromethane	4.390	85	53166	1.022	ppbV	99
4) chloromethane	4.617	50	25708	1.058	ppbV	99
5) Freon-114	4.785	85	74178	1.045	ppbV	100
6) vinyl chloride	4.952	62	29047	1.055	ppbV	99
7) 1,3-butadiene	5.159	54	18959	1.042	ppbV	99
8) bromomethane	5.559	94	24945	1.049	ppbV	100
9) chloroethane	5.823	64	14165	1.058	ppbV	99
10) ethanol	6.047	31	91143	5.365	ppbV	98
11) vinyl bromide	6.327	106	23337	1.044	ppbV	100
12) acrolein	6.519	56	8360	0.783	ppbV #	81
13) acetone	6.711	43	135334	4.319	ppbV	98
14) trichlorofluoromethane	6.910	101	52494	0.831	ppbV	100
15) isopropyl alcohol	7.078	45	75717	2.902	ppbV	100
16) acrylonitrile	7.334	53	13212M6	0.944	ppbV	
17) 1,1-dichloroethene	7.758	61	37284	1.051	ppbV	99
18) tertiary butyl alcohol	7.878	59	33461	0.981	ppbV	93
19) methylene chloride	7.934	49	28333	1.069	ppbV	97
20) 3-chloropropene	8.077	41	24377	1.027	ppbV	99
21) carbon disulfide	8.269	76	62566	1.027	ppbV #	90
22) Freon 113	8.277	101	42510	1.039	ppbV	100
23) trans-1,2-dichloroethene	9.106	61	33424	1.035	ppbV	98
24) 1,1-dichloroethane	9.345	63	42582	1.042	ppbV	99

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253199.D
Acq On : 26 Mar 2018 1:14 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD1.0
Misc : WG1100531
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 26 12:10:05 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	9.454	73	50240	1.016	ppbV		99
26) vinyl acetate	9.557	43	37106	0.953	ppbV		98
27) 2-butanone	9.864	43	42879	1.008	ppbV		99
28) cis-1,2-dichloroethene	10.344	61	31888	1.031	ppbV		96
29) Ethyl Acetate	10.635	61	6167	0.917	ppbV		89
30) chloroform	10.691	83	47109	1.034	ppbV		99
31) Tetrahydrofuran	11.198	42	25468	1.154	ppbV		98
32) 1,2-dichloroethane	11.536	62	32489	1.029	ppbV		99
34) hexane	10.588	57	31754	1.015	ppbV		83
36) 1,1,1-trichloroethane	11.823	97	43859	1.034	ppbV		99
37) benzene	12.335	78	66869	1.040	ppbV		100
38) carbon tetrachloride	12.509	117	43283	1.021	ppbV		99
39) cyclohexane	12.651	56	32724	1.040	ppbV		99
40) dibromomethane	13.238	93	26673	1.024	ppbV		100
41) 1,2-dichloropropane	13.260	63	26673	1.023	ppbV		99
42) bromodichloromethane	13.478	83	51002	1.025	ppbV		99
43) 1,4-dioxane	13.554	88	13061	0.962	ppbV	#	62
44) trichloroethene	13.532	130	26632	1.014	ppbV		99
45) 2,2,4-trimethylpentane	13.554	57	105230	1.015	ppbV		100
46) heptane	13.837	43	37567	1.012	ppbV		100
47) cis-1,3-dichloropropene	14.497	75	35549	0.983	ppbV		98
48) 4-methyl-2-pentanone	14.542	43	51465	0.981	ppbV		97
49) trans-1,3-dichloropropene	15.048	75	34517	0.974	ppbV		97
50) 1,1,2-trichloroethane	15.229	97	26998	1.017	ppbV		100
52) toluene	15.500	91	77868	1.020	ppbV		100
54) 2-hexanone	15.744	43	46840	0.939	ppbV	#	95
55) dibromochloromethane	15.907	129	43529	0.986	ppbV		99
56) 1,2-dibromoethane	16.133	107	42101	0.993	ppbV		99
57) tetrachloroethene	16.521	166	31584	0.995	ppbV		98
58) 1,1,1,2-tetrachloroethane	17.067	131	30333	0.988	ppbV		99
59) chlorobenzene	17.086	112	60512	0.997	ppbV		99
60) ethylbenzene	17.367	91	96822	0.998	ppbV		100
61) m+p-xylene	17.510	91	149245	1.935	ppbV		99
62) bromoform	17.591	173	38138	0.936	ppbV		100
63) styrene	17.781	104	54137	0.948	ppbV		99
64) 1,1,2,2-tetrachloroethane	17.862	83	63704	0.957	ppbV		100
65) o-xylene	17.862	91	76885	0.959	ppbV		99
66) 1,2,3-trichloropropane	17.962	75	46687	0.989	ppbV		99
68) isopropylbenzene	18.296	105	94323	0.968	ppbV		99
69) bromobenzene	18.381	77	53649	0.967	ppbV		99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253199.D
Acq On : 26 Mar 2018 1:14 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD1.0
Misc : WG1100531
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 26 12:10:05 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

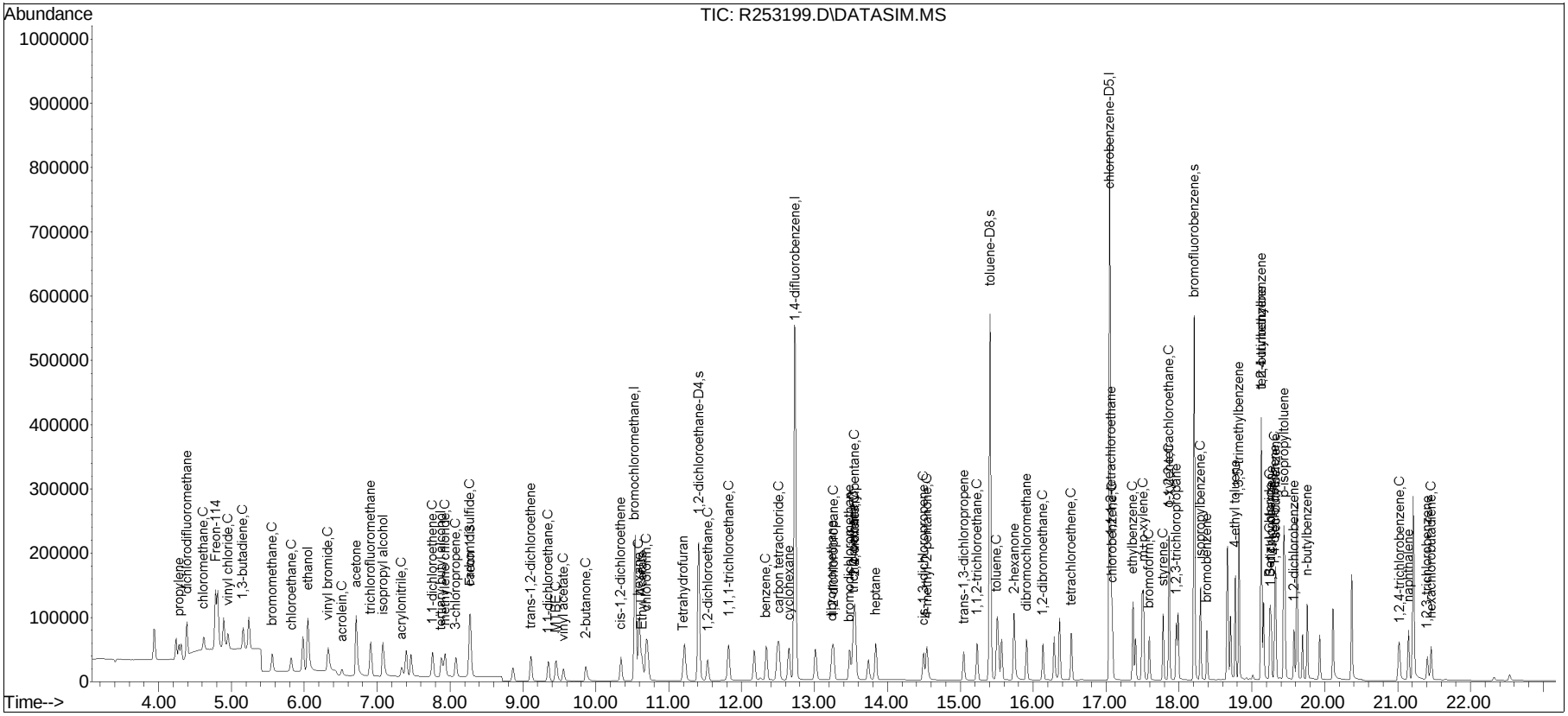
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) 4-ethyl toluene	18.772	105	99004	0.917	ppbV		98
71) 1,3,5-trimethylbenzene	18.820	105	81618	0.924	ppbV		99
72) tert-butylbenzene	19.129	119	82032	0.901	ppbV		99
73) 1,2,4-trimethylbenzene	19.129	105	81724	0.888	ppbV		98
74) Benzyl Chloride	19.248	91	59921	0.782	ppbV		98
75) 1,3-dichlorobenzene	19.263	146	56896	0.882	ppbV		96
76) 1,4-dichlorobenzene	19.315	146	58323	0.879	ppbV		97
77) sec-butylbenzene	19.325	105	117039	0.901	ppbV		98
78) p-isopropyltoluene	19.439	119	95147	0.877	ppbV		99
79) 1,2-dichlorobenzene	19.577	146	53398	0.883	ppbV		96
80) n-butylbenzene	19.758	91	97732	0.882	ppbV		96
81) 1,2,4-trichlorobenzene	21.030	180	42242	0.744	ppbV	#	84
82) naphthalene	21.148	128	99736	0.829	ppbV		99
83) 1,2,3-trichlorobenzene	21.405	180	35416	0.707	ppbV	#	91
84) hexachlorobutadiene	21.459	225	33937	0.773	ppbV	#	92

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0325SIM_ICAL\R253200.D

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253199.D
Acq On : 26 Mar 2018 1:14 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD1.0
Misc : WG1100531
ALS Vial : 6 Sample Multiplier: 1

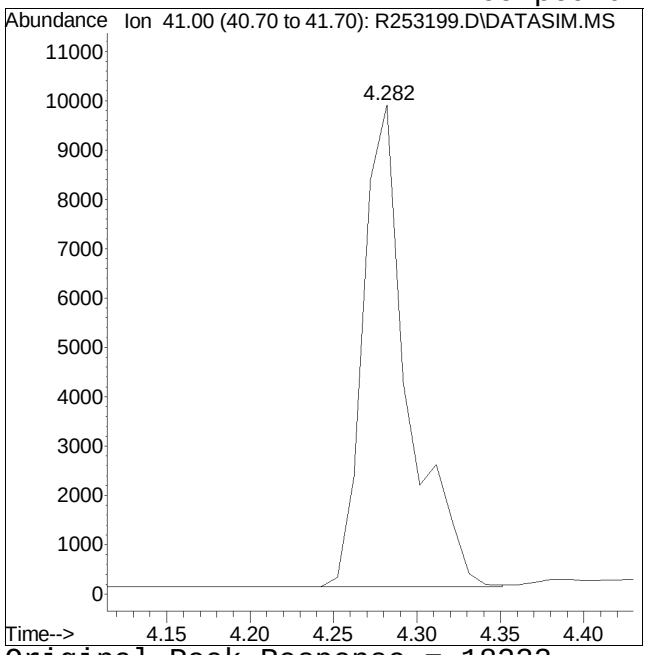
Quant Time: Mar 26 12:10:05 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration



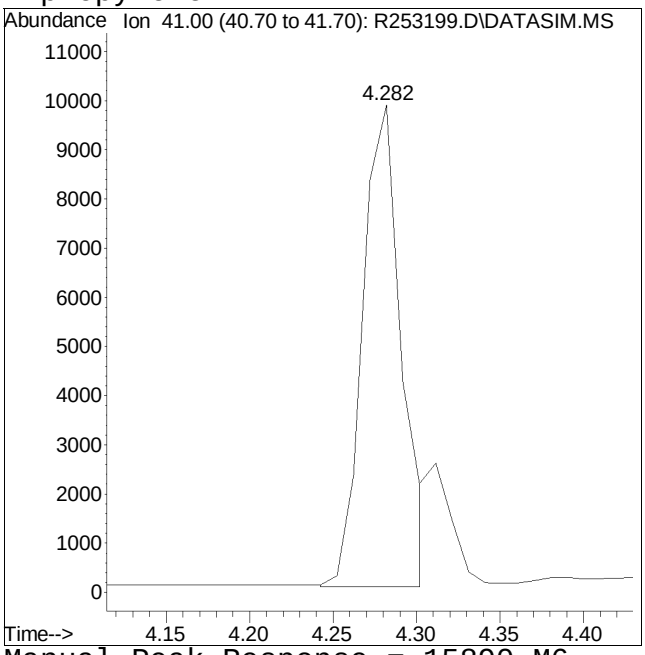
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253199.D
Date Inj'd : 3/26/2018 1:14 am
Sample : ITO15-SIMSTD1.0
Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #2: propylene



Original Peak Response = 18232



Manual Peak Response = 15890 M6

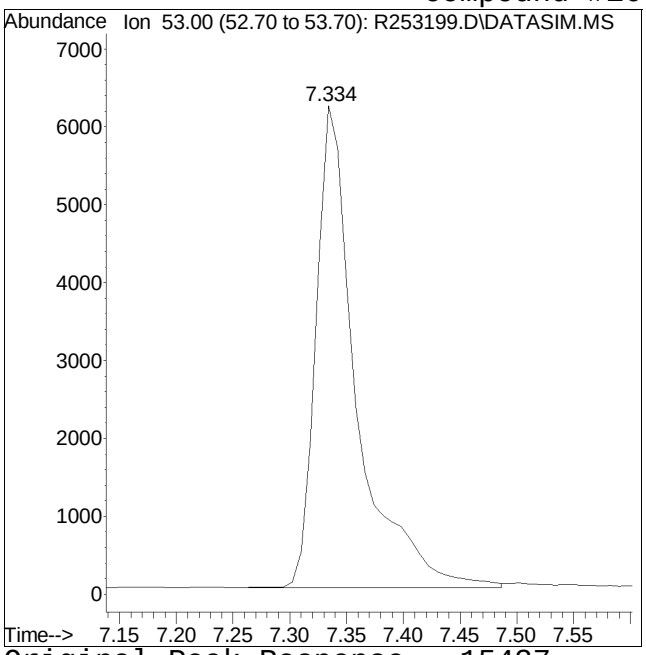
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

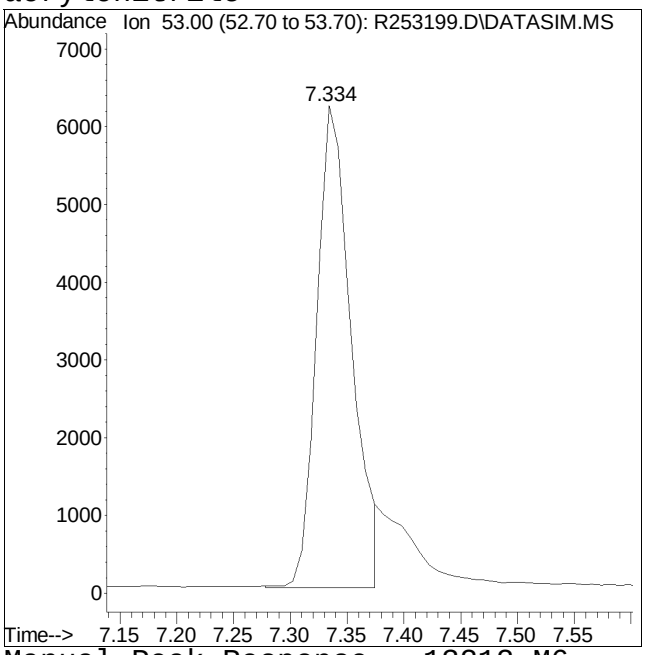
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253199.D
Date Inj'd : 3/26/2018 1:14 am
Sample : ITO15-SIMSTD1.0

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #16: acrylonitrile



Original Peak Response = 15437



Manual Peak Response = 13212 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253200.D
Acq On : 26 Mar 2018 1:49 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD5.0
Misc : WG1100531
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 26 07:23:23 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Sat Mar 24 10:11:49 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	273176	10.000	ppbV	0.00
Standard Area = 273176			Recovery = 100.00%			
33) 1,4-difluorobenzene	12.738	114	626263	10.000	ppbV	0.00
Standard Area = 626263			Recovery = 100.00%			
51) chlorobenzene-D5	17.048	54	143934	10.000	ppbV	0.00
Standard Area = 143934			Recovery = 100.00%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.414	65	197517	9.380	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 93.80%			
53) toluene-D8	15.410	98	542322	10.093	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.93%			
67) bromofluorobenzene	18.205	95	292611	10.514	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 105.14%			
Target Compounds						Qvalue
2) propylene	4.282	41	74320M6	4.660	ppbV	
3) dichlorodifluoromethane	4.390	85	262946	5.406	ppbV	99
4) chloromethane	4.617	50	122798	5.341	ppbV	99
5) Freon-114	4.785	85	358694	5.782	ppbV	96
6) vinyl chloride	4.952	62	139185	5.615	ppbV	100
7) 1,3-butadiene	5.159	54	91941	5.853	ppbV	92
8) bromomethane	5.560	94	120253	5.553	ppbV	99
9) chloroethane	5.823	64	67684	5.512	ppbV	95
10) ethanol	6.039	31	429373	29.705	ppbV	96
11) vinyl bromide	6.327	106	113013	5.868	ppbV	99
12) acrolein	6.511	56	53975	5.648	ppbV	97
13) acetone	6.695	43	791981	26.656	ppbV	98
14) trichlorofluoromethane	6.910	101	319188	6.381	ppbV	99
15) isopropyl alcohol	7.062	45	329694	11.166	ppbV	100
16) acrylonitrile	7.334	53	70756	5.238	ppbV	99
17) 1,1-dichloroethene	7.758	61	179362	5.704	ppbV	99
18) tertiary butyl alcohol	7.862	59	172374	6.091	ppbV #	86
19) methylene chloride	7.934	49	133978	4.832	ppbV	95
20) 3-chloropropene	8.077	41	120049	5.336	ppbV	90
21) carbon disulfide	8.269	76	308121	5.304	ppbV	97
22) Freon 113	8.277	101	206811	5.236	ppbV	97
23) trans-1,2-dichloroethene	9.106	61	163303	5.674	ppbV	98
24) 1,1-dichloroethane	9.352	63	206532	5.243	ppbV	99

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253200.D
Acq On : 26 Mar 2018 1:49 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD5.0
Misc : WG1100531
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 26 07:23:23 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Sat Mar 24 10:11:49 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	9.441	73	250056	7.050	ppbV		99
26) vinyl acetate	9.550	43	196930	5.236	ppbV		99
27) 2-butanone	9.843	43	214982	5.280	ppbV		94
28) cis-1,2-dichloroethene	10.344	61	156393	5.968	ppbV		95
29) Ethyl Acetate	10.625	61	33995	5.671	ppbV		85
30) chloroform	10.691	83	230212	5.383	ppbV		100
31) Tetrahydrofuran	11.170	42	111532M6	4.926	ppbV		
32) 1,2-dichloroethane	11.536	62	159606	5.301	ppbV		99
34) hexane	10.588	57	158472	5.081	ppbV		93
36) 1,1,1-trichloroethane	11.823	97	214960	4.832	ppbV		96
37) benzene	12.335	78	325623	5.014	ppbV		95
38) carbon tetrachloride	12.509	117	214840	4.814	ppbV		100
39) cyclohexane	12.651	56	159438	5.205	ppbV		93
40) dibromomethane	13.238	93	131921	4.397	ppbV		97
41) 1,2-dichloropropane	13.260	63	132141	4.568	ppbV		99
42) bromodichloromethane	13.478	83	252206	4.862	ppbV		100
43) 1,4-dioxane	13.532	88	68761	5.695	ppbV		87
44) trichloroethene	13.532	130	133110	4.948	ppbV		99
45) 2,2,4-trimethylpentane	13.554	57	525022	5.019	ppbV		99
46) heptane	13.837	43	188147	4.857	ppbV	#	94
47) cis-1,3-dichloropropene	14.497	75	183283	5.691	ppbV		99
48) 4-methyl-2-pentanone	14.524	43	265855	5.024	ppbV	#	95
49) trans-1,3-dichloropropene	15.048	75	179598	5.730	ppbV		98
50) 1,1,2-trichloroethane	15.229	97	134455	4.816	ppbV		97
52) toluene	15.500	91	388902	5.074	ppbV		100
54) 2-hexanone	15.726	43	253952	4.988	ppbV	#	93
55) dibromochloromethane	15.907	129	224816	5.026	ppbV		100
56) 1,2-dibromoethane	16.133	107	215871	5.127	ppbV		100
57) tetrachloroethene	16.521	166	161599	4.689	ppbV		95
58) 1,1,1,2-tetrachloroethane	17.067	131	156422	4.770	ppbV		99
59) chlorobenzene	17.086	112	309075	4.784	ppbV		98
60) ethylbenzene	17.367	91	493921	5.814	ppbV		100
61) m+p-xylene	17.510	91	785669	11.777	ppbV		99
62) bromoform	17.591	173	207493	4.985	ppbV		100
63) styrene	17.781	104	290819	6.265	ppbV		99
64) 1,1,2,2-tetrachloroethane	17.862	83	338854	4.925	ppbV		99
65) o-xylene	17.862	91	408292	5.983	ppbV		97
66) 1,2,3-trichloropropane	17.962	75	240363	4.777	ppbV		97
68) isopropylbenzene	18.296	105	496065	5.036	ppbV		100
69) bromobenzene	18.381	77	282414	5.097	ppbV		99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253200.D
Acq On : 26 Mar 2018 1:49 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD5.0
Misc : WG1100531
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 26 07:23:23 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Sat Mar 24 10:11:49 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

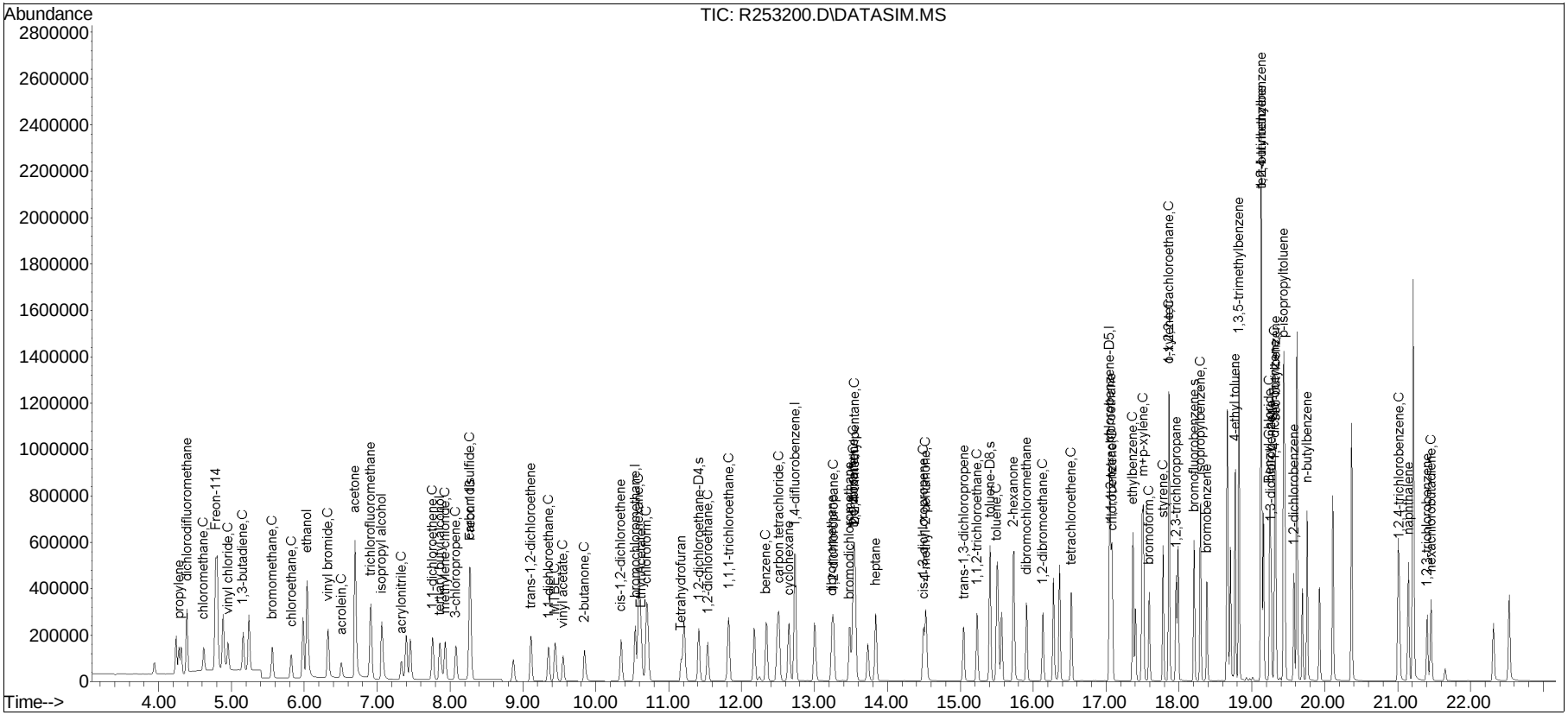
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) 4-ethyl toluene	18.772	105	550086	6.336	ppbV		100
71) 1,3,5-trimethylbenzene	18.820	105	449803	6.130	ppbV		99
72) tert-butylbenzene	19.129	119	463886	5.212	ppbV		100
73) 1,2,4-trimethylbenzene	19.129	105	468665	6.529	ppbV		99
74) Benzyl Chloride	19.244	91	390346	5.202	ppbV		95
75) 1,3-dichlorobenzene	19.263	146	328507	5.457	ppbV		99
76) 1,4-dichlorobenzene	19.315	146	337764	5.663	ppbV		100
77) sec-butylbenzene	19.325	105	661540	5.212	ppbV		99
78) p-isopropyltoluene	19.434	119	552690	5.289	ppbV		97
79) 1,2-dichlorobenzene	19.577	146	307977	5.525	ppbV		100
80) n-butylbenzene	19.758	91	564158	5.500	ppbV		98
81) 1,2,4-trichlorobenzene	21.019	180	289165	6.172	ppbV	#	76
82) naphthalene	21.148	128	613081	6.843	ppbV		99
83) 1,2,3-trichlorobenzene	21.405	180	255209	6.349	ppbV		99
84) hexachlorobutadiene	21.459	225	223657	5.153	ppbV		98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0325SIM_ICAL\R253200.D

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253200.D
Acq On : 26 Mar 2018 1:49 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD5.0
Misc : WG1100531
ALS Vial : 7 Sample Multiplier: 1

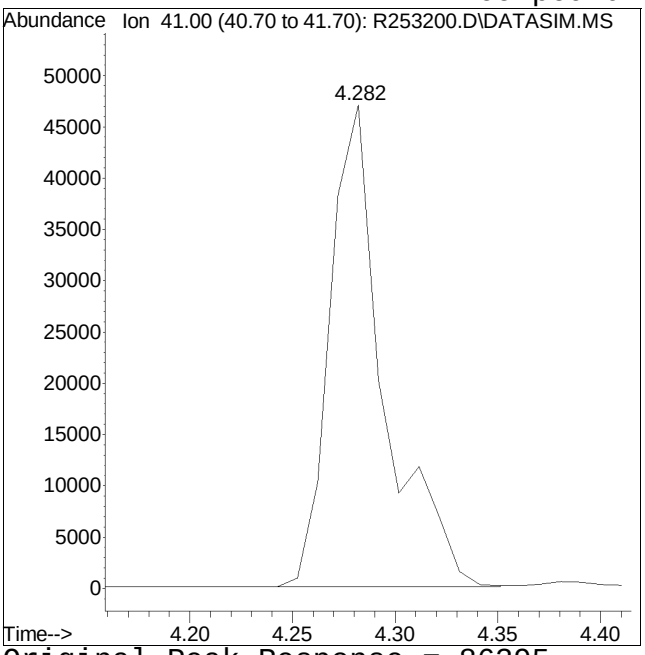
Quant Time: Mar 26 07:23:23 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Sat Mar 24 10:11:49 2018
Response via : Initial Calibration



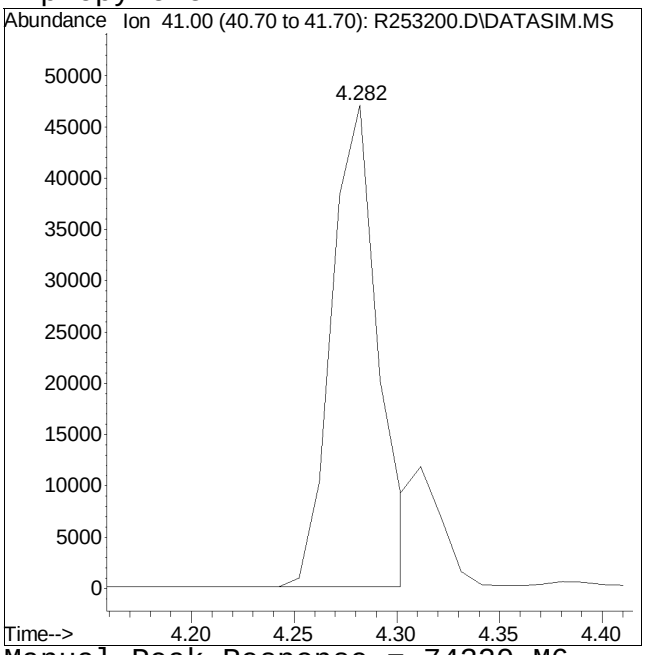
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253200.D
Date Inj'd : 3/26/2018 1:49 am
Sample : ITO15-SIMSTD5.0
Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:22 am

Compound #2: propylene



Original Peak Response = 86395



Manual Peak Response = 74320 M6

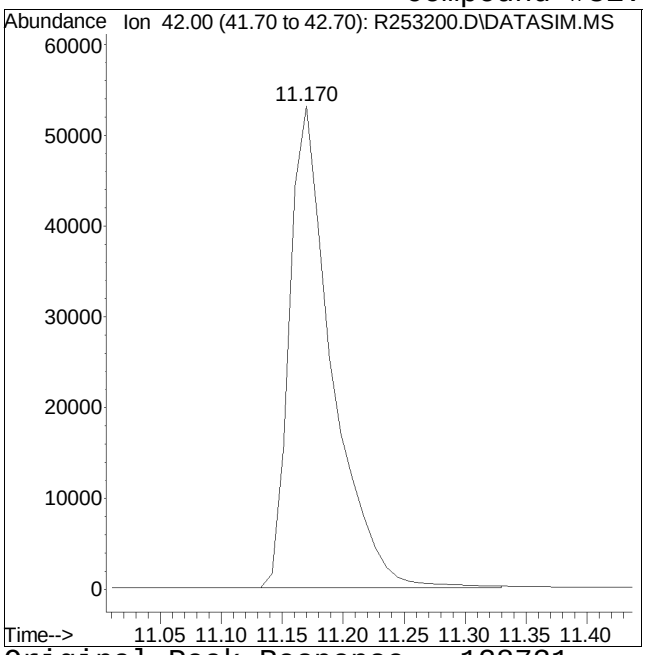
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

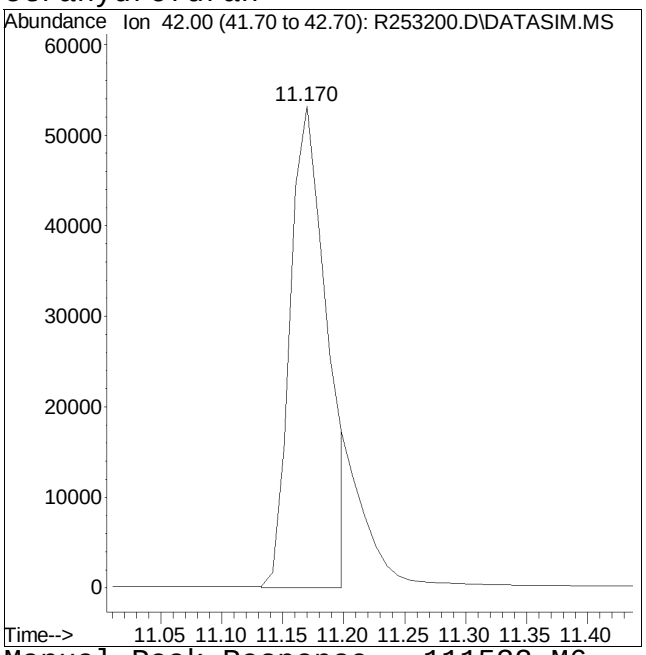
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253200.D
Date Inj'd : 3/26/2018 1:49 am
Sample : ITO15-SIMSTD5.0

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:22 am

Compound #31: Tetrahydrofuran



Original Peak Response = 128731



Manual Peak Response = 111532 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253201.D
Acq On : 26 Mar 2018 2:26 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD10.0
Misc : WG1100531
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 26 12:11:17 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	277624	10.000	ppbV	0.00
Standard Area = 273176			Recovery = 101.63%			
33) 1,4-difluorobenzene	12.738	114	636575	10.000	ppbV	0.00
Standard Area = 626263			Recovery = 101.65%			
51) chlorobenzene-D5	17.048	54	146089	10.000	ppbV	0.00
Standard Area = 143934			Recovery = 101.50%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.414	65	199297	9.927	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.27%			
53) toluene-D8	15.410	98	549417	9.981	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.81%			
67) bromofluorobenzene	18.205	95	297830	10.028	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.28%			
Target Compounds						Qvalue
2) propylene	4.282	41	149751M6	9.913	ppbV	
3) dichlorodifluoromethane	4.390	85	500583	9.366	ppbV	100
4) chloromethane	4.617	50	239120	9.580	ppbV	100
5) Freon-114	4.785	85	699382	9.593	ppbV	99
6) vinyl chloride	4.952	62	270321	9.555	ppbV	100
7) 1,3-butadiene	5.159	54	181589	9.717	ppbV	96
8) bromomethane	5.559	94	233351	9.547	ppbV	100
9) chloroethane	5.823	64	132142	9.605	ppbV	99
10) ethanol	6.039	31	818343	46.884	ppbV	99
11) vinyl bromide	6.327	106	219351	9.549	ppbV	100
12) acrolein	6.503	56	105092	9.579	ppbV	99
13) acetone	6.687	43	1210085	37.586	ppbV	98
14) trichlorofluoromethane	6.910	101	503497	7.761	ppbV	100
15) isopropyl alcohol	7.054	45	629168	23.472	ppbV	100
16) acrylonitrile	7.326	53	143322	9.966	ppbV	99
17) 1,1-dichloroethene	7.758	61	355647	9.755	ppbV	99
18) tertiary butyl alcohol	7.854	59	334241	9.540	ppbV	99
19) methylene chloride	7.934	49	264456	9.711	ppbV	99
20) 3-chloropropene	8.077	41	242191	9.926	ppbV	99
21) carbon disulfide	8.269	76	621723	9.927	ppbV	98
22) Freon 113	8.277	101	416860	9.917	ppbV	99
23) trans-1,2-dichloroethene	9.106	61	324871	9.788	ppbV	100
24) 1,1-dichloroethane	9.352	63	406574	9.685	ppbV	100

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253201.D
Acq On : 26 Mar 2018 2:26 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD10.0
Misc : WG1100531
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 26 12:11:17 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
25) MTBE	9.434	73	502698	9.891	ppbV	100
26) vinyl acetate	9.550	43	417833	10.439	ppbV	99
27) 2-butanone	9.837	43	427454	9.782	ppbV	100
28) cis-1,2-dichloroethene	10.344	61	309485	9.736	ppbV	100
29) Ethyl Acetate	10.616	61	69354	10.037	ppbV	70
30) chloroform	10.691	83	458397	9.796	ppbV	100
31) Tetrahydrofuran	11.160	42	221075M6	9.752	ppbV	
32) 1,2-dichloroethane	11.536	62	312756	9.641	ppbV	100
34) hexane	10.588	57	317990	9.870	ppbV	93
36) 1,1,1-trichloroethane	11.823	97	428336	9.802	ppbV	98
37) benzene	12.335	78	647705	9.785	ppbV	99
38) carbon tetrachloride	12.509	117	431754	9.885	ppbV	100
39) cyclohexane	12.651	56	318156	9.816	ppbV	100
40) dibromomethane	13.238	93	261937	9.767	ppbV	99
41) 1,2-dichloropropane	13.260	63	261131	9.721	ppbV	100
42) bromodichloromethane	13.478	83	504181	9.834	ppbV	100
43) 1,4-dioxane	13.532	88	138169	9.884	ppbV	89
44) trichloroethene	13.532	130	272227	10.060	ppbV	100
45) 2,2,4-trimethylpentane	13.554	57	1051360	9.850	ppbV	99
46) heptane	13.837	43	374740	9.797	ppbV	99
47) cis-1,3-dichloropropene	14.497	75	371546	9.972	ppbV	99
48) 4-methyl-2-pentanone	14.524	43	532390	9.851	ppbV	97
49) trans-1,3-dichloropropene	15.048	75	367497	10.065	ppbV	100
50) 1,1,2-trichloroethane	15.229	97	268334	9.817	ppbV	99
52) toluene	15.500	91	776276	9.833	ppbV	99
54) 2-hexanone	15.726	43	518045	10.049	ppbV	97
55) dibromochloromethane	15.907	129	460856	10.098	ppbV	100
56) 1,2-dibromoethane	16.133	107	438026	9.996	ppbV	100
57) tetrachloroethene	16.521	166	332918	10.149	ppbV	100
58) 1,1,1,2-tetrachloroethane	17.067	131	318507	10.031	ppbV	100
59) chlorobenzene	17.086	112	623472	9.937	ppbV	99
60) ethylbenzene	17.367	91	1001816	9.992	ppbV	99
61) m+p-xylene	17.510	91	1594861	20.000	ppbV	100
62) bromoform	17.591	173	444559	10.555	ppbV	99
63) styrene	17.781	104	595679	10.090	ppbV	99
64) 1,1,2,2-tetrachloroethane	17.862	83	699170	10.165	ppbV	100
65) o-xylene	17.862	91	844075	10.184	ppbV	99
66) 1,2,3-trichloropropane	17.962	75	488400	10.010	ppbV	100
68) isopropylbenzene	18.296	105	1005256	9.983	ppbV	99
69) bromobenzene	18.381	77	574380	10.019	ppbV	98

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253201.D
Acq On : 26 Mar 2018 2:26 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD10.0
Misc : WG1100531
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 26 12:11:17 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

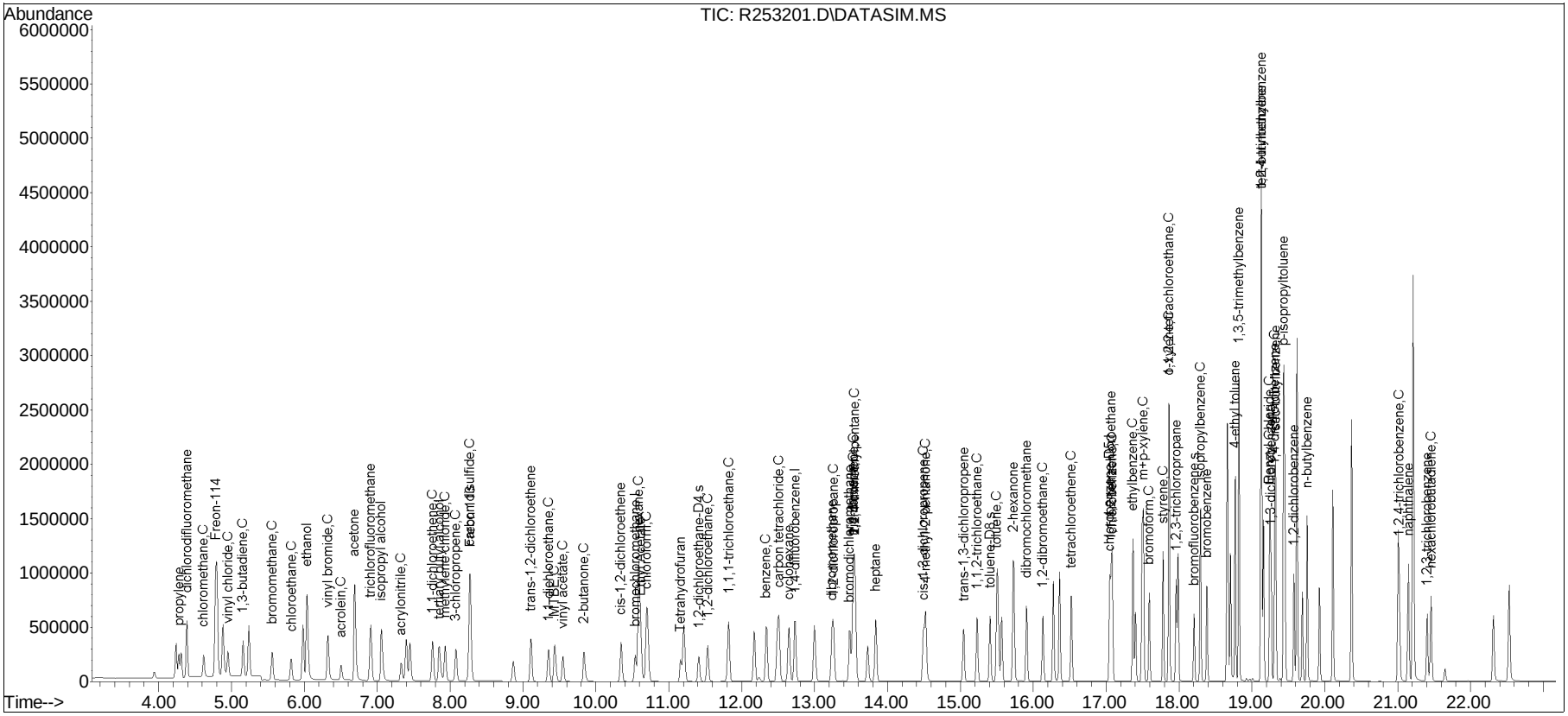
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.772	105	1130677	10.126	ppbV	99
71) 1,3,5-trimethylbenzene	18.820	105	923969	10.119	ppbV	98
72) tert-butylbenzene	19.129	119	968182	10.282	ppbV	100
73) 1,2,4-trimethylbenzene	19.129	105	983594	10.339	ppbV	99
74) Benzyl Chloride	19.244	91	826399	10.429	ppbV	99
75) 1,3-dichlorobenzene	19.263	146	687706	10.313	ppbV	99
76) 1,4-dichlorobenzene	19.315	146	711990	10.384	ppbV	100
77) sec-butylbenzene	19.325	105	1355457	10.094	ppbV	99
78) p-isopropyltoluene	19.434	119	1140817	10.168	ppbV	99
79) 1,2-dichlorobenzene	19.577	146	644742	10.313	ppbV	100
80) n-butylbenzene	19.758	91	1158993	10.120	ppbV	99
81) 1,2,4-trichlorobenzene	21.019	180	636697	10.847	ppbV	98
82) naphthalene	21.148	128	1300080	10.446	ppbV	100
83) 1,2,3-trichlorobenzene	21.405	180	554382	10.701	ppbV	99
84) hexachlorobutadiene	21.459	225	493537	10.871	ppbV	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0325SIM_ICAL\R253200.D

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253201.D
Acq On : 26 Mar 2018 2:26 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD10.0
Misc : WG1100531
ALS Vial : 7 Sample Multiplier: 1

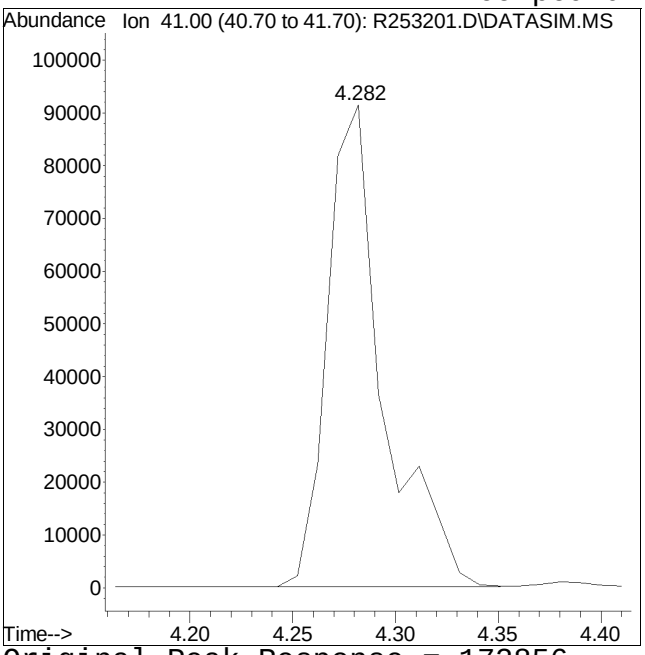
Quant Time: Mar 26 12:11:17 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration



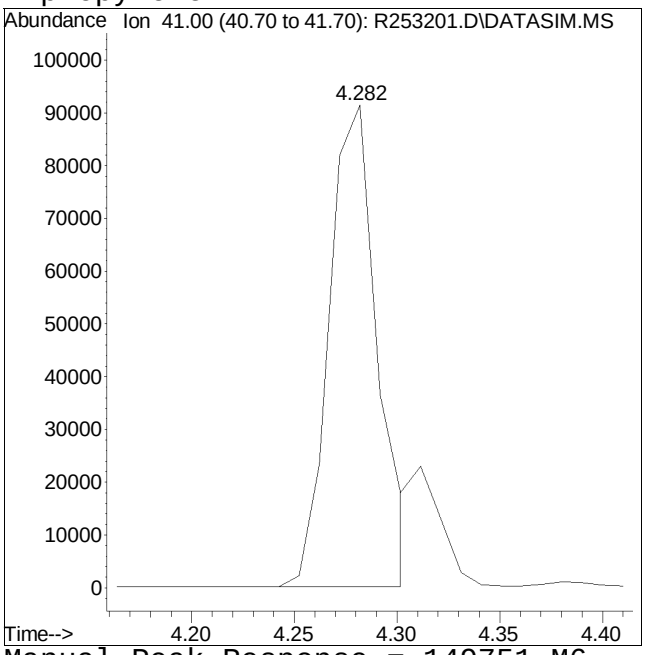
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253201.D
Date Inj'd : 3/26/2018 2:26 am
Sample : ITO15-SIMSTD10.0
Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #2: propylene



Original Peak Response = 172856



Manual Peak Response = 149751 M6

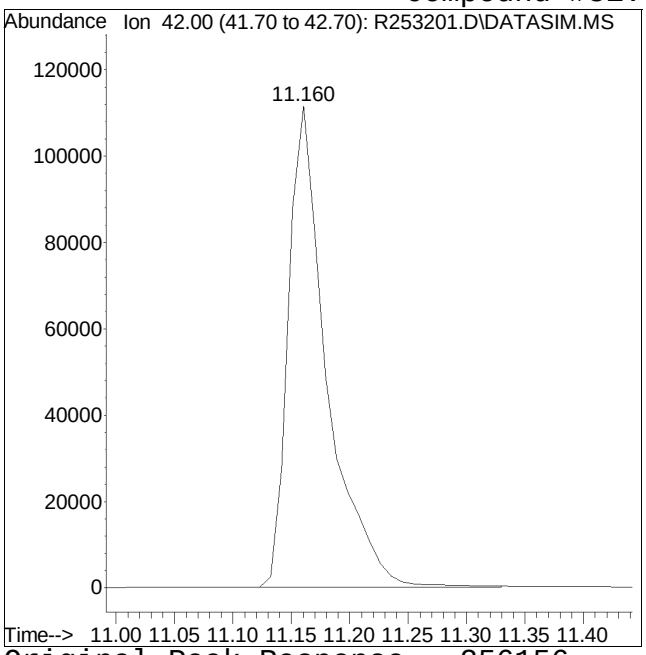
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

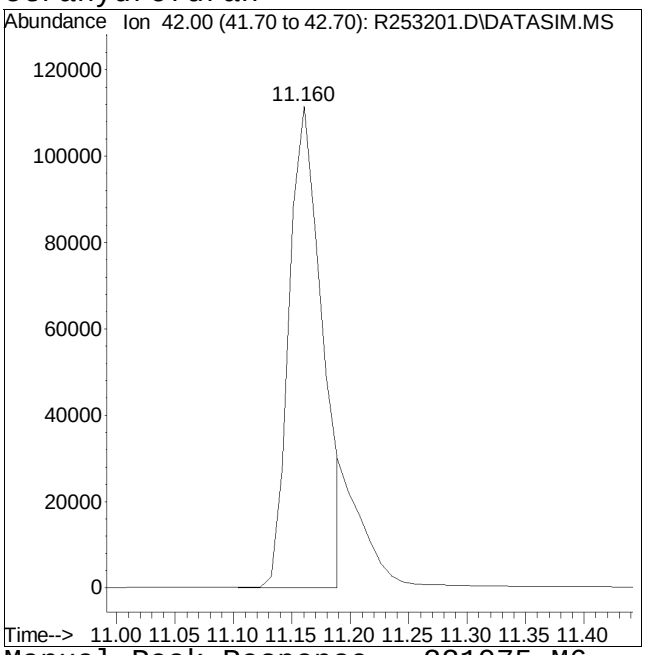
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253201.D
Date Inj'd : 3/26/2018 2:26 am
Sample : ITO15-SIMSTD10.0

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #31: Tetrahydrofuran



Original Peak Response = 256156



Manual Peak Response = 221075 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253202.D
Acq On : 26 Mar 2018 3:00 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD20.0
Misc : WG1100531
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 26 12:13:20 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	284741	10.000	ppbV	0.00
Standard Area = 273176			Recovery = 104.23%			
33) 1,4-difluorobenzene	12.738	114	652246	10.000	ppbV	0.00
Standard Area = 626263			Recovery = 104.15%			
51) chlorobenzene-D5	17.048	54	151803	10.000	ppbV	0.00
Standard Area = 143934			Recovery = 105.47%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.414	65	201242	9.783	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 97.83%			
53) toluene-D8	15.410	98	557592	9.749	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 97.49%			
67) bromofluorobenzene	18.205	95	309427	10.027	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.27%			
Target Compounds						Qvalue
2) propylene	4.282	41	330542M6	21.335	ppbV	
3) dichlorodifluoromethane	4.390	85	1166042	21.272	ppbV	99
4) chloromethane	4.617	50	510205	19.930	ppbV	99
5) Freon-114	4.785	85	1527834	20.432	ppbV	98
6) vinyl chloride	4.952	62	585415	20.176	ppbV	100
7) 1,3-butadiene	5.159	54	393453	20.528	ppbV	93
8) bromomethane	5.560	94	503091	20.068	ppbV	99
9) chloroethane	5.823	64	283352	20.082	ppbV	99
10) ethanol	6.039	31	1845481	103.088	ppbV	100
11) vinyl bromide	6.327	106	477660	20.275	ppbV	100
12) acrolein	6.503	56	228909	20.344	ppbV	97
13) acetone	6.687	43	3547338	107.429	ppbV	99
14) trichlorofluoromethane	6.910	101	1134484	17.050	ppbV	100
15) isopropyl alcohol	7.062	45	1576494	57.343	ppbV	100
16) acrylonitrile	7.334	53	319555	21.664	ppbV	100
17) 1,1-dichloroethene	7.758	61	784484	20.981	ppbV	100
18) tertiary butyl alcohol	7.854	59	804603	22.391	ppbV	97
19) methylene chloride	7.934	49	580230	20.774	ppbV	98
20) 3-chloropropene	8.078	41	541267	21.628	ppbV	99
21) carbon disulfide	8.269	76	1409672	21.946	ppbV	98
22) Freon 113	8.277	101	942274	21.856	ppbV	99
23) trans-1,2-dichloroethene	9.106	61	722968	21.237	ppbV	98
24) 1,1-dichloroethane	9.352	63	900117	20.906	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253202.D
Acq On : 26 Mar 2018 3:00 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD20.0
Misc : WG1100531
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 26 12:13:20 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	9.434	73	1129383	21.665	ppbV		100
26) vinyl acetate	9.550	43	1014919	24.722	ppbV		99
27) 2-butanone	9.837	43	956368	21.340	ppbV		99
28) cis-1,2-dichloroethene	10.344	61	685521	21.026	ppbV		97
29) Ethyl Acetate	10.616	61	160866	22.699	ppbV		71
30) chloroform	10.700	83	1033145	21.528	ppbV		97
31) Tetrahydrofuran	11.151	42	511479M6	21.998	ppbV		
32) 1,2-dichloroethane	11.536	62	690262	20.746	ppbV		99
34) hexane	10.588	57	720939	21.840	ppbV		91
36) 1,1,1-trichloroethane	11.823	97	952667	21.276	ppbV		100
37) benzene	12.346	78	1419783	20.933	ppbV		94
38) carbon tetrachloride	12.509	117	984790	22.006	ppbV		99
39) cyclohexane	12.651	56	706999	21.288	ppbV		98
40) dibromomethane	13.238	93	590538	21.491	ppbV		98
41) 1,2-dichloropropane	13.260	63	587275	21.336	ppbV		99
42) bromodichloromethane	13.489	83	1128690	21.485	ppbV	#	95
43) 1,4-dioxane	13.521	88	331914	23.174	ppbV		90
44) trichloroethene	13.532	130	625146	22.547	ppbV		99
45) 2,2,4-trimethylpentane	13.554	57	2369715	21.669	ppbV		98
46) heptane	13.837	43	848019	21.638	ppbV		98
47) cis-1,3-dichloropropene	14.497	75	843218	22.087	ppbV		98
48) 4-methyl-2-pentanone	14.524	43	1212266	21.891	ppbV	#	96
49) trans-1,3-dichloropropene	15.048	75	851877	22.771	ppbV		99
50) 1,1,2-trichloroethane	15.229	97	604413	21.581	ppbV		100
52) toluene	15.500	91	1736905	21.173	ppbV		99
54) 2-hexanone	15.726	43	1216189	22.704	ppbV		96
55) dibromochloromethane	15.907	129	1074055	22.649	ppbV		99
56) 1,2-dibromoethane	16.133	107	999082	21.941	ppbV		100
57) tetrachloroethene	16.521	166	787239	23.095	ppbV		100
58) 1,1,1,2-tetrachloroethane	17.067	131	740979	22.457	ppbV		99
59) chlorobenzene	17.086	112	1416033	21.720	ppbV		98
60) ethylbenzene	17.367	91	2260797	21.700	ppbV		98
61) m+p-xylene	17.510	91	3670119	44.292	ppbV		100
62) bromoform	17.596	173	1073812	24.535	ppbV		99
63) styrene	17.781	104	1358719	22.149	ppbV		98
64) 1,1,2,2-tetrachloroethane	17.862	83	1635928	22.888	ppbV		100
65) o-xylene	17.867	91	1962165	22.783	ppbV		97
66) 1,2,3-trichloropropane	17.962	75	1112818	21.949	ppbV		99
68) isopropylbenzene	18.296	105	2278331	21.774	ppbV		99
69) bromobenzene	18.386	77	1323975	22.225	ppbV		97

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253202.D
Acq On : 26 Mar 2018 3:00 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD20.0
Misc : WG1100531
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 26 12:13:20 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

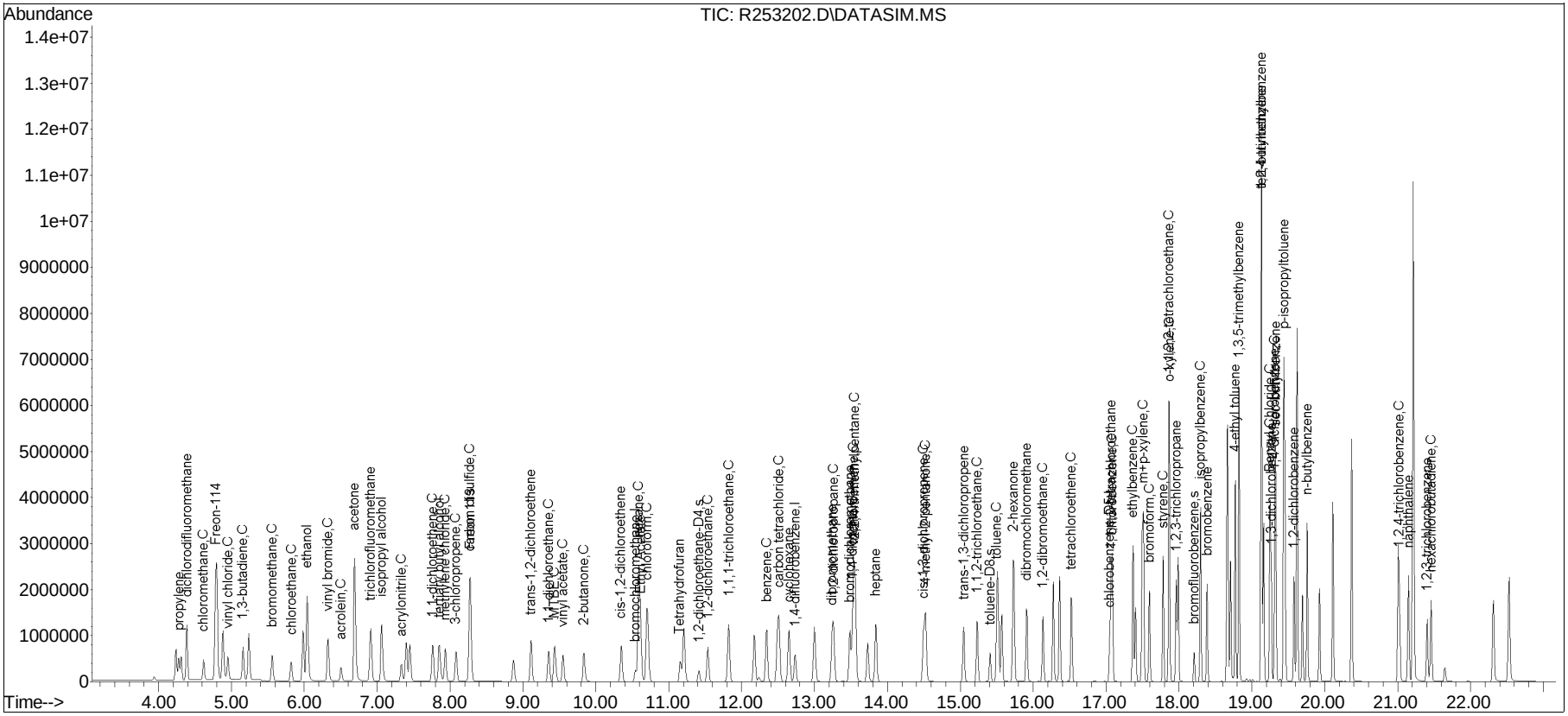
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.772	105	2532552	21.826	ppbV	98
71) 1,3,5-trimethylbenzene	18.820	105	2076684	21.888	ppbV	99
72) tert-butylbenzene	19.129	119	2231754	22.808	ppbV	99
73) 1,2,4-trimethylbenzene	19.129	105	2295349	23.219	ppbV	95
74) Benzyl Chloride	19.248	91	1964516	23.859	ppbV	91
75) 1,3-dichlorobenzene	19.268	146	1580520	22.809	ppbV	95
76) 1,4-dichlorobenzene	19.315	146	1644998	23.089	ppbV	96
77) sec-butylbenzene	19.325	105	3073285	22.024	ppbV	99
78) p-isopropyltoluene	19.439	119	2591372	22.228	ppbV	95
79) 1,2-dichlorobenzene	19.577	146	1463714	22.532	ppbV	97
80) n-butylbenzene	19.758	91	2562337	21.532	ppbV	98
81) 1,2,4-trichlorobenzene	21.019	180	1409320	23.106	ppbV	99
82) naphthalene	21.148	128	2656074	20.539	ppbV	98
83) 1,2,3-trichlorobenzene	21.405	180	1172749	21.785	ppbV	98
84) hexachlorobutadiene	21.459	225	1091165	23.129	ppbV	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0325SIM_ICAL\R253200.D

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253202.D
Acq On : 26 Mar 2018 3:00 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD20.0
Misc : WG1100531
ALS Vial : 8 Sample Multiplier: 1

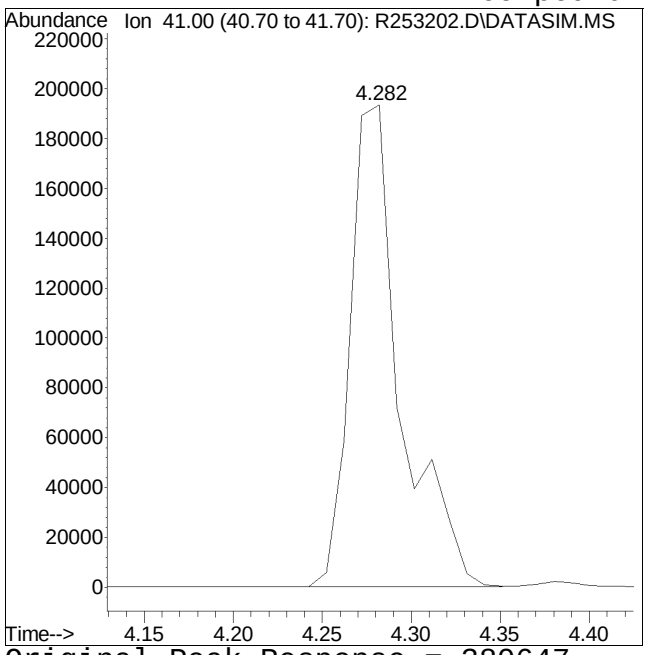
Quant Time: Mar 26 12:13:20 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration



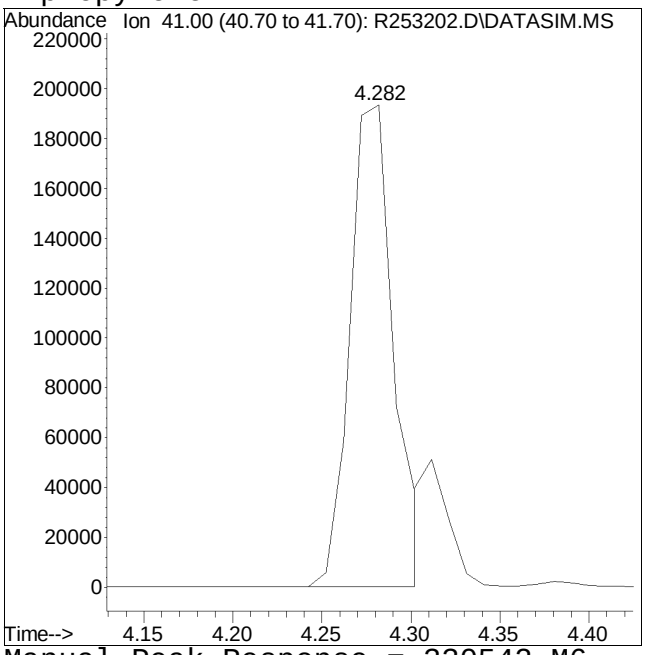
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253202.D
Date Inj'd : 3/26/2018 3:00 am
Sample : ITO15-SIMSTD20.0
Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #2: propylene



Original Peak Response = 380647



Manual Peak Response = 330542 M6

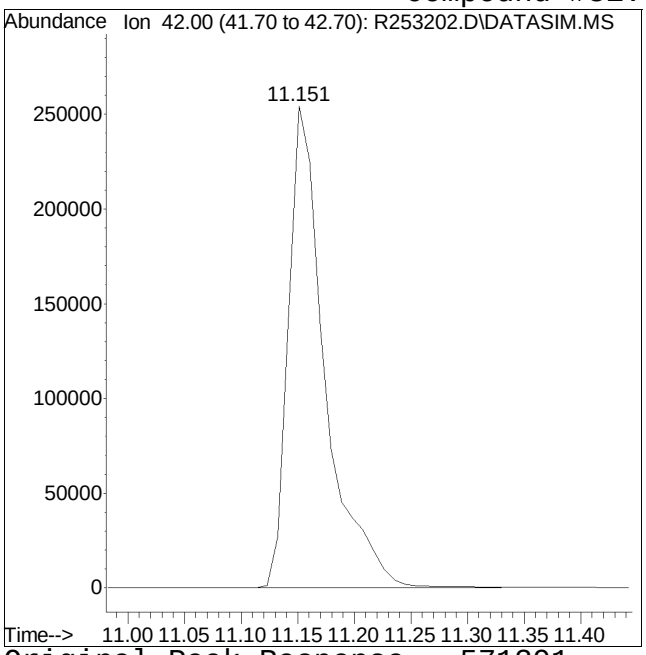
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

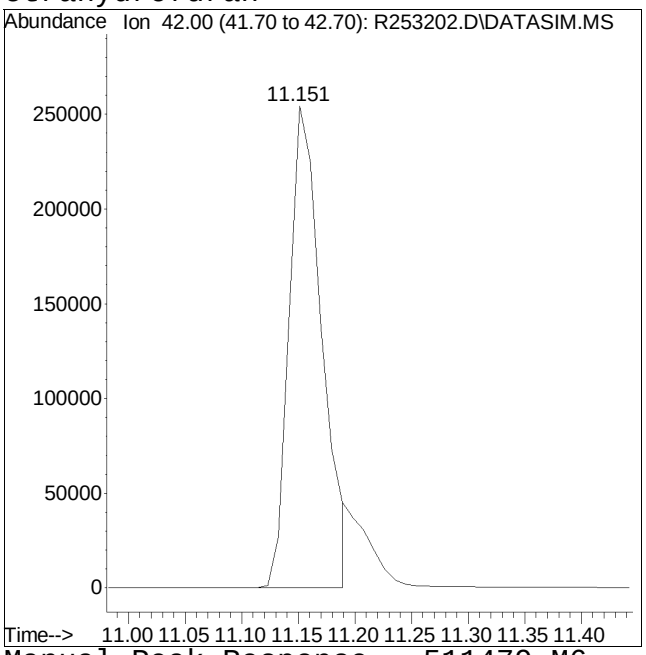
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253202.D
Date Inj'd : 3/26/2018 3:00 am
Sample : ITO15-SIMSTD20.0

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #31: Tetrahydrofuran



Original Peak Response = 571391



Manual Peak Response = 511479 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253203.D
Acq On : 26 Mar 2018 3:35 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD50.0
Misc : WG1100531
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 26 12:14:18 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	305602	10.000	ppbV	0.00
Standard Area = 273176			Recovery = 111.87%			
33) 1,4-difluorobenzene	12.738	114	679249	10.000	ppbV	0.00
Standard Area = 626263			Recovery = 108.46%			
51) chlorobenzene-D5	17.048	54	162726	10.000	ppbV	0.00
Standard Area = 143934			Recovery = 113.06%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.414	65	210087	9.807	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.07%			
53) toluene-D8	15.410	98	580971	9.476	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.76%			
67) bromofluorobenzene	18.205	95	326140	9.859	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.59%			
Target Compounds						Qvalue
2) propylene	4.282	41	791907M6	47.624	ppbV	
3) dichlorodifluoromethane	4.390	85	2781593	47.281	ppbV	99
4) chloromethane	4.617	50	1191245	43.358	ppbV	100
5) Freon-114	4.785	85	3567047	44.447	ppbV	97
6) vinyl chloride	4.952	62	1364131	43.805	ppbV	100
7) 1,3-butadiene	5.159	54	912649	44.366	ppbV	99
8) bromomethane	5.560	94	1170344	43.498	ppbV	100
9) chloroethane	5.823	64	655994	43.318	ppbV	98
10) ethanol	6.055	31	4153717	216.186	ppbV	96
11) vinyl bromide	6.327	106	1117313	44.188	ppbV	99
12) acrolein	6.503	56	533834	44.205	ppbV	97
13) acetone	6.695	43	8006197	225.911	ppbV	94
14) trichlorofluoromethane	6.918	101	3200911	44.821	ppbV	99
15) isopropyl alcohol	7.070	45	3865941	131.021	ppbV	100
16) acrylonitrile	7.334	53	786627	49.689	ppbV	99
17) 1,1-dichloroethene	7.766	61	1942017	48.393	ppbV	97
18) tertiary butyl alcohol	7.854	59	2029348	52.619	ppbV	96
19) methylene chloride	7.934	49	1431130	47.742	ppbV	93
20) 3-chloropropene	8.085	41	1344889	50.071	ppbV	97
21) carbon disulfide	8.277	76	3600133	52.222	ppbV	92
22) Freon 113	8.277	101	2407813	52.036	ppbV	98
23) trans-1,2-dichloroethene	9.113	61	1809692	49.530	ppbV	96
24) 1,1-dichloroethane	9.352	63	2213563	47.903	ppbV	99

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253203.D
Acq On : 26 Mar 2018 3:35 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD50.0
Misc : WG1100531
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 26 12:14:18 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	9.434	73	2837104	50.710	ppbV		99
26) vinyl acetate	9.550	43	2600451	59.019	ppbV		100
27) 2-butanone	9.837	43	2371917	49.312	ppbV		99
28) cis-1,2-dichloroethene	10.353	61	1701591	48.629	ppbV		93
29) Ethyl Acetate	10.616	61	410220	53.933	ppbV	#	47
30) chloroform	10.700	83	2587352	50.232	ppbV		100
31) Tetrahydrofuran	11.151	42	1275635M6	51.119	ppbV		
32) 1,2-dichloroethane	11.536	62	1722996	48.249	ppbV		98
34) hexane	10.597	57	1838720	53.489	ppbV		80
36) 1,1,1-trichloroethane	11.823	97	2409636	51.676	ppbV		97
37) benzene	12.346	78	3470907	49.139	ppbV		97
38) carbon tetrachloride	12.520	117	2522283	54.122	ppbV		97
39) cyclohexane	12.651	56	1762231	50.953	ppbV		96
40) dibromomethane	13.238	93	1502719	52.512	ppbV		97
41) 1,2-dichloropropane	13.260	63	1484045	51.773	ppbV		98
42) bromodichloromethane	13.489	83	2855467	52.194	ppbV		97
43) 1,4-dioxane	13.521	88	829584	55.618	ppbV		89
44) trichloroethene	13.532	130	1583384	54.837	ppbV		97
45) 2,2,4-trimethylpentane	13.554	57	5891730	51.732	ppbV		96
46) heptane	13.848	43	2135942	52.335	ppbV	#	97
47) cis-1,3-dichloropropene	14.497	75	2133310	53.657	ppbV		96
48) 4-methyl-2-pentanone	14.524	43	3071019	53.252	ppbV		97
49) trans-1,3-dichloropropene	15.048	75	2164719	55.565	ppbV		97
50) 1,1,2-trichloroethane	15.238	97	1523515	52.236	ppbV		91
52) toluene	15.509	91	4293890	48.830	ppbV		97
54) 2-hexanone	15.726	43	3084331	53.714	ppbV		99
55) dibromochloromethane	15.916	129	2730659	53.718	ppbV		99
56) 1,2-dibromoethane	16.133	107	2528612	51.804	ppbV		99
57) tetrachloroethene	16.530	166	2074014	56.761	ppbV	#	91
58) 1,1,1,2-tetrachloroethane	17.072	131	1929838	54.563	ppbV		100
59) chlorobenzene	17.086	112	3589147	51.357	ppbV		94
60) ethylbenzene	17.372	91	5580060	49.964	ppbV		95
61) m+p-xylene	17.515	91	9009320	101.428	ppbV		99
62) bromoform	17.596	173	2783058	59.319	ppbV		98
63) styrene	17.786	104	3386031	51.493	ppbV		97
64) 1,1,2,2-tetrachloroethane	17.867	83	3757454	49.041	ppbV		99
65) o-xylene	17.867	91	4558126	49.373	ppbV		96
66) 1,2,3-trichloropropane	17.962	75	2833680	52.139	ppbV		97
68) isopropylbenzene	18.296	105	5517442	49.190	ppbV		97
69) bromobenzene	18.386	77	3379279	52.919	ppbV		97

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253203.D
Acq On : 26 Mar 2018 3:35 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD50.0
Misc : WG1100531
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 26 12:14:18 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

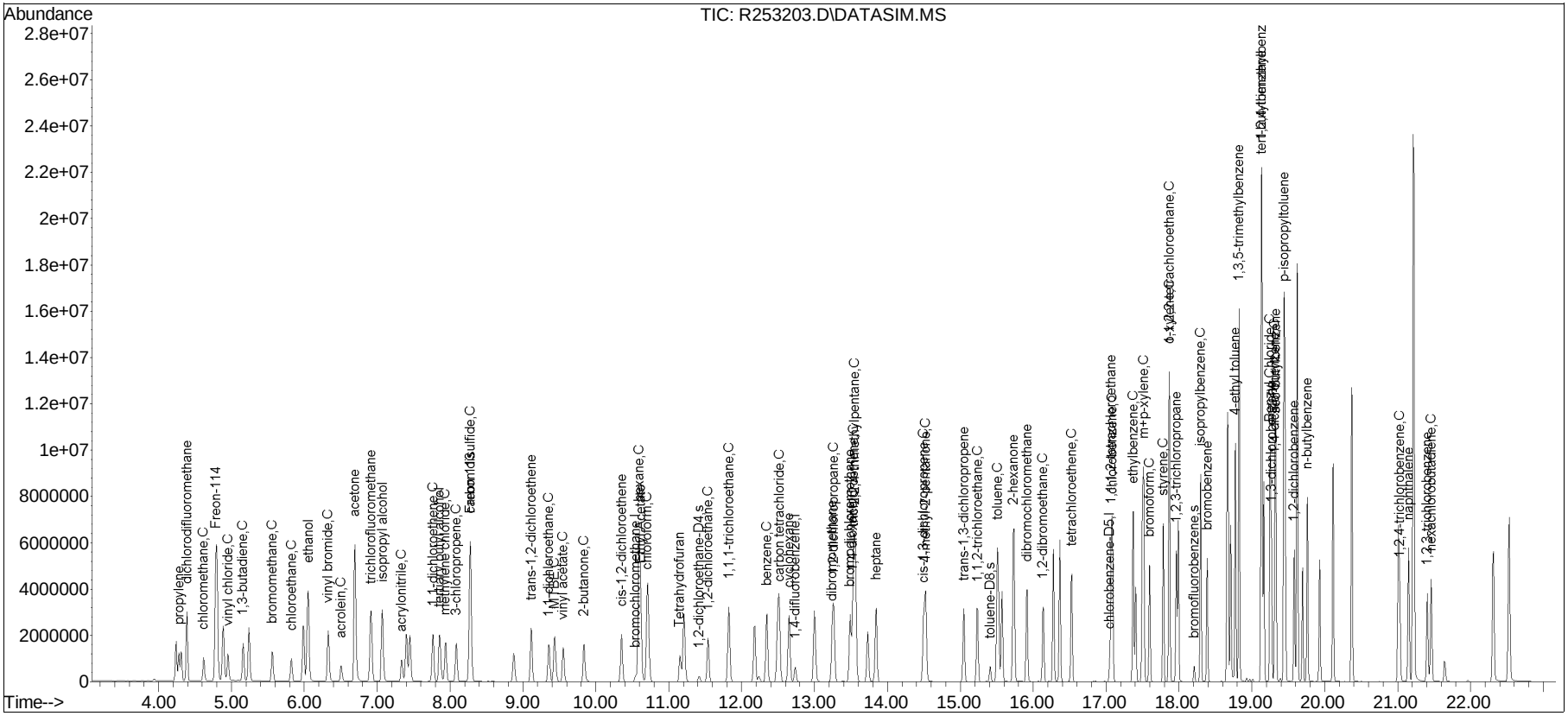
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) 4-ethyl toluene	18.772	105	6144766	49.403	ppbV		95
71) 1,3,5-trimethylbenzene	18.825	105	5122516	50.366	ppbV		90
72) tert-butylbenzene	19.129	119	4864045	46.373	ppbV		96
73) 1,2,4-trimethylbenzene	19.134	105	5021607	47.387	ppbV		98
74) Benzyl Chloride	19.249	91	5035729	57.054	ppbV		93
75) 1,3-dichlorobenzene	19.268	146	3927964	52.881	ppbV		96
76) 1,4-dichlorobenzene	19.315	146	3950534	51.727	ppbV		89
77) sec-butylbenzene	19.329	105	6992775	46.749	ppbV	#	91
78) p-isopropyltoluene	19.439	119	6118160	48.957	ppbV		93
79) 1,2-dichlorobenzene	19.582	146	3675150	52.776	ppbV		97
80) n-butylbenzene	19.763	91	6089089	47.734	ppbV	#	90
81) 1,2,4-trichlorobenzene	21.030	180	3505449	53.614	ppbV	#	87
82) naphthalene	21.148	128	6790632	48.986	ppbV	#	93
83) 1,2,3-trichlorobenzene	21.405	180	3229398	55.963	ppbV		94
84) hexachlorobutadiene	21.459	225	2966705	58.664	ppbV		98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0325SIM_ICAL\R253200.D

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253203.D
Acq On : 26 Mar 2018 3:35 am
Operator : AIRPIANO2:AR
Sample : ITO15-SIMSTD50.0
Misc : WG1100531
ALS Vial : 8 Sample Multiplier: 1

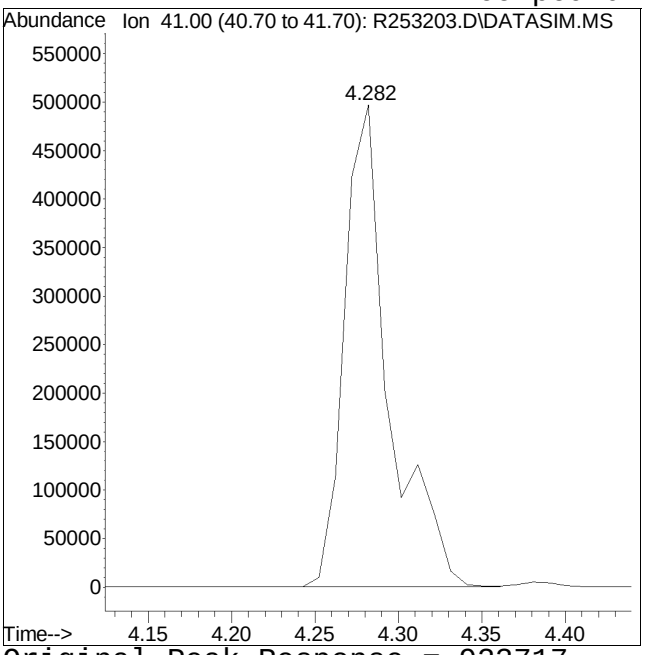
Quant Time: Mar 26 12:14:18 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 07:24:41 2018
Response via : Initial Calibration



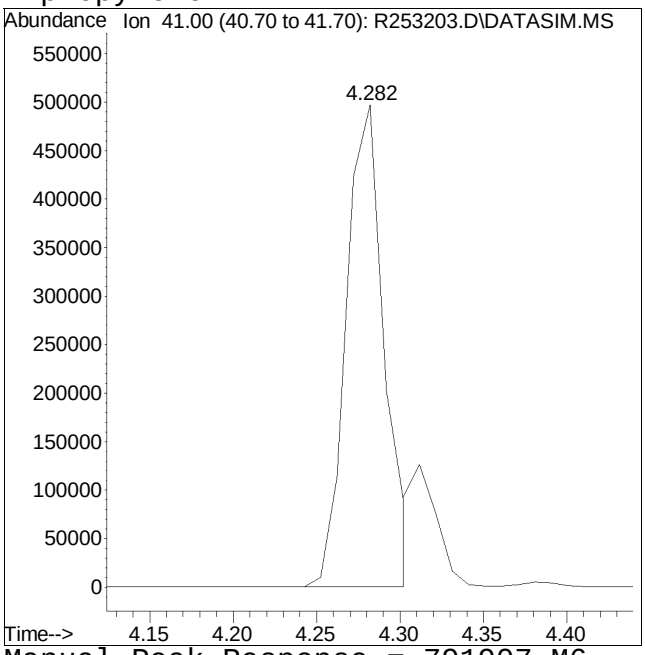
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253203.D
Date Inj'd : 3/26/2018 3:35 am
Sample : ITO15-SIMSTD50.0
Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #2: propylene



Original Peak Response = 923717



Manual Peak Response = 791907 M6

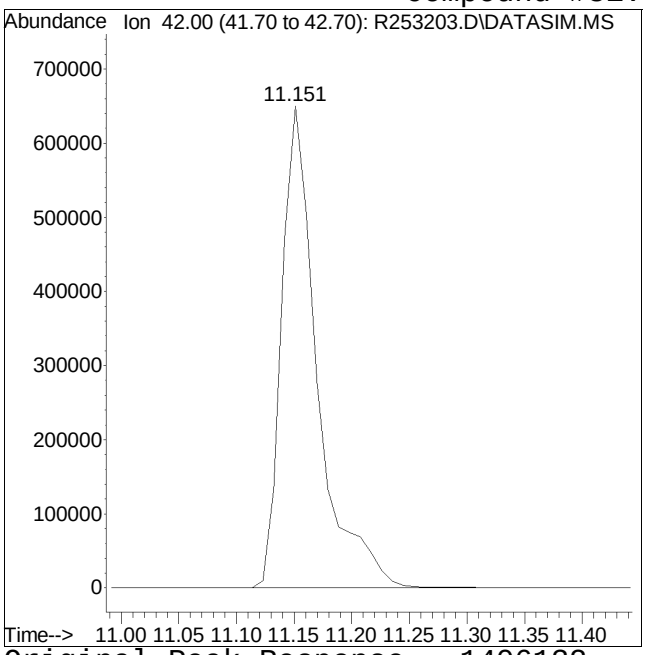
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

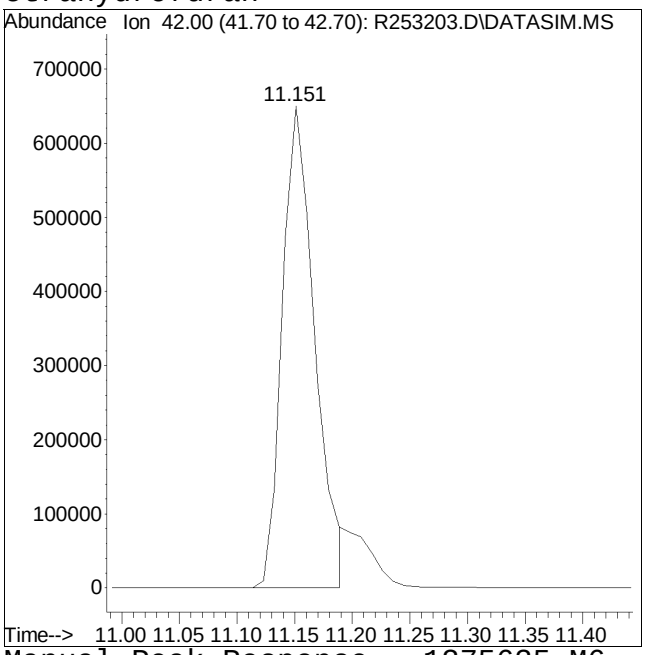
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253203.D
Date Inj'd : 3/26/2018 3:35 am
Sample : ITO15-SIMSTD50.0

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 7:25 am

Compound #31: Tetrahydrofuran



Original Peak Response = 1406132



Manual Peak Response = 1275635 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253208.D
Acq On : 26 Mar 2018 10:23 am
Operator : AIRPIANO2:AR
Sample : CTO15-SIMSTD5.0
Misc : WG1100531
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Mar 26 12:19:00 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	bromochloromethane	1.000	1.000	0.0	106	0.00
2		propylene	0.578	0.588	-1.7	115	0.00
3		dichlorodifluoromethane	1.995	1.900	4.8	105	0.00
4	C	chloromethane	0.926	0.798	13.8	94	0.00
5		Freon-114	2.693	2.443	9.3	99	0.00
6	C	vinyl chloride	1.051	0.931	11.4	97	0.00
7	C	1,3-butadiene	0.698	0.689	1.3	109	0.00
8	C	bromomethane	0.905	0.824	9.0	99	0.00
9	C	chloroethane	0.517	0.454	12.2	97	0.00
10		ethanol	0.641	0.560	12.6	95	0.00
11	C	vinyl bromide	0.842	0.813	3.4	104	0.00
12	C	acrolein	0.424	0.341	19.6	92	0.00
13		acetone	1.145	1.317	-15.0	121	0.00
14		trichlorofluoromethane	2.061	1.914	7.1	87	0.00
15		isopropyl alcohol	1.271	1.186	6.7	131	0.00
16	C	acrylonitrile	0.545	0.489	10.3	100	0.00
17	C	1,1-dichloroethene	1.362	1.306	4.1	106	0.00
18		tertiary butyl alcohol	1.320	1.303	1.3	110	0.00
19	C	methylene chloride	1.004	0.951	5.3	103	0.00
20	C	3-chloropropene	0.910	0.999	-9.8	121	0.00
21	C	carbon disulfide	2.364	2.230	5.7	105	0.00
22		Freon 113	1.582	1.559	1.5	109	0.00
23		trans-1,2-dichloroethene	1.225	1.210	1.2	108	0.00
24	C	1,1-dichloroethane	1.550	1.479	4.6	104	0.00
25	C	MTBE	1.863	2.051	-10.1	119	0.00
26	C	vinyl acetate	1.537	1.706	-11.0	126	0.00
27	C	2-butanone	1.627	1.668	-2.5	113	0.00
28		cis-1,2-dichloroethene	1.172	1.147	2.1	106	0.00
29		Ethyl Acetate	0.250	0.271	-8.4	116	0.00
30	C	chloroform	1.738	1.721	1.0	108	0.00
31		Tetrahydrofuran	0.900	0.845	6.1	110	0.00
32	C	1,2-dichloroethane	1.205	1.160	3.7	106	0.00
33	I	1,4-difluorobenzene	1.000	1.000	0.0	115	0.00
34	C	hexane	0.524	0.487	7.1	110	0.00
35	s	1,2-dichloroethane-D4	0.317	0.308	2.8	112	0.00
36	C	1,1,1-trichloroethane	0.709	0.663	6.5	111	0.00
37	C	benzene	1.081	0.951	12.0	105	0.01
38	C	carbon tetrachloride	0.704	0.663	5.8	111	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253208.D
Acq On : 26 Mar 2018 10:23 am
Operator : AIRPIANO2:AR
Sample : CTO15-SIMSTD5.0
Misc : WG1100531
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Mar 26 12:19:00 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
39		cyclohexane	0.527	0.507	3.8	114	0.00
40		dibromomethane	0.477	0.376	21.2	102	0.00
41	C	1,2-dichloropropane	0.441	0.387	12.2	105	0.00
42		bromodichloromethane	0.824	0.816	1.0	116	0.00
43	C	1,4-dioxane	0.224	0.232	-3.6	121	0.00
44	C	trichloroethene	0.441	0.417	5.4	112	0.00
45	C	2,2,4-trimethylpentane	1.718	1.655	3.7	113	0.00
46		heptane	0.618	0.595	3.7	113	0.00
47	C	cis-1,3-dichloropropene	0.585	0.582	0.5	114	0.00
48	C	4-methyl-2-pentanone	0.867	0.854	1.5	115	0.00
49		trans-1,3-dichloropropene	0.572	0.493	13.8	98	0.00
50	C	1,1,2-trichloroethane	0.439	0.417	5.0	111	0.00
51	I	chlorobenzene-D5	1.000	1.000	0.0	109	0.00
52	C	toluene	5.482	5.366	2.1	108	0.00
53	s	toluene-D8	3.757	3.922	-4.4	113	0.00
54		2-hexanone	3.536	3.708	-4.9	114	0.00
55		dibromochloromethane	3.146	3.519	-11.9	123	0.00
56	C	1,2-dibromoethane	3.018	3.036	-0.6	110	0.00
57	C	tetrachloroethene	2.309	2.379	-3.0	115	0.00
58		1,1,1,2-tetrachloroethane	2.188	2.106	3.7	105	0.00
59	C	chlorobenzene	4.323	4.348	-0.6	110	0.00
60	C	ethylbenzene	6.802	6.886	-1.2	109	0.00
61	C	m+p-xylene	5.321	5.407	-1.6	108	0.00
62	C	bromoform	2.850	3.329	-16.8	126	0.00
63	C	styrene	3.859	4.090	-6.0	110	0.00
64	C	1,1,2,2-tetrachloroethane	4.582	4.626	-1.0	107	0.00
65	C	o-xylene	5.518	5.699	-3.3	109	0.00
66		1,2,3-trichloropropane	3.324	3.130	5.8	102	0.00
67	s	bromofluorobenzene	1.974	2.108	-6.8	113	0.00
68	C	isopropylbenzene	6.935	6.820	1.7	108	0.00
69		bromobenzene	3.874	3.694	4.6	102	0.00
70		4-ethyl toluene	6.760	7.808	-15.5	111	0.00
71		1,3,5-trimethylbenzene	5.659	6.163	-8.9	107	0.00
72		tert-butylbenzene	6.285	6.101	2.9	103	0.00
73		1,2,4-trimethylbenzene	5.662	6.467	-14.2	108	0.00
74	C	Benzyl Chloride	5.107	5.798	-13.5	116	0.00
75		1,3-dichlorobenzene	4.024	4.643	-15.4	111	0.00
76	C	1,4-dichlorobenzene	4.135	4.764	-15.2	110	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253208.D
Acq On : 26 Mar 2018 10:23 am
Operator : AIRPIANO2:AR
Sample : CTO15-SIMSTD5.0
Misc : WG1100531
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Mar 26 12:19:00 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
77	sec-butylbenzene	8.859	8.588	3.1	102	0.00
78	p-isopropyltoluene	7.366	6.843	7.1	97	0.00
79	1,2-dichlorobenzene	3.810	4.393	-15.3	112	0.00
80	n-butylbenzene	7.231	7.380	-2.1	102	0.00
81 C	1,2,4-trichlorobenzene	3.251	3.933	-21.0	106	0.00
82	naphthalene	6.703	7.884	-17.6	101	0.00
83	1,2,3-trichlorobenzene	2.707	3.287	-21.4	101	0.00
84 C	hexachlorobutadiene	2.738	3.126	-14.2	109	0.00

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253208.D
Acq On : 26 Mar 2018 10:23 am
Operator : AIRPIANO2:AR
Sample : CTO15-SIMSTD5.0
Misc : WG1100531
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Mar 26 12:19:00 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	290282	10.000	ppbV	0.00
Standard Area = 273176			Recovery = 106.26%			
33) 1,4-difluorobenzene	12.738	114	717903	10.000	ppbV	0.00
Standard Area = 626263			Recovery = 114.63%			
51) chlorobenzene-D5	17.048	54	156587	10.000	ppbV	0.00
Standard Area = 143934			Recovery = 108.79%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.414	65	220796	9.709	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 97.09%			
53) toluene-D8	15.409	98	614063	10.438	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 104.38%			
67) bromofluorobenzene	18.205	95	330141	10.680	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 106.80%			
Target Compounds						Qvalue
2) propylene	4.282	41	85408M6	5.087	ppbV	
3) dichlorodifluoromethane	4.390	85	275794	4.763	ppbV	100
4) chloromethane	4.617	50	115885	4.309	ppbV	100
5) Freon-114	4.785	85	354611	4.537	ppbV	98
6) vinyl chloride	4.952	62	135188	4.433	ppbV	100
7) 1,3-butadiene	5.159	54	100005	4.936	ppbV	99
8) bromomethane	5.559	94	119586	4.552	ppbV	99
9) chloroethane	5.823	64	65961	4.394	ppbV	99
10) ethanol	6.039	31	406284	21.843	ppbV	100
11) vinyl bromide	6.327	106	118065	4.830	ppbV	100
12) acrolein	6.511	56	49449	4.021	ppbV	100
13) acetone	6.694	43	955511	28.755	ppbV	100
14) trichlorofluoromethane	6.910	101	277803	4.645	ppbV	100
15) isopropyl alcohol	7.062	45	430375	11.661	ppbV	100
16) acrylonitrile	7.334	53	70982	4.491	ppbV	99
17) 1,1-dichloroethene	7.758	61	189518	4.793	ppbV	99
18) tertiary butyl alcohol	7.861	59	189178	4.935	ppbV	96
19) methylene chloride	7.933	49	138070	4.738	ppbV	99
20) 3-chloropropene	8.077	41	145015	5.492	ppbV	99
21) carbon disulfide	8.277	76	323650	4.717	ppbV	94
22) Freon 113	8.277	101	226342	4.929	ppbV	97
23) trans-1,2-dichloroethene	9.106	61	175642	4.938	ppbV	99
24) 1,1-dichloroethane	9.352	63	214663	4.772	ppbV	99

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253208.D
Acq On : 26 Mar 2018 10:23 am
Operator : AIRPIANO2:AR
Sample : CTO15-SIMSTD5.0
Misc : WG1100531
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Mar 26 12:19:00 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
25) MTBE	9.440	73	297746	5.504	ppbV	99
26) vinyl acetate	9.550	43	247561	5.547	ppbV	100
27) 2-butanone	9.843	43	242127	5.128	ppbV	99
28) cis-1,2-dichloroethene	10.343	61	166459	4.892	ppbV	100
29) Ethyl Acetate	10.625	61	39310	5.414	ppbV	98
30) chloroform	10.691	83	249779	4.952	ppbV	100
31) Tetrahydrofuran	11.170	42	122588M6	4.695	ppbV	
32) 1,2-dichloroethane	11.536	62	168430	4.816	ppbV	99
34) hexane	10.588	57	174909	4.652	ppbV	94
36) 1,1,1-trichloroethane	11.823	97	238126	4.679	ppbV	99
37) benzene	12.346	78	341378	4.400	ppbV	92
38) carbon tetrachloride	12.509	117	237822	4.706	ppbV	99
39) cyclohexane	12.650	56	181993	4.806	ppbV	99
40) dibromomethane	13.238	93	135018	3.945	ppbV	97
41) 1,2-dichloropropane	13.260	63	138820	4.385	ppbV	100
42) bromodichloromethane	13.478	83	293065	4.954	ppbV	99
43) 1,4-dioxane	13.532	88	83274	5.189	ppbV	97
44) trichloroethene	13.532	130	149677	4.728	ppbV	98
45) 2,2,4-trimethylpentane	13.554	57	594201	4.818	ppbV	100
46) heptane	13.837	43	213496	4.809	ppbV	99
47) cis-1,3-dichloropropene	14.497	75	208933	4.978	ppbV	99
48) 4-methyl-2-pentanone	14.524	43	306600	4.923	ppbV	99
49) trans-1,3-dichloropropene	15.048	75	176852	4.304	ppbV	99
50) 1,1,2-trichloroethane	15.229	97	149783	4.757	ppbV	97
52) toluene	15.500	91	420095	4.894	ppbV	99
54) 2-hexanone	15.726	43	290292	5.243	ppbV	96
55) dibromochloromethane	15.907	129	275505	5.593	ppbV	100
56) 1,2-dibromoethane	16.132	107	237735	5.031	ppbV	99
57) tetrachloroethene	16.521	166	186251	5.152	ppbV	96
58) 1,1,1,2-tetrachloroethane	17.067	131	164892	4.812	ppbV	99
59) chlorobenzene	17.086	112	340431	5.029	ppbV	98
60) ethylbenzene	17.367	91	539168	5.062	ppbV	98
61) m+p-xylene	17.510	91	846677	10.161	ppbV	100
62) bromoform	17.591	173	260626	5.841	ppbV	100
63) styrene	17.781	104	320184	5.299	ppbV	99
64) 1,1,2,2-tetrachloroethane	17.862	83	362197	5.048	ppbV	100
65) o-xylene	17.862	91	446223	5.164	ppbV	98
66) 1,2,3-trichloropropane	17.962	75	245055	4.708	ppbV	99
68) isopropylbenzene	18.295	105	533984	4.917	ppbV	99
69) bromobenzene	18.381	77	289241	4.768	ppbV	95

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253208.D
Acq On : 26 Mar 2018 10:23 am
Operator : AIRPIANO2:AR
Sample : CTO15-SIMSTD5.0
Misc : WG1100531
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Mar 26 12:19:00 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\R253200.D
Sub List : Default - All compounds listed

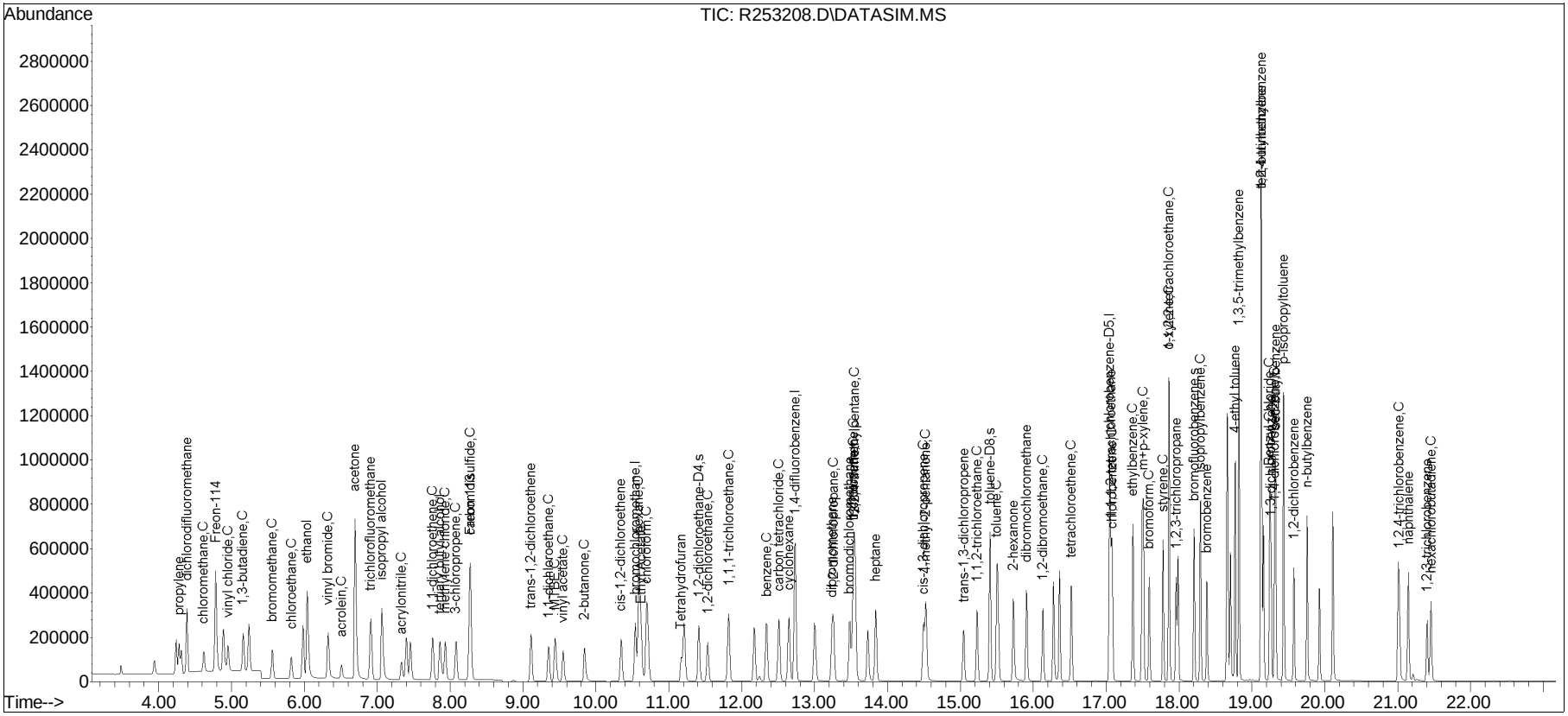
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.772	105	611354	5.776	ppbV	99
71) 1,3,5-trimethylbenzene	18.820	105	482520	5.445	ppbV	97
72) tert-butylbenzene	19.129	119	477631	4.853	ppbV	100
73) 1,2,4-trimethylbenzene	19.129	105	506307	5.710	ppbV	98
74) Benzyl Chloride	19.244	91	453934	5.677	ppbV	98
75) 1,3-dichlorobenzene	19.263	146	363533	5.770	ppbV	98
76) 1,4-dichlorobenzene	19.310	146	372979	5.760	ppbV	95
77) sec-butylbenzene	19.324	105	672381	4.847	ppbV	99
78) p-isopropyltoluene	19.434	119	535748	4.645	ppbV	99
79) 1,2-dichlorobenzene	19.577	146	343934	5.765	ppbV	98
80) n-butylbenzene	19.758	91	577803	5.103	ppbV	97
81) 1,2,4-trichlorobenzene	21.019	180	307950	6.050	ppbV	97
82) naphthalene	21.148	128	617235	5.880	ppbV	99
83) 1,2,3-trichlorobenzene	21.405	180	257384	6.072	ppbV	98
84) hexachlorobutadiene	21.459	225	244744	5.708	ppbV	95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0325SIM_ICAL\R253200.D

Data Path : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\
Data File : R253208.D
Acq On : 26 Mar 2018 10:23 am
Operator : AIRPIANO2:AR
Sample : CTO15-SIMSTD5.0
Misc : WG1100531
ALS Vial : 2 Sample Multiplier: 1

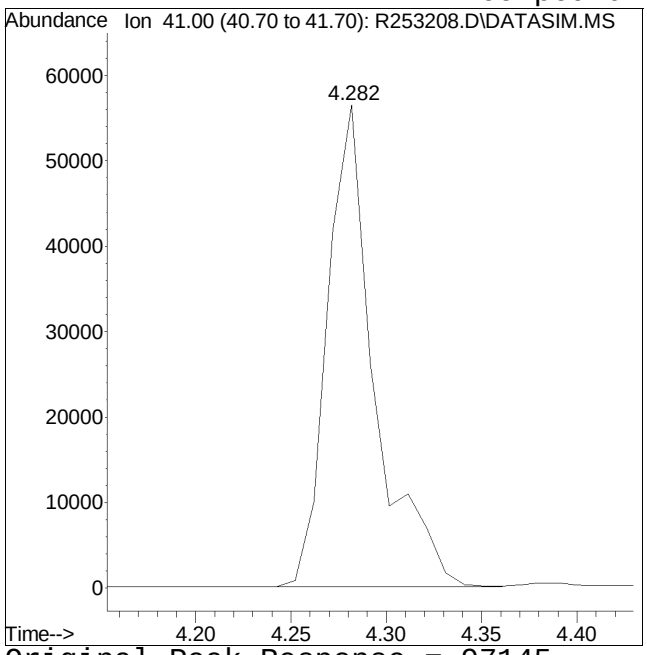
Quant Time: Mar 26 12:19:00 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180325SIM_ICAL\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration



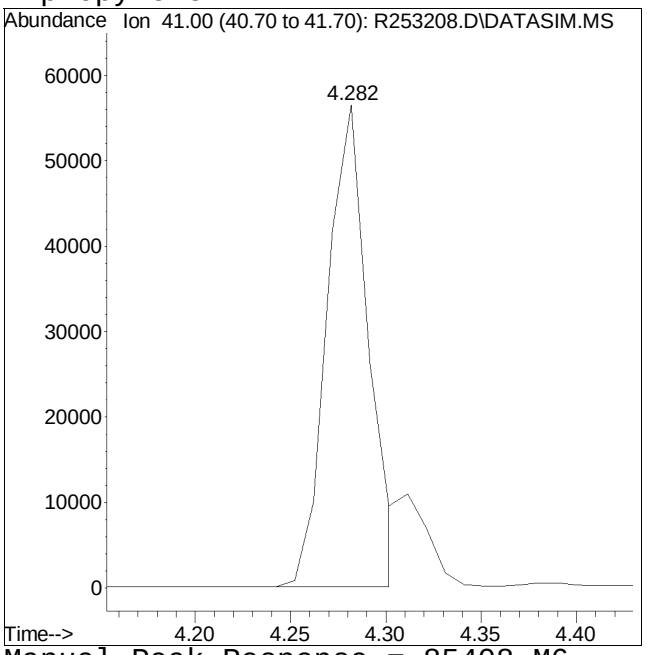
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253208.D
Date Inj'd : 3/26/2018 10:23 am
Sample : CTO15-SIMSTD5.0
Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 12:18 pm

Compound #2: propylene



Original Peak Response = 97145



Manual Peak Response = 85408 M6

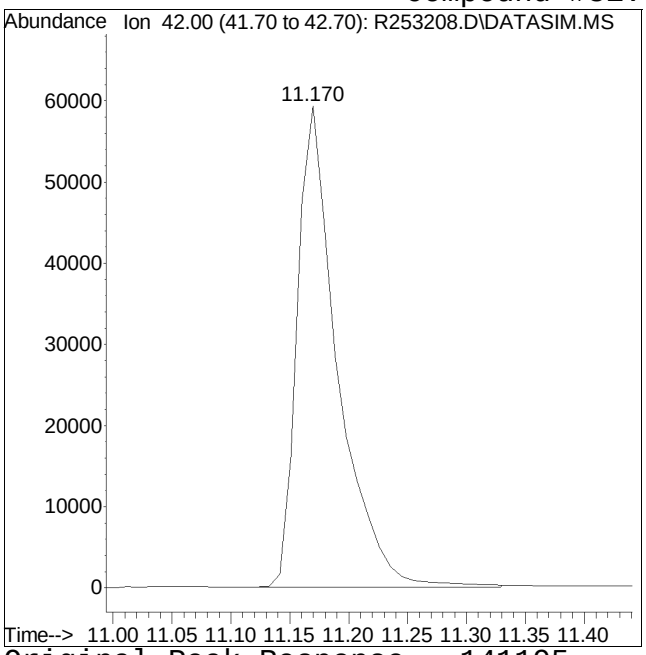
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

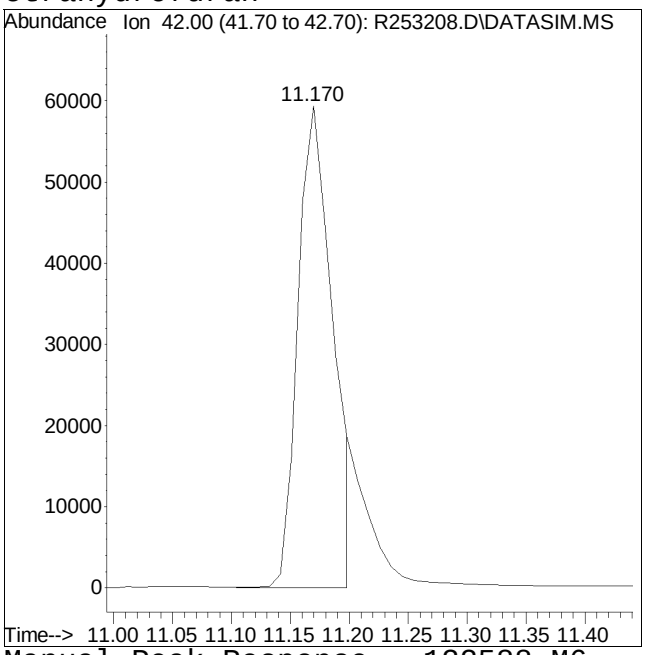
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253208.D
Date Inj'd : 3/26/2018 10:23 am
Sample : CTO15-SIMSTD5.0

Method : TSIM180325.M
Operator : AIRPIANO2:AR
Instrument : Airpiano 2
Quant Date : 3/26/2018 12:18 pm

Compound #31: Tetrahydrofuran



Original Peak Response = 141195



Manual Peak Response = 122588 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Response Factor Report

Method Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Method File : TSIM180404.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Thu Apr 05 10:02:48 2018
Response Via : Initial Calibration

Calibration Files
0.02=r156844_Ev2.D 0.04=r156845_Ev2.D 0.1 =r156846_Ev2.D 0.2 =r156847_Ev2.D 0.5 =r156848_Ev2.D
1.0 =r156849_Ev2.D 5.0 =r156850_Ev2.D 10.0=r156851_Ev2.D 20.0=r156852_Ev2.D 50.0=r156853_Ev2.D

		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
1)	I	bromochloromethane	----------ISTD----------											
2)		propylene			0.808	0.869	0.806	0.793	0.724	0.715	0.699	0.530	0.7430	13.93
3)		dichlorodifluorome...	1.557	1.386	1.305	1.523	1.414	1.388	1.279	1.301	1.288	0.993	1.3434	11.64
4)	C	chloromethane		0.849	0.762	0.885	0.822	0.801	0.755	0.857	0.856	0.676	0.8071	8.18
5)		Freon-114	1.648	1.616	1.558	1.797	1.699	1.653	1.530	1.667	1.727	1.379	1.6274	7.18
6)	C	vinyl chloride	0.903	0.830	0.762	0.893	0.832	0.817	0.757	0.784	0.794	0.660	0.8033	8.74
7)	C	1,3-butadiene	0.685	0.711	0.585	0.698	0.645	0.636	0.601	0.662	0.699	0.572	0.6493	7.73
8)	C	bromomethane	0.576	0.784	0.638	0.751	0.690	0.665	0.621	0.621	0.648	0.544	0.6537	11.23
9)	C	chloroethane	0.579	0.418	0.351	0.463	0.424	0.423	0.272	0.400	0.419	0.347	0.4096	19.70
10)		ethanol					0.706	0.655	0.613	0.604	0.644	0.514	0.6226	10.33
11)	C	vinyl bromide	0.831	0.705	0.619	0.704	0.667	0.642	0.609	0.613	0.636	0.515	0.6543	12.63
12)		acrolein	0.658	0.456	0.304	0.384	0.349	0.321	0.317	0.321	0.352	0.305	0.3769	28.96
13)		acetone				1.303	1.169	1.073	0.904	0.855	0.842	0.599	0.9634	24.41
14)		trichlorofluoromet...	1.369	1.345	1.251	1.473	1.401	1.335	1.237	1.176	1.099	0.850	1.2536	14.36
15)		isopropyl alcohol				2.101	1.512	1.294	1.143	1.062	1.150	0.865	1.3039	30.99#
16)	C	acrylonitrile	0.677	0.650	0.522	0.656	0.616	0.605	0.595	0.598	0.656	0.565	0.6141	7.75
17)	C	1,1-dichloroethene	1.155	1.090	1.083	1.252	1.168	1.131	1.056	1.013	1.006	0.830	1.0783	10.64
18)		tertiary butyl alc...	1.497	1.409	1.232	1.344	1.203	1.107	1.140	1.054	1.164	0.995	1.2145	13.12
19)	C	methylene chloride					1.108	1.078	0.998	0.977	1.015	0.827	1.0003	9.86
20)	C	3-chloropropene				1.297	1.238	1.231	1.377	1.130	1.102	0.869	1.1776	14.03
21)	C	carbon disulfide				2.189	2.112	2.077	2.047	2.062	2.195	1.846	2.0754	5.65
22)		Freon 113	1.565	1.338	1.307	1.508	1.386	1.367	1.258	1.222	1.226	1.021	1.3199	11.68
23)		trans-1,2-dichloro...	1.159	1.079	1.016	1.247	1.170	1.137	1.068	1.027	1.021	0.847	1.0771	10.27
24)	C	1,1-dichloroethane	1.591	1.332	1.388	1.641	1.457	1.431	1.325	1.289	1.256	1.015	1.3725	12.91
25)	C	MTBE	1.922	1.867	1.662	1.927	2.006	1.922	1.805	1.765	1.781	1.401	1.8056	9.63
26)	C	vinyl acetate			1.835	2.004	2.049	2.037	1.825	2.106	1.780	1.388	1.8779	12.35
27)	C	2-butanone				2.192	2.075	2.010	1.786	1.904	1.957	1.243	1.8809	16.43
28)		cis-1,2-dichloroet...	1.132	1.060	0.966	1.160	1.086	1.100	1.031	1.011	1.016	0.844	1.0408	8.74
29)		Ethyl Acetate				0.295	0.281	0.268	0.263	0.256	0.267	0.239	0.2669	6.75
30)	C	chloroform	1.452	1.244	1.201	1.399	1.333	1.325	1.242	1.202	1.217	1.032	1.2646	9.39
31)		Tetrahydrofuran			1.110	1.281	1.238	1.220	1.202	1.192	1.224	1.037	1.1880	6.55

Response Factor Report

Method Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Method File : TSIM180404.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Thu Apr 05 10:02:48 2018
Response Via : Initial Calibration

Calibration Files
0.02=r156844_Ev2.D 0.04=r156845_Ev2.D 0.1 =r156846_Ev2.D 0.2 =r156847_Ev2.D 0.5 =r156848_Ev2.D
1.0 =r156849_Ev2.D 5.0 =r156850_Ev2.D 10.0=r156851_Ev2.D 20.0=r156852_Ev2.D 50.0=r156853_Ev2.D

		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
32)	C	1,2-dichloroethane	1.016	0.995	0.917	1.063	0.988	0.956	0.893	0.853	0.831	0.649	0.9160	12.99
33)	I	1,4-difluorobenzene	----------	----------	ISTD	----------	----------	----------	----------	----------	----------	----------		
34)	C	hexane			0.595	0.658	0.635	0.649	0.622	0.608	0.622	0.534	0.6154	6.30
35)	s	1,2-dichloroethane-D4	0.273	0.278	0.272	0.275	0.272	0.274	0.272	0.267	0.249	0.204	0.2634	8.53
36)	C	1,1,1-trichloroethane	0.530	0.395	0.380	0.509	0.538	0.560	0.491	0.547	0.554	0.433	0.4937	13.66
37)	C	benzene		1.163	1.106	1.257	1.172	1.187	1.118	1.109	1.175	1.053	1.1490	5.15
38)	C	carbon tetrachloride	0.510	0.471	0.424	0.483	0.469	0.472	0.456	0.457	0.470	0.387	0.4598	7.29
39)		cyclohexane	0.606	0.645	0.617	0.663	0.657	0.678	0.651	0.638	0.672	0.594	0.6421	4.44
40)		Dibromomethane	0.556	0.493	0.385	0.408	0.373	0.373	0.351	0.343	0.353	0.300	0.3935	19.32
41)	C	1,2-dichloropropane	0.448	0.512	0.452	0.507	0.493	0.474	0.450	0.439	0.453	0.383	0.4611	8.20
42)		bromodichloromethane	0.523	0.483	0.553	0.600	0.589	0.595	0.599	0.603	0.632	0.538	0.5715	8.01
43)	C	1,4-dioxane		0.246	0.199	0.269	0.230	0.233	0.233	0.225	0.253	0.232	0.2357	8.26
44)	C	trichloroethene	0.547	0.419	0.428	0.472	0.445	0.428	0.419	0.423	0.445	0.401	0.4427	9.35
45)	C	2,2,4-trimethylpen...	2.055	1.938	1.857	2.229	2.132	2.115	2.023	1.991	2.072	1.801	2.0212	6.41
46)		heptane	1.042	0.983	0.869	1.021	1.013	1.027	0.983	0.973	1.000	0.808	0.9718	7.71
47)	C	cis-1,3-dichloropr...	0.527	0.478	0.438	0.524	0.512	0.532	0.555	0.574	0.626	0.549	0.5315	9.61
48)	C	4-methyl-2-pentanone	0.976	0.912	0.903	1.087	1.077	1.139	1.101	1.119	1.169	0.928	1.0412	9.71
49)		trans-1,3-dichloro...	0.486	0.378	0.403	0.487	0.463	0.502	0.523	0.544	0.591	0.516	0.4893	12.90
50)	C	1,1,2-trichloroethane	0.506	0.431	0.406	0.451	0.421	0.429	0.414	0.411	0.436	0.382	0.4289	7.71
51)	I	chlorobenzene-D5	----------	----------	ISTD	----------	----------	----------	----------	----------	----------	----------		
52)	C	toluene	7.240	6.641	6.015	7.047	6.683	6.547	6.218	6.171	6.338	5.938	6.4839	6.63
53)	s	toluene-D8	4.517	4.452	4.493	4.556	4.540	4.397	4.416	4.383	4.476	4.541	4.4772	1.40
54)		2-hexanone	4.011	3.838	4.141	4.778	4.939	5.055	5.184	5.008	5.071	4.377	4.6402	10.79
55)		dibromochloromethane	1.872	2.386	2.066	2.461	2.397	2.429	2.522	2.602	2.762	2.556	2.4052	10.78
56)	C	1,2-dibromoethane	3.514	3.034	2.691	3.116	3.003	2.991	2.906	2.981	3.182	2.999	3.0416	6.92
57)	C	tetrachloroethene	2.041	2.372	2.131	2.473	2.263	2.267	2.161	2.137	2.277	2.219	2.2341	5.65
58)		1,1,1,2-tetrachlor...	2.271	1.484	1.670	2.071	1.929	1.930	1.946	1.991	2.100	1.961	1.9354	11.38
59)	C	chlorobenzene	5.412	4.682	4.403	5.200	4.895	4.889	4.655	4.709	5.052	4.788	4.8685	6.01
60)	C	ethylbenzene	7.471	7.246	6.861	8.294	8.011	8.115	8.039	8.033	8.300	7.510	7.7880	6.25
61)	C	m+p-xylene	6.131	5.866	5.663	7.030	6.800	6.820	6.589	6.678	6.751	5.973	6.4300	7.41

Response Factor Report

Method Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Method File : TSIM180404.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Thu Apr 05 10:02:48 2018
Response Via : Initial Calibration

Calibration Files
0.02=r156844_Ev2.D 0.04=r156845_Ev2.D 0.1 =r156846_Ev2.D 0.2 =r156847_Ev2.D 0.5 =r156848_Ev2.D
1.0 =r156849_Ev2.D 5.0 =r156850_Ev2.D 10.0=r156851_Ev2.D 20.0=r156852_Ev2.D 50.0=r156853_Ev2.D

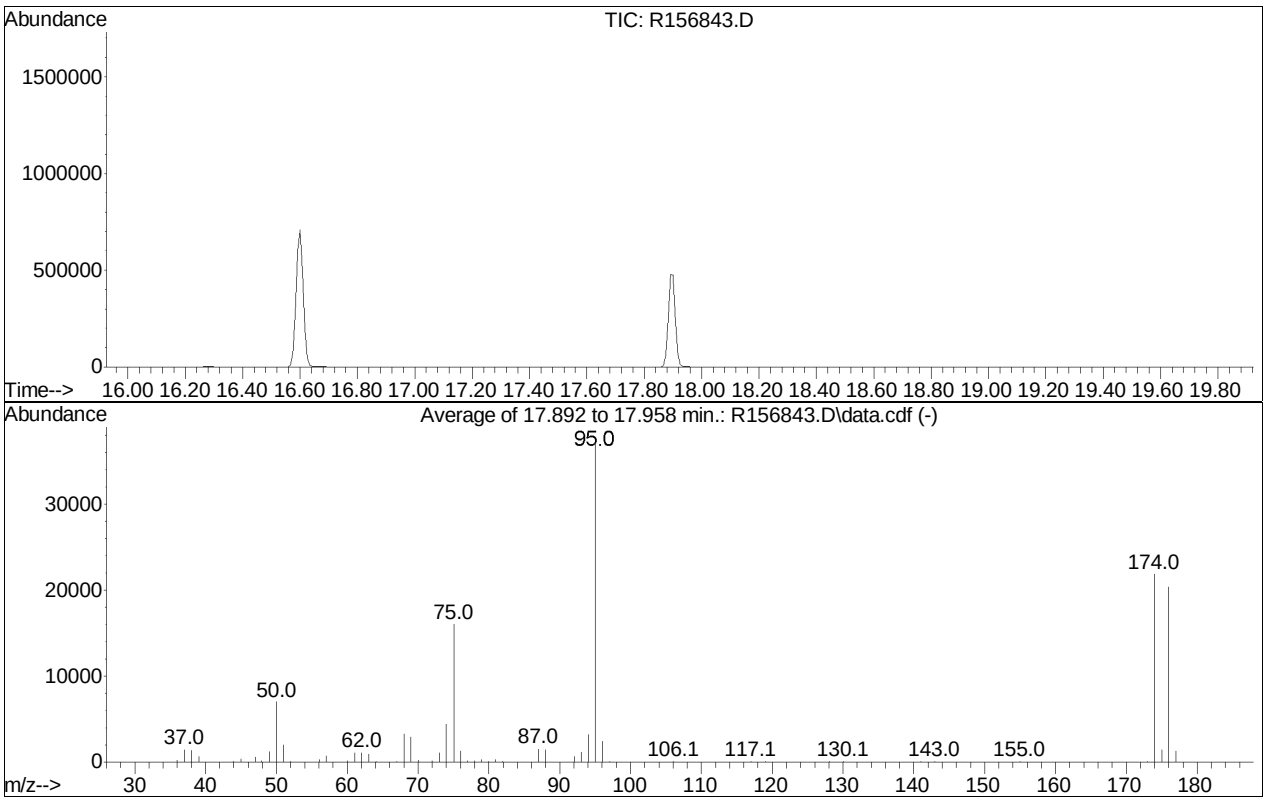
		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
62)	C	bromoform	2.183	1.502	1.471	1.790	1.757	1.803	1.999	2.124	2.294	2.193	1.9116	15.25
63)	C	styrene	4.632	4.100	4.100	4.869	4.890	4.928	5.141	5.345	5.709	5.239	4.8954	10.50
64)	C	1,1,2,2-tetrachlor...	4.445	4.065	3.970	4.811	4.698	4.624	4.685	4.730	5.017	4.491	4.5535	7.14
65)	C	o-xylene	6.451	5.722	5.700	6.990	6.798	6.881	6.866	6.790	6.944	5.996	6.5138	7.91
66)		1,2,3-Trichloropro...	3.718	3.647	3.382	4.047	3.858	3.718	3.667	3.781	3.962	3.592	3.7371	5.08
67)	s	bromofluorobenzene	1.378	2.084	1.991	2.343	2.457	2.370	2.451	2.743	2.443	2.532	2.2791	16.75
68)	C	isopropylbenzene	7.870	7.232	6.924	8.500	8.201	8.169	8.379	8.457	8.756	7.726	8.0215	7.29
69)		Bromobenzene	5.120	4.447	4.061	4.831	4.585	4.540	4.683	4.790	5.066	4.539	4.6661	6.63
70)		4-ethyl toluene	7.542	6.983	7.146	8.994	8.843	8.928	9.376	9.570	9.800	8.592	8.5774	11.75
71)		1,3,5-trimethylben...	6.326	6.210	6.185	7.928	7.805	7.896	8.125	8.189	8.389	7.327	7.4379	11.73
72)		tert-butylbenzene				7.578	7.494	7.610	7.840	8.036	8.161	6.750	7.6383	6.06
73)		1,2,4-trimethylben...	5.829	6.002	5.907	7.573	7.574	7.735	8.039	8.223	8.368	6.843	7.2092	13.71
74)	C	Benzyl Chloride	3.026	3.003	2.981	3.575	3.832	4.038	4.819	5.219	5.977	5.637	4.2107	26.84
75)		1,3-dichlorobenzene	3.993	3.998	4.031	4.853	4.813	4.698	4.992	5.227	5.519	4.893	4.7017	11.31
76)	C	1,4-dichlorobenzene	4.144	4.127	3.894	4.727	4.610	4.640	4.914	5.191	5.391	4.848	4.6487	10.29
77)		sec-butylbenzene	0.907	0.830	0.849	1.068	1.044	1.074	1.151	1.151	1.160	0.992	1.0225	12.14
78)		p-isopropyltoluene	7.160	6.903	7.204	8.977	8.843	9.101	9.667	9.808	9.796	8.108	8.5567	13.27
79)		1,2-dichlorobenzene	3.798	3.923	3.752	4.443	4.390	4.443	4.777	4.967	5.168	4.624	4.4284	10.94
80)		n-butylbenzene	5.661	6.428	6.632	8.392	8.556	8.882	9.539	9.466	9.291	8.005	8.0852	17.08
81)	C	1,2,4-trichloroben...		1.617	1.937	2.718	2.948	3.205	4.017	4.252	4.071	3.675	3.1600	29.89
82)		naphthalene		0.549	0.594	0.929	1.013	1.101	1.142	1.181	1.097	0.964	0.9523	24.25
83)		1,2,3-trichloroben...		2.159	2.085	2.698	2.837	3.060	3.809	3.973	3.637	3.312	3.0633	22.30
84)	C	hexachlorobutadiene	2.245	2.203	2.247	2.730	2.679	2.767	3.359	3.400	3.009	2.697	2.7338	15.78

(#) = Out of Range

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : R156843.D
Acq On : 4 Apr 2018 5:34 PM
Operator : AIRLAB15:RY
Sample : WG1103790-1,3,250,250
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Integration File: rteint.p

Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Thu Apr 05 10:02:48 2018



Spectrum Information: Average of 17.892 to 17.958 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	18.9	7016	PASS
75	95	30	66	43.1	16016	PASS
95	95	100	100	100.0	37135	PASS
96	95	5	9	6.4	2386	PASS
173	174	0.00	2	0.5	109	PASS
174	95	50	120	58.8	21841	PASS
175	174	4	9	6.7	1458	PASS
176	174	93	101	93.4	20397	PASS
177	176	5	9	6.2	1270	PASS

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156844_Ev2.D
Acq On : 4 Apr 2018 6:10 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.02
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 10:02:37 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.67	49	132911	10.000	ppbV	# 0.00
Standard Area = 133810			Recovery = 99.33%			
33) 1,4-difluorobenzene	11.94	114	272498	10.000	ppbV	0.01
Standard Area = 280369			Recovery = 97.19%			
51) chlorobenzene-D5	16.59	54	56352	10.000	ppbV	0.00
Standard Area = 59059			Recovery = 95.42%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	10.56	65	74380	10.047	ppbV	0.02
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.47%			
53) toluene-D8	14.77	98	254561	10.228	ppbV	0.02
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.28%			
67) bromofluorobenzene	17.89	95	77661	5.623	ppbV	0.02
Spiked Amount 10.000	Range 70 - 130		Recovery = 56.23%#			
Target Compounds						Qvalue
2) propylene	3.91	41	301M6	0.031	ppbV	
3) dichlorodifluoromethane	3.99	85	414	0.024	ppbV	92
4) chloromethane	4.18	50	253	0.025	ppbV #	75
5) Freon-114	4.31	85	438	0.022	ppbV	95
6) vinyl chloride	4.45	62	240	0.024	ppbV #	71
7) 1,3-butadiene	4.62	54	182	0.023	ppbV #	71
8) bromomethane	4.95	94	153	0.019	ppbV	90
9) chloroethane	5.17	64	154	0.043	ppbV #	37
10) ethanol	5.37	31	3585	0.440	ppbV	98
11) vinyl bromide	5.63	106	221M2	0.027	ppbV	
12) acrolein	5.80	56	175M4	0.042	ppbV	
13) acetone	5.97	43	5209	0.434	ppbV #	98
14) trichlorofluoromethane	6.15	101	364	0.022	ppbV	98
15) isopropyl alcohol	6.30	45	5576	0.367	ppbV #	95
16) acrylonitrile	6.55	53	180M2	0.023	ppbV	
17) 1,1-dichloroethene	6.93	61	307	0.022	ppbV	88
18) tertiary butyl alcohol	7.06	59	398	0.026	ppbV #	1
19) methylene chloride	7.10	49	395	0.030	ppbV	100
20) 3-chloropropene	7.24	41	357	0.020	ppbV #	77
21) carbon disulfide	7.40	76	484	0.018	ppbV #	1
22) Freon 113	7.44	101	416	0.025	ppbV #	87
23) trans-1,2-dichloroethene	8.24	61	308	0.022	ppbV #	84
24) 1,1-dichloroethane	8.47	63	423	0.024	ppbV	90

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156844_Ev2.D
Acq On : 4 Apr 2018 6:10 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.02
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 10:02:37 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	8.60	73	511	0.021	ppbV	#	63
26) vinyl acetate	8.71	43	528	0.022	ppbV	#	71
27) 2-butanone	9.00	43	689	0.029	ppbV	#	91
28) cis-1,2-dichloroethene	9.47	61	301	0.022	ppbV		94
29) Ethyl Acetate	9.81	61	98	0.028	ppbV	#	1
30) chloroform	9.83	83	386	0.023	ppbV	#	82
31) Tetrahydrofuran	10.35	42	317	0.020	ppbV	#	87
32) 1,2-dichloroethane	10.68	62	270	0.023	ppbV	#	69
34) hexane	9.75	57	347	0.020	ppbV	#	61
36) 1,1,1-trichloroethane	10.98	97	289	0.022	ppbV	#	83
37) benzene	11.51	78	747	0.025	ppbV	#	84
38) carbon tetrachloride	11.68	117	278	0.022	ppbV	#	91
39) cyclohexane	11.82	56	330	0.019	ppbV		96
40) Dibromomethane	12.43	93	303M4	0.032	ppbV		
41) 1,2-dichloropropane	12.45	63	244	0.020	ppbV	#	76
42) bromodichloromethane	12.69	83	285	0.017	ppbV	#	89
43) 1,4-dioxane	0.00		0	N.D.			
44) trichloroethene	12.73	130	298M3	0.026	ppbV		
45) 2,2,4-trimethylpentane	12.79	57	1120	0.020	ppbV	#	89
46) heptane	13.11	43	568	0.021	ppbV	#	95
47) cis-1,3-dichloropropene	13.75	75	287	0.019	ppbV	#	70
48) 4-methyl-2-pentanone	13.83	43	532	0.018	ppbV	#	85
49) trans-1,3-dichloropropene	14.37	75	265	0.019	ppbV	#	66
50) 1,1,2-trichloroethane	14.57	97	276	0.024	ppbV		94
52) toluene	14.88	91	816	0.023	ppbV		100
54) 2-hexanone	15.20	43	452	0.015	ppbV	#	89
55) dibromochloromethane	15.32	129	211	0.015	ppbV	#	87
56) 1,2-dibromoethane	15.57	107	396	0.024	ppbV		99
57) tetrachloroethene	16.01	166	230	0.019	ppbV		92
58) 1,1,1,2-tetrachloroethane	16.62	131	256	0.023	ppbV	#	94
59) chlorobenzene	16.63	112	610	0.023	ppbV	#	91
60) ethylbenzene	16.96	91	842	0.019	ppbV		99
61) m+p-xylene	17.12	91	1382	0.037	ppbV		98
62) bromoform	17.18	173	246	0.022	ppbV		97
63) styrene	17.43	104	522	0.018	ppbV		96
64) 1,1,2,2-tetrachloroethane	17.52	83	501	0.019	ppbV		95
65) o-xylene	17.51	91	727	0.019	ppbV		92
66) 1,2,3-Trichloropropane	17.63	75	419	0.020	ppbV	#	46
68) isopropylbenzene	18.00	105	887	0.019	ppbV		96
69) Bromobenzene	18.07	77	577	0.022	ppbV	#	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156844_Ev2.D
Acq On : 4 Apr 2018 6:10 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.02
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 10:02:37 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.53	105	850	0.016	ppbV #	90
71) 1,3,5-trimethylbenzene	18.59	105	713	0.016	ppbV #	90
72) tert-butylbenzene	18.93	119	712	0.016	ppbV	96
73) 1,2,4-trimethylbenzene	18.93	105	657	0.015	ppbV	93
74) Benzyl Chloride	19.04	91	341M3	0.013	ppbV	
75) 1,3-dichlorobenzene	19.06	146	450	0.016	ppbV #	84
76) 1,4-dichlorobenzene	19.11	146	467	0.017	ppbV	97
77) sec-butylbenzene	19.13	105	1022	0.016	ppbV	100
78) p-isopropyltoluene	19.27	119	807	0.015	ppbV	96
79) 1,2-dichlorobenzene	19.39	146	428	0.016	ppbV #	89
80) n-butylbenzene	19.61	91	638	0.012	ppbV	98
81) 1,2,4-trichlorobenzene	20.94	180	211M4	0.009	ppbV	
82) naphthalene	21.08	128	568M4	0.009	ppbV	
83) 1,2,3-trichlorobenzene	21.32	180	231	0.011	ppbV #	74
84) hexachlorobutadiene	21.35	225	253	0.013	ppbV #	77

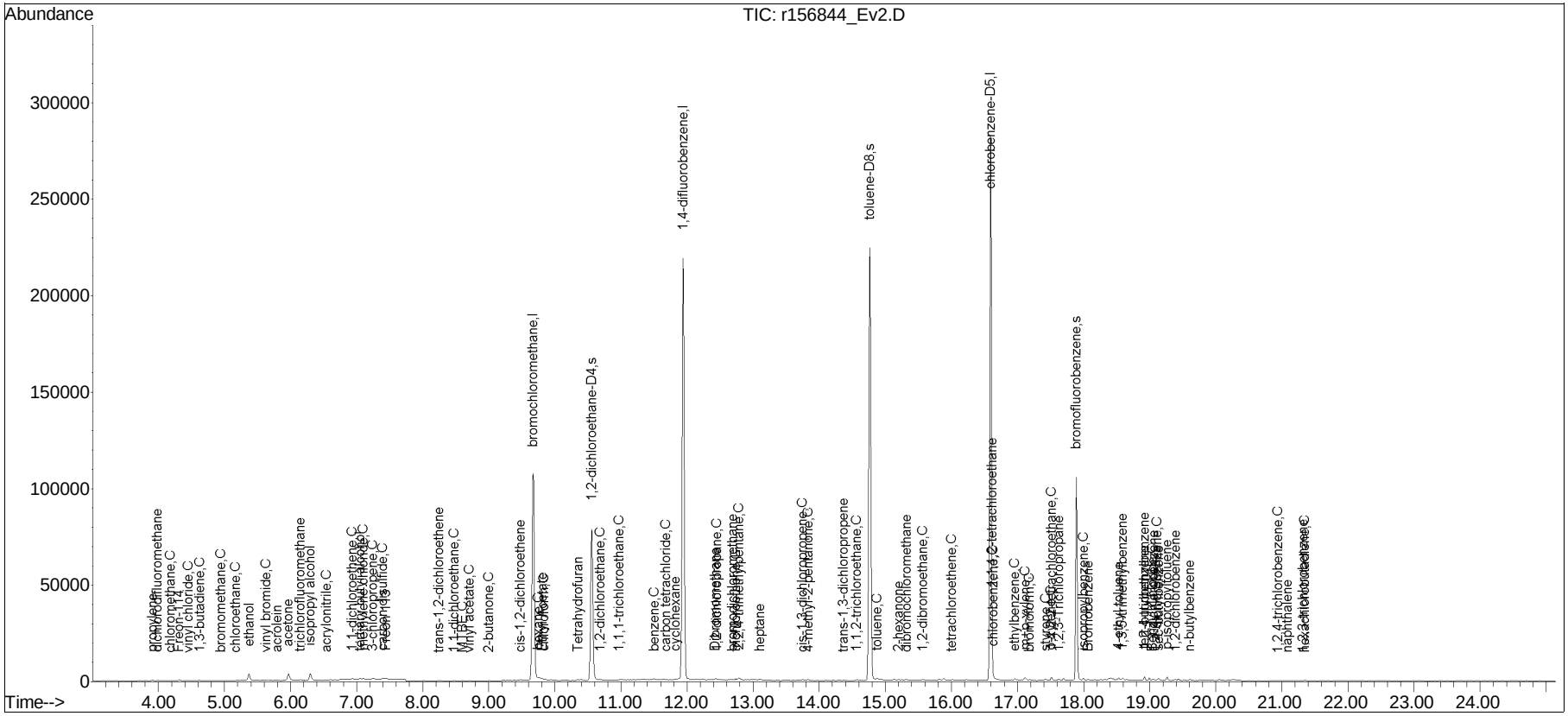
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156844_Ev2.D
Acq On : 4 Apr 2018 6:10 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.02
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 10:02:37 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

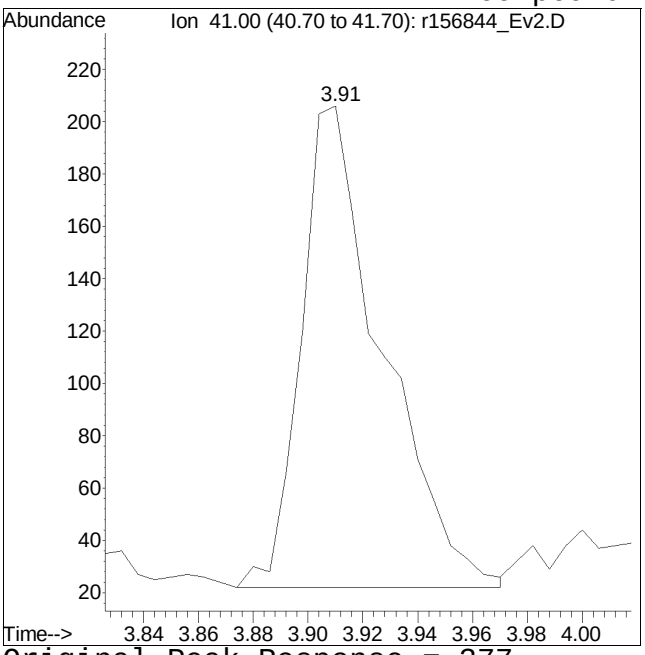
Sub List : Default - All compounds listed8\180404SIM_ICAL\r156850_Ev2.D



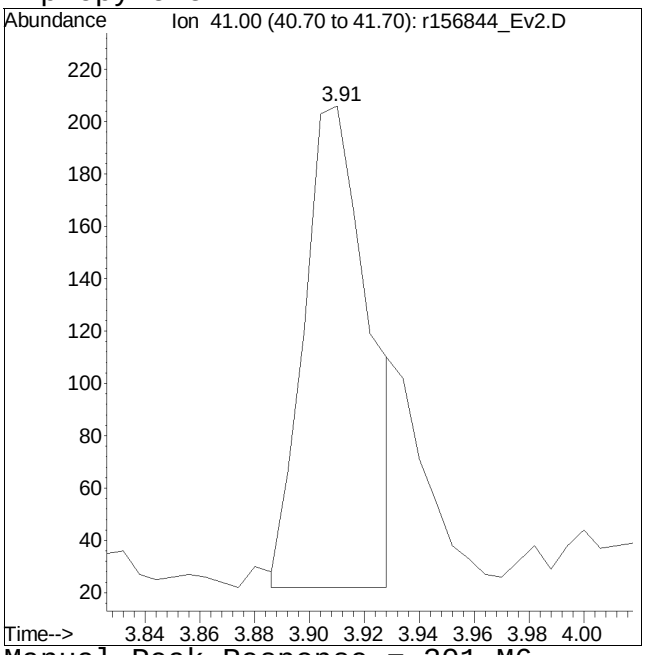
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156844_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 6:10 PM Instrument :
Sample : ITO15-SIMSTD0.02 Quant Date : 4/5/2018 9:48 am

Compound #2: propylene



Original Peak Response = 377



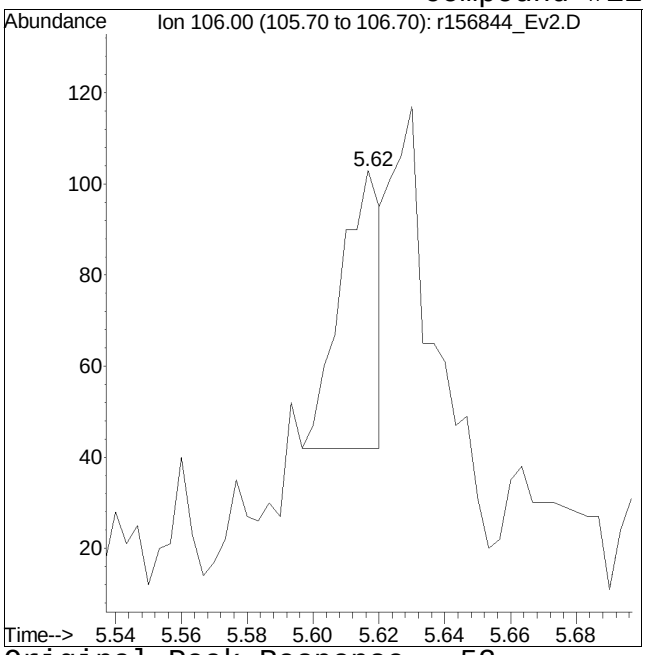
Manual Peak Response = 301 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

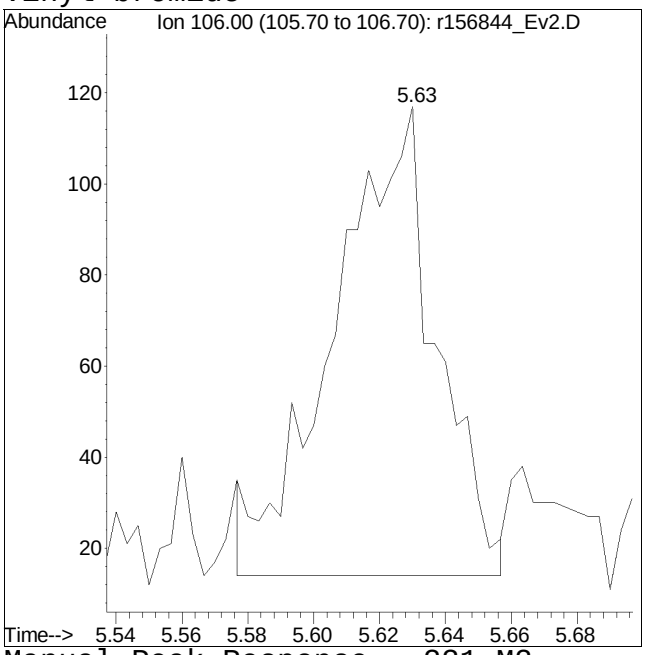
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156844_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 6:10 PM Instrument :
Sample : ITO15-SIMSTD0.02 Quant Date : 4/5/2018 9:48 am

Compound #11: vinyl bromide



Original Peak Response = 52



Manual Peak Response = 221 M2

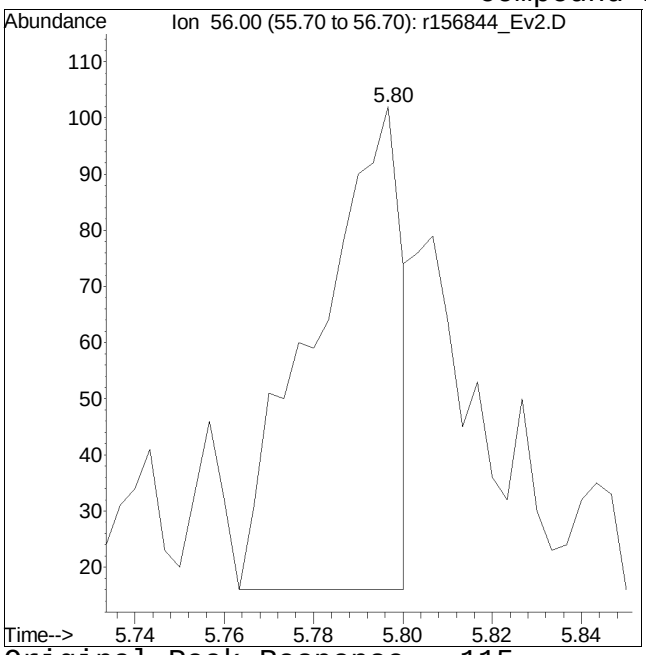
M2 = Peak not found by automatic integration algorithm.

Manual Integration/Negative Proof Report

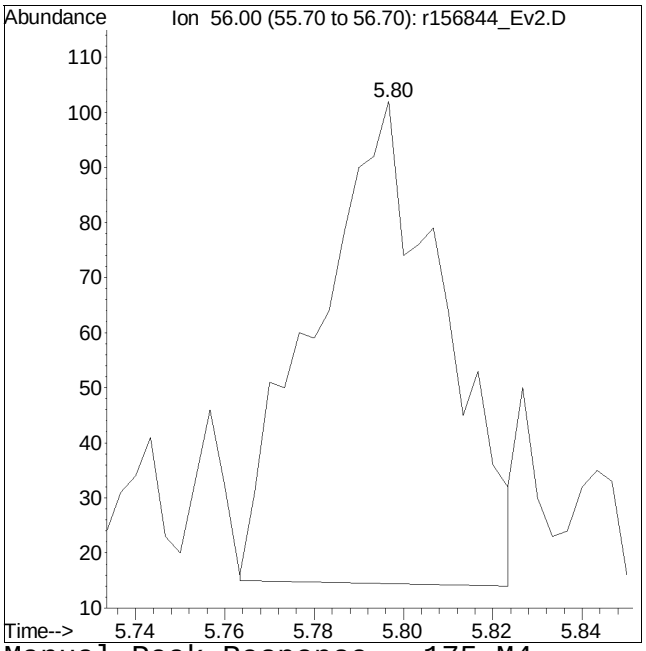
Data Path : O:\Forensics\Data\Airlab15\
Data File : r156844_Ev2.D
Date Inj'd : 4/4/2018 6:10 PM
Sample : ITO15-SIMSTD0.02

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:48 am

Compound #12: acrolein



Original Peak Response = 115



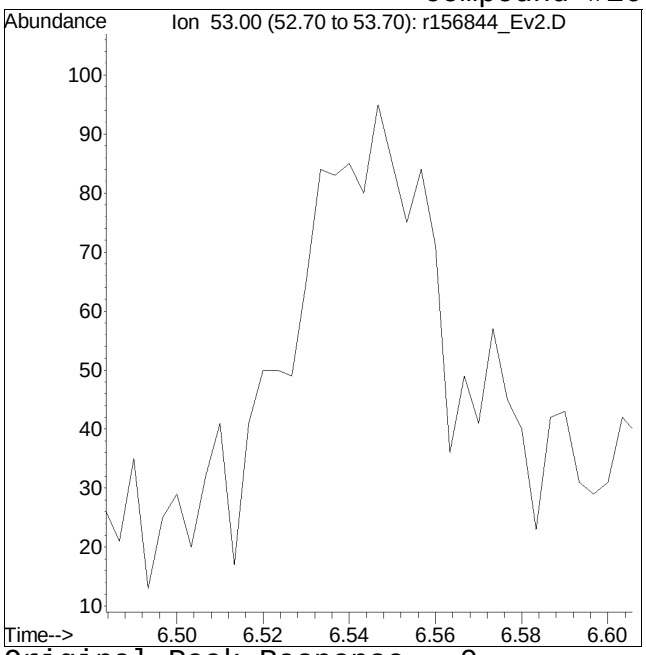
Manual Peak Response = 175 M4

M4 = Poor automated baseline construction.

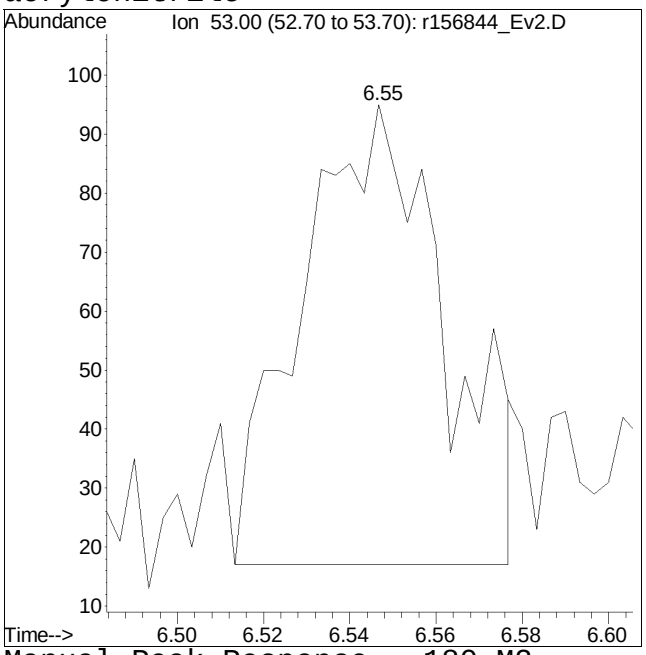
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156844_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 6:10 PM Instrument :
Sample : ITO15-SIMSTD0.02 Quant Date : 4/5/2018 9:48 am

Compound #16: acrylonitrile



Original Peak Response = 0



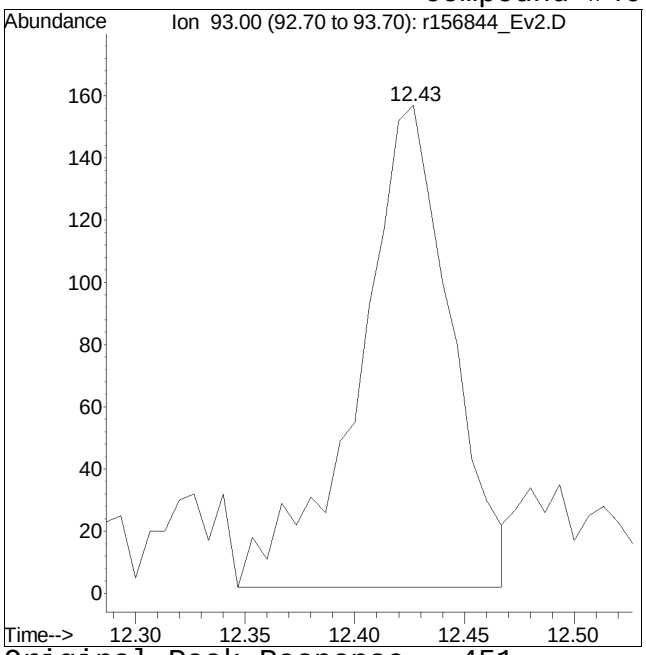
Manual Peak Response = 180 M2

M2 = Peak not found by automatic integration algorithm.

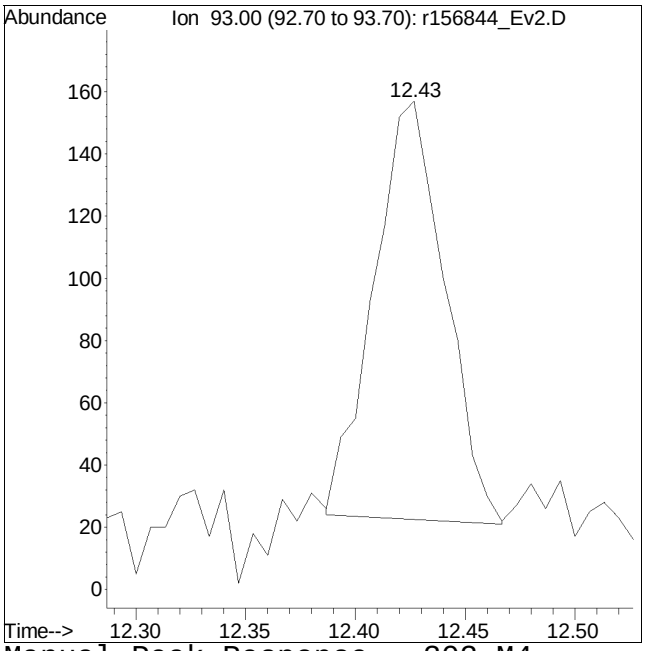
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156844_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 6:10 PM Instrument :
Sample : ITO15-SIMSTD0.02 Quant Date : 4/5/2018 9:48 am

Compound #40: Dibromomethane



Original Peak Response = 451



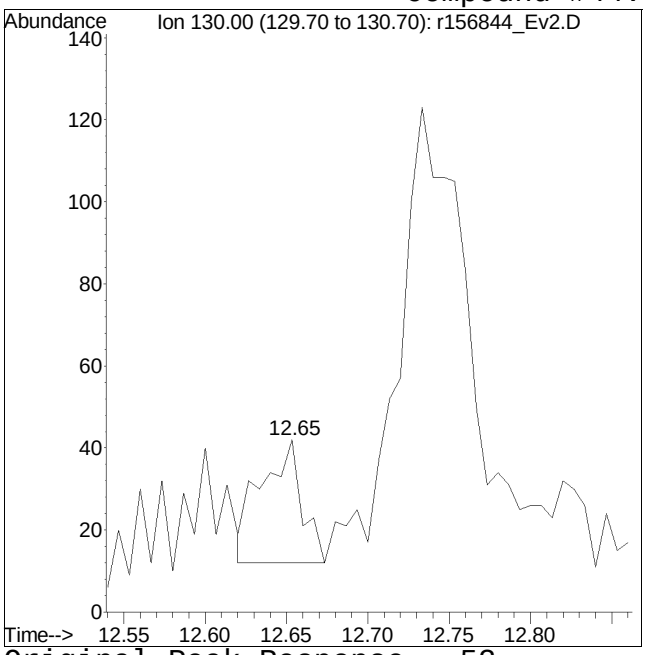
Manual Peak Response = 303 M4

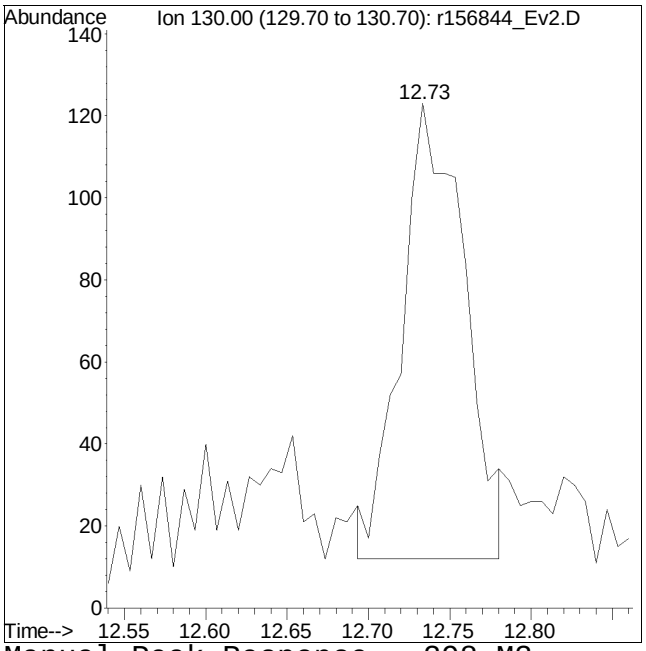
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156844_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 6:10 PM Instrument :
Sample : ITO15-SIMSTD0.02 Quant Date : 4/5/2018 9:48 am

Compound #44: trichloroethene





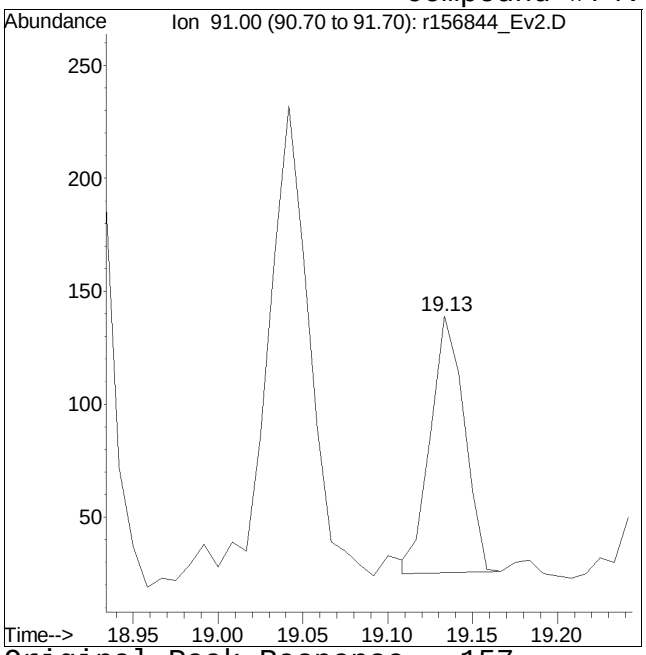
Original Peak Response = 52 Manual Peak Response = 298 M3

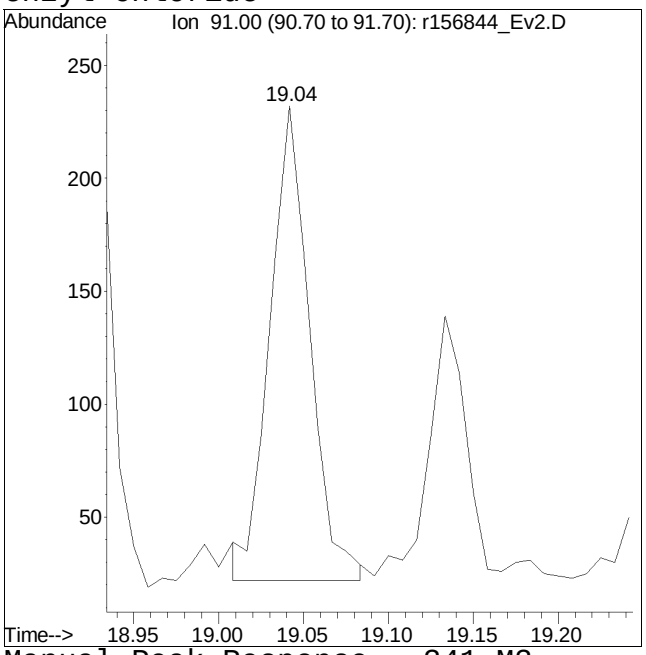
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156844_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 6:10 PM Instrument :
Sample : ITO15-SIMSTD0.02 Quant Date : 4/5/2018 9:48 am

Compound #74: Benzyl Chloride





Original Peak Response = 157 Manual Peak Response = 341 M3

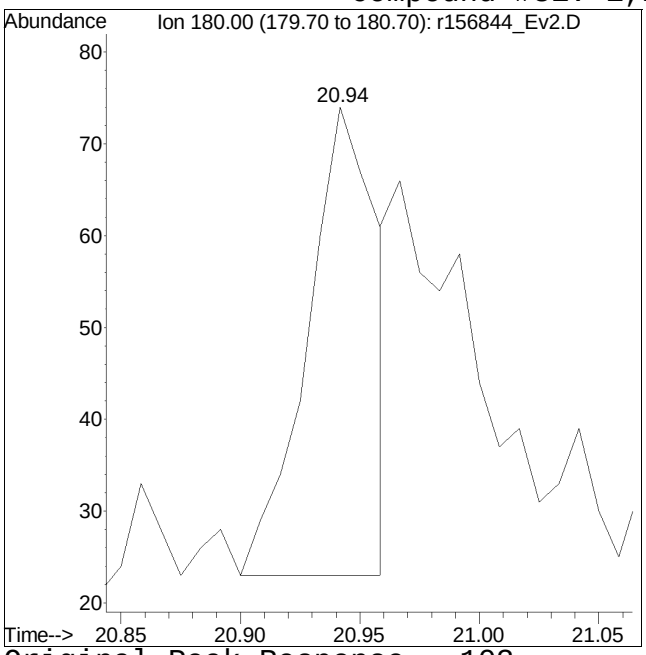
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

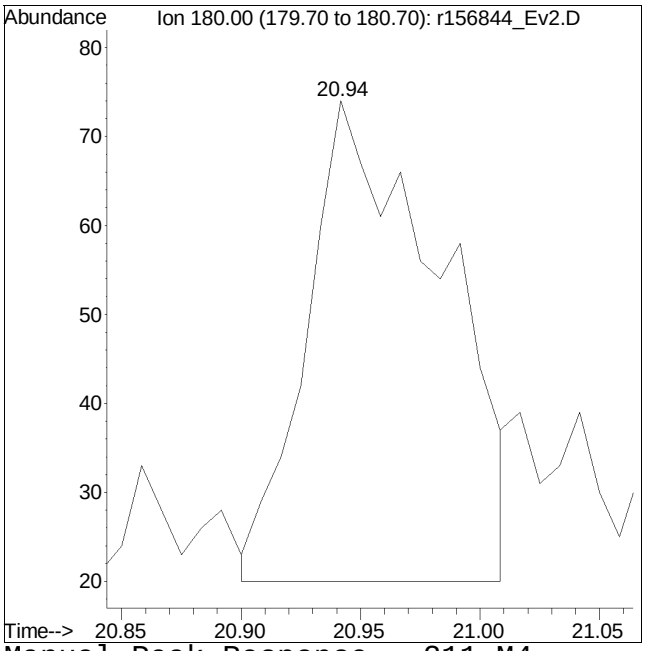
Data Path : O:\Forensics\Data\Airlab15\
Data File : r156844_Ev2.D
Date Inj'd : 4/4/2018 6:10 PM
Sample : ITO15-SIMSTD0.02

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:48 am

Compound #81: 1,2,4-trichlorobenzene



Original Peak Response = 103



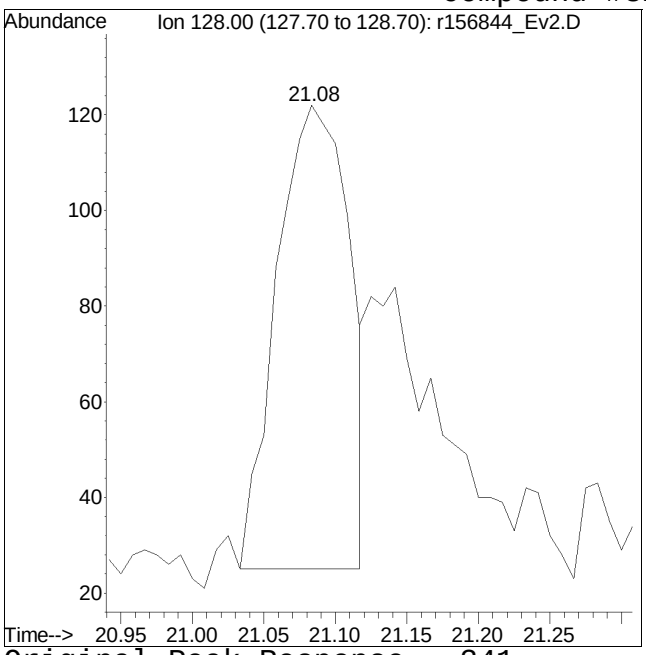
Manual Peak Response = 211 M4

M4 = Poor automated baseline construction.

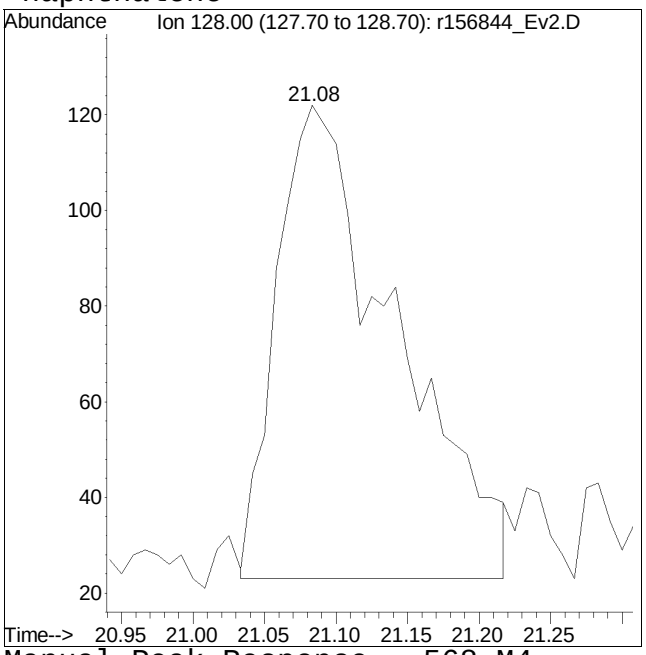
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156844_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 6:10 PM Instrument :
Sample : ITO15-SIMSTD0.02 Quant Date : 4/5/2018 9:48 am

Compound #82: naphthalene



Original Peak Response = 341



Manual Peak Response = 568 M4

M4 = Poor automated baseline construction.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156845_Ev2.D
Acq On : 4 Apr 2018 6:44 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.04
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:53:31 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.68	49	130449	10.000	ppbV	# 0.02
Standard Area = 133810			Recovery = 97.49%			
33) 1,4-difluorobenzene	11.94	114	270939	10.000	ppbV	0.01
Standard Area = 280369			Recovery = 96.64%			
51) chlorobenzene-D5	16.59	54	56276	10.000	ppbV	0.00
Standard Area = 59059			Recovery = 95.29%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	10.56	65	75262	10.224	ppbV	0.02
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.24%			
53) toluene-D8	14.77	98	250555	10.081	ppbV	0.02
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.81%			
67) bromofluorobenzene	17.89	95	117268	8.503	ppbV	0.02
Spiked Amount 10.000	Range 70 - 130		Recovery = 85.03%			
Target Compounds						Qvalue
2) propylene	3.91	41	485M4	0.051	ppbV	
3) dichlorodifluoromethane	3.99	85	723	0.043	ppbV	94
4) chloromethane	4.18	50	443	0.045	ppbV	90
5) Freon-114	4.31	85	843	0.042	ppbV	96
6) vinyl chloride	4.45	62	433	0.044	ppbV #	85
7) 1,3-butadiene	4.62	54	371	0.047	ppbV	81
8) bromomethane	4.95	94	409	0.050	ppbV	98
9) chloroethane	5.17	64	218	0.061	ppbV #	84
10) ethanol	5.37	31	4126	0.516	ppbV	99
11) vinyl bromide	5.63	106	368M4	0.046	ppbV	
12) acrolein	5.80	56	238M4	0.058	ppbV	
13) acetone	5.97	43	5582	0.473	ppbV #	98
14) trichlorofluoromethane	6.16	101	702	0.043	ppbV	97
15) isopropyl alcohol	6.30	45	6214	0.417	ppbV #	96
16) acrylonitrile	6.55	53	339M4	0.044	ppbV	
17) 1,1-dichloroethene	6.94	61	569	0.041	ppbV #	83
18) tertiary butyl alcohol	7.05	59	735	0.049	ppbV #	1
19) methylene chloride	7.10	49	631	0.048	ppbV	95
20) 3-chloropropene	7.25	41	611	0.034	ppbV #	75
21) carbon disulfide	7.40	76	1014	0.038	ppbV #	1
22) Freon 113	7.45	101	698	0.043	ppbV #	94
23) trans-1,2-dichloroethene	8.25	61	563	0.040	ppbV #	88
24) 1,1-dichloroethane	8.48	63	695	0.040	ppbV	91

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156845_Ev2.D
Acq On : 4 Apr 2018 6:44 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.04
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:53:31 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	8.60	73	974	0.041	ppbV	#	70
26) vinyl acetate	8.72	43	923	0.039	ppbV	#	84
27) 2-butanone	9.00	43	1150	0.049	ppbV	#	95
28) cis-1,2-dichloroethene	9.48	61	553	0.041	ppbV	#	80
29) Ethyl Acetate	9.82	61	150	0.044	ppbV	#	9
30) chloroform	9.83	83	649	0.040	ppbV	#	91
31) Tetrahydrofuran	10.35	42	538	0.034	ppbV	#	84
32) 1,2-dichloroethane	10.68	62	519	0.045	ppbV	#	81
34) hexane	9.76	57	696	0.041	ppbV	#	73
36) 1,1,1-trichloroethane	10.98	97	428	0.032	ppbV	#	83
37) benzene	11.51	78	1260	0.042	ppbV	#	91
38) carbon tetrachloride	11.68	117	510	0.041	ppbV	#	86
39) cyclohexane	11.82	56	699	0.040	ppbV		94
40) Dibromomethane	12.43	93	534	0.056	ppbV	#	100
41) 1,2-dichloropropane	12.46	63	555	0.045	ppbV	#	72
42) bromodichloromethane	12.69	83	523	0.032	ppbV	#	78
43) 1,4-dioxane	12.81	88	267	0.042	ppbV	#	80
44) trichloroethene	12.74	130	454	0.040	ppbV		91
45) 2,2,4-trimethylpentane	12.79	57	2100	0.038	ppbV	#	90
46) heptane	13.10	43	1065	0.040	ppbV		96
47) cis-1,3-dichloropropene	13.75	75	518	0.034	ppbV	#	83
48) 4-methyl-2-pentanone	13.82	43	988	0.033	ppbV	#	87
49) trans-1,3-dichloropropene	14.38	75	410	0.029	ppbV	#	76
50) 1,1,2-trichloroethane	14.57	97	467	0.042	ppbV		93
52) toluene	14.88	91	1495	0.043	ppbV		97
54) 2-hexanone	15.19	43	864	0.030	ppbV	#	94
55) dibromochloromethane	15.32	129	537	0.038	ppbV	#	96
56) 1,2-dibromoethane	15.56	107	683	0.042	ppbV		96
57) tetrachloroethene	16.02	166	534	0.044	ppbV		95
58) 1,1,1,2-tetrachloroethane	16.62	131	334	0.031	ppbV	#	92
59) chlorobenzene	16.63	112	1054	0.040	ppbV		97
60) ethylbenzene	16.96	91	1631	0.036	ppbV		92
61) m+p-xylene	17.12	91	2641	0.071	ppbV		100
62) bromoform	17.18	173	338	0.030	ppbV		92
63) styrene	17.43	104	923	0.032	ppbV		94
64) 1,1,2,2-tetrachloroethane	17.51	83	915	0.035	ppbV		99
65) o-xylene	17.51	91	1288	0.033	ppbV		97
66) 1,2,3-Trichloropropane	17.62	75	821	0.040	ppbV	#	62
68) isopropylbenzene	18.00	105	1628	0.035	ppbV		93
69) Bromobenzene	18.07	77	1001	0.038	ppbV	#	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156845_Ev2.D
Acq On : 4 Apr 2018 6:44 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.04
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:53:31 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.53	105	1572	0.030	ppbV #	96
71) 1,3,5-trimethylbenzene	18.59	105	1398	0.031	ppbV #	92
72) tert-butylbenzene	18.92	119	1380	0.031	ppbV	99
73) 1,2,4-trimethylbenzene	18.93	105	1351	0.030	ppbV	94
74) Benzyl Chloride	19.04	91	676	0.025	ppbV	92
75) 1,3-dichlorobenzene	19.05	146	900	0.032	ppbV #	85
76) 1,4-dichlorobenzene	19.11	146	929	0.034	ppbV	90
77) sec-butylbenzene	19.13	105	1868	0.029	ppbV	99
78) p-isopropyltoluene	19.26	119	1554	0.029	ppbV	98
79) 1,2-dichlorobenzene	19.38	146	883	0.033	ppbV	92
80) n-butylbenzene	19.61	91	1447	0.027	ppbV	94
81) 1,2,4-trichlorobenzene	20.91	180	364	0.016	ppbV #	77
82) naphthalene	21.07	128	1236M4	0.019	ppbV	
83) 1,2,3-trichlorobenzene	21.31	180	486	0.023	ppbV #	87
84) hexachlorobutadiene	21.35	225	496	0.026	ppbV #	88

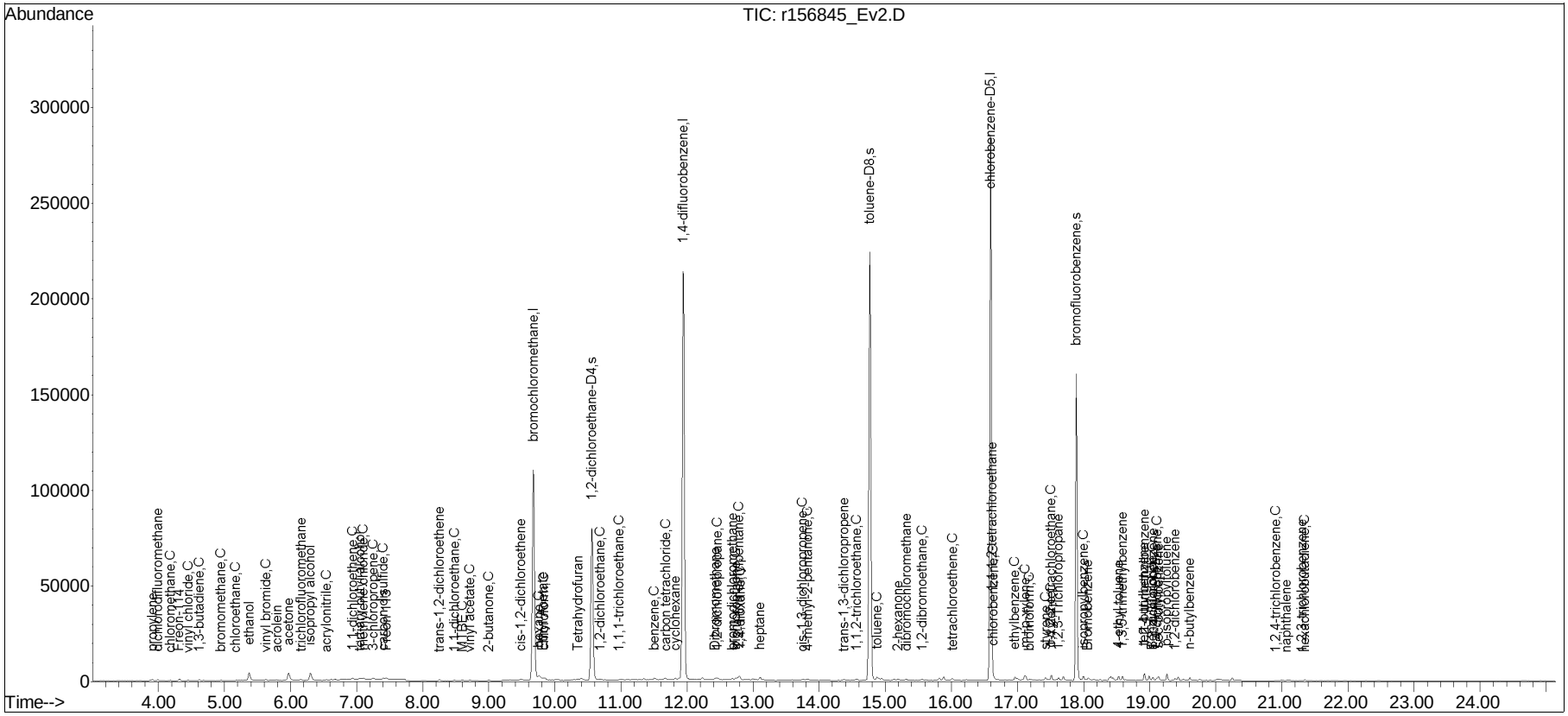
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156845_Ev2.D
Acq On : 4 Apr 2018 6:44 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.04
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:53:31 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

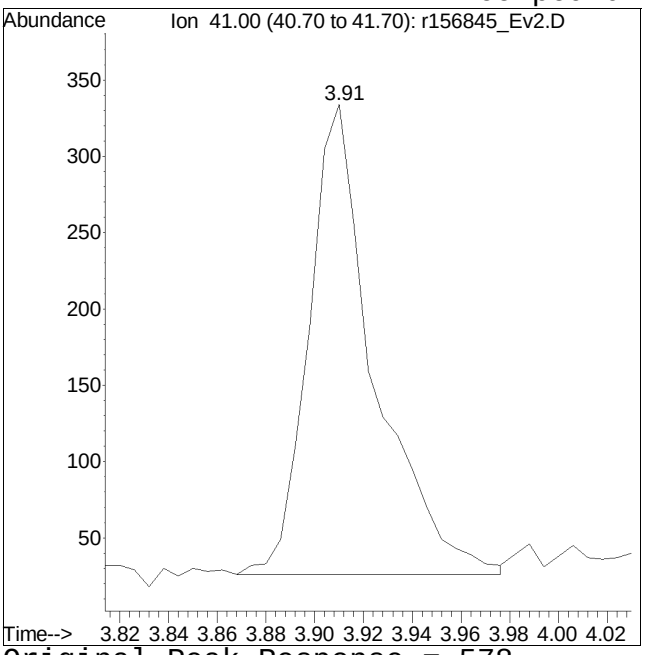
Sub List : Default - All compounds listed8\180404SIM_ICAL\r156850_Ev2.D



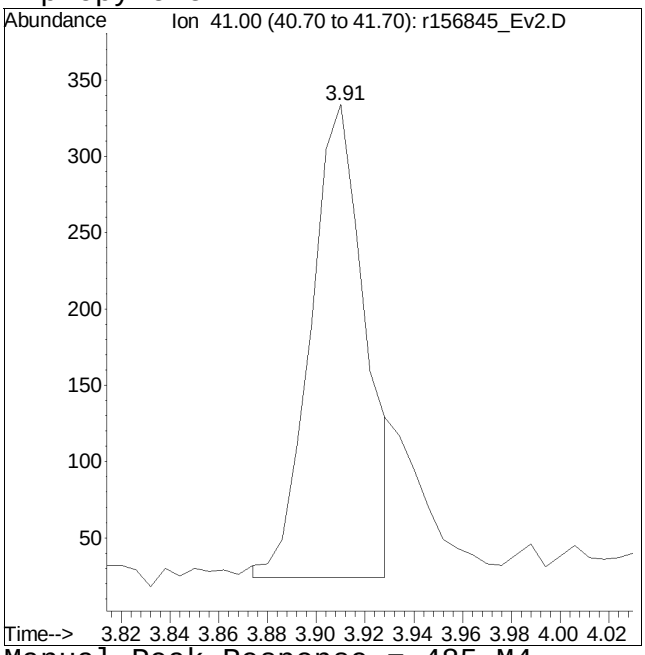
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156845_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 6:44 PM Instrument :
Sample : ITO15-SIMSTD0.04 Quant Date : 4/5/2018 9:48 am

Compound #2: propylene



Original Peak Response = 578



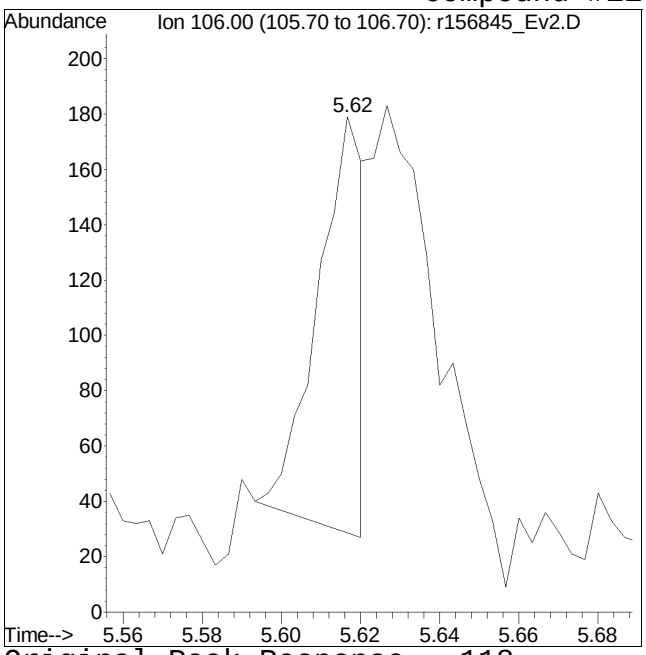
Manual Peak Response = 485 M4

M4 = Poor automated baseline construction.

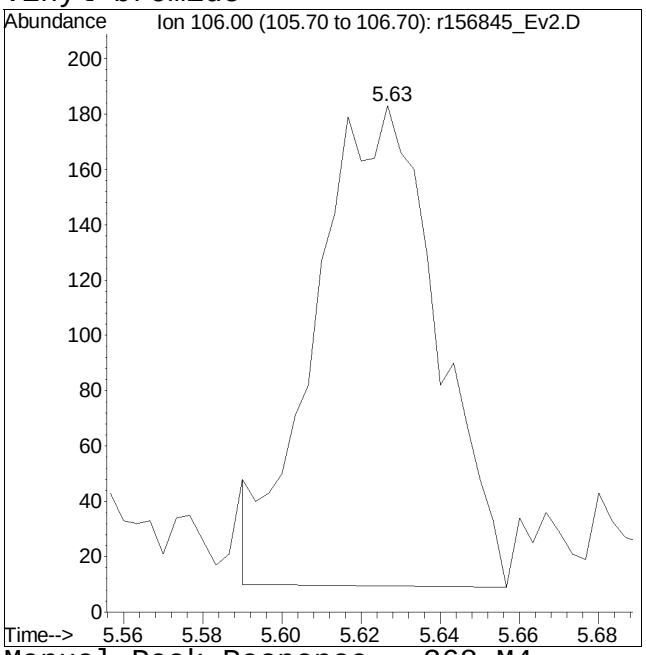
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156845_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 6:44 PM Instrument :
Sample : ITO15-SIMSTD0.04 Quant Date : 4/5/2018 9:48 am

Compound #11: vinyl bromide



Original Peak Response = 118



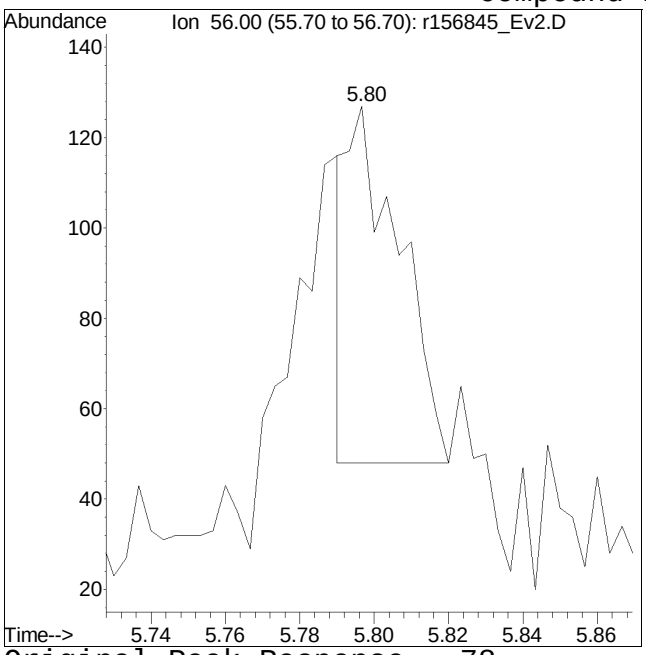
Manual Peak Response = 368 M4

M4 = Poor automated baseline construction.

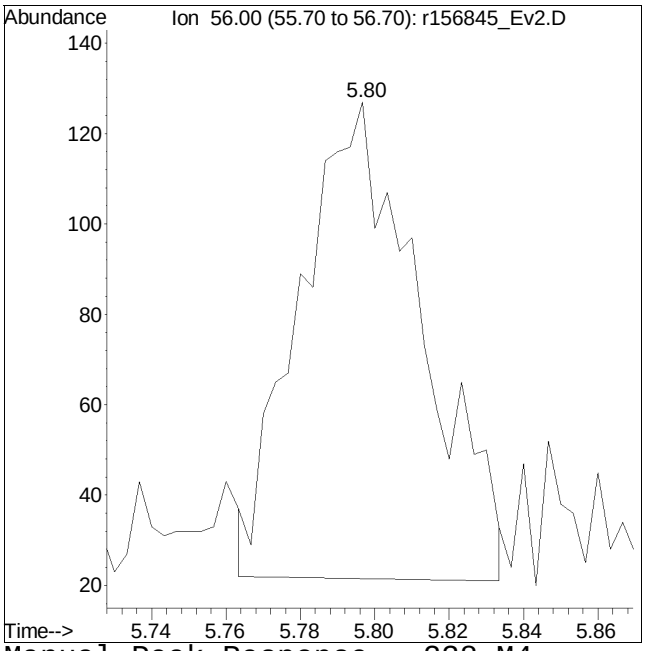
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156845_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 6:44 PM Instrument :
Sample : ITO15-SIMSTD0.04 Quant Date : 4/5/2018 9:48 am

Compound #12: acrolein



Original Peak Response = 78



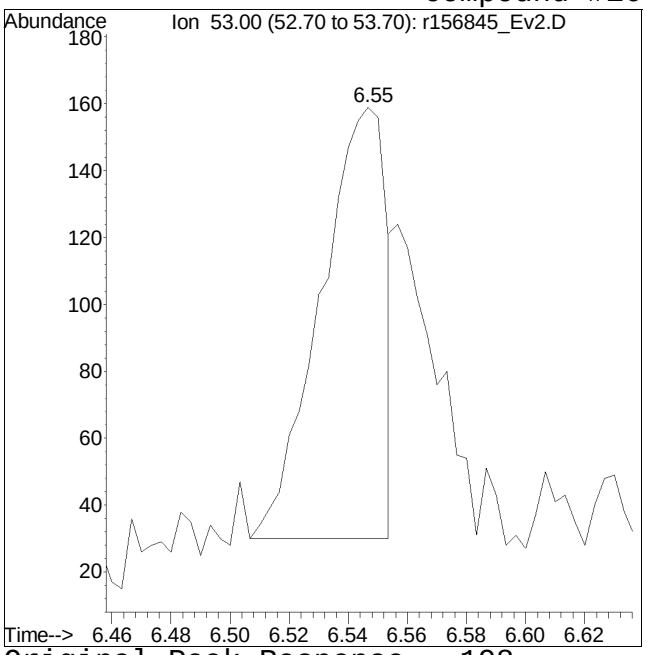
Manual Peak Response = 238 M4

M4 = Poor automated baseline construction.

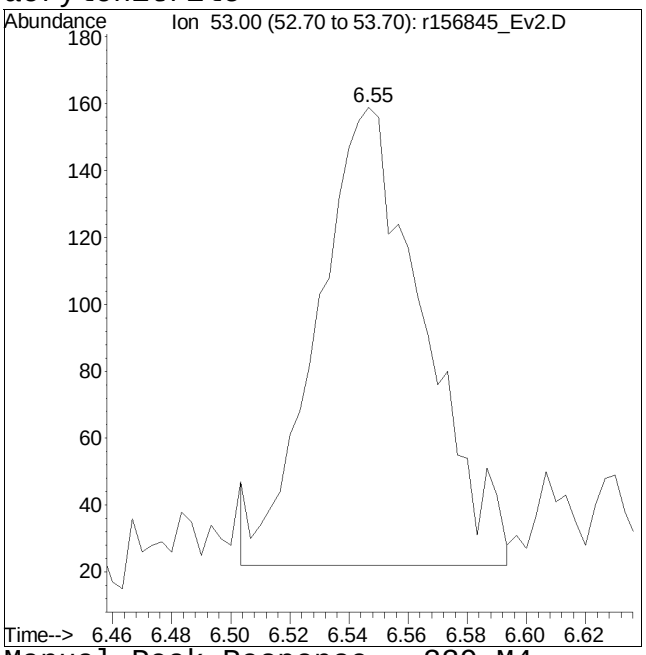
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156845_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 6:44 PM Instrument :
Sample : ITO15-SIMSTD0.04 Quant Date : 4/5/2018 9:48 am

Compound #16: acrylonitrile



Original Peak Response = 198



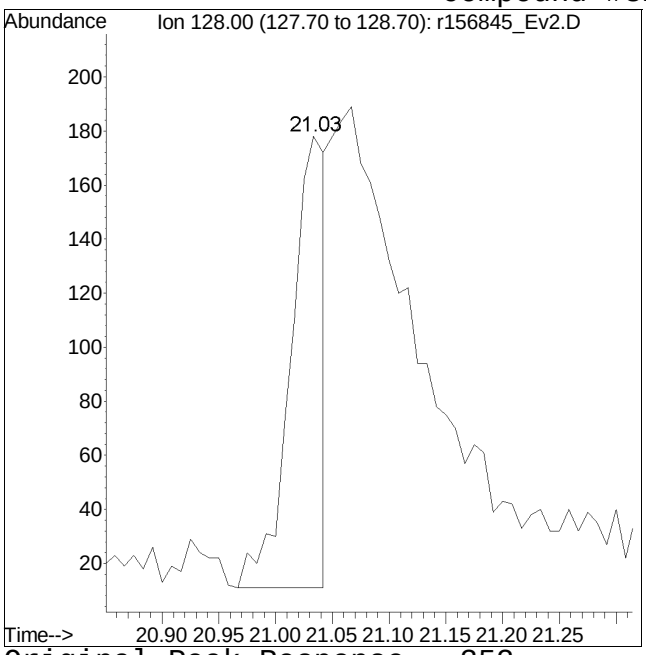
Manual Peak Response = 339 M4

M4 = Poor automated baseline construction.

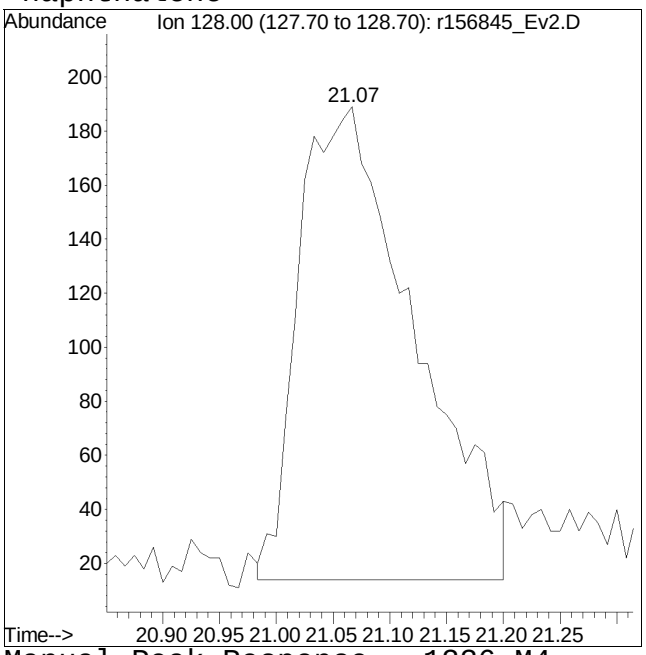
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156845_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 6:44 PM Instrument :
Sample : ITO15-SIMSTD0.04 Quant Date : 4/5/2018 9:48 am

Compound #82: naphthalene



Original Peak Response = 352



Manual Peak Response = 1236 M4

M4 = Poor automated baseline construction.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156846_Ev2.D
Acq On : 4 Apr 2018 7:21 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.1
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:54:32 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.67	49	130492	10.000	ppbV	# 0.00
Standard Area = 133810			Recovery = 97.52%			
33) 1,4-difluorobenzene	11.94	114	275136	10.000	ppbV	0.01
Standard Area = 280369			Recovery = 98.13%			
51) chlorobenzene-D5	16.59	54	56828	10.000	ppbV	0.00
Standard Area = 59059			Recovery = 96.22%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	10.56	65	74753	10.000	ppbV	0.02
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.00%			
53) toluene-D8	14.77	98	255302	10.172	ppbV	0.02
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.72%			
67) bromofluorobenzene	17.89	95	113167	8.125	ppbV	0.02
Spiked Amount 10.000	Range 70 - 130		Recovery = 81.25%			
Target Compounds						Qvalue
2) propylene	3.90	41	1055M6	0.112	ppbV	
3) dichlorodifluoromethane	3.99	85	1703	0.102	ppbV	98
4) chloromethane	4.18	50	995	0.101	ppbV #	88
5) Freon-114	4.31	85	2033	0.102	ppbV	100
6) vinyl chloride	4.44	62	995	0.101	ppbV	94
7) 1,3-butadiene	4.62	54	763	0.097	ppbV	88
8) bromomethane	4.94	94	832	0.103	ppbV	97
9) chloroethane	5.17	64	458	0.129	ppbV #	78
10) ethanol	5.37	31	6054	0.756	ppbV	96
11) vinyl bromide	5.62	106	808	0.102	ppbV	92
12) acrolein	5.78	56	397	0.096	ppbV #	100
13) acetone	5.96	43	9206	0.781	ppbV #	97
14) trichlorofluoromethane	6.15	101	1633	0.101	ppbV	95
15) isopropyl alcohol	6.29	45	8245	0.553	ppbV	99
16) acrylonitrile	6.54	53	681	0.088	ppbV	96
17) 1,1-dichloroethene	6.93	61	1413	0.103	ppbV	97
18) tertiary butyl alcohol	7.04	59	1608	0.108	ppbV #	1
19) methylene chloride	7.10	49	1427	0.110	ppbV	96
20) 3-chloropropene	7.24	41	1481	0.082	ppbV	94
21) carbon disulfide	7.40	76	2412	0.090	ppbV #	1
22) Freon 113	7.44	101	1706	0.104	ppbV	98
23) trans-1,2-dichloroethene	8.24	61	1326	0.095	ppbV	93
24) 1,1-dichloroethane	8.47	63	1811	0.105	ppbV	100

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156846_Ev2.D
Acq On : 4 Apr 2018 7:21 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.1
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:54:32 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	8.58	73	2169	0.092	ppbV	#	84
26) vinyl acetate	8.71	43	2394	0.101	ppbV	#	93
27) 2-butanone	8.99	43	2463	0.106	ppbV	#	97
28) cis-1,2-dichloroethene	9.47	61	1260	0.094	ppbV		95
29) Ethyl Acetate	9.80	61	336	0.098	ppbV	#	44
30) chloroform	9.83	83	1567	0.097	ppbV		96
31) Tetrahydrofuran	10.33	42	1449	0.092	ppbV		99
32) 1,2-dichloroethane	10.68	62	1196	0.103	ppbV		98
34) hexane	9.75	57	1637	0.096	ppbV	#	74
36) 1,1,1-trichloroethane	10.98	97	1045	0.077	ppbV	#	95
37) benzene	11.50	78	3044	0.099	ppbV		96
38) carbon tetrachloride	11.67	117	1167	0.093	ppbV		95
39) cyclohexane	11.82	56	1697	0.095	ppbV	#	87
40) Dibromomethane	12.42	93	1060	0.110	ppbV	#	100
41) 1,2-dichloropropane	12.45	63	1243	0.100	ppbV	#	91
42) bromodichloromethane	12.69	83	1522	0.092	ppbV	#	94
43) 1,4-dioxane	12.79	88	548	0.086	ppbV	#	48
44) trichloroethene	12.73	130	1178	0.102	ppbV		98
45) 2,2,4-trimethylpentane	12.79	57	5110	0.092	ppbV		97
46) heptane	13.10	43	2391	0.088	ppbV		98
47) cis-1,3-dichloropropene	13.75	75	1206	0.079	ppbV		90
48) 4-methyl-2-pentanone	13.81	43	2484	0.082	ppbV	#	98
49) trans-1,3-dichloropropene	14.37	75	1109	0.077	ppbV	#	88
50) 1,1,2-trichloroethane	14.57	97	1116	0.098	ppbV		96
52) toluene	14.88	91	3418	0.097	ppbV		97
54) 2-hexanone	15.18	43	2353	0.080	ppbV		97
55) dibromochloromethane	15.32	129	1174	0.082	ppbV	#	95
56) 1,2-dibromoethane	15.56	107	1529	0.093	ppbV		100
57) tetrachloroethene	16.02	166	1211	0.099	ppbV		93
58) 1,1,1,2-tetrachloroethane	16.62	131	949	0.086	ppbV		95
59) chlorobenzene	16.63	112	2502	0.095	ppbV		97
60) ethylbenzene	16.96	91	3899	0.085	ppbV		98
61) m+p-xylene	17.12	91	6436	0.172	ppbV		99
62) bromoform	17.18	173	836	0.074	ppbV		98
63) styrene	17.43	104	2330	0.080	ppbV		100
64) 1,1,2,2-tetrachloroethane	17.51	83	2256	0.085	ppbV		99
65) o-xylene	17.51	91	3239	0.083	ppbV		95
66) 1,2,3-Trichloropropane	17.62	75	1922	0.092	ppbV	#	65
68) isopropylbenzene	18.00	105	3935	0.083	ppbV		96
69) Bromobenzene	18.07	77	2308	0.087	ppbV	#	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156846_Ev2.D
Acq On : 4 Apr 2018 7:21 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.1
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:54:32 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.52	105	4061	0.076	ppbV #	97
71) 1,3,5-trimethylbenzene	18.59	105	3515	0.076	ppbV	99
72) tert-butylbenzene	18.92	119	3445	0.077	ppbV	100
73) 1,2,4-trimethylbenzene	18.92	105	3357	0.073	ppbV #	89
74) Benzyl Chloride	19.04	91	1694	0.062	ppbV	98
75) 1,3-dichlorobenzene	19.05	146	2291M3	0.081	ppbV	
76) 1,4-dichlorobenzene	19.11	146	2213	0.079	ppbV	99
77) sec-butylbenzene	19.13	105	4824	0.074	ppbV	98
78) p-isopropyltoluene	19.26	119	4094	0.075	ppbV	96
79) 1,2-dichlorobenzene	19.38	146	2132	0.079	ppbV #	91
80) n-butylbenzene	19.61	91	3769	0.070	ppbV	96
81) 1,2,4-trichlorobenzene	20.90	180	1101	0.048	ppbV #	89
82) naphthalene	21.02	128	3377	0.052	ppbV #	91
83) 1,2,3-trichlorobenzene	21.28	180	1185	0.055	ppbV	89
84) hexachlorobutadiene	21.35	225	1277	0.067	ppbV #	94

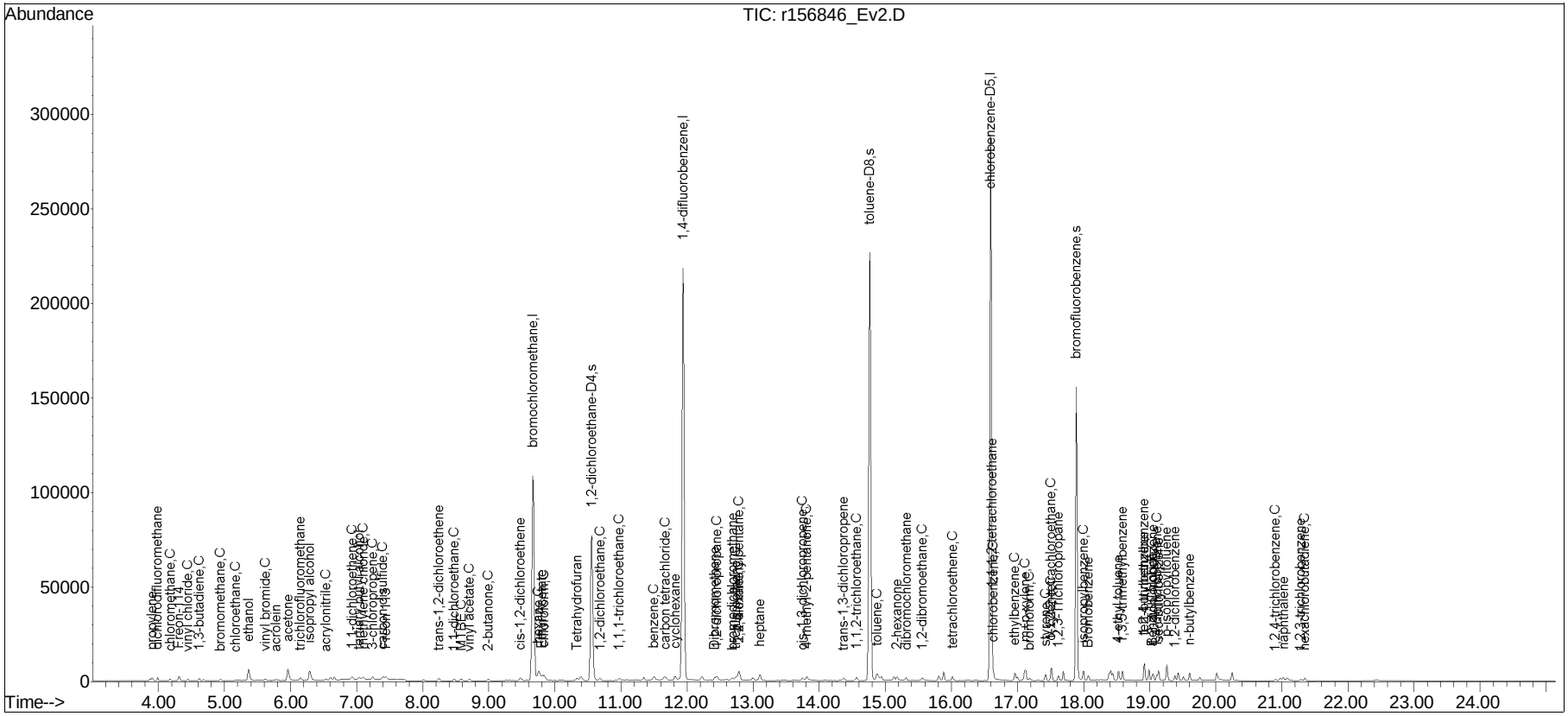
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156846_Ev2.D
Acq On : 4 Apr 2018 7:21 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.1
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:54:32 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

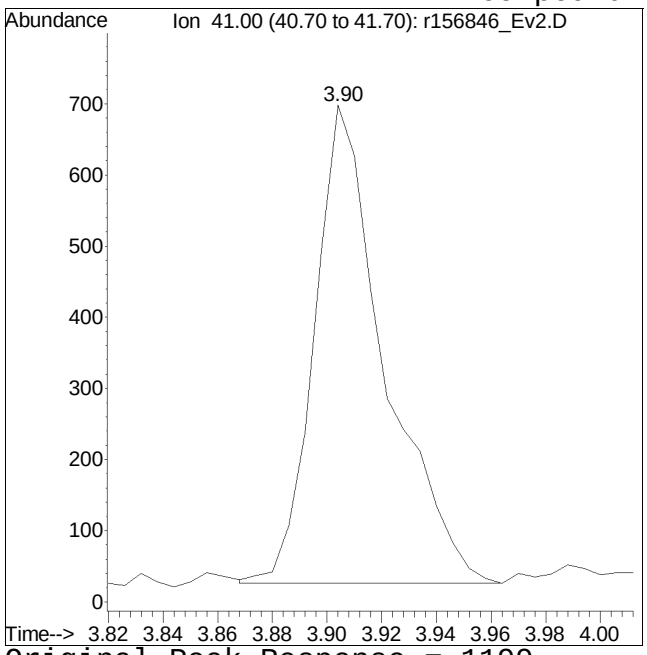
Sub List : Default - All compounds listed8\180404SIM_ICAL\r156850_Ev2.D



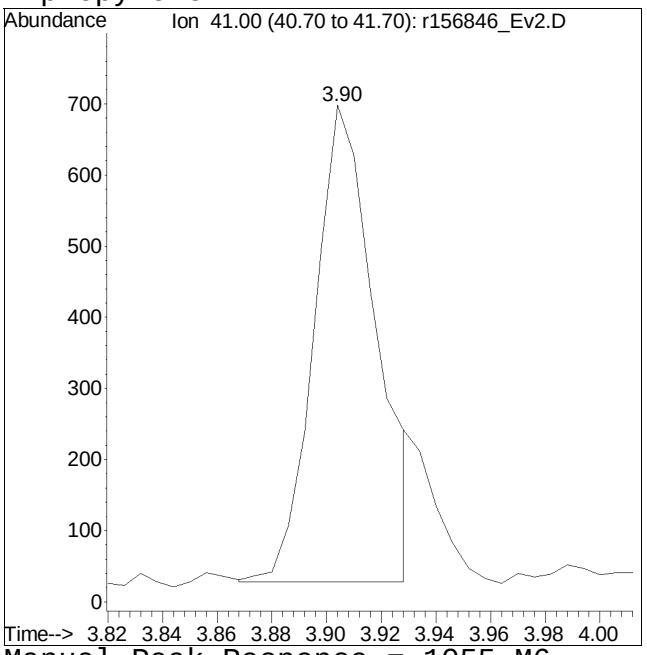
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156846_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 7:21 PM Instrument :
Sample : ITO15-SIMSTD0.1 Quant Date : 4/5/2018 9:48 am

Compound #2: propylene



Original Peak Response = 1199



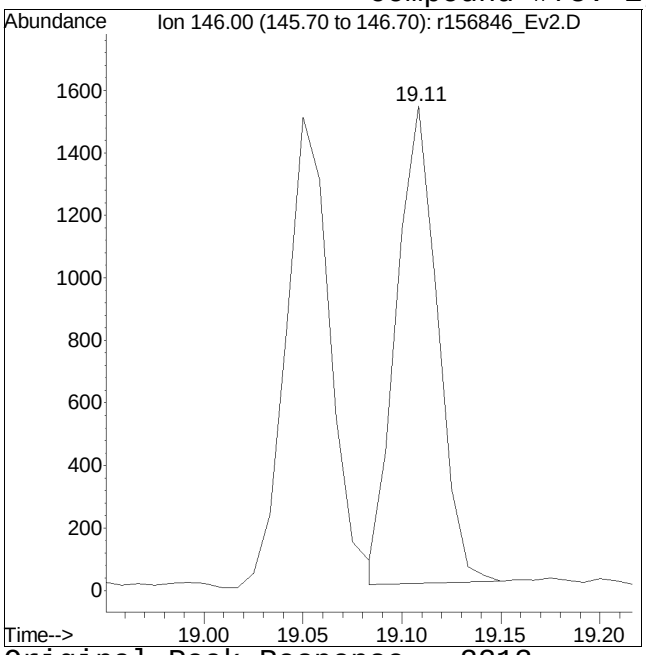
Manual Peak Response = 1055 M6

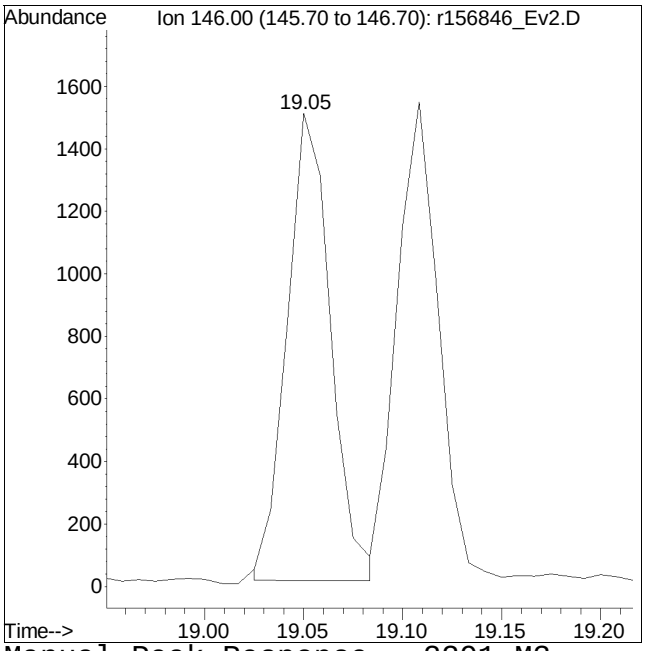
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156846_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 7:21 PM Instrument :
Sample : ITO15-SIMSTD0.1 Quant Date : 4/5/2018 9:48 am

Compound #75: 1,3-dichlorobenzene





Original Peak Response = 2213 Manual Peak Response = 2291 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156847_Ev2.D
Acq On : 4 Apr 2018 7:58 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.2
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:55:36 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.66	49	128596	10.000	ppbV	# 0.00
Standard Area = 133810			Recovery = 96.10%			
33) 1,4-difluorobenzene	11.93	114	277199	10.000	ppbV	0.00
Standard Area = 280369			Recovery = 98.87%			
51) chlorobenzene-D5	16.58	54	56162	10.000	ppbV	0.00
Standard Area = 59059			Recovery = 95.09%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	10.55	65	76315	10.133	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.33%			
53) toluene-D8	14.76	98	255859	10.315	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 103.15%			
67) bromofluorobenzene	17.88	95	131589	9.560	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 95.60%			
Target Compounds						Qvalue
2) propylene	3.90	41	2234M6	0.240	ppbV	
3) dichlorodifluoromethane	3.99	85	3917	0.238	ppbV	99
4) chloromethane	4.17	50	2275	0.234	ppbV	97
5) Freon-114	4.31	85	4623	0.235	ppbV	96
6) vinyl chloride	4.44	62	2297	0.236	ppbV	95
7) 1,3-butadiene	4.61	54	1795	0.232	ppbV	93
8) bromomethane	4.94	94	1931	0.242	ppbV	98
9) chloroethane	5.16	64	1190	0.340	ppbV	93
10) ethanol	5.36	31	11612M4	1.472	ppbV	
11) vinyl bromide	5.61	106	1811	0.231	ppbV	99
12) acrolein	5.78	56	988	0.242	ppbV #	100
13) acetone	5.95	43	16751	1.441	ppbV #	98
14) trichlorofluoromethane	6.14	101	3788	0.238	ppbV	97
15) isopropyl alcohol	6.28	45	13508	0.919	ppbV	99
16) acrylonitrile	6.53	53	1688	0.221	ppbV	95
17) 1,1-dichloroethene	6.92	61	3219	0.237	ppbV	99
18) tertiary butyl alcohol	7.02	59	3457	0.236	ppbV #	1
19) methylene chloride	7.09	49	3074	0.240	ppbV	98
20) 3-chloropropene	7.24	41	3336	0.188	ppbV	97
21) carbon disulfide	7.39	76	5631	0.214	ppbV #	16
22) Freon 113	7.43	101	3878	0.240	ppbV	99
23) trans-1,2-dichloroethene	8.23	61	3208	0.233	ppbV	93
24) 1,1-dichloroethane	8.47	63	4220	0.248	ppbV	99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156847_Ev2.D
Acq On : 4 Apr 2018 7:58 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.2
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:55:36 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	8.57	73	4955	0.214	ppbV	#	94
26) vinyl acetate	8.70	43	5153	0.220	ppbV		98
27) 2-butanone	8.98	43	5637	0.245	ppbV		97
28) cis-1,2-dichloroethene	9.47	61	2984	0.225	ppbV		97
29) Ethyl Acetate	9.79	61	760	0.225	ppbV	#	54
30) chloroform	9.82	83	3598	0.225	ppbV		97
31) Tetrahydrofuran	10.32	42	3295M6	0.213	ppbV		
32) 1,2-dichloroethane	10.68	62	2735	0.238	ppbV		97
34) hexane	9.74	57	3648	0.212	ppbV		85
36) 1,1,1-trichloroethane	10.97	97	2823	0.207	ppbV	#	93
37) benzene	11.49	78	6968	0.225	ppbV		98
38) carbon tetrachloride	11.67	117	2677	0.212	ppbV		95
39) cyclohexane	11.81	56	3678	0.204	ppbV		96
40) Dibromomethane	12.41	93	2262	0.233	ppbV	#	100
41) 1,2-dichloropropane	12.45	63	2809	0.225	ppbV		91
42) bromodichloromethane	12.67	83	3326	0.200	ppbV	#	96
43) 1,4-dioxane	12.77	88	1492M3	0.231	ppbV		
44) trichloroethene	12.73	130	2619	0.226	ppbV		99
45) 2,2,4-trimethylpentane	12.78	57	12358	0.220	ppbV		97
46) heptane	13.09	43	5658	0.208	ppbV		95
47) cis-1,3-dichloropropene	13.74	75	2904	0.189	ppbV		94
48) 4-methyl-2-pentanone	13.80	43	6027	0.197	ppbV		98
49) trans-1,3-dichloropropene	14.36	75	2699	0.186	ppbV	#	87
50) 1,1,2-trichloroethane	14.56	97	2501	0.218	ppbV		98
52) toluene	14.87	91	7915	0.227	ppbV		99
54) 2-hexanone	15.17	43	5367	0.184	ppbV		97
55) dibromochloromethane	15.31	129	2764	0.195	ppbV		95
56) 1,2-dibromoethane	15.55	107	3500	0.214	ppbV		99
57) tetrachloroethene	16.01	166	2778	0.229	ppbV		95
58) 1,1,1,2-tetrachloroethane	16.62	131	2326	0.213	ppbV		97
59) chlorobenzene	16.63	112	5841	0.223	ppbV		94
60) ethylbenzene	16.96	91	9316	0.206	ppbV		99
61) m+p-xylene	17.12	91	15793	0.427	ppbV		97
62) bromoform	17.18	173	2011	0.179	ppbV		98
63) styrene	17.42	104	5469	0.189	ppbV		97
64) 1,1,2,2-tetrachloroethane	17.51	83	5404	0.205	ppbV		99
65) o-xylene	17.51	91	7852	0.204	ppbV		97
66) 1,2,3-Trichloropropane	17.62	75	4546	0.221	ppbV	#	67
68) isopropylbenzene	17.99	105	9548	0.203	ppbV		99
69) Bromobenzene	18.07	77	5426	0.206	ppbV	#	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156847_Ev2.D
Acq On : 4 Apr 2018 7:58 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.2
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:55:36 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) 4-ethyl toluene	18.52	105	10102	0.192	ppbV		99
71) 1,3,5-trimethylbenzene	18.58	105	8905	0.195	ppbV		98
72) tert-butylbenzene	18.92	119	8512	0.193	ppbV		100
73) 1,2,4-trimethylbenzene	18.92	105	8506	0.188	ppbV		96
74) Benzyl Chloride	19.03	91	4016	0.148	ppbV		98
75) 1,3-dichlorobenzene	19.05	146	5451	0.194	ppbV		95
76) 1,4-dichlorobenzene	19.10	146	5310	0.192	ppbV		96
77) sec-butylbenzene	19.13	105	11996	0.186	ppbV		100
78) p-isopropyltoluene	19.25	119	10083	0.186	ppbV		93
79) 1,2-dichlorobenzene	19.38	146	4990	0.186	ppbV		98
80) n-butylbenzene	19.60	91	9426	0.176	ppbV		96
81) 1,2,4-trichlorobenzene	20.90	180	3053	0.135	ppbV		95
82) naphthalene	21.02	128	10434	0.163	ppbV		98
83) 1,2,3-trichlorobenzene	21.27	180	3031	0.142	ppbV		97
84) hexachlorobutadiene	21.34	225	3066	0.163	ppbV	#	92

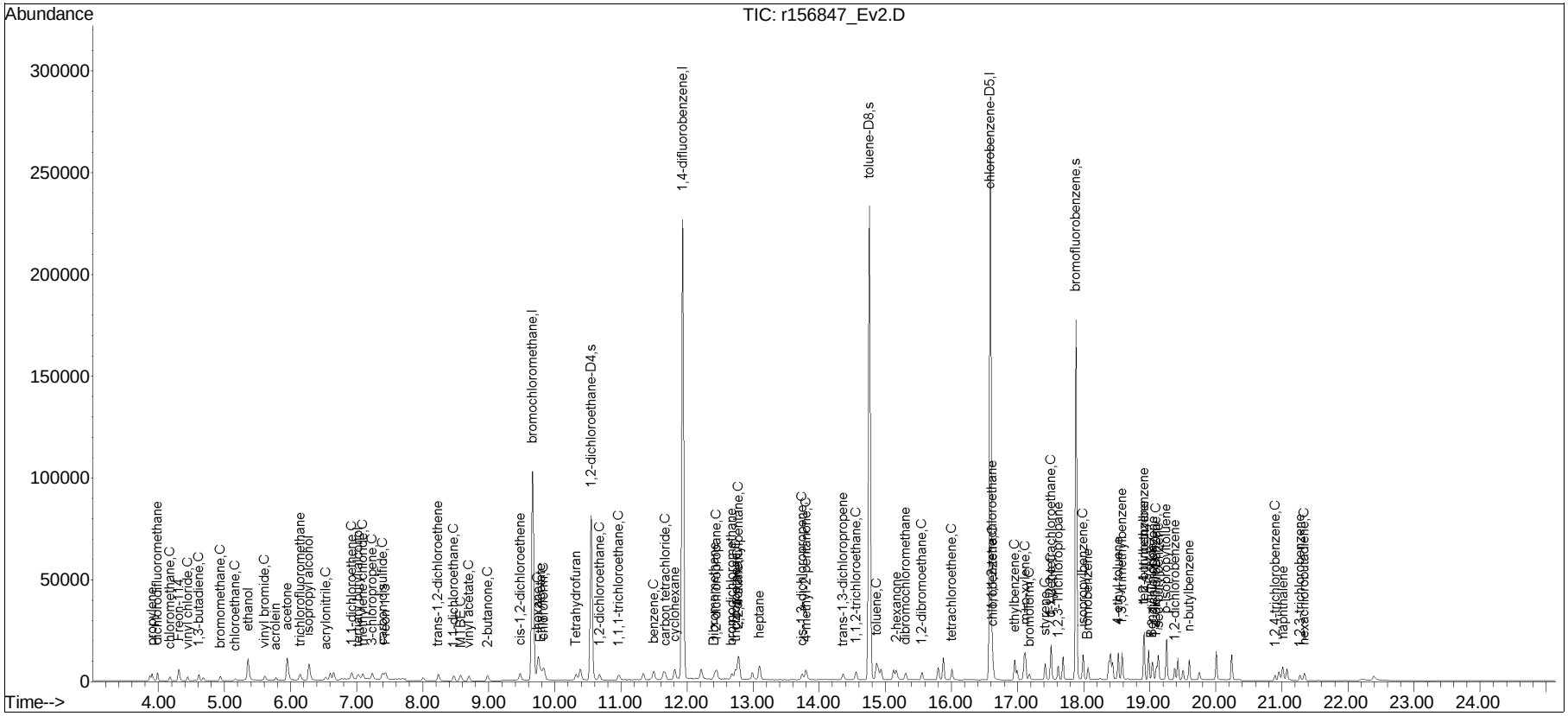
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156847_Ev2.D
Acq On : 4 Apr 2018 7:58 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.2
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:55:36 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

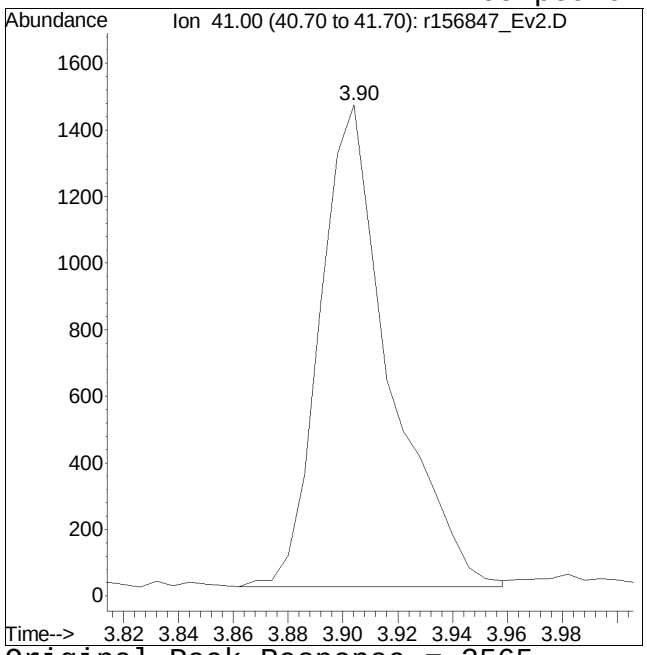
Sub List : Default - All compounds listed8\180404SIM_ICAL\r156850_Ev2.D



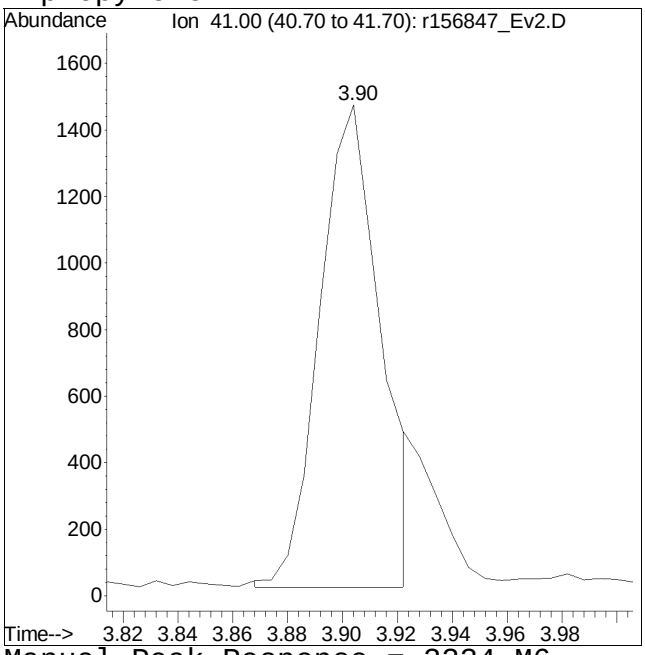
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156847_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 7:58 PM Instrument :
Sample : ITO15-SIMSTD0.2 Quant Date : 4/5/2018 9:48 am

Compound #2: propylene



Original Peak Response = 2565



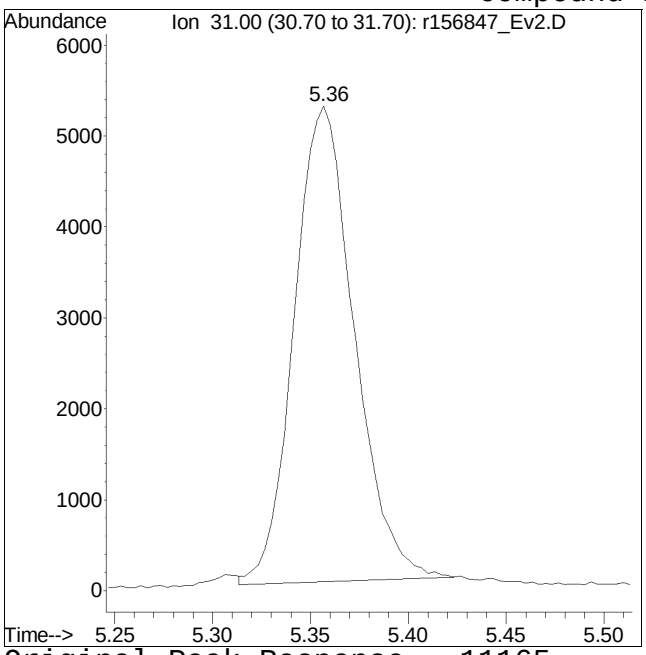
Manual Peak Response = 2234 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

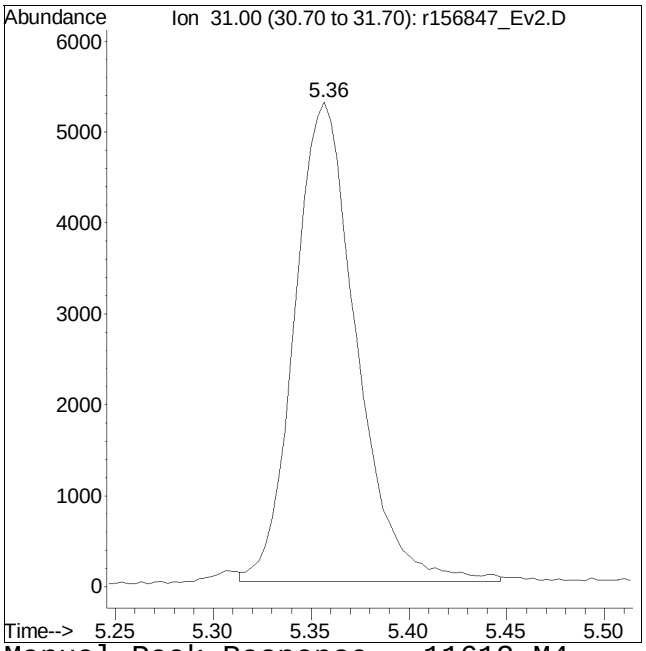
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156847_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 7:58 PM Instrument :
Sample : ITO15-SIMSTD0.2 Quant Date : 4/5/2018 9:48 am

Compound #10: ethanol



Original Peak Response = 11165



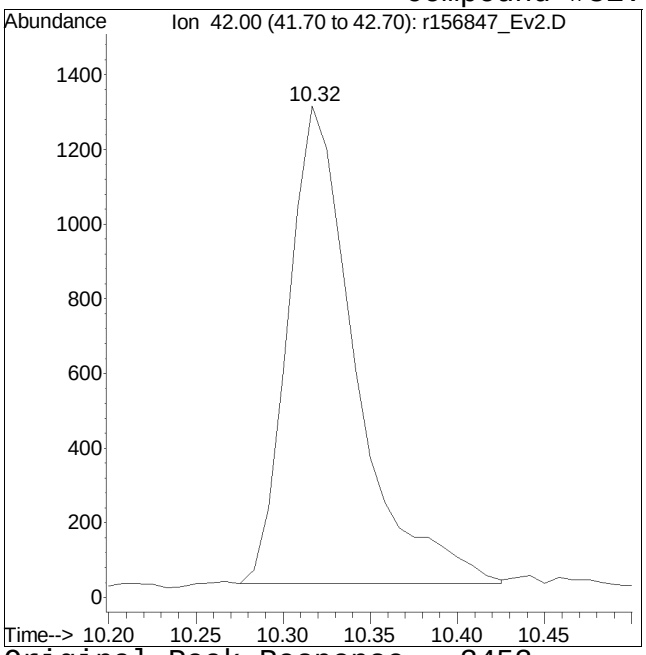
Manual Peak Response = 11612 M4

M4 = Poor automated baseline construction.

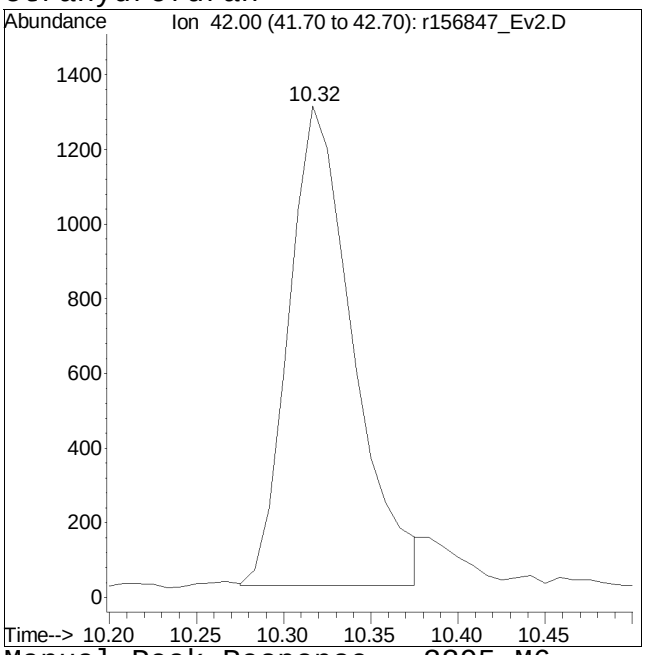
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156847_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 7:58 PM Instrument :
Sample : ITO15-SIMSTD0.2 Quant Date : 4/5/2018 9:48 am

Compound #31: Tetrahydrofuran



Original Peak Response = 3453



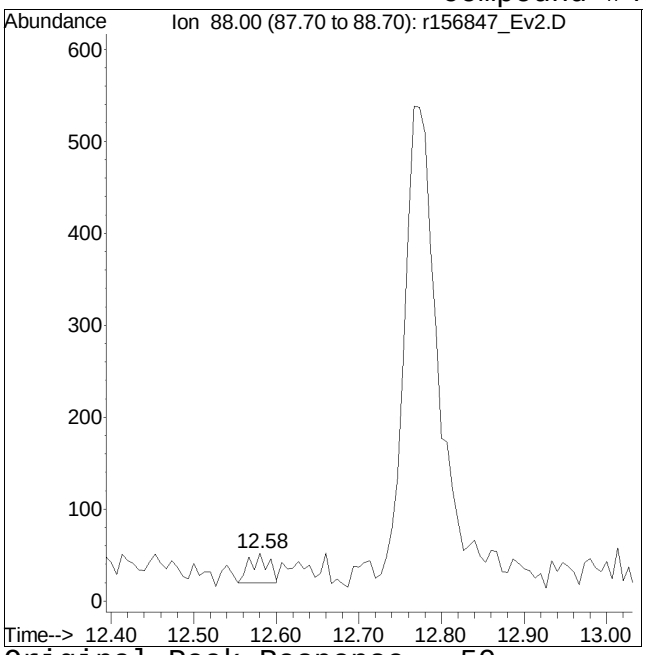
Manual Peak Response = 3295 M6

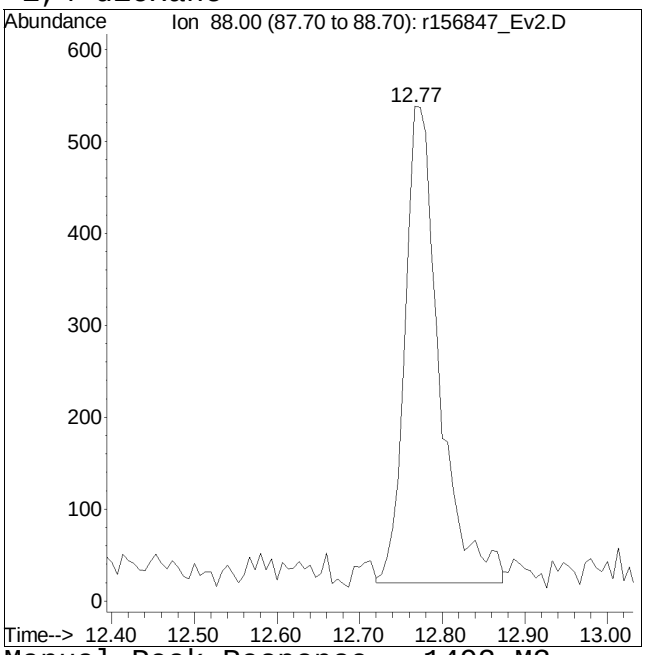
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156847_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 7:58 PM Instrument :
Sample : ITO15-SIMSTD0.2 Quant Date : 4/5/2018 9:48 am

Compound #43: 1,4-dioxane





Original Peak Response = 50 Manual Peak Response = 1492 M3
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156848_Ev2.D
Acq On : 4 Apr 2018 8:33 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.5
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:57:16 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.66	49	130018	10.000	ppbV	# 0.00
Standard Area = 133810			Recovery = 97.17%			
33) 1,4-difluorobenzene	11.93	114	277973	10.000	ppbV	0.00
Standard Area = 280369			Recovery = 99.15%			
51) chlorobenzene-D5	16.58	54	56744	10.000	ppbV	0.00
Standard Area = 59059			Recovery = 96.08%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	10.55	65	75606	10.011	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.11%			
53) toluene-D8	14.76	98	257596	10.279	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.79%			
67) bromofluorobenzene	17.88	95	139423	10.025	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.25%			
Target Compounds						Qvalue
2) propylene	3.90	41	5239M6	0.556	ppbV	
3) dichlorodifluoromethane	3.99	85	9191	0.553	ppbV	100
4) chloromethane	4.17	50	5346	0.545	ppbV	98
5) Freon-114	4.31	85	11047	0.555	ppbV	98
6) vinyl chloride	4.44	62	5407	0.549	ppbV	98
7) 1,3-butadiene	4.61	54	4193	0.536	ppbV	96
8) bromomethane	4.94	94	4486	0.555	ppbV	99
9) chloroethane	5.16	64	2756	0.779	ppbV	97
10) ethanol	5.35	31	22938	2.876	ppbV	100
11) vinyl bromide	5.61	106	4338	0.548	ppbV	99
12) acrolein	5.77	56	2270	0.551	ppbV #	100
13) acetone	5.94	43	37984	3.232	ppbV #	99
14) trichlorofluoromethane	6.14	101	9106	0.566	ppbV	99
15) isopropyl alcohol	6.27	45	24573	1.653	ppbV	99
16) acrylonitrile	6.52	53	4005	0.518	ppbV	98
17) 1,1-dichloroethene	6.92	61	7590	0.553	ppbV	98
18) tertiary butyl alcohol	7.01	59	7822	0.528	ppbV #	1
19) methylene chloride	7.09	49	7203	0.555	ppbV	98
20) 3-chloropropene	7.24	41	8045	0.449	ppbV	99
21) carbon disulfide	7.39	76	13730	0.516	ppbV #	68
22) Freon 113	7.43	101	9013	0.551	ppbV	98
23) trans-1,2-dichloroethene	8.23	61	7606	0.548	ppbV	99
24) 1,1-dichloroethane	8.47	63	9471	0.550	ppbV	99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156848_Ev2.D
Acq On : 4 Apr 2018 8:33 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.5
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:57:16 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	8.57	73	13038	0.556	ppbV		97
26) vinyl acetate	8.69	43	13322	0.562	ppbV		100
27) 2-butanone	8.97	43	13489	0.581	ppbV		96
28) cis-1,2-dichloroethene	9.47	61	7063	0.527	ppbV		100
29) Ethyl Acetate	9.78	61	1825	0.535	ppbV		59
30) chloroform	9.82	83	8667	0.537	ppbV		99
31) Tetrahydrofuran	10.30	42	8046M6	0.515	ppbV		
32) 1,2-dichloroethane	10.68	62	6420	0.553	ppbV		99
34) hexane	9.74	57	8827	0.511	ppbV		99
36) 1,1,1-trichloroethane	10.97	97	7476	0.548	ppbV		96
37) benzene	11.49	78	16292	0.524	ppbV		98
38) carbon tetrachloride	11.67	117	6516	0.514	ppbV		99
39) cyclohexane	11.81	56	9135	0.505	ppbV		98
40) Dibromomethane	12.41	93	5180	0.531	ppbV	#	100
41) 1,2-dichloropropane	12.45	63	6846	0.547	ppbV		96
42) bromodichloromethane	12.67	83	8191	0.492	ppbV		99
43) 1,4-dioxane	12.75	88	3198	0.495	ppbV	#	80
44) trichloroethene	12.73	130	6188	0.531	ppbV		97
45) 2,2,4-trimethylpentane	12.77	57	29626	0.527	ppbV		98
46) heptane	13.09	43	14081	0.515	ppbV		98
47) cis-1,3-dichloropropene	13.74	75	7120	0.461	ppbV		98
48) 4-methyl-2-pentanone	13.79	43	14972	0.489	ppbV		99
49) trans-1,3-dichloropropene	14.36	75	6430	0.442	ppbV		93
50) 1,1,2-trichloroethane	14.56	97	5858	0.509	ppbV		98
52) toluene	14.87	91	18962	0.537	ppbV		100
54) 2-hexanone	15.16	43	14014	0.476	ppbV		99
55) dibromochloromethane	15.31	129	6801	0.475	ppbV		96
56) 1,2-dibromoethane	15.55	107	8519	0.517	ppbV		100
57) tetrachloroethene	16.01	166	6420	0.524	ppbV		100
58) 1,1,1,2-tetrachloroethane	16.61	131	5474	0.496	ppbV		97
59) chlorobenzene	16.63	112	13887	0.526	ppbV		97
60) ethylbenzene	16.96	91	22729	0.498	ppbV		99
61) m+p-xylene	17.11	91	38586	1.032	ppbV		99
62) bromoform	17.18	173	4985	0.439	ppbV		99
63) styrene	17.42	104	13874	0.476	ppbV		98
64) 1,1,2,2-tetrachloroethane	17.50	83	13328	0.501	ppbV		99
65) o-xylene	17.51	91	19287	0.495	ppbV		100
66) 1,2,3-Trichloropropane	17.61	75	10946	0.526	ppbV	#	70
68) isopropylbenzene	17.99	105	23268	0.489	ppbV		98
69) Bromobenzene	18.07	77	13009	0.490	ppbV	#	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156848_Ev2.D
Acq On : 4 Apr 2018 8:33 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.5
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:57:16 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.52	105	25090	0.472	ppbV	99
71) 1,3,5-trimethylbenzene	18.58	105	22143	0.480	ppbV	98
72) tert-butylbenzene	18.91	119	21262	0.478	ppbV	96
73) 1,2,4-trimethylbenzene	18.91	105	21488	0.471	ppbV	90
74) Benzyl Chloride	19.03	91	10871	0.398	ppbV	99
75) 1,3-dichlorobenzene	19.04	146	13655M3	0.482	ppbV	
76) 1,4-dichlorobenzene	19.10	146	13080	0.469	ppbV	98
77) sec-butylbenzene	19.13	105	29612	0.453	ppbV	95
78) p-isopropyltoluene	19.25	119	25089	0.457	ppbV	96
79) 1,2-dichlorobenzene	19.38	146	12456	0.460	ppbV #	91
80) n-butylbenzene	19.59	91	24274	0.448	ppbV	90
81) 1,2,4-trichlorobenzene	20.89	180	8365	0.367	ppbV	95
82) naphthalene	21.01	128	28741	0.444	ppbV	98
83) 1,2,3-trichlorobenzene	21.27	180	8048	0.372	ppbV	94
84) hexachlorobutadiene	21.34	225	7601	0.399	ppbV	95

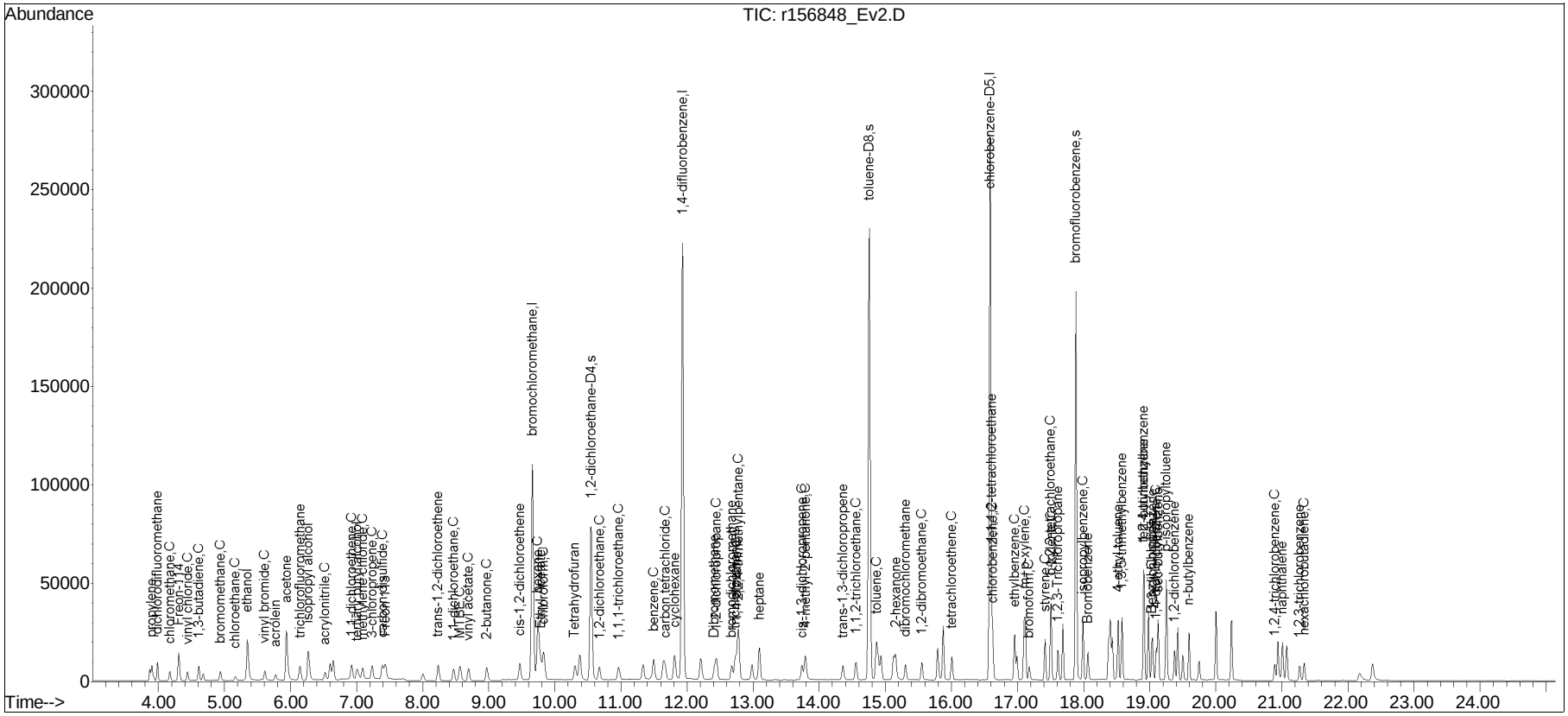
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156848_Ev2.D
Acq On : 4 Apr 2018 8:33 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD0.5
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:57:16 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

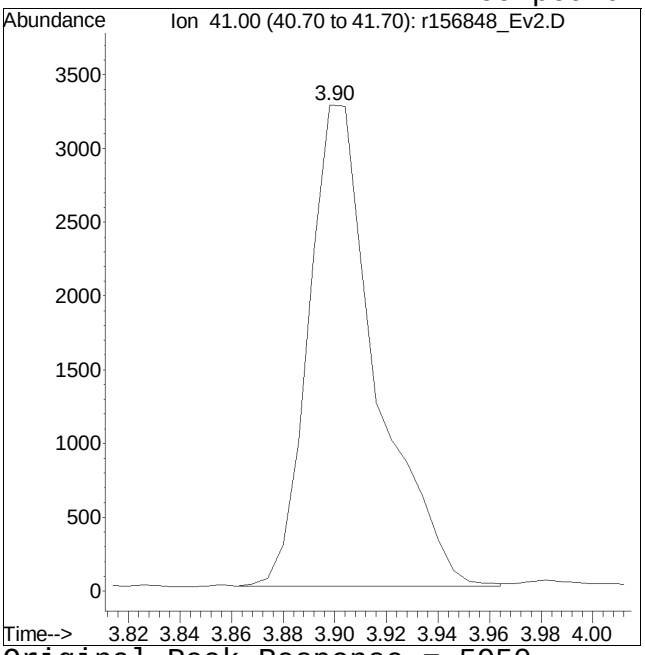
Sub List : Default - All compounds listed8\180404SIM_ICAL\r156850_Ev2.D



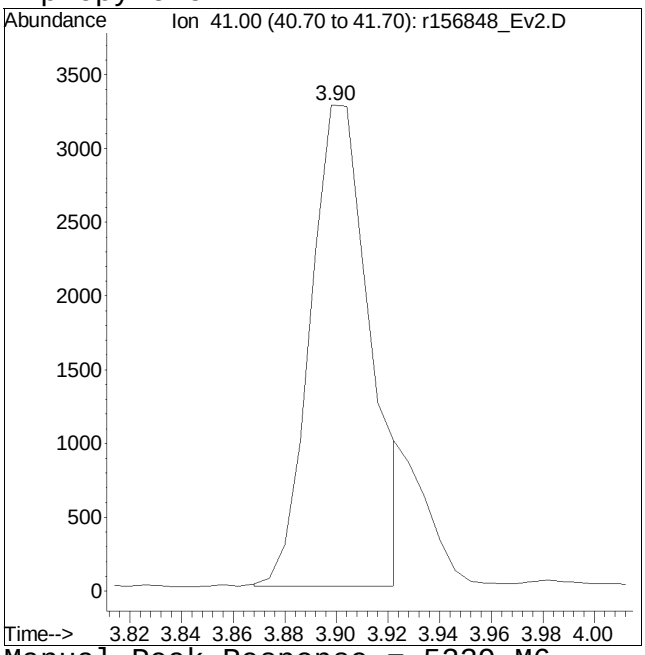
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156848_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 8:33 PM Instrument :
Sample : ITO15-SIMSTD0.5 Quant Date : 4/5/2018 9:49 am

Compound #2: propylene



Original Peak Response = 5950



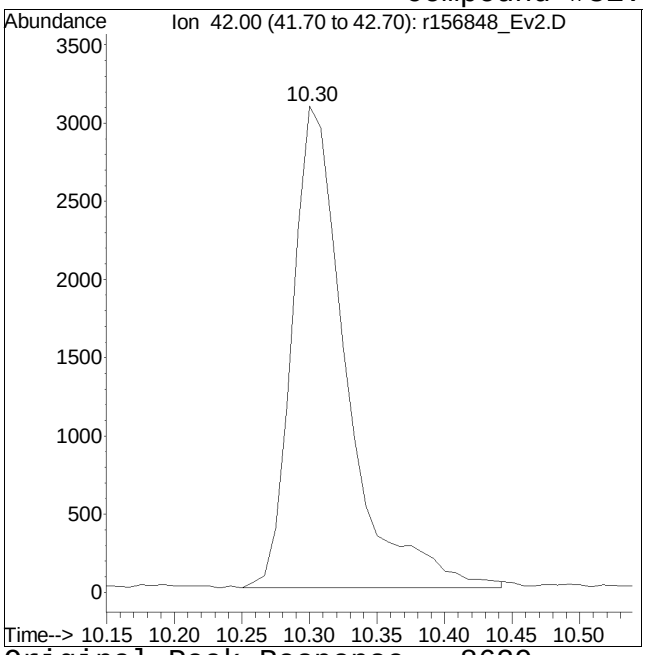
Manual Peak Response = 5239 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

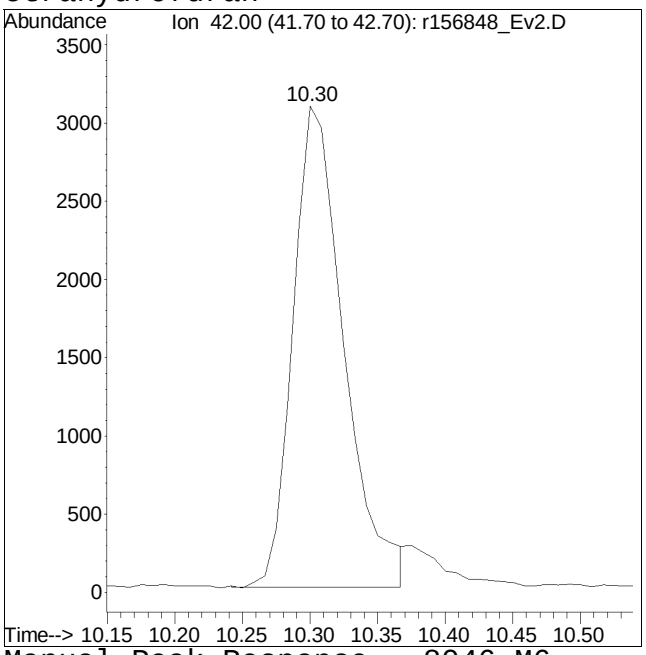
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156848_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 8:33 PM Instrument :
Sample : ITO15-SIMSTD0.5 Quant Date : 4/5/2018 9:49 am

Compound #31: Tetrahydrofuran



Original Peak Response = 8629



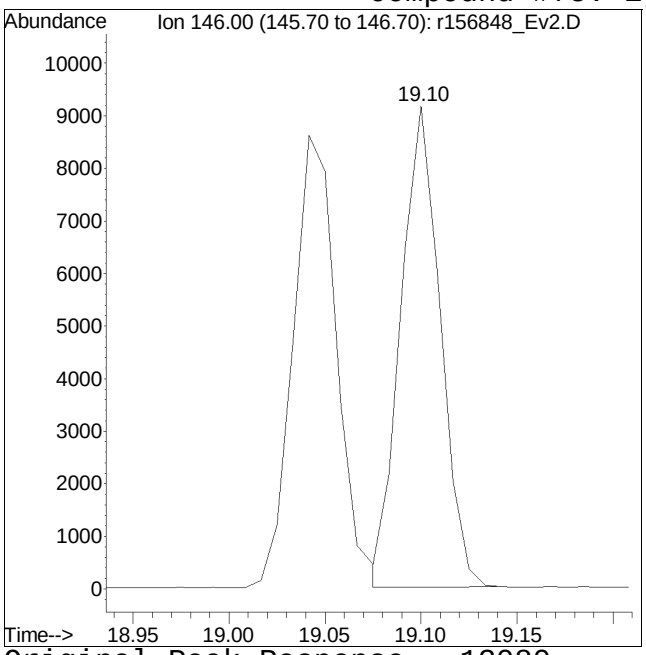
Manual Peak Response = 8046 M6

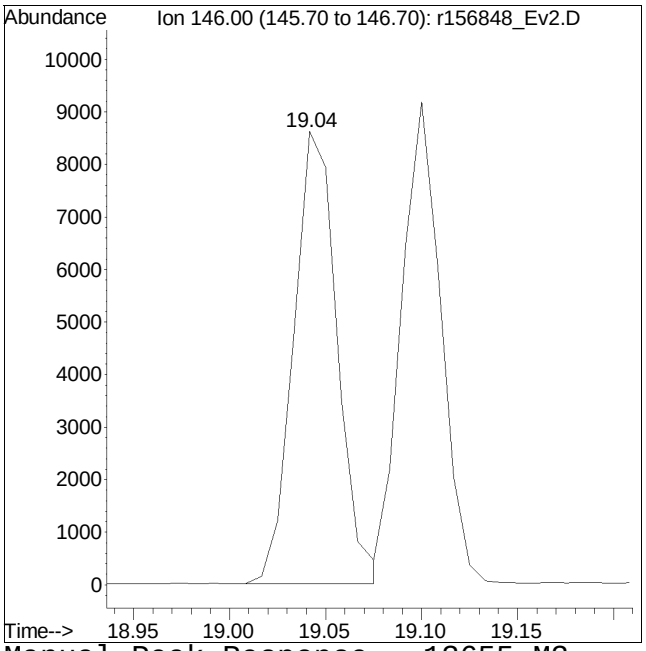
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156848_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 8:33 PM Instrument :
Sample : ITO15-SIMSTD0.5 Quant Date : 4/5/2018 9:49 am

Compound #75: 1,3-dichlorobenzene





Original Peak Response = 13080 Manual Peak Response = 13655 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156849_Ev2.D
Acq On : 4 Apr 2018 9:11 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD1.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:58:07 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.66	49	130918	10.000	ppbV	# 0.00
Standard Area = 133810			Recovery = 97.84%			
33) 1,4-difluorobenzene	11.93	114	274872	10.000	ppbV	0.00
Standard Area = 280369			Recovery = 98.04%			
51) chlorobenzene-D5	16.58	54	57158	10.000	ppbV	0.00
Standard Area = 59059			Recovery = 96.78%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	10.54	65	75208	10.071	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.71%			
53) toluene-D8	14.75	98	251352	9.957	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.57%			
67) bromofluorobenzene	17.88	95	135443	9.669	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 96.69%			
Target Compounds						Qvalue
2) propylene	3.90	41	10376M6	1.094	ppbV	
3) dichlorodifluoromethane	3.98	85	18170	1.085	ppbV	99
4) chloromethane	4.17	50	10487	1.061	ppbV	98
5) Freon-114	4.31	85	21636	1.080	ppbV	99
6) vinyl chloride	4.44	62	10701	1.080	ppbV	100
7) 1,3-butadiene	4.61	54	8324	1.058	ppbV	95
8) bromomethane	4.94	94	8711	1.071	ppbV	98
9) chloroethane	5.16	64	5536	1.555	ppbV	98
10) ethanol	5.34	31	42879	5.339	ppbV	100
11) vinyl bromide	5.61	106	8411M4	1.055	ppbV	
12) acrolein	5.77	56	4206	1.014	ppbV #	100
13) acetone	5.93	43	70211	5.934	ppbV	100
14) trichlorofluoromethane	6.14	101	17478	1.079	ppbV	99
15) isopropyl alcohol	6.26	45	42360	2.830	ppbV	100
16) acrylonitrile	6.52	53	7919	1.017	ppbV	98
17) 1,1-dichloroethene	6.92	61	14801	1.071	ppbV	100
18) tertiary butyl alcohol	7.00	59	14491	0.971	ppbV #	1
19) methylene chloride	7.09	49	14117	1.081	ppbV	99
20) 3-chloropropene	7.23	41	16115	0.894	ppbV	99
21) carbon disulfide	7.39	76	27192	1.015	ppbV #	85
22) Freon 113	7.43	101	17895	1.086	ppbV	100
23) trans-1,2-dichloroethene	8.23	61	14883	1.064	ppbV	97
24) 1,1-dichloroethane	8.47	63	18730	1.080	ppbV	100

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156849_Ev2.D
Acq On : 4 Apr 2018 9:11 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD1.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:58:07 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	8.56	73	25164	1.065	ppbV		99
26) vinyl acetate	8.69	43	26669	1.116	ppbV		99
27) 2-butanone	8.96	43	26309	1.125	ppbV		95
28) cis-1,2-dichloroethene	9.47	61	14406	1.067	ppbV		99
29) Ethyl Acetate	9.78	61	3510	1.021	ppbV		68
30) chloroform	9.82	83	17342	1.067	ppbV		99
31) Tetrahydrofuran	10.29	42	15967	1.015	ppbV		100
32) 1,2-dichloroethane	10.67	62	12516	1.071	ppbV		99
34) hexane	9.73	57	17835	1.044	ppbV		92
36) 1,1,1-trichloroethane	10.96	97	15393	1.141	ppbV		95
37) benzene	11.49	78	32619	1.061	ppbV		100
38) carbon tetrachloride	11.67	117	12971	1.036	ppbV		97
39) cyclohexane	11.81	56	18637	1.042	ppbV		98
40) Dibromomethane	12.41	93	10251	1.064	ppbV	#	100
41) 1,2-dichloropropane	12.44	63	13040	1.053	ppbV		96
42) bromodichloromethane	12.67	83	16364	0.994	ppbV		98
43) 1,4-dioxane	12.75	88	6411	1.003	ppbV		90
44) trichloroethene	12.73	130	11774	1.022	ppbV		97
45) 2,2,4-trimethylpentane	12.77	57	58127	1.045	ppbV		99
46) heptane	13.09	43	28218	1.044	ppbV		99
47) cis-1,3-dichloropropene	13.73	75	14630	0.959	ppbV		98
48) 4-methyl-2-pentanone	13.78	43	31314	1.035	ppbV		99
49) trans-1,3-dichloropropene	14.36	75	13788	0.959	ppbV		97
50) 1,1,2-trichloroethane	14.55	97	11803	1.036	ppbV		97
52) toluene	14.86	91	37422	1.053	ppbV		100
54) 2-hexanone	15.15	43	28892	0.975	ppbV		100
55) dibromochloromethane	15.30	129	13884	0.963	ppbV		99
56) 1,2-dibromoethane	15.55	107	17095	1.029	ppbV		100
57) tetrachloroethene	16.00	166	12960	1.049	ppbV		98
58) 1,1,1,2-tetrachloroethane	16.61	131	11033	0.992	ppbV		99
59) chlorobenzene	16.63	112	27945	1.050	ppbV		100
60) ethylbenzene	16.95	91	46386	1.010	ppbV		100
61) m+p-xylene	17.11	91	77963	2.070	ppbV		97
62) bromoform	17.18	173	10304	0.902	ppbV		99
63) styrene	17.42	104	28170	0.959	ppbV		98
64) 1,1,2,2-tetrachloroethane	17.50	83	26430	0.987	ppbV		100
65) o-xylene	17.50	91	39332	1.002	ppbV		96
66) 1,2,3-Trichloropropane	17.61	75	21249	1.014	ppbV	#	70
68) isopropylbenzene	17.99	105	46692	0.975	ppbV		97
69) Bromobenzene	18.06	77	25947	0.969	ppbV	#	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156849_Ev2.D
Acq On : 4 Apr 2018 9:11 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD1.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:58:07 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) 4-ethyl toluene	18.52	105	51032	0.952	ppbV		99
71) 1,3,5-trimethylbenzene	18.57	105	45134	0.972	ppbV		98
72) tert-butylbenzene	18.91	119	43496	0.971	ppbV		98
73) 1,2,4-trimethylbenzene	18.91	105	44211	0.962	ppbV		94
74) Benzyl Chloride	19.02	91	23083	0.838	ppbV		96
75) 1,3-dichlorobenzene	19.04	146	26850	0.941	ppbV		94
76) 1,4-dichlorobenzene	19.10	146	26520	0.944	ppbV		94
77) sec-butylbenzene	19.13	105	61363	0.933	ppbV		97
78) p-isopropyltoluene	19.25	119	52017	0.941	ppbV		97
79) 1,2-dichlorobenzene	19.38	146	25396	0.930	ppbV		93
80) n-butylbenzene	19.59	91	50769	0.931	ppbV		93
81) 1,2,4-trichlorobenzene	20.89	180	18318	0.798	ppbV		100
82) naphthalene	21.01	128	62930	0.964	ppbV		99
83) 1,2,3-trichlorobenzene	21.27	180	17488	0.803	ppbV		99
84) hexachlorobutadiene	21.33	225	15818	0.824	ppbV	#	92

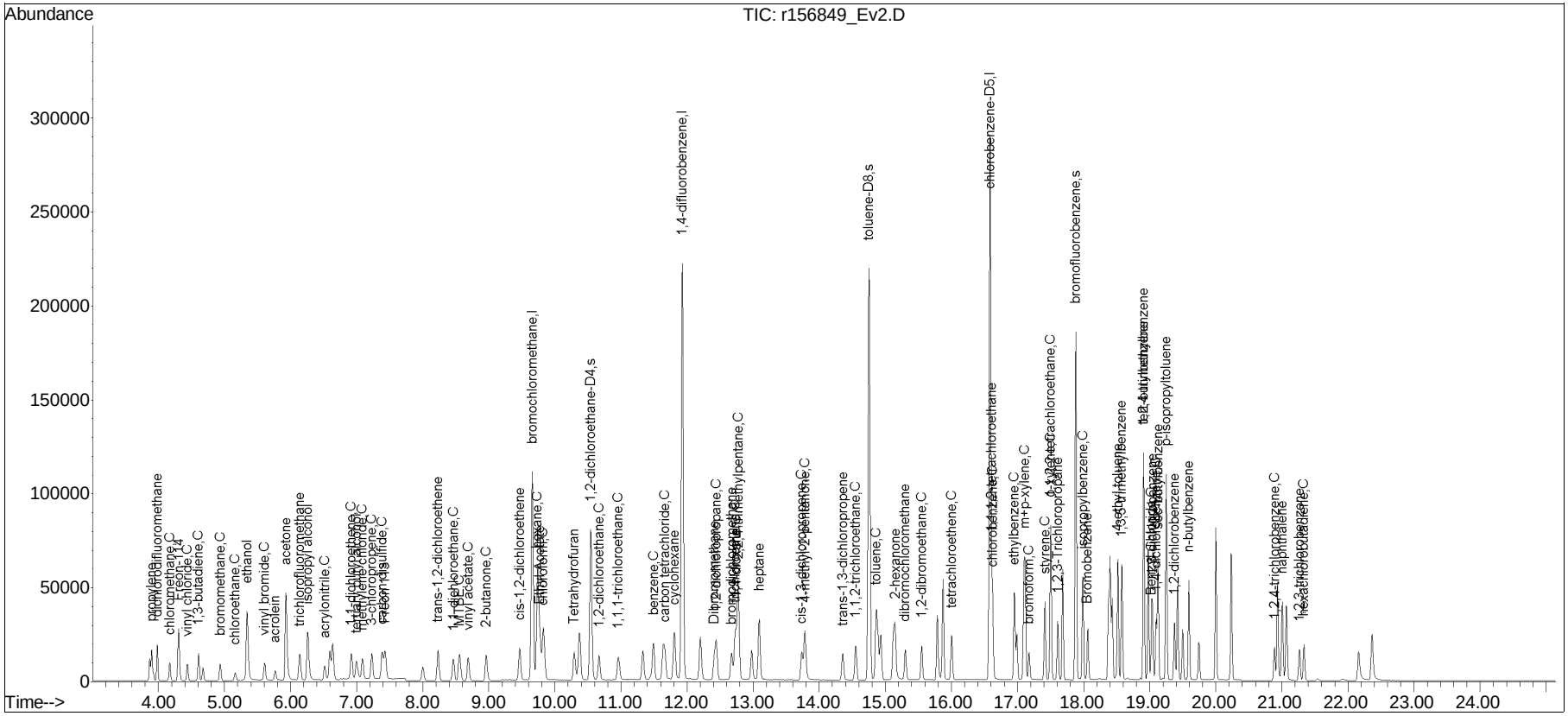
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156849_Ev2.D
Acq On : 4 Apr 2018 9:11 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD1.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:58:07 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

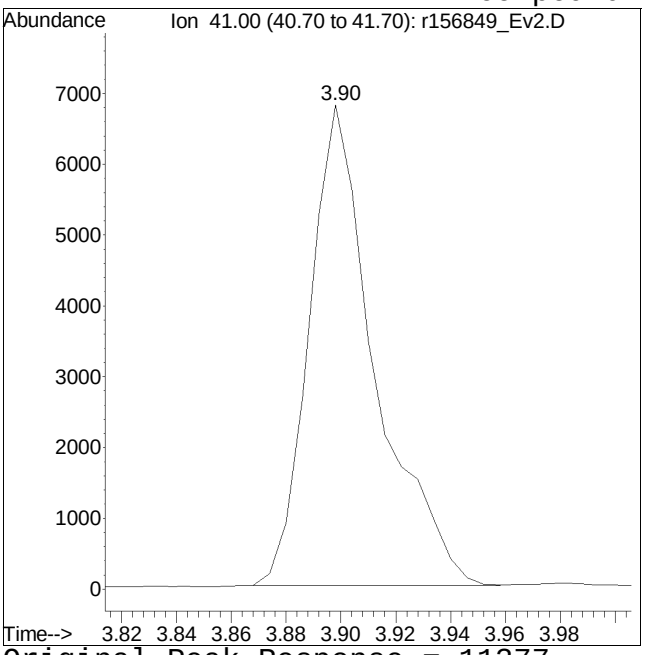
Sub List : Default - All compounds listed8\180404SIM_ICAL\r156850_Ev2.D



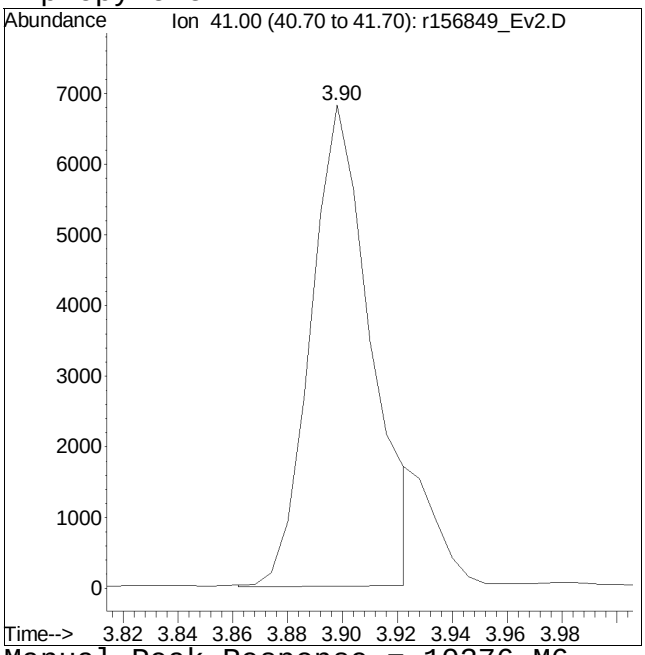
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156849_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:11 PM Instrument :
Sample : ITO15-SIMSTD1.0 Quant Date : 4/5/2018 9:49 am

Compound #2: propylene



Original Peak Response = 11377



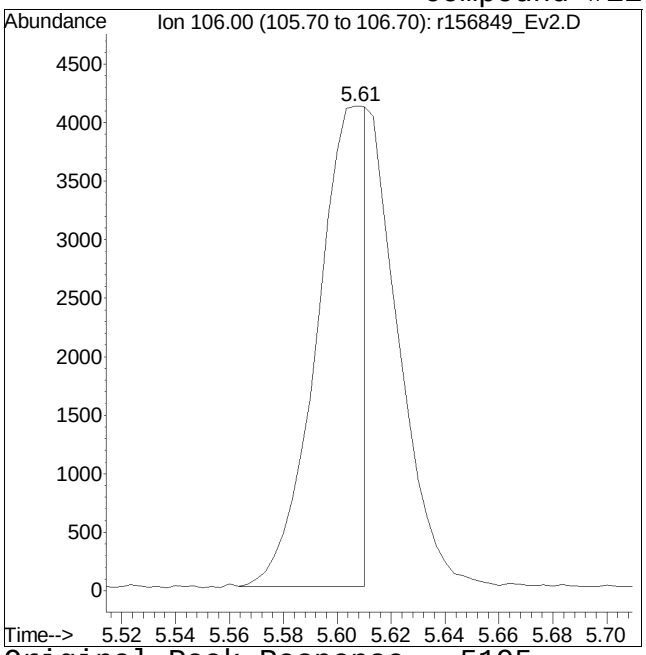
Manual Peak Response = 10376 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

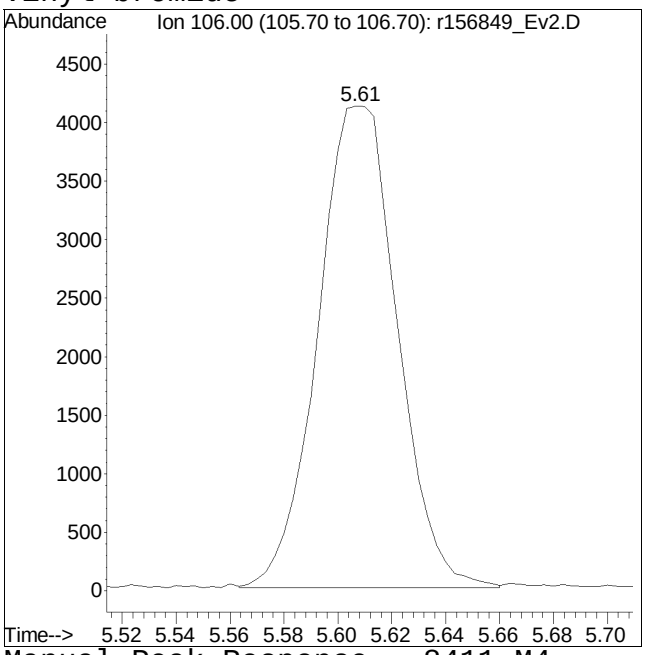
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156849_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:11 PM Instrument :
Sample : ITO15-SIMSTD1.0 Quant Date : 4/5/2018 9:49 am

Compound #11: vinyl bromide



Original Peak Response = 5195



Manual Peak Response = 8411 M4

M4 = Poor automated baseline construction.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156850_Ev2.D
Acq On : 4 Apr 2018 9:48 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD5.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:46:33 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Fri Feb 16 18:24:21 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.66	49	133810M2	10.000	ppbV	0.69
Standard Area = 133810			Recovery = 100.00%			
33) 1,4-difluorobenzene	11.93	114	280369M3	10.000	ppbV	0.71
Standard Area = 280369			Recovery = 100.00%			
51) chlorobenzene-D5	16.58	54	59059M2	10.000	ppbV	0.66
Standard Area = 59059			Recovery = 100.00%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	10.54	65	76173M3	9.631	ppbV	0.70
Spiked Amount 10.000	Range 70 - 130		Recovery = 96.31%			
53) toluene-D8	14.75	98	260833M2	12.657	ppbV	0.68
Spiked Amount 10.000	Range 70 - 130		Recovery = 126.57%			
67) bromofluorobenzene	17.88	95	144742M3	12.721	ppbV	0.60
Spiked Amount 10.000	Range 70 - 130		Recovery = 127.21%			
Target Compounds						Qvalue
2) propylene	3.89	41	48467M6	3.946	ppbV	
3) dichlorodifluoromethane	3.98	85	85573M3	4.991	ppbV	
4) chloromethane	4.17	50	50508	4.177	ppbV	97
5) Freon-114	4.31	85	102392M3	4.428	ppbV	
6) vinyl chloride	4.44	62	50657M3	4.091	ppbV	
7) 1,3-butadiene	4.61	54	40221M2	4.135	ppbV	
8) bromomethane	4.94	94	41564M2	4.458	ppbV	
9) chloroethane	5.16	64	18199M2	2.824	ppbV	
10) ethanol	5.33	31	205227M2	19.762	ppbV	
11) vinyl bromide	5.61	106	40727M3	4.637	ppbV	
12) acrolein	5.76	56	21201M3	3.767	ppbV	
13) acetone	5.92	43	302359M3	19.510	ppbV	
14) trichlorofluoromethane	6.14	101	82789M2	5.561	ppbV	
15) isopropyl alcohol	6.25	45	191260M3	9.355	ppbV	
16) acrylonitrile	6.51	53	39812M3	4.259	ppbV	
17) 1,1-dichloroethene	6.92	61	70632M2	4.374	ppbV	
18) tertiary butyl alcohol	6.98	59	76275M3	3.703	ppbV	
19) methylene chloride	7.09	49	66750M2	4.871	ppbV	
20) 3-chloropropene	7.23	41	92133M3	4.716	ppbV	
21) carbon disulfide	7.39	76	136963M3	5.115	ppbV	

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156850_Ev2.D
Acq On : 4 Apr 2018 9:48 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD5.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:46:33 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Fri Feb 16 18:24:21 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
22) Freon 113	7.43	101	84172M3	5.280	ppbV	
23) trans-1,2-dichloroethene	8.23	61	71484M3	4.805	ppbV	
24) 1,1-dichloroethane	8.47	63	88666M2	4.774	ppbV	
25) MTBE	8.55	73	120745M3	5.586	ppbV	
26) vinyl acetate	8.68	43	122074M3	4.662	ppbV	
27) 2-butanone	8.95	43	119475M2	4.816	ppbV	
28) cis-1,2-dichloroethene	9.47	61	69003M3	4.860	ppbV	
29) Ethyl Acetate	9.77	61	17566M2	5.051	ppbV	
30) chloroform	9.82	83	83064M2	5.229	ppbV	
31) Tetrahydrofuran	10.28	42	80425M3	5.066	ppbV	
32) 1,2-dichloroethane	10.67	62	59713M3	4.875	ppbV	
34) hexane	9.73	57	87148M3	4.112	ppbV	
36) 1,1,1-trichloroethane	10.97	97	68814M2	4.957	ppbV	
37) benzene	11.49	78	156792M2	4.401	ppbV	
38) carbon tetrachloride	11.67	117	63870M2	5.187	ppbV	
39) cyclohexane	11.81	56	91199M3	3.836	ppbV	
40) Dibromomethane	12.41	93	49153M2	4.393	ppbV	
41) 1,2-dichloropropane	12.44	63	63142M3	4.370	ppbV	
42) bromodichloromethane	12.67	83	83926M3	4.522	ppbV	
43) 1,4-dioxane	12.73	88	32595M3	4.400	ppbV	
44) trichloroethene	12.73	130	58732M3	5.140	ppbV	
45) 2,2,4-trimethylpentane	12.77	57	283600M3	4.075	ppbV	
46) heptane	13.09	43	137782M3	4.350	ppbV	
47) cis-1,3-dichloropropene	13.73	75	77836M2	4.754	ppbV	
48) 4-methyl-2-pentanone	13.78	43	154359M3	4.247	ppbV	
49) trans-1,3-dichloropropene	14.36	75	73295M3	4.670	ppbV	
50) 1,1,2-trichloroethane	14.55	97	58079M2	5.032	ppbV	
52) toluene	14.86	91	183627M2	5.876	ppbV	
54) 2-hexanone	15.14	43	153084M3	5.874	ppbV	
55) dibromochloromethane	15.30	129	74469M2	6.844	ppbV	
56) 1,2-dibromoethane	15.55	107	85826M2	6.228	ppbV	
57) tetrachloroethene	16.00	166	63801M2	6.454	ppbV	
58) 1,1,1,2-tetrachloroethane	16.61	131	57459M2	6.723	ppbV	
59) chlorobenzene	16.63	112	137447M2	6.060	ppbV	
60) ethylbenzene	16.95	91	237382M2	6.412	ppbV	
61) m+p-xylene	17.11	91	389114M3	12.946	ppbV	
62) bromoform	17.18	173	59026M2	7.340	ppbV	
63) styrene	17.41	104	151817M2	6.891	ppbV	
64) 1,1,2,2-tetrachloroethane	17.50	83	138332M3	5.752	ppbV	
65) o-xylene	17.50	91	202744M3	6.723	ppbV	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156850_Ev2.D
Acq On : 4 Apr 2018 9:48 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD5.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:46:33 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Fri Feb 16 18:24:21 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
66) 1,2,3-Trichloropropane	17.61	75	108271M3	5.814	ppbV	
68) isopropylbenzene	17.98	105	247428M3	6.866	ppbV	
69) Bromobenzene	18.06	77	138280M3	5.927	ppbV	
70) 4-ethyl toluene	18.52	105	276882M3	7.565	ppbV	
71) 1,3,5-trimethylbenzene	18.57	105	239914M3	7.445	ppbV	
72) tert-butylbenzene	18.91	119	231523M2	7.313	ppbV	
73) 1,2,4-trimethylbenzene	18.91	105	237383M3	7.350	ppbV	
74) Benzyl Chloride	19.02	91	142316M3	6.722	ppbV	
75) 1,3-dichlorobenzene	19.04	146	147418M2	7.666	ppbV	
76) 1,4-dichlorobenzene	19.09	146	145114M2	7.496	ppbV	
77) sec-butylbenzene	19.13	105	339940M2	7.555	ppbV	
78) p-isopropyltoluene	19.25	119	285463M3	7.724	ppbV	
79) 1,2-dichlorobenzene	19.38	146	141060M3	7.855	ppbV	
80) n-butylbenzene	19.59	91	281688M3	7.888	ppbV	
81) 1,2,4-trichlorobenzene	20.88	180	118608M2	11.626	ppbV	
82) naphthalene	21.00	128	337209M2	11.598	ppbV	
83) 1,2,3-trichlorobenzene	21.26	180	112491M3	11.871	ppbV	
84) hexachlorobutadiene	21.33	225	99202M2	9.974	ppbV	

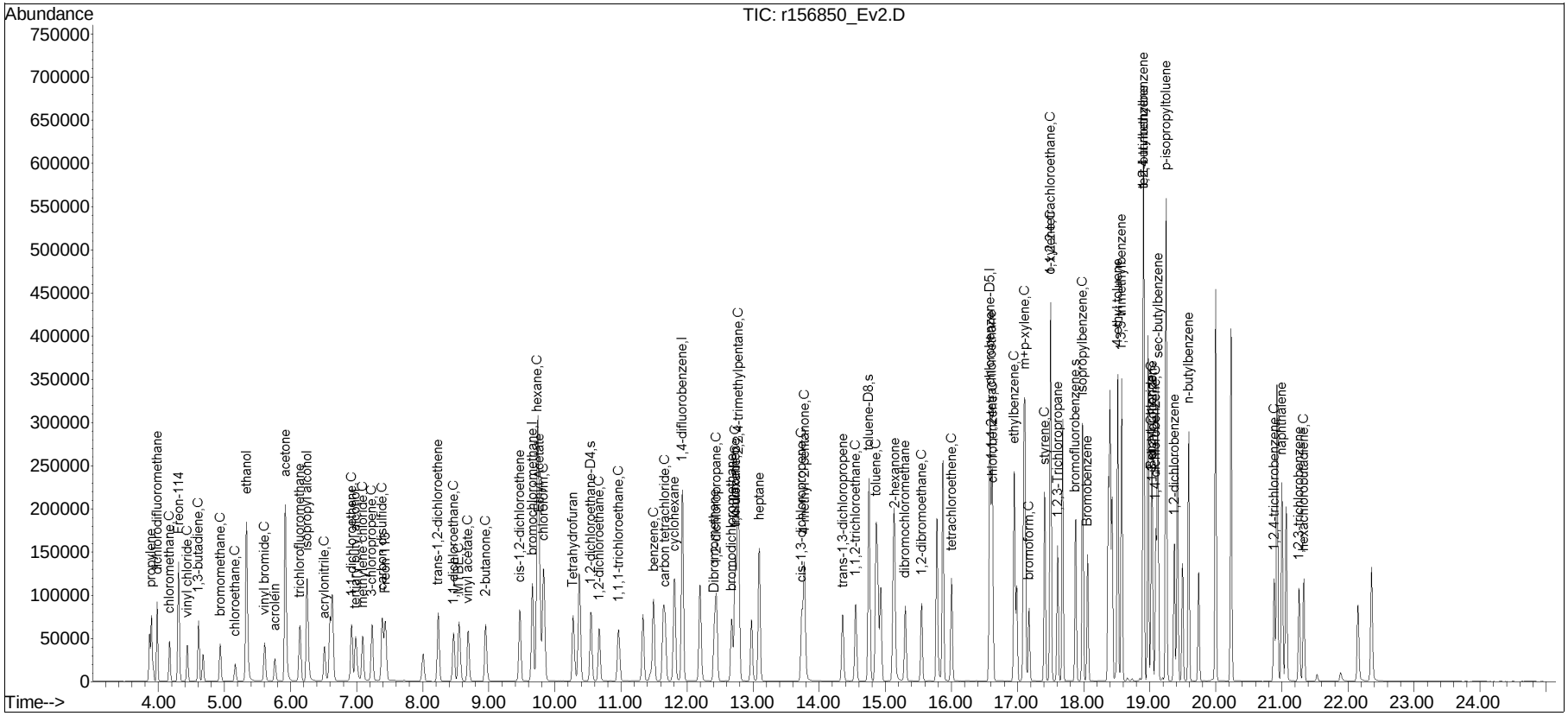
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156850_Ev2.D
Acq On : 4 Apr 2018 9:48 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD5.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:46:33 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Fri Feb 16 18:24:21 2018
Response via : Initial Calibration

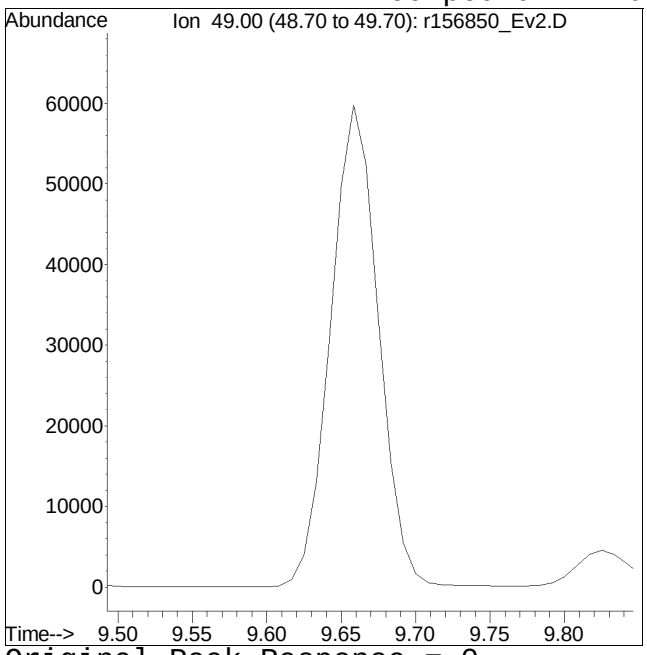
Sub List : Default - All compounds listed8\180404SIM_ICAL\r156850_Ev2.D

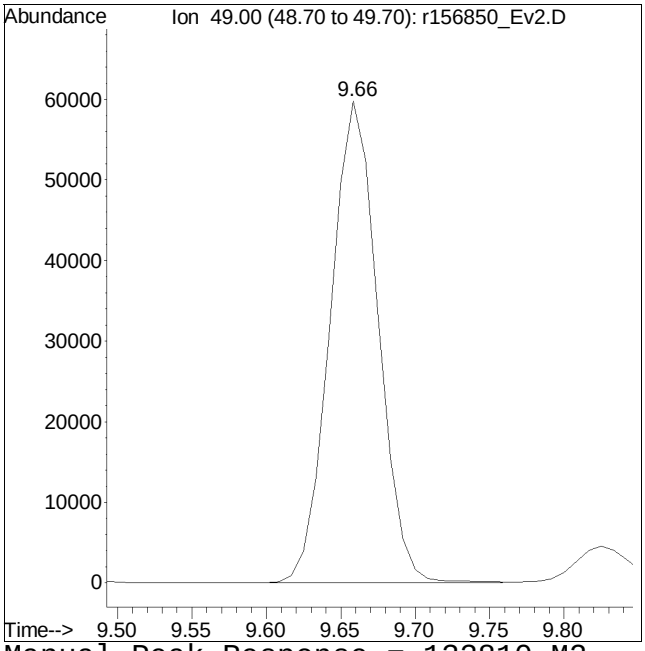


Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #1: bromochloromethane



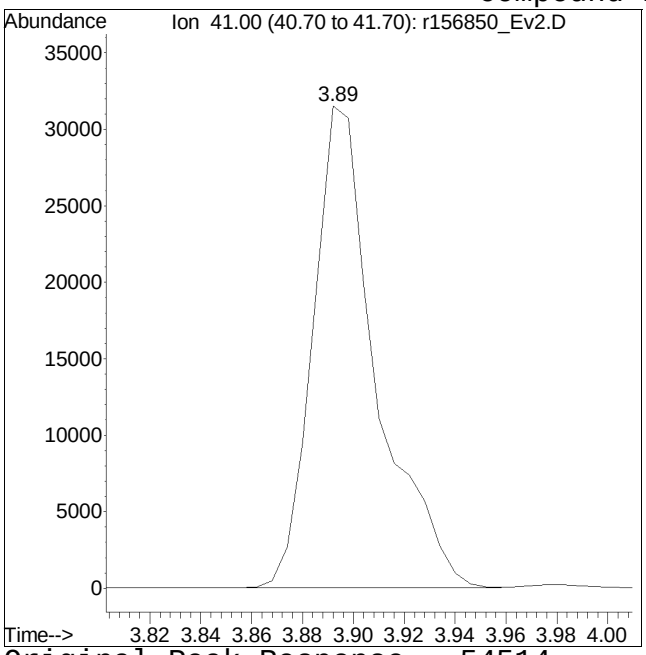


Original Peak Response = 0 Manual Peak Response = 133810 M2
M2 = Peak not found by automatic integration algorithm.

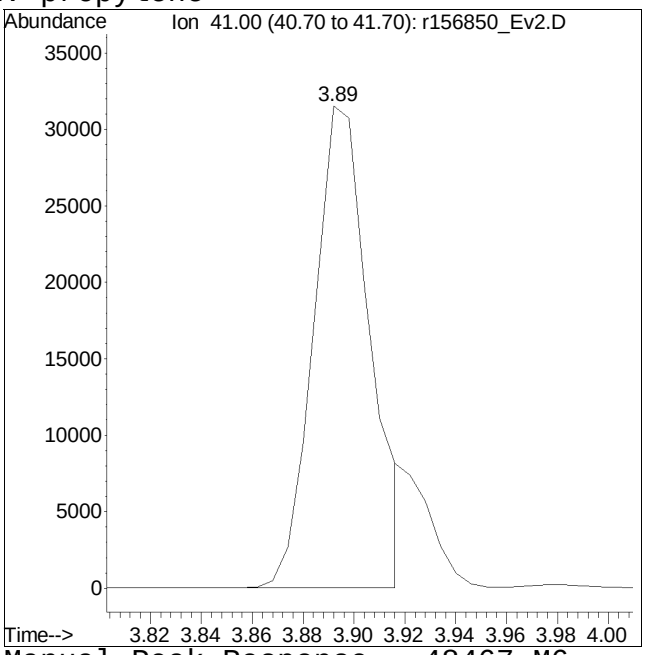
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #2: propylene



Original Peak Response = 54514



Manual Peak Response = 48467 M6

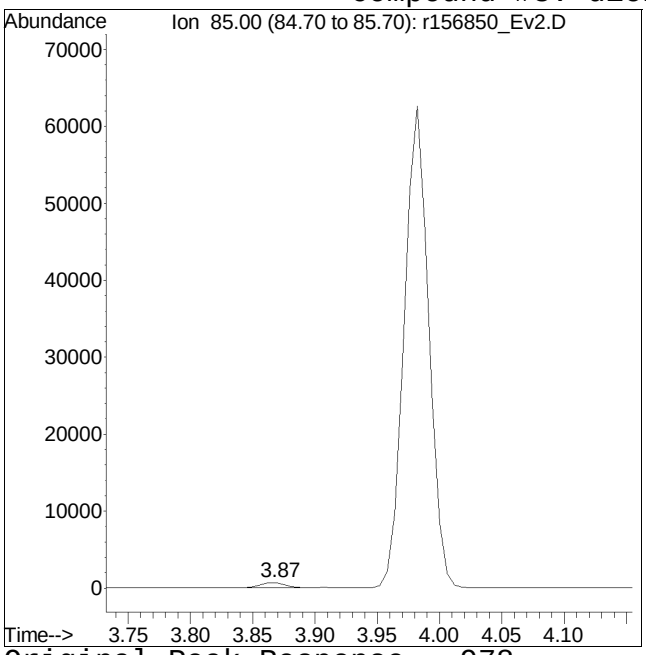
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

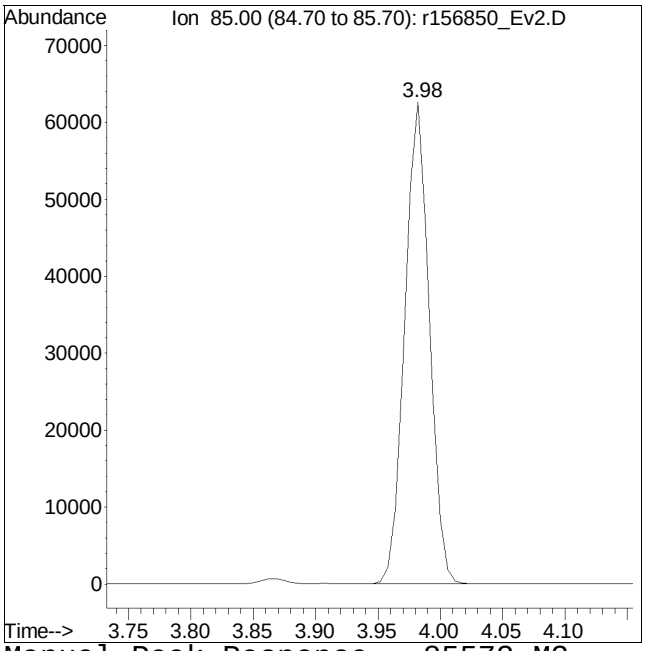
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\
Data File : r156850_Ev2.D
Date Inj'd : 4/4/2018 9:48 PM
Sample : ITO15-SIMSTD5.0

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:28 am

Compound #3: dichlorodifluoromethane





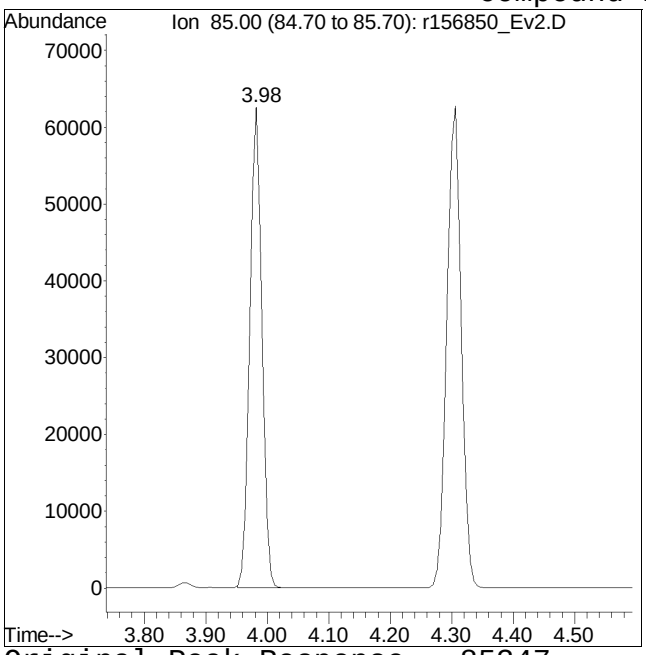
Original Peak Response = 978 Manual Peak Response = 85573 M3

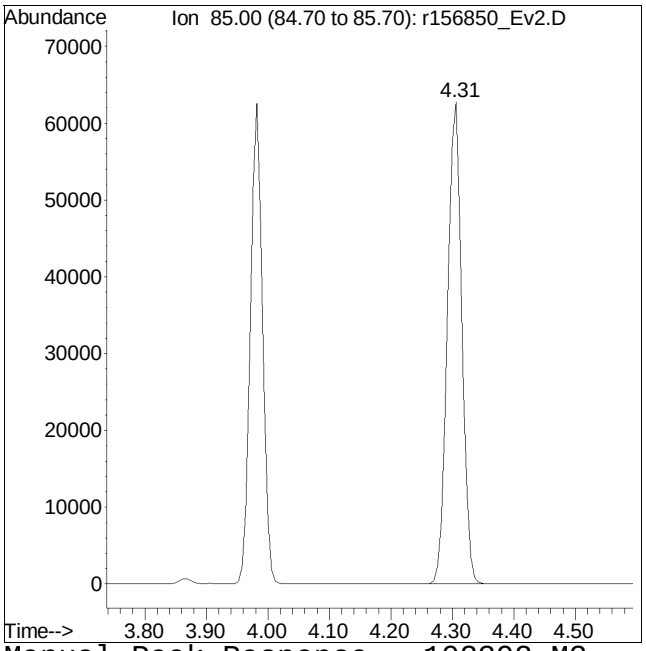
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #5: Freon-114





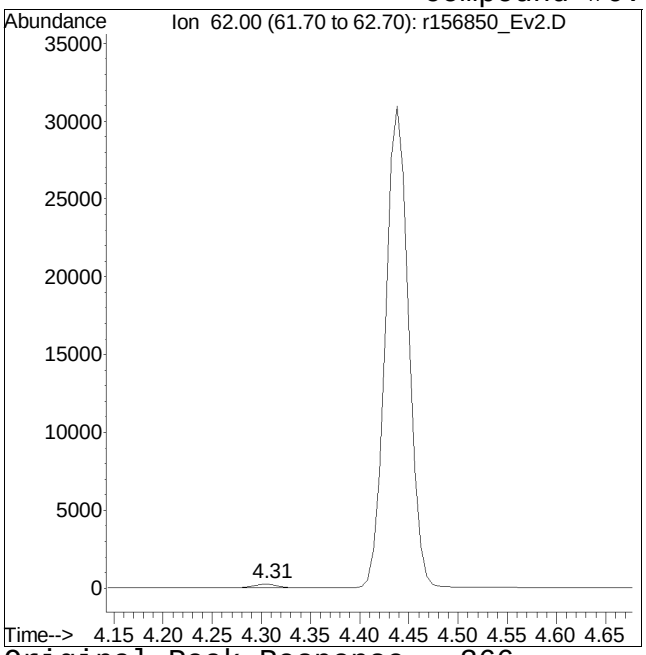
Original Peak Response = 85347 Manual Peak Response = 102392 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

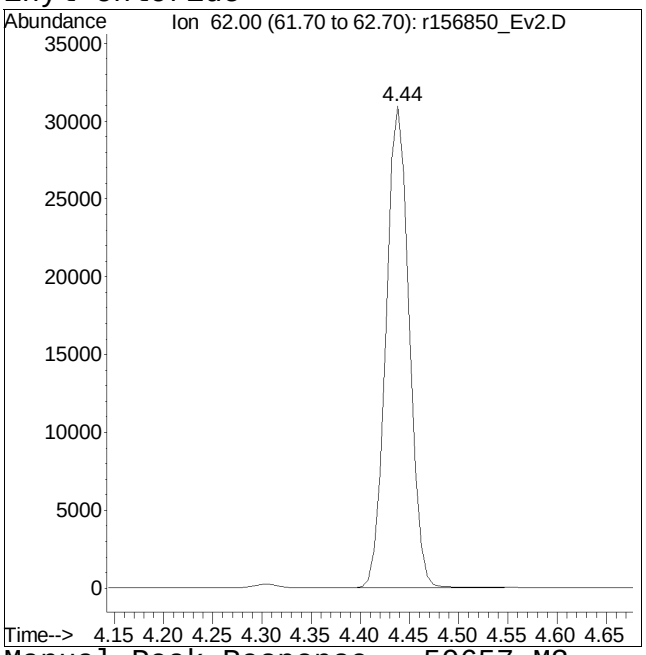
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #6: vinyl chloride



Original Peak Response = 366



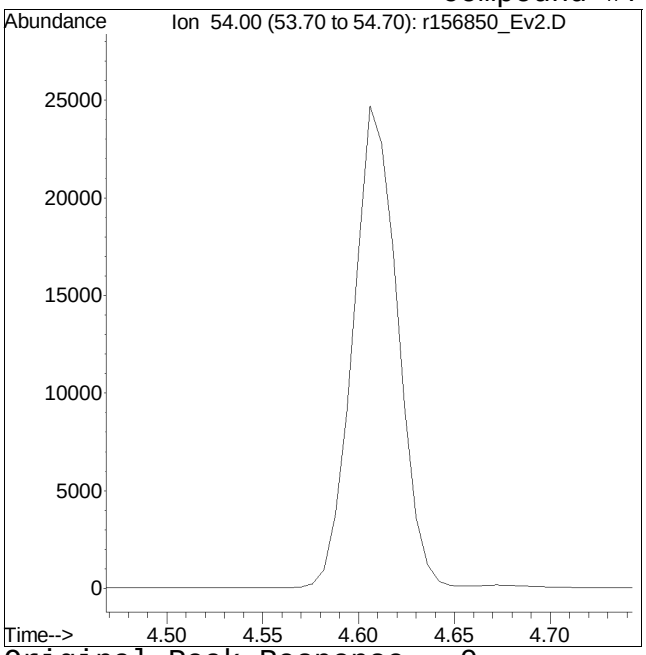
Manual Peak Response = 50657 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

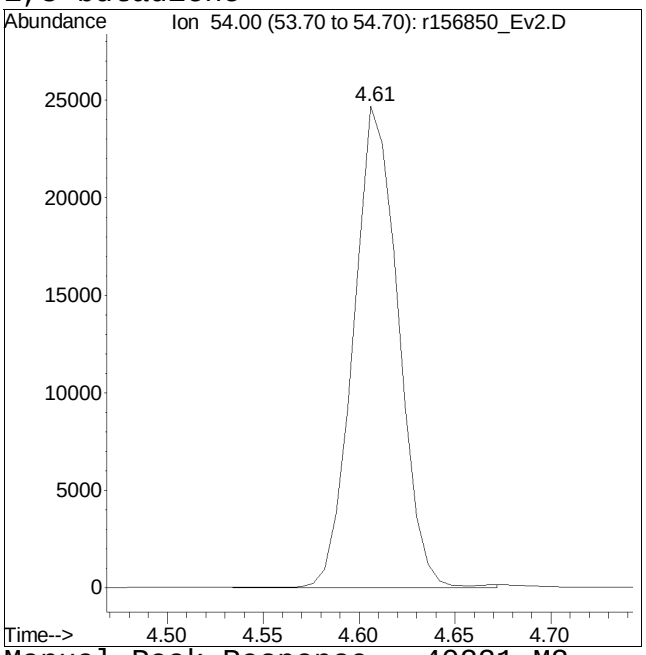
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #7: 1,3-butadiene



Original Peak Response = 0



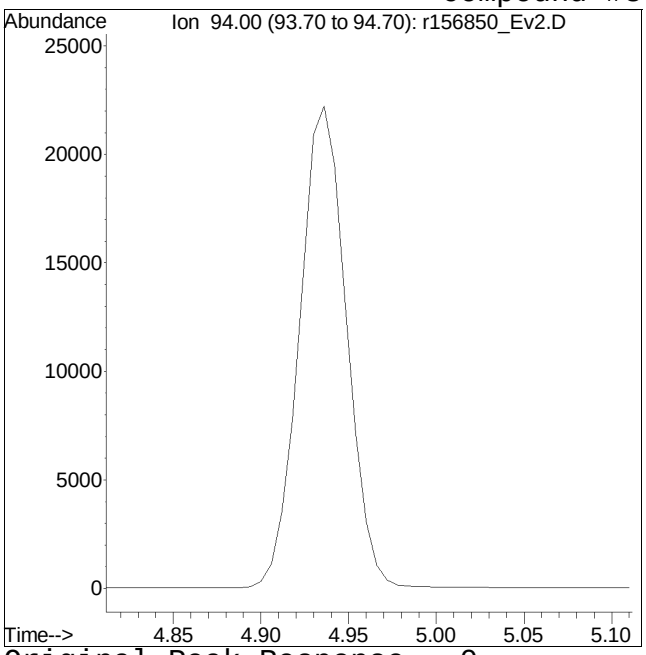
Manual Peak Response = 40221 M2

M2 = Peak not found by automatic integration algorithm.

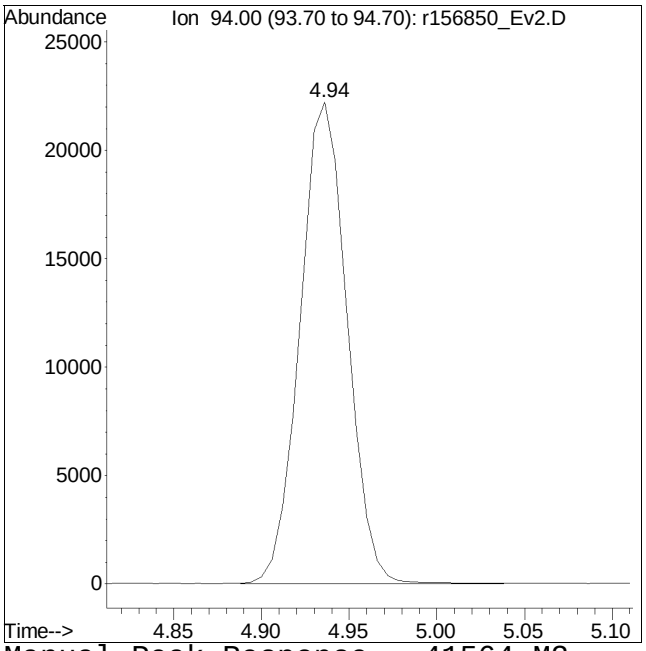
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #8: bromomethane



Original Peak Response = 0



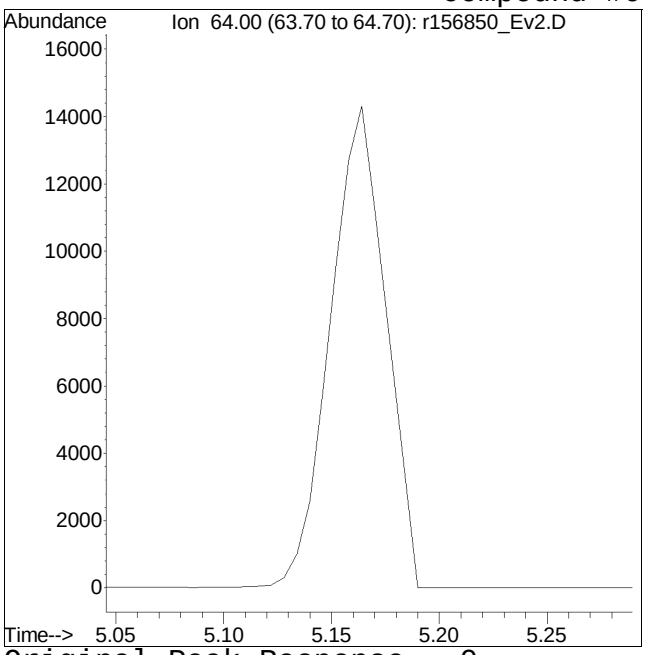
Manual Peak Response = 41564 M2

M2 = Peak not found by automatic integration algorithm.

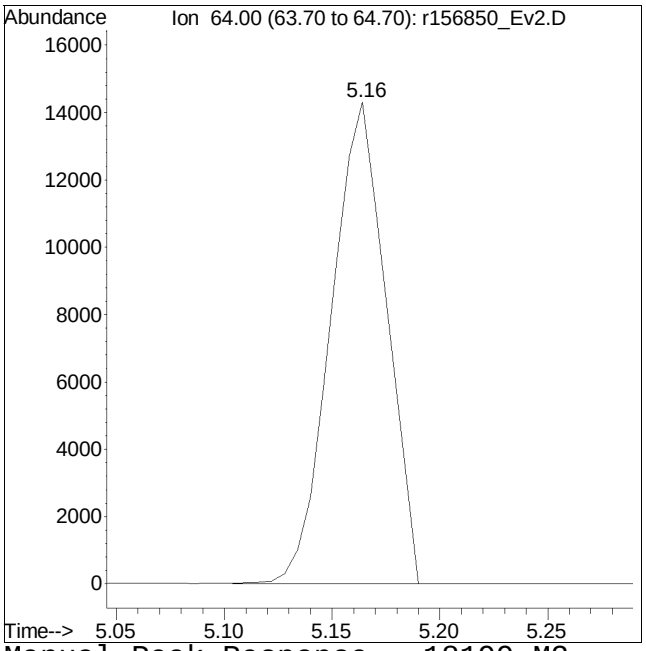
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #9: chloroethane



Original Peak Response = 0



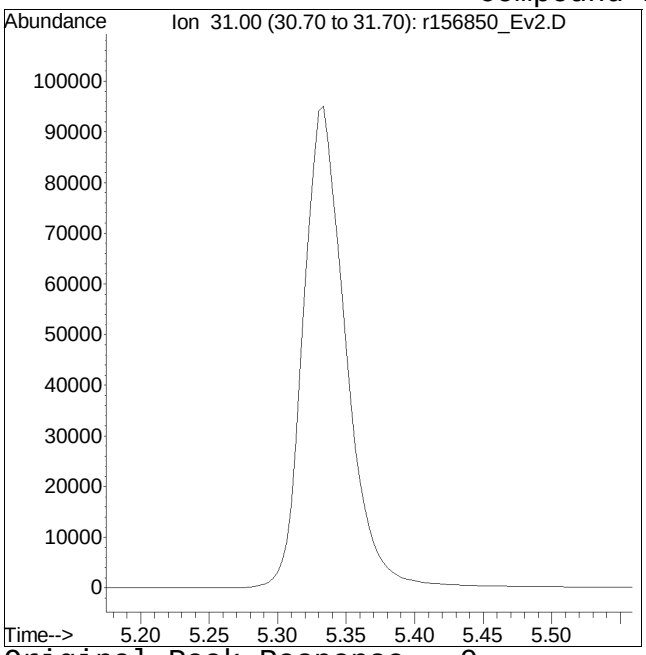
Manual Peak Response = 18199 M2

M2 = Peak not found by automatic integration algorithm.

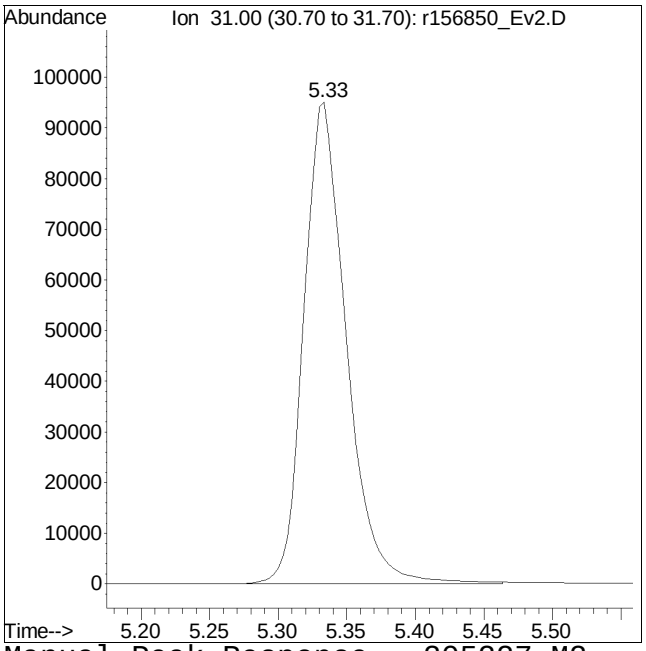
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #10: ethanol



Original Peak Response = 0



Manual Peak Response = 205227 M2

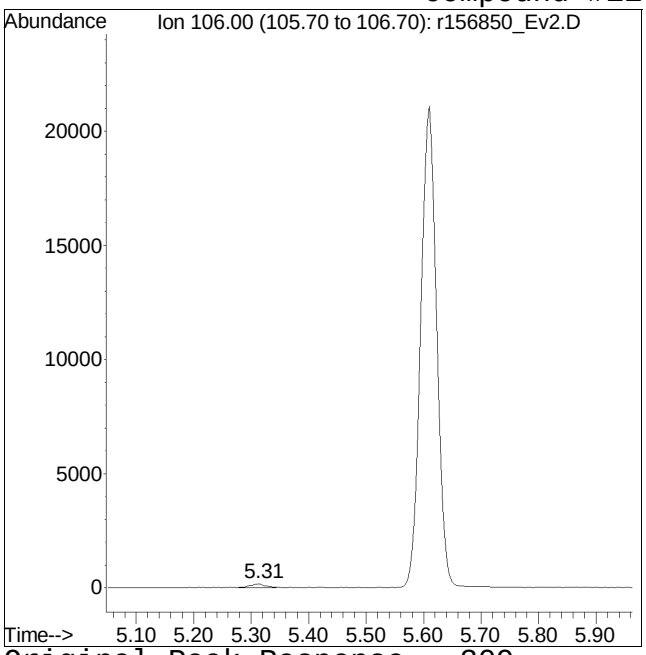
M2 = Peak not found by automatic integration algorithm.

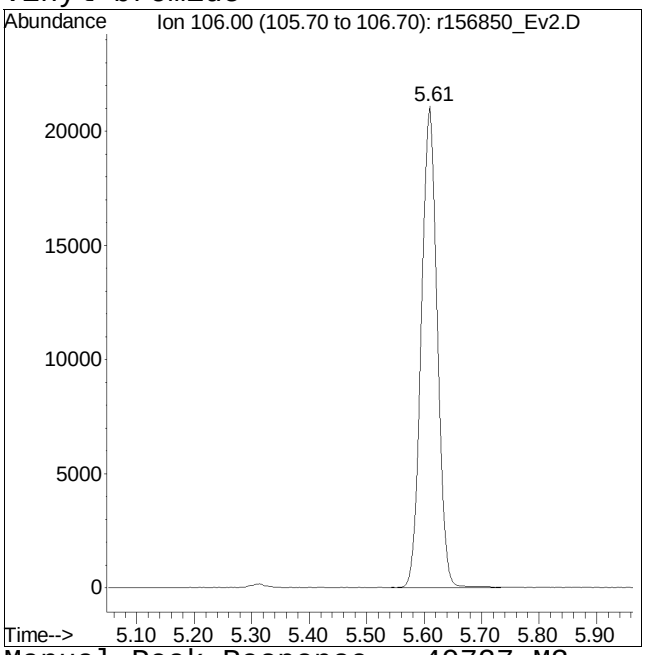
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\
Data File : r156850_Ev2.D
Date Inj'd : 4/4/2018 9:48 PM
Sample : ITO15-SIMSTD5.0

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:28 am

Compound #11: vinyl bromide





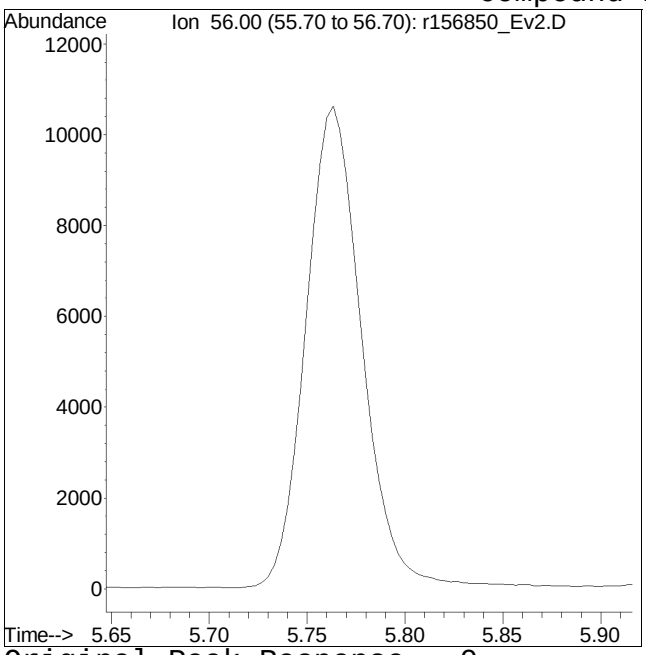
Original Peak Response = 309 Manual Peak Response = 40727 M3

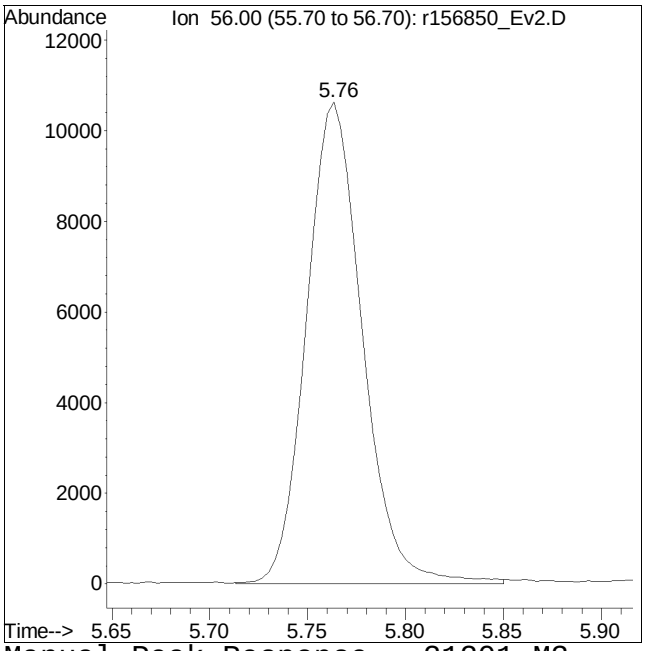
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #12: acrolein





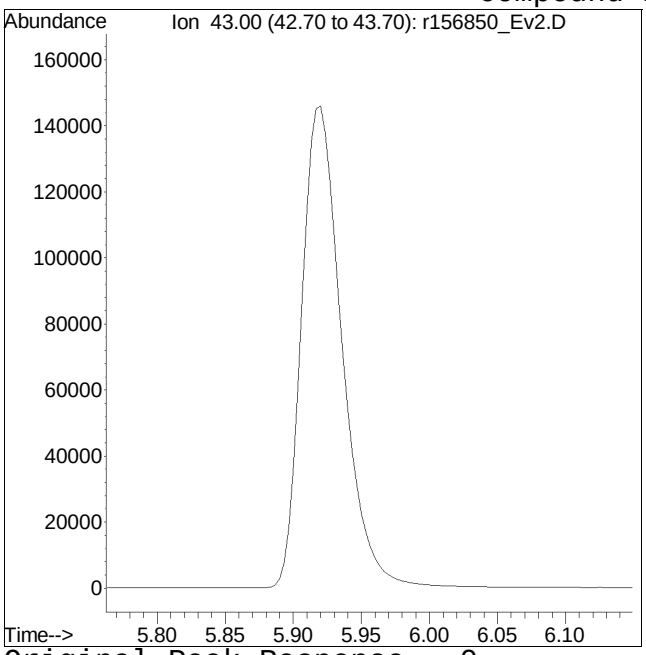
Original Peak Response = 0 Manual Peak Response = 21201 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

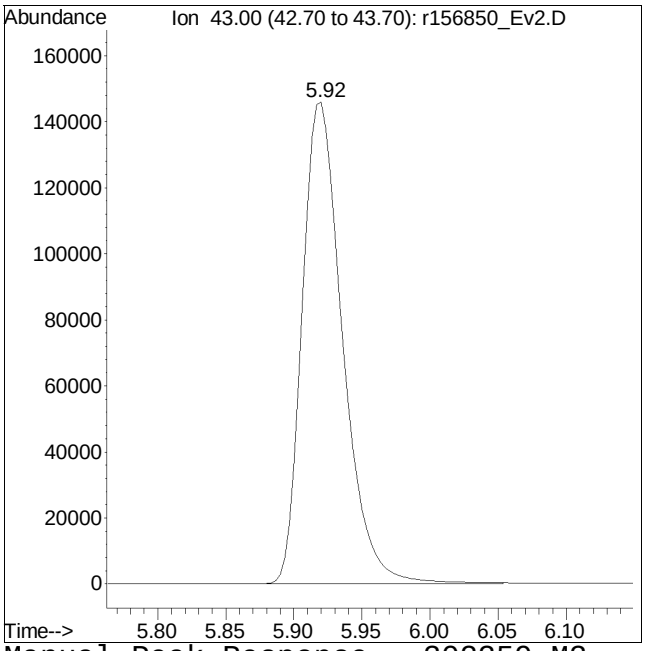
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #13: acetone



Original Peak Response = 0



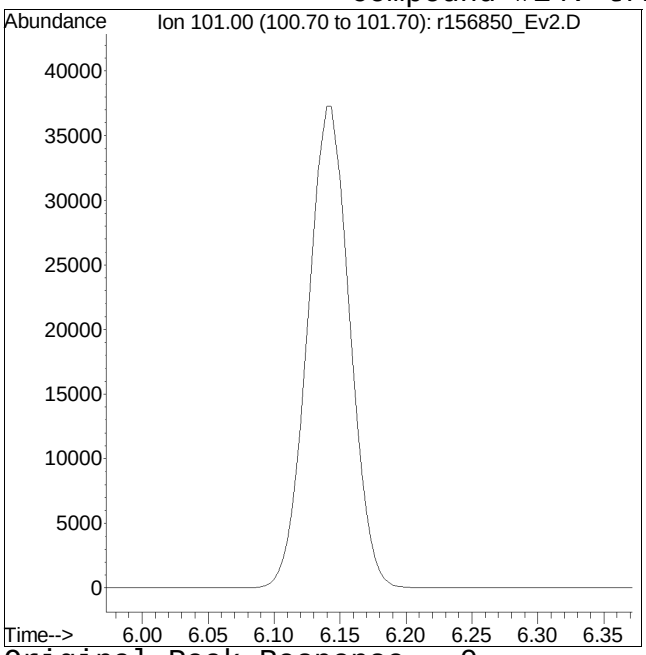
Manual Peak Response = 302359 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

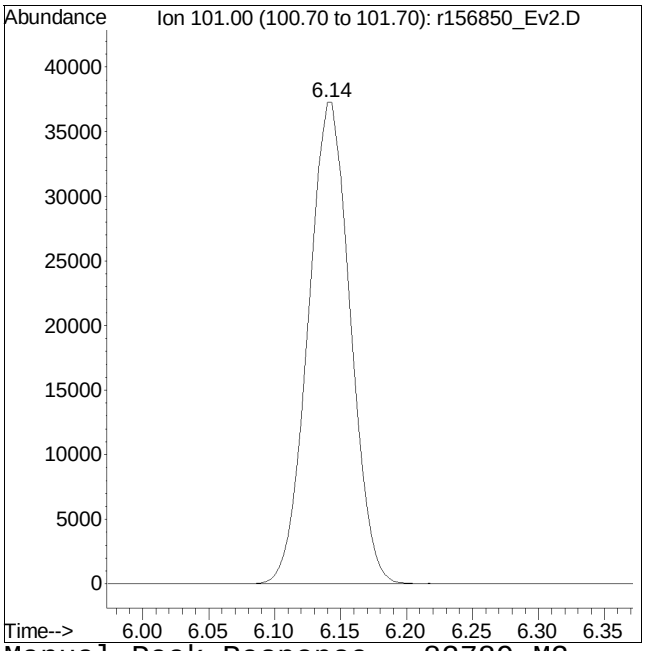
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #14: trichlorofluoromethane



Original Peak Response = 0



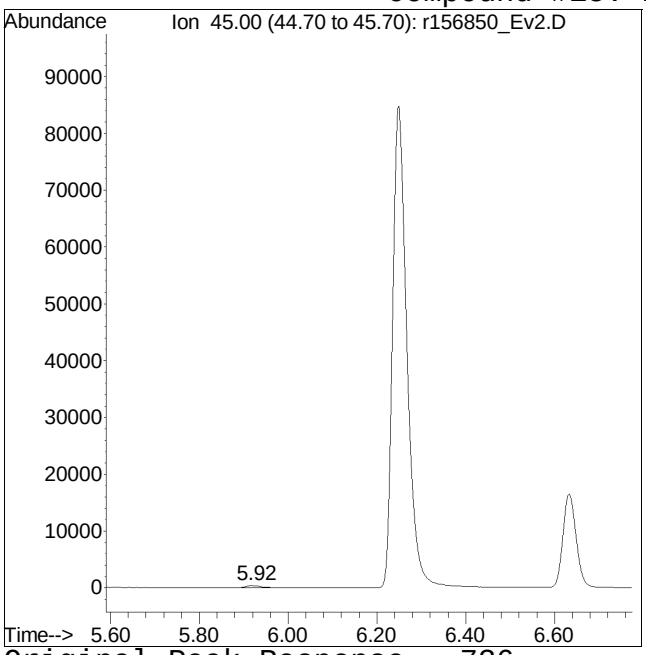
Manual Peak Response = 82789 M2

M2 = Peak not found by automatic integration algorithm.

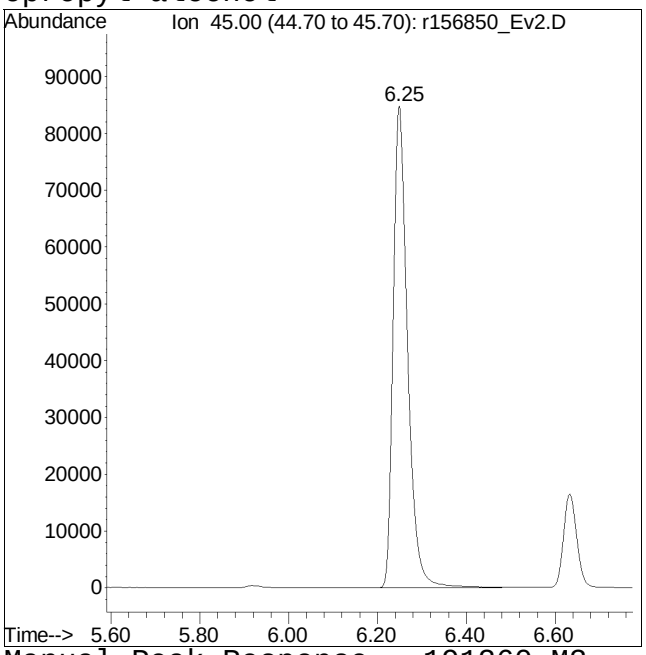
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #15: isopropyl alcohol



Original Peak Response = 736



Manual Peak Response = 191260 M3

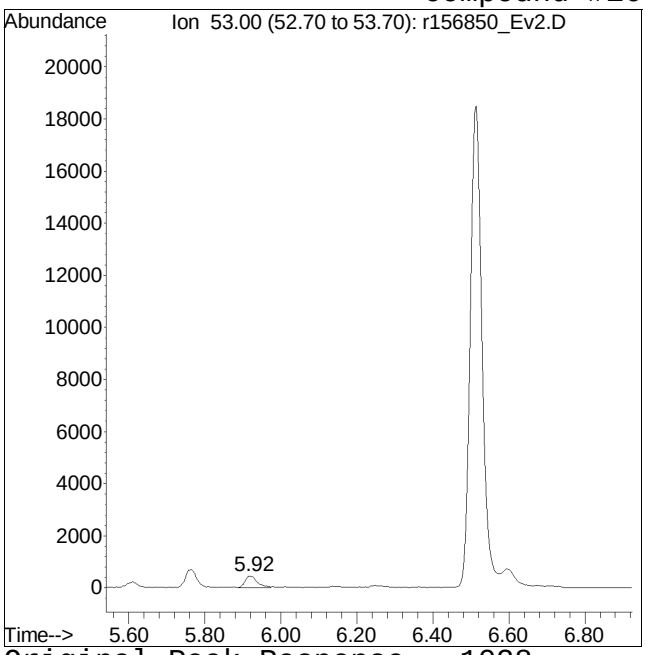
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

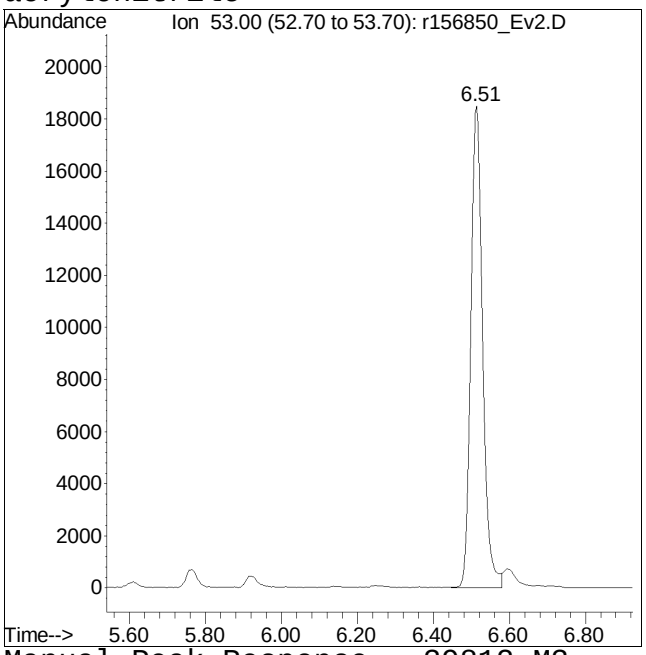
Data Path : O:\Forensics\Data\Airlab15\
Data File : r156850_Ev2.D
Date Inj'd : 4/4/2018 9:48 PM
Sample : ITO15-SIMSTD5.0

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:28 am

Compound #16: acrylonitrile



Original Peak Response = 1028



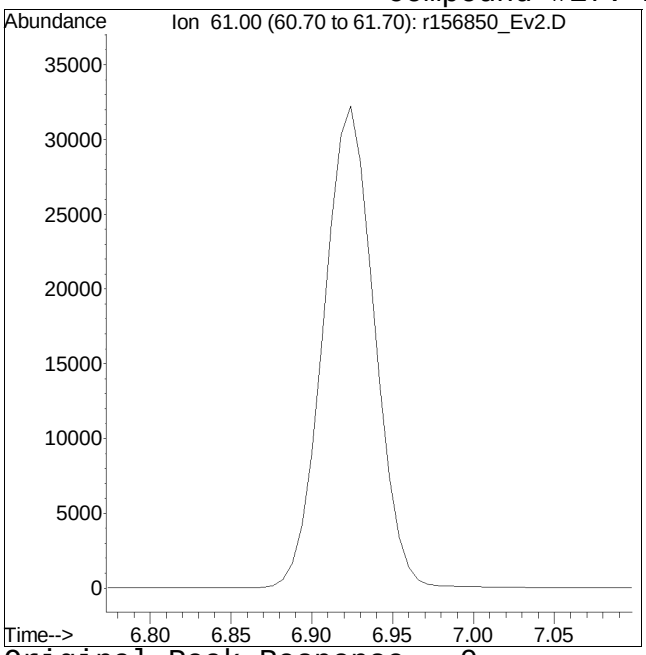
Manual Peak Response = 39812 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

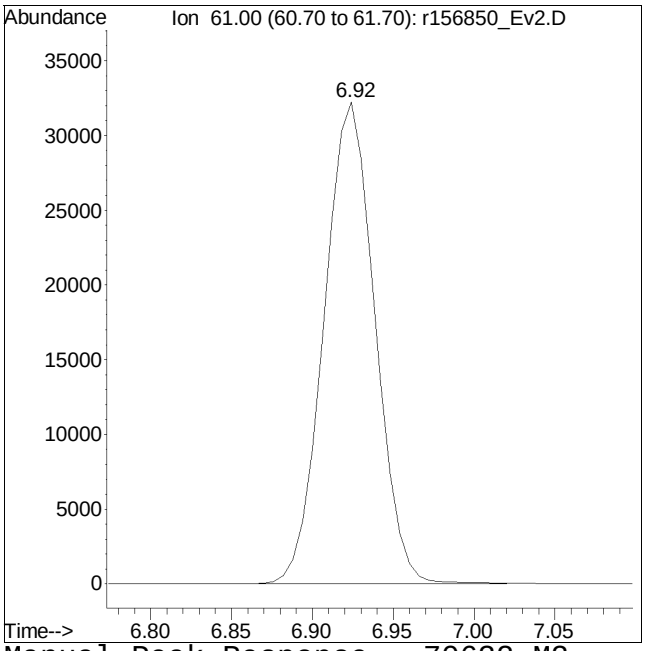
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #17: 1,1-dichloroethene



Original Peak Response = 0



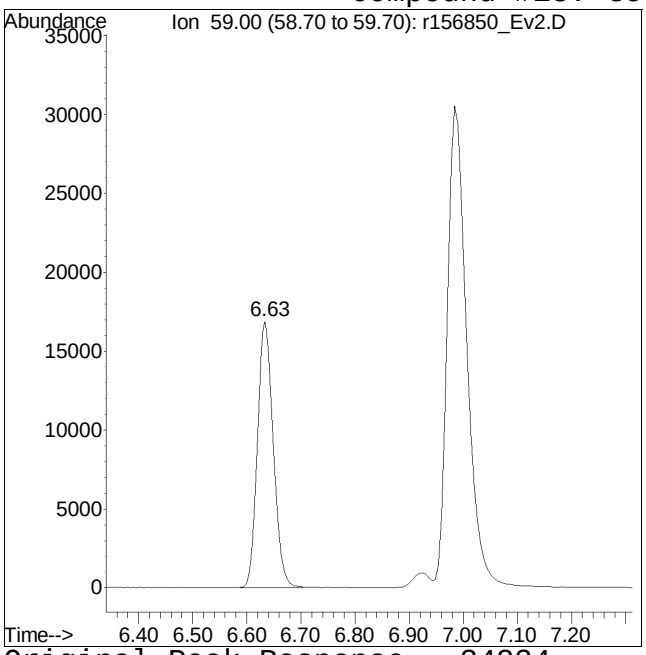
Manual Peak Response = 70632 M2

M2 = Peak not found by automatic integration algorithm.

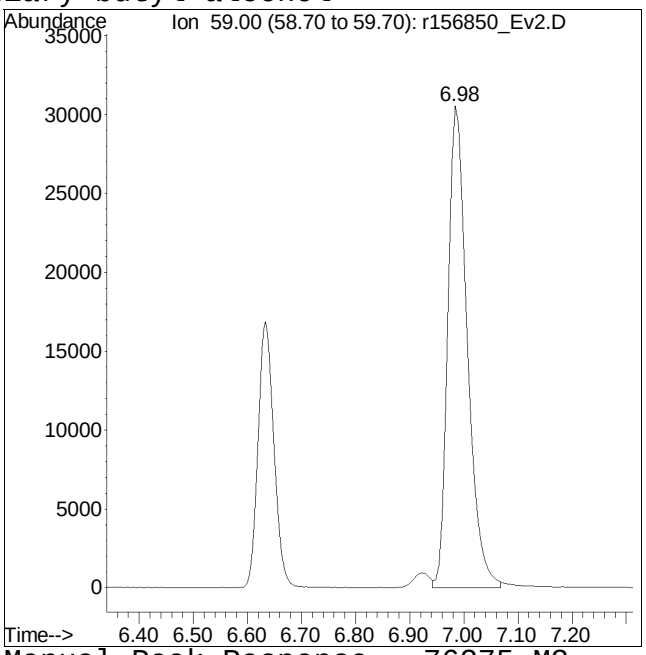
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #18: tertiary butyl alcohol



Original Peak Response = 34234



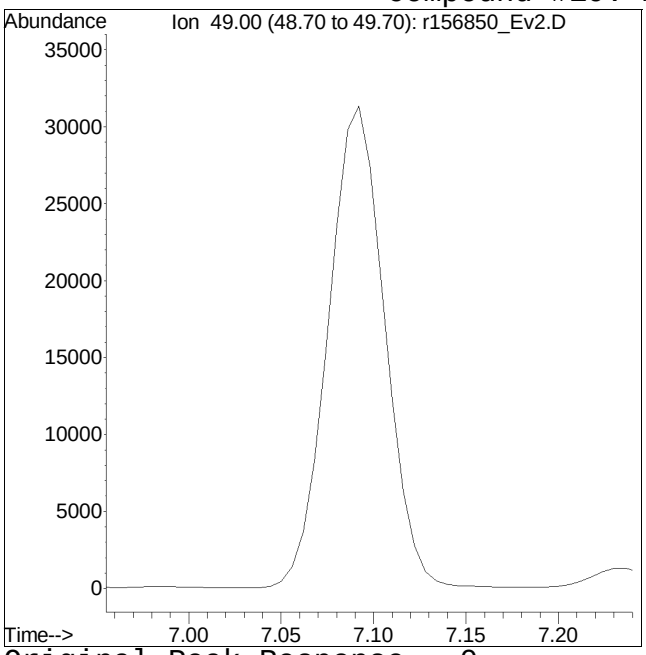
Manual Peak Response = 76275 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

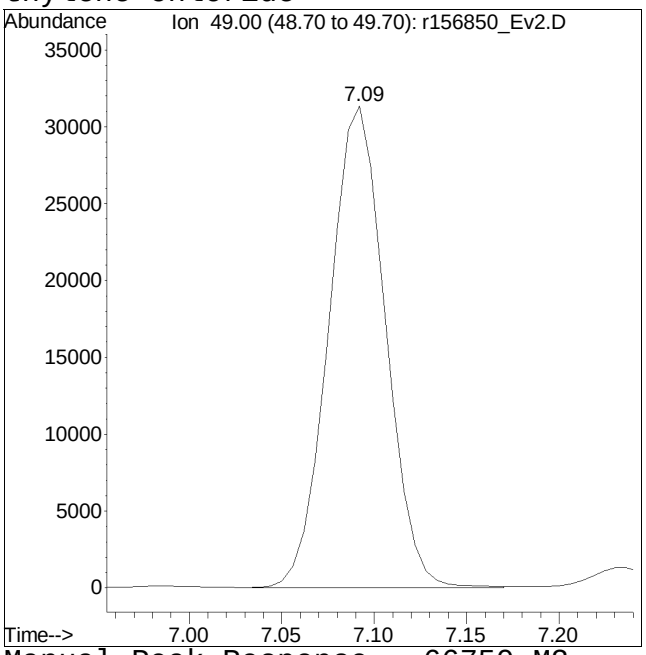
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #19: methylene chloride



Original Peak Response = 0



Manual Peak Response = 66750 M2

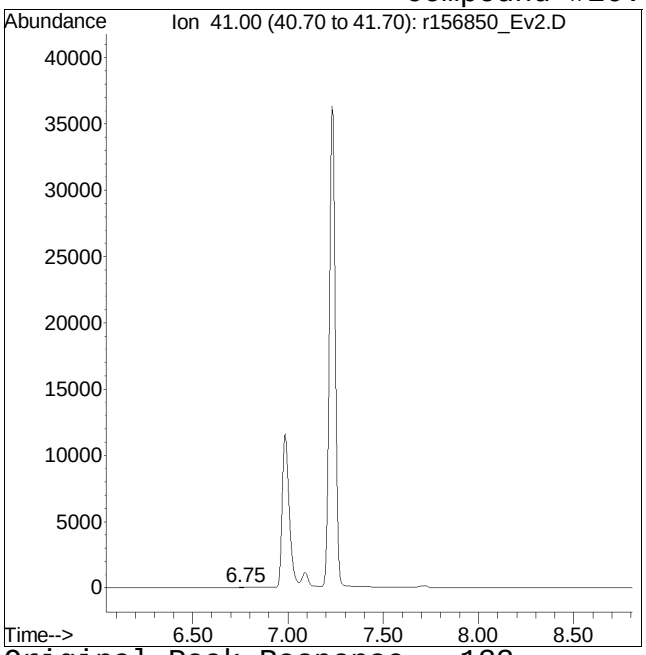
M2 = Peak not found by automatic integration algorithm.

Manual Integration/Negative Proof Report

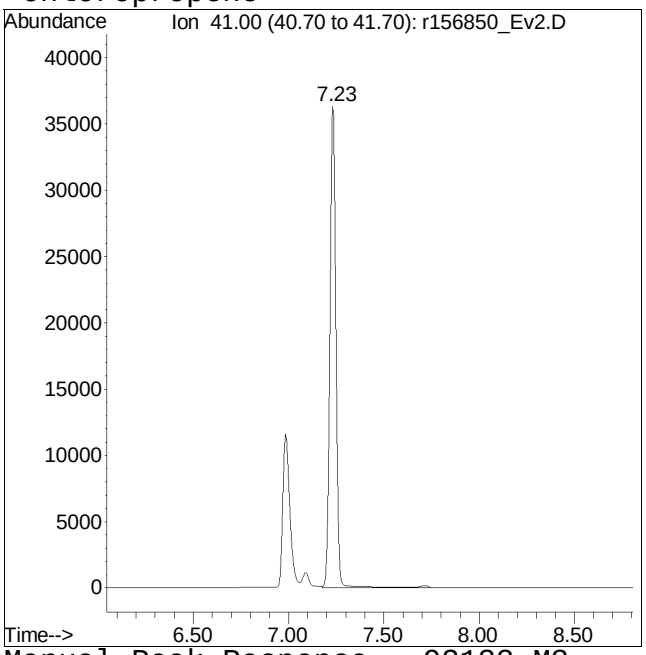
Data Path : O:\Forensics\Data\Airlab15\
Data File : r156850_Ev2.D
Date Inj'd : 4/4/2018 9:48 PM
Sample : ITO15-SIMSTD5.0

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:28 am

Compound #20: 3-chloropropene



Original Peak Response = 133



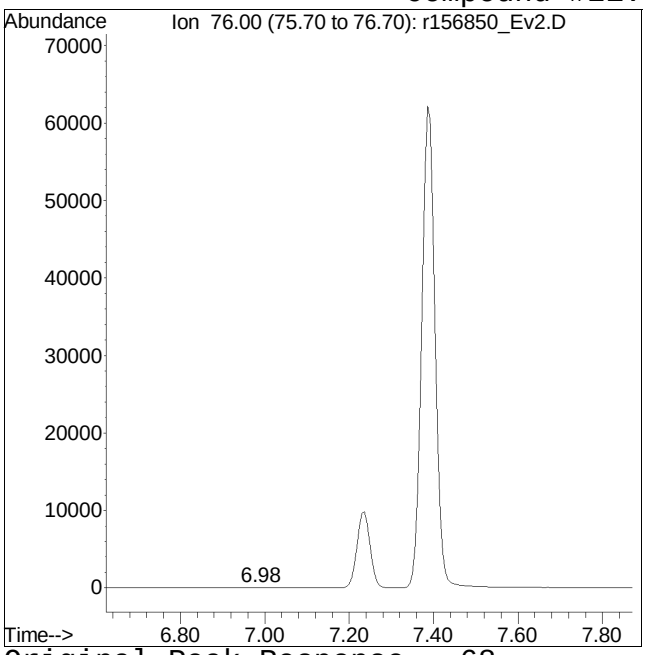
Manual Peak Response = 92133 M3

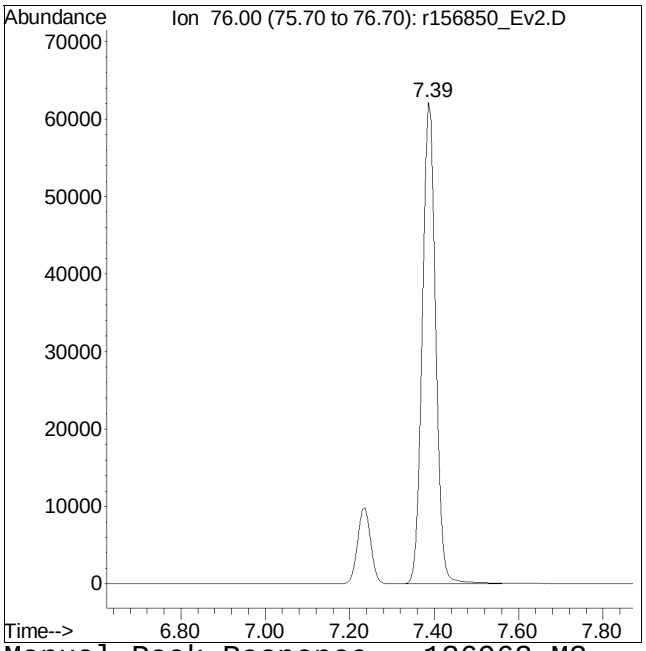
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #21: carbon disulfide



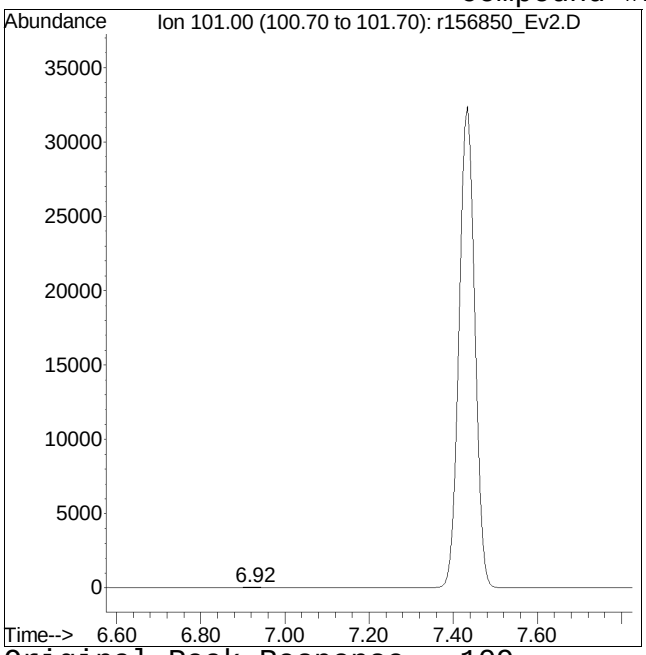


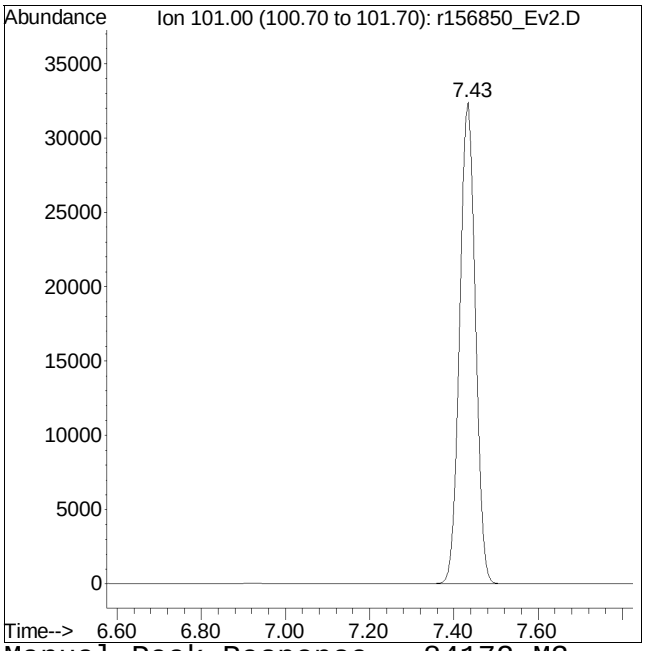
Original Peak Response = 68 Manual Peak Response = 136963 M3
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #22: Freon 113





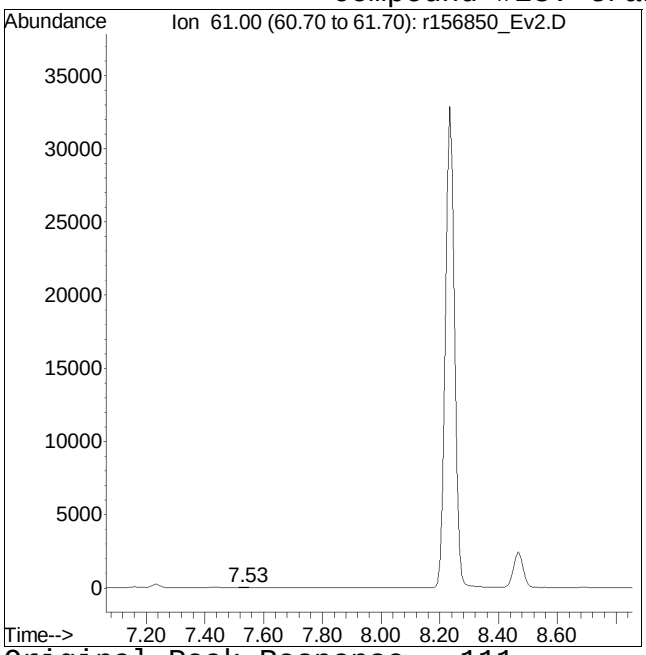
Original Peak Response = 109 Manual Peak Response = 84172 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

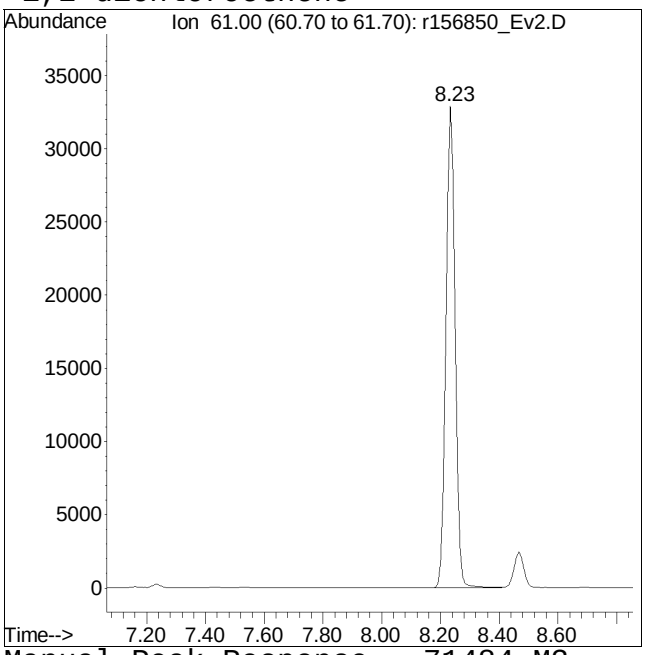
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #23: trans-1,2-dichloroethene



Original Peak Response = 111



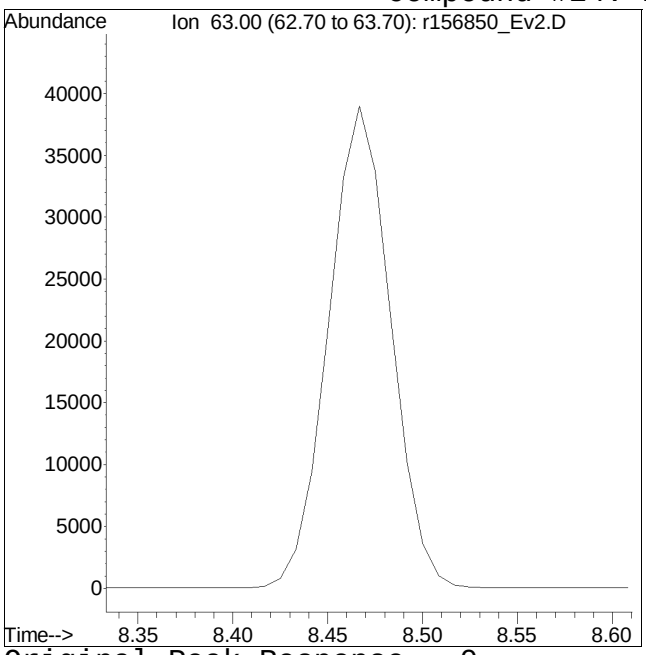
Manual Peak Response = 71484 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

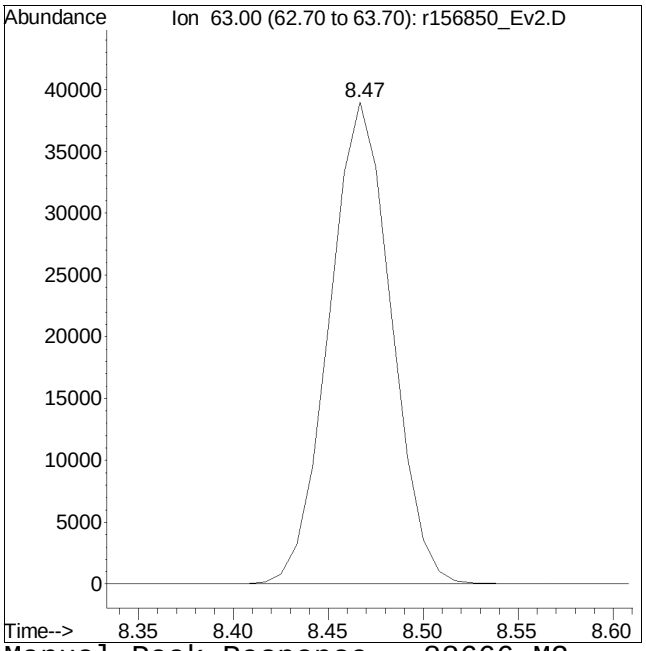
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #24: 1,1-dichloroethane



Original Peak Response = 0



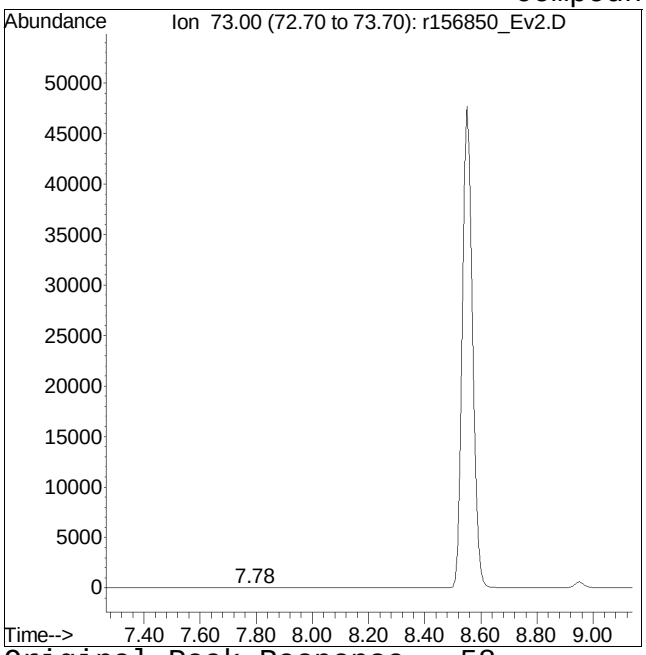
Manual Peak Response = 88666 M2

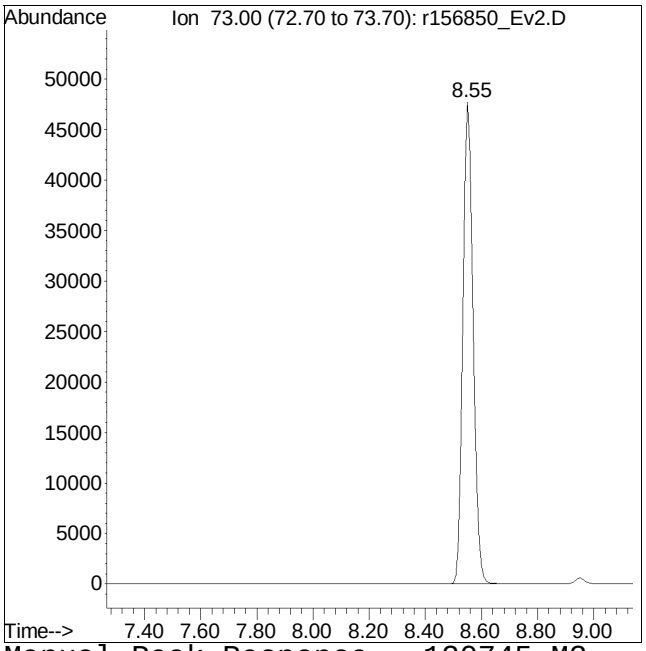
M2 = Peak not found by automatic integration algorithm.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #25: MTBE



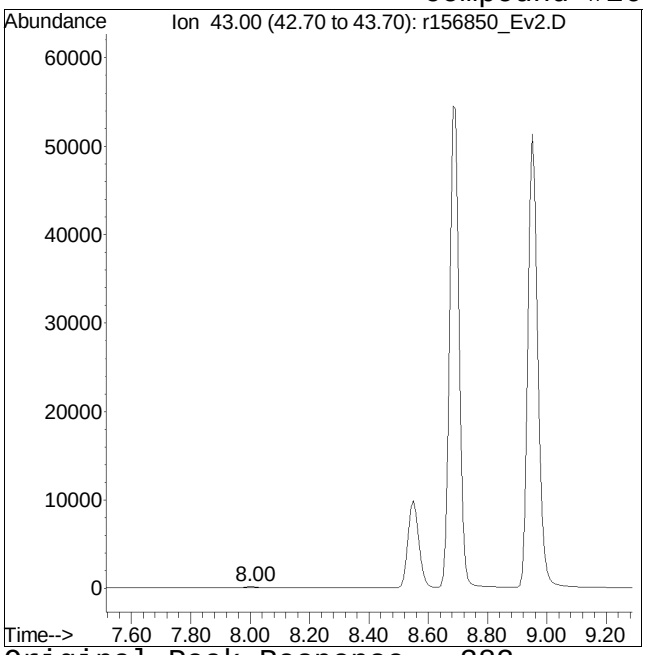


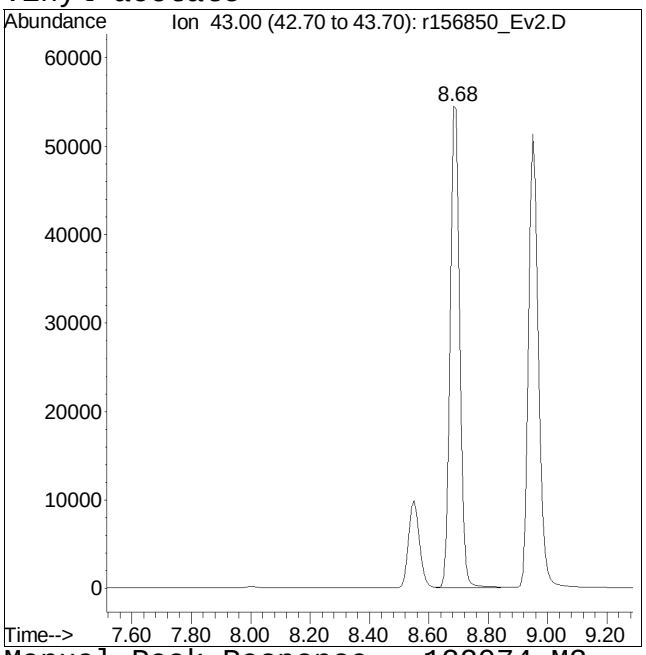
Original Peak Response = 58 Manual Peak Response = 120745 M3
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #26: vinyl acetate





Original Peak Response = 382 Manual Peak Response = 122074 M3

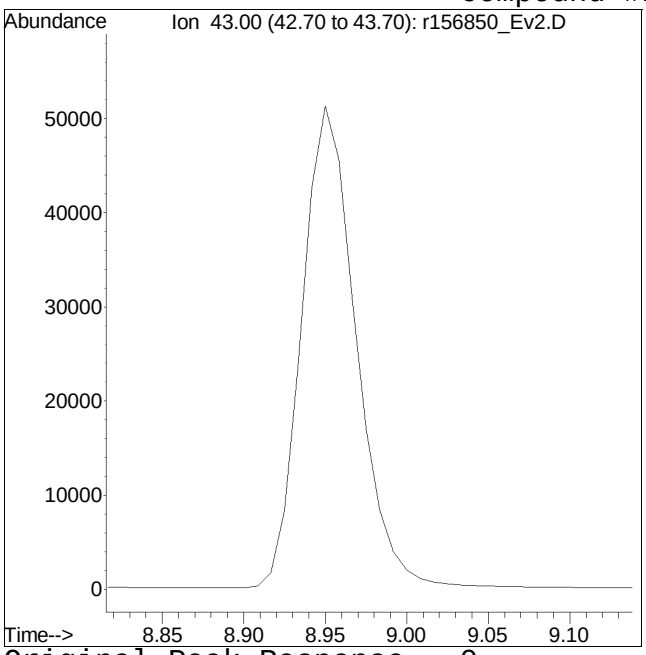
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

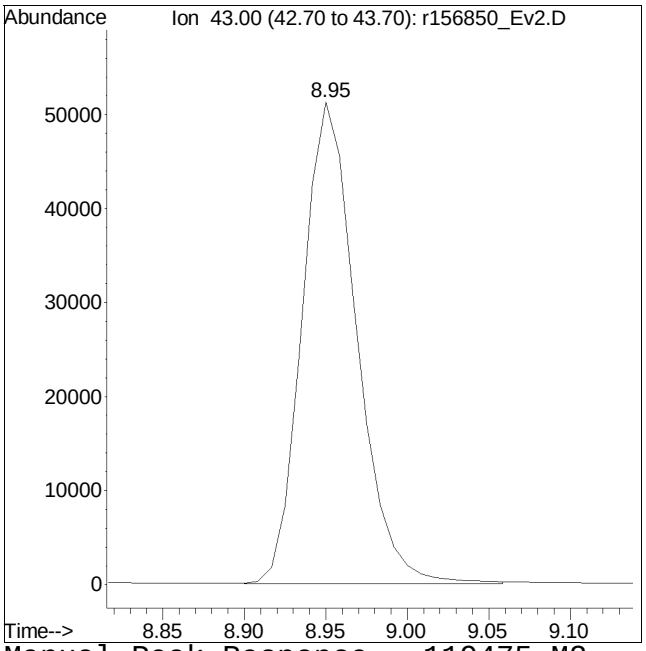
Data Path : O:\Forensics\Data\Airlab15\
Data File : r156850_Ev2.D
Date Inj'd : 4/4/2018 9:48 PM
Sample : ITO15-SIMSTD5.0

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:28 am

Compound #27: 2-butanone



Original Peak Response = 0



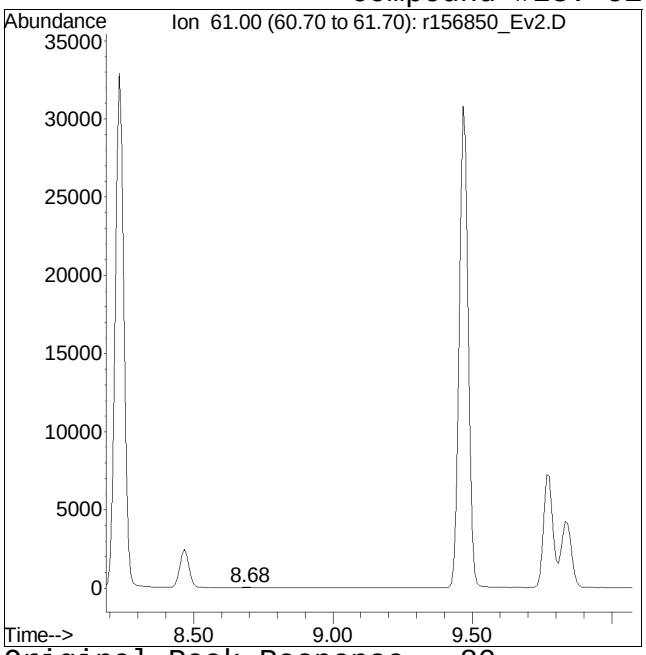
Manual Peak Response = 119475 M2

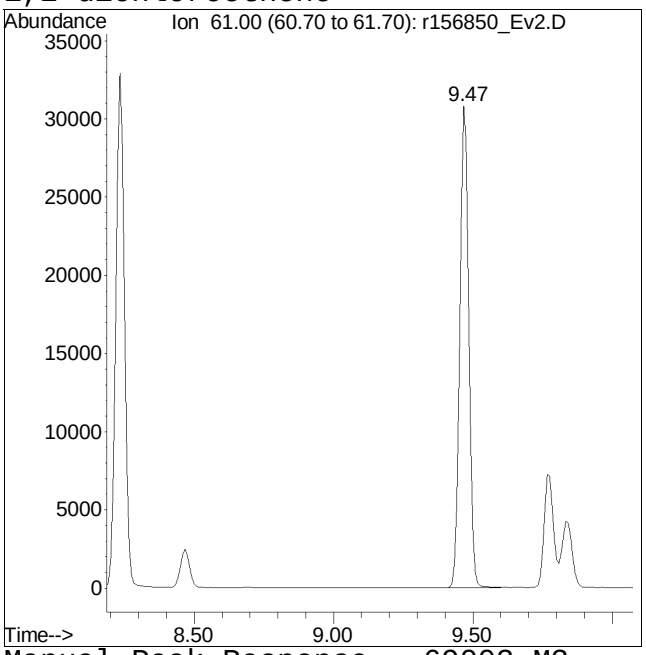
M2 = Peak not found by automatic integration algorithm.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #28: cis-1,2-dichloroethene





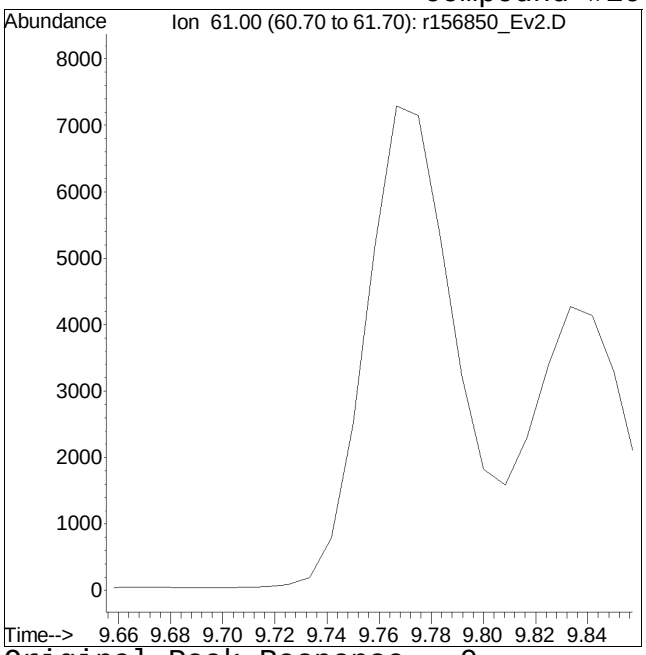
Original Peak Response = 80 Manual Peak Response = 69003 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

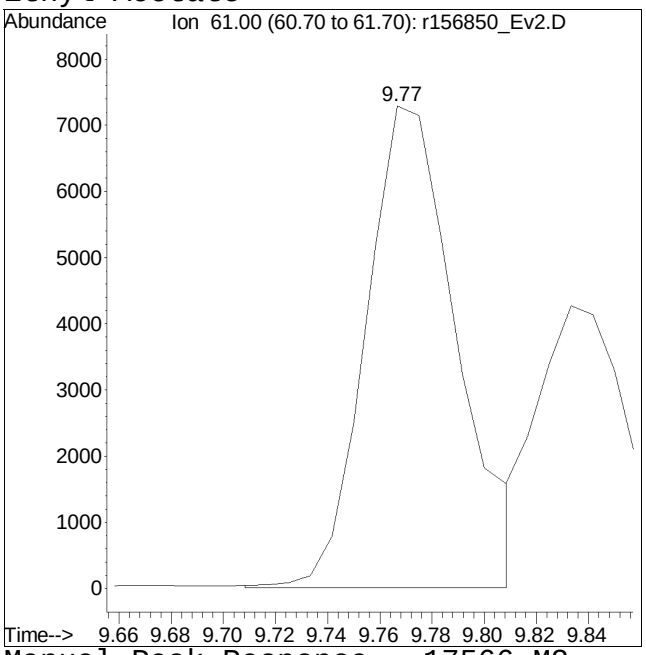
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #29: Ethyl Acetate



Original Peak Response = 0



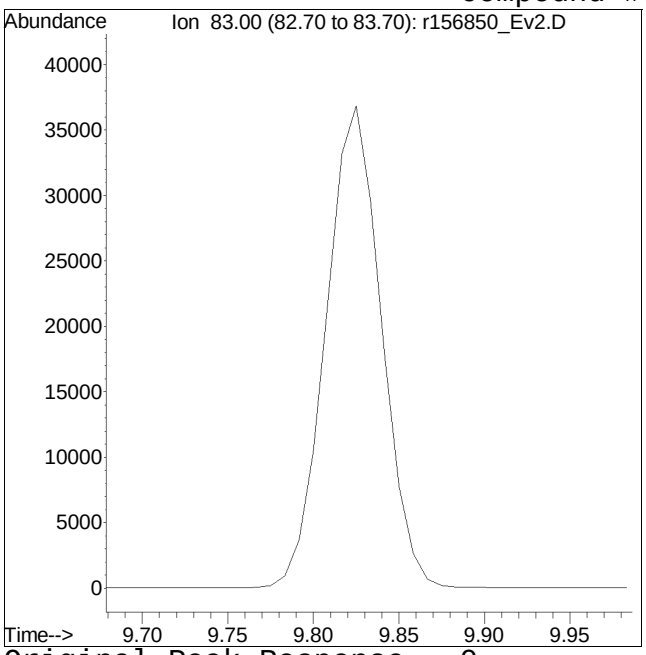
Manual Peak Response = 17566 M2

M2 = Peak not found by automatic integration algorithm.

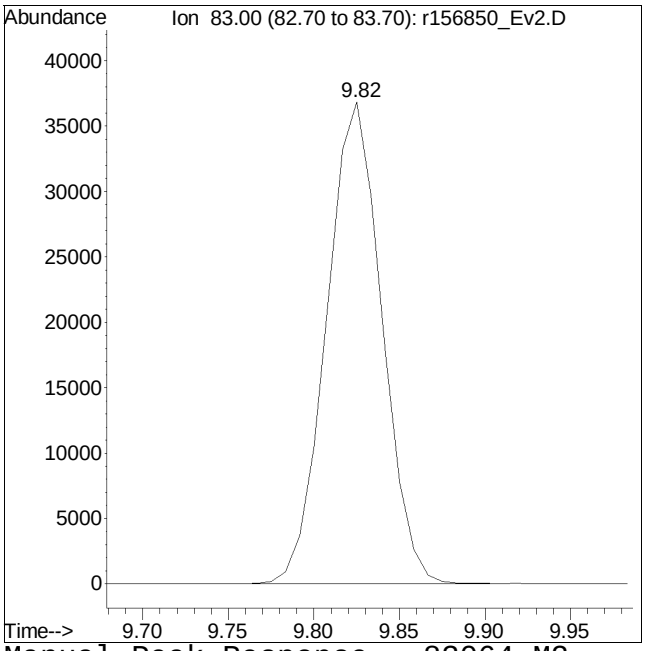
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #30: chloroform



Original Peak Response = 0



Manual Peak Response = 83064 M2

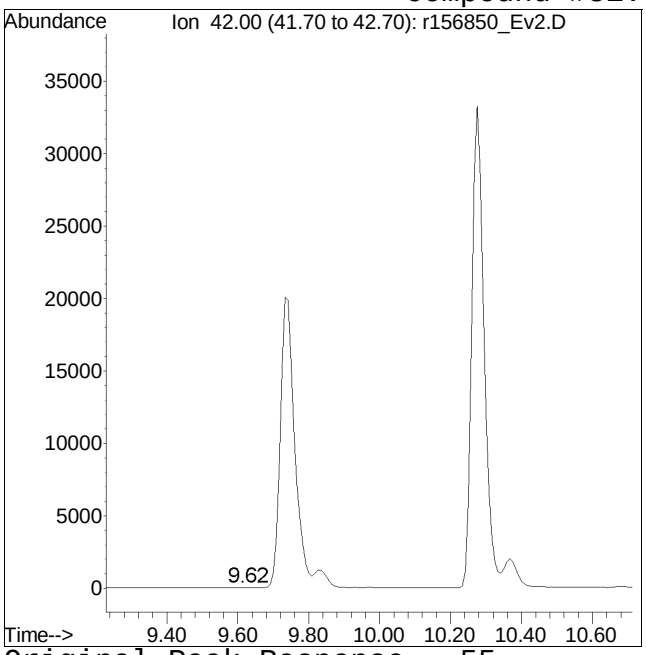
M2 = Peak not found by automatic integration algorithm.

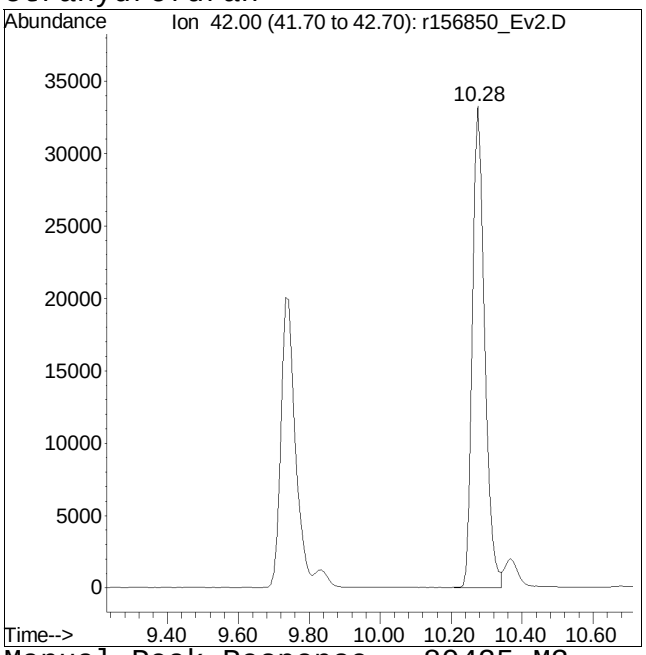
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\
Data File : r156850_Ev2.D
Date Inj'd : 4/4/2018 9:48 PM
Sample : ITO15-SIMSTD5.0

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:28 am

Compound #31: Tetrahydrofuran





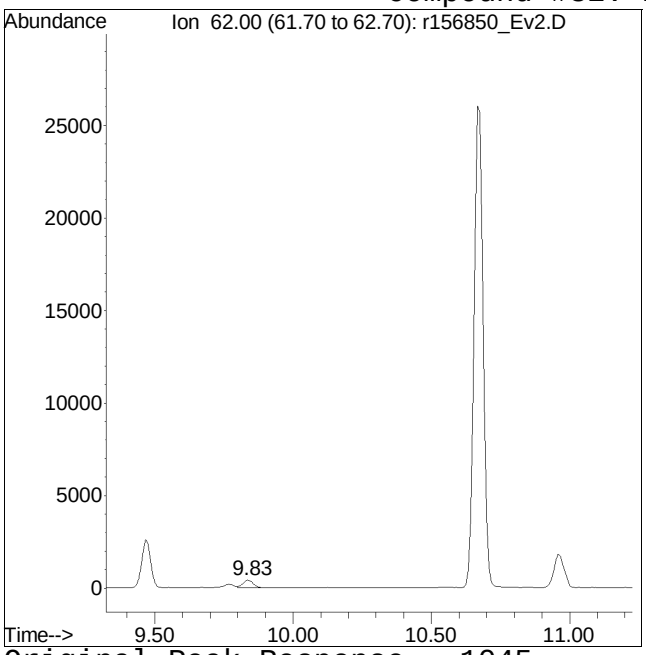
Original Peak Response = 55 Manual Peak Response = 80425 M3

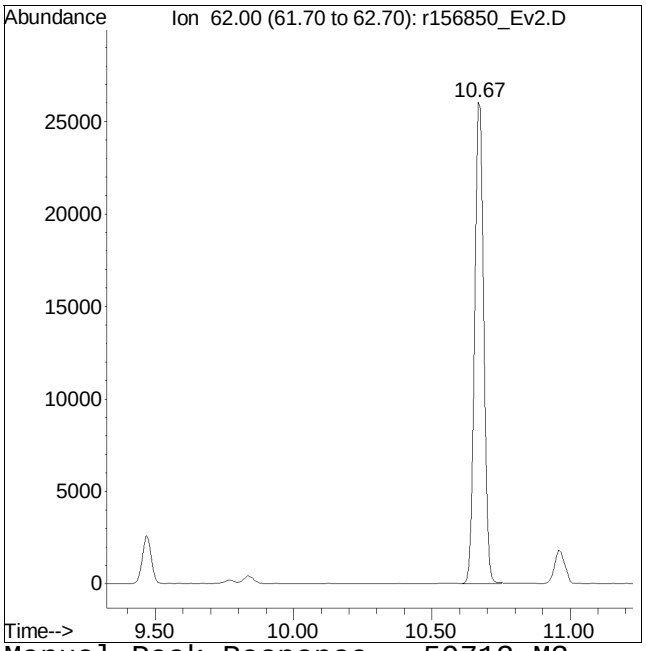
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #32: 1,2-dichloroethane





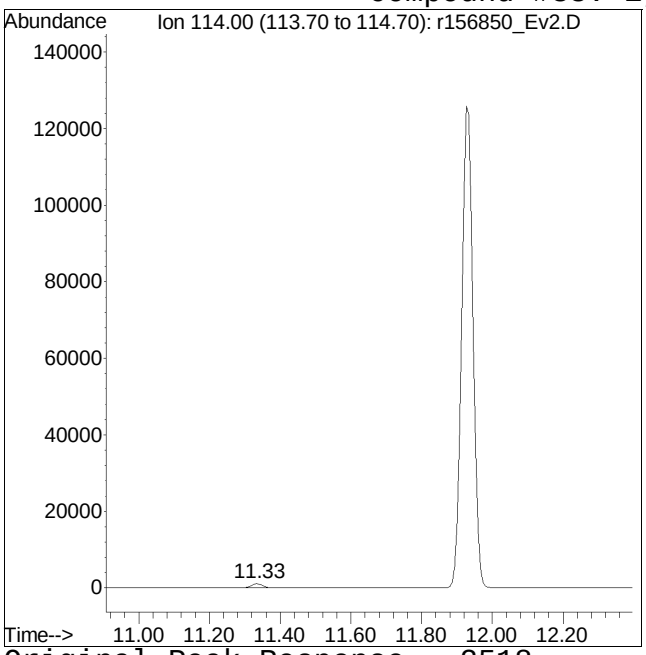
Original Peak Response = 1045 Manual Peak Response = 59713 M3

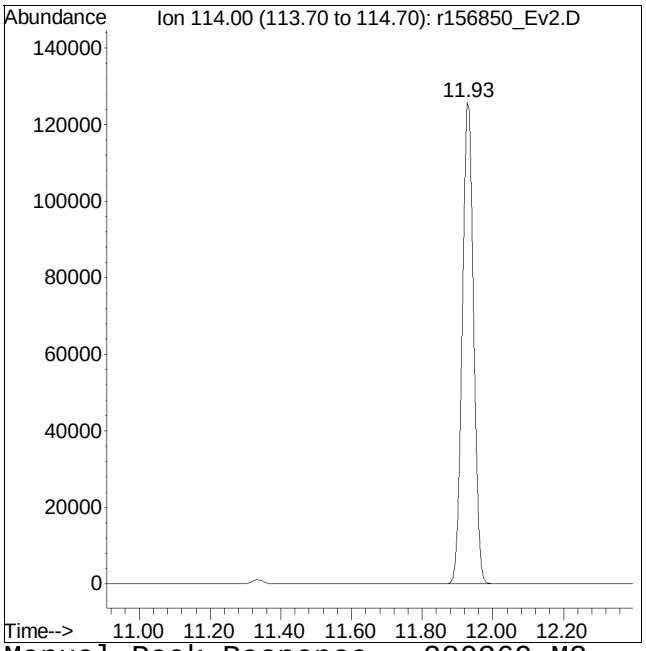
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #33: 1,4-difluorobenzene





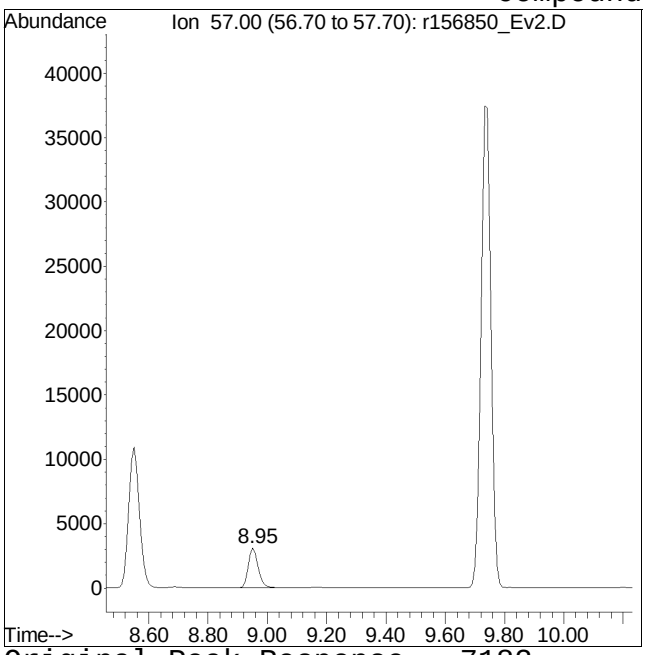
Original Peak Response = 2518 Manual Peak Response = 280369 M3

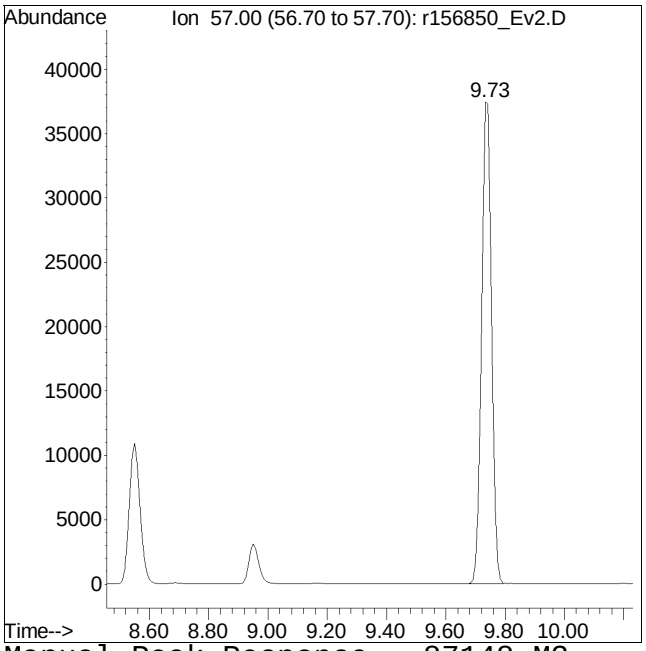
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #34: hexane





Original Peak Response = 7182 Manual Peak Response = 87148 M3

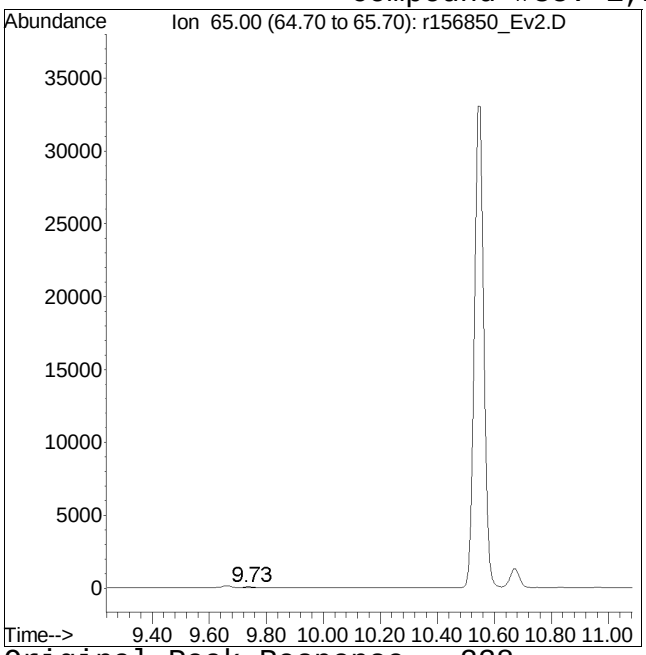
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

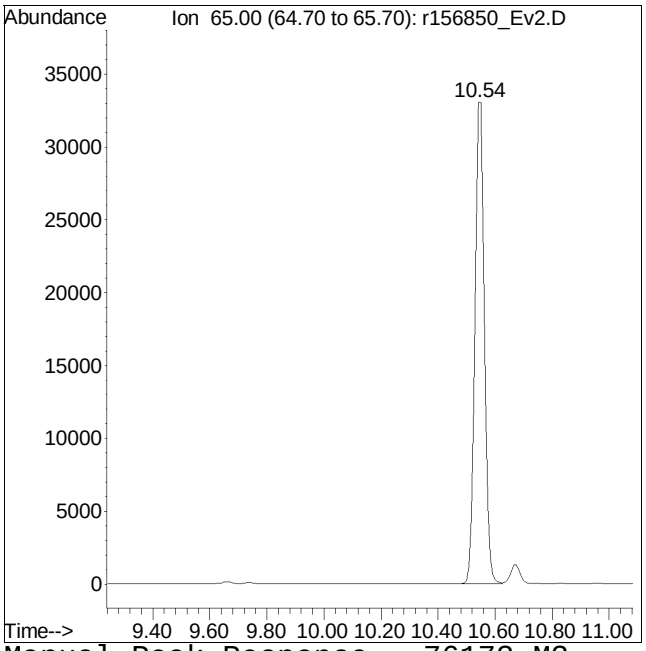
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\
Data File : r156850_Ev2.D
Date Inj'd : 4/4/2018 9:48 PM
Sample : ITO15-SIMSTD5.0

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:28 am

Compound #35: 1,2-dichloroethane-D4





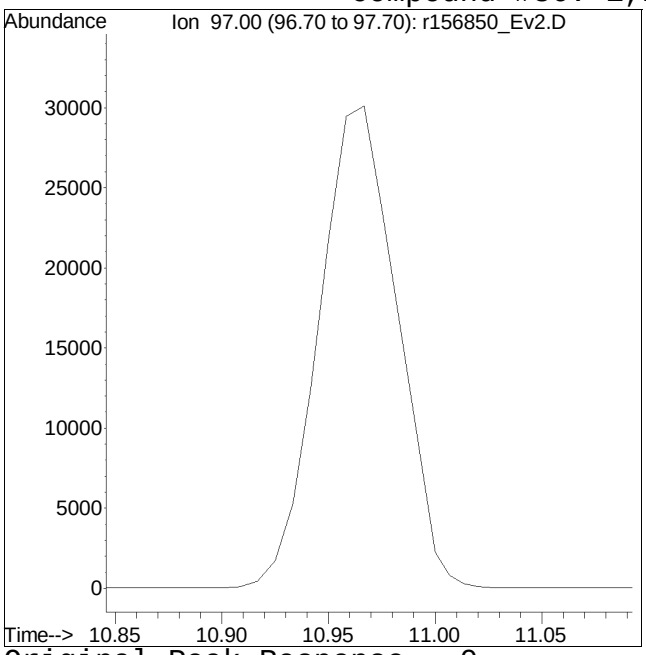
Original Peak Response = 238 Manual Peak Response = 76173 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

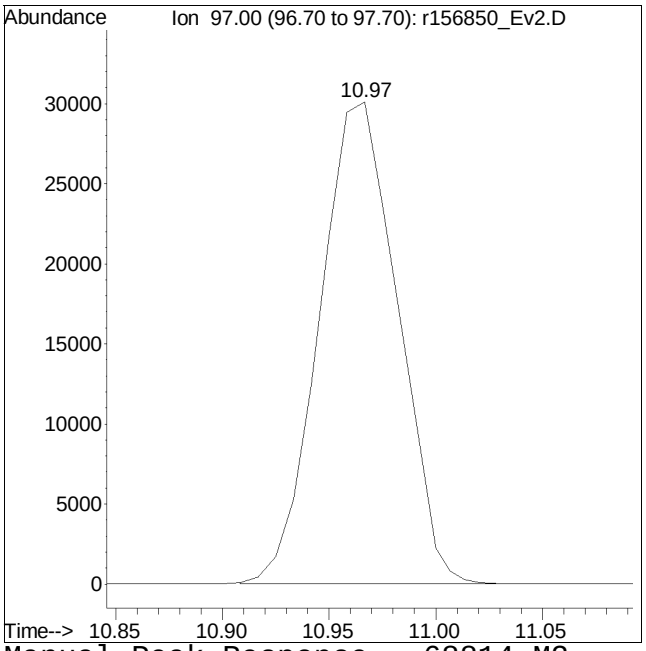
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #36: 1,1,1-trichloroethane



Original Peak Response = 0



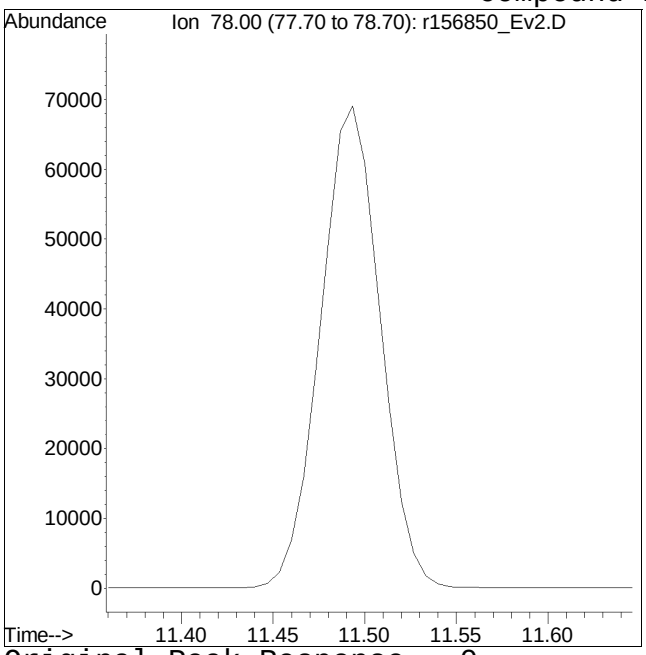
Manual Peak Response = 68814 M2

M2 = Peak not found by automatic integration algorithm.

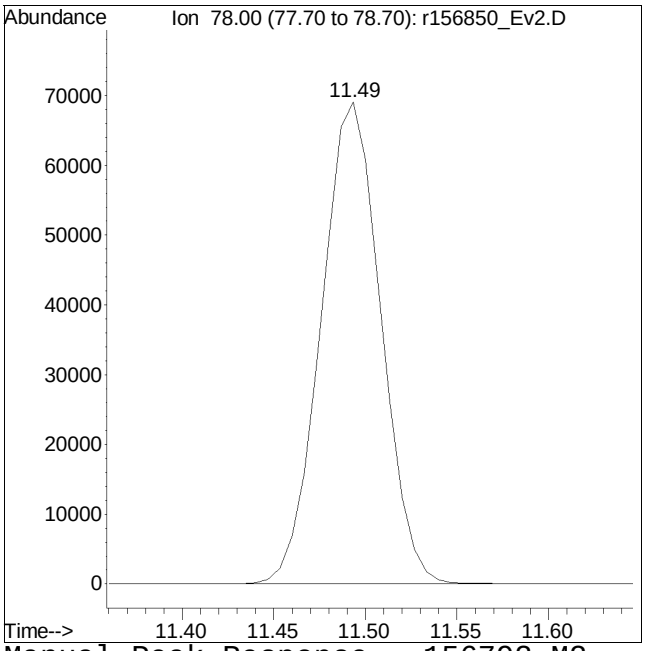
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #37: benzene



Original Peak Response = 0



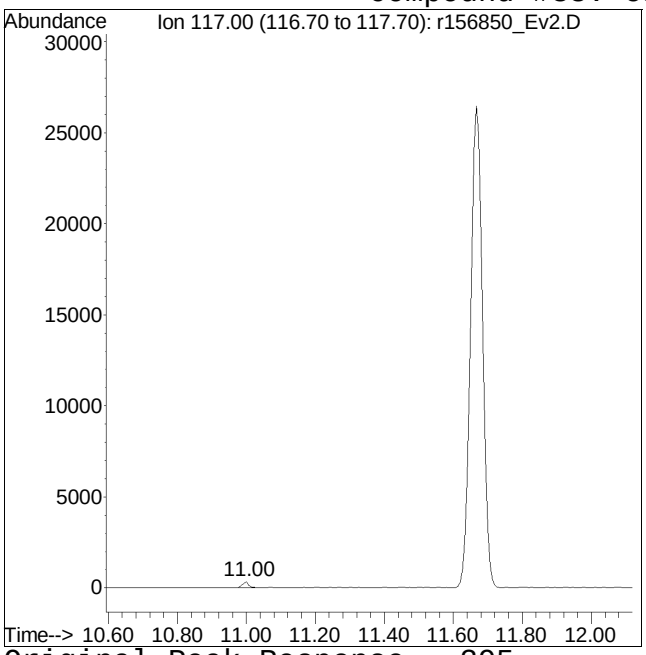
Manual Peak Response = 156792 M2

M2 = Peak not found by automatic integration algorithm.

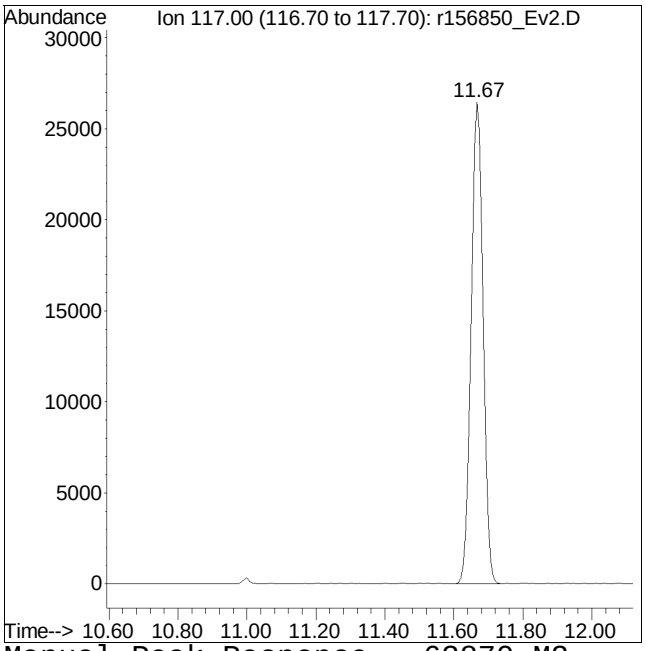
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #38: carbon tetrachloride



Original Peak Response = 395



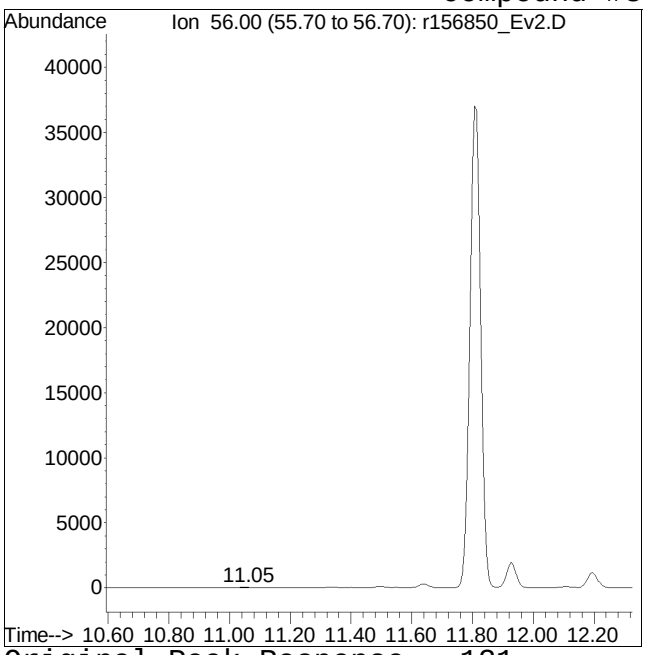
Manual Peak Response = 63870 M2

M2 = Peak not found by automatic integration algorithm.

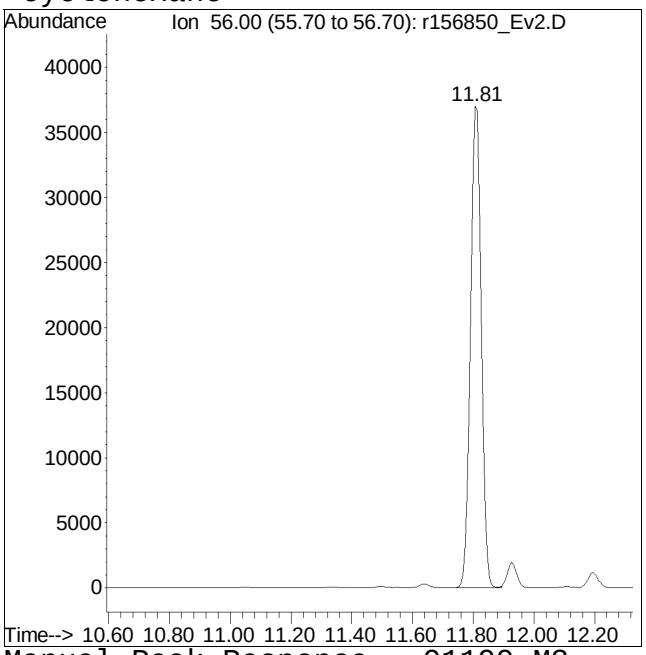
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #39: cyclohexane



Original Peak Response = 121



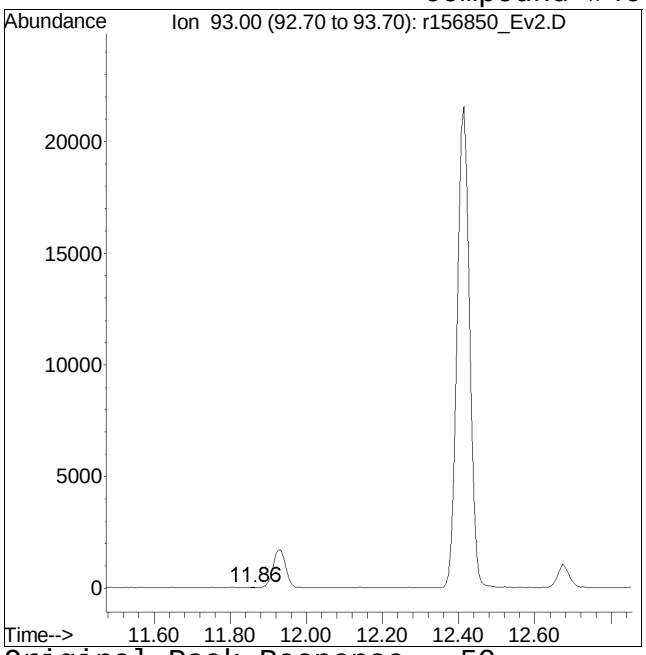
Manual Peak Response = 91199 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

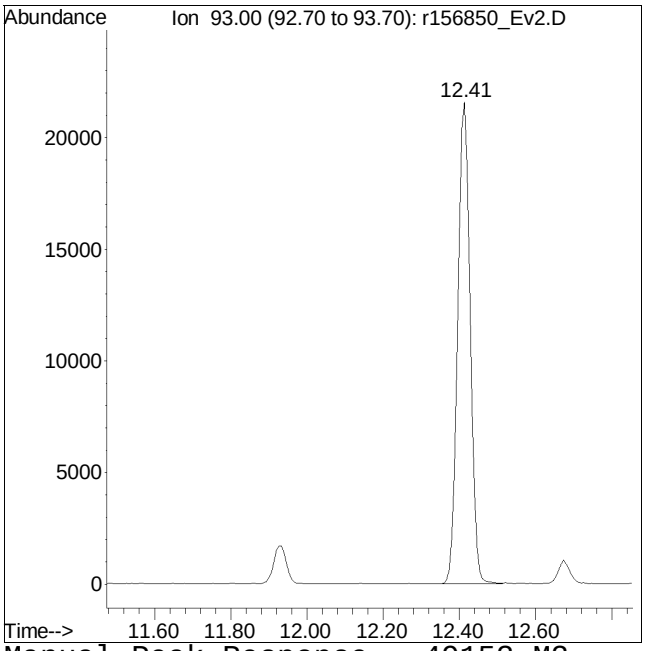
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #40: Dibromomethane



Original Peak Response = 59



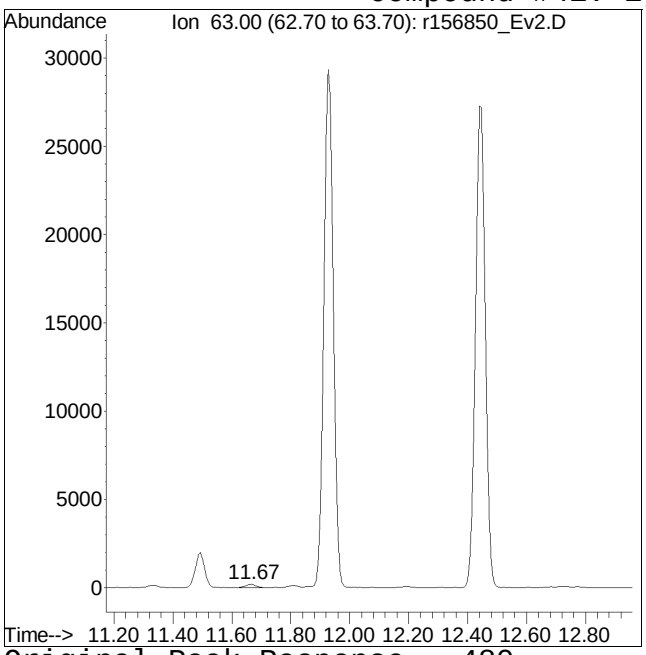
Manual Peak Response = 49153 M2

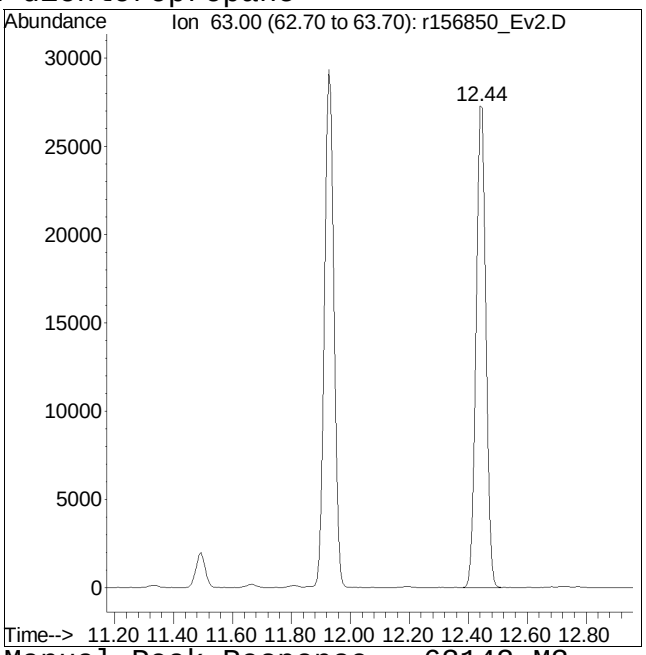
M2 = Peak not found by automatic integration algorithm.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #41: 1,2-dichloropropane





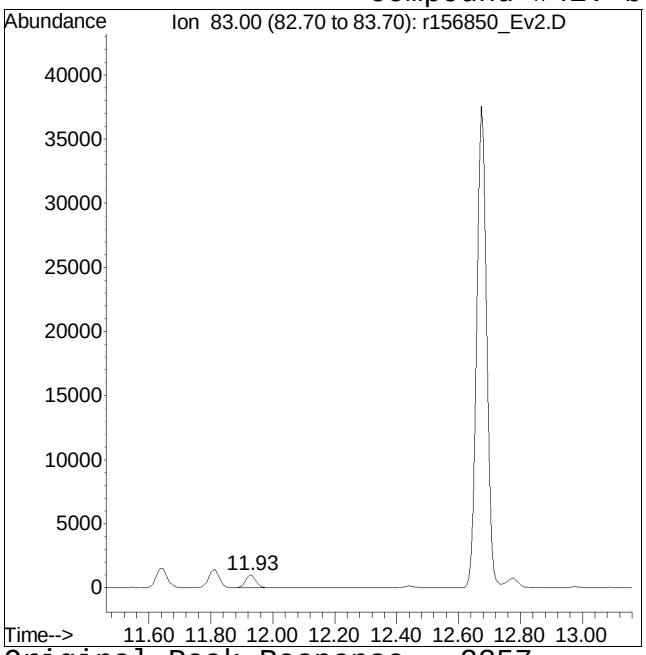
Original Peak Response = 480 Manual Peak Response = 63142 M3
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

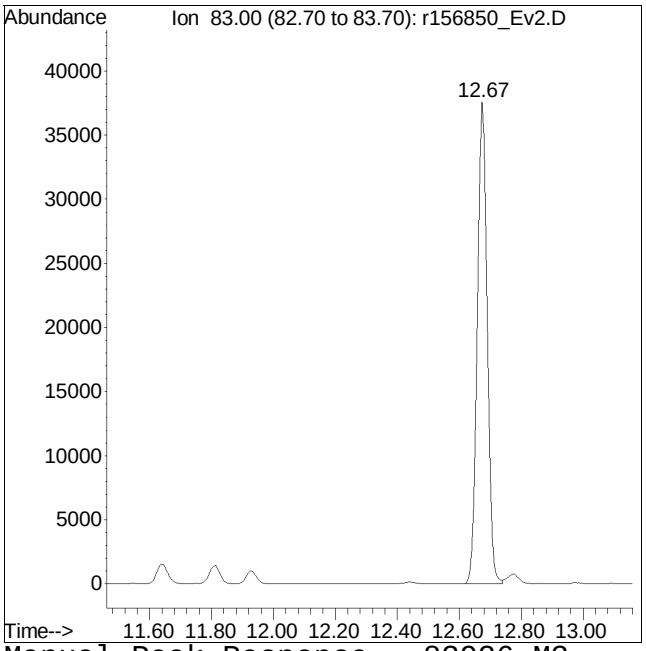
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\
Data File : r156850_Ev2.D
Date Inj'd : 4/4/2018 9:48 PM
Sample : ITO15-SIMSTD5.0

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:28 am

Compound #42: bromodichloromethane





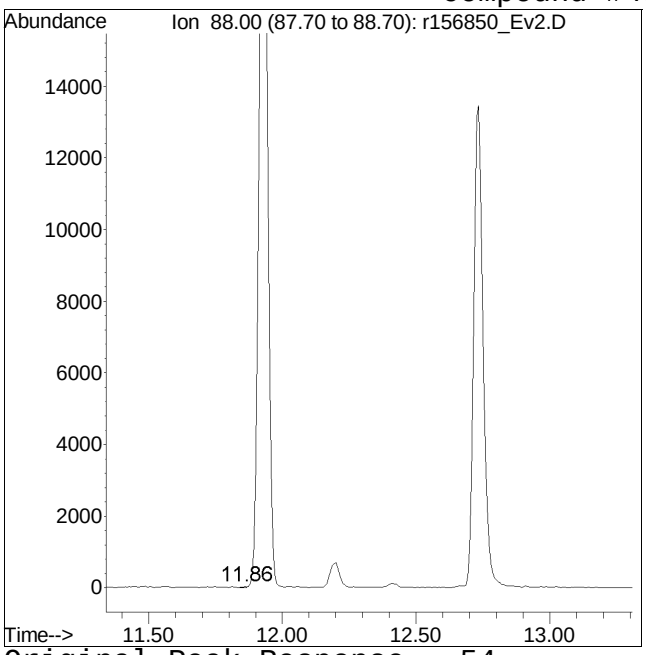
Original Peak Response = 2357 Manual Peak Response = 83926 M3

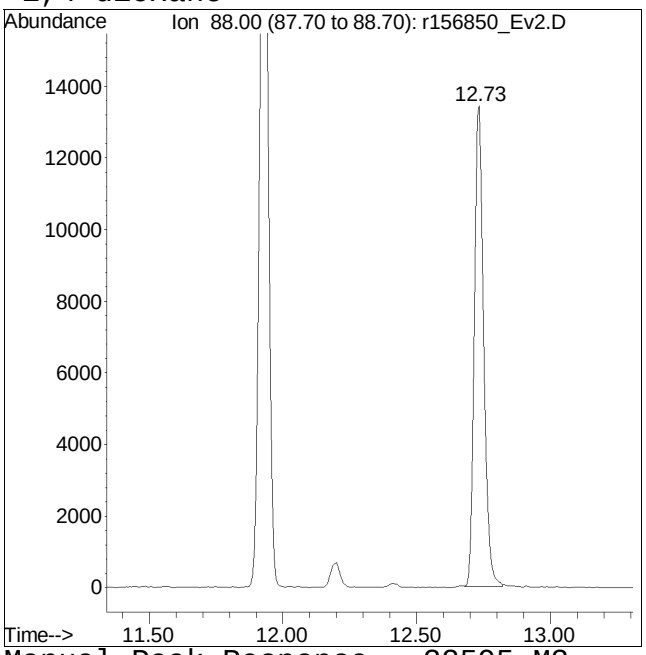
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #43: 1,4-dioxane





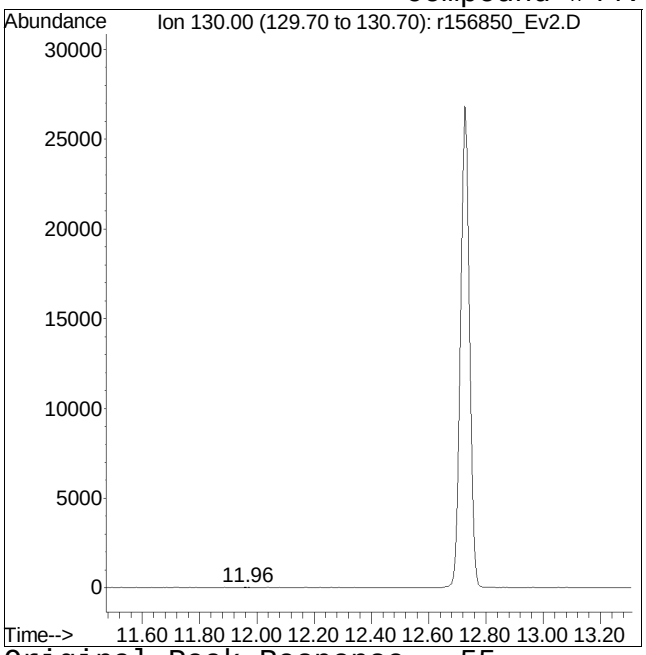
Original Peak Response = 54 Manual Peak Response = 32595 M3

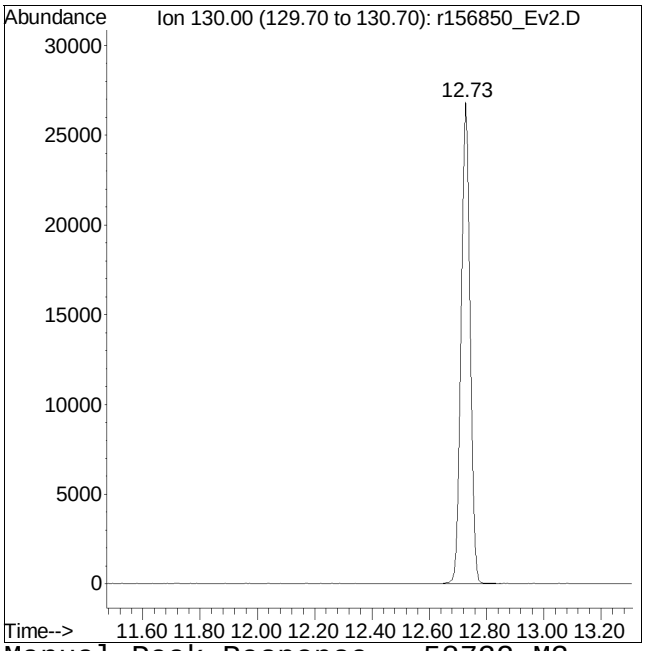
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #44: trichloroethene





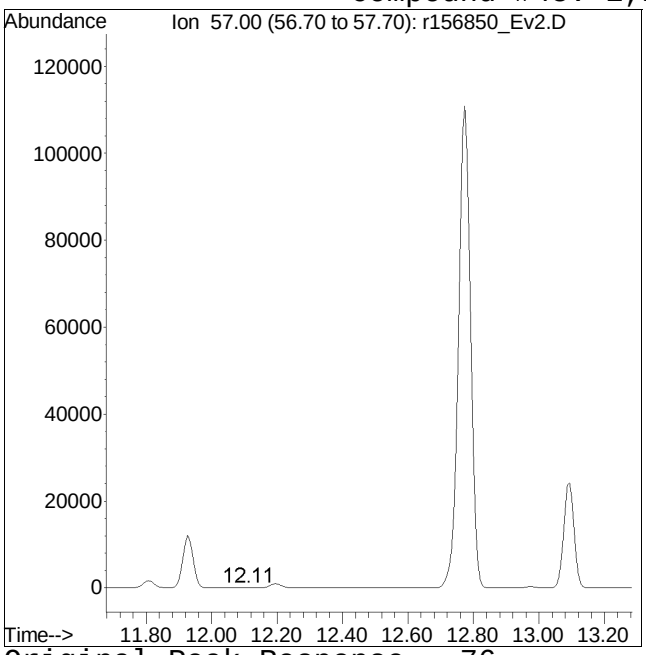
Original Peak Response = 55 Manual Peak Response = 58732 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

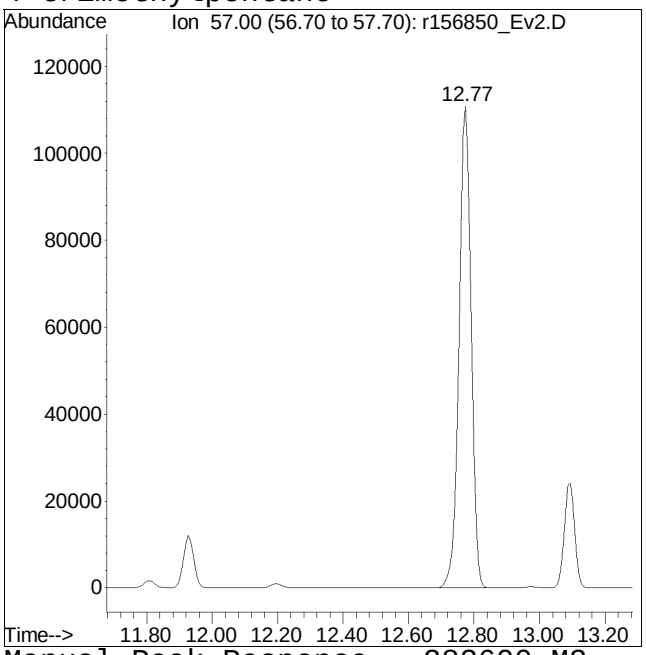
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #45: 2,2,4-trimethylpentane



Original Peak Response = 76



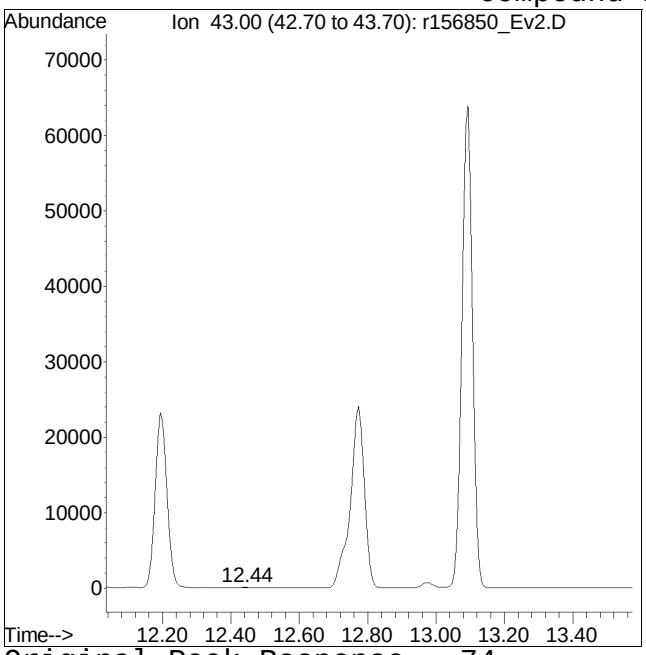
Manual Peak Response = 283600 M3

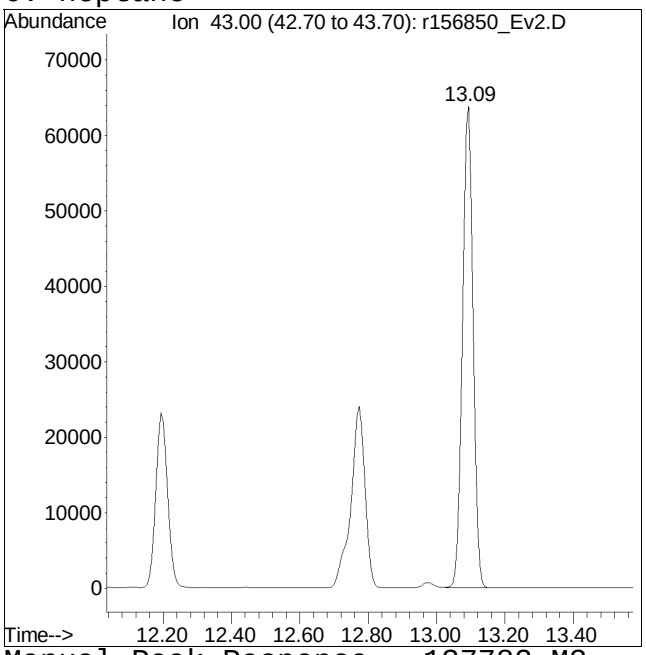
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #46: heptane





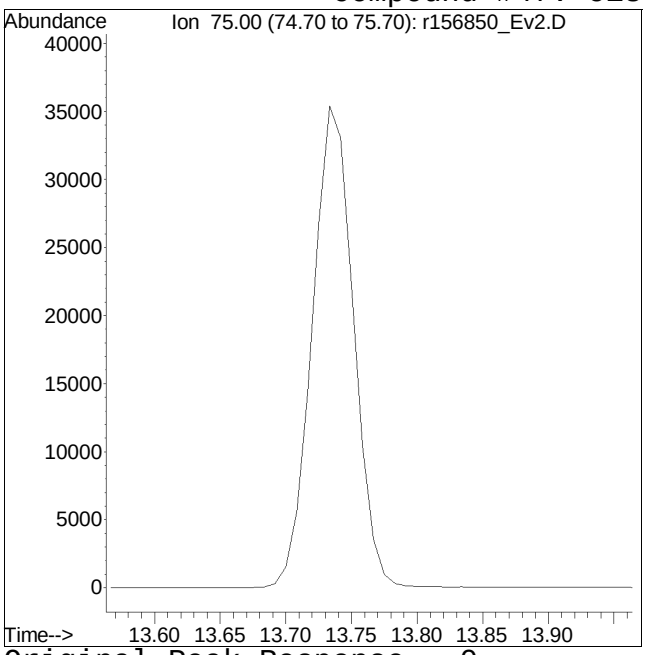
Original Peak Response = 74 Manual Peak Response = 137782 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

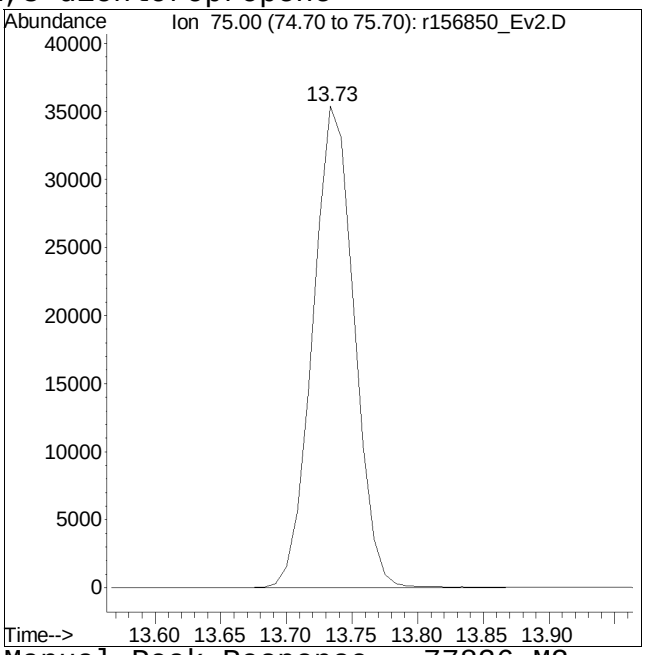
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #47: cis-1,3-dichloropropene



Original Peak Response = 0



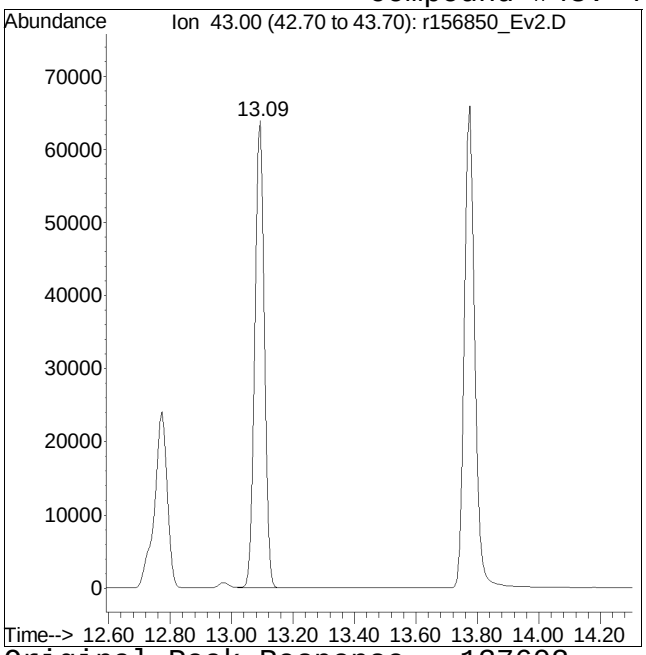
Manual Peak Response = 77836 M2

M2 = Peak not found by automatic integration algorithm.

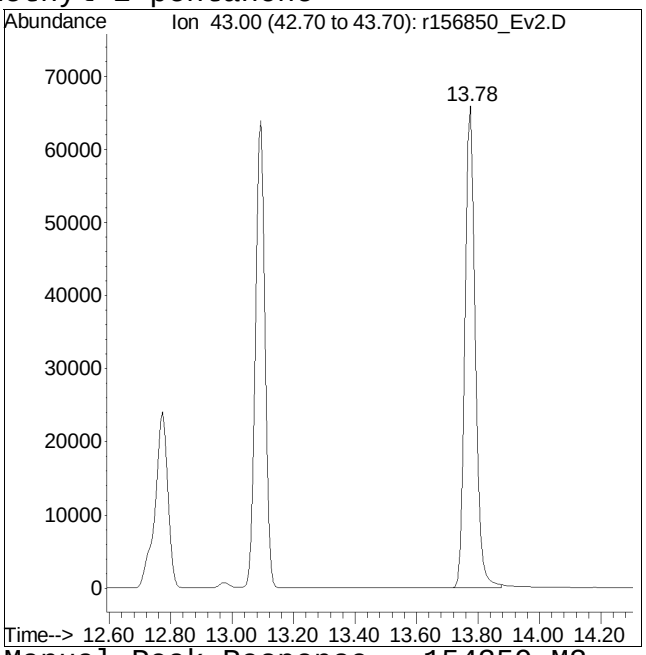
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #48: 4-methyl-2-pentanone



Original Peak Response = 137602



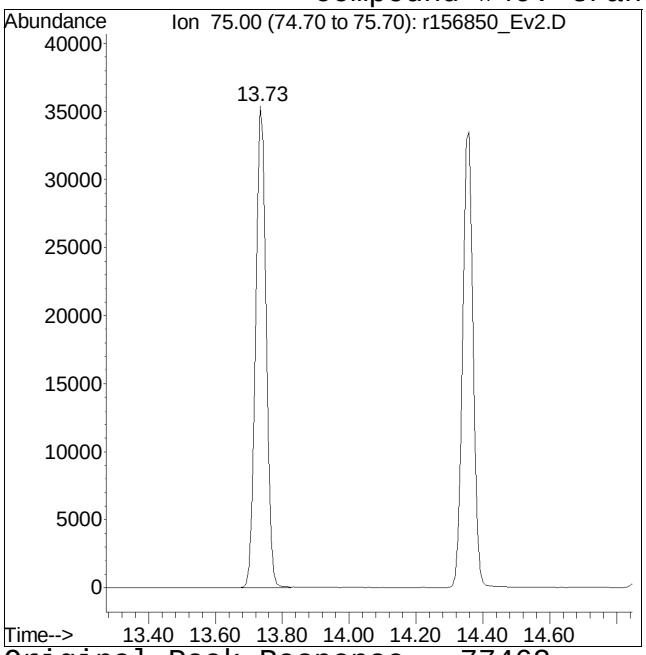
Manual Peak Response = 154359 M3

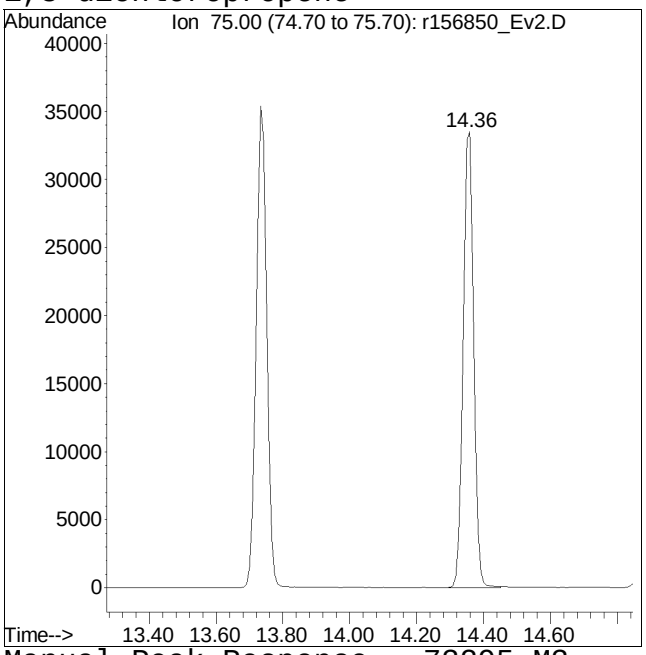
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #49: trans-1,3-dichloropropene





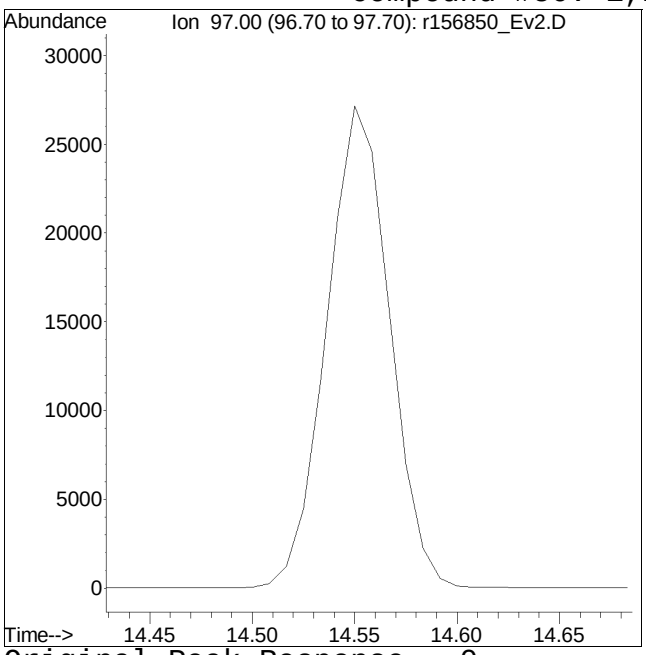
Original Peak Response = 77462 Manual Peak Response = 73295 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

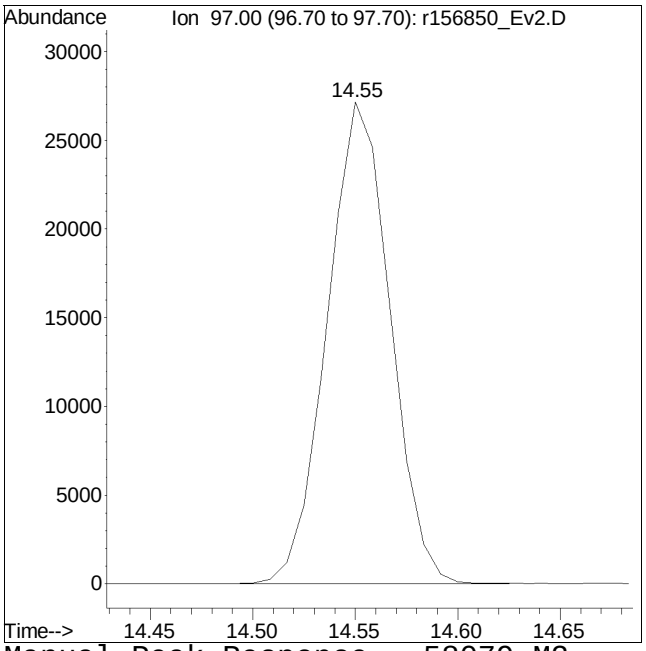
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #50: 1,1,2-trichloroethane



Original Peak Response = 0



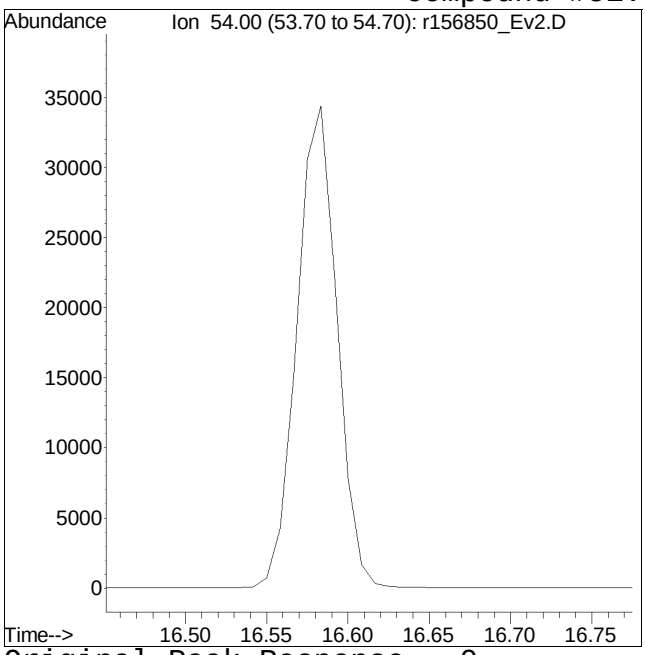
Manual Peak Response = 58079 M2

M2 = Peak not found by automatic integration algorithm.

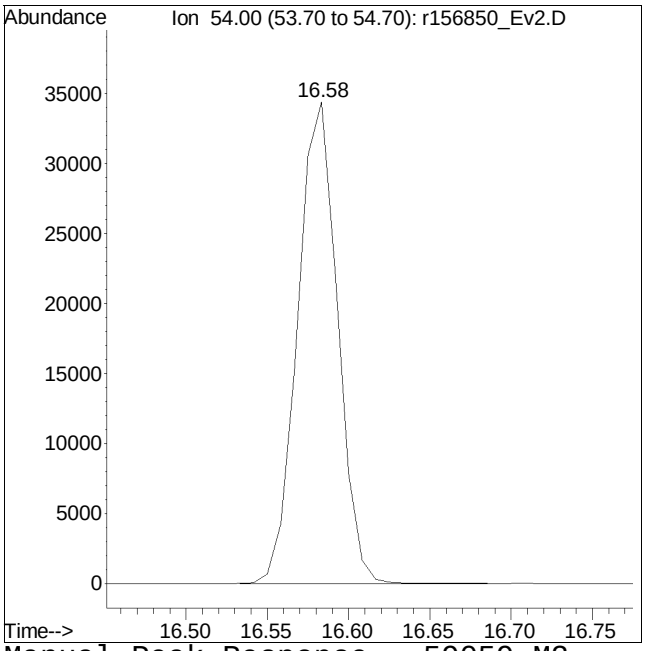
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #51: chlorobenzene-D5



Original Peak Response = 0



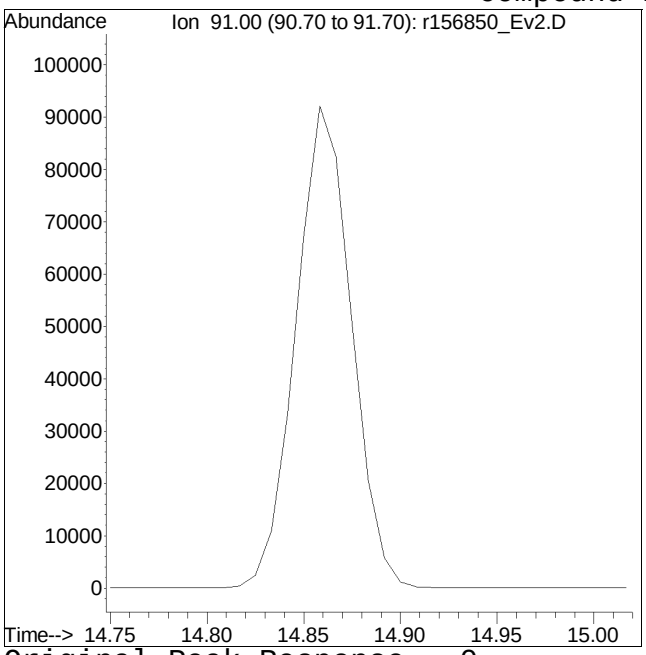
Manual Peak Response = 59059 M2

M2 = Peak not found by automatic integration algorithm.

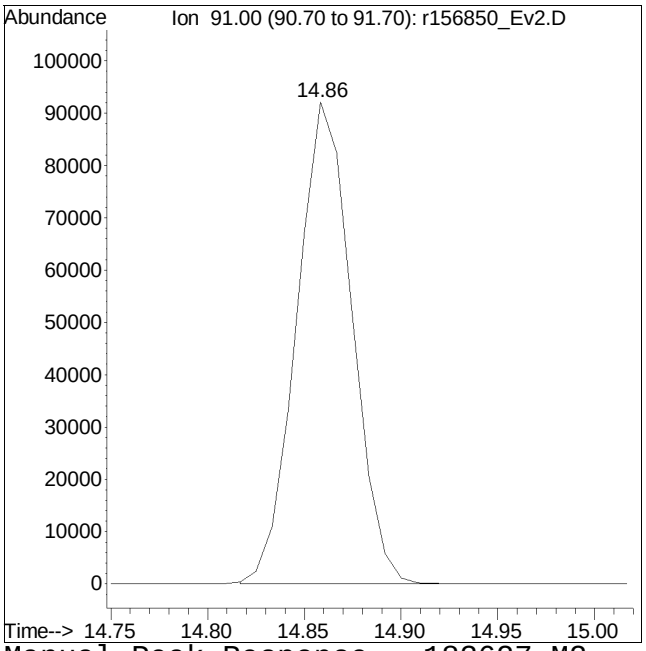
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #52: toluene



Original Peak Response = 0



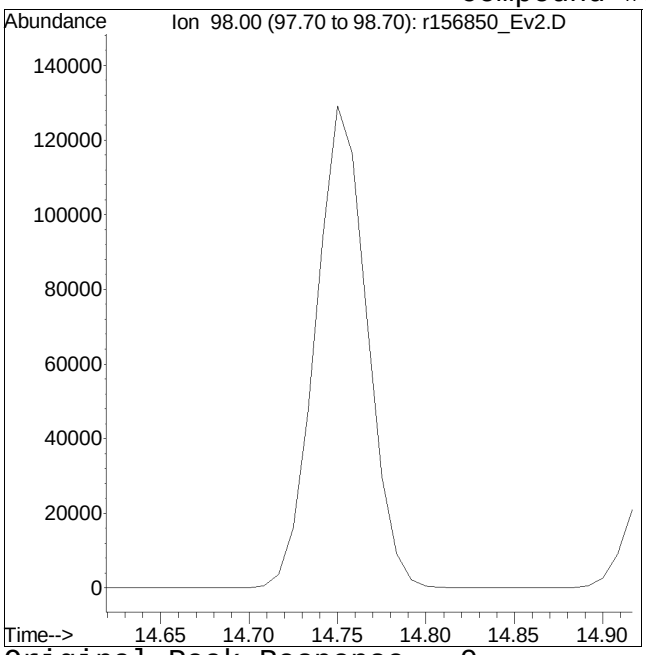
Manual Peak Response = 183627 M2

M2 = Peak not found by automatic integration algorithm.

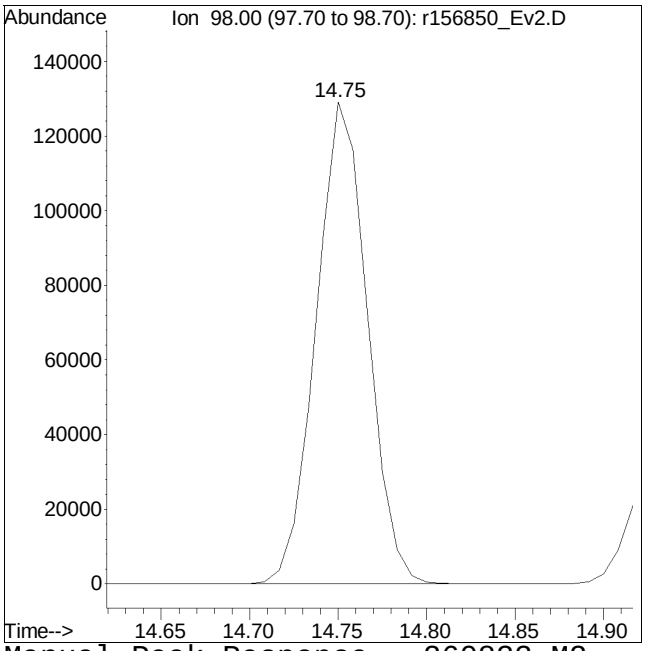
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #53: toluene-D8



Original Peak Response = 0



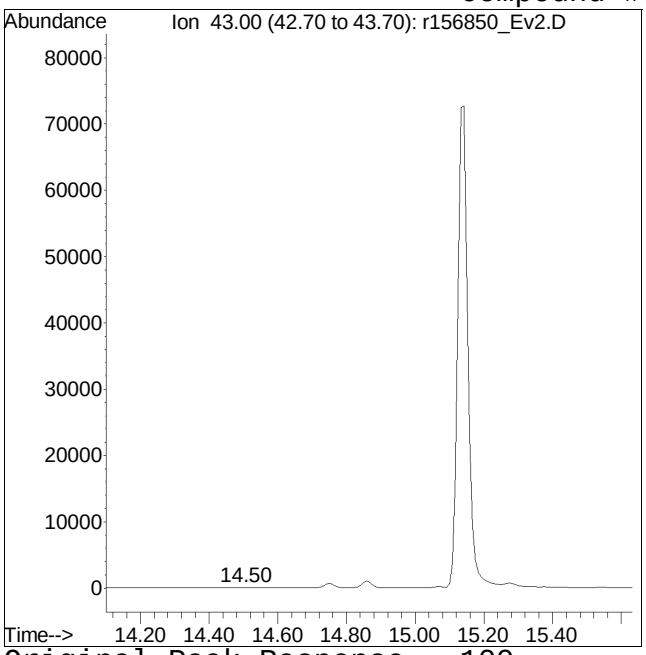
Manual Peak Response = 260833 M2

M2 = Peak not found by automatic integration algorithm.

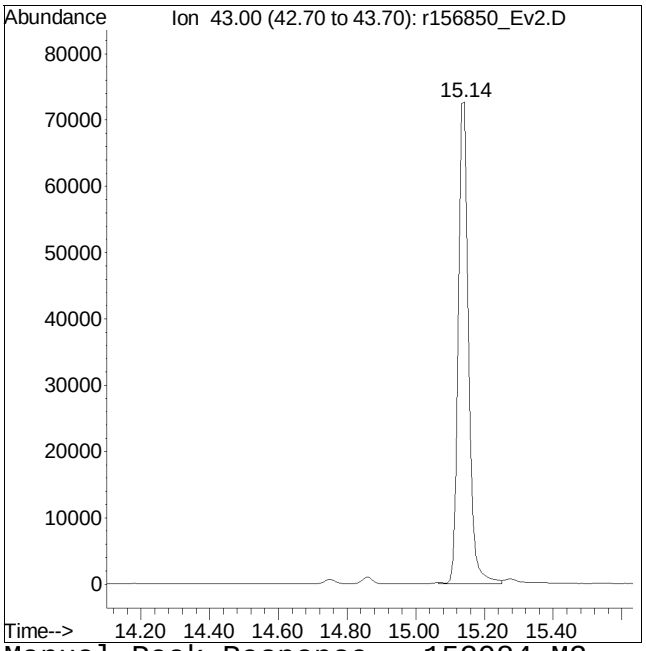
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #54: 2-hexanone



Original Peak Response = 100



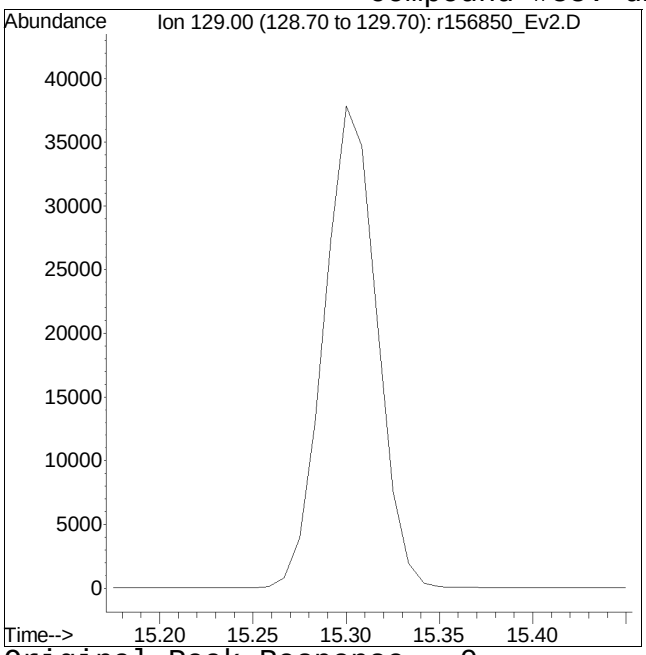
Manual Peak Response = 153084 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

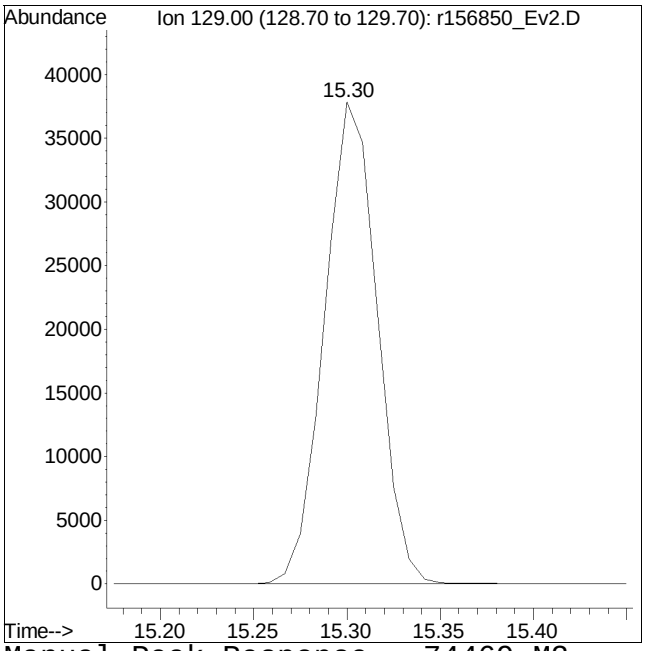
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #55: dibromochloromethane



Original Peak Response = 0



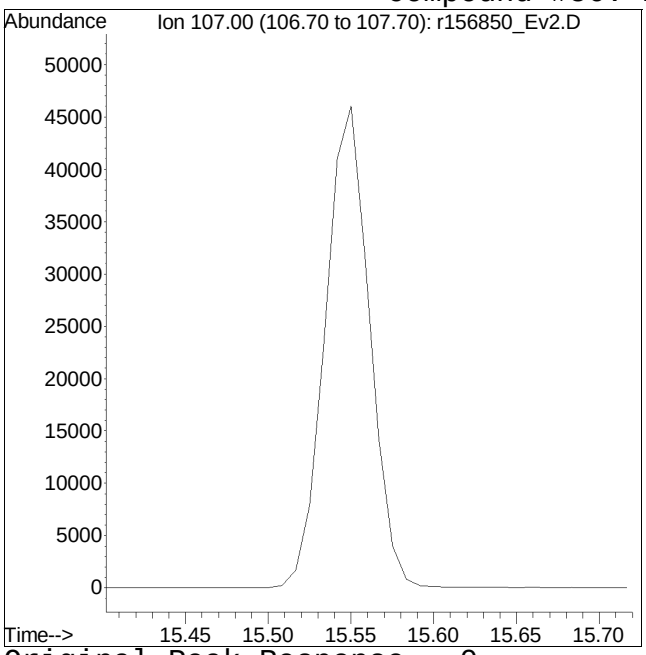
Manual Peak Response = 74469 M2

M2 = Peak not found by automatic integration algorithm.

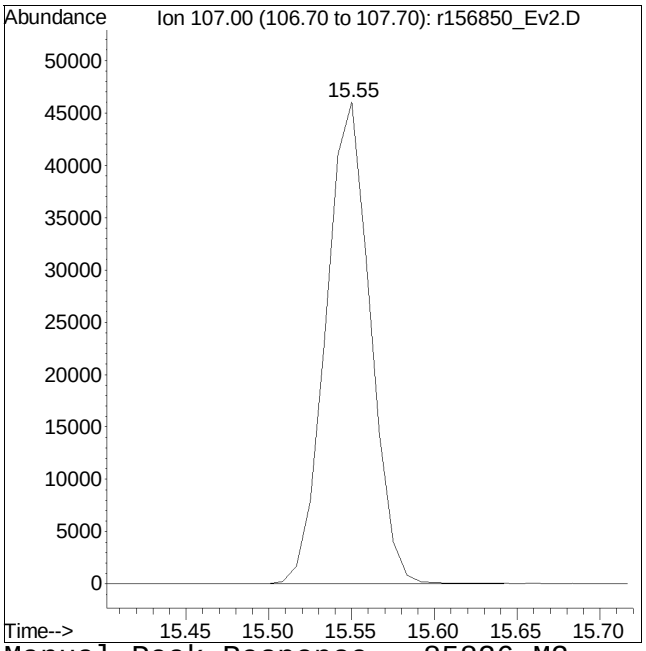
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #56: 1,2-dibromoethane



Original Peak Response = 0



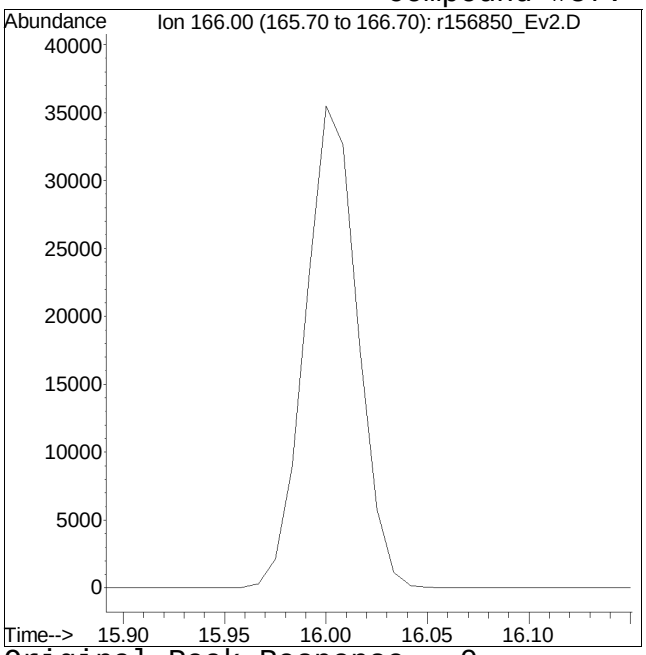
Manual Peak Response = 85826 M2

M2 = Peak not found by automatic integration algorithm.

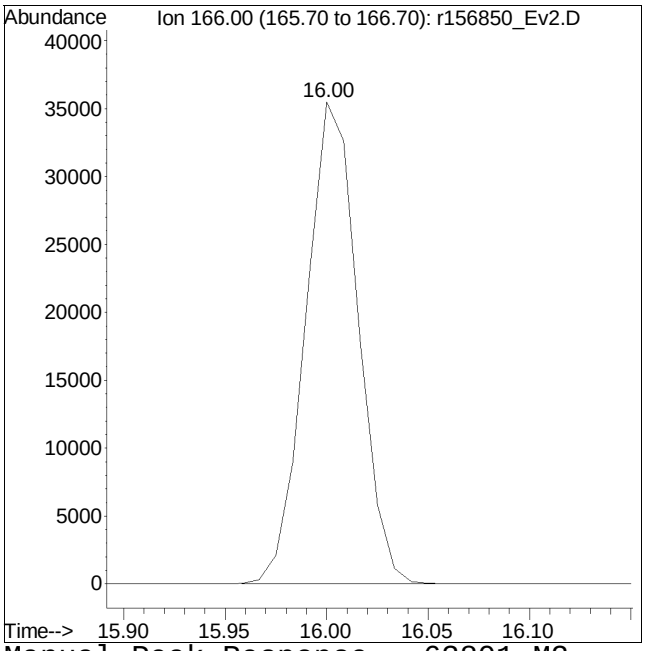
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #57: tetrachloroethene



Original Peak Response = 0



Manual Peak Response = 63801 M2

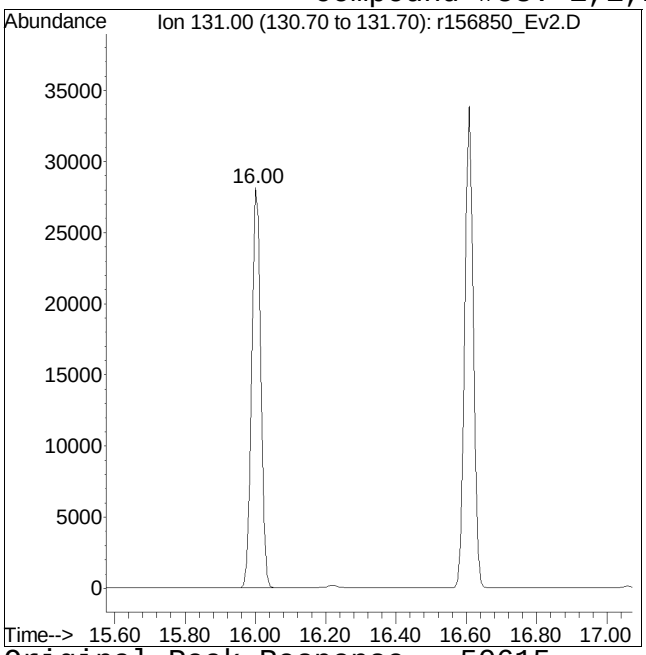
M2 = Peak not found by automatic integration algorithm.

Manual Integration/Negative Proof Report

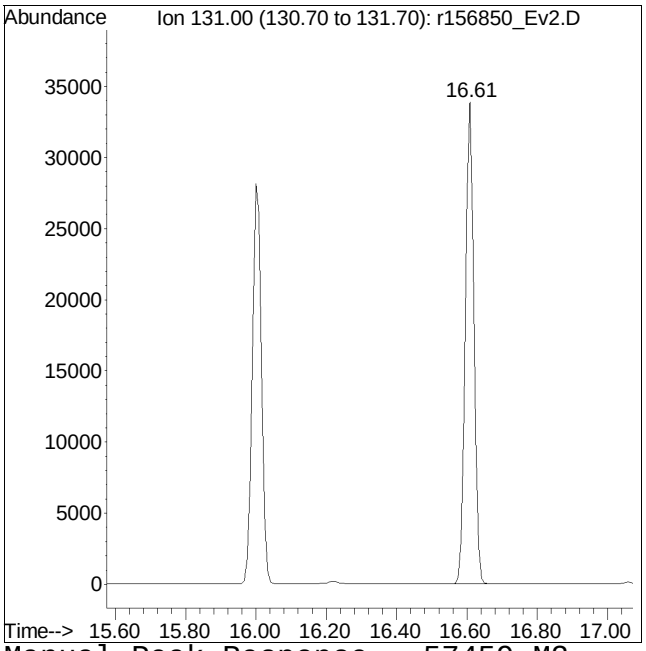
Data Path : O:\Forensics\Data\Airlab15\
Data File : r156850_Ev2.D
Date Inj'd : 4/4/2018 9:48 PM
Sample : ITO15-SIMSTD5.0

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:28 am

Compound #58: 1,1,1,2-tetrachloroethane



Original Peak Response = 50615



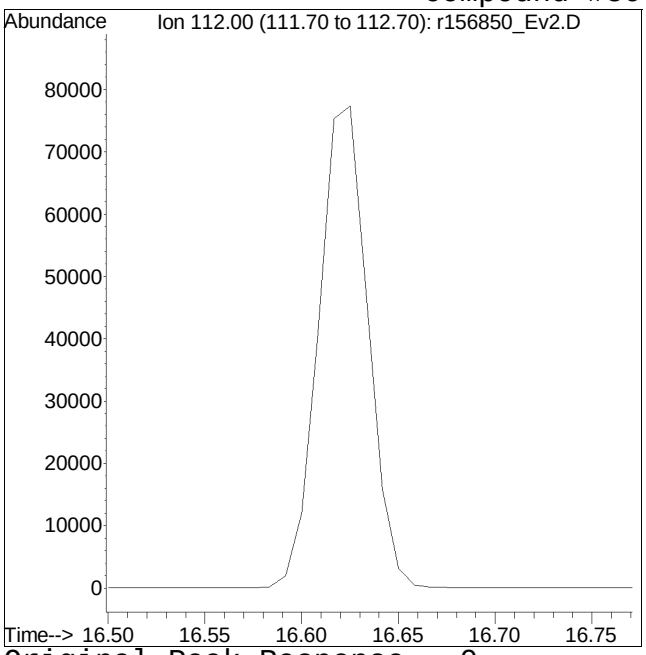
Manual Peak Response = 57459 M2

M2 = Peak not found by automatic integration algorithm.

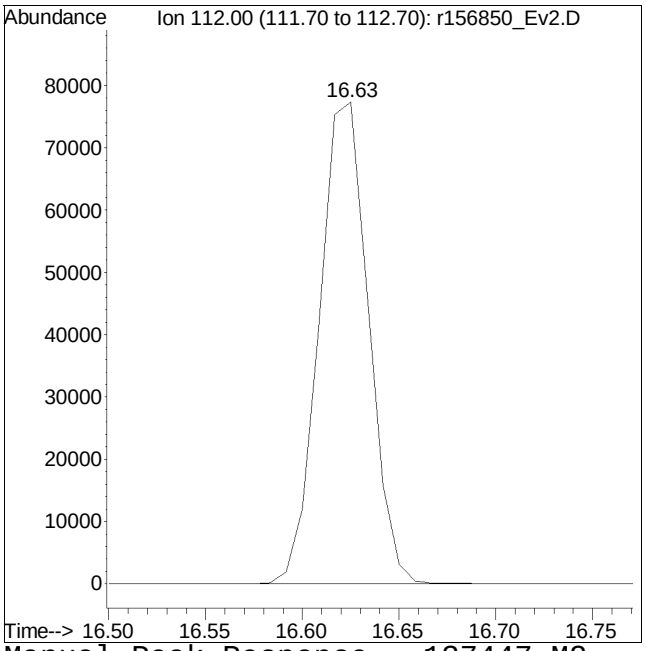
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #59: chlorobenzene



Original Peak Response = 0



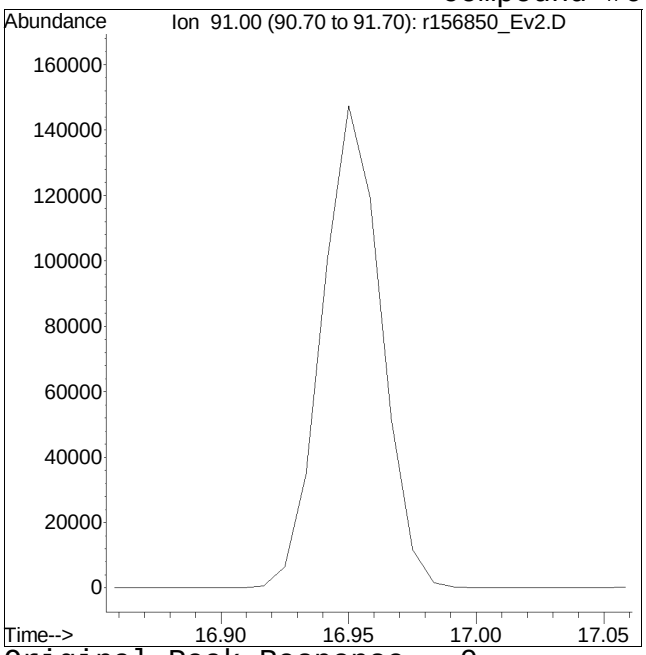
Manual Peak Response = 137447 M2

M2 = Peak not found by automatic integration algorithm.

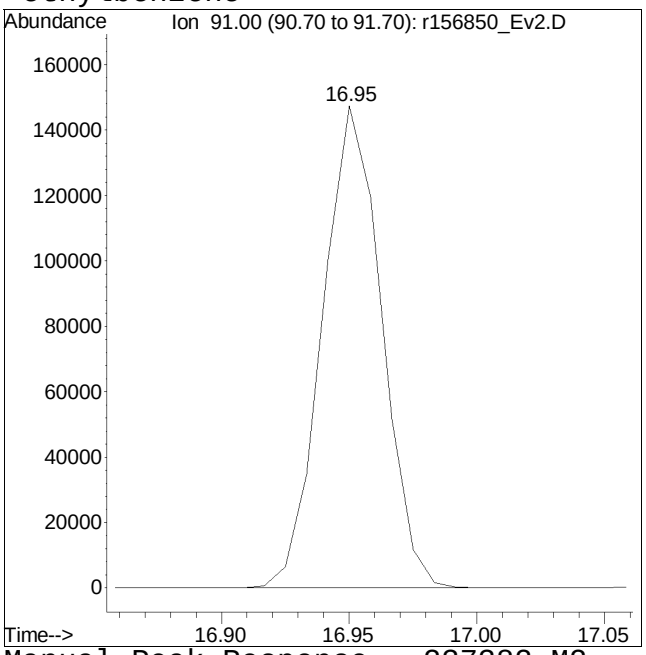
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #60: ethylbenzene



Original Peak Response = 0



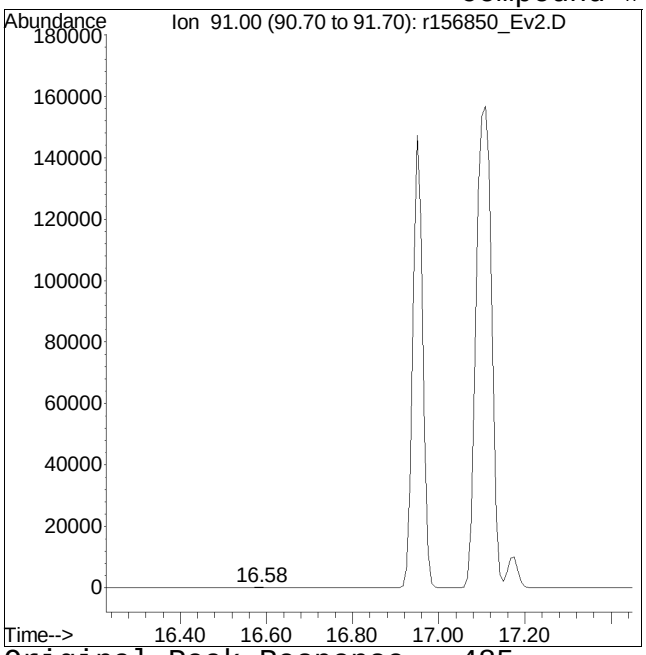
Manual Peak Response = 237382 M2

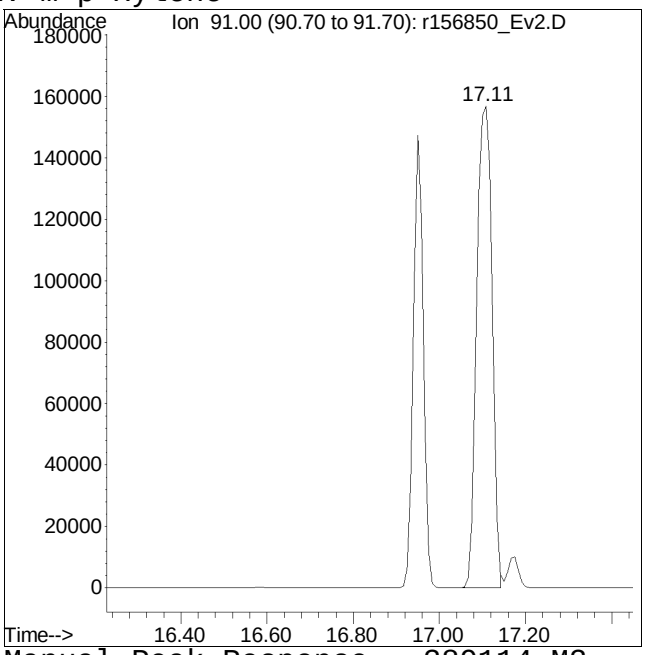
M2 = Peak not found by automatic integration algorithm.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #61: m+p-xylene



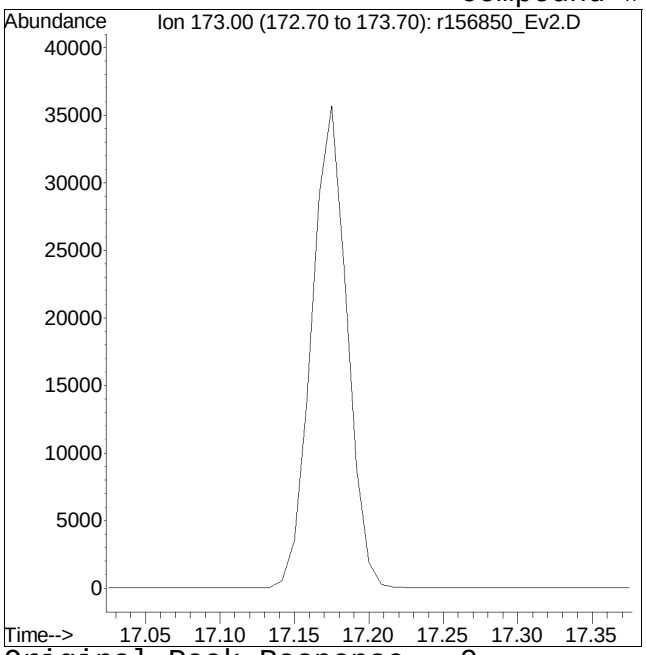


Original Peak Response = 485 Manual Peak Response = 389114 M3
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

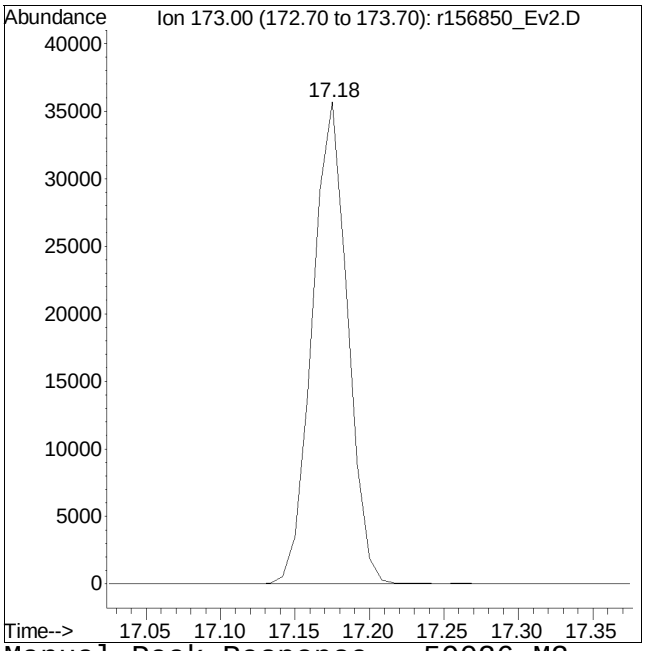
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #62: bromoform



Original Peak Response = 0



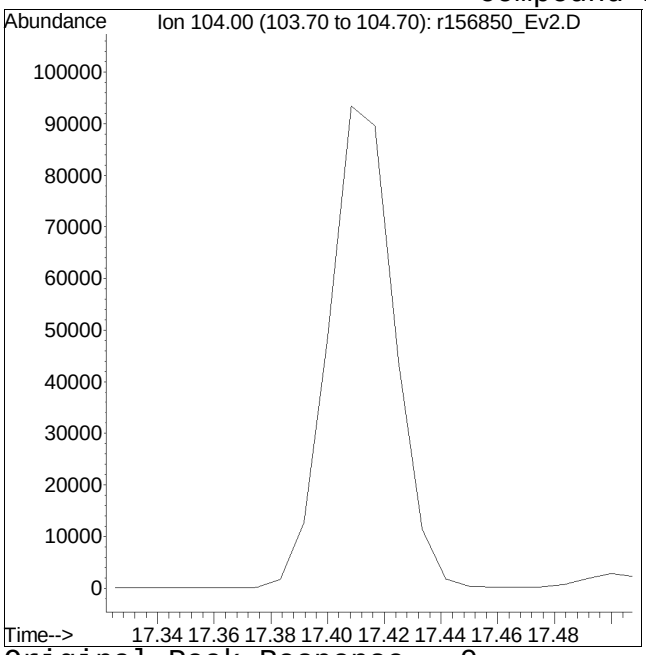
Manual Peak Response = 59026 M2

M2 = Peak not found by automatic integration algorithm.

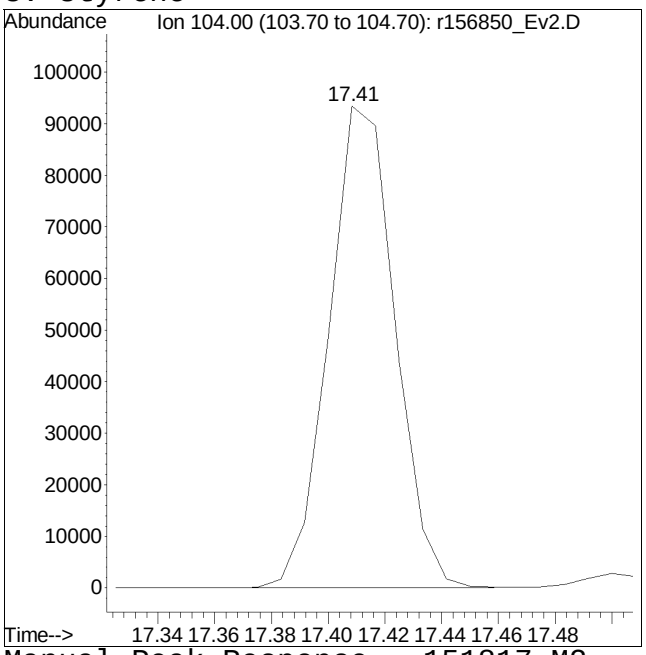
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #63: styrene



Original Peak Response = 0



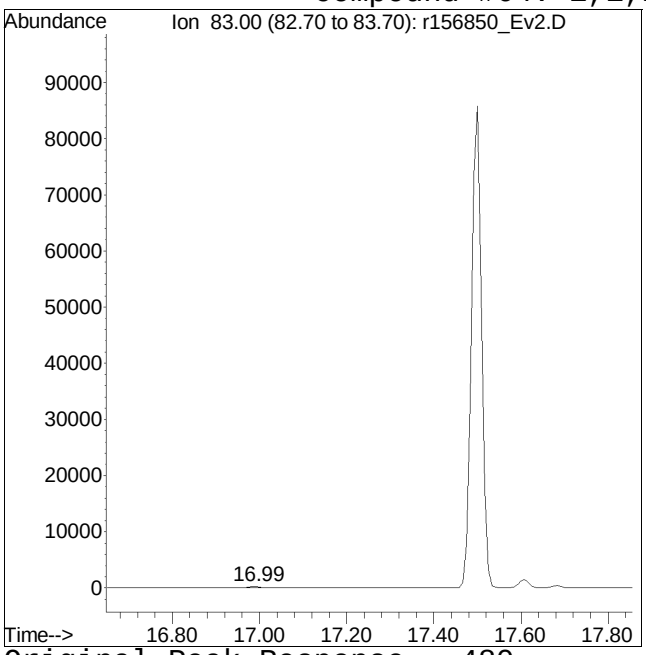
Manual Peak Response = 151817 M2

M2 = Peak not found by automatic integration algorithm.

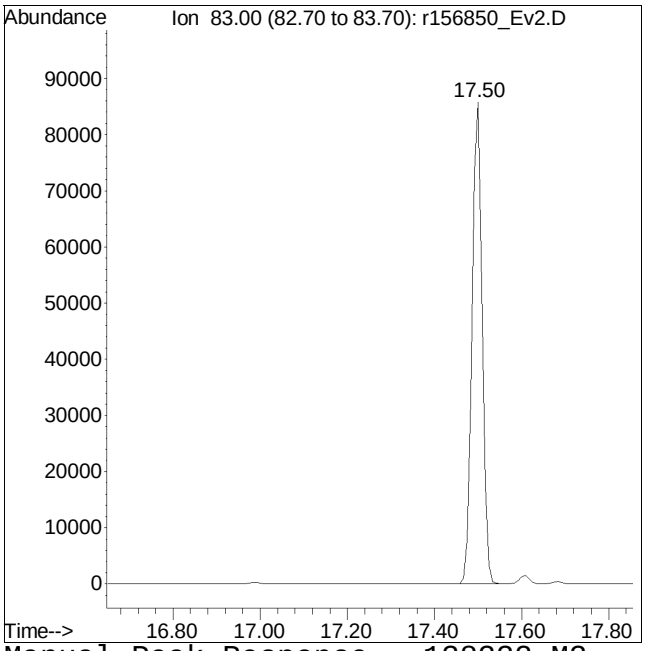
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #64: 1,1,2,2-tetrachloroethane



Original Peak Response = 480



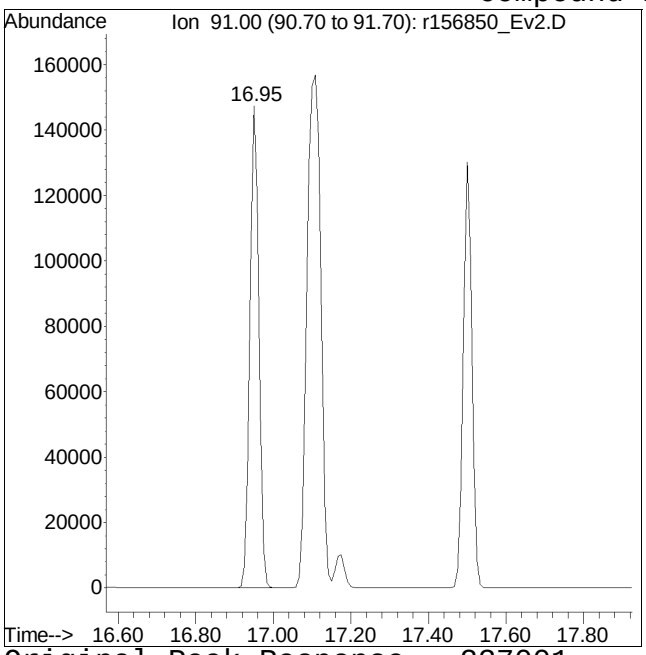
Manual Peak Response = 138332 M3

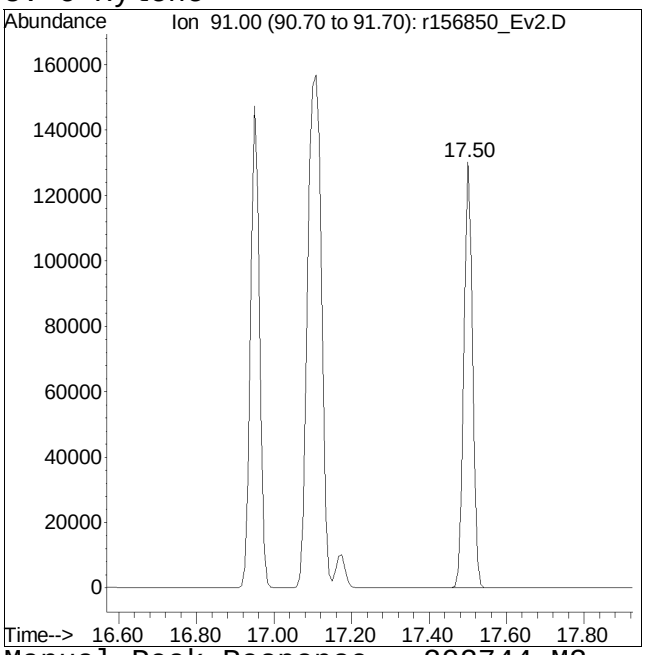
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #65: o-xylene



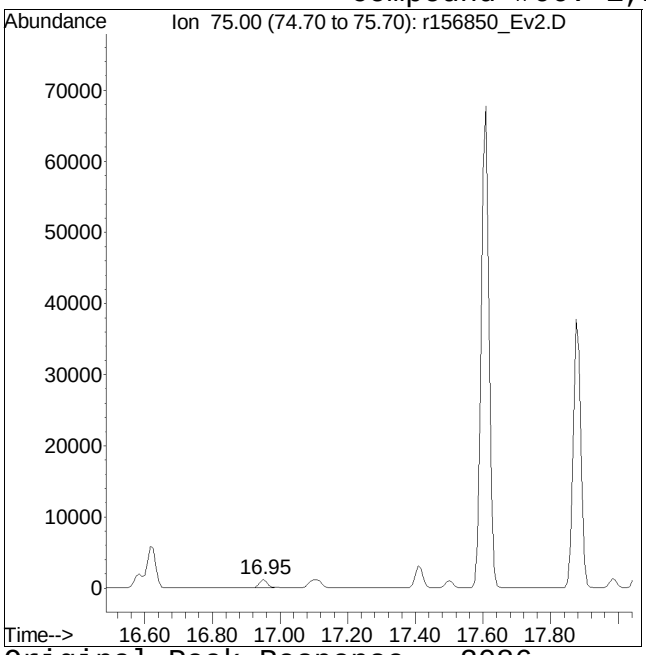


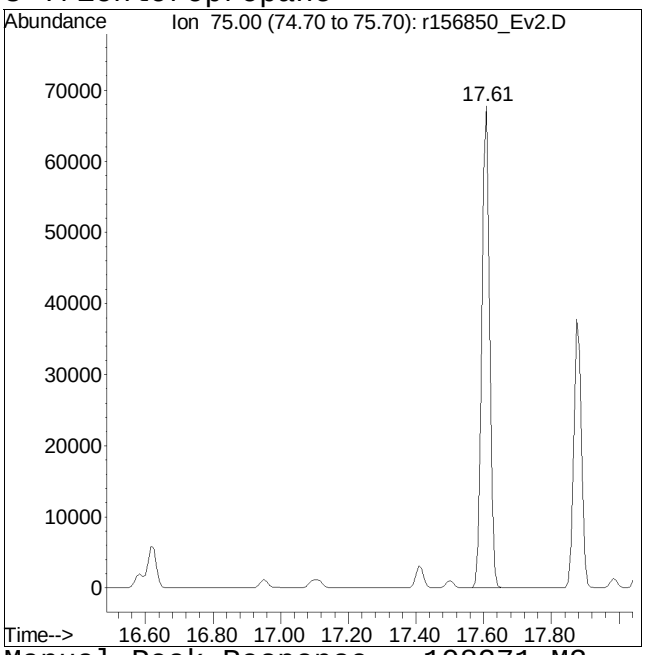
Original Peak Response = 237001 Manual Peak Response = 202744 M3
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #66: 1,2,3-Trichloropropane





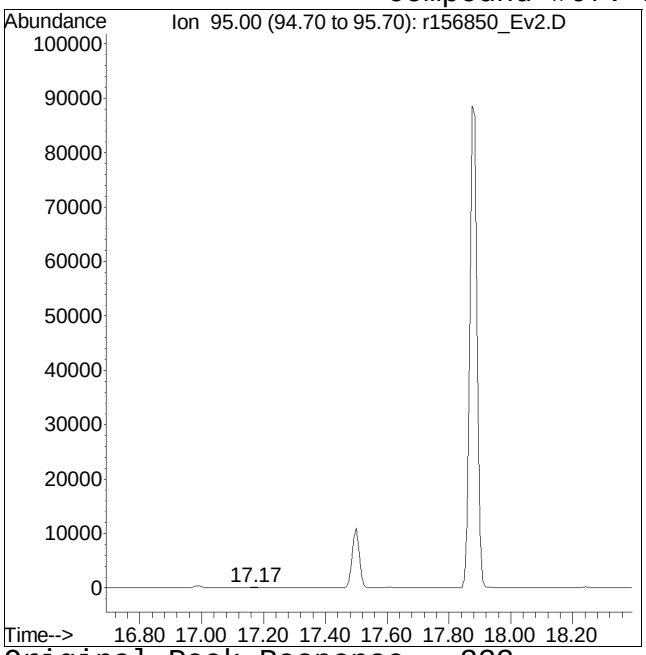
Original Peak Response = 2086 Manual Peak Response = 108271 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

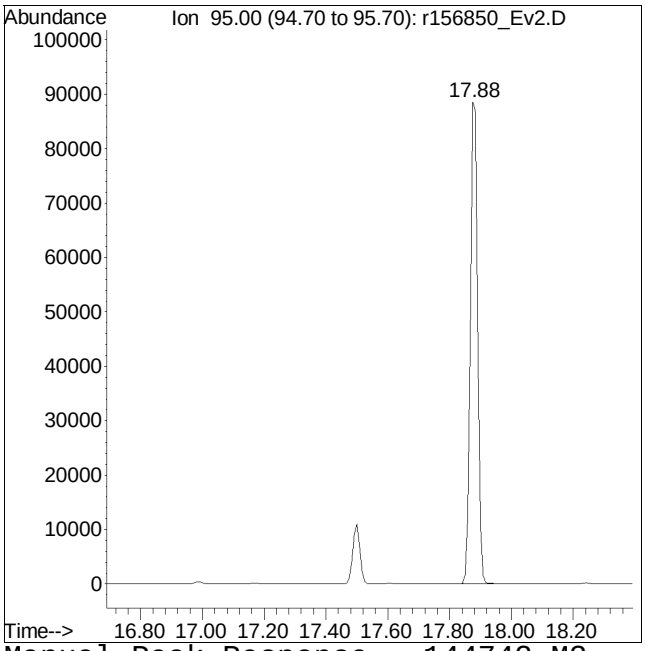
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #67: bromofluorobenzene



Original Peak Response = 333



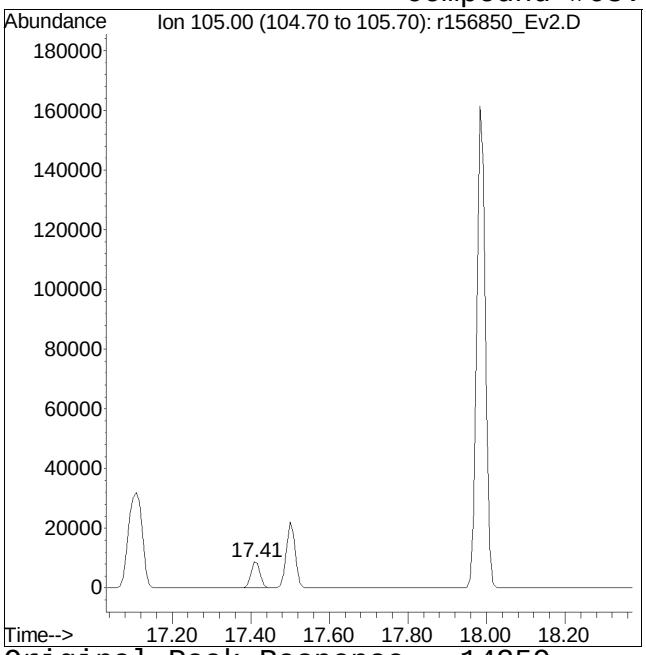
Manual Peak Response = 144742 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

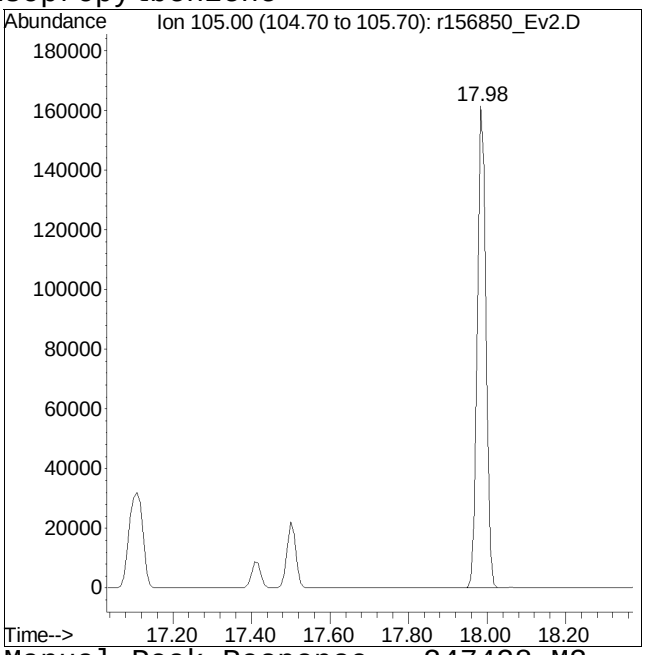
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #68: isopropylbenzene



Original Peak Response = 14259



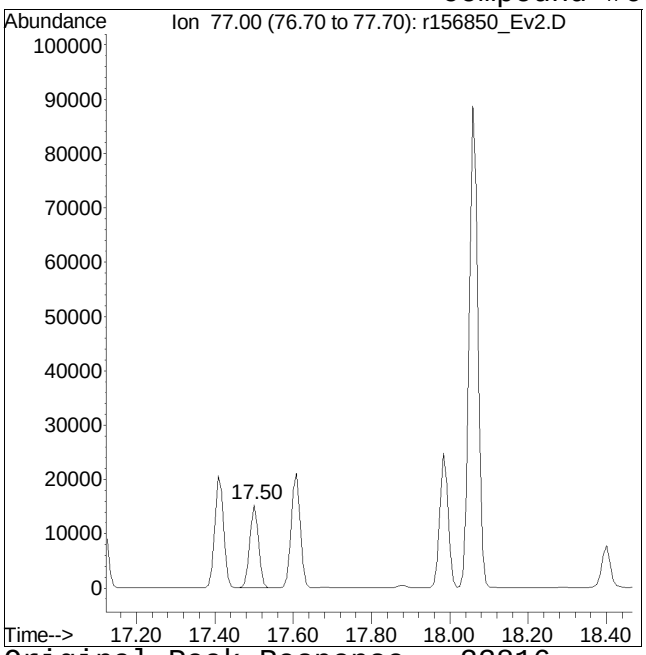
Manual Peak Response = 247428 M3

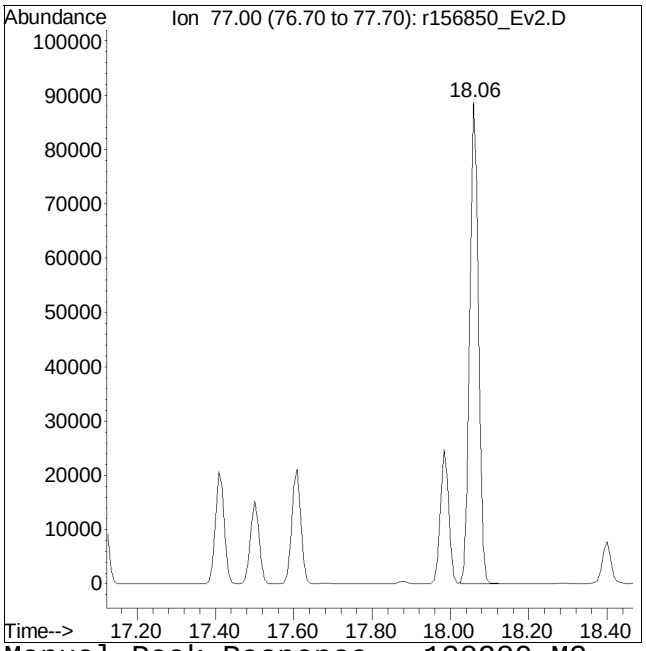
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #69: Bromobenzene





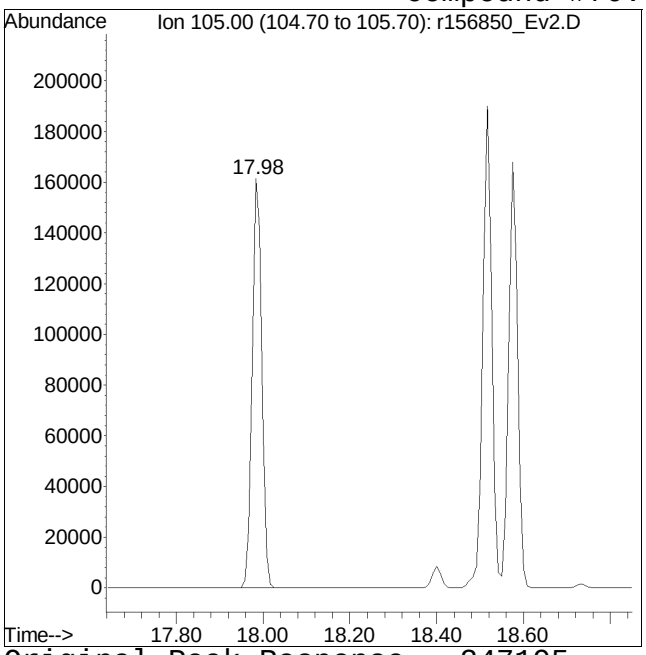
Original Peak Response = 23816 Manual Peak Response = 138280 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

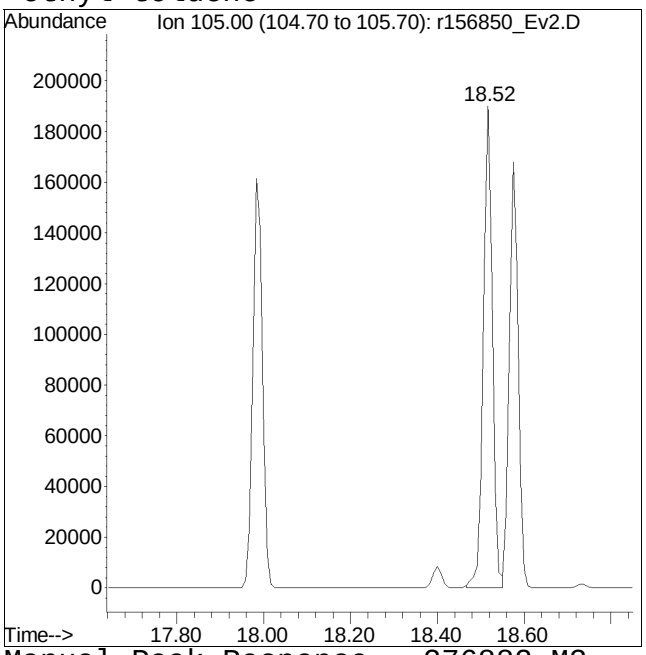
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #70: 4-ethyl toluene



Original Peak Response = 247195



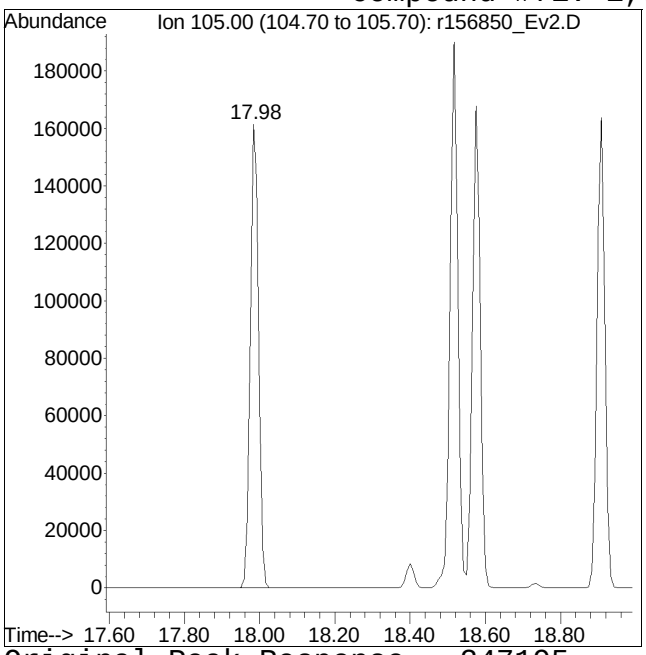
Manual Peak Response = 276882 M3

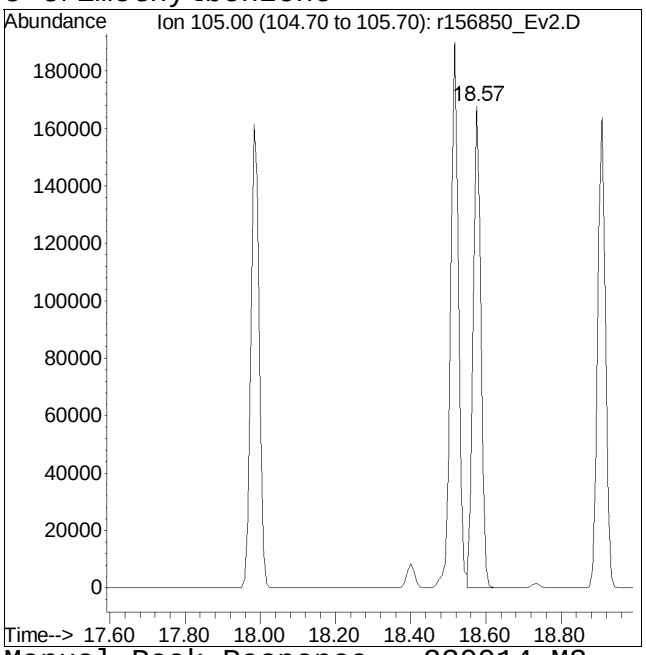
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #71: 1,3,5-trimethylbenzene





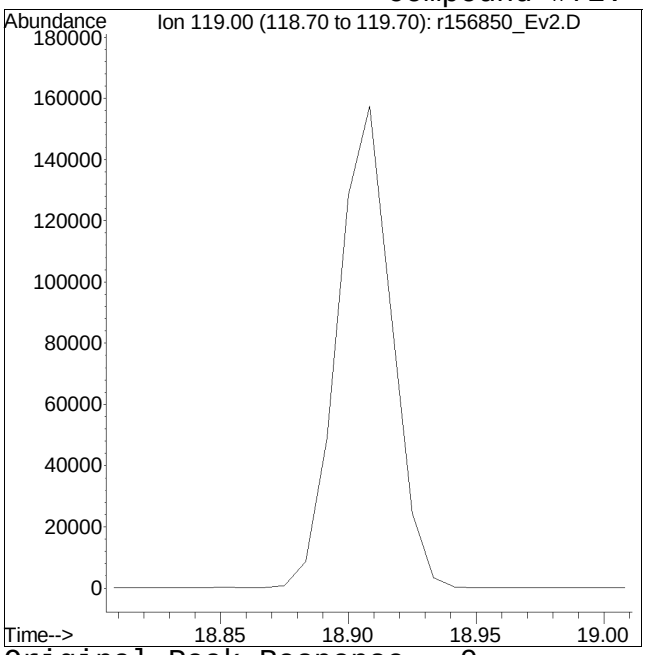
Original Peak Response = 247195 Manual Peak Response = 239914 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

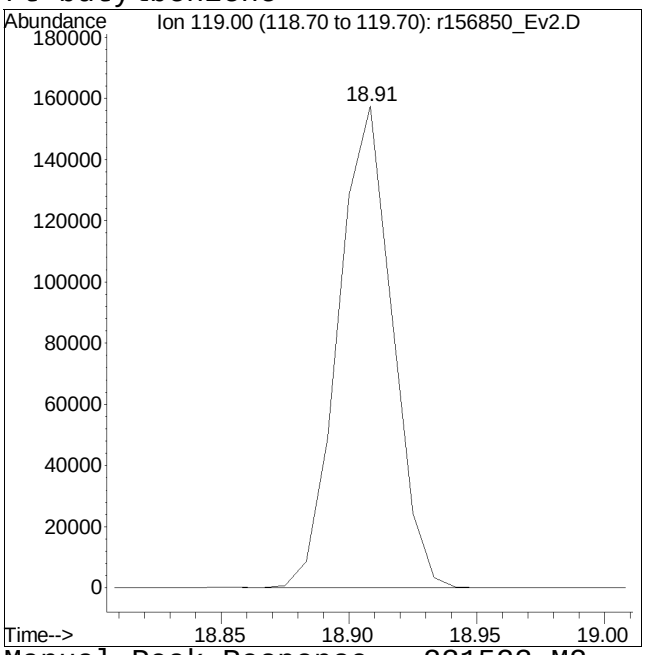
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #72: tert-butylbenzene



Original Peak Response = 0



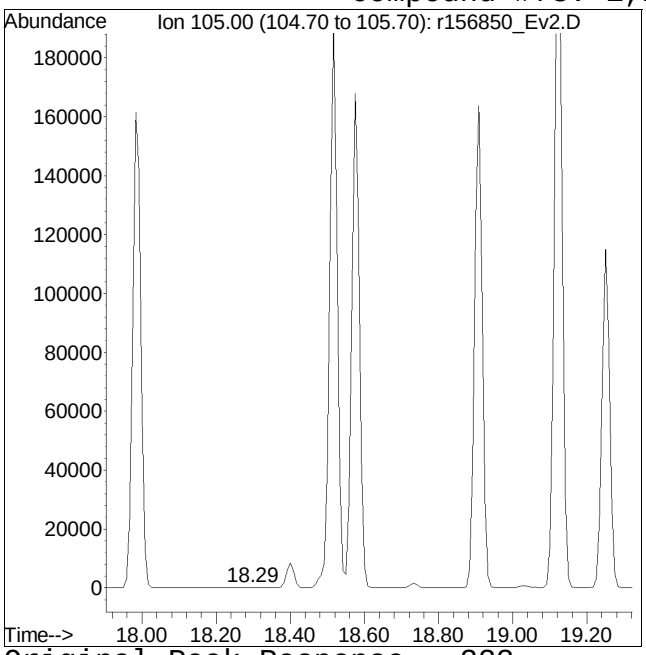
Manual Peak Response = 231523 M2

M2 = Peak not found by automatic integration algorithm.

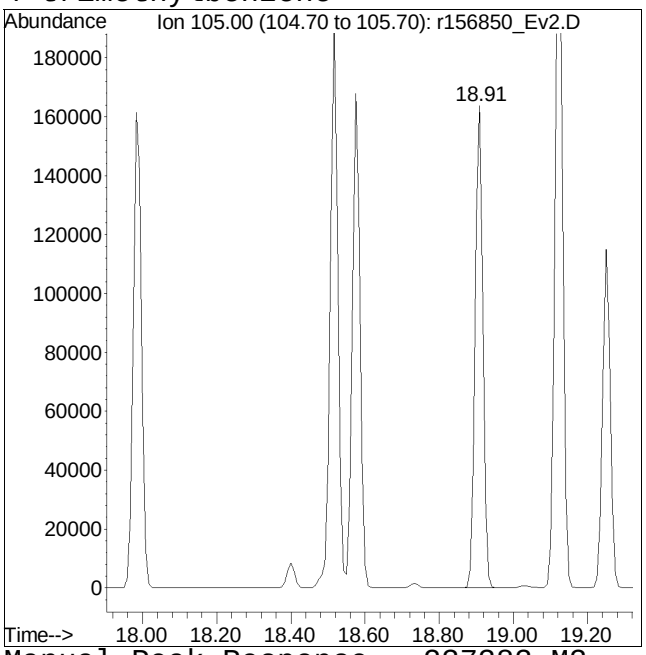
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #73: 1,2,4-trimethylbenzene



Original Peak Response = 223



Manual Peak Response = 237383 M3

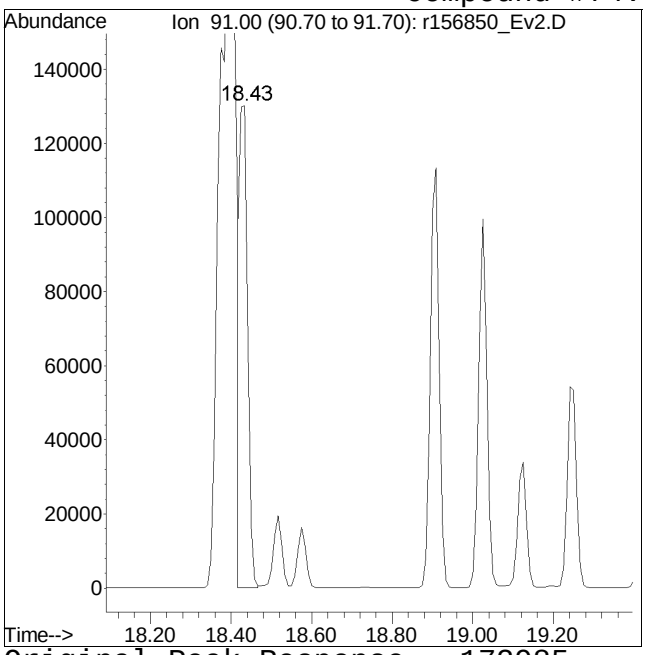
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

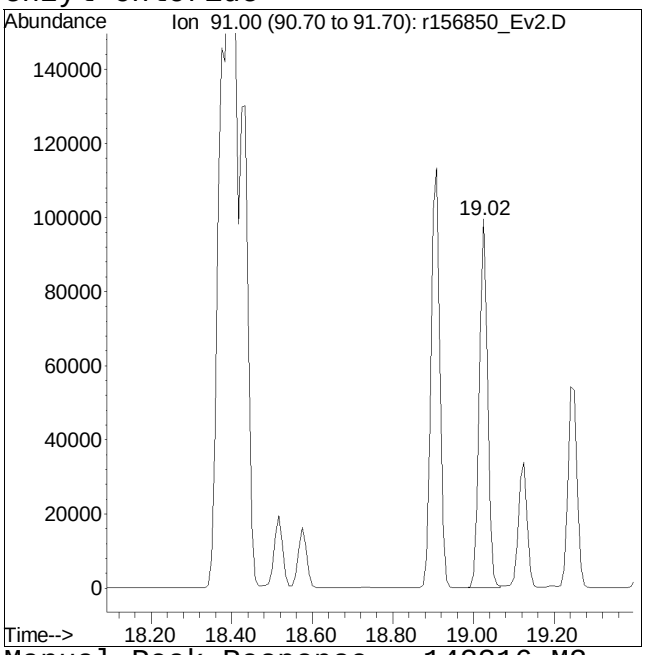
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\
Data File : r156850_Ev2.D
Date Inj'd : 4/4/2018 9:48 PM
Sample : ITO15-SIMSTD5.0

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:28 am

Compound #74: Benzyl Chloride





Original Peak Response = 172985 Manual Peak Response = 142316 M3

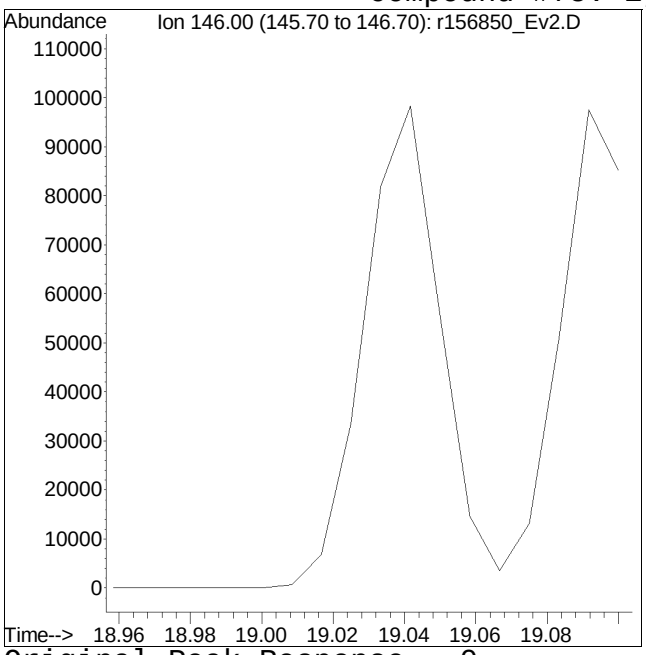
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

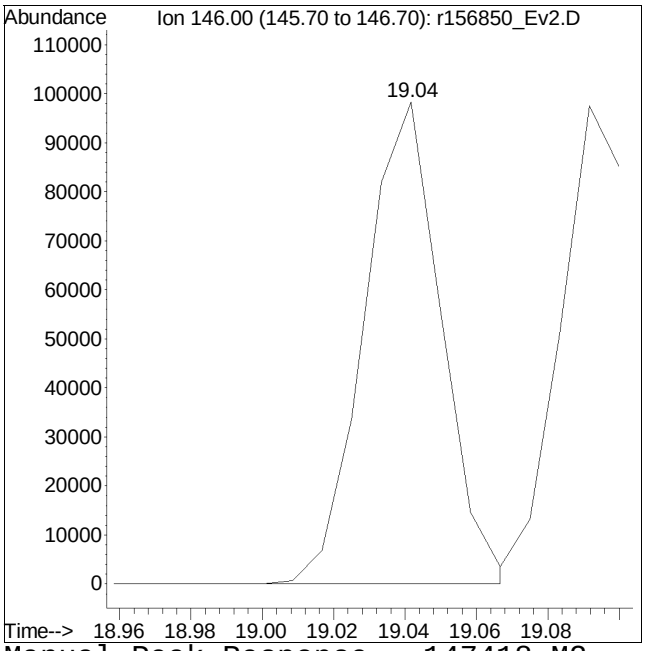
Data Path : O:\Forensics\Data\Airlab15\
Data File : r156850_Ev2.D
Date Inj'd : 4/4/2018 9:48 PM
Sample : ITO15-SIMSTD5.0

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:28 am

Compound #75: 1,3-dichlorobenzene



Original Peak Response = 0



Manual Peak Response = 147418 M2

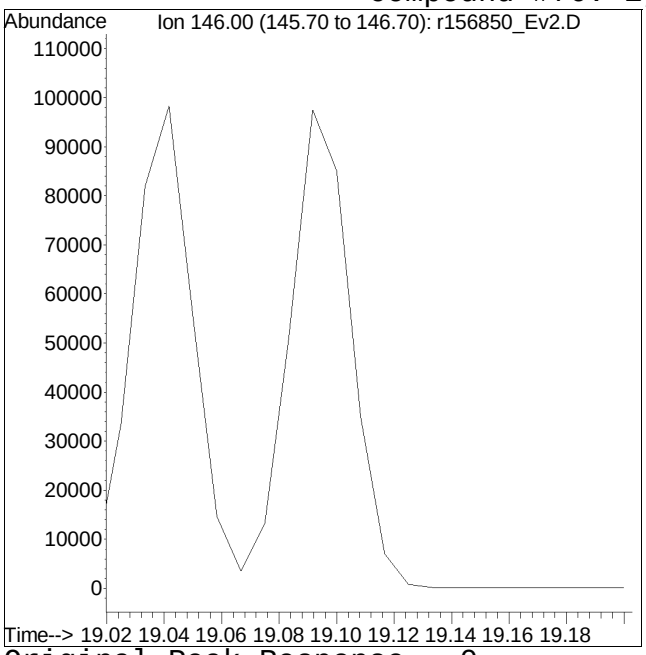
M2 = Peak not found by automatic integration algorithm.

Manual Integration/Negative Proof Report

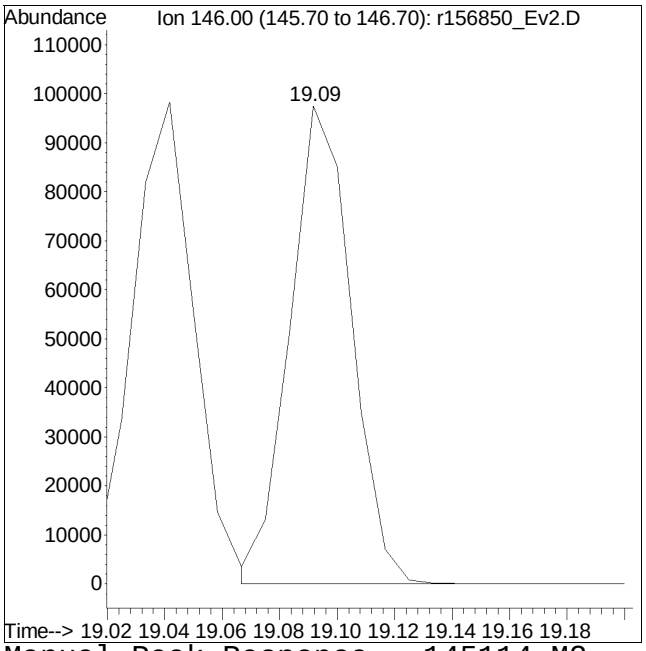
Data Path : O:\Forensics\Data\Airlab15\
Data File : r156850_Ev2.D
Date Inj'd : 4/4/2018 9:48 PM
Sample : ITO15-SIMSTD5.0

QMethod : TSIM180404.M
Operator : AIRLAB15:RY
Instrument :
Quant Date : 4/5/2018 9:28 am

Compound #76: 1,4-dichlorobenzene



Original Peak Response = 0



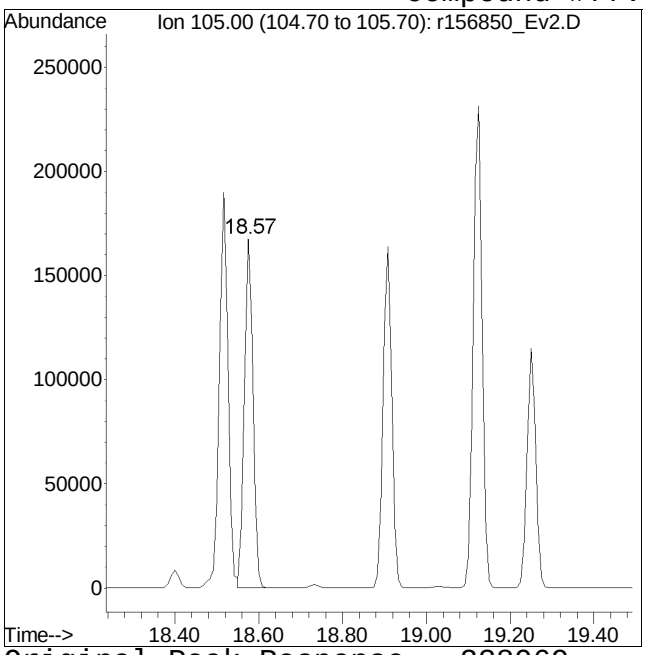
Manual Peak Response = 145114 M2

M2 = Peak not found by automatic integration algorithm.

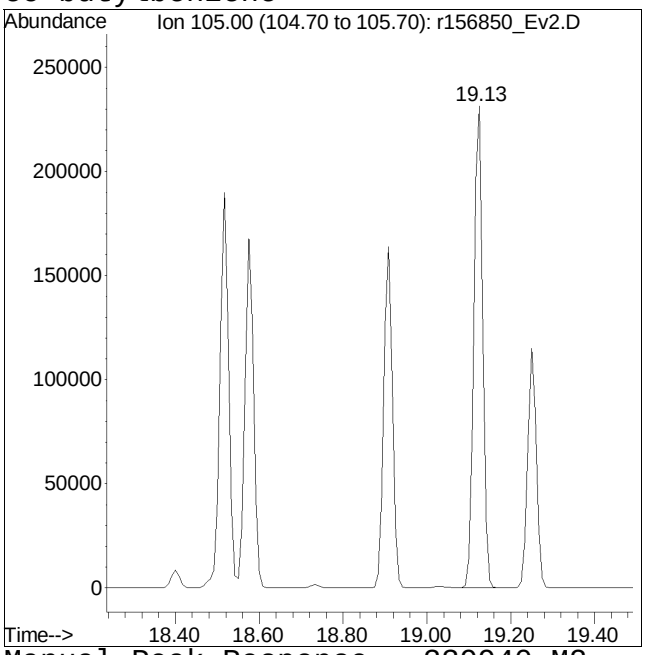
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #77: sec-butylbenzene



Original Peak Response = 238969



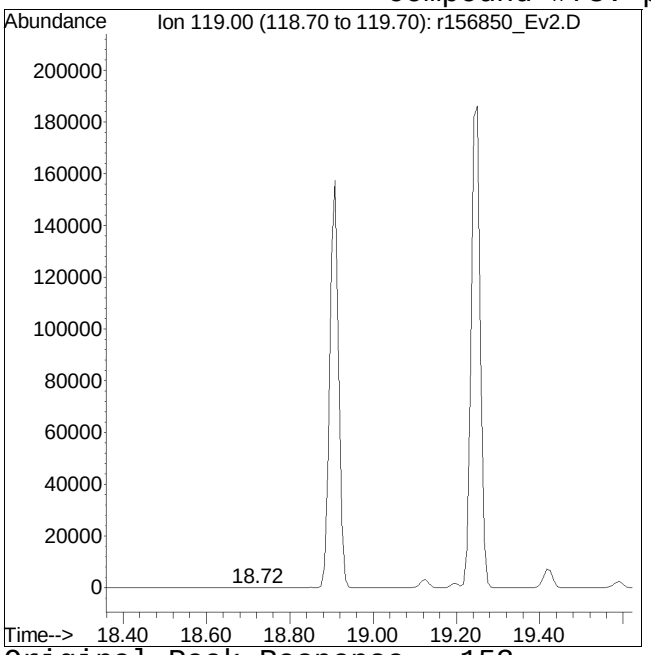
Manual Peak Response = 339940 M2

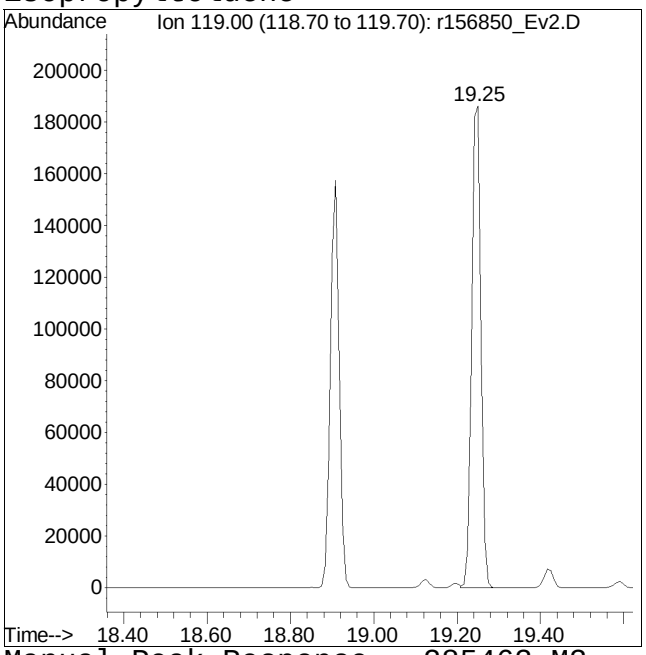
M2 = Peak not found by automatic integration algorithm.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #78: p-isopropyltoluene



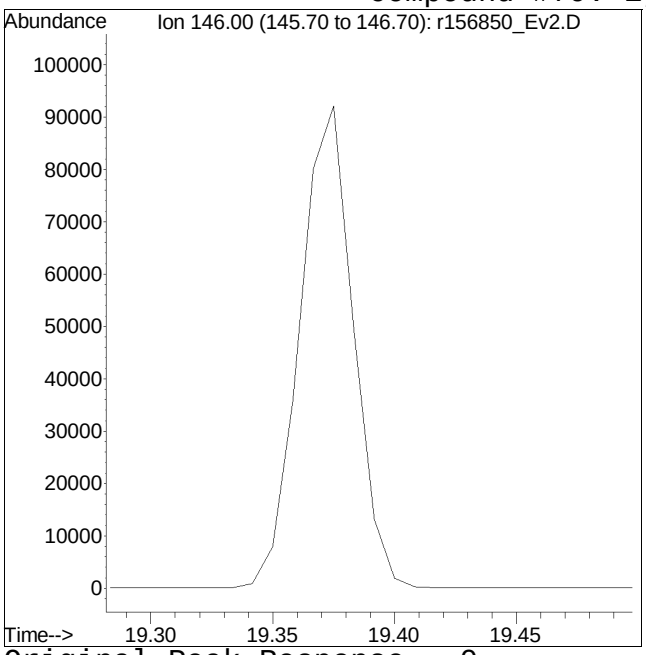


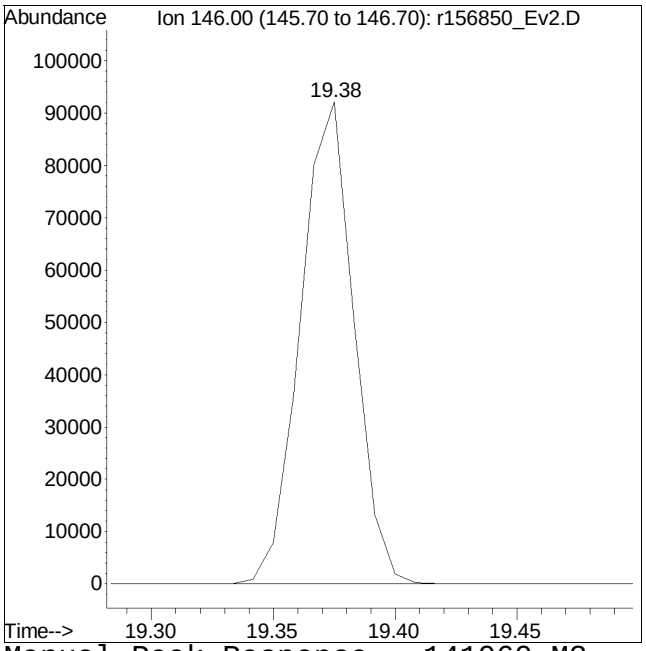
Original Peak Response = 153 Manual Peak Response = 285463 M3
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #79: 1,2-dichlorobenzene



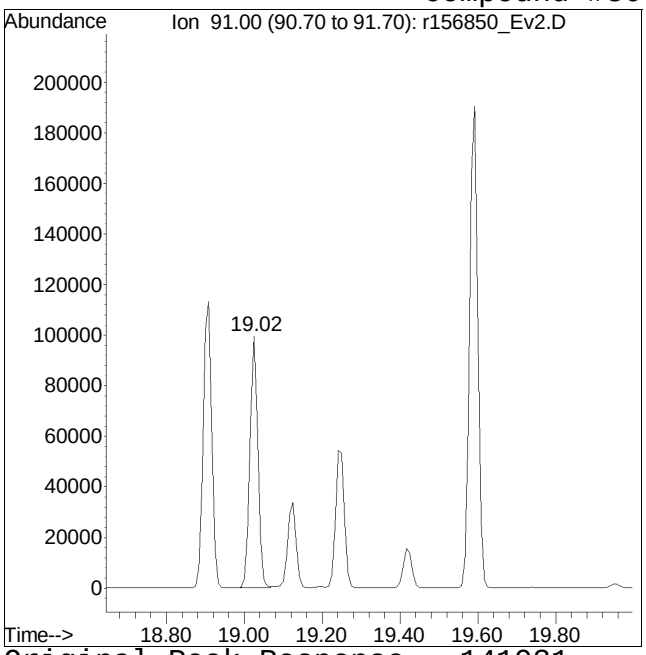


Original Peak Response = 0 Manual Peak Response = 141060 M3
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

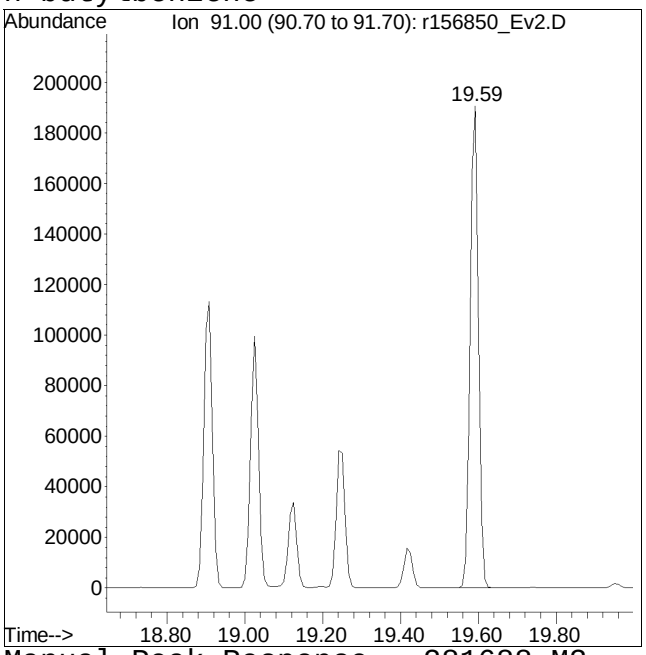
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #80: n-butylbenzene



Original Peak Response = 141931



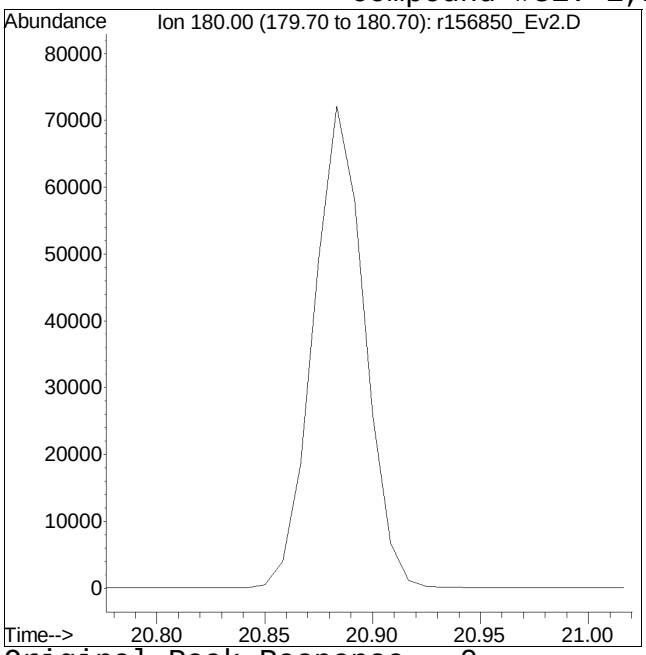
Manual Peak Response = 281688 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

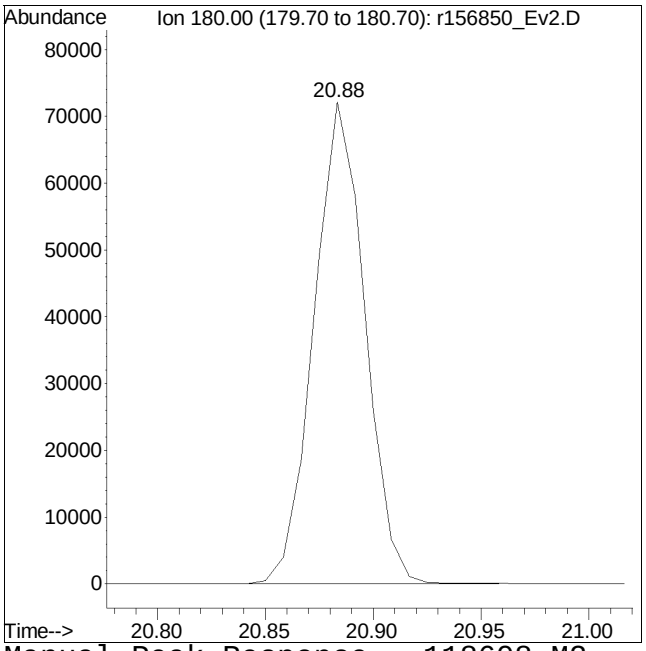
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #81: 1,2,4-trichlorobenzene



Original Peak Response = 0



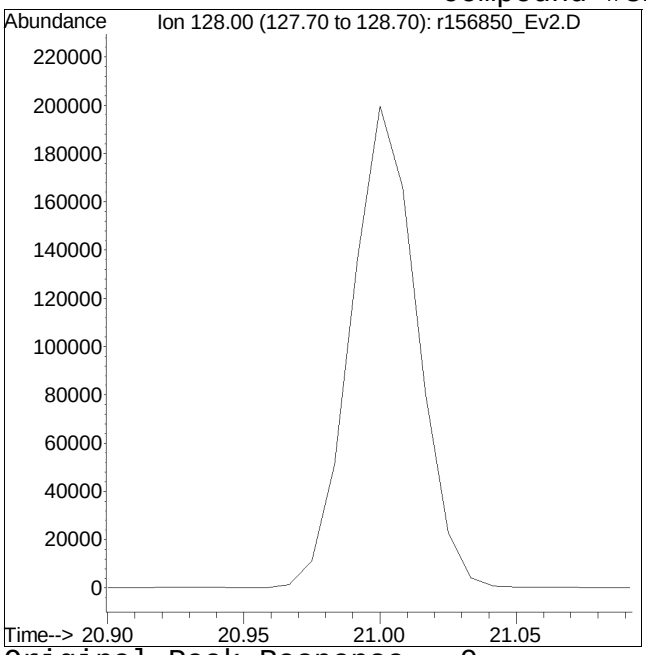
Manual Peak Response = 118608 M2

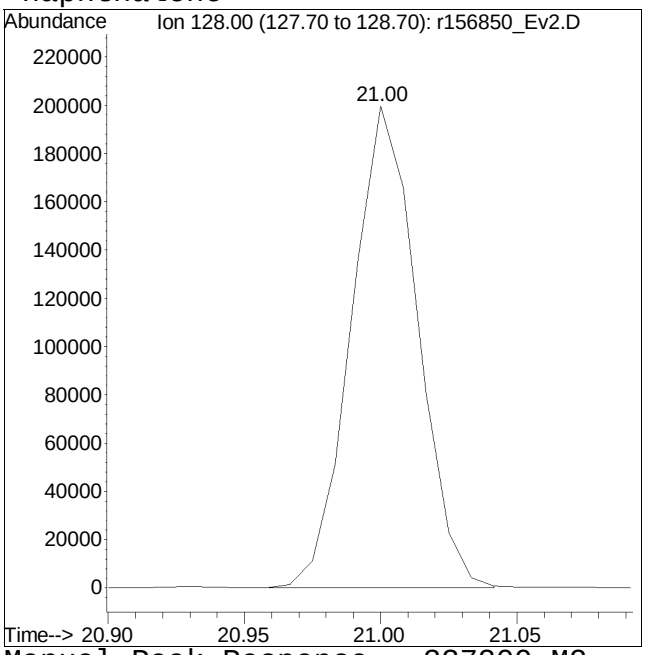
M2 = Peak not found by automatic integration algorithm.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #82: naphthalene



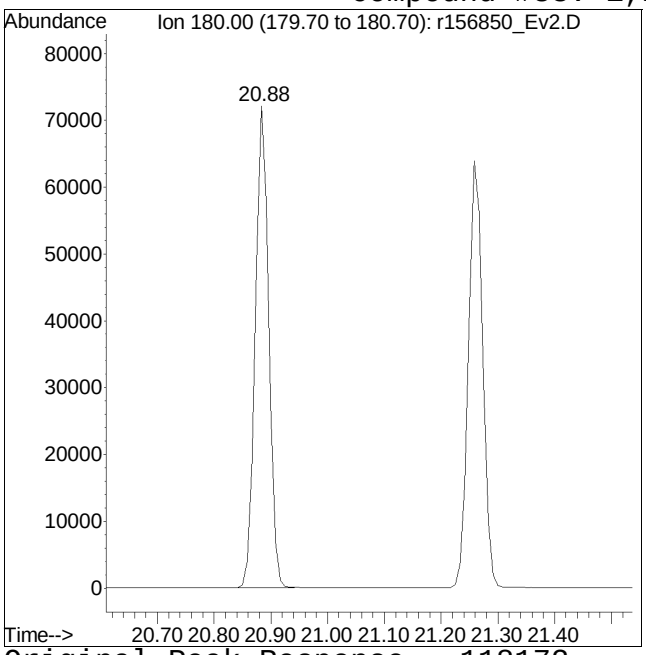


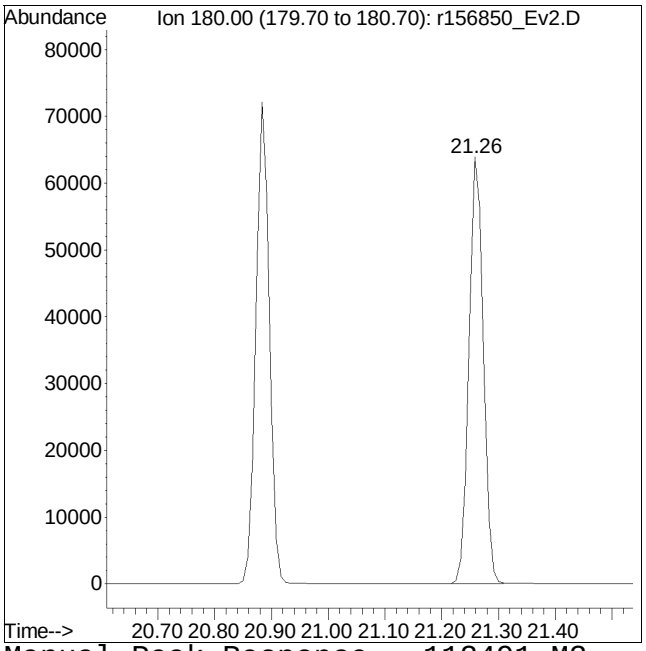
Original Peak Response = 0 Manual Peak Response = 337209 M2
M2 = Peak not found by automatic integration algorithm.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #83: 1,2,3-trichlorobenzene





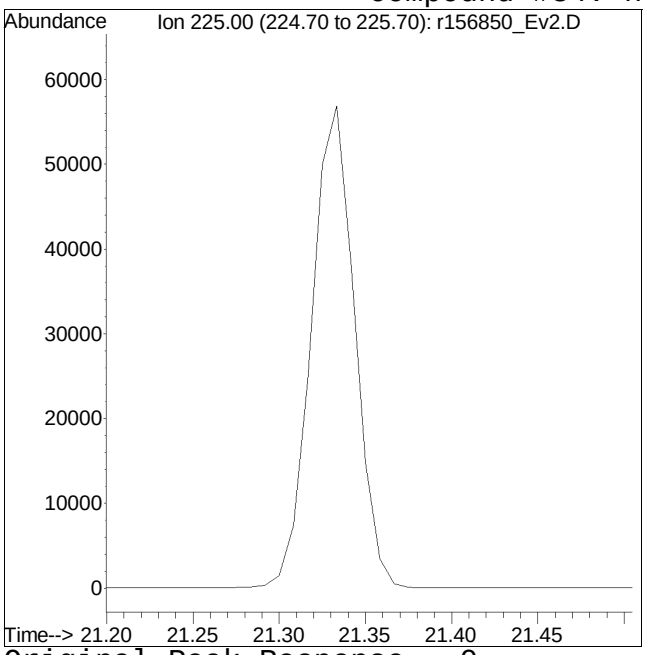
Original Peak Response = 118172 Manual Peak Response = 112491 M3

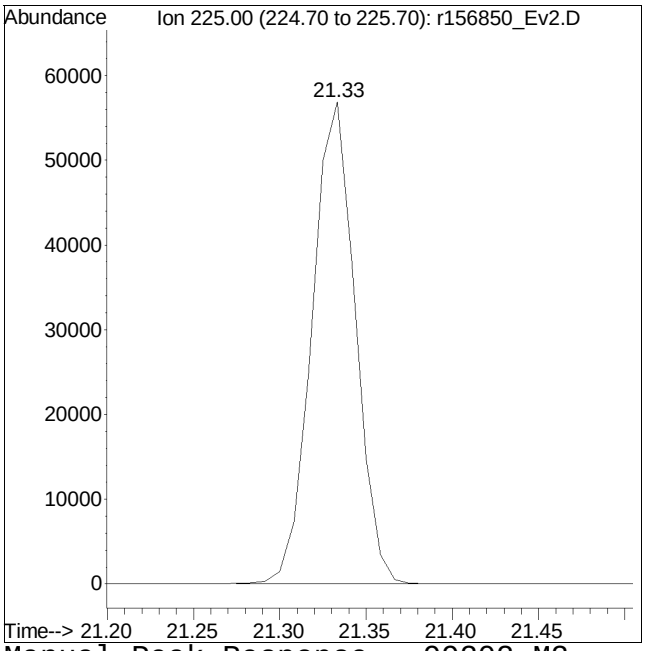
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156850_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 9:48 PM Instrument :
Sample : ITO15-SIMSTD5.0 Quant Date : 4/5/2018 9:28 am

Compound #84: hexachlorobutadiene





Original Peak Response = 0 Manual Peak Response = 99202 M2
M2 = Peak not found by automatic integration algorithm.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156851_Ev2.D
Acq On : 4 Apr 2018 10:25 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD010
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:58:58 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.65	49	137597	10.000	ppbV	# 0.00
Standard Area = 133810			Recovery = 102.83%			
33) 1,4-difluorobenzene	11.93	114	287999	10.000	ppbV	0.00
Standard Area = 280369			Recovery = 102.72%			
51) chlorobenzene-D5	16.57	54	60409	10.000	ppbV	0.00
Standard Area = 59059			Recovery = 102.29%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	10.54	65	76834	9.820	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.20%			
53) toluene-D8	14.75	98	264802	9.925	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.25%			
67) bromofluorobenzene	17.88	95	165672	11.190	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 111.90%			
Target Compounds						Qvalue
2) propylene	3.89	41	98430M6	9.875	ppbV	
3) dichlorodifluoromethane	3.98	85	178981	10.170	ppbV	99
4) chloromethane	4.17	50	117921	11.352	ppbV	100
5) Freon-114	4.30	85	229384	10.893	ppbV	96
6) vinyl chloride	4.43	62	107862	10.353	ppbV	96
7) 1,3-butadiene	4.61	54	91057	11.008	ppbV	84
8) bromomethane	4.93	94	85413	9.992	ppbV	99
9) chloroethane	5.16	64	55098	14.721	ppbV	97
10) ethanol	5.33	31	415575	49.231	ppbV	97
11) vinyl bromide	5.60	106	84299	10.064	ppbV	99
12) acrolein	5.76	56	44119	10.119	ppbV #	100
13) acetone	5.91	43	588359	47.308	ppbV	98
14) trichlorofluoromethane	6.14	101	161816	9.504	ppbV	98
15) isopropyl alcohol	6.24	45	365286	23.217	ppbV	100
16) acrylonitrile	6.51	53	82297	10.051	ppbV	100
17) 1,1-dichloroethene	6.92	61	139449	9.600	ppbV	99
18) tertiary butyl alcohol	6.98	59	144966	9.241	ppbV #	1
19) methylene chloride	7.09	49	134404	9.791	ppbV	100
20) 3-chloropropene	7.23	41	155544	8.209	ppbV	98
21) carbon disulfide	7.38	76	283716	10.072	ppbV	98
22) Freon 113	7.43	101	168212	9.717	ppbV	99
23) trans-1,2-dichloroethene	8.22	61	141336	9.614	ppbV	98
24) 1,1-dichloroethane	8.46	63	177343	9.725	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156851_Ev2.D
Acq On : 4 Apr 2018 10:25 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD010
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:58:58 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	8.54	73	242810	9.778	ppbV		95
26) vinyl acetate	8.68	43	289733	11.540	ppbV		99
27) 2-butanone	8.94	43	261942	10.661	ppbV		96
28) cis-1,2-dichloroethene	9.47	61	139141	9.805	ppbV		96
29) Ethyl Acetate	9.76	61	35190	9.741	ppbV		90
30) chloroform	9.82	83	165367	9.680	ppbV		98
31) Tetrahydrofuran	10.27	42	163995	9.915	ppbV		97
32) 1,2-dichloroethane	10.67	62	117381	9.558	ppbV		99
34) hexane	9.73	57	175189	9.785	ppbV		84
36) 1,1,1-trichloroethane	10.96	97	157669	11.153	ppbV		98
37) benzene	11.49	78	319530	9.920	ppbV		99
38) carbon tetrachloride	11.67	117	131580	10.028	ppbV		97
39) cyclohexane	11.81	56	183879	9.814	ppbV		99
40) Dibromomethane	12.41	93	98754	9.779	ppbV	#	100
41) 1,2-dichloropropane	12.44	63	126406	9.744	ppbV		99
42) bromodichloromethane	12.67	83	173772	10.078	ppbV		99
43) 1,4-dioxane	12.72	88	64870	9.687	ppbV		99
44) trichloroethene	12.72	130	121816	10.096	ppbV		97
45) 2,2,4-trimethylpentane	12.77	57	573308	9.840	ppbV		99
46) heptane	13.09	43	280088	9.895	ppbV		100
47) cis-1,3-dichloropropene	13.73	75	165169	10.329	ppbV		97
48) 4-methyl-2-pentanone	13.77	43	322254	10.162	ppbV		100
49) trans-1,3-dichloropropene	14.35	75	156593	10.399	ppbV		100
50) 1,1,2-trichloroethane	14.55	97	118489	9.930	ppbV		96
52) toluene	14.86	91	372779	9.924	ppbV		99
54) 2-hexanone	15.13	43	302554	9.661	ppbV		99
55) dibromochloromethane	15.30	129	157191	10.318	ppbV		99
56) 1,2-dibromoethane	15.54	107	180070	10.256	ppbV		98
57) tetrachloroethene	16.00	166	129084	9.890	ppbV		98
58) 1,1,1,2-tetrachloroethane	16.61	131	120261	10.231	ppbV		97
59) chlorobenzene	16.62	112	284480	10.117	ppbV		97
60) ethylbenzene	16.95	91	485238	9.992	ppbV		96
61) m+p-xylene	17.10	91	806796	20.271	ppbV		99
62) bromoform	17.18	173	128300	10.625	ppbV		98
63) styrene	17.41	104	322865	10.396	ppbV		98
64) 1,1,2,2-tetrachloroethane	17.49	83	285758	10.098	ppbV		100
65) o-xylene	17.50	91	410206	9.890	ppbV		96
66) 1,2,3-Trichloropropane	17.60	75	228397	10.312	ppbV	#	79
68) isopropylbenzene	17.98	105	510863	10.093	ppbV		98
69) Bromobenzene	18.06	77	289342	10.228	ppbV	#	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156851_Ev2.D
Acq On : 4 Apr 2018 10:25 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD010
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:58:58 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.52	105	578098	10.206	ppbV	99
71) 1,3,5-trimethylbenzene	18.57	105	494682	10.079	ppbV	97
72) tert-butylbenzene	18.91	119	485425	10.249	ppbV	97
73) 1,2,4-trimethylbenzene	18.91	105	496721	10.229	ppbV	97
74) Benzyl Chloride	19.02	91	315259	10.828	ppbV	97
75) 1,3-dichlorobenzene	19.04	146	315755	10.470	ppbV	97
76) 1,4-dichlorobenzene	19.09	146	313561	10.563	ppbV	97
77) sec-butylbenzene	19.13	105	695327	9.999	ppbV	98
78) p-isopropyltoluene	19.24	119	592491	10.146	ppbV	98
79) 1,2-dichlorobenzene	19.37	146	300052	10.398	ppbV	92
80) n-butylbenzene	19.58	91	571847	9.924	ppbV	95
81) 1,2,4-trichlorobenzene	20.88	180	256850	10.586	ppbV	98
82) naphthalene	21.00	128	713523	10.343	ppbV	100
83) 1,2,3-trichlorobenzene	21.26	180	240017	10.430	ppbV	98
84) hexachlorobutadiene	21.33	225	205404	10.121	ppbV	98

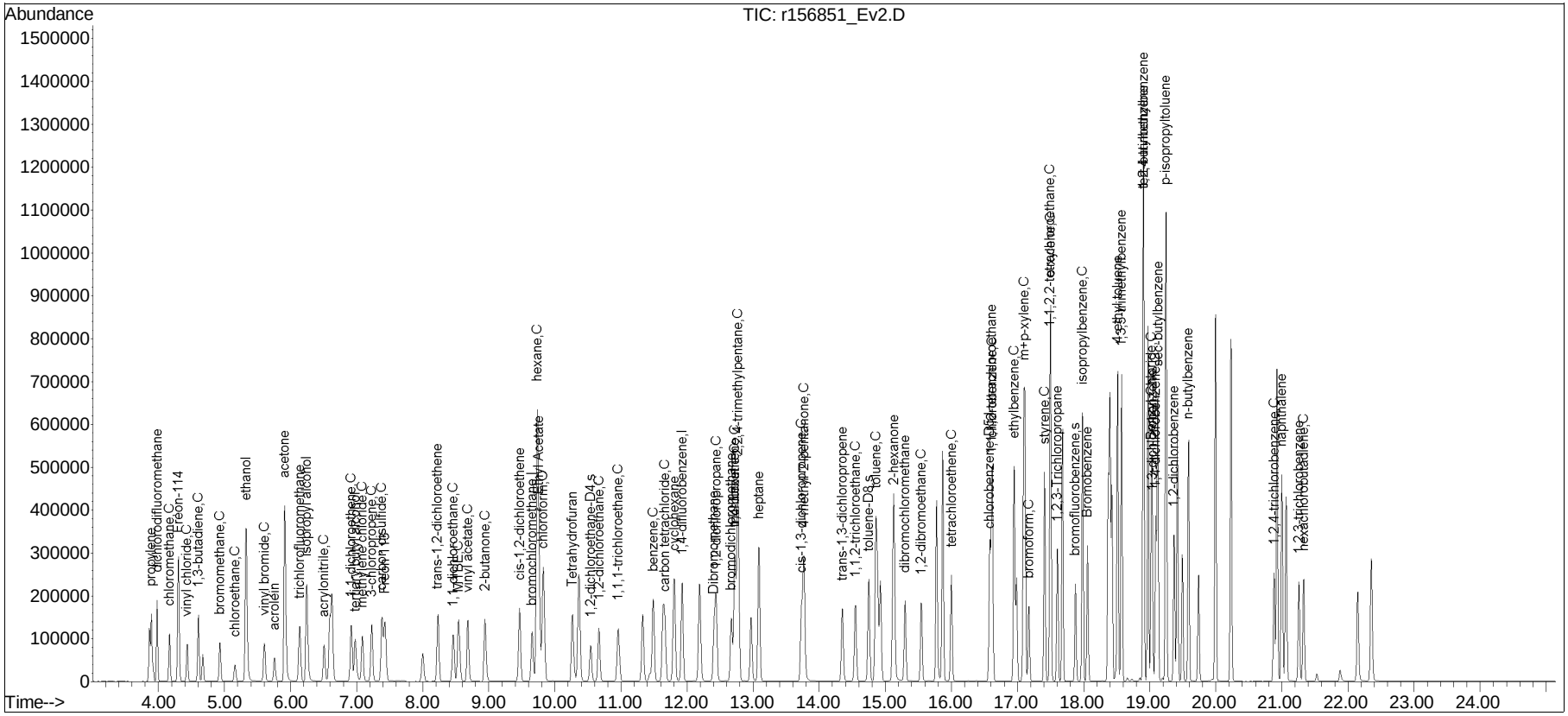
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156851_Ev2.D
Acq On : 4 Apr 2018 10:25 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD010
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 09:58:58 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

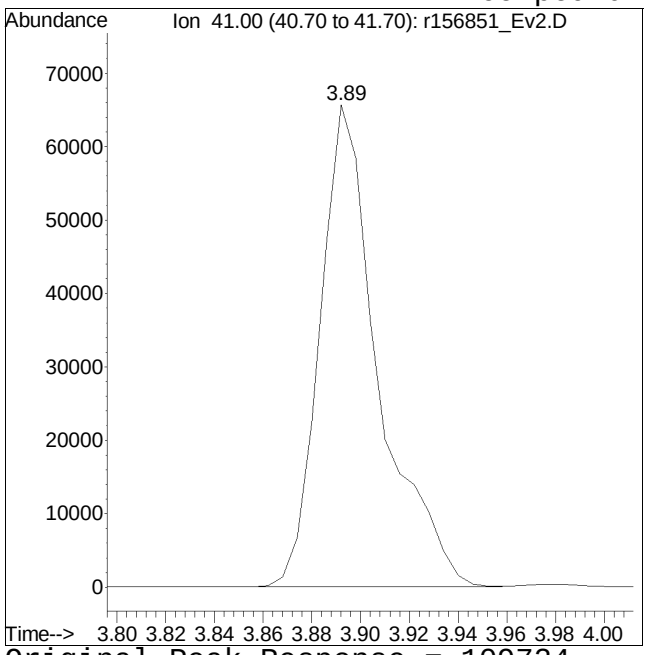
Sub List : Default - All compounds listed8\180404SIM_ICAL\r156850_Ev2.D



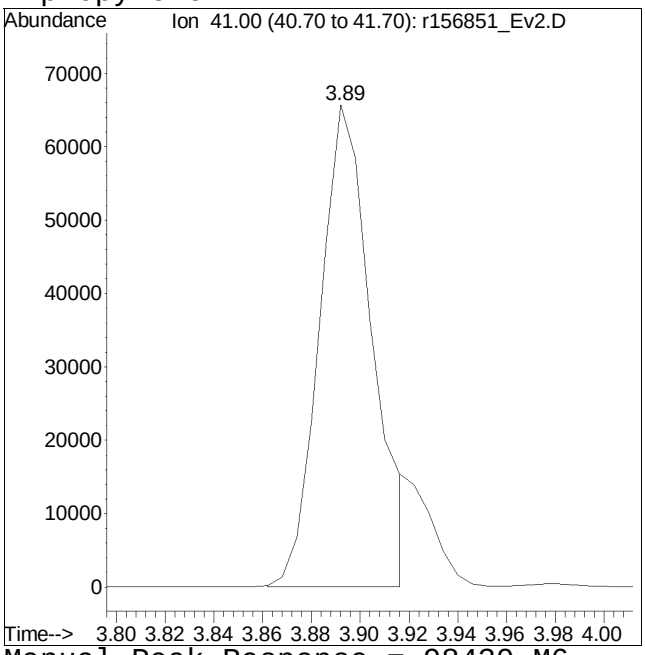
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156851_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 10:25 PM Instrument :
Sample : ITO15-SIMSTD010 Quant Date : 4/5/2018 9:49 am

Compound #2: propylene



Original Peak Response = 109724



Manual Peak Response = 98430 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156852_Ev2.D
Acq On : 4 Apr 2018 11:01 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD020
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 10:00:00 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.65	49	147866	10.000	ppbV	# 0.00
Standard Area = 133810			Recovery = 110.50%			
33) 1,4-difluorobenzene	11.93	114	305447	10.000	ppbV	0.00
Standard Area = 280369			Recovery = 108.94%			
51) chlorobenzene-D5	16.57	54	64359	10.000	ppbV	0.00
Standard Area = 59059			Recovery = 108.97%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	10.54	65	76022	9.161	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 91.61%			
53) toluene-D8	14.75	98	288050	10.134	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.34%			
67) bromofluorobenzene	17.88	95	157242	9.969	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.69%			
Target Compounds						Qvalue
2) propylene	3.89	41	206716M6	19.298	ppbV	
3) dichlorodifluoromethane	3.98	85	380898	20.140	ppbV	99
4) chloromethane	4.17	50	253274	22.689	ppbV	99
5) Freon-114	4.30	85	510854	22.575	ppbV	98
6) vinyl chloride	4.43	62	234821	20.974	ppbV	97
7) 1,3-butadiene	4.61	54	206609	23.243	ppbV #	78
8) bromomethane	4.93	94	191521	20.849	ppbV	97
9) chloroethane	5.15	64	123869	30.797	ppbV	97
10) ethanol	5.32	31	951954	104.940	ppbV	92
11) vinyl bromide	5.60	106	188226	20.912	ppbV	99
12) acrolein	5.75	56	104242	22.247	ppbV #	100
13) acetone	5.91	43	1245273	93.176	ppbV #	87
14) trichlorofluoromethane	6.13	101	324903	17.757	ppbV	99
15) isopropyl alcohol	6.24	45	850392	50.295	ppbV	99
16) acrylonitrile	6.50	53	194027	22.052	ppbV	99
17) 1,1-dichloroethene	6.92	61	297386	19.051	ppbV	97
18) tertiary butyl alcohol	6.97	59	344300	20.424	ppbV #	1
19) methylene chloride	7.09	49	300097	20.342	ppbV	97
20) 3-chloropropene	7.22	41	325809	16.001	ppbV	96
21) carbon disulfide	7.38	76	649077	21.443	ppbV	93
22) Freon 113	7.43	101	362533	19.488	ppbV	97
23) trans-1,2-dichloroethene	8.22	61	301810	19.104	ppbV	99
24) 1,1-dichloroethane	8.46	63	371430	18.954	ppbV	99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156852_Ev2.D
Acq On : 4 Apr 2018 11:01 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD020
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 10:00:00 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	8.54	73	526592	19.733	ppbV		98
26) vinyl acetate	8.68	43	526351	19.509	ppbV		98
27) 2-butanone	8.93	43	578822	21.921	ppbV		96
28) cis-1,2-dichloroethene	9.47	61	300504	19.705	ppbV		92
29) Ethyl Acetate	9.76	61	78832	20.306	ppbV		91
30) chloroform	9.82	83	359984	19.609	ppbV		99
31) Tetrahydrofuran	10.26	42	361928	20.362	ppbV		95
32) 1,2-dichloroethane	10.67	62	245763	18.622	ppbV		97
34) hexane	9.73	57	380000	20.012	ppbV		80
36) 1,1,1-trichloroethane	10.96	97	338582	22.581	ppbV		99
37) benzene	11.49	78	717812	21.011	ppbV		99
38) carbon tetrachloride	11.66	117	287375	20.650	ppbV		97
39) cyclohexane	11.80	56	410528	20.659	ppbV		97
40) Dibromomethane	12.41	93	215923	20.161	ppbV	#	100
41) 1,2-dichloropropane	12.43	63	276649	20.108	ppbV		99
42) bromodichloromethane	12.67	83	386074	21.112	ppbV		100
43) 1,4-dioxane	12.71	88	154582	21.766	ppbV		97
44) trichloroethene	12.72	130	271614	21.225	ppbV		99
45) 2,2,4-trimethylpentane	12.77	57	1265487	20.479	ppbV		97
46) heptane	13.09	43	610904	20.349	ppbV		97
47) cis-1,3-dichloropropene	13.73	75	382190	22.535	ppbV		95
48) 4-methyl-2-pentanone	13.76	43	714254	21.237	ppbV		99
49) trans-1,3-dichloropropene	14.35	75	361303	22.624	ppbV		96
50) 1,1,2-trichloroethane	14.55	97	266588	21.066	ppbV		95
52) toluene	14.86	91	815825	20.385	ppbV		100
54) 2-hexanone	15.13	43	652719	19.563	ppbV		98
55) dibromochloromethane	15.30	129	355470	21.902	ppbV		99
56) 1,2-dibromoethane	15.54	107	409550	21.894	ppbV		100
57) tetrachloroethene	16.00	166	293129	21.080	ppbV		97
58) 1,1,1,2-tetrachloroethane	16.61	131	270335	21.587	ppbV		97
59) chlorobenzene	16.62	112	650301	21.708	ppbV		98
60) ethylbenzene	16.95	91	1068422	20.651	ppbV		93
61) m+p-xylene	17.11	91	1738046	40.988	ppbV		95
62) bromoform	17.17	173	295322	22.956	ppbV		99
63) styrene	17.41	104	734910	22.211	ppbV		98
64) 1,1,2,2-tetrachloroethane	17.49	83	645800	21.420	ppbV		98
65) o-xylene	17.50	91	893863	20.229	ppbV		93
66) 1,2,3-Trichloropropane	17.60	75	510021	21.613	ppbV	#	83
68) isopropylbenzene	17.98	105	1127060	20.900	ppbV		96
69) Bromobenzene	18.06	77	652046	21.635	ppbV	#	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156852_Ev2.D
Acq On : 4 Apr 2018 11:01 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD020
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 10:00:00 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.52	105	1261385	20.903	ppbV	96
71) 1,3,5-trimethylbenzene	18.57	105	1079754	20.650	ppbV	95
72) tert-butylbenzene	18.91	119	1050425	20.817	ppbV	97
73) 1,2,4-trimethylbenzene	18.91	105	1077120	20.819	ppbV	96
74) Benzyl Chloride	19.02	91	769354	24.804	ppbV	94
75) 1,3-dichlorobenzene	19.03	146	710399	22.111	ppbV	94
76) 1,4-dichlorobenzene	19.09	146	693978	21.942	ppbV	96
77) sec-butylbenzene	19.12	105	1492789	20.149	ppbV	98
78) p-isopropyltoluene	19.24	119	1260951	20.267	ppbV	99
79) 1,2-dichlorobenzene	19.37	146	665249	21.639	ppbV	93
80) n-butylbenzene	19.58	91	1195936	19.480	ppbV	97
81) 1,2,4-trichlorobenzene	20.88	180	524014	20.271	ppbV	98
82) naphthalene	21.00	128	1412494	19.219	ppbV	99
83) 1,2,3-trichlorobenzene	21.26	180	468125	19.094	ppbV	97
84) hexachlorobutadiene	21.32	225	387366	17.916	ppbV	99

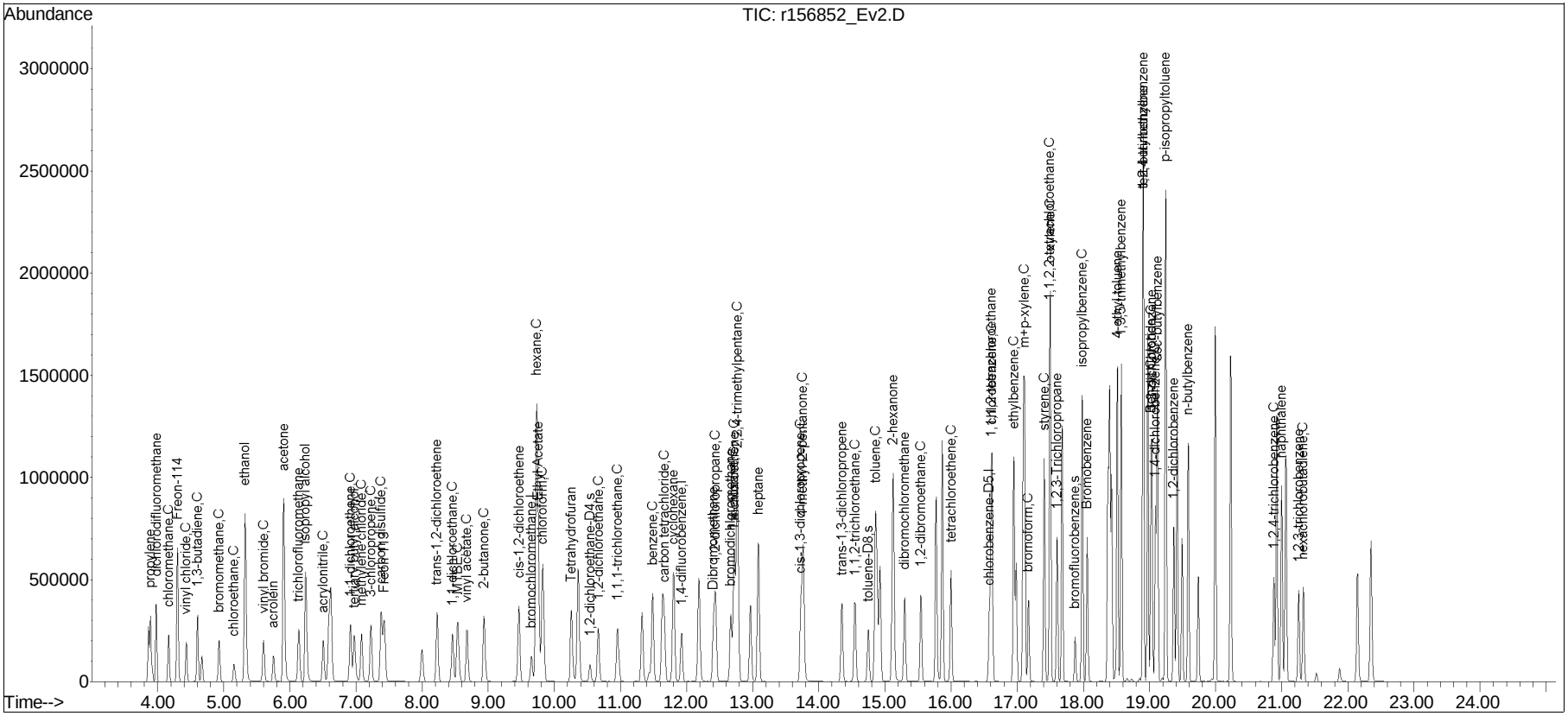
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156852_Ev2.D
Acq On : 4 Apr 2018 11:01 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD020
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 10:00:00 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

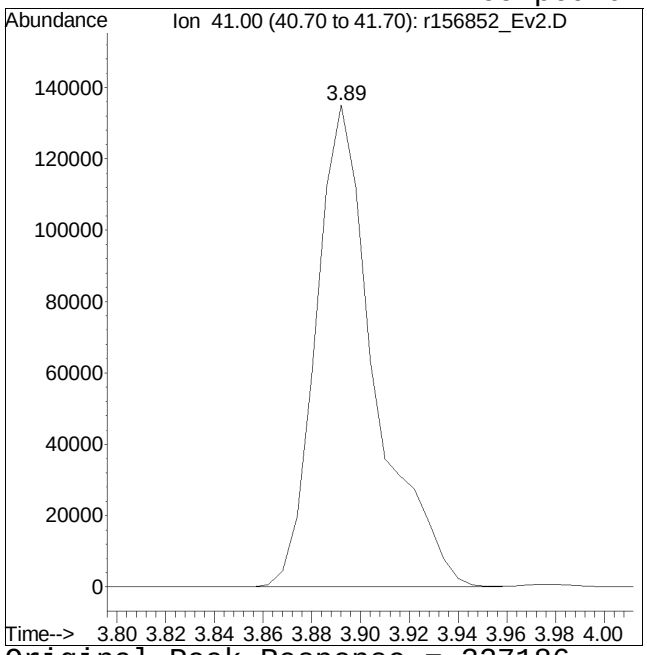
Sub List : Default - All compounds listed8\180404SIM_ICAL\r156850_Ev2.D



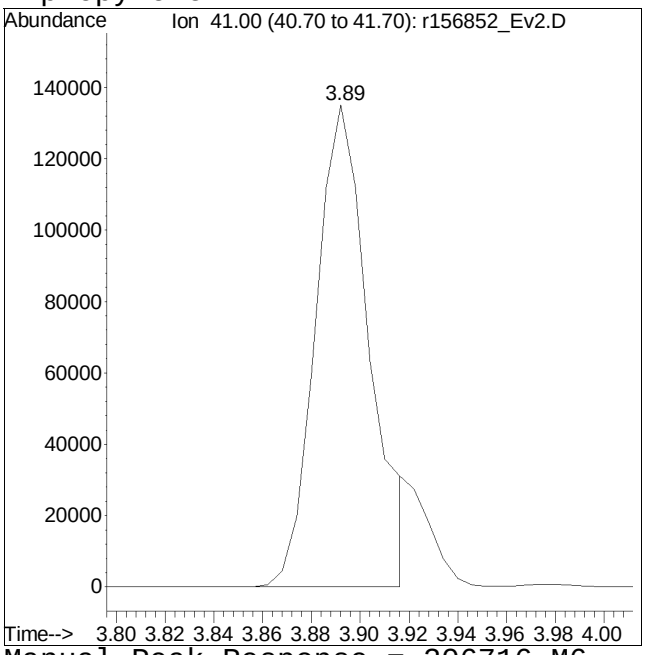
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156852_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 11:01 PM Instrument :
Sample : ITO15-SIMSTD020 Quant Date : 4/5/2018 9:49 am

Compound #2: propylene



Original Peak Response = 227186



Manual Peak Response = 206716 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156853_Ev2.D
Acq On : 4 Apr 2018 11:39 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD050
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 10:01:02 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.66	49	168135	10.000	ppbV	# 0.00
Standard Area = 133810			Recovery = 125.65%			
33) 1,4-difluorobenzene	11.92	114	352614	10.000	ppbV	0.00
Standard Area = 280369			Recovery = 125.77%			
51) chlorobenzene-D5	16.57	54	68260	10.000	ppbV	0.00
Standard Area = 59059			Recovery = 115.58%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	10.54	65	71823	7.497	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 74.97%			
53) toluene-D8	14.75	98	309981	10.282	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.82%			
67) bromofluorobenzene	17.88	95	172825	10.331	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 103.31%			
Target Compounds						Qvalue
2) propylene	3.89	41	445306M6	36.561	ppbV	
3) dichlorodifluoromethane	3.98	85	834830	38.821	ppbV	99
4) chloromethane	4.16	50	568345	44.777	ppbV	97
5) Freon-114	4.29	85	1159209	45.050	ppbV	97
6) vinyl chloride	4.43	62	555237	43.615	ppbV	97
7) 1,3-butadiene	4.60	54	480945	47.582	ppbV	80
8) bromomethane	4.93	94	457064	43.758	ppbV	95
9) chloroethane	5.16	64	291481	63.733	ppbV	98
10) ethanol	5.33	31	2159659	209.373	ppbV	88
11) vinyl bromide	5.60	106	433060	42.312	ppbV	98
12) acrolein	5.75	56	256641	48.169	ppbV #	100
13) acetone	5.91	43	2517432	165.655	ppbV #	75
14) trichlorofluoromethane	6.13	101	714205	34.328	ppbV	98
15) isopropyl alcohol	6.24	45	1816978	94.507	ppbV #	97
16) acrylonitrile	6.51	53	475320	47.509	ppbV	98
17) 1,1-dichloroethene	6.92	61	697737	39.309	ppbV	94
18) tertiary butyl alcohol	6.98	59	836407	43.635	ppbV #	1
19) methylene chloride	7.09	49	694830	41.422	ppbV	89
20) 3-chloropropene	7.22	41	730357	31.544	ppbV #	93
21) carbon disulfide	7.38	76	1551556	45.078	ppbV #	90
22) Freon 113	7.43	101	858593	40.590	ppbV	92
23) trans-1,2-dichloroethene	8.22	61	712190	39.645	ppbV	97
24) 1,1-dichloroethane	8.46	63	853478	38.303	ppbV	98

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156853_Ev2.D
Acq On : 4 Apr 2018 11:39 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD050
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 10:01:02 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	8.53	73	1177704	38.812	ppbV		95
26) vinyl acetate	8.68	43	1167096	38.044	ppbV	#	92
27) 2-butanone	8.93	43	1045008	34.805	ppbV	#	95
28) cis-1,2-dichloroethene	9.47	61	709804	40.933	ppbV		88
29) Ethyl Acetate	9.76	61	200743	45.475	ppbV		75
30) chloroform	9.82	83	867298	41.549	ppbV		99
31) Tetrahydrofuran	10.25	42	872139	43.151	ppbV		92
32) 1,2-dichloroethane	10.67	62	545863	36.376	ppbV	#	93
34) hexane	9.73	57	941264	42.939	ppbV		98
36) 1,1,1-trichloroethane	10.96	97	763031	44.082	ppbV		97
37) benzene	11.49	78	1856395	47.070	ppbV		99
38) carbon tetrachloride	11.66	117	682439	42.478	ppbV		98
39) cyclohexane	11.80	56	1046405	45.615	ppbV		93
40) Dibromomethane	12.41	93	529768	42.849	ppbV	#	100
41) 1,2-dichloropropane	12.44	63	675613	42.538	ppbV		96
42) bromodichloromethane	12.67	83	948254	44.919	ppbV		99
43) 1,4-dioxane	12.71	88	409515	49.948	ppbV		94
44) trichloroethene	12.72	130	706802	47.844	ppbV		98
45) 2,2,4-trimethylpentane	12.77	57	3176108	44.524	ppbV		93
46) heptane	13.09	43	1424396	41.100	ppbV		91
47) cis-1,3-dichloropropene	13.73	75	968281	49.456	ppbV	#	89
48) 4-methyl-2-pentanone	13.76	43	1636417	42.147	ppbV		94
49) trans-1,3-dichloropropene	14.35	75	909797	49.348	ppbV		92
50) 1,1,2-trichloroethane	14.55	97	674071	46.141	ppbV		92
52) toluene	14.86	91	2026619	47.745	ppbV		99
54) 2-hexanone	15.13	43	1493782	42.213	ppbV	#	88
55) dibromochloromethane	15.30	129	872279	50.672	ppbV		99
56) 1,2-dibromoethane	15.54	107	1023684	51.598	ppbV		100
57) tetrachloroethene	16.00	166	757398	51.355	ppbV	#	93
58) 1,1,1,2-tetrachloroethane	16.61	131	669366	50.396	ppbV		96
59) chlorobenzene	16.62	112	1633982	51.428	ppbV		98
60) ethylbenzene	16.95	91	2563197	46.712	ppbV		90
61) m+p-xylene	17.10	91	4076963	90.652	ppbV		95
62) bromoform	17.18	173	748547	54.861	ppbV		98
63) styrene	17.41	104	1788039	50.950	ppbV		97
64) 1,1,2,2-tetrachloroethane	17.49	83	1532696	47.932	ppbV		98
65) o-xylene	17.50	91	2046378	43.664	ppbV		91
66) 1,2,3-Trichloropropane	17.60	75	1225787	48.977	ppbV	#	88
68) isopropylbenzene	17.98	105	2636965	46.105	ppbV		92
69) Bromobenzene	18.06	77	1549326	48.470	ppbV	#	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156853_Ev2.D
Acq On : 4 Apr 2018 11:39 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD050
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 10:01:02 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.52	105	2932320	45.815	ppbV	95
71) 1,3,5-trimethylbenzene	18.57	105	2500541	45.089	ppbV	93
72) tert-butylbenzene	18.91	119	2303694	43.045	ppbV	93
73) 1,2,4-trimethylbenzene	18.91	105	2335520	42.562	ppbV	97
74) Benzyl Chloride	19.02	91	1923840	58.480	ppbV	91
75) 1,3-dichlorobenzene	19.04	146	1669921	49.004	ppbV	97
76) 1,4-dichlorobenzene	19.09	146	1654752	49.330	ppbV	97
77) sec-butylbenzene	19.12	105	3386283	43.093	ppbV	99
78) p-isopropyltoluene	19.24	119	2767227	41.936	ppbV	97
79) 1,2-dichlorobenzene	19.37	146	1578194	48.400	ppbV	93
80) n-butylbenzene	19.58	91	2732069	41.958	ppbV	100
81) 1,2,4-trichlorobenzene	20.88	180	1254234	45.746	ppbV	97
82) naphthalene	21.00	128	3290075	42.208	ppbV	99
83) 1,2,3-trichlorobenzene	21.26	180	1130279	43.467	ppbV	97
84) hexachlorobutadiene	21.32	225	920630	40.147	ppbV	97

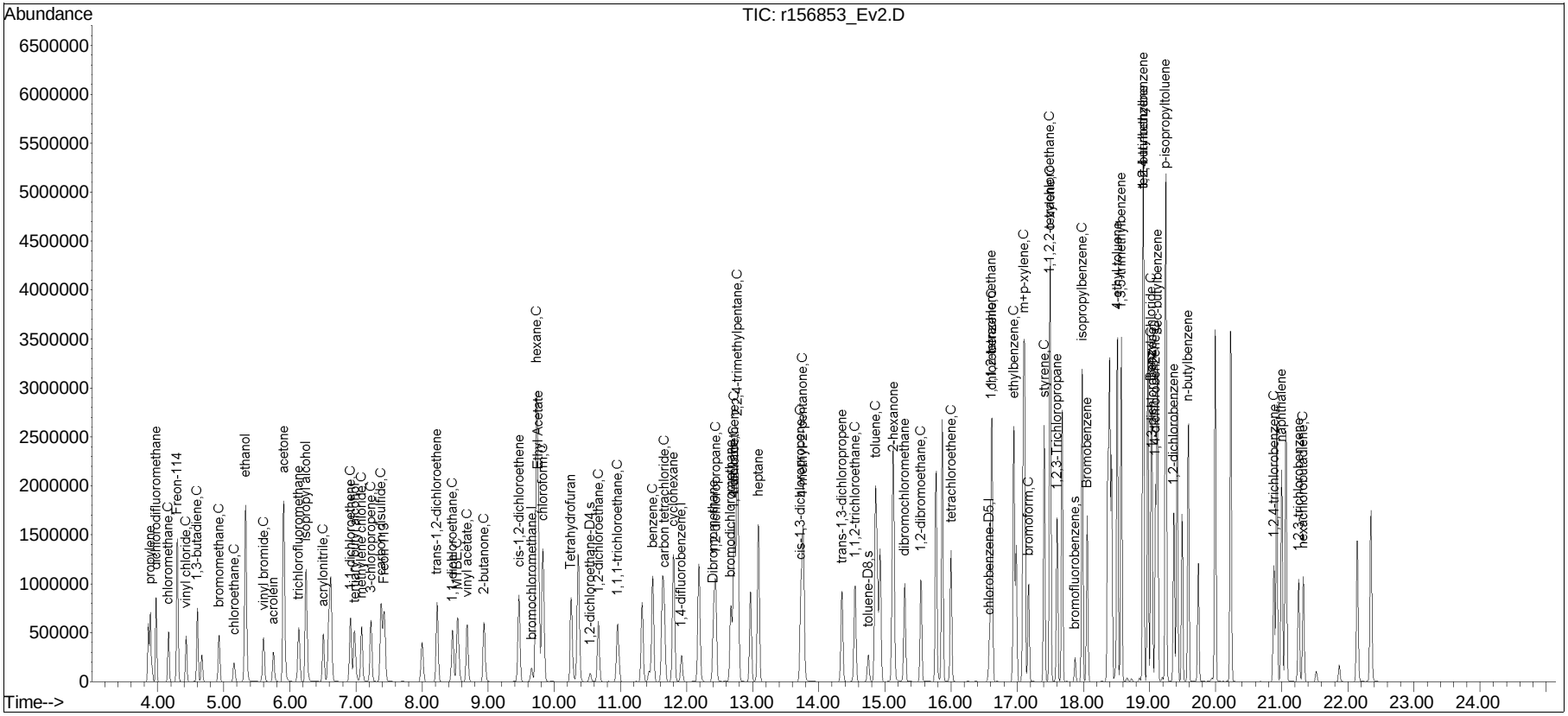
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156853_Ev2.D
Acq On : 4 Apr 2018 11:39 PM
Operator : AIRLAB15:RY
Sample : ITO15-SIMSTD050
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 10:01:02 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 09:48:29 2018
Response via : Initial Calibration

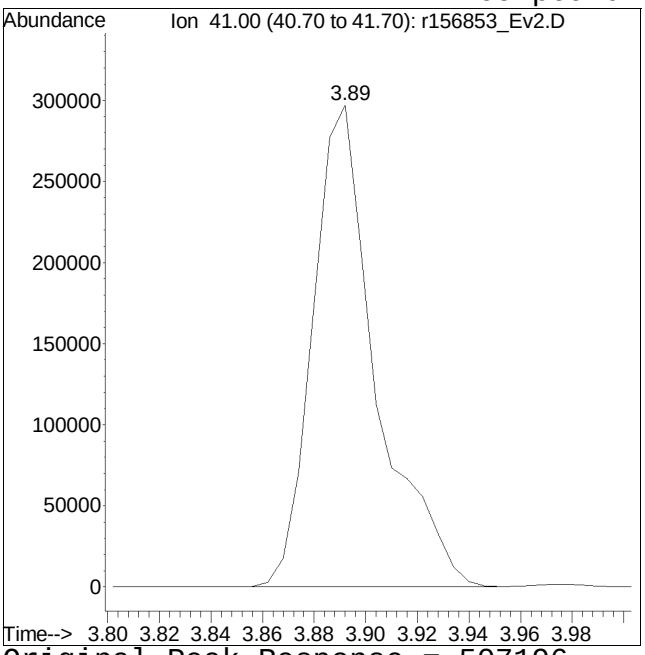
Sub List : Default - All compounds listed8\180404SIM_ICAL\r156850_Ev2.D



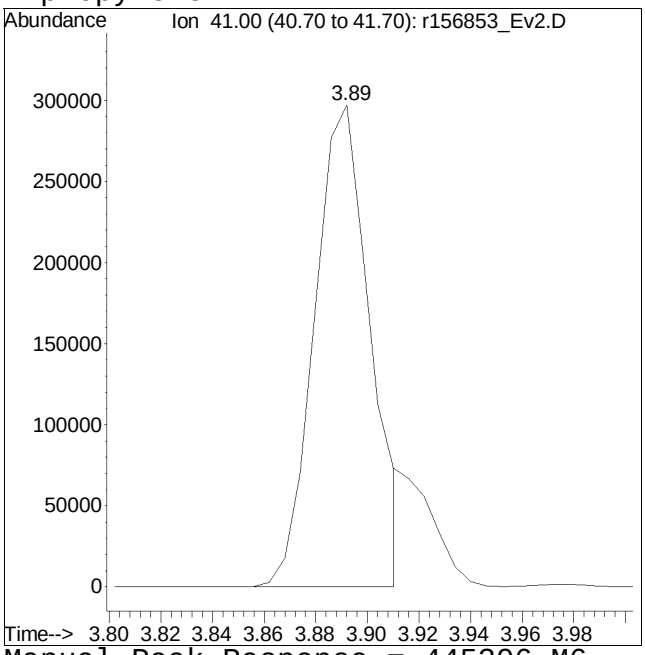
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156853_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/4/2018 11:39 PM Instrument :
Sample : ITO15-SIMSTD050 Quant Date : 4/5/2018 9:49 am

Compound #2: propylene



Original Peak Response = 507196



Manual Peak Response = 445306 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156858_Ev2.D
Acq On : 5 Apr 2018 10:22 AM
Operator : AIRLAB15:RY
Sample : CTO15-SIMSTD5.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 11:05:29 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	bromochloromethane	1.000	1.000	0.0	117	-0.03
2		propylene	0.743	0.640	13.9	103	-0.02
3		dichlorodifluoromethane	1.343	1.083	19.4	99	-0.02
4	C	chloromethane	0.807	0.703	12.9	109	-0.02
5		Freon-114	1.627	1.503	7.6	115	-0.03
6	C	vinyl chloride	0.803	0.686	14.6	106	-0.03
7	C	1,3-butadiene	0.649	0.661	-1.8	128	-0.02
8	C	bromomethane	0.654	0.564	13.8	106	-0.03
9	C	chloroethane	0.410	0.388	5.4	166#	-0.04
10		ethanol	0.623	0.553	11.2	105	-0.04
11	C	vinyl bromide	0.654	0.567	13.3	109	-0.04
12		acrolein	0.377	0.288	23.6	106	-0.04
13		acetone	0.963	0.785	18.5	101	-0.04
14		trichlorofluoromethane	1.254	0.905	27.8	85	-0.03
15		isopropyl alcohol	1.304	1.061	18.6	108	-0.04
16	C	acrylonitrile	0.614	0.561	8.6	110	-0.04
17	C	1,1-dichloroethene	1.078	0.881	18.3	97	-0.04
18		tertiary butyl alcohol	1.215	1.011	16.8	104	-0.04
19	C	methylene chloride	1.000	0.867	13.3	102	-0.04
20	C	3-chloropropene	1.178	1.033	12.3	88	-0.04
21	C	carbon disulfide	2.075	1.900	8.4	108	-0.04
22		Freon 113	1.320	1.091	17.3	101	-0.04
23		trans-1,2-dichloroethene	1.077	0.920	14.6	101	-0.03
24	C	1,1-dichloroethane	1.372	1.077	21.5	95	-0.03
25	C	MTBE	1.806	1.567	13.2	101	-0.03
26	C	vinyl acetate	1.878	2.025	-7.8	130	-0.03
27	C	2-butanone	1.881	1.761	6.4	115	-0.03
28		cis-1,2-dichloroethene	1.041	0.893	14.2	101	-0.03
29		Ethyl Acetate	0.267	0.270	-1.1	120	-0.03
30	C	chloroform	1.265	1.115	11.9	105	-0.03
31		Tetrahydrofuran	1.188	1.075	9.5	104	-0.03
32	C	1,2-dichloroethane	0.916	0.650	29.0	85	-0.03
33	I	1,4-difluorobenzene	1.000	1.000	0.0	124	-0.03
34	C	hexane	0.615	0.593	3.6	118	-0.03
35	s	1,2-dichloroethane-D4	0.263	0.192	27.0	87	-0.03
36	C	1,1,1-trichloroethane	0.494	0.440	10.9	111	-0.04
37	C	benzene	1.149	1.048	8.8	116	-0.04
38	C	carbon tetrachloride	0.460	0.366	20.4	99	-0.04

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156858_Ev2.D
Acq On : 5 Apr 2018 10:22 AM
Operator : AIRLAB15:RY
Sample : CTO15-SIMSTD5.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 11:05:29 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
39		cyclohexane	0.642	0.648	-0.9	123	-0.03
40		Dibromomethane	0.394	0.288	26.9	101	-0.04
41	C	1,2-dichloropropane	0.461	0.381	17.4	105	-0.03
42		bromodichloromethane	0.572	0.560	2.1	116	-0.03
43	C	1,4-dioxane	0.236	0.246	-4.2	131	-0.04
44	C	trichloroethene	0.443	0.393	11.3	116	-0.03
45	C	2,2,4-trimethylpentane	2.021	2.004	0.8	122	-0.03
46		heptane	0.972	0.855	12.0	107	-0.04
47	C	cis-1,3-dichloropropene	0.531	0.540	-1.7	120	-0.03
48	C	4-methyl-2-pentanone	1.041	0.971	6.7	109	-0.04
49		trans-1,3-dichloropropene	0.489	0.415	15.1	98	-0.04
50	C	1,1,2-trichloroethane	0.429	0.385	10.3	115	-0.03
51	I	chlorobenzene-D5	1.000	1.000	0.0	108	-0.02
52	C	toluene	6.484	6.265	3.4	109	-0.02
53	s	toluene-D8	4.477	4.536	-1.3	111	-0.03
54		2-hexanone	4.640	4.873	-5.0	102	-0.03
55		dibromochloromethane	2.405	2.797	-16.3	120	-0.03
56	C	1,2-dibromoethane	3.042	3.091	-1.6	115	-0.03
57	C	tetrachloroethene	2.234	2.295	-2.7	115	-0.03
58		1,1,1,2-tetrachloroethane	1.935	1.869	3.4	104	-0.03
59	C	chlorobenzene	4.868	5.044	-3.6	117	-0.02
60	C	ethylbenzene	7.788	8.077	-3.7	109	-0.02
61	C	m+p-xylene	6.430	6.435	-0.1	106	-0.03
62	C	bromoform	1.912	2.291	-19.8	124	-0.03
63	C	styrene	4.895	5.343	-9.2	113	-0.02
64	C	1,1,2,2-tetrachloroethane	4.554	4.949	-8.7	115	-0.02
65	C	o-xylene	6.514	6.671	-2.4	105	-0.02
66		1,2,3-Trichloropropane	3.737	3.474	7.0	103	-0.03
67	s	bromofluorobenzene	2.279	1.608	29.4	71	-0.02
68	C	isopropylbenzene	8.022	8.337	-3.9	108	-0.02
69		Bromobenzene	4.666	4.501	3.5	104	-0.02
70		4-ethyl toluene	8.577	9.584	-11.7	111	-0.02
71		1,3,5-trimethylbenzene	7.438	7.860	-5.7	105	-0.02
72		tert-butylbenzene	7.638	7.252	5.1	100	-0.03
73		1,2,4-trimethylbenzene	7.209	7.934	-10.1	107	-0.03
74	C	Benzyl Chloride	4.211	5.162	-22.6	116	-0.02
75		1,3-dichlorobenzene	4.702	5.070	-7.8	110	-0.03
76	C	1,4-dichlorobenzene	4.649	4.878	-4.9	108	-0.02

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156858_Ev2.D
Acq On : 5 Apr 2018 10:22 AM
Operator : AIRLAB15:RY
Sample : CTO15-SIMSTD5.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 11:05:29 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
77	sec-butylbenzene	10.225	10.432	-2.0	98	-0.02
78	p-isopropyltoluene	8.557	8.273	3.3	93	-0.02
79	1,2-dichlorobenzene	4.428	4.761	-7.5	108	-0.02
80	n-butylbenzene	8.085	8.485	-4.9	96	-0.02
81 C	1,2,4-trichlorobenzene	3.160	3.581	-13.3	97	-0.02
82	naphthalene	9.523	9.713	-2.0	92	-0.02
83	1,2,3-trichlorobenzene	3.063	3.224	-5.3	92	-0.02
84 C	hexachlorobutadiene	2.734	2.941	-7.6	95	-0.02

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156858_Ev2.D
Acq On : 5 Apr 2018 10:22 AM
Operator : AIRLAB15:RY
Sample : CTO15-SIMSTD5.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 11:05:29 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.63	49	156310	10.000	ppbV	#-0.03
Standard Area = 133810			Recovery = 116.81%			
33) 1,4-difluorobenzene	11.89	114	346313	10.000	ppbV	-0.03
Standard Area = 280369			Recovery = 123.52%			
51) chlorobenzene-D5	16.56	54	64033	10.000	ppbV	-0.02
Standard Area = 59059			Recovery = 108.42%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	10.51	65	66480	7.287	ppbV	-0.03
Spiked Amount 10.000	Range 70 - 130		Recovery = 72.87%			
53) toluene-D8	14.72	98	290473	10.132	ppbV	-0.03
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.32%			
67) bromofluorobenzene	17.86	95	102958	7.055	ppbV	-0.02
Spiked Amount 10.000	Range 70 - 130		Recovery = 70.55%			
Target Compounds						Qvalue
2) propylene	3.87	41	50043M6	4.309	ppbV	
3) dichlorodifluoromethane	3.96	85	84658	4.032	ppbV	99
4) chloromethane	4.14	50	54939	4.355	ppbV	96
5) Freon-114	4.28	85	117500	4.619	ppbV	96
6) vinyl chloride	4.41	62	53617	4.270	ppbV	97
7) 1,3-butadiene	4.58	54	51623	5.087	ppbV #	75
8) bromomethane	4.91	94	44063	4.313	ppbV	97
9) chloroethane	5.13	64	30286	4.731	ppbV	99
10) ethanol	5.30	31	216004	22.194	ppbV	87
11) vinyl bromide	5.57	106	44343	4.336	ppbV	97
12) acrolein	5.73	56	22484	3.817	ppbV #	100
13) acetone	5.88	43	306584	20.359	ppbV #	82
14) trichlorofluoromethane	6.11	101	70708	3.608	ppbV	97
15) isopropyl alcohol	6.21	45	207398	10.176	ppbV #	98
16) acrylonitrile	6.48	53	43853	4.569	ppbV	97
17) 1,1-dichloroethene	6.89	61	68840	4.084	ppbV	95
18) tertiary butyl alcohol	6.95	59	79049	4.164	ppbV #	1
19) methylene chloride	7.06	49	67769	4.334	ppbV	90
20) 3-chloropropene	7.19	41	80727	4.385	ppbV #	94
21) carbon disulfide	7.35	76	148524	4.578	ppbV #	92
22) Freon 113	7.40	101	85274	4.133	ppbV	94
23) trans-1,2-dichloroethene	8.20	61	71912	4.271	ppbV	94
24) 1,1-dichloroethane	8.43	63	84166	3.923	ppbV	98

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156858_Ev2.D
Acq On : 5 Apr 2018 10:22 AM
Operator : AIRLAB15:RY
Sample : CTO15-SIMSTD5.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 11:05:29 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	8.52	73	122439	4.338	ppbV		95
26) vinyl acetate	8.65	43	158260	5.392	ppbV		98
27) 2-butanone	8.92	43	137624	4.681	ppbV		98
28) cis-1,2-dichloroethene	9.43	61	69754	4.288	ppbV		91
29) Ethyl Acetate	9.73	61	21138	5.068	ppbV		61
30) chloroform	9.79	83	87117	4.407	ppbV		98
31) Tetrahydrofuran	10.24	42	83997	4.523	ppbV	#	89
32) 1,2-dichloroethane	10.63	62	50821	3.550	ppbV	#	93
34) hexane	9.70	57	102704	4.819	ppbV		81
36) 1,1,1-trichloroethane	10.93	97	76194	4.456	ppbV	#	97
37) benzene	11.45	78	181538	4.562	ppbV		98
38) carbon tetrachloride	11.63	117	63458	3.985	ppbV		96
39) cyclohexane	11.77	56	112160	5.044	ppbV		91
40) Dibromomethane	12.37	93	49815	3.655	ppbV	#	100
41) 1,2-dichloropropane	12.41	63	66001	4.134	ppbV		95
42) bromodichloromethane	12.64	83	97015	4.902	ppbV		100
43) 1,4-dioxane	12.69	88	42583	5.217	ppbV		96
44) trichloroethene	12.69	130	68047	4.438	ppbV		97
45) 2,2,4-trimethylpentane	12.74	57	346922	4.956	ppbV	#	90
46) heptane	13.05	43	148080	4.400	ppbV		91
47) cis-1,3-dichloropropene	13.70	75	93444	5.077	ppbV	#	87
48) 4-methyl-2-pentanone	13.73	43	168214	4.665	ppbV		94
49) trans-1,3-dichloropropene	14.32	75	71915	4.244	ppbV		94
50) 1,1,2-trichloroethane	14.52	97	66583	4.482	ppbV		93
52) toluene	14.83	91	200572	4.831	ppbV		99
54) 2-hexanone	15.11	43	156024	5.251	ppbV		92
55) dibromochloromethane	15.28	129	89561	5.815	ppbV		99
56) 1,2-dibromoethane	15.52	107	98969	5.081	ppbV		99
57) tetrachloroethene	15.98	166	73472	5.136	ppbV		93
58) 1,1,1,2-tetrachloroethane	16.58	131	59853	4.830	ppbV		97
59) chlorobenzene	16.60	112	161488	5.180	ppbV		97
60) ethylbenzene	16.93	91	258596	5.186	ppbV		96
61) m+p-xylene	17.08	91	412051	10.008	ppbV		95
62) bromoform	17.15	173	73360	5.993	ppbV		100
63) styrene	17.39	104	171053	5.457	ppbV		96
64) 1,1,2,2-tetrachloroethane	17.48	83	158450	5.434	ppbV		99
65) o-xylene	17.48	91	213576	5.121	ppbV		97
66) 1,2,3-Trichloropropane	17.58	75	111234	4.648	ppbV	#	88
68) isopropylbenzene	17.97	105	266932	5.197	ppbV		97
69) Bromobenzene	18.04	77	144095	4.823	ppbV	#	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156858_Ev2.D
Acq On : 5 Apr 2018 10:22 AM
Operator : AIRLAB15:RY
Sample : CTO15-SIMSTD5.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 11:05:29 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\r156850_Ev2.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.49	105	306860	5.587	ppbV	99
71) 1,3,5-trimethylbenzene	18.56	105	251646	5.284	ppbV	96
72) tert-butylbenzene	18.88	119	232179	4.747	ppbV	98
73) 1,2,4-trimethylbenzene	18.88	105	254023	5.503	ppbV	96
74) Benzyl Chloride	19.01	91	165272	6.130	ppbV	96
75) 1,3-dichlorobenzene	19.02	146	162334	5.392	ppbV	98
76) 1,4-dichlorobenzene	19.07	146	156181	5.247	ppbV	92
77) sec-butylbenzene	19.10	105	333995	5.101	ppbV	96
78) p-isopropyltoluene	19.23	119	264864	4.834	ppbV	100
79) 1,2-dichlorobenzene	19.35	146	152433	5.376	ppbV	98
80) n-butylbenzene	19.57	91	271657	5.247	ppbV	96
81) 1,2,4-trichlorobenzene	20.87	180	114657	5.666	ppbV	96
82) naphthalene	20.98	128	310971	5.100	ppbV	98
83) 1,2,3-trichlorobenzene	21.24	180	103209	5.262	ppbV	96
84) hexachlorobutadiene	21.31	225	94148	5.378	ppbV	99

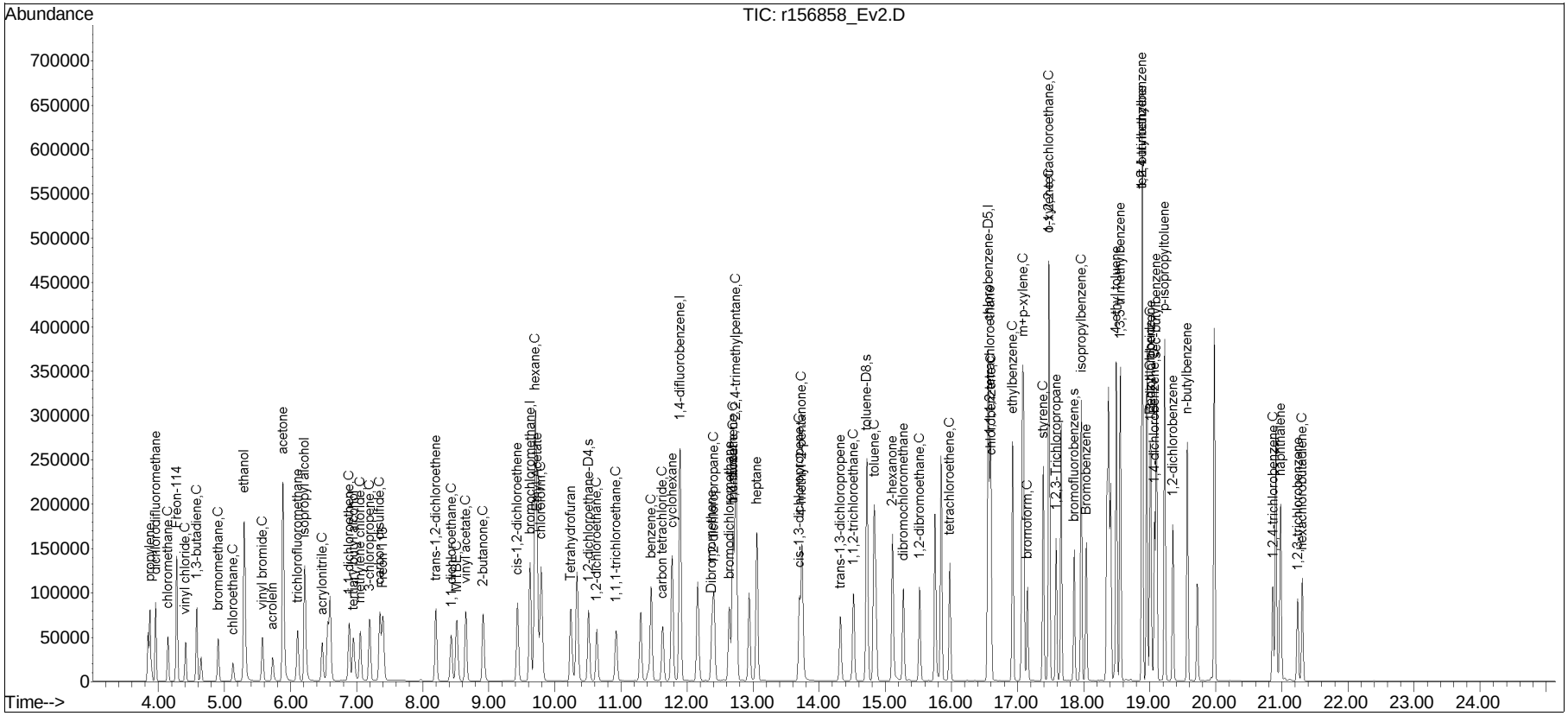
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\
Data File : r156858_Ev2.D
Acq On : 5 Apr 2018 10:22 AM
Operator : AIRLAB15:RY
Sample : CTO15-SIMSTD5.0
Misc : WG1103790
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 05 11:05:29 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180404SIM_ICAL\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

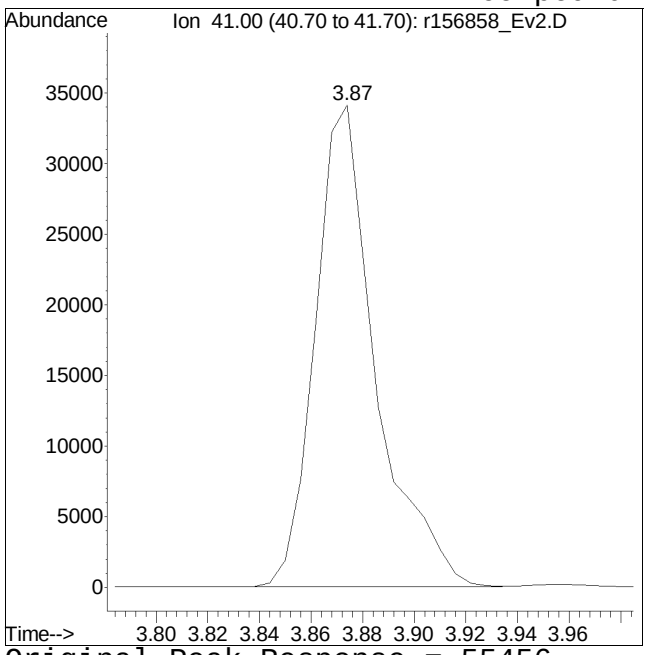
Sub List : Default - All compounds listed8\180404SIM_ICAL\r156850_Ev2.D



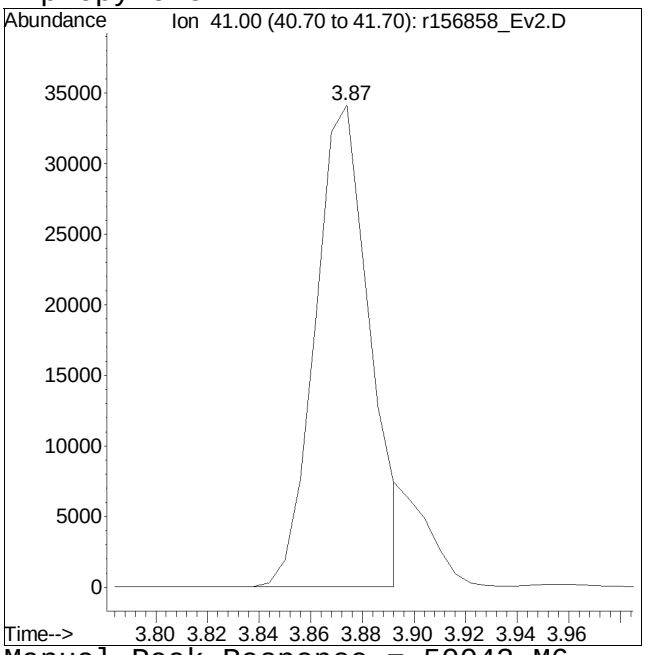
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r156858_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/5/2018 10:22 AM Instrument :
Sample : CTO15-SIMSTD5.0 Quant Date : 4/5/2018 10:59 am

Compound #2: propylene



Original Peak Response = 55456



Manual Peak Response = 50043 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Work Group

ALPHA ANALYTICAL LABORATORIES, INC.

Alpha WORK GROUP REPORT (wk02)

Apr 23 2018, 06:00 pm

Work Group: WG1108448 for Department: 3 GC/MS

Created: 20-APR-18 Due: Operator: ry

Sample	Client ID	C	Product	Matrix	Stat	UA	HOLD	DUE	PR	Location
L1812962-01	S01-HGR-OA02-041218	S	TO15-SIM	AIR	DONE	U	0512	0423	S0	Can-6
L1812962-02	S01-B505-IA06-041218	S	TO15-SIM	AIR	DONE	U	0512	0423	S0	Can-6
L1812962-03	S01-B505-IA10-041218	S	TO15-SIM	AIR	DONE	U	0512	0423	S0	Can-6
L1812962-04	S01-B505-IA11-041218	S	TO15-SIM	AIR	DONE	U	0512	0423	S0	Can-6
L1812962-08	S01-B505-IA09-041218	S	TO15-SIM	AIR	DONE	U	0512	0423	S0	Can-6
WG1108448-1	MS BFB Tune Standard	S	TO15-SIM	AIR	DONE	U				
WG1108448-2	Continuing Calibrati	S	TO15-SIM	AIR	DONE	U				
WG1108448-3	Laboratory Control S	S	TO15-SIM	AIR	DONE	U				
WG1108448-4	Laboratory Method Bl	S	TO15-SIM	AIR	DONE	U				
WG1108448-5	Duplicate Sample	S	TO15-SIM	AIR	DONE	U				

Comments:

WG1108448-5 L1812962-04

ALPHA ANALYTICAL LABORATORIES, INC.

Alpha WORK GROUP REPORT (wk02)

Apr 23 2018, 06:00 pm

Work Group: WG1108672 for Department: 3 GC/MS

Created: 21-APR-18 Due: Operator: ry

Sample	Client ID	C	Product	Matrix	Stat	UA	HOLD	DUE	PR	Location
L1812962-05	S01-B505-IA12-041218	S	TO15-SIM	AIR	DONE	U	0512	0423	S0	Can-6
L1812962-06	S01-B505-IA12-041218-FD01	S	TO15-SIM	AIR	DONE	U	0512	0423	S0	Can-6
L1812962-07	S01-B505-IA07-041218	S	TO15-SIM	AIR	DONE	U	0512	0423	S0	Can-6
L1813132-01	IA-37WE-2	S	TO15-SIM	AIR	DONE	U	0513	0423	S0	Can-6
L1813132-02	IA-37WE-1	S	TO15-SIM	AIR	DONE	U	0513	0423	S0	Can-6
L1813132-03	SS-37WE	S	TO15-SIM	SOIL_VAPOR	DONE	U	0512	0423	S0	Can-2.7
L1813132-04	SP-E APT 1	S	TO15-SIM	SOIL_VAPOR	DONE	U	0512	0423	S0	Can-2.7
L1813132-05	IA-16C-1	S	TO15-SIM	AIR	DONE	U	0513	0423	S0	Can-6
L1813132-06	IA-16C-1A	S	TO15-SIM	AIR	DONE	U	0513	0423	S0	Can-6
L1813132-07	IA-16C-2	S	TO15-SIM	AIR	DONE	U	0513	0423	S0	Can-6
L1813132-08	IA-14C-2	S	TO15-SIM	AIR	DONE	U	0513	0423	S0	Can-6
L1813132-09	IA-14C-1	S	TO15-SIM	AIR	DONE	U	0513	0423	S0	Can-6
L1813132-10	UNIT 4	S	TO15-SIM	SOIL_VAPOR	DONE	U	0513	0423	S0	Can-2.7
L1813132-11	UNIT 8	S	TO15-SIM	SOIL_VAPOR	DONE	U	0513	0423	S0	Can-2.7
L1813132-12	SS-14C	S	TO15-SIM	SOIL_VAPOR	DONE	U	0513	0423	S0	Can-2.7
L1813132-13	IA-11B-1	S	TO15-SIM	AIR	DONE	U	0513	0423	S0	Can-6
L1813132-14	IA-11B-2	S	TO15-SIM	AIR	DONE	U	0513	0423	S0	Can-6
WG1108672-1	MS BFB Tune Standard	S	TO15-SIM	AIR	DONE	U				
WG1108672-1	MS BFB Tune Standard	S	TO15-SIM	SOIL_VAPOR	DONE	U				
WG1108672-2	Continuing Calibrati	S	TO15-SIM	AIR	DONE	U				
WG1108672-2	Continuing Calibrati	S	TO15-SIM	SOIL_VAPOR	DONE	U				
WG1108672-3	Laboratory Control S	S	TO15-SIM	AIR	DONE	U				
WG1108672-3	Laboratory Control S	S	TO15-SIM	SOIL_VAPOR	DONE	U				
WG1108672-4	Laboratory Method Bl	S	TO15-SIM	AIR	DONE	U				
WG1108672-4	Laboratory Method Bl	S	TO15-SIM	SOIL_VAPOR	DONE	U				
WG1108672-5	Duplicate Sample	S	TO15-SIM	AIR	DONE	U				
WG1108672-5	Duplicate Sample	S	TO15-SIM	SOIL_VAPOR	DONE	U				

Comments:

WG1108672-5 L1813132-04

Sequence Logs

Alpha Analytical Air Lab
Instrument Run Log

ID: Airpiano 2

Internal Standard/Surrogate IDs: SS17-030/ SS17-031

Date: 03/25/18

Internal Standard/Surrogate Volume: 100 ml

Analyst Initials: AR

Sequence File Name: 180325.S

SIM ICAL# Full Scan ICAL# TO-12 ICAL# APH ICAL#

AS Position #	Sample ID	Acquisition Method	Data File ID	Standard ID or Batch ID #, ICAL Ref #	Comment (s)	Product/ Sublist	Leak Check Pass ? Y/N
1	TA2032501	TO15_SFS	R253193	250ml	TUNE		NA
5	ITO15-SIMSTD0.02	TO15_SFS	R253194	SS18-008D 125ML	SIM ONLY		NA
5	ITO15-SIMSTD0.04	TO15_SFS	R253195	SS18-008D 250ML	SIM ONLY		NA
5	ITO15-SIMSTD0.1	TO15_SFS	R253196	SS18-008C 25ML	SIM ONLY		NA
6	ITO15-SIMSTD0.2	TO15_SFS	R253197	SS18-008C 50ML			NA
6	ITO15-SIMSTD0.5	TO15_SFS	R253198	SS18-008C 125ML			NA
6	ITO15-SIMSTD1.0	TO15_SFS	R253199	SS18-008C 250ML			NA
7	ITO15-SIMSTD5.0	TO15_SFS	R253200	SS18-008B1 125ML			NA
7	ITO15-SIMSTD10.0	TO15_SFS	R253201	SS18-008B1 250ML			NA
8	ITO15-SIMSTD20.0	TO15_SFS	R253202	SS18-008A 50ML			NA
8	ITO15-SIMSTD50.0	TO15_SFS	R253203	SS18-008A 125ML			NA
8	ITO15-SIMSTD100.0	TO15_SFS	R253204	SS18-008A 250ML	FULL SCAN ONLY		NA
1	BA2032501	TO15_SFS	R253205	250ml			NA
		Pause					
1	BA2032501	TO15_SFS	R253206	250ml			NA
2	CTO15-LLSTD10.0	TO15_SFS	R253207	SS18-007A 250ML	FULL SCAN ICV		NA
2	CTO15-SIMSTD5.0	TO15_SFS	R253208	SS18-007A 125ML	SIM ICV		NA

Alpha Analytical Air Lab
Instrument Run Log

Column ID: Rtx-1 0.25 mm ID

Date(s) of Initial Calibration: Refer to Initial Calibration Summary Form 6

Date Acquired: see Instrument Performance Check Summary and/or quantitation report.

Sample ID information: L1301234-01,3,250,250 { Lab sample ID, dept #, actual volume analyzed (mL), nominal volume analyzed (mL) }

Dilution Factor: See Form 1 report, or divide nominal volume by actual volume analyzed

Alpha Analytical Air Lab
Instrument Run Log

Instrument ID: Airlab15

Internal Standard/Surrogate IDs: SS17-030 / SS17-031

Date: 04/04/18

Internal Standard/Surrogate Volume: 100 ml

Analyst Initials: RY

Sequence File Name: 180404.S

SIM ICAL# Full Scan ICAL# NJ ICAL# APH ICAL#

AS Position #	Sample ID	Acquisition Method	Data File ID	Standard ID or Batch ID #, ICAL Ref #	Comment (s)	Product/ sublist	Leak Check Pass ? Y/N
1	TA15040301	TO15_SFS.qgm	R156843.qgd	WG1102798	TUNE		NA
5	ITO15-SIMSTD0.02	TO15_SFS.qgm	R156844.qgd	WG1102798	SIM ONLY	SS18-008A	NA
5	ITO15-SIMSTD0.04	TO15_SFS.qgm	R156845.qgd	WG1102798	SIM ONLY	SS18-008A	NA
5	ITO15-SIMSTD0.1	TO15_SFS.qgm	R156846.qgd	WG1102798	SIM ONLY	SS18-008A	NA
6	ITO15-SIMSTD0.2	TO15_SFS.qgm	R156847.qgd	WG1102798		SS18-008C	NA
6	ITO15-SIMSTD0.5	TO15_SFS.qgm	R156848.qgd	WG1102798		SS18-008C	NA
6	ITO15-SIMSTD1.0	TO15_SFS.qgm	R156849.qgd	WG1102798		SS18-008C	Y
7	ITO15-SIMSTD5.0	TO15_SFS.qgm	R156850.qgd	WG1102798		SS18-008B	Y
7	ITO15-SIMSTD010	TO15_SFS.qgm	R156851.qgd	WG1102798		SS18-008B	Y
8	ITO15-SIMSTD020	TO15_SFS.qgm	R156852.qgd	WG1102798		SS18-008A	Y
8	ITO15-SIMSTD050	TO15_SFS.qgm	R156853.qgd	WG1102798		SS18-008A	Y
8	ITO15-LLSTD100	TO15_SFS.qgm	R156854.qgd	WG1102798	NOT USED FOR SIM	SS18-008A	Y
1	BLANK	TO15_SFS.qgm	R156855.qgd	WG1102798			Y
1	BLANK	TO15_SFS.qgm	R156856.qgd	WG1102798			Y
2	CTO15-LLSTD010	TO15_SFS.qgm	R156857.qgd	WG1102798	FULL SCAN ICV		Y
2	CTO15-SIMSTD5.0	TO15_SFS.qgm	R156858.qgd	WG1102798	SIM ICV		Y

Alpha Analytical Air Lab
Instrument Run Log

Date(s) of Initial Calibration: Refer to Initial Calibration Summary Form 6

Date Acquired: see Instrument Performance Check Summary and/or quantitation re

Sample ID information: L1301234-01,3,250,250 { Lab sample ID, dept #, actual volume analyzed (mL), nominal volume analyzed (mL) }

Dilution Factor: See Form 1 report, or divide nominal volume by actual volume analyzed

Alpha Analytical Air Lab
Instrument Run Log

ID: Airpiano 2

Internal Standard/Surrogate IDs: SS17-030/ SS17-031

Date: 04/21/18

Internal Standard/Surrogate Volume: 100 ml

Analyst Initials: RY / MB

Sequence File Name: 180421.S

SIM ICAL# 14572 Full Scan ICAL# 14571 TO-12 ICAL# APH ICAL#

AS Position #	Sample ID	Acquisition Method	Data File ID	Standard ID or Batch ID #, ICAL Ref #	Comment (s)	Product/ Sublist	Leak Check Pass ? Y/N
1	TA2042101	TO15_SFS	R253809	250ml	TUNE		NA
2	CA2042101	TO15_SFS	R253810	SS18-008B2 250 ml 10.0	LL CC		NA
3	CTO15-LLSTD10.0	TO15_SFS	R253811	SS18-0087B 250 ml 10.0	LL LCS		NA
3	CTO15-SIMSTD5.0	TO15_SFS	R253812	SS18-0087B 125 ml 5.0	SIM LCS		NA
1	BA2042101	TO15_SFS	R253813	250ml	LL BLANK		NA
1	BA2042102	TO15_SFS	R253814	250ml	SIM BLANK		NA
2	L1812962-05,3,250,250	TO15_SFS	R253815	WG1108672,ICAL14572		9 CL BY SIM	Y
3	L1812962-06,3,250,250	TO15_SFS	R253816	WG1108672,ICAL14572		9 CL BY SIM	Y
4	L1812962-07,3,250,250	TO15_SFS	R253817	WG1108672,ICAL14572		9 CL BY SIM	Y
5	L1813132-01,3,250,250	TO15_SFS	R253818	WG1108672,ICAL14572	ETOH OVERCAL	STD + NAPH BY SIM	Y
6	L1813132-02,3,250,250	TO15_SFS	R253819	WG1108672,ICAL14572		STD + NAPH BY SIM	Y
7	L1813132-05,3,250,250	TO15_SFS	R253820	WG1108672,ICAL14572		STD + NAPH BY SIM	Y
8	L1813132-06,3,250,250	TO15_SFS	R253821	WG1108672,ICAL14572		STD + NAPH BY SIM	Y
9	L1813132-07,3,250,250	TO15_SFS	R253822	WG1108672,ICAL14572		STD + NAPH BY SIM	Y
10	L1813132-08,3,250,250	TO15_SFS	R253823	WG1108672,ICAL14572	ETOH OVERCAL	STD + NAPH BY SIM	Y
11	L1813132-09,3,250,250	TO15_SFS	R253824	WG1108672,ICAL14572		STD + NAPH BY SIM	Y
12	L1813132-13,3,250,250	TO15_SFS	R253825	WG1108672,ICAL14572		STD + NAPH BY SIM	Y
13	L1813132-14,3,250,250	TO15_SFS	R253826	WG1108672,ICAL14572		STD + NAPH BY SIM	Y
14	L1813132-03,3,250,250	TO15_SFS	R253827	WG1108672,ICAL14572		STD + NAPH BY SIM	Y
15	L1813132-04D,3,25,250	TO15_SFS	R253828	WG1108672,ICAL14572		STD + NAPH BY SIM	Y
15	L1813132-04DDUP,3,25,250	TO15_SFS	R253829	WG1108672,ICAL14572	TO15-SIM DUP	STD + NAPH BY SIM	Y
16	L1813132-10,3,250,250	TO15_SFS	R253830	WG1108672,ICAL14572		STD + NAPH BY SIM	Y
1	L1813132-11,3,250,250	TO15_SFS	R253831	WG1108672,ICAL14572		STD + NAPH BY SIM	Y

Alpha Analytical Air Lab
Instrument Run Log

2	L1813132-12,3,250,250	TO15_SFS	R253832	WG1108672,ICAL14572	PCE OVERCAL	STD + NAPH BY SIM	Y
2	L1813132-12D,3,100,250	TO15_SFS	R253833	WG1108672,ICAL14572	PCE ONLY	STD + NAPH BY SIM	Y
5	L1813132-01D,3,100,250	TO15_SFS	R253834	WG1108672,ICAL14572	ETOH ONLY	STD + NAPH BY SIM	Y
10	L1813132-08D,3,50,250	TO15_SFS	R253835	WG1108672,ICAL14572	ETOH ONLY	STD + NAPH BY SIM	Y

Column ID: Rtx-1 0.25 mm ID

Date(s) of Initial Calibration: Refer to Initial Calibration Summary Form 6

Date Acquired: see Instrument Performance Check Summary and/or quantitation report.

Sample ID information: L1301234-01,3,250,250 { Lab sample ID, dept #, actual volume analyzed (mL), nominal volume analyzed (mL) }

Dilution Factor: See Form 1 report, or divide nominal volume by actual volume analyzed

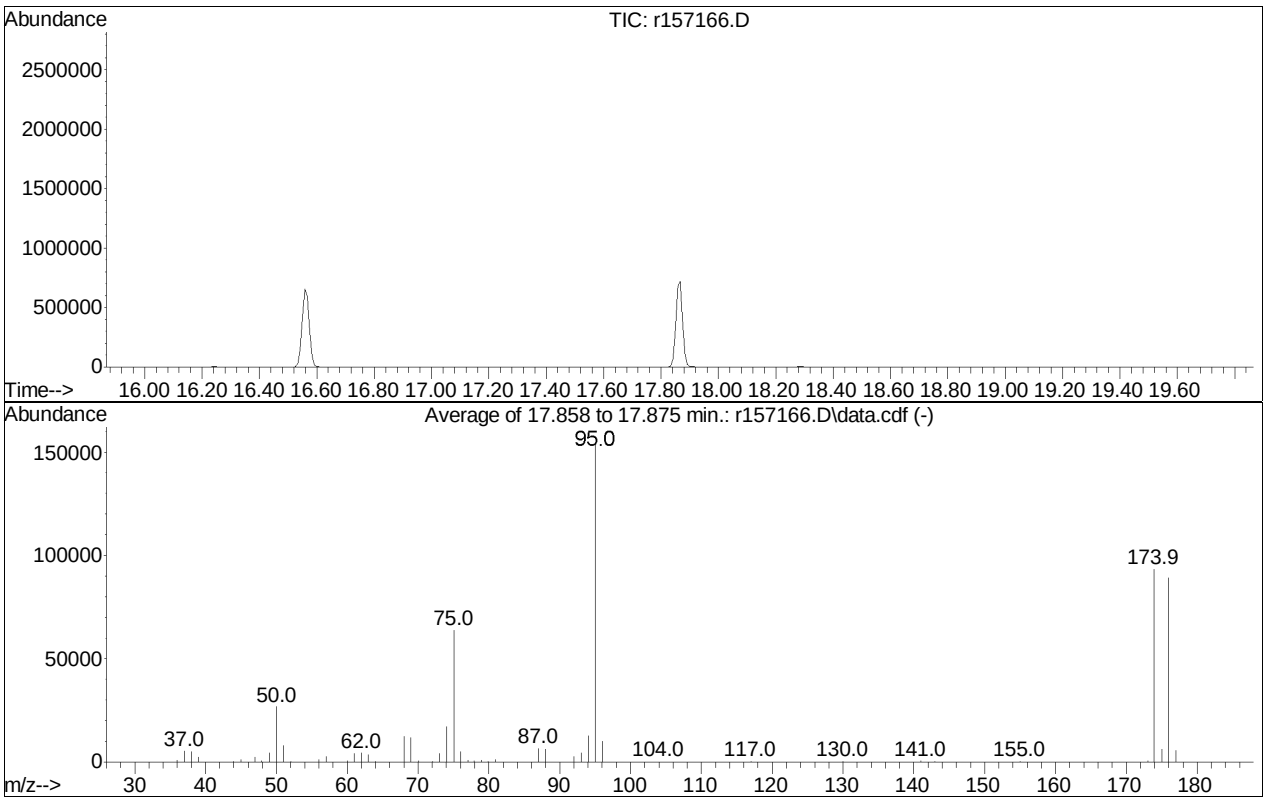
Analytical Event

Continuing Calibration
BFB Tune

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157166.D
Acq On : 20 Apr 2018 2:23 PM
Operator : AIRLAB15:RY
Sample : WG1108448-1,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Integration File: rteint.p

Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Thu Apr 05 10:02:48 2018



AutoFind: Scans 2263, 2264, 2265; Background Corrected with Scan 2258

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	17.3	26810	PASS
75	95	30	66	41.4	63954	PASS
95	95	100	100	100.0	154538	PASS
96	95	5	9	6.6	10207	PASS
173	174	0.00	2	0.5	479	PASS
174	95	50	120	60.4	93415	PASS
175	174	4	9	6.7	6236	PASS
176	174	93	101	95.3	89019	PASS
177	176	5	9	6.3	5614	PASS

Continuing Calibration

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157169_Ev2.D
Acq On : 20 Apr 2018 4:16 PM
Operator : AIRLAB15:RY
Sample : WG1108448-2,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 16:56:10 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	bromochloromethane	1.000	1.000	0.0	99	-0.04
2		propylene	0.743	0.709	4.6	97	-0.03
3		dichlorodifluoromethane	1.343	1.139	15.2	88	-0.04
4	C	chloromethane	0.807	0.722	10.5	95	-0.04
5		Freon-114	1.627	1.498	7.9	97	-0.04
6	C	vinyl chloride	0.803	0.675	15.9	88	-0.04
7	C	1,3-butadiene	0.649	0.639	1.5	106	-0.04
8	C	bromomethane	0.654	0.549	16.1	88	-0.04
9	C	chloroethane	0.410	0.365	11.0	133	-0.04
10		ethanol	0.623	0.490	21.3	79	-0.04
11	C	vinyl bromide	0.654	0.554	15.3	90	-0.05
12		acrolein	0.377	0.251	33.4#	79	-0.04
13		acetone	0.963	0.838	13.0	92	-0.05
14		trichlorofluoromethane	1.254	0.995	20.7	80	-0.05
15		isopropyl alcohol	1.304	1.033	20.8	90	-0.04
16	C	acrylonitrile	0.614	0.490	20.2	82	-0.04
17	C	1,1-dichloroethene	1.078	0.864	19.9	81	-0.05
18		tertiary butyl alcohol	1.215	0.870	28.4	76	-0.04
19	C	methylene chloride	1.000	0.838	16.2	83	-0.05
20	C	3-chloropropene	1.178	1.038	11.9	75	-0.04
21	C	carbon disulfide	2.075	1.763	15.0	86	-0.05
22		Freon 113	1.320	1.113	15.7	88	-0.05
23		trans-1,2-dichloroethene	1.077	0.995	7.6	92	-0.04
24	C	1,1-dichloroethane	1.372	1.234	10.1	92	-0.05
25	C	MTBE	1.806	1.596	11.6	88	-0.04
26	C	vinyl acetate	1.878	2.073	-10.4	113	-0.04
27	C	2-butanone	1.881	1.736	7.7	97	-0.04
28		cis-1,2-dichloroethene	1.041	0.916	12.0	88	-0.04
29		Ethyl Acetate	0.267	0.252	5.6	95	-0.04
30	C	chloroform	1.265	1.148	9.2	92	-0.04
31		Tetrahydrofuran	1.188	1.070	9.9	88	-0.04
32	C	1,2-dichloroethane	0.916	0.741	19.1	82	-0.04
33	I	1,4-difluorobenzene	1.000	1.000	0.0	103	-0.04
34	C	hexane	0.615	0.573	6.8	95	-0.04
36	C	1,1,1-trichloroethane	0.494	0.502	-1.6	105	-0.05
37	C	benzene	1.149	1.015	11.7	93	-0.04
38	C	carbon tetrachloride	0.460	0.410	10.9	92	-0.04
39		cyclohexane	0.642	0.621	3.3	98	-0.04

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157169_Ev2.D
Acq On : 20 Apr 2018 4:16 PM
Operator : AIRLAB15:RY
Sample : WG1108448-2,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 16:56:10 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
40		Dibromomethane	0.394	0.296	24.9	87	-0.05
41	C	1,2-dichloropropane	0.461	0.389	15.6	88	-0.04
42		bromodichloromethane	0.572	0.580	-1.4	99	-0.04
43	C	1,4-dioxane	0.236	0.229	3.0	101	-0.05
44	C	trichloroethene	0.443	0.391	11.7	96	-0.05
45	C	2,2,4-trimethylpentane	2.021	1.959	3.1	99	-0.04
46		heptane	0.972	0.926	4.7	97	-0.05
47	C	cis-1,3-dichloropropene	0.531	0.513	3.4	95	-0.04
48	C	4-methyl-2-pentanone	1.041	1.053	-1.2	98	-0.04
49		trans-1,3-dichloropropene	0.489	0.404	17.4	79	-0.04
50	C	1,1,2-trichloroethane	0.429	0.388	9.6	96	-0.04
51	I	chlorobenzene-D5	1.000	1.000	0.0	95	-0.03
52	C	toluene	6.484	5.988	7.6	92	-0.03
54		2-hexanone	4.640	4.925	-6.1	90	-0.04
55		dibromochloromethane	2.405	2.778	-15.5	105	-0.03
56	C	1,2-dibromoethane	3.042	2.904	4.5	95	-0.03
57	C	tetrachloroethene	2.234	2.142	4.1	94	-0.03
58		1,1,1,2-tetrachloroethane	1.935	1.837	5.1	90	-0.03
59	C	chlorobenzene	4.868	4.646	4.6	95	-0.03
60	C	ethylbenzene	7.788	7.743	0.6	92	-0.02
61	C	m+p-xylene	6.430	6.378	0.8	92	-0.03
62	C	bromoform	1.912	2.215	-15.8	105	-0.03
63	C	styrene	4.895	4.993	-2.0	92	-0.03
64	C	1,1,2,2-tetrachloroethane	4.554	4.627	-1.6	94	-0.02
65	C	o-xylene	6.514	6.533	-0.3	90	-0.02
66		1,2,3-Trichloropropane	3.737	3.377	9.6	88	-0.03
68	C	isopropylbenzene	8.022	7.967	0.7	90	-0.02
69		Bromobenzene	4.666	4.285	8.2	87	-0.02
70		4-ethyl toluene	8.577	9.302	-8.5	94	-0.02
71		1,3,5-trimethylbenzene	7.438	7.685	-3.3	90	-0.02
72		tert-butylbenzene	7.638	7.087	7.2	86	-0.03
73		1,2,4-trimethylbenzene	7.209	7.714	-7.0	91	-0.03
74	C	Benzyl Chloride	4.211	4.891	-16.1	96	-0.02
75		1,3-dichlorobenzene	4.702	4.806	-2.2	91	-0.03
76	C	1,4-dichlorobenzene	4.649	4.565	1.8	88	-0.02
77		sec-butylbenzene	10.225	10.173	0.5	84	-0.02
78		p-isopropyltoluene	8.557	8.077	5.6	79	-0.02
79		1,2-dichlorobenzene	4.428	4.535	-2.4	90	-0.02

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157169_Ev2.D
Acq On : 20 Apr 2018 4:16 PM
Operator : AIRLAB15:RY
Sample : WG1108448-2,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 16:56:10 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
80	n-butylbenzene	8.085	8.334	-3.1	83	-0.02
81 C	1,2,4-trichlorobenzene	3.160	3.085	2.4	73	-0.02
82	naphthalene	9.523	8.979	5.7	75	-0.02
83	1,2,3-trichlorobenzene	3.063	2.983	2.6	74	-0.02
84 C	hexachlorobutadiene	2.734	2.964	-8.4	84	-0.02

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157169_Ev2.D
Acq On : 20 Apr 2018 4:16 PM
Operator : AIRLAB15:RY
Sample : WG1108448-2,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 16:56:10 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180420SIM\r157169_Ev2.D
Sub List : Default-LCS-AP2 - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) bromochloromethane	9.62	49	132894	10.000	ppbV		#-0.04
Standard Area = 132894			Recovery = 100.00%				
33) 1,4-difluorobenzene	11.89	114	287503	10.000	ppbV		-0.04
Standard Area = 287503			Recovery = 100.00%				
51) chlorobenzene-D5	16.55	54	56135	10.000	ppbV		-0.03
Standard Area = 56135			Recovery = 100.00%				
System Monitoring Compounds							
Target Compounds							Qvalue
2) propylene	3.86	41	47089M6	4.769	ppbV		
3) dichlorodifluoromethane	3.95	85	75713	4.241	ppbV		100
4) chloromethane	4.13	50	47980	4.473	ppbV		98
5) Freon-114	4.27	85	99510	4.601	ppbV		99
6) vinyl chloride	4.40	62	44819	4.198	ppbV		98
7) 1,3-butadiene	4.57	54	42459	4.921	ppbV	#	78
8) bromomethane	4.89	94	36476	4.199	ppbV		100
9) chloroethane	5.12	64	24228	4.451	ppbV		97
10) ethanol	5.29	31	162958	19.694	ppbV		97
11) vinyl bromide	5.56	106	36821	4.235	ppbV		100
12) acrolein	5.72	56	16680	3.331	ppbV	#	100
13) acetone	5.87	43	278330	21.739	ppbV	#	93
14) trichlorofluoromethane	6.09	101	66084	3.967	ppbV		98
15) isopropyl alcohol	6.21	45	171524	9.899	ppbV		99
16) acrylonitrile	6.47	53	32575	3.992	ppbV		99
17) 1,1-dichloroethene	6.88	61	57388	4.005	ppbV		97
18) tertiary butyl alcohol	6.94	59	57824	3.583	ppbV	#	1
19) methylene chloride	7.04	49	55697	4.190	ppbV		96
20) 3-chloropropene	7.19	41	68939	4.405	ppbV		95
21) carbon disulfide	7.34	76	117134	4.247	ppbV		96
22) Freon 113	7.39	101	73965	4.217	ppbV		98
23) trans-1,2-dichloroethene	8.19	61	66095	4.617	ppbV		98
24) 1,1-dichloroethane	8.42	63	81973	4.494	ppbV		98
25) MTBE	8.51	73	106057	4.420	ppbV		98
26) vinyl acetate	8.64	43	137717	5.518	ppbV		99
27) 2-butanone	8.91	43	115342	4.615	ppbV		98
28) cis-1,2-dichloroethene	9.43	61	60834	4.398	ppbV		95
29) Ethyl Acetate	9.72	61	16713	4.713	ppbV		81
30) chloroform	9.78	83	76292	4.540	ppbV		99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157169_Ev2.D
Acq On : 20 Apr 2018 4:16 PM
Operator : AIRLAB15:RY
Sample : WG1108448-2,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 16:56:10 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180420SIM\r157169_Ev2.D
Sub List : Default-LCS-AP2 - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
31) Tetrahydrofuran	10.23	42	71118	4.505	ppbV		94
32) 1,2-dichloroethane	10.63	62	49254	4.046	ppbV		98
34) hexane	9.69	57	82372	4.656	ppbV		92
36) 1,1,1-trichloroethane	10.92	97	72145	5.082	ppbV		95
37) benzene	11.45	78	145964	4.419	ppbV		98
38) carbon tetrachloride	11.63	117	58945	4.459	ppbV		98
39) cyclohexane	11.77	56	89310	4.838	ppbV		97
40) Dibromomethane	12.37	93	42559	3.762	ppbV	#	100
41) 1,2-dichloropropane	12.40	63	55873	4.215	ppbV		98
42) bromodichloromethane	12.63	83	83440	5.078	ppbV		99
43) 1,4-dioxane	12.69	88	32892	4.854	ppbV		96
44) trichloroethene	12.68	130	56245	4.419	ppbV		96
45) 2,2,4-trimethylpentane	12.73	57	281574	4.846	ppbV		96
46) heptane	13.05	43	133095	4.764	ppbV		98
47) cis-1,3-dichloropropene	13.69	75	73757	4.827	ppbV		94
48) 4-methyl-2-pentanone	13.73	43	151430	5.059	ppbV		98
49) trans-1,3-dichloropropene	14.32	75	58024	4.125	ppbV		96
50) 1,1,2-trichloroethane	14.51	97	55843	4.528	ppbV		98
52) toluene	14.82	91	168071	4.618	ppbV		100
54) 2-hexanone	15.10	43	138233	5.307	ppbV		99
55) dibromochloromethane	15.27	129	77976	5.775	ppbV		99
56) 1,2-dibromoethane	15.52	107	81506	4.774	ppbV		100
57) tetrachloroethene	15.98	166	60120	4.794	ppbV		96
58) 1,1,1,2-tetrachloroethane	16.58	131	51573	4.747	ppbV		98
59) chlorobenzene	16.59	112	130410	4.772	ppbV		97
60) ethylbenzene	16.93	91	217318	4.971	ppbV		97
61) m+p-xylene	17.08	91	358040	9.919	ppbV		99
62) bromoform	17.15	173	62165	5.793	ppbV		100
63) styrene	17.38	104	140149	5.100	ppbV		99
64) 1,1,2,2-tetrachloroethane	17.48	83	129858	5.080	ppbV		99
65) o-xylene	17.48	91	183373	5.015	ppbV		97
66) 1,2,3-Trichloropropane	17.58	75	94797	4.519	ppbV	#	82
68) isopropylbenzene	17.97	105	223615	4.966	ppbV		97
69) Bromobenzene	18.03	77	120282	4.592	ppbV	#	100
70) 4-ethyl toluene	18.49	105	261084	5.422	ppbV		99
71) 1,3,5-trimethylbenzene	18.56	105	215685	5.166	ppbV		97
72) tert-butylbenzene	18.88	119	198902	4.639	ppbV		98
73) 1,2,4-trimethylbenzene	18.88	105	216500	5.350	ppbV		97
74) Benzyl Chloride	19.00	91	137271	5.808	ppbV		97
75) 1,3-dichlorobenzene	19.02	146	134885	5.111	ppbV		96

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157169_Ev2.D
Acq On : 20 Apr 2018 4:16 PM
Operator : AIRLAB15:RY
Sample : WG1108448-2,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 16:56:10 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180420SIM\r157169_Ev2.D
Sub List : Default-LCS-AP2 - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
76) 1,4-dichlorobenzene	19.07	146	128120	4.910	ppbV	93
77) sec-butylbenzene	19.10	105	285531	4.975	ppbV	97
78) p-isopropyltoluene	19.23	119	226696	4.720	ppbV	100
79) 1,2-dichlorobenzene	19.35	146	127299	5.121	ppbV	94
80) n-butylbenzene	19.57	91	233910	5.154	ppbV	94
81) 1,2,4-trichlorobenzene	20.87	180	86599	4.882	ppbV	98
82) naphthalene	20.98	128	252016	4.714	ppbV	99
83) 1,2,3-trichlorobenzene	21.24	180	83737	4.870	ppbV	99
84) hexachlorobutadiene	21.31	225	83192	5.421	ppbV	98

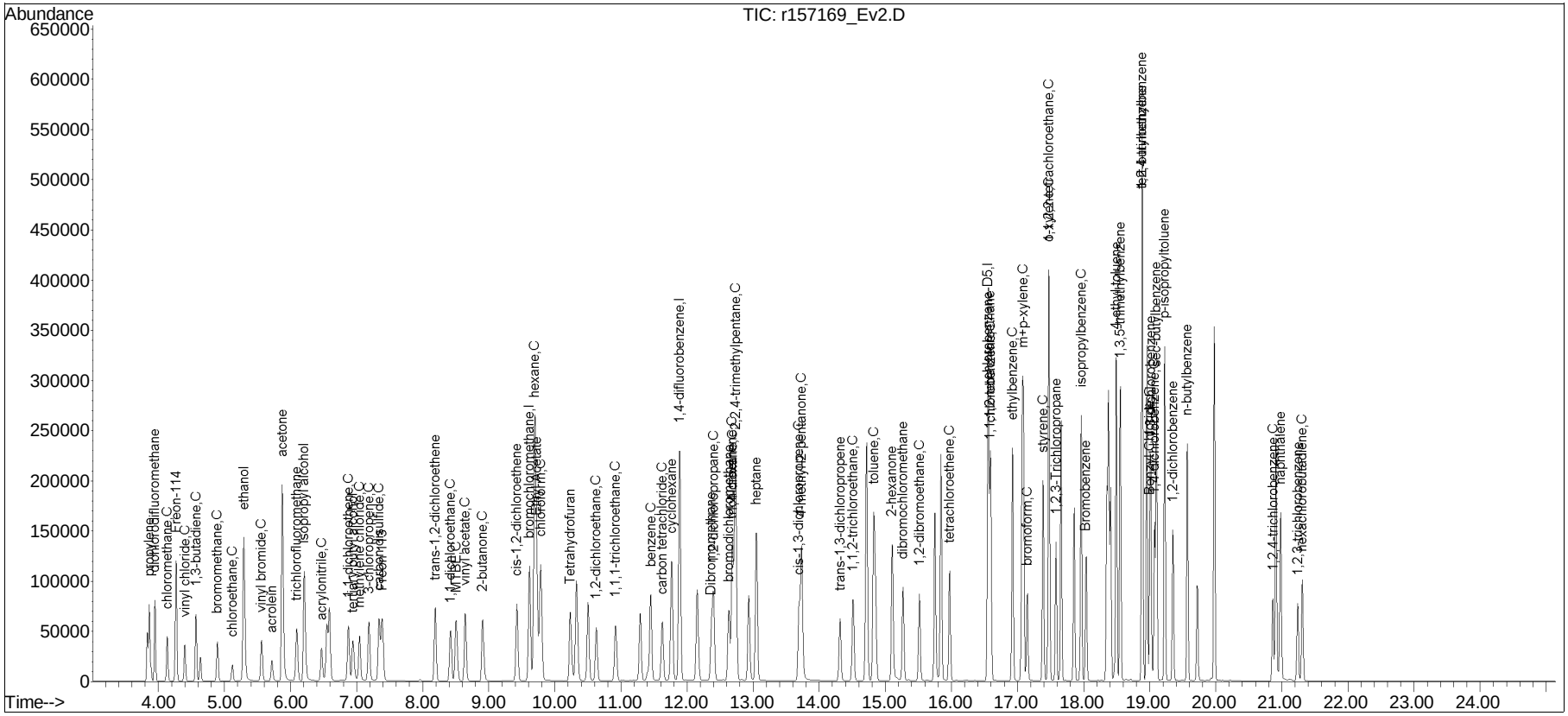
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157169_Ev2.D
Acq On : 20 Apr 2018 4:16 PM
Operator : AIRLAB15:RY
Sample : WG1108448-2,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 16:56:10 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

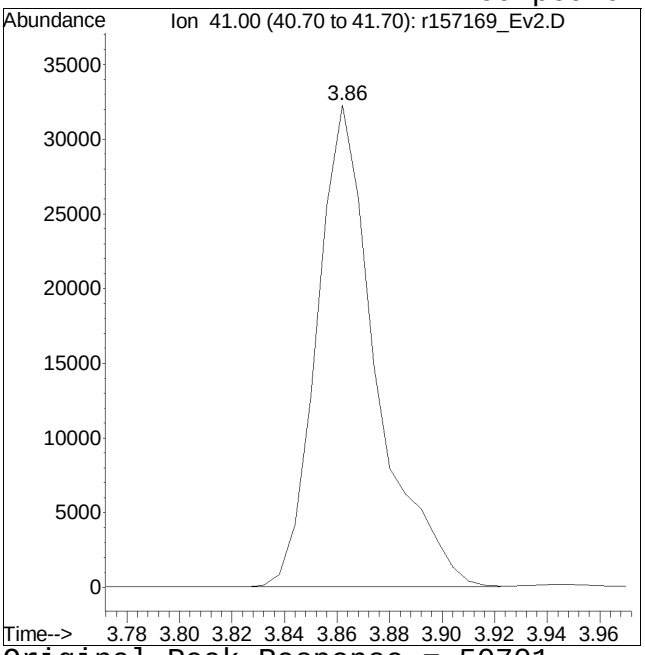
Sub List : Default-LCS-AP2 - All compounds listedSIM\r157169_Ev2.D



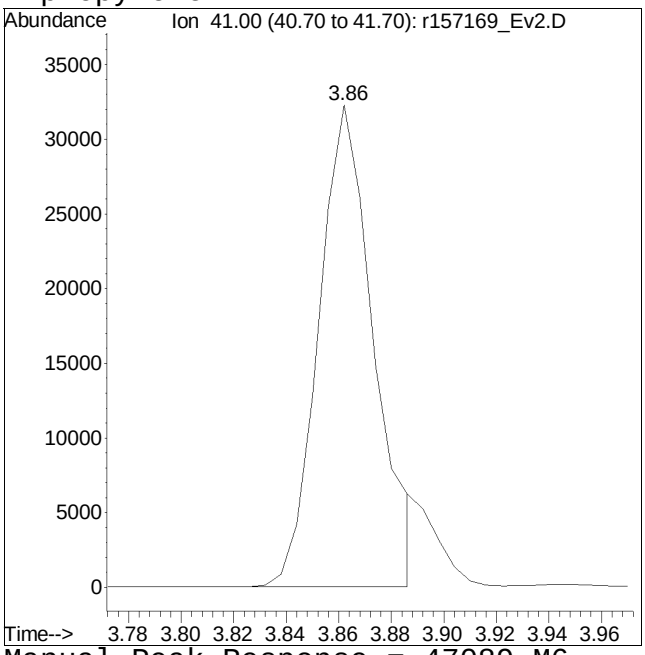
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\Airlab15\QMethod : TSIM180404.M
Data File : r157169_Ev2.D Operator : AIRLAB15:RY
Date Inj'd : 4/20/2018 4:16 PM Instrument :
Sample : WG1108448-2,3,250,250 Quant Date : 4/20/2018 4:55 pm

Compound #2: propylene



Original Peak Response = 50701



Manual Peak Response = 47089 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Sample Raw Data

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157172_Ev2.D
Acq On : 20 Apr 2018 7:19 PM
Operator : AIRLAB15:RY
Sample : L1812962-01,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 21 08:32:07 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180420SIM\r157169_Ev2.D
Sub List : 9_Chlorinateds - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.58	49	82600	10.000	ppbV	#-0.07
Standard Area = 132894			Recovery =		62.15%	
33) 1,4-difluorobenzene	11.87	114	203992	10.000	ppbV	-0.06
Standard Area = 287503			Recovery =		70.95%	
51) chlorobenzene-D5	16.54	54	46534	10.000	ppbV	-0.04
Standard Area = 56135			Recovery =		82.90%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	0.00		0		N.D.	
17) 1,1-dichloroethene	0.00		0		N.D.	
23) trans-1,2-dichloroethene	0.00		0		N.D.	
28) cis-1,2-dichloroethene	0.00		0		N.D.	
44) trichloroethene	0.00		0		N.D.	
57) tetrachloroethene	15.97		0		N.D.	

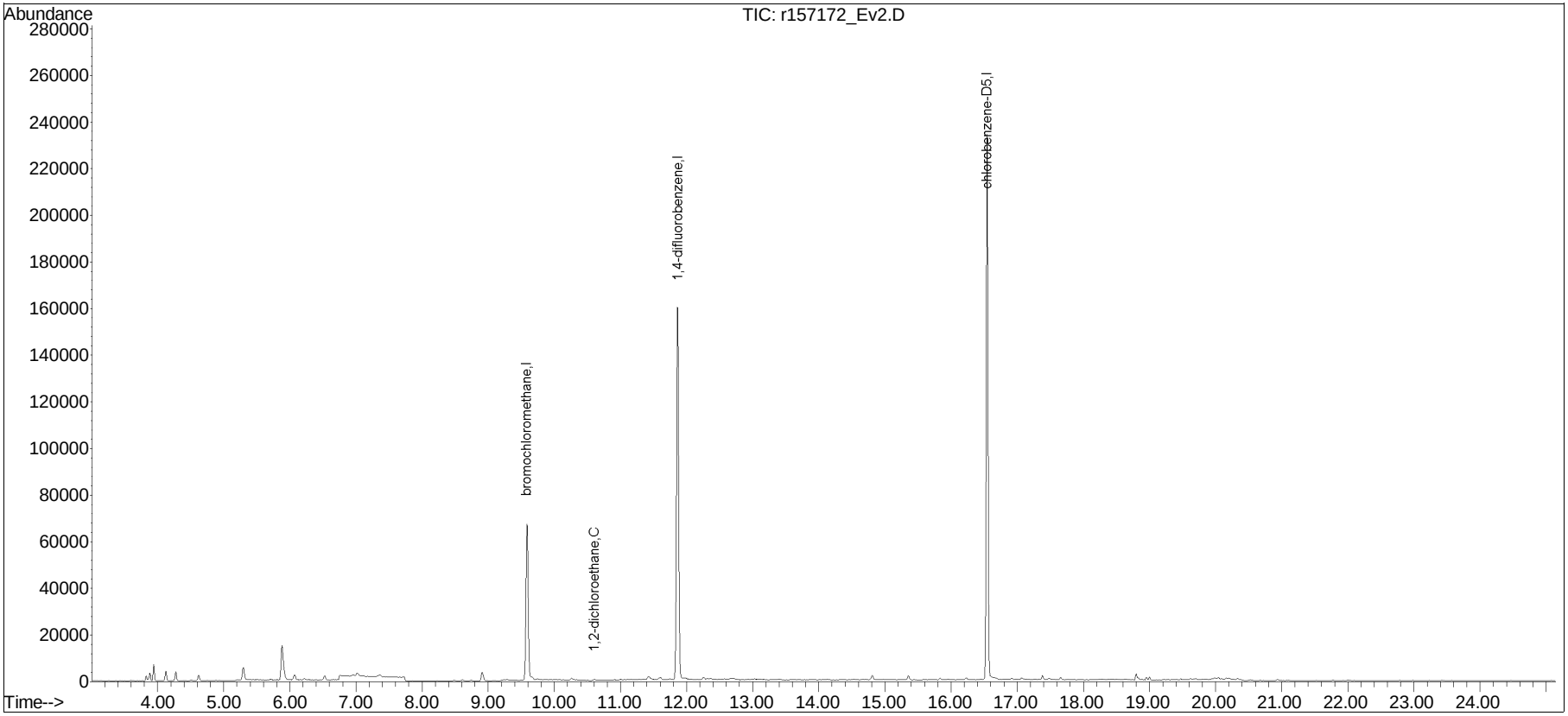
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157172_Ev2.D
Acq On : 20 Apr 2018 7:19 PM
Operator : AIRLAB15:RY
Sample : L1812962-01,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 21 08:32:07 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Sub List : 9_Chlorinateds - .Airlab15\2018\180420SIM\r157169_Ev2.D



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\Airlab15\	QMethod	: TSIM180404.M
Data File	: r157172_Ev2.D	Operator	: AIRLAB15:RY
Date Inj'd	: 4/20/2018 7:19 PM	Instrument	:
Sample	: L1812962-01,3,250,250	Quant Date	: 4/21/2018 8:32 am

There are no manual integrations or false positives in this file.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157173_Ev2.D
Acq On : 20 Apr 2018 7:55 PM
Operator : AIRLAB15:RY
Sample : L1812962-02,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 21 17:23:14 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180420SIM\r157169_Ev2.D
Sub List : 9_Chlorinateds - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.60	49	120004	10.000	ppbV	#-0.06
Standard Area = 132894			Recovery =		90.30%	
33) 1,4-difluorobenzene	11.87	114	247938	10.000	ppbV	-0.05
Standard Area = 287503			Recovery =		86.24%	
51) chlorobenzene-D5	16.54	54	48428	10.000	ppbV	-0.04
Standard Area = 56135			Recovery =		86.27%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	0.00		0	N.D.		
17) 1,1-dichloroethene	0.00		0	N.D.		
23) trans-1,2-dichloroethene	8.17		0	N.D.		
28) cis-1,2-dichloroethene	9.42	61	535	0.043	ppbV	92
44) trichloroethene	12.67	130	1145	0.104	ppbV	96
57) tetrachloroethene	15.96	166	48288	4.463	ppbV	98

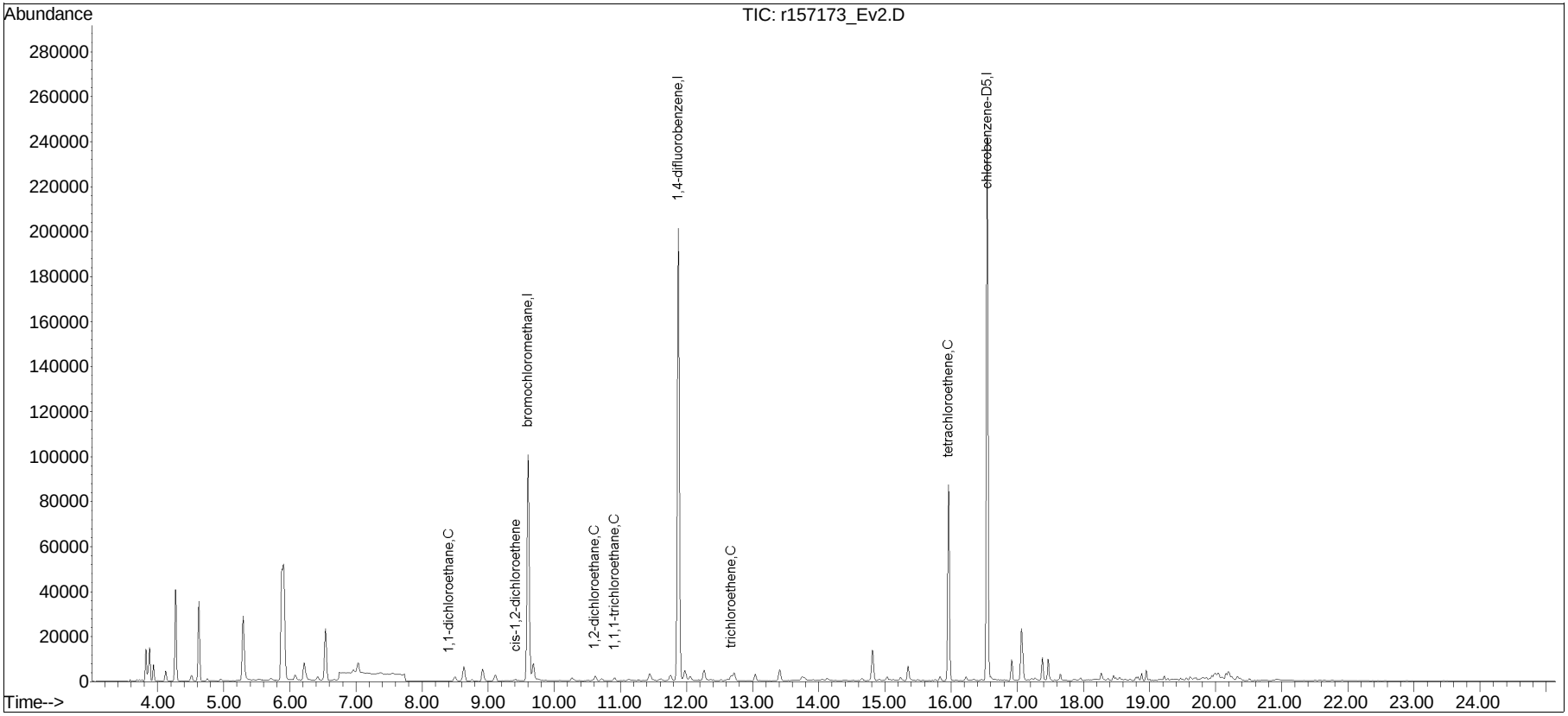
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

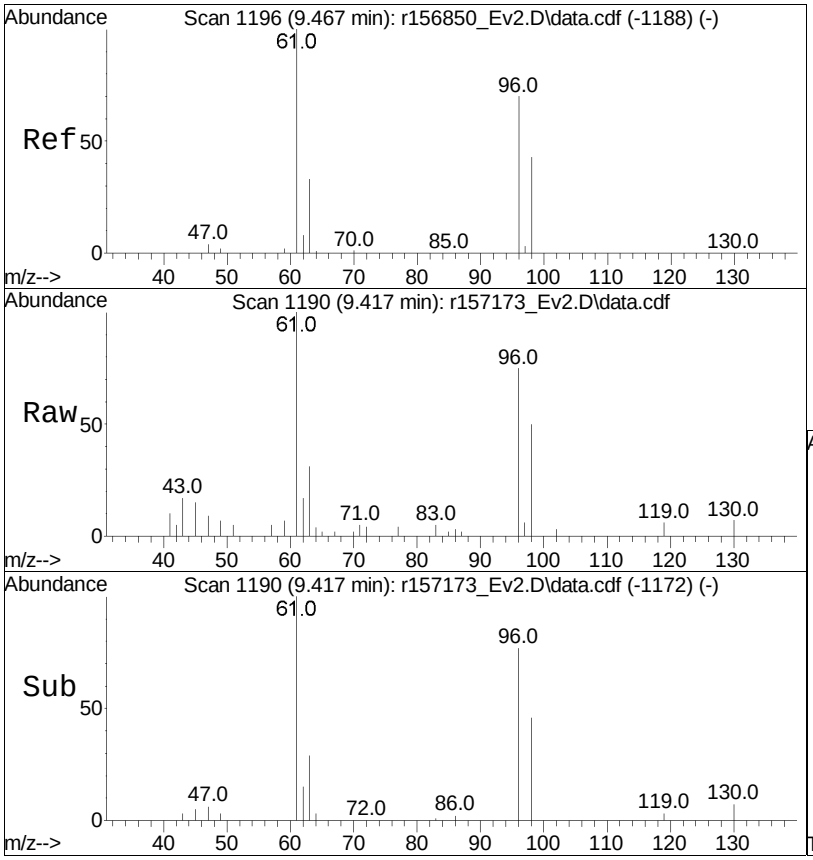
Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157173_Ev2.D
Acq On : 20 Apr 2018 7:55 PM
Operator : AIRLAB15:RY
Sample : L1812962-02,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 21 17:23:14 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Sub List : 9_Chlorinateds - .Airlab15\2018\180420SIM\r157169_Ev2.D



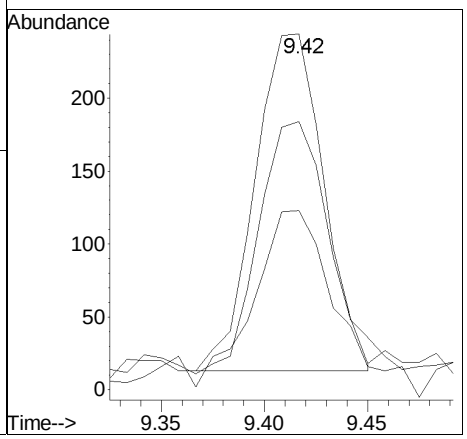
TSIM180404.M Sat Apr 21 17:23:29 2018 Page 2

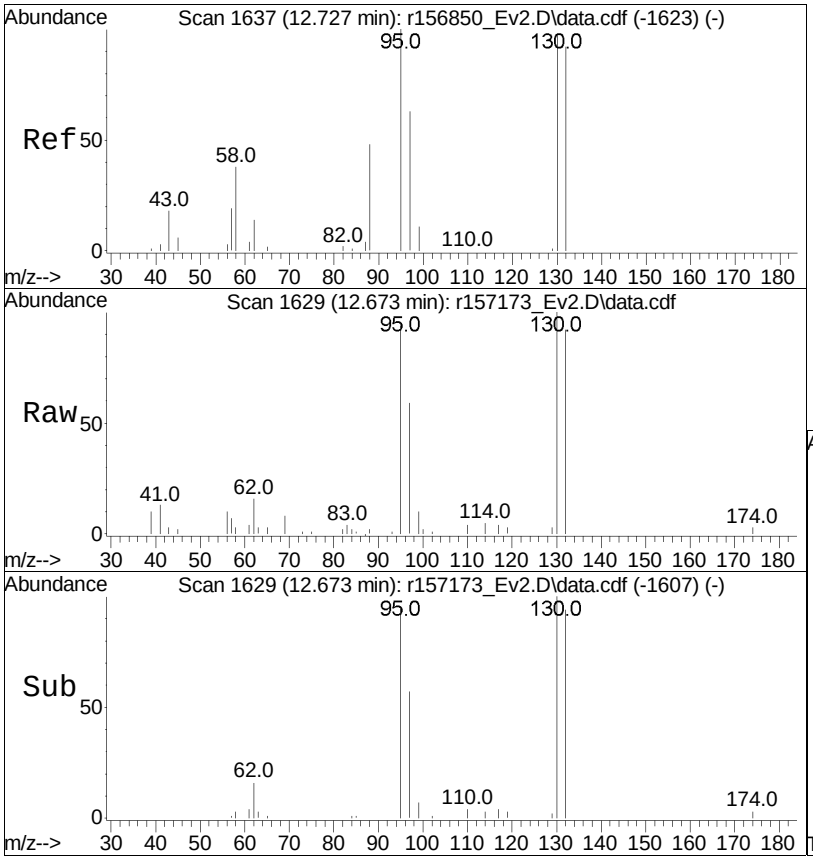


#28
cis-1,2-dichloroethene
Concen: 0.04 ppbV
RT: 9.42 min Scan# 1190
Delta R.T. -0.050 min
Lab File: r157173_Ev2.D
Acq: 20 Apr 2018 7:55 PM

Tgt Ion: 61 Resp: 535

Ion	Ratio	Lower	Upper
61	100		
96	75.4	56.1	84.1
98	50.4	34.6	52.0

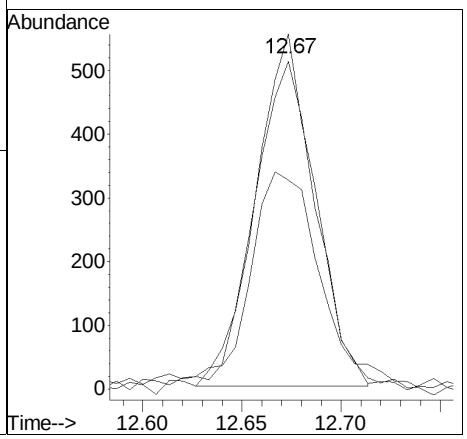


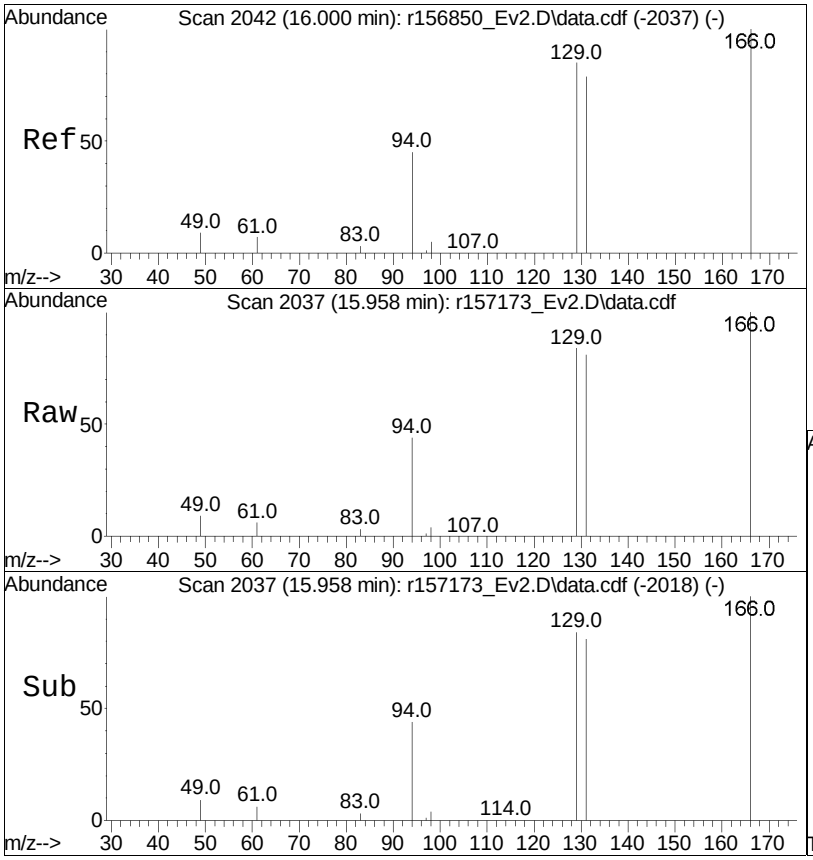


#44
trichloroethene
Concen: 0.10 ppbV
RT: 12.67 min Scan# 1629
Delta R.T. -0.053 min
Lab File: r157173_Ev2.D
Acq: 20 Apr 2018 7:55 PM

Tgt Ion:130 Resp: 1145

Ion	Ratio	Lower	Upper
130	100		
132	92.3	75.5	113.3
97	58.9	51.9	77.9

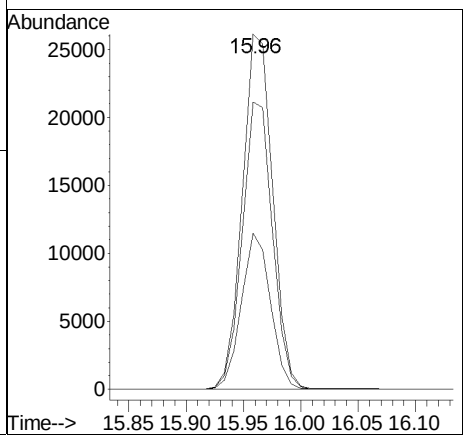




#57
tetrachloroethene
Concen: 4.46 ppbV
RT: 15.96 min Scan# 2037
Delta R.T. -0.042 min
Lab File: r157173_Ev2.D
Acq: 20 Apr 2018 7:55 PM

Tgt Ion:166 Resp: 48288

Ion	Ratio	Lower	Upper
166	100		
131	80.9	63.5	95.3
94	44.0	36.1	54.1



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157174_Ev2.D
Acq On : 20 Apr 2018 8:31 PM
Operator : AIRLAB15:RY
Sample : L1812962-03,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 21 17:23:54 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180420SIM\r157169_Ev2.D
Sub List : 9_Chlorinateds - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.60	49	90747	10.000	ppbV	#-0.06
Standard Area = 132894			Recovery =		68.29%	
33) 1,4-difluorobenzene	11.87	114	216902	10.000	ppbV	-0.05
Standard Area = 287503			Recovery =		75.44%	
51) chlorobenzene-D5	16.54	54	47073	10.000	ppbV	-0.04
Standard Area = 56135			Recovery =		83.86%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	0.00		0	N.D.		
17) 1,1-dichloroethene	0.00		0	N.D.		
23) trans-1,2-dichloroethene	8.18	61	124	0.013	ppbV #	74
28) cis-1,2-dichloroethene	9.42	61	709	0.075	ppbV	92
44) trichloroethene	12.67	130	1312	0.137	ppbV	93
57) tetrachloroethene	15.96	166	70558	6.709	ppbV	98

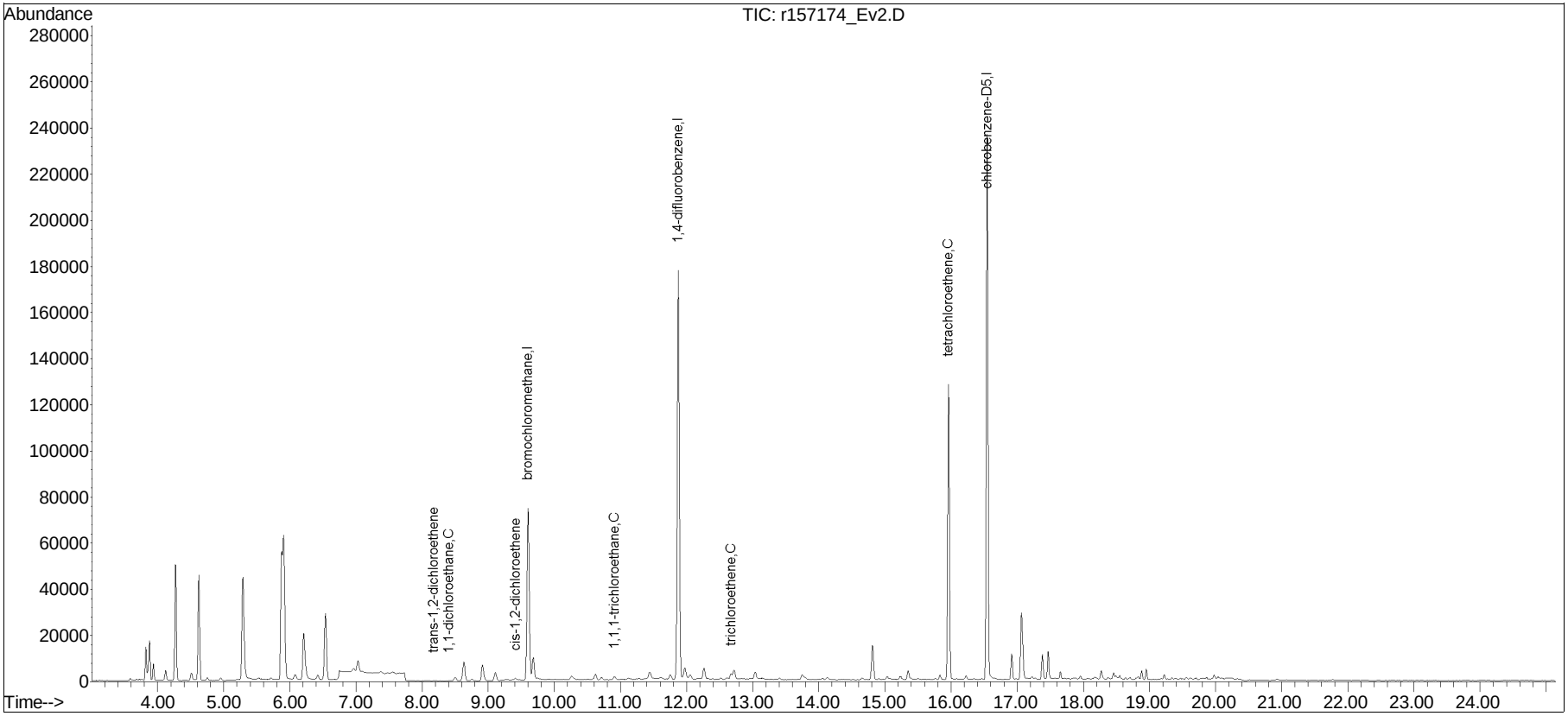
(#) = qualifier out of range (m) = manual integration (+) = signals summed

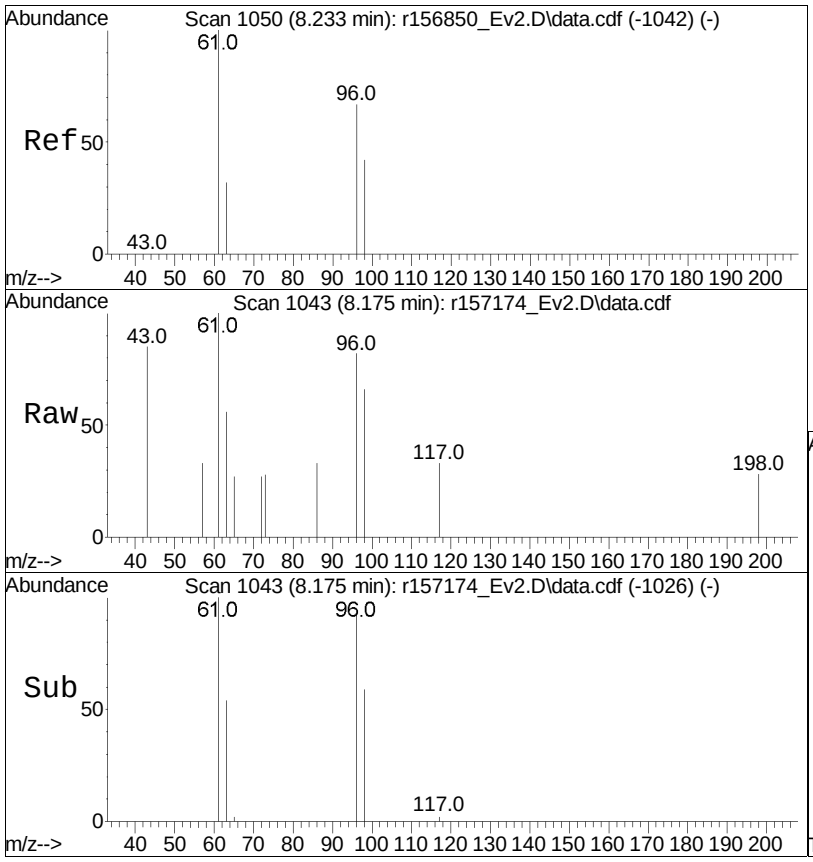
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157174_Ev2.D
Acq On : 20 Apr 2018 8:31 PM
Operator : AIRLAB15:RY
Sample : L1812962-03,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 21 17:23:54 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Sub List : 9_Chlorinateds - .Airlab15\2018\180420SIM\r157169_Ev2.D

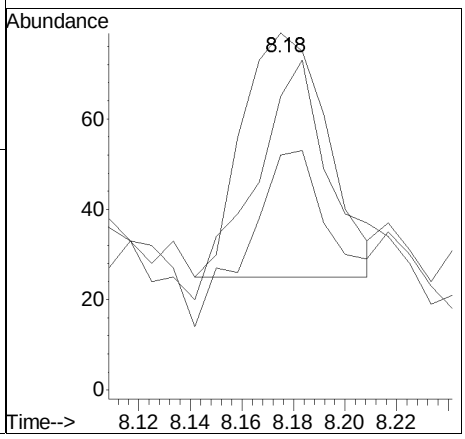


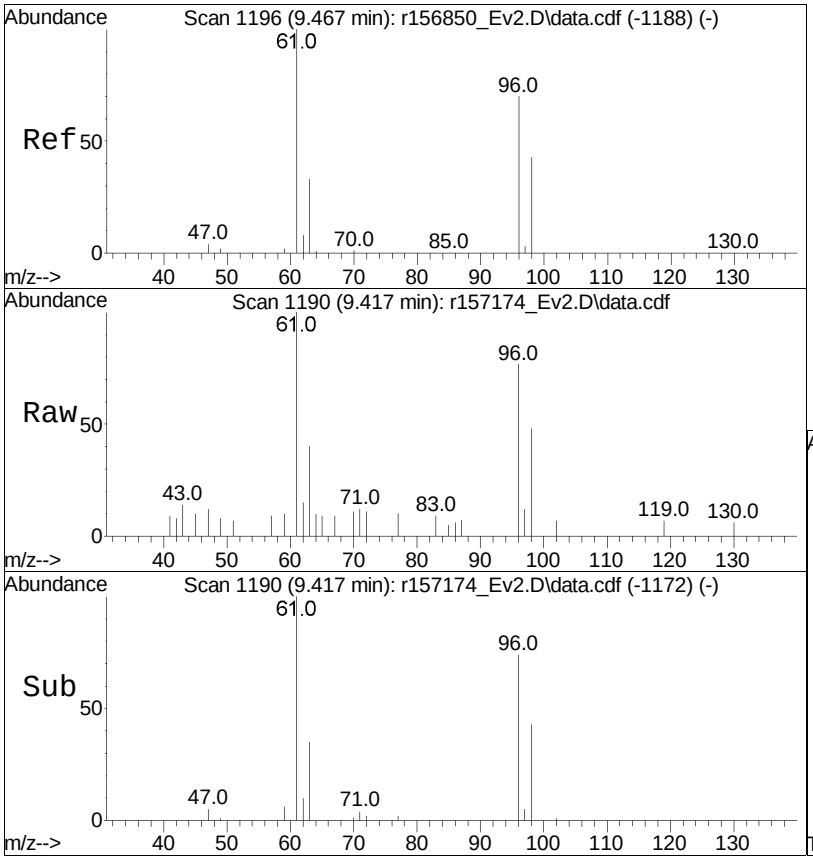


#23
trans-1,2-dichloroethene
Concen: 0.01 ppbV
RT: 8.18 min Scan# 1043
Delta R.T. -0.058 min
Lab File: r157174_Ev2.D
Acq: 20 Apr 2018 8:31 PM

Tgt Ion: 61 Resp: 124

Ion	Ratio	Lower	Upper
61	100		
96	82.3	54.0	81.0#
98	65.8	33.8	50.8#

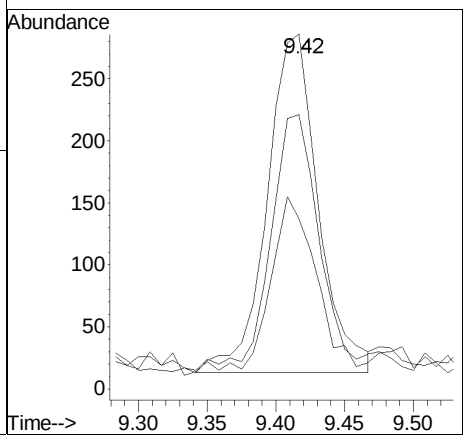


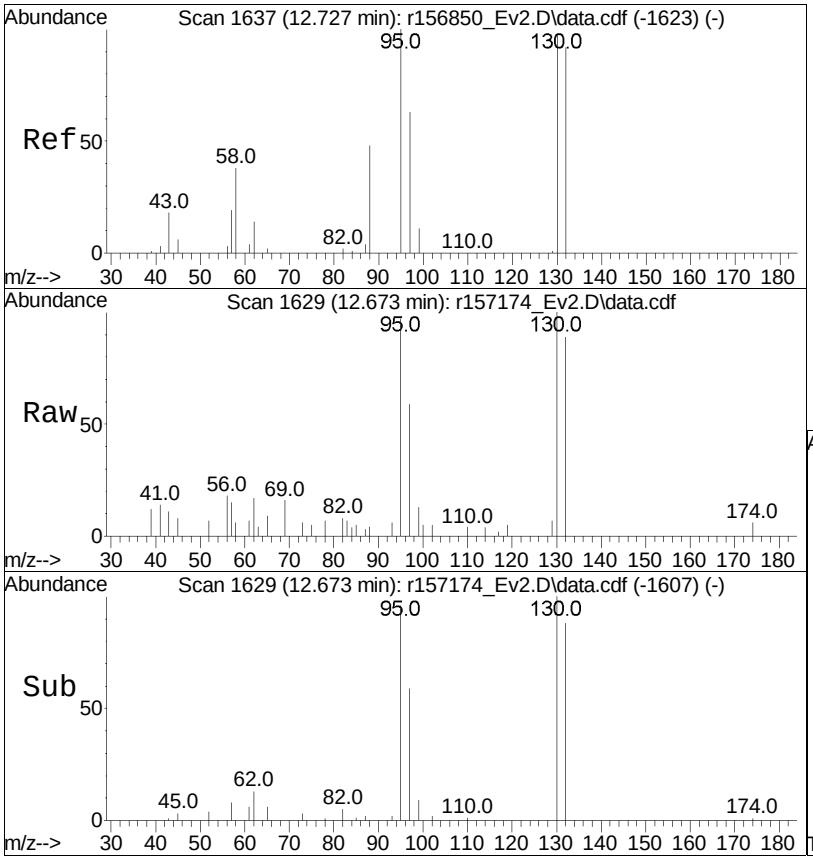


#28
cis-1,2-dichloroethene
Concen: 0.08 ppbV
RT: 9.42 min Scan# 1190
Delta R.T. -0.050 min
Lab File: r157174_Ev2.D
Acq: 20 Apr 2018 8:31 PM

Tgt Ion: 61 Resp: 709

Ion	Ratio	Lower	Upper
61	100		
96	77.3	56.1	84.1
98	47.9	34.6	52.0

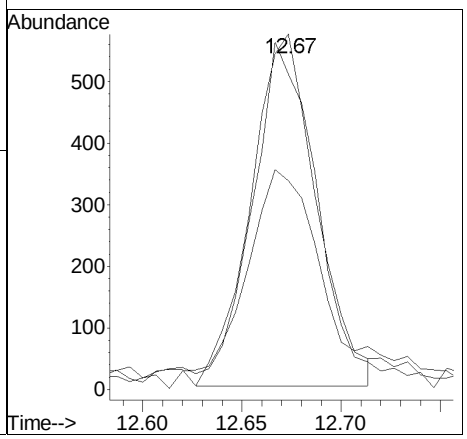


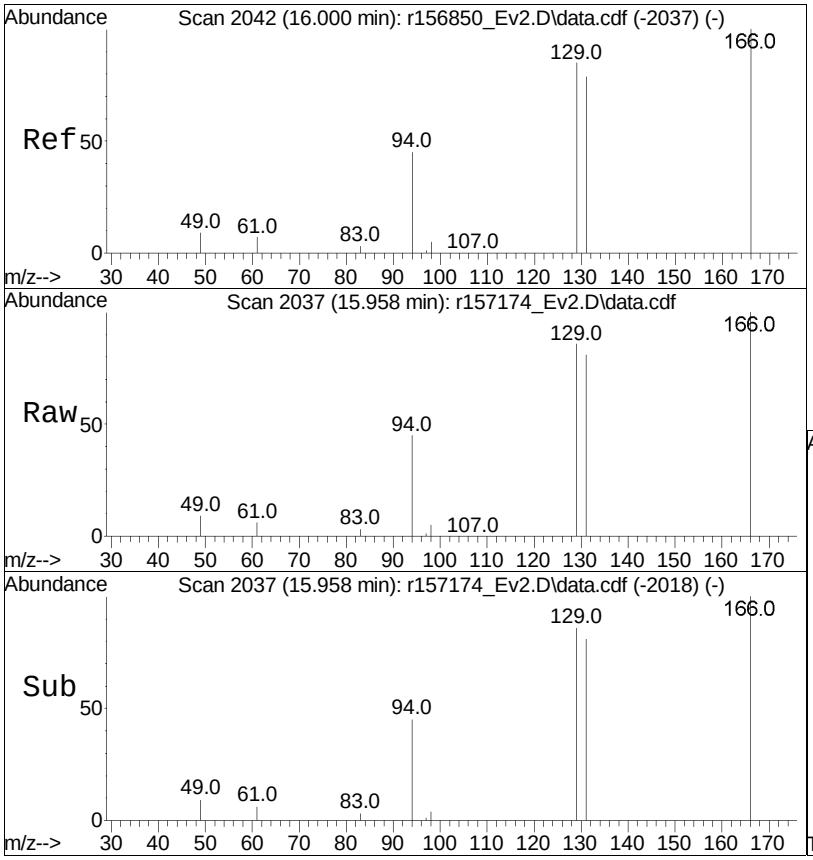


#44
trichloroethene
Concen: 0.14 ppbV
RT: 12.67 min Scan# 1629
Delta R.T. -0.053 min
Lab File: r157174_Ev2.D
Acq: 20 Apr 2018 8:31 PM

Tgt Ion:130 Resp: 1312

Ion	Ratio	Lower	Upper
130	100		
132	88.7	75.5	113.3
97	58.8	51.9	77.9

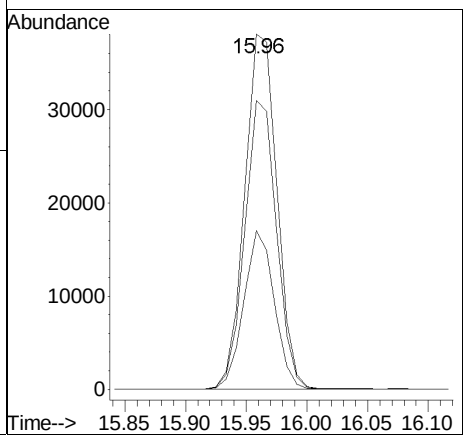




#57
tetrachloroethene
Concen: 6.71 ppbV
RT: 15.96 min Scan# 2037
Delta R.T. -0.042 min
Lab File: r157174_Ev2.D
Acq: 20 Apr 2018 8:31 PM

Tgt Ion:166 Resp: 70558

Ion	Ratio	Lower	Upper
166	100		
131	81.3	63.5	95.3
94	44.7	36.1	54.1



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\Airlab15\	QMethod	: TSIM180404.M
Data File	: r157174_Ev2.D	Operator	: AIRLAB15:RY
Date Inj'd	: 4/20/2018 8:31 PM	Instrument	:
Sample	: L1812962-03,3,250,250	Quant Date	: 4/21/2018 8:32 am

There are no manual integrations or false positives in this file.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157175_Ev2.D
Acq On : 20 Apr 2018 9:07 PM
Operator : AIRLAB15:RY
Sample : L1812962-04,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 21 17:24:24 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180420SIM\r157169_Ev2.D
Sub List : 9_Chlorinateds - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.60	49	95489	10.000	ppbV	#-0.06
Standard Area = 132894			Recovery =		71.85%	
33) 1,4-difluorobenzene	11.87	114	236917	10.000	ppbV	-0.05
Standard Area = 287503			Recovery =		82.41%	
51) chlorobenzene-D5	16.54	54	52636	10.000	ppbV	-0.04
Standard Area = 56135			Recovery =		93.77%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	0.00		0	N.D.		
17) 1,1-dichloroethene	0.00		0	N.D.		
23) trans-1,2-dichloroethene	8.18	61	160	0.016	ppbV	96
28) cis-1,2-dichloroethene	9.41	61	747	0.075	ppbV	92
44) trichloroethene	12.67	130	733	0.070	ppbV	96
57) tetrachloroethene	15.96	166	53011	4.508	ppbV	97

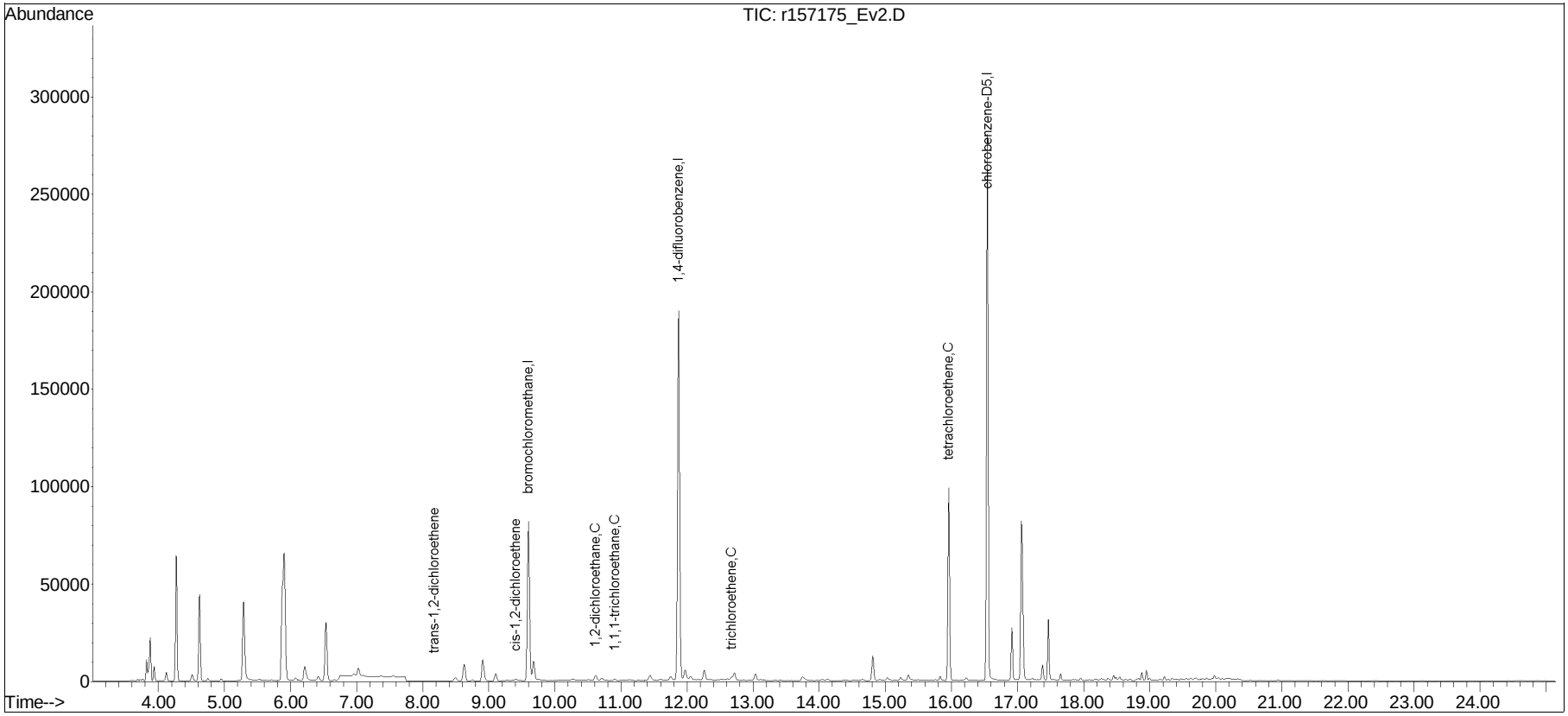
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

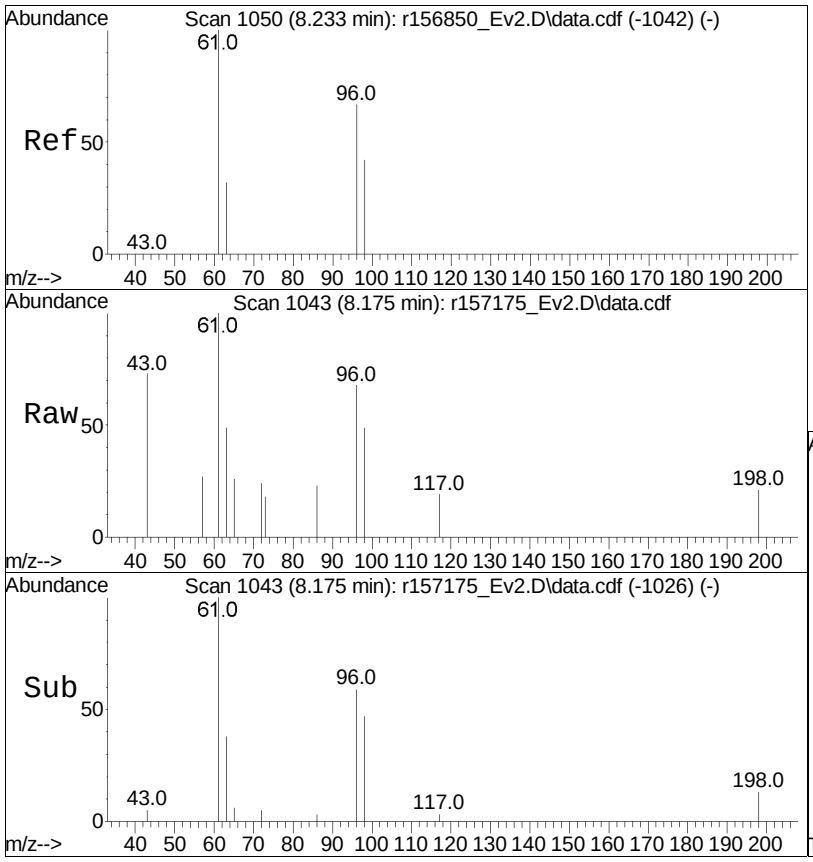
Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157175_Ev2.D
Acq On : 20 Apr 2018 9:07 PM
Operator : AIRLAB15:RY
Sample : L1812962-04,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 21 17:24:24 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Sub List : 9_Chlorinateds - .Airlab15\2018\180420SIM\r157169_Ev2.D



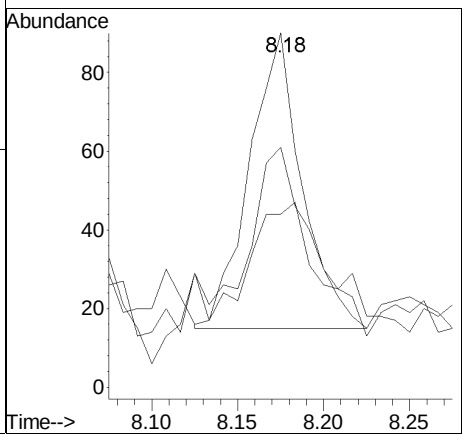
TSIM180404.M Sat Apr 21 17:24:39 2018 Page 2

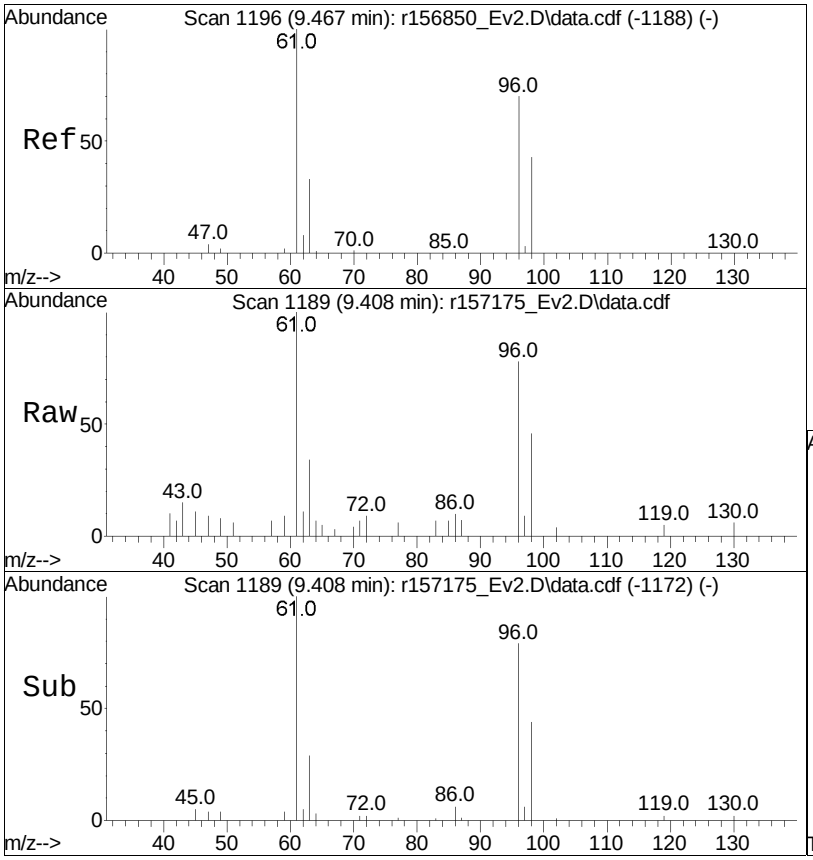


#23
trans-1,2-dichloroethene
Concen: 0.02 ppbV
RT: 8.18 min Scan# 1043
Delta R.T. -0.058 min
Lab File: r157175_Ev2.D
Acq: 20 Apr 2018 9:07 PM

Tgt Ion: 61 Resp: 160

Ion	Ratio	Lower	Upper
61	100		
96	67.8	54.0	81.0
98	48.9	33.8	50.8

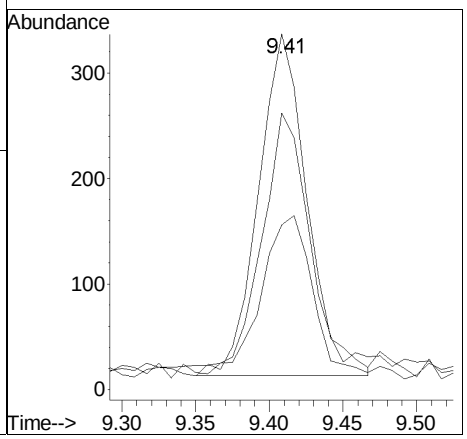


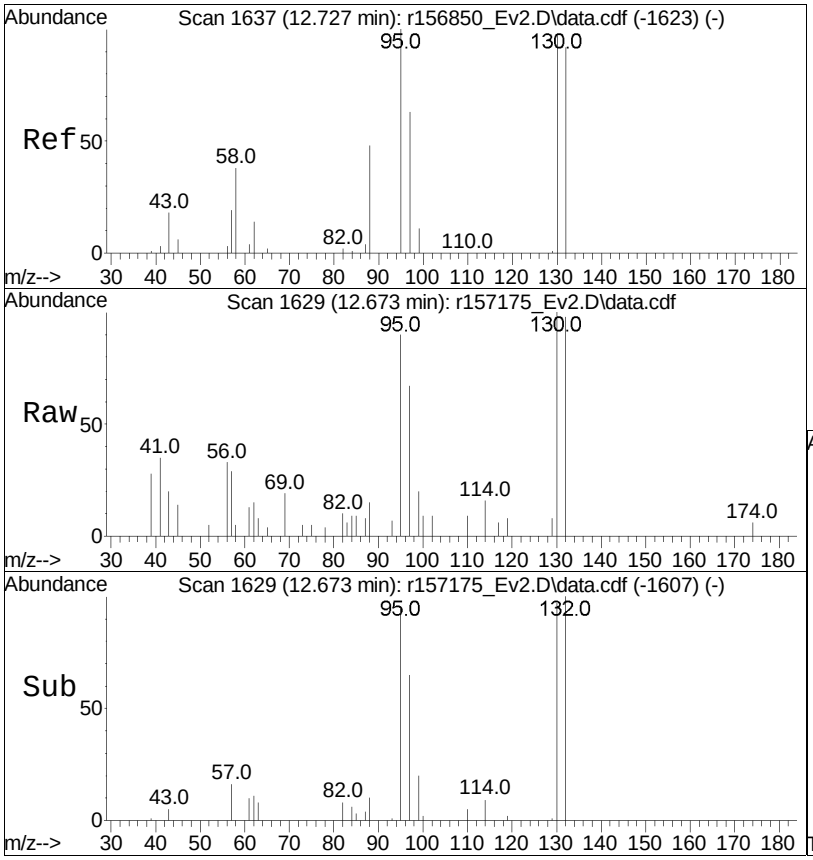


#28
cis-1,2-dichloroethene
Concen: 0.08 ppbV
RT: 9.41 min Scan# 1189
Delta R.T. -0.058 min
Lab File: r157175_Ev2.D
Acq: 20 Apr 2018 9:07 PM

Tgt Ion: 61 Resp: 747

Ion	Ratio	Lower	Upper
61	100		
96	77.7	56.1	84.1
98	46.3	34.6	52.0

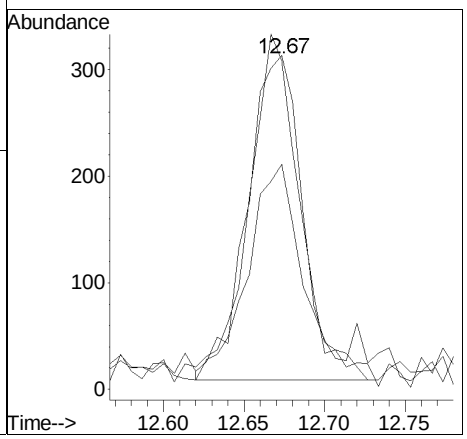


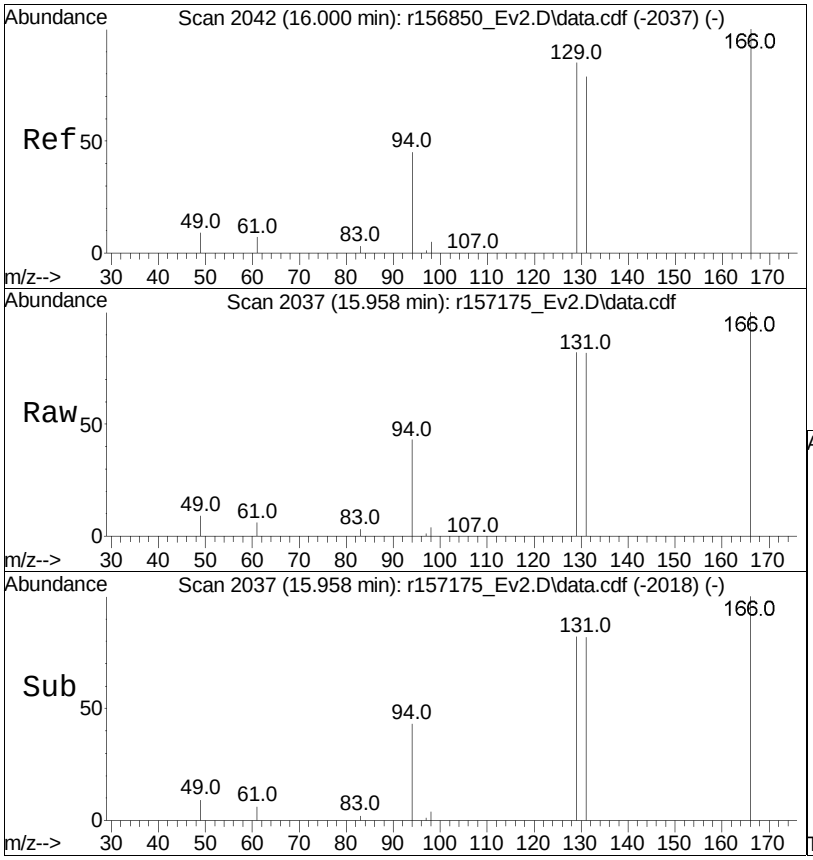


#44
trichloroethene
Concen: 0.07 ppbV
RT: 12.67 min Scan# 1629
Delta R.T. -0.053 min
Lab File: r157175_Ev2.D
Acq: 20 Apr 2018 9:07 PM

Tgt Ion:130 Resp: 733

Ion	Ratio	Lower	Upper
130	100		
132	98.4	75.5	113.3
97	67.4	51.9	77.9

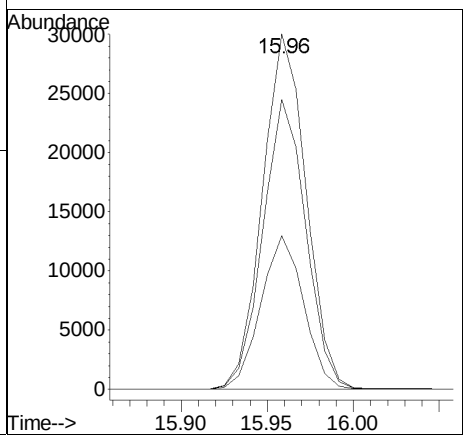




#57
tetrachloroethene
Concen: 4.51 ppbV
RT: 15.96 min Scan# 2037
Delta R.T. -0.042 min
Lab File: r157175_Ev2.D
Acq: 20 Apr 2018 9:07 PM

Tgt Ion:166 Resp: 53011

Ion	Ratio	Lower	Upper
166	100		
131	81.6	63.5	95.3
94	43.2	36.1	54.1



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157180_Ev2.D
Acq On : 21 Apr 2018 12:27 AM
Operator : AIRLAB15:RY
Sample : L1812962-08,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 21 17:25:25 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180420SIM\r157169_Ev2.D
Sub List : 9_Chlorinateds - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.59	49	119538	10.000	ppbV	#-0.07
Standard Area = 132894			Recovery =		89.95%	
33) 1,4-difluorobenzene	11.87	114	248372	10.000	ppbV	-0.06
Standard Area = 287503			Recovery =		86.39%	
51) chlorobenzene-D5	16.54	54	47762	10.000	ppbV	-0.04
Standard Area = 56135			Recovery =		85.08%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	0.00		0	N.D.		
17) 1,1-dichloroethene	0.00		0	N.D.		
23) trans-1,2-dichloroethene	0.00		0	N.D.	d	
28) cis-1,2-dichloroethene	9.40	61	495	0.040	ppbV	92
44) trichloroethene	12.67	130	1092	0.099	ppbV	97
57) tetrachloroethene	15.96	166	27333	2.562	ppbV	97

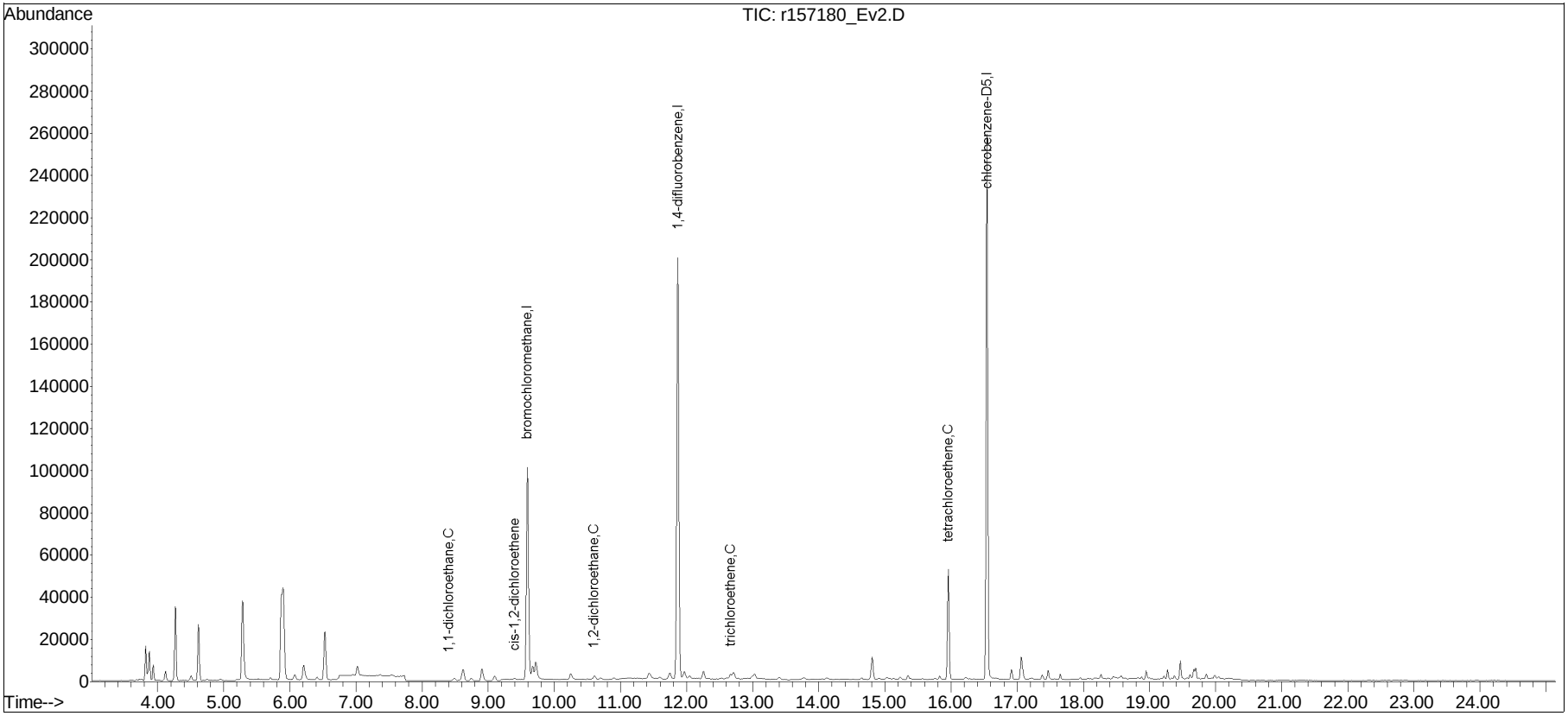
(#) = qualifier out of range (m) = manual integration (+) = signals summed

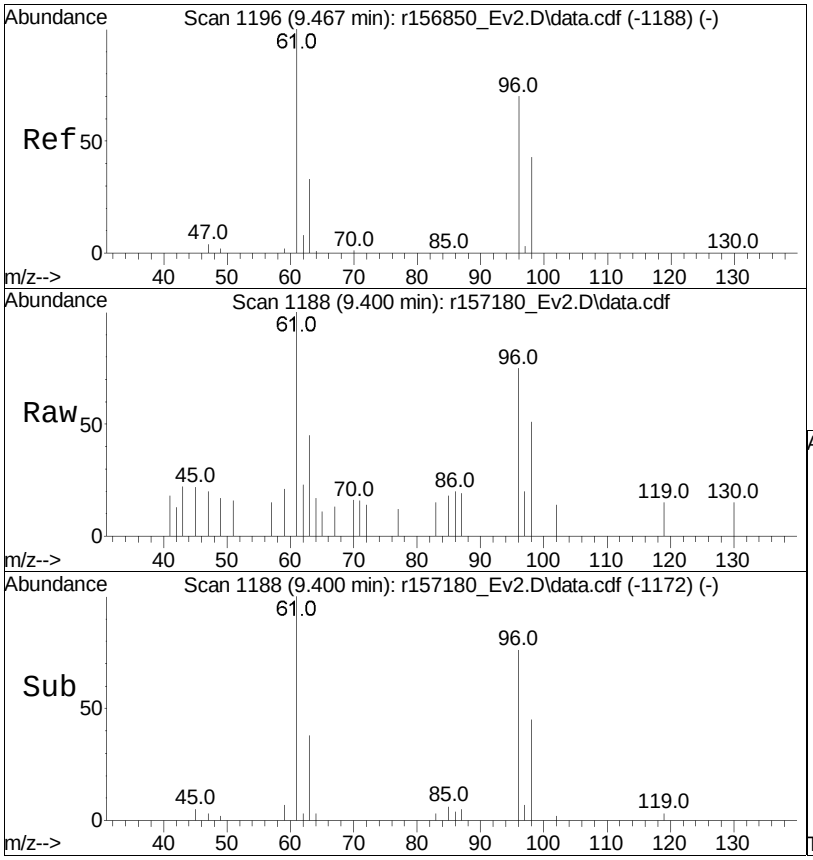
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157180_Ev2.D
Acq On : 21 Apr 2018 12:27 AM
Operator : AIRLAB15:RY
Sample : L1812962-08,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 21 17:25:25 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Sub List : 9_Chlorinateds - .Airlab15\2018\180420SIM\r157169_Ev2.D

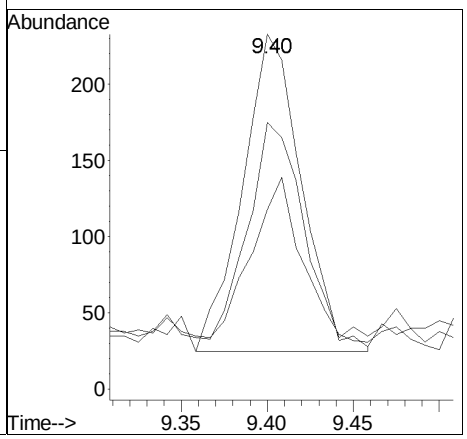


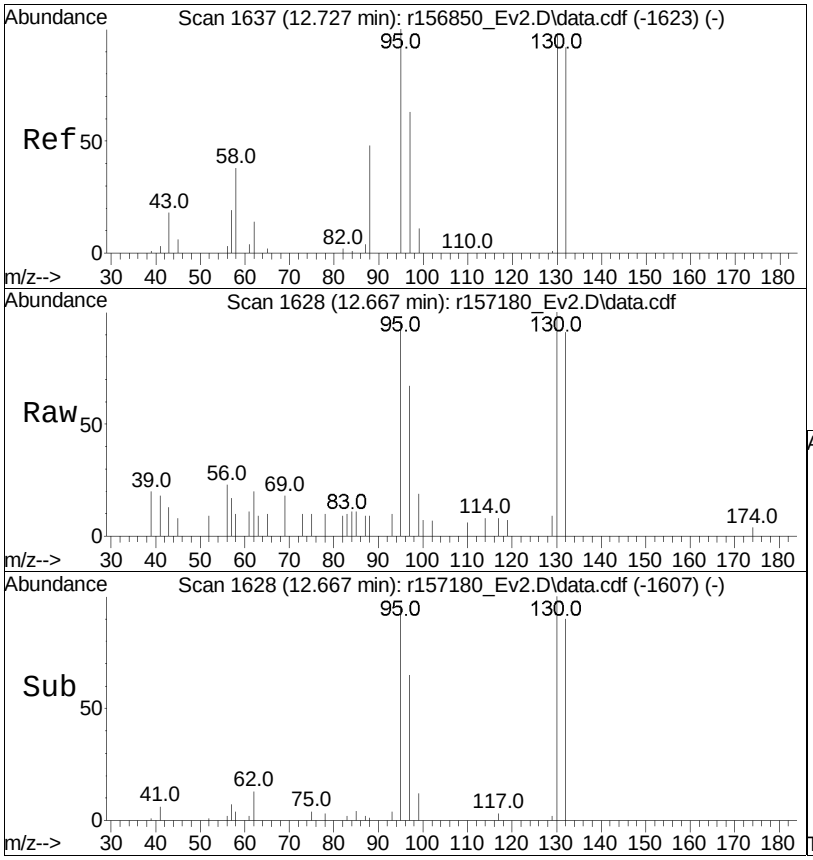


#28
cis-1,2-dichloroethene
Concen: 0.04 ppbV
RT: 9.40 min Scan# 1188
Delta R.T. -0.067 min
Lab File: r157180_Ev2.D
Acq: 21 Apr 2018 12:27 AM

Tgt Ion: 61 Resp: 495

Ion	Ratio	Lower	Upper
61	100		
96	75.1	56.1	84.1
98	50.6	34.6	52.0

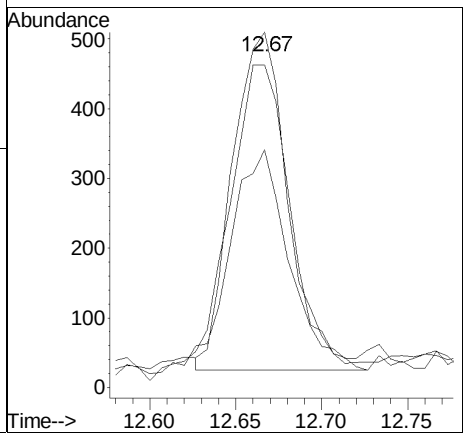


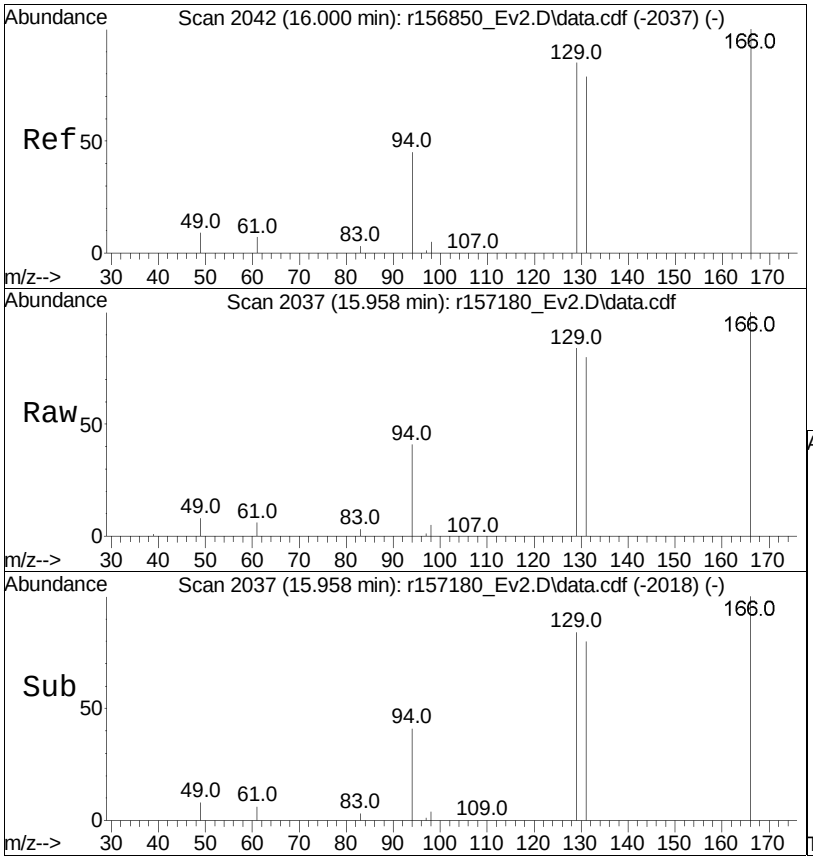


#44
trichloroethene
Concen: 0.10 ppbV
RT: 12.67 min Scan# 1628
Delta R.T. -0.060 min
Lab File: r157180_Ev2.D
Acq: 21 Apr 2018 12:27 AM

Tgt Ion:130 Resp: 1092

Ion	Ratio	Lower	Upper
130	100		
132	90.8	75.5	113.3
97	66.9	51.9	77.9

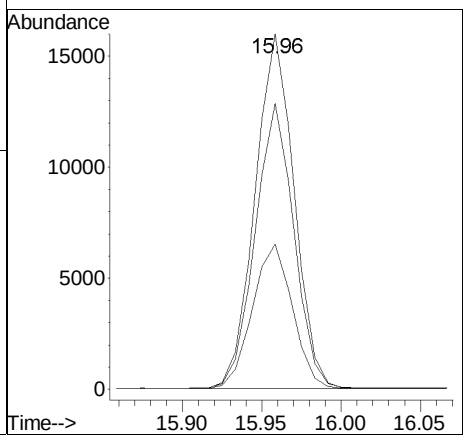




#57
tetrachloroethene
Concen: 2.56 ppbV
RT: 15.96 min Scan# 2037
Delta R.T. -0.042 min
Lab File: r157180_Ev2.D
Acq: 21 Apr 2018 12:27 AM

Tgt Ion:166 Resp: 27333

Ion	Ratio	Lower	Upper
166	100		
131	80.5	63.5	95.3
94	40.9	36.1	54.1



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\Airlab15\	QMethod	: TSIM180404.M
Data File	: r157180_Ev2.D	Operator	: AIRLAB15:RY
Date Inj'd	: 4/21/2018 12:27 AM	Instrument	:
Sample	: L1812962-08,3,250,250	Quant Date	: 4/21/2018 8:33 am

There are no manual integrations or false positives in this file.

Method Blank
Raw Data

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157171_Ev2.D
Acq On : 20 Apr 2018 5:58 PM
Operator : AIRLAB15:RY
Sample : WG1108448-4,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 18:36:44 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180420SIM\r157169_Ev2.D
Sub List : Default-LCS-AP2 - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.61	49	123603	10.000	ppbV	#-0.05
Standard Area = 132894			Recovery = 93.01%			
33) 1,4-difluorobenzene	11.88	114	265728	10.000	ppbV	-0.05
Standard Area = 287503			Recovery = 92.43%			
51) chlorobenzene-D5	16.55	54	52009	10.000	ppbV	-0.03
Standard Area = 56135			Recovery = 92.65%			
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	0.00		0	N.D.		
17) 1,1-dichloroethene	0.00		0	N.D.		
23) trans-1,2-dichloroethene	0.00		0	N.D.		
28) cis-1,2-dichloroethene	9.33		0	N.D.		
44) trichloroethene	0.00		0	N.D.		
57) tetrachloroethene	15.89		0	N.D.		

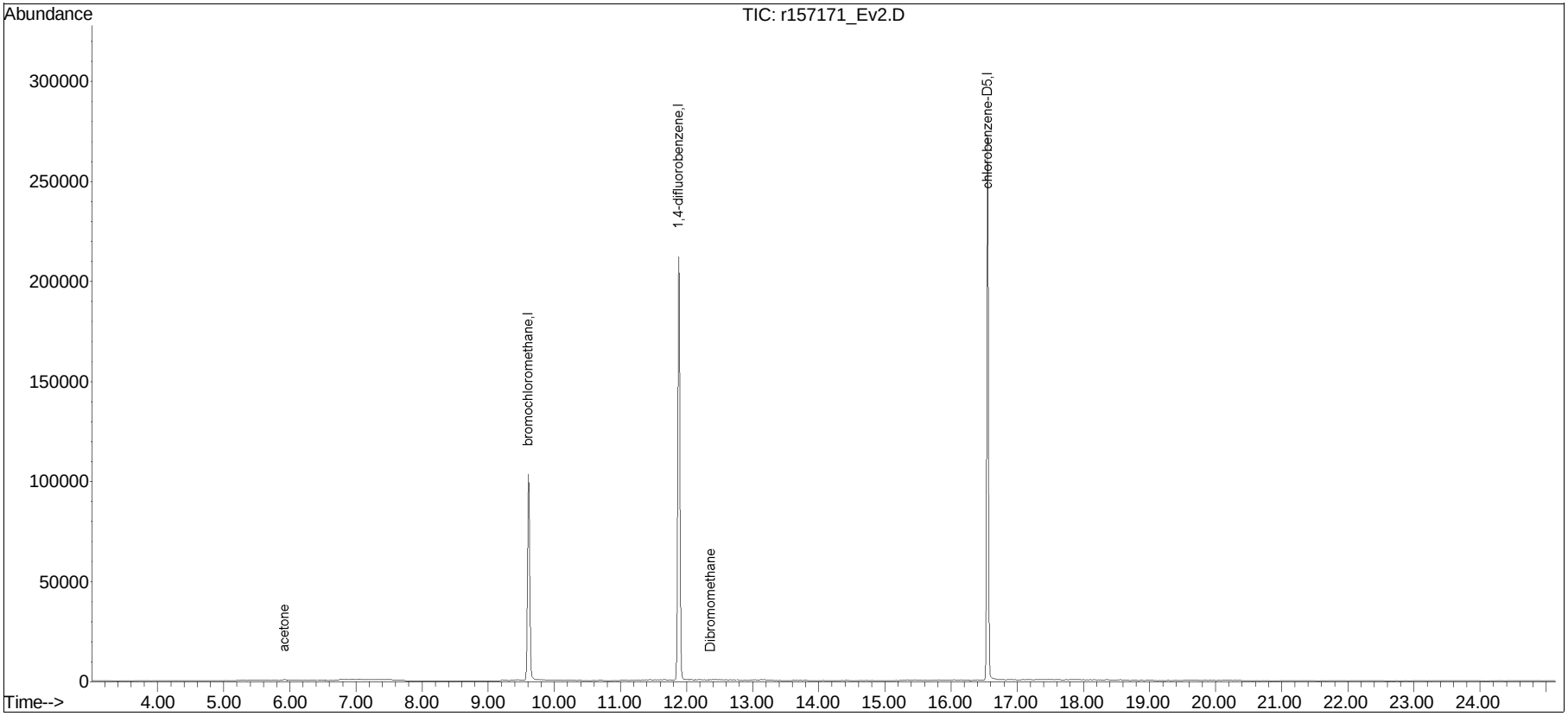
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157171_Ev2.D
Acq On : 20 Apr 2018 5:58 PM
Operator : AIRLAB15:RY
Sample : WG1108448-4,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 18:36:44 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Sub List : Default-LCS-AP2 - All compounds listedSIM\r157169_Ev2.D



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\Airlab15\	QMethod	: TSIM180404.M
Data File	: r157171_Ev2.D	Operator	: AIRLAB15:RY
Date Inj'd	: 4/20/2018 5:58 PM	Instrument	:
Sample	: WG1108448-4,3,250,250	Quant Date	: 4/20/2018 6:36 pm

There are no manual integrations or false positives in this file.

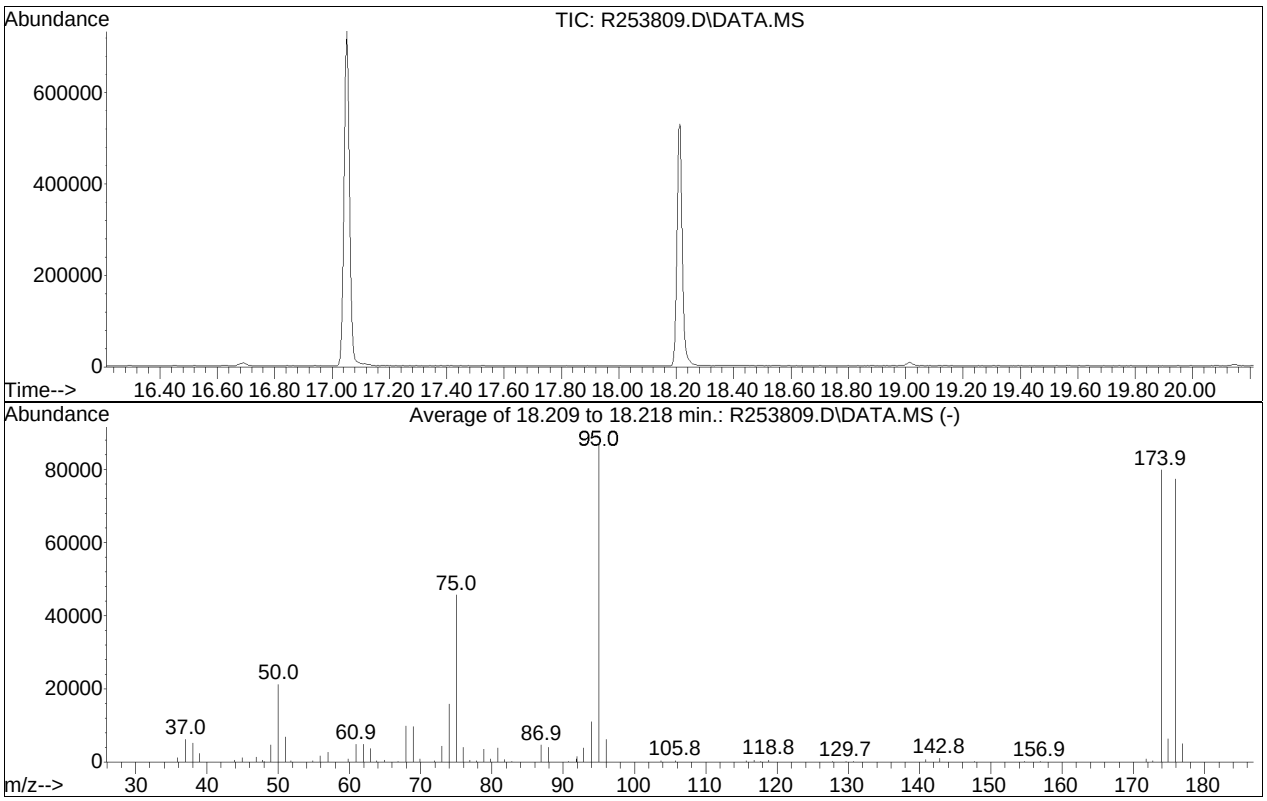
Analytical Event

Continuing Calibration
BFB Tune

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253809.D
Acq On : 21 Apr 2018 11:32 am
Operator : AIRPIANO2:RY
Sample : WG1108672-1,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Mon Mar 26 12:18:08 2018



AutoFind: Scans 1813, 1814, 1815; Background Corrected with Scan 1805

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	24.3	21238	PASS
75	95	30	66	52.4	45736	PASS
95	95	100	100	100.0	87341	PASS
96	95	5	9	7.2	6265	PASS
173	174	0.00	2	0.5	409	PASS
174	95	50	120	91.5	79907	PASS
175	174	4	9	7.9	6301	PASS
176	174	93	101	96.9	77469	PASS
177	176	5	9	6.4	4967	PASS

Continuing Calibration

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253812.D
Acq On : 21 Apr 2018 1:20 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-2,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 21 14:08:38 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	bromochloromethane	1.000	1.000	0.0	70	0.00
2		propylene	0.578	0.725	-25.4	93	0.00
3		dichlorodifluoromethane	1.995	1.872	6.2	68	0.00
4	C	chloromethane	0.926	0.898	3.0	70	0.00
5		Freon-114	2.693	2.297	14.7	61	0.00
6	C	vinyl chloride	1.051	0.944	10.2	65	0.00
7	C	1,3-butadiene	0.698	0.749	-7.3	78	0.00
8	C	bromomethane	0.905	0.775	14.4	62	0.00
9	C	chloroethane	0.517	0.449	13.2	64	0.00
10		ethanol	0.641	0.624	2.7	70	0.00
11	C	vinyl bromide	0.842	0.711	15.6	60	0.00
12	C	acrolein	0.424	0.240	43.4#	43#	0.00
13		acetone	1.145	1.033	9.8	63	0.00
14		trichlorofluoromethane	2.061	1.497	27.4	45#	0.00
15		isopropyl alcohol	1.271	1.032	18.8	75	0.00
16	C	acrylonitrile	0.545	0.435	20.2	59#	0.00
17	C	1,1-dichloroethene	1.362	1.072	21.3	57#	0.00
18		tertiary butyl alcohol	1.320	0.991	24.9	55#	0.00
19	C	methylene chloride	1.004	0.887	11.7	63	0.00
20	C	3-chloropropene	0.910	0.986	-8.4	79	0.00
21	C	carbon disulfide	2.364	1.885	20.3	59#	0.00
22		Freon 113	1.582	1.238	21.7	57#	0.00
23		trans-1,2-dichloroethene	1.225	0.939	23.3	55#	0.00
24	C	1,1-dichloroethane	1.550	1.254	19.1	58#	0.00
25	C	MTBE	1.863	1.551	16.7	59#	0.00
26	C	vinyl acetate	1.537	1.518	1.2	74	0.00
27	C	2-butanone	1.627	1.571	3.4	70	0.00
28		cis-1,2-dichloroethene	1.172	0.902	23.0	55#	0.00
29		Ethyl Acetate	0.250	0.225	10.0	63	0.00
30	C	chloroform	1.738	1.345	22.6	56#	0.00
31		Tetrahydrofuran	0.900	0.794	11.8	68	0.00
32	C	1,2-dichloroethane	1.205	0.946	21.5	57#	0.00
33	I	1,4-difluorobenzene	1.000	1.000	0.0	62	0.00
34	C	hexane	0.524	0.522	0.4	64	0.00
36	C	1,1,1-trichloroethane	0.709	0.626	11.7	57#	0.00
37	C	benzene	1.081	0.910	15.8	54#	0.00
38	C	carbon tetrachloride	0.704	0.630	10.5	57#	0.00
39		cyclohexane	0.527	0.521	1.1	63	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253812.D
Acq On : 21 Apr 2018 1:20 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-2,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 21 14:08:38 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
40		dibromomethane	0.477	0.343	28.1	50#	0.00
41	C	1,2-dichloropropane	0.441	0.390	11.6	57#	0.00
42		bromodichloromethane	0.824	0.792	3.9	61	0.00
43	C	1,4-dioxane	0.224	0.206	8.0	58#	0.00
44	C	trichloroethene	0.441	0.383	13.2	56#	0.00
45	C	2,2,4-trimethylpentane	1.718	1.830	-6.5	68	0.00
46		heptane	0.618	0.690	-11.7	71	0.00
47	C	cis-1,3-dichloropropene	0.585	0.505	13.7	54#	0.00
48	C	4-methyl-2-pentanone	0.867	0.934	-7.7	68	0.00
49		trans-1,3-dichloropropene	0.572	0.424	25.9	46#	0.00
50	C	1,1,2-trichloroethane	0.439	0.388	11.6	56#	0.00
51	I	chlorobenzene-D5	1.000	1.000	0.0	68	0.00
52	C	toluene	5.482	4.356	20.5	55#	0.00
54		2-hexanone	3.536	3.363	4.9	65	0.00
55		dibromochloromethane	3.146	2.892	8.1	63	0.00
56	C	1,2-dibromoethane	3.018	2.346	22.3	53#	0.00
57	C	tetrachloroethene	2.309	1.937	16.1	59#	0.00
58		1,1,1,2-tetrachloroethane	2.188	1.648	24.7	51#	0.00
59	C	chlorobenzene	4.323	3.412	21.1	54#	0.00
60	C	ethylbenzene	6.802	5.413	20.4	54#	0.00
61	C	m+p-xylene	5.321	4.362	18.0	54#	0.00
62	C	bromoform	2.850	2.864	-0.5	67	0.00
63	C	styrene	3.859	3.092	19.9	52#	0.00
64	C	1,1,2,2-tetrachloroethane	4.582	3.877	15.4	56#	0.00
65	C	o-xylene	5.518	4.685	15.1	56#	0.00
66		1,2,3-trichloropropane	3.324	2.686	19.2	55#	0.00
68	C	isopropylbenzene	6.935	5.614	19.0	55#	0.00
69		bromobenzene	3.874	3.096	20.1	54#	0.00
70		4-ethyl toluene	6.760	6.570	2.8	58#	0.00
71		1,3,5-trimethylbenzene	5.659	4.963	12.3	54#	0.00
72		tert-butylbenzene	6.285	5.224	16.9	55#	0.00
73		1,2,4-trimethylbenzene	5.662	5.432	4.1	57#	0.00
74	C	Benzyl Chloride	5.107	4.833	5.4	61	0.00
75		1,3-dichlorobenzene	4.024	3.781	6.0	56#	0.00
76	C	1,4-dichlorobenzene	4.135	3.769	8.9	55#	0.00
77		sec-butylbenzene	8.859	7.448	15.9	55#	0.00
78		p-isopropyltoluene	7.366	5.778	21.6	51#	0.00
79		1,2-dichlorobenzene	3.810	3.562	6.5	57#	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253812.D
Acq On : 21 Apr 2018 1:20 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-2,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 21 14:08:38 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
80	n-butylbenzene	7.231	6.351	12.2	55#	0.00
81 C	1,2,4-trichlorobenzene	3.251	3.049	6.2	52#	0.00
82	naphthalene	6.703	5.850	12.7	47#	0.00
83	1,2,3-trichlorobenzene	2.707	2.405	11.2	46#	0.00
84 C	hexachlorobutadiene	2.738	2.747	-0.3	60	0.00

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 1

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253812.D
Acq On : 21 Apr 2018 1:20 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-2,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 21 14:08:38 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180421SIM\R253812.D
Sub List : Default-LCS-AP2 - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) bromochloromethane	10.539	49	191605	10.000	ppbV		0.00
Standard Area = 191605			Recovery = 100.00%				
33) 1,4-difluorobenzene	12.736	114	388232	10.000	ppbV	#	0.00
Standard Area = 388232			Recovery = 100.00%				
51) chlorobenzene-D5	17.051	54	97750	10.000	ppbV		0.00
Standard Area = 97750			Recovery = 100.00%				
System Monitoring Compounds							
Target Compounds							Qvalue
2) propylene	4.281	41	69415M6	6.264	ppbV		
3) dichlorodifluoromethane	4.389	85	179359	4.692	ppbV		98
4) chloromethane	4.626	50	86010	4.845	ppbV		96
5) Freon-114	4.783	85	220058	4.265	ppbV		99
6) vinyl chloride	4.961	62	90423	4.492	ppbV		96
7) 1,3-butadiene	5.168	54	71756	5.366	ppbV		99
8) bromomethane	5.558	94	74277	4.283	ppbV		98
9) chloroethane	5.822	64	42993	4.339	ppbV		95
10) ethanol	6.046	31	298670	24.327	ppbV		97
11) vinyl bromide	6.325	106	68115	4.222	ppbV		98
12) acrolein	6.517	56	23033	2.837	ppbV	#	92
13) acetone	6.701	43	495042	22.570	ppbV		100
14) trichlorofluoromethane	6.909	101	143380	3.632	ppbV		99
15) isopropyl alcohol	7.069	45	247085	10.143	ppbV		99
16) acrylonitrile	7.333	53	41656	3.993	ppbV		99
17) 1,1-dichloroethene	7.764	61	102667	3.934	ppbV		98
18) tertiary butyl alcohol	7.860	59	94986	3.754	ppbV	#	91
19) methylene chloride	7.932	49	84963	4.417	ppbV		92
20) 3-chloropropene	8.084	41	94495	5.422	ppbV	#	92
21) carbon disulfide	8.276	76	180600	3.987	ppbV		98
22) Freon 113	8.276	101	118559	3.912	ppbV		100
23) trans-1,2-dichloroethene	9.112	61	89917	3.830	ppbV		98
24) 1,1-dichloroethane	9.351	63	120114	4.045	ppbV		99
25) MTBE	9.446	73	148637	4.163	ppbV		97
26) vinyl acetate	9.555	43	145391	4.936	ppbV		97
27) 2-butanone	9.842	43	150513	4.829	ppbV		94
28) cis-1,2-dichloroethene	10.352	61	86460	3.849	ppbV		97
29) Ethyl Acetate	10.624	61	21547	4.496	ppbV	#	57
30) chloroform	10.699	83	128865	3.871	ppbV		99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253812.D
Acq On : 21 Apr 2018 1:20 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-2,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 21 14:08:38 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180421SIM\R253812.D
Sub List : Default-LCS-AP2 - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
31) Tetrahydrofuran	11.178	42	76049M6	4.412	ppbV		
32) 1,2-dichloroethane	11.535	62	90582	3.924	ppbV	#	95
34) hexane	10.596	57	101347	4.984	ppbV		94
36) 1,1,1-trichloroethane	11.822	97	121473	4.414	ppbV		92
37) benzene	12.344	78	176565	4.209	ppbV		99
38) carbon tetrachloride	12.519	117	122330	4.476	ppbV		94
39) cyclohexane	12.660	56	101121	4.938	ppbV		94
40) dibromomethane	13.237	93	66597	3.598	ppbV		93
41) 1,2-dichloropropane	13.270	63	75784	4.427	ppbV		97
42) bromodichloromethane	13.487	83	153750	4.806	ppbV	#	98
43) 1,4-dioxane	13.542	88	39930	4.601	ppbV		92
44) trichloroethene	13.531	130	74290	4.339	ppbV		97
45) 2,2,4-trimethylpentane	13.564	57	355154	5.325	ppbV		97
46) heptane	13.847	43	133993	5.582	ppbV		96
47) cis-1,3-dichloropropene	14.495	75	98088	4.322	ppbV		91
48) 4-methyl-2-pentanone	14.532	43	181295	5.383	ppbV		96
49) trans-1,3-dichloropropene	15.047	75	82339	3.705	ppbV	#	86
50) 1,1,2-trichloroethane	15.237	97	75397	4.428	ppbV		95
52) toluene	15.508	91	212917	3.973	ppbV		98
54) 2-hexanone	15.734	43	164375	4.756	ppbV		91
55) dibromochloromethane	15.905	129	141357	4.597	ppbV		96
56) 1,2-dibromoethane	16.131	107	114656	3.886	ppbV		99
57) tetrachloroethene	16.529	166	94687	4.196	ppbV		91
58) 1,1,1,2-tetrachloroethane	17.070	131	80529	3.764	ppbV		99
59) chlorobenzene	17.085	112	166762	3.946	ppbV		93
60) ethylbenzene	17.370	91	264547	3.979	ppbV		100
61) m+p-xylene	17.509	91	426398	8.198	ppbV		100
62) bromoform	17.594	173	139969	5.025	ppbV		98
63) styrene	17.785	104	151099	4.006	ppbV		98
64) 1,1,2,2-tetrachloroethane	17.866	83	189474	4.230	ppbV		99
65) o-xylene	17.866	91	228963	4.245	ppbV		97
66) 1,2,3-trichloropropane	17.966	75	131292	4.040	ppbV		96
68) isopropylbenzene	18.294	105	274398	4.048	ppbV		100
69) bromobenzene	18.385	77	151338	3.996	ppbV		99
70) 4-ethyl toluene	18.770	105	321125	4.860	ppbV		100
71) 1,3,5-trimethylbenzene	18.823	105	242563	4.385	ppbV	#	10
72) tert-butylbenzene	19.128	119	255327	4.156	ppbV		98
73) 1,2,4-trimethylbenzene	19.128	105	265489	4.797	ppbV	#	21
74) Benzyl Chloride	19.247	91	236237	4.733	ppbV	#	32
75) 1,3-dichlorobenzene	19.266	146	184788	4.698	ppbV		99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253812.D
Acq On : 21 Apr 2018 1:20 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-2,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 21 14:08:38 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180421SIM\R253812.D
Sub List : Default-LCS-AP2 - All compounds listed

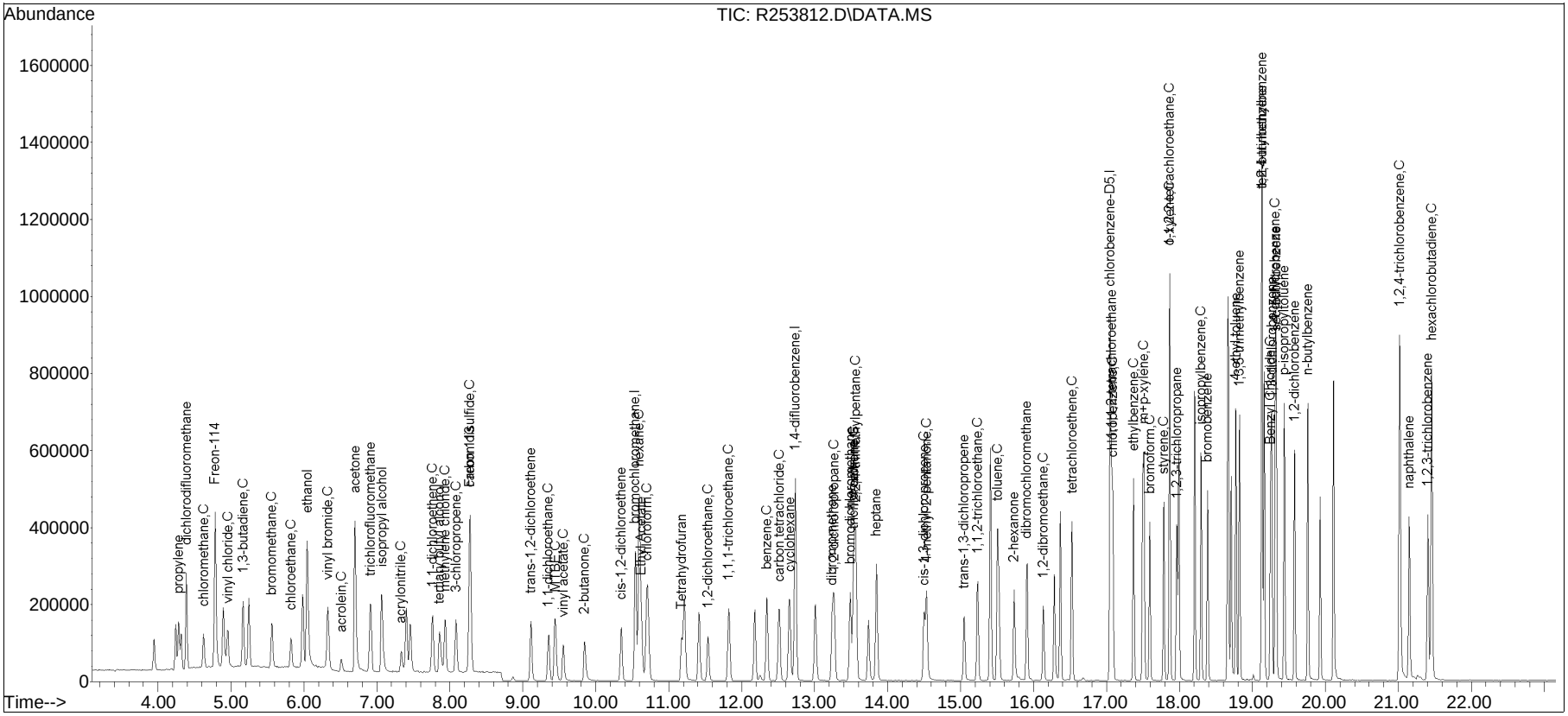
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
76) 1,4-dichlorobenzene	19.314	146	184221	4.558	ppbV	96
77) sec-butylbenzene	19.328	105	364005	4.203	ppbV	98
78) p-isopropyltoluene	19.438	119	282386	3.922	ppbV	96
79) 1,2-dichlorobenzene	19.576	146	174106	4.675	ppbV	98
80) n-butylbenzene	19.761	91	310427	4.392	ppbV	99
81) 1,2,4-trichlorobenzene	21.018	180	149001	4.689	ppbV #	89
82) naphthalene	21.147	128	285922	4.364	ppbV	98
83) 1,2,3-trichlorobenzene	21.404	180	117528	4.442	ppbV	96
84) hexachlorobutadiene	21.457	225	134255	5.016	ppbV	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default-LCS-AP2 - All compounds listedR253812.D

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253812.D
Acq On : 21 Apr 2018 1:20 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-2,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 21 14:08:38 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

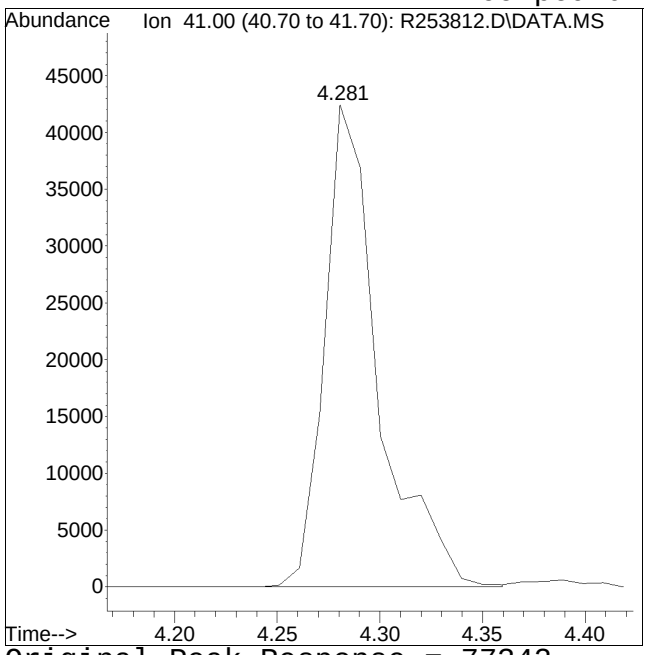


Manual Integration/Negative Proof Report

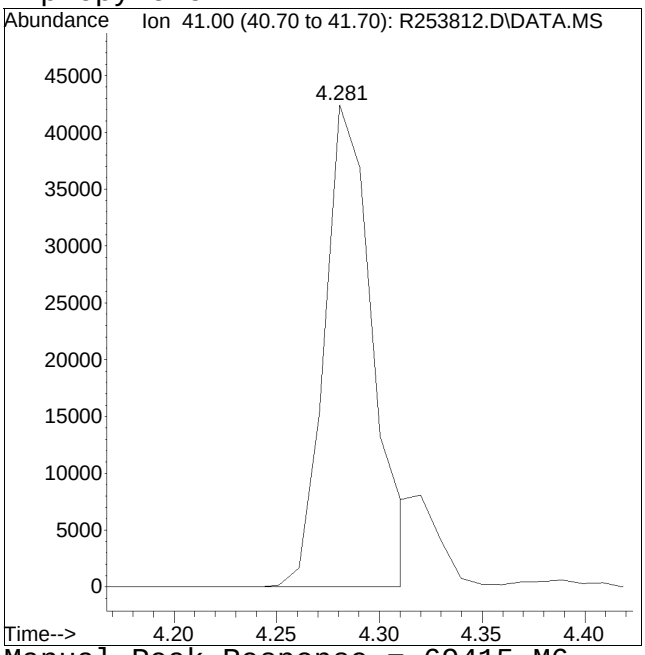
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253812.D
Date Inj'd : 4/21/2018 1:20 pm
Sample : WG1108672-2,3,250,250

Method : TSIM180325.M
Operator : AIRPIANO2:RY
Instrument : Airpiano 2
Quant Date : 4/21/2018 2:08 pm

Compound #2: propylene



Original Peak Response = 77342



Manual Peak Response = 69415 M6

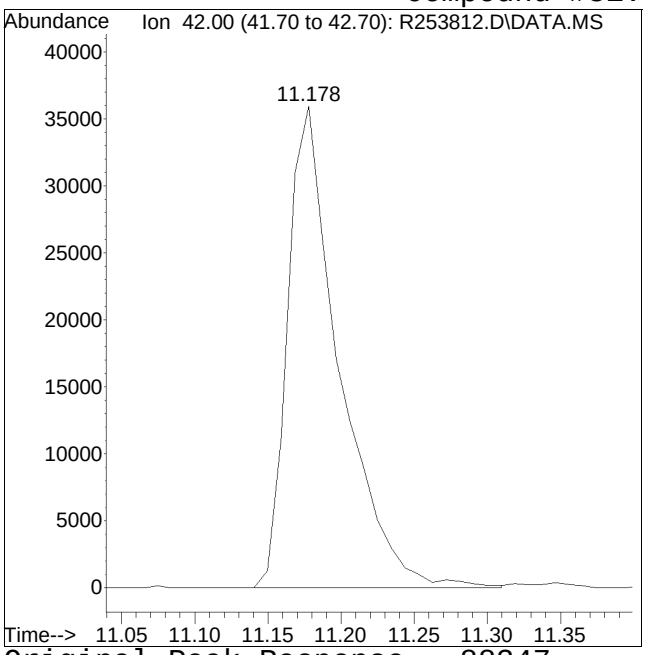
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

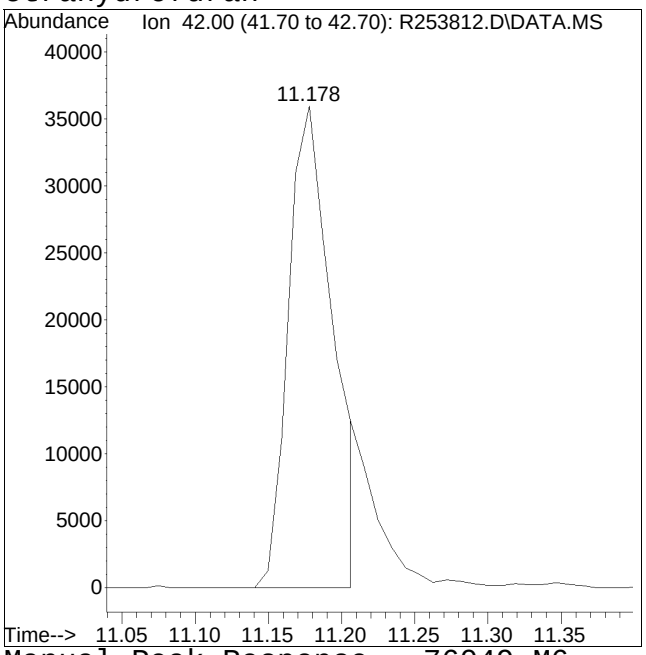
Data Path : O:\Forensics\Data\AIR2\2018Q
Data File : R253812.D
Date Inj'd : 4/21/2018 1:20 pm
Sample : WG1108672-2,3,250,250

Method : TSIM180325.M
Operator : AIRPIANO2:RY
Instrument : Airpiano 2
Quant Date : 4/21/2018 2:08 pm

Compound #31: Tetrahydrofuran



Original Peak Response = 88347



Manual Peak Response = 76049 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Sample Raw Data

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253815.D
Acq On : 21 Apr 2018 3:35 pm
Operator : AIRPIANO2:MB
Sample : L1812962-05,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Apr 21 16:04:22 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180421SIM\R253812.D
Sub List : 9_Chlorinateds - .

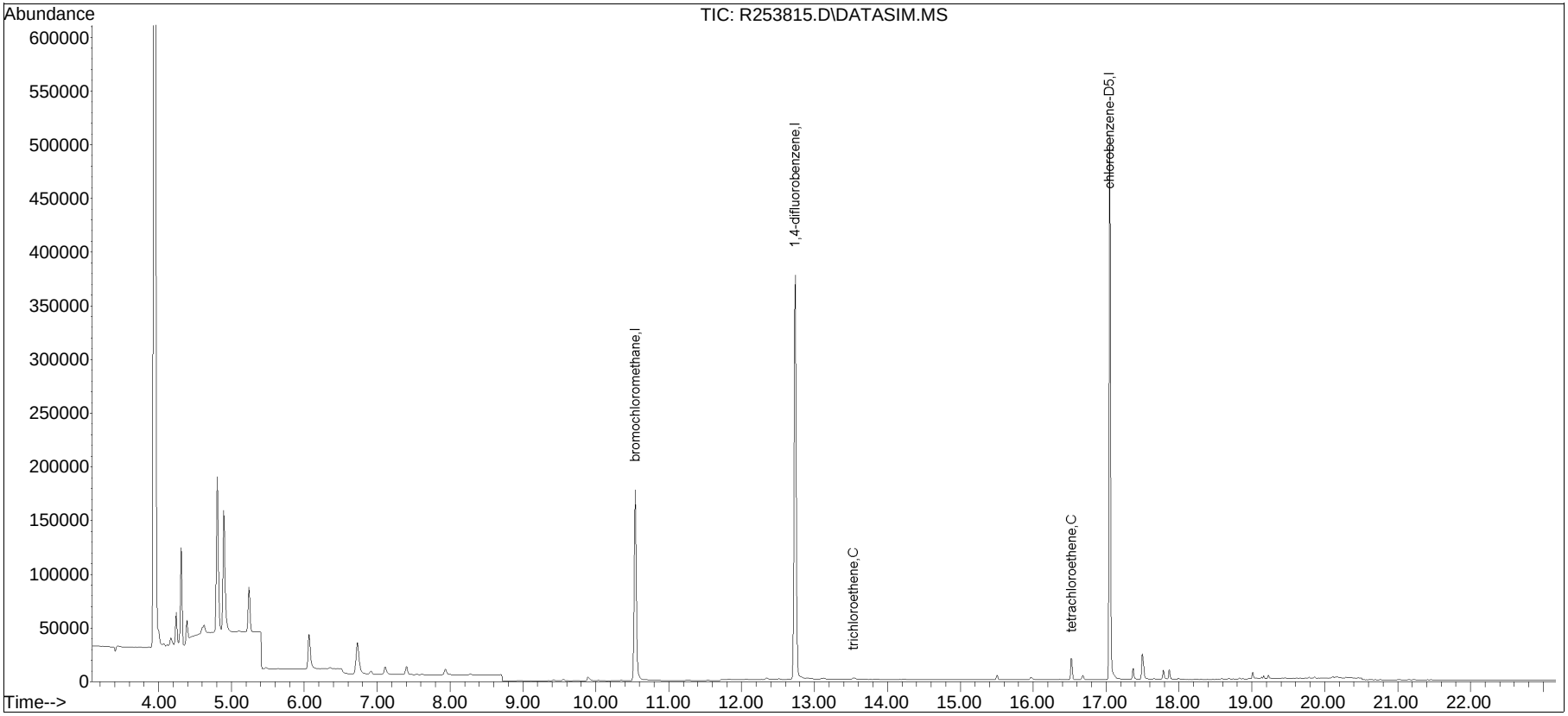
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	215253	10.000	ppbV	0.00
Standard Area = 191605			Recovery = 112.34%			
33) 1,4-difluorobenzene	12.738	114	413838	10.000	ppbV	0.00
Standard Area = 388232			Recovery = 106.60%			
51) chlorobenzene-D5	17.048	54	87770	10.000	ppbV	0.00
Standard Area = 97750			Recovery = 89.79%			
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.952		0	N.D.		
17) 1,1-dichloroethene	7.766		0	N.D.		
23) trans-1,2-dichloroethene	9.106		0	N.D.		
28) cis-1,2-dichloroethene	10.344		0	N.D.		
44) trichloroethene	13.532	130	544	0.030	ppbV	100
57) tetrachloroethene	16.530	166	9762	0.482	ppbV #	87

(#) = qualifier out of range (m) = manual integration (+) = signals summed

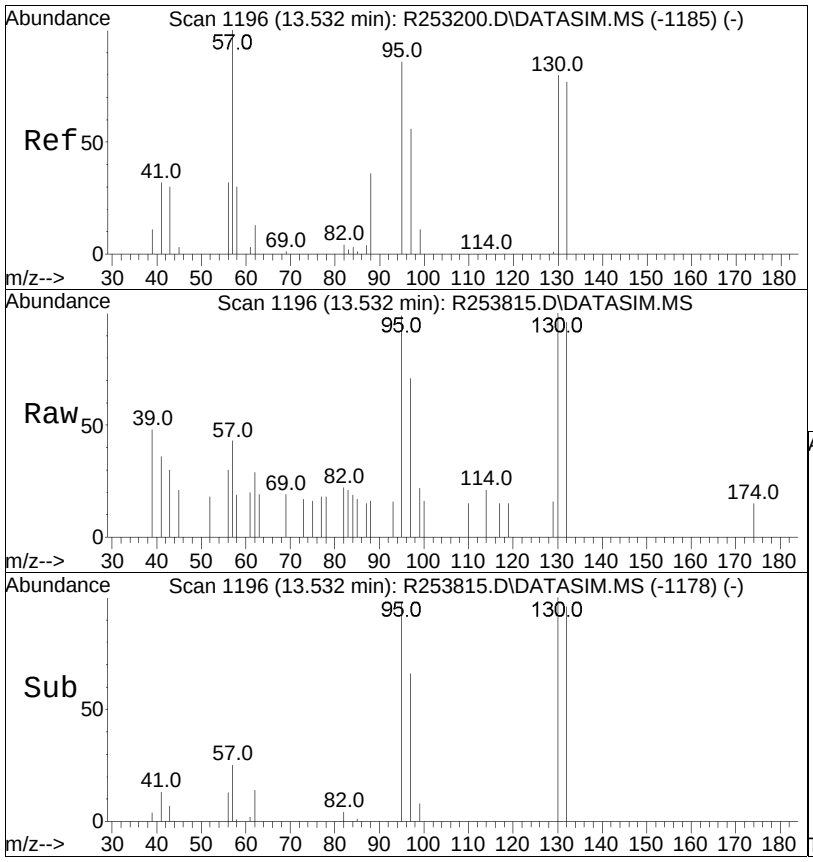
Sub List : 9_Chlorinateds - .AIR2\2018\180421SIM\R253812.D

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253815.D
Acq On : 21 Apr 2018 3:35 pm
Operator : AIRPIANO2:MB
Sample : L1812962-05,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Apr 21 16:04:22 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration



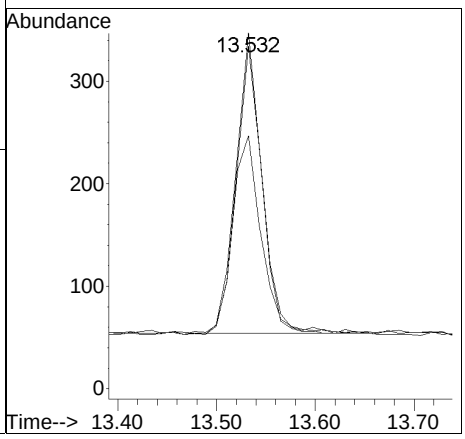
TSIM180325.M Mon Apr 23 09:40:31 2018 Page 2

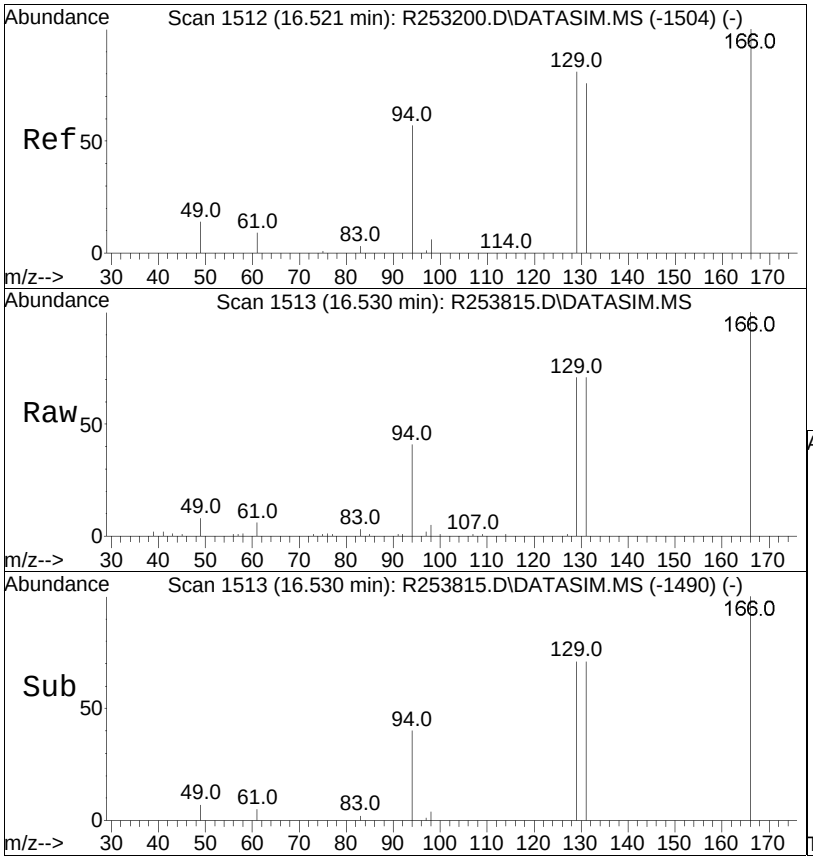


#44
trichloroethene
Concen: 0.03 ppbV
RT: 13.532 min Scan# 1196
Delta R.T. -0.000 min
Lab File: R253815.D
Acq: 21 Apr 2018 3:35 pm

Tgt Ion:130 Resp: 544

Ion	Ratio	Lower	Upper
130	100		
132	96.3	77.2	115.8
97	71.2	56.5	84.7

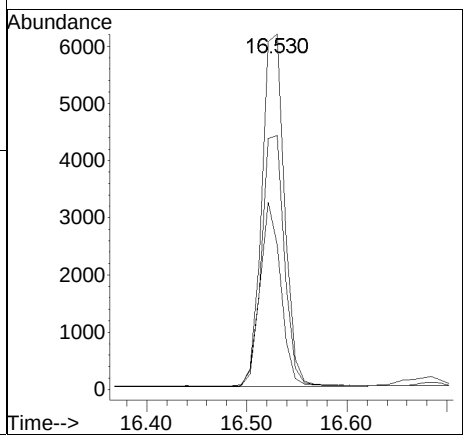




#57
tetrachloroethene
Concen: 0.48 ppbV
RT: 16.530 min Scan# 1513
Delta R.T. 0.009 min
Lab File: R253815.D
Acq: 21 Apr 2018 3:35 pm

Tgt Ion:166 Resp: 9762

Ion	Ratio	Lower	Upper
166	100		
131	71.5	61.0	91.6
94	40.7	46.0	69.0#



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\AIR2\2018Q	Method	: TSIM180325.M
Data File	: R253815.D	Operator	: AIRPIANO2:MB
Date Inj'd	: 4/21/2018 3:35 pm	Instrument	: Airpiano 2
Sample	: L1812962-05,3,250,250	Quant Date	: 4/21/2018 4:04 pm

There are no manual integrations or false positives in this file.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253816.D
Acq On : 21 Apr 2018 4:45 pm
Operator : AIRPIANO2:MB
Sample : L1812962-06,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 22 08:45:42 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180421SIM\R253812.D
Sub List : 9_Chlorinateds - .

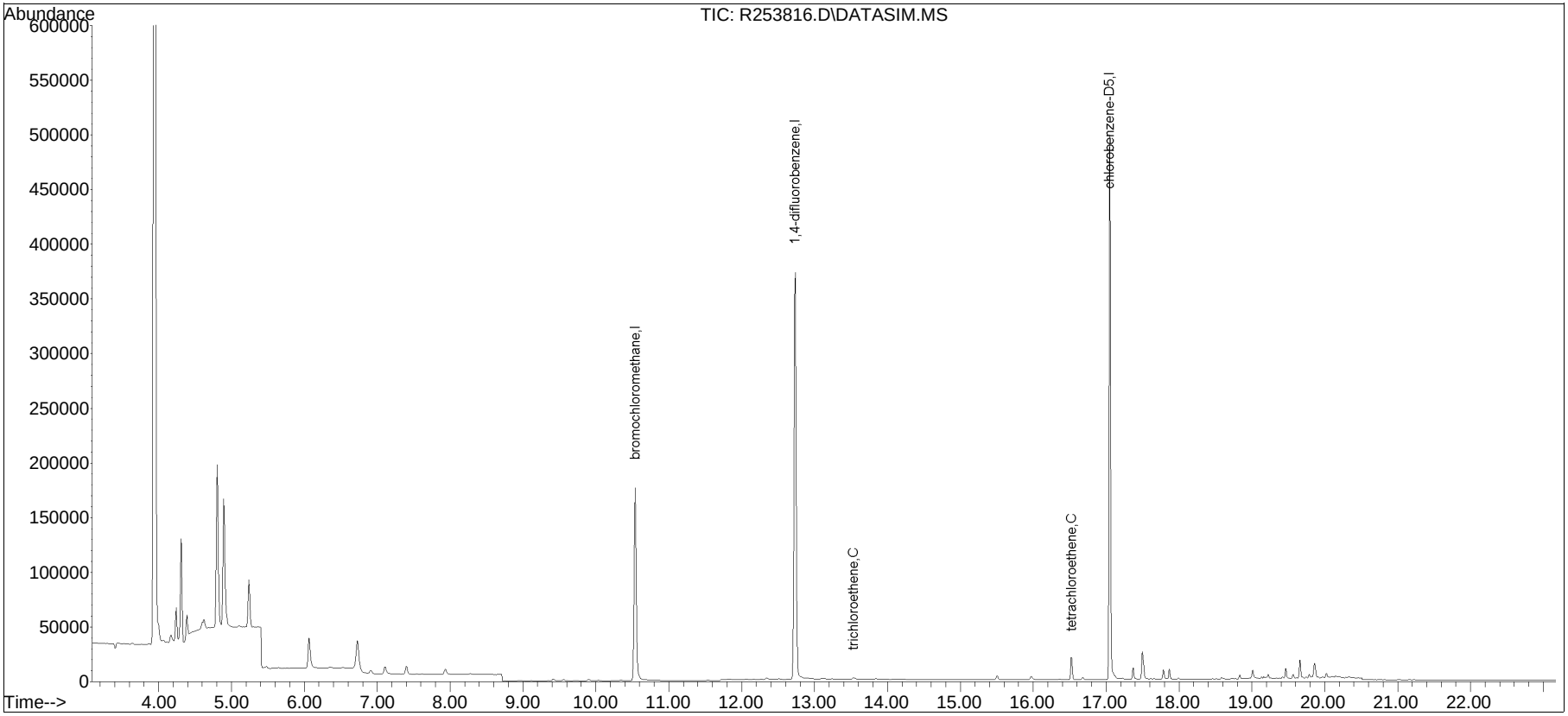
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	216213	10.000	ppbV	0.00
Standard Area = 191605			Recovery = 112.84%			
33) 1,4-difluorobenzene	12.738	114	414230	10.000	ppbV	0.00
Standard Area = 388232			Recovery = 106.70%			
51) chlorobenzene-D5	17.048	54	86988	10.000	ppbV	0.00
Standard Area = 97750			Recovery = 88.99%			
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.962		0	N.D.		
17) 1,1-dichloroethene	7.750		0	N.D.		
23) trans-1,2-dichloroethene	9.113		0	N.D.		
28) cis-1,2-dichloroethene	10.343		0	N.D.		
44) trichloroethene	13.532	130	575	0.031	ppbV	97
57) tetrachloroethene	16.530	166	9971	0.496	ppbV #	86

(#) = qualifier out of range (m) = manual integration (+) = signals summed

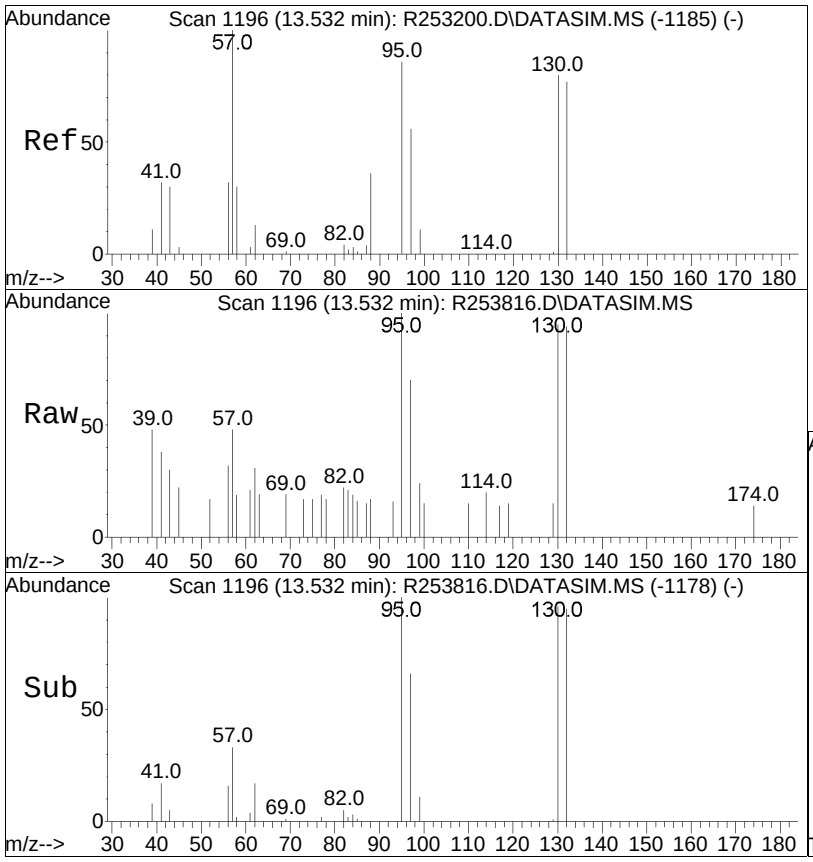
Sub List : 9_Chlorinateds - .AIR2\2018\180421SIM\R253812.D

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253816.D
Acq On : 21 Apr 2018 4:45 pm
Operator : AIRPIANO2:MB
Sample : L1812962-06,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 22 08:45:42 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration



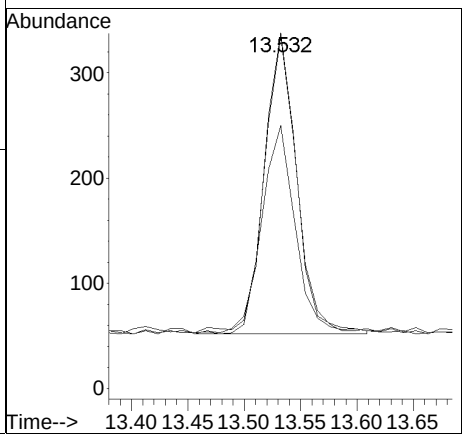
TSIM180325.M Mon Apr 23 09:40:36 2018 Page 2

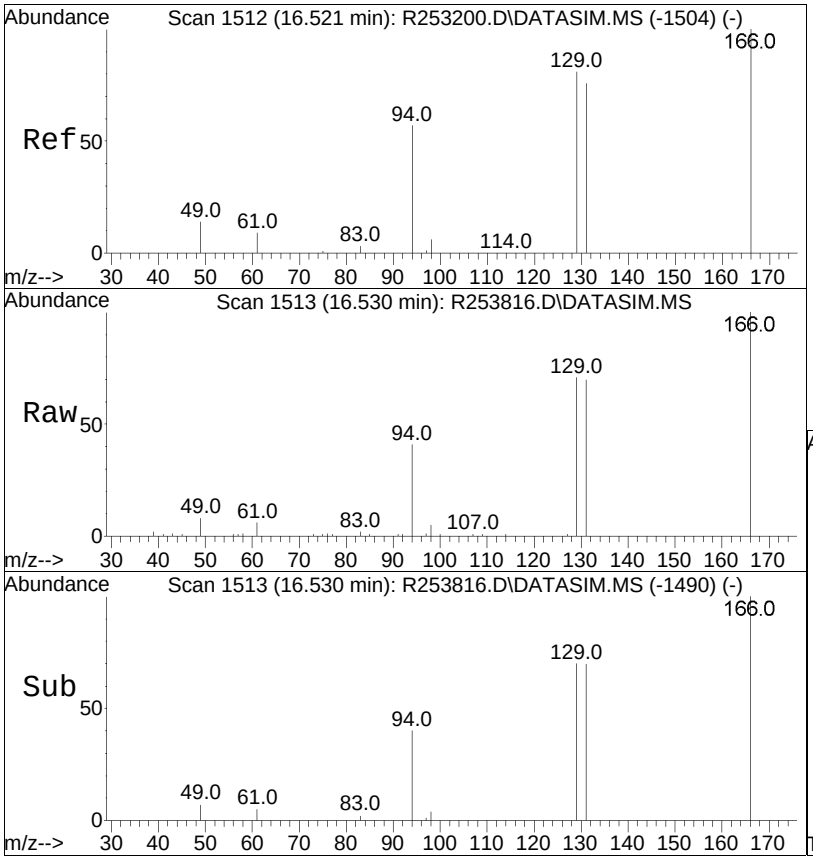


#44
trichloroethene
Concen: 0.03 ppbV
RT: 13.532 min Scan# 1196
Delta R.T. -0.000 min
Lab File: R253816.D
Acq: 21 Apr 2018 4:45 pm

Tgt Ion:130 Resp: 575

Ion	Ratio	Lower	Upper
130	100		
132	99.1	77.2	115.8
97	74.0	56.5	84.7

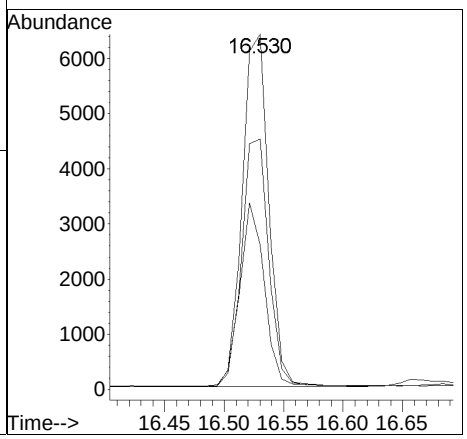




#57
tetrachloroethene
Concen: 0.50 ppbV
RT: 16.530 min Scan# 1513
Delta R.T. 0.009 min
Lab File: R253816.D
Acq: 21 Apr 2018 4:45 pm

Tgt Ion:166 Resp: 9971

Ion	Ratio	Lower	Upper
166	100		
131	70.4	61.0	91.6
94	40.5	46.0	69.0#



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\AIR2\2018Q	Method	: TSIM180325.M
Data File	: R253816.D	Operator	: AIRPIANO2:MB
Date Inj'd	: 4/21/2018 4:45 pm	Instrument	: Airpiano 2
Sample	: L1812962-06,3,250,250	Quant Date	: 4/22/2018 8:45 am

There are no manual integrations or false positives in this file.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253817.D
Acq On : 21 Apr 2018 5:21 pm
Operator : AIRPIANO2:MB
Sample : L1812962-07,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Apr 23 09:37:04 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180421SIM\R253812.D
Sub List : 9_Chlorinateds - .

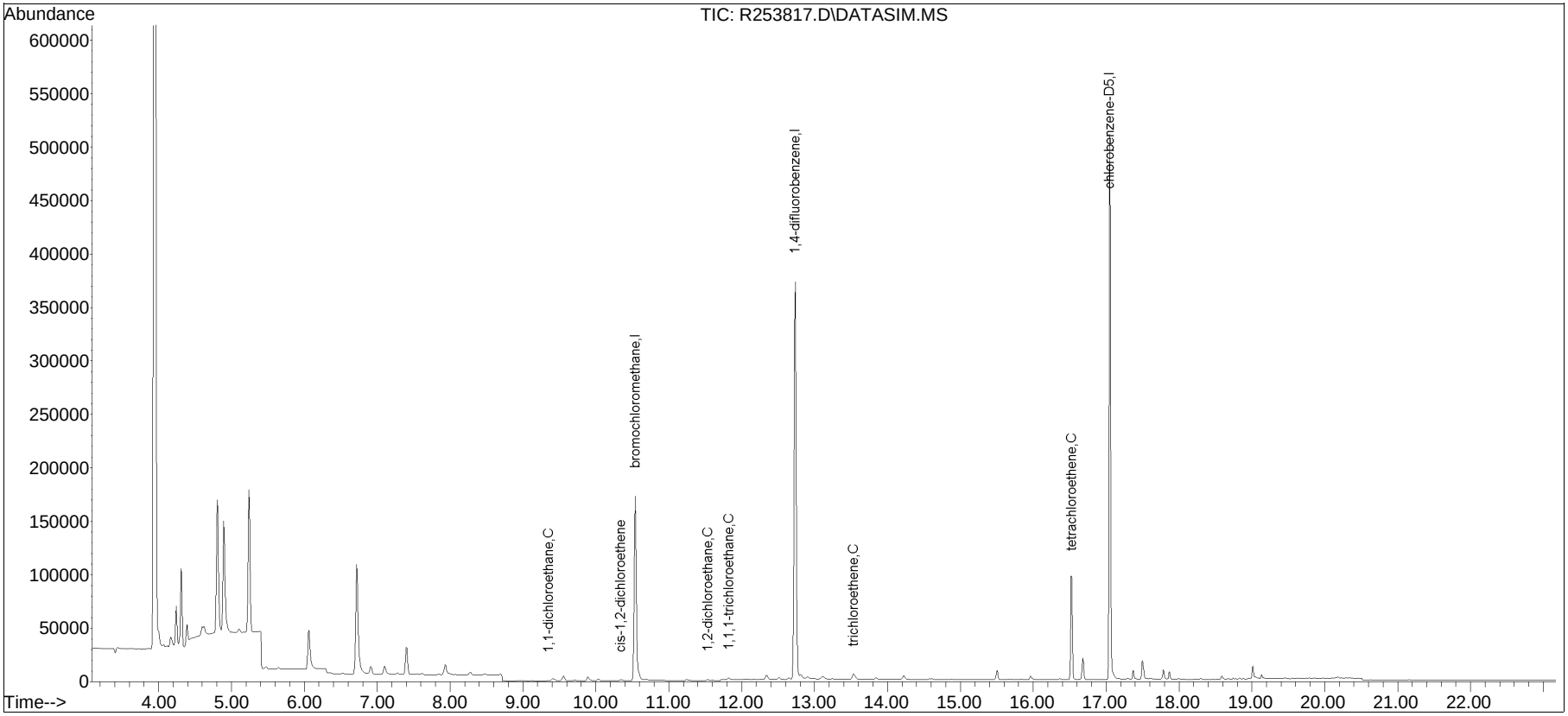
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	210360	10.000	ppbV	0.00
Standard Area = 191605			Recovery = 109.79%			
33) 1,4-difluorobenzene	12.738	114	404919	10.000	ppbV	0.00
Standard Area = 388232			Recovery = 104.30%			
51) chlorobenzene-D5	17.048	54	88374	10.000	ppbV	0.00
Standard Area = 97750			Recovery = 90.41%			
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.952		0	N.D.		
17) 1,1-dichloroethene	7.758		0	N.D.		
23) trans-1,2-dichloroethene	9.113		0	N.D.		
28) cis-1,2-dichloroethene	10.343	61	681	0.028	ppbV #	91
44) trichloroethene	13.532	130	1978	0.111	ppbV	99
57) tetrachloroethene	16.530	166	47877	2.347	ppbV #	85

(#) = qualifier out of range (m) = manual integration (+) = signals summed

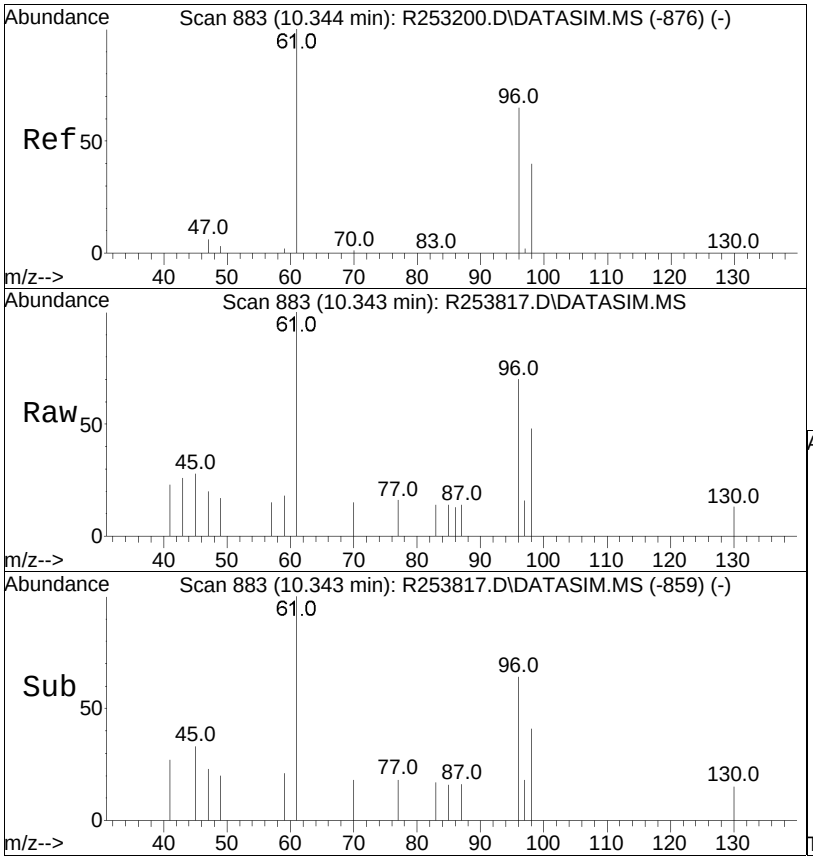
Sub List : 9_Chlorinateds - .AIR2\2018\180421SIM\R253812.D

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253817.D
Acq On : 21 Apr 2018 5:21 pm
Operator : AIRPIANO2:MB
Sample : L1812962-07,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Apr 23 09:37:04 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration



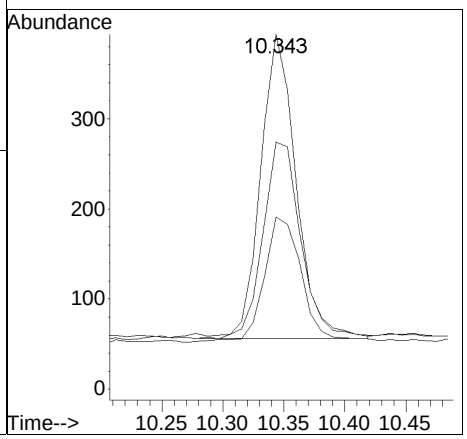
TSIM180325.M Mon Apr 23 09:40:41 2018 Page 2

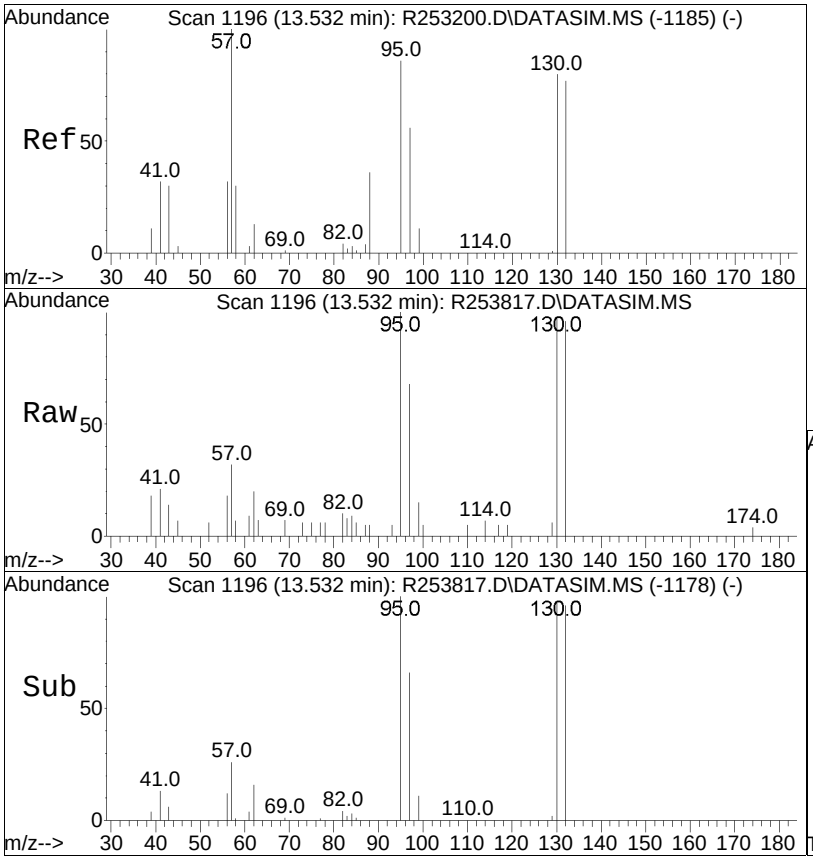


#28
cis-1,2-dichloroethene
Concen: 0.03 ppbV
RT: 10.343 min Scan# 883
Delta R.T. -0.000 min
Lab File: R253817.D
Acq: 21 Apr 2018 5:21 pm

Tgt Ion: 61 Resp: 681

Ion	Ratio	Lower	Upper
61	100		
96	69.5	51.7	77.5
98	48.5	31.7	47.5#

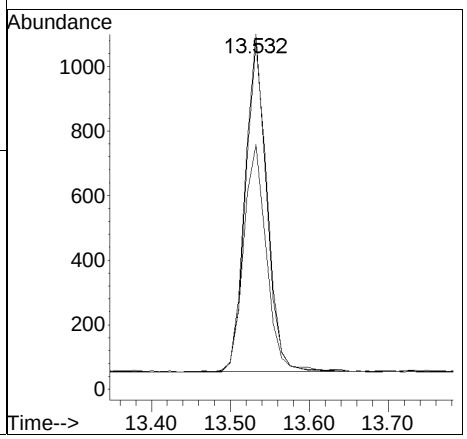


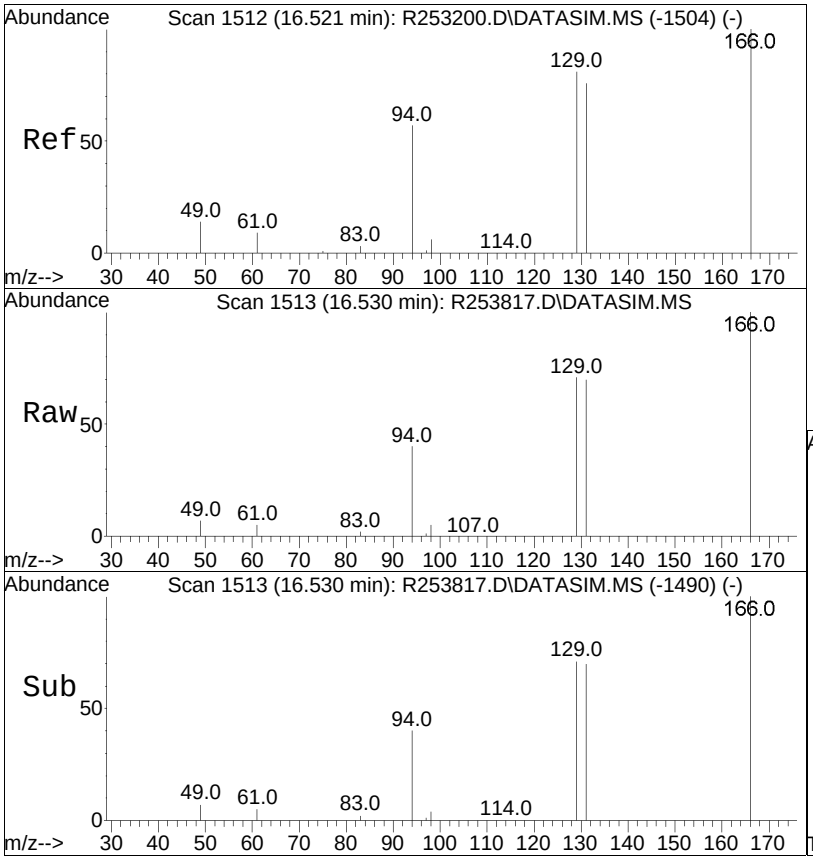


#44
trichloroethene
Concen: 0.11 ppbV
RT: 13.532 min Scan# 1196
Delta R.T. -0.000 min
Lab File: R253817.D
Acq: 21 Apr 2018 5:21 pm

Tgt Ion:130 Resp: 1978

Ion	Ratio	Lower	Upper
130	100		
132	97.5	77.2	115.8
97	68.9	56.5	84.7

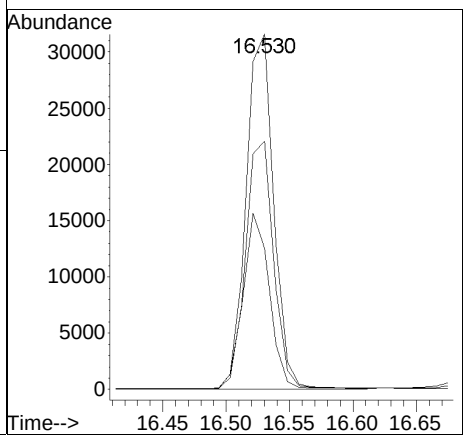




#57
tetrachloroethene
Concen: 2.35 ppbV
RT: 16.530 min Scan# 1513
Delta R.T. 0.009 min
Lab File: R253817.D
Acq: 21 Apr 2018 5:21 pm

Tgt Ion:166 Resp: 47877

Ion	Ratio	Lower	Upper
166	100		
131	69.9	61.0	91.6
94	39.7	46.0	69.0#



Method Blank
Raw Data

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253814.D
Acq On : 21 Apr 2018 2:48 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-4,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Apr 21 15:16:10 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180421SIM\R253812.D
Sub List : Default-LCS-AP2 - All compounds listed

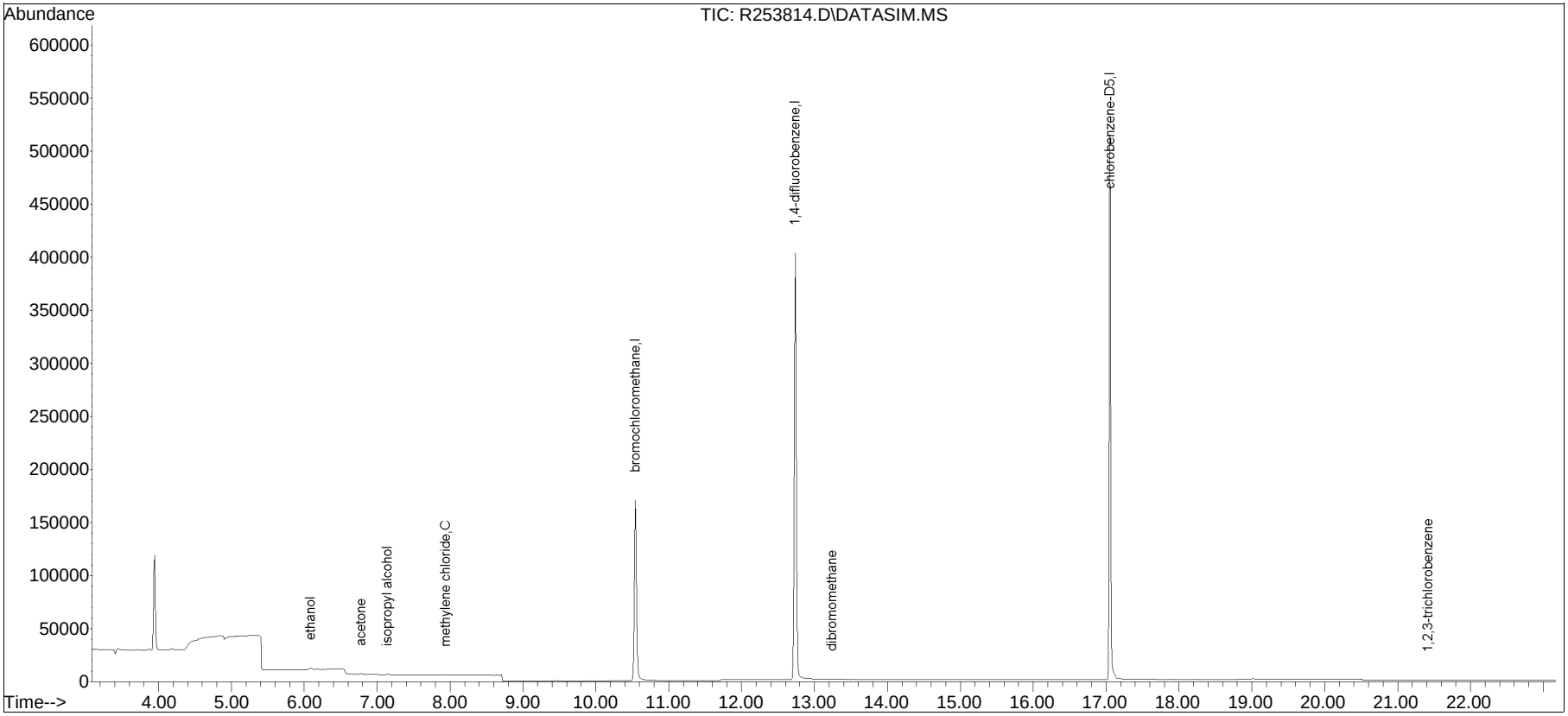
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	211811	10.000	ppbV	0.00
Standard Area = 191605			Recovery = 110.55%			
33) 1,4-difluorobenzene	12.738	114	423616	10.000	ppbV	0.00
Standard Area = 388232			Recovery = 109.11%			
51) chlorobenzene-D5	17.053	54	91106	10.000	ppbV	0.00
Standard Area = 97750			Recovery = 93.20%			
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.942		0	N.D.		
17) 1,1-dichloroethene	7.766		0	N.D.		
23) trans-1,2-dichloroethene	9.106		0	N.D.		
28) cis-1,2-dichloroethene	10.344		0	N.D.		
44) trichloroethene	13.543		0	N.D.		
57) tetrachloroethene	16.521		0	N.D.		

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default-LCS-AP2 - All compounds listedR253812.D

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253814.D
Acq On : 21 Apr 2018 2:48 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-4,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Apr 21 15:16:10 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration



Batch Quality Control

LCS Raw Data

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157169_Ev2.D
Acq On : 20 Apr 2018 4:16 PM
Operator : AIRLAB15:RY
Sample : WG1108448-3,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 16:56:10 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	bromochloromethane	10.000	10.000	0.0	99	-0.04
2		propylene	5.000	4.769	4.6	97	-0.03
3		dichlorodifluoromethane	5.000	4.241	15.2	88	-0.04
4	C	chloromethane	5.000	4.473	10.5	95	-0.04
5		Freon-114	5.000	4.601	8.0	97	-0.04
6	C	vinyl chloride	5.000	4.198	16.0	88	-0.04
7	C	1,3-butadiene	5.000	4.921	1.6	106	-0.04
8	C	bromomethane	5.000	4.199	16.0	88	-0.04
9	C	chloroethane	5.000	4.451	11.0	133	-0.04
10		ethanol	25.000	19.694	21.2	79	-0.04
11	C	vinyl bromide	5.000	4.235	15.3	90	-0.05
12		acrolein	5.000	3.331	33.4#	79	-0.04
13		acetone	25.000	21.739	13.0	92	-0.05
14		trichlorofluoromethane	5.000	3.967	20.7	80	-0.05
15		isopropyl alcohol	12.500	9.899	20.8	90	-0.04
16	C	acrylonitrile	5.000	3.992	20.2	82	-0.04
17	C	1,1-dichloroethene	5.000	4.005	19.9	81	-0.05
18		tertiary butyl alcohol	5.000	3.583	28.3	76	-0.04
19	C	methylene chloride	5.000	4.190	16.2	83	-0.05
20	C	3-chloropropene	5.000	4.405	11.9	75	-0.04
21	C	carbon disulfide	5.000	4.247	15.1	86	-0.05
22		Freon 113	5.000	4.217	15.7	88	-0.05
23		trans-1,2-dichloroethene	5.000	4.617	7.7	92	-0.04
24	C	1,1-dichloroethane	5.000	4.494	10.1	92	-0.05
25	C	MTBE	5.000	4.420	11.6	88	-0.04
26	C	vinyl acetate	5.000	5.518	-10.4	113	-0.04
27	C	2-butanone	5.000	4.615	7.7	97	-0.04
28		cis-1,2-dichloroethene	5.000	4.398	12.0	88	-0.04
29		Ethyl Acetate	5.000	4.713	5.7	95	-0.04
30	C	chloroform	5.000	4.540	9.2	92	-0.04
31		Tetrahydrofuran	5.000	4.505	9.9	88	-0.04
32	C	1,2-dichloroethane	5.000	4.046	19.1	82	-0.04
33	I	1,4-difluorobenzene	10.000	10.000	0.0	103	-0.04
34	C	hexane	5.000	4.656	6.9	95	-0.04
36	C	1,1,1-trichloroethane	5.000	5.082	-1.6	105	-0.05
37	C	benzene	5.000	4.419	11.6	93	-0.04
38	C	carbon tetrachloride	5.000	4.459	10.8	92	-0.04
39		cyclohexane	5.000	4.838	3.2	98	-0.04

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157169_Ev2.D
Acq On : 20 Apr 2018 4:16 PM
Operator : AIRLAB15:RY
Sample : WG1108448-3,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 16:56:10 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
40		Dibromomethane	5.000	3.762	24.8	87	-0.05
41	C	1,2-dichloropropane	5.000	4.215	15.7	88	-0.04
42		bromodichloromethane	5.000	5.078	-1.6	99	-0.04
43	C	1,4-dioxane	5.000	4.854	2.9	101	-0.05
44	C	trichloroethene	5.000	4.419	11.6	96	-0.05
45	C	2,2,4-trimethylpentane	5.000	4.846	3.1	99	-0.04
46		heptane	5.000	4.764	4.7	97	-0.05
47	C	cis-1,3-dichloropropene	5.000	4.827	3.5	95	-0.04
48	C	4-methyl-2-pentanone	5.000	5.059	-1.2	98	-0.04
49		trans-1,3-dichloropropene	5.000	4.125	17.5	79	-0.04
50	C	1,1,2-trichloroethane	5.000	4.528	9.4	96	-0.04
51	I	chlorobenzene-D5	10.000	10.000	0.0	95	-0.03
52	C	toluene	5.000	4.618	7.6	92	-0.03
54		2-hexanone	5.000	5.307	-6.1	90	-0.04
55		dibromochloromethane	5.000	5.775	-15.5	105	-0.03
56	C	1,2-dibromoethane	5.000	4.774	4.5	95	-0.03
57	C	tetrachloroethene	5.000	4.794	4.1	94	-0.03
58		1,1,1,2-tetrachloroethane	5.000	4.747	5.1	90	-0.03
59	C	chlorobenzene	5.000	4.772	4.6	95	-0.03
60	C	ethylbenzene	5.000	4.971	0.6	92	-0.02
61	C	m+p-xylene	10.000	9.919	0.8	92	-0.03
62	C	bromoform	5.000	5.793	-15.9	105	-0.03
63	C	styrene	5.000	5.100	-2.0	92	-0.03
64	C	1,1,2,2-tetrachloroethane	5.000	5.080	-1.6	94	-0.02
65	C	o-xylene	5.000	5.015	-0.3	90	-0.02
66		1,2,3-Trichloropropane	5.000	4.519	9.6	88	-0.03
68	C	isopropylbenzene	5.000	4.966	0.7	90	-0.02
69		Bromobenzene	5.000	4.592	8.2	87	-0.02
70		4-ethyl toluene	5.000	5.422	-8.4	94	-0.02
71		1,3,5-trimethylbenzene	5.000	5.166	-3.3	90	-0.02
72		tert-butylbenzene	5.000	4.639	7.2	86	-0.03
73		1,2,4-trimethylbenzene	5.000	5.350	-7.0	91	-0.03
74	C	Benzyl Chloride	5.000	5.808	-16.2	96	-0.02
75		1,3-dichlorobenzene	5.000	5.111	-2.2	91	-0.03
76	C	1,4-dichlorobenzene	5.000	4.910	1.8	88	-0.02
77		sec-butylbenzene	5.000	4.975	0.5	84	-0.02
78		p-isopropyltoluene	5.000	4.720	5.6	79	-0.02
79		1,2-dichlorobenzene	5.000	5.121	-2.4	90	-0.02

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157169_Ev2.D
Acq On : 20 Apr 2018 4:16 PM
Operator : AIRLAB15:RY
Sample : WG1108448-3,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 16:56:10 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
80	n-butylbenzene	5.000	5.154	-3.1	83	-0.02
81 C	1,2,4-trichlorobenzene	5.000	4.882	2.4	73	-0.02
82	naphthalene	5.000	4.714	5.7	75	-0.02
83	1,2,3-trichlorobenzene	5.000	4.870	2.6	74	-0.02
84 C	hexachlorobutadiene	5.000	5.421	-8.4	84	-0.02

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253812.D
Acq On : 21 Apr 2018 1:20 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-3,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 21 14:08:38 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	bromochloromethane	10.000	10.000	0.0	70	0.00
2		propylene	5.000	6.264	-25.3	93	0.00
3		dichlorodifluoromethane	5.000	4.692	6.2	68	0.00
4	C	chloromethane	5.000	4.845	3.1	70	0.00
5		Freon-114	5.000	4.265	14.7	61	0.00
6	C	vinyl chloride	5.000	4.492	10.2	65	0.00
7	C	1,3-butadiene	5.000	5.366	-7.3	78	0.00
8	C	bromomethane	5.000	4.283	14.3	62	0.00
9	C	chloroethane	5.000	4.339	13.2	64	0.00
10		ethanol	25.000	24.327	2.7	70	0.00
11	C	vinyl bromide	5.000	4.222	15.6	60	0.00
12	C	acrolein	5.000	2.837	43.3#	43	0.00
13		acetone	25.000	22.570	9.7	63	0.00
14		trichlorofluoromethane	5.000	3.632	27.4	45	0.00
15		isopropyl alcohol	12.500	10.143	18.9	75	0.00
16	C	acrylonitrile	5.000	3.993	20.1	59	0.00
17	C	1,1-dichloroethene	5.000	3.934	21.3	57	0.00
18		tertiary butyl alcohol	5.000	3.754	24.9	55	0.00
19	C	methylene chloride	5.000	4.417	11.7	63	0.00
20	C	3-chloropropene	5.000	5.422	-8.4	79	0.00
21	C	carbon disulfide	5.000	3.987	20.3	59	0.00
22		Freon 113	5.000	3.912	21.8	57	0.00
23		trans-1,2-dichloroethene	5.000	3.830	23.4	55	0.00
24	C	1,1-dichloroethane	5.000	4.045	19.1	58	0.00
25	C	MTBE	5.000	4.163	16.7	59	0.00
26	C	vinyl acetate	5.000	4.936	1.3	74	0.00
27	C	2-butanone	5.000	4.829	3.4	70	0.00
28		cis-1,2-dichloroethene	5.000	3.849	23.0	55	0.00
29		Ethyl Acetate	5.000	4.496	10.1	63	0.00
30	C	chloroform	5.000	3.871	22.6	56	0.00
31		Tetrahydrofuran	5.000	4.412	11.8	68	0.00
32	C	1,2-dichloroethane	5.000	3.924	21.5	57	0.00
33	I	1,4-difluorobenzene	10.000	10.000	0.0	62	0.00
34	C	hexane	5.000	4.984	0.3	64	0.00
36	C	1,1,1-trichloroethane	5.000	4.414	11.7	57	0.00
37	C	benzene	5.000	4.209	15.8	54	0.00
38	C	carbon tetrachloride	5.000	4.476	10.5	57	0.00
39		cyclohexane	5.000	4.938	1.2	63	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253812.D
Acq On : 21 Apr 2018 1:20 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-3,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 21 14:08:38 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
40		dibromomethane	5.000	3.598	28.0	50	0.00
41	C	1,2-dichloropropane	5.000	4.427	11.5	57	0.00
42		bromodichloromethane	5.000	4.806	3.9	61	0.00
43	C	1,4-dioxane	5.000	4.601	8.0	58	0.00
44	C	trichloroethene	5.000	4.339	13.2	56	0.00
45	C	2,2,4-trimethylpentane	5.000	5.325	-6.5	68	0.00
46		heptane	5.000	5.582	-11.6	71	0.00
47	C	cis-1,3-dichloropropene	5.000	4.322	13.6	54	0.00
48	C	4-methyl-2-pentanone	5.000	5.383	-7.7	68	0.00
49		trans-1,3-dichloropropene	5.000	3.705	25.9	46	0.00
50	C	1,1,2-trichloroethane	5.000	4.428	11.4	56	0.00
51	I	chlorobenzene-D5	10.000	10.000	0.0	68	0.00
52	C	toluene	5.000	3.973	20.5	55	0.00
54		2-hexanone	5.000	4.756	4.9	65	0.00
55		dibromochloromethane	5.000	4.597	8.1	63	0.00
56	C	1,2-dibromoethane	5.000	3.886	22.3	53	0.00
57	C	tetrachloroethene	5.000	4.196	16.1	59	0.00
58		1,1,1,2-tetrachloroethane	5.000	3.764	24.7	51	0.00
59	C	chlorobenzene	5.000	3.946	21.1	54	0.00
60	C	ethylbenzene	5.000	3.979	20.4	54	0.00
61	C	m+p-xylene	10.000	8.198	18.0	54	0.00
62	C	bromoform	5.000	5.025	-0.5	67	0.00
63	C	styrene	5.000	4.006	19.9	52	0.00
64	C	1,1,2,2-tetrachloroethane	5.000	4.230	15.4	56	0.00
65	C	o-xylene	5.000	4.245	15.1	56	0.00
66		1,2,3-trichloropropane	5.000	4.040	19.2	55	0.00
68	C	isopropylbenzene	5.000	4.048	19.0	55	0.00
69		bromobenzene	5.000	3.996	20.1	54	0.00
70		4-ethyl toluene	5.000	4.860	2.8	58	0.00
71		1,3,5-trimethylbenzene	5.000	4.385	12.3	54	0.00
72		tert-butylbenzene	5.000	4.156	16.9	55	0.00
73		1,2,4-trimethylbenzene	5.000	4.797	4.1	57	0.00
74	C	Benzyl Chloride	5.000	4.733	5.3	61	0.00
75		1,3-dichlorobenzene	5.000	4.698	6.0	56	0.00
76	C	1,4-dichlorobenzene	5.000	4.558	8.8	55	0.00
77		sec-butylbenzene	5.000	4.203	15.9	55	0.00
78		p-isopropyltoluene	5.000	3.922	21.6	51	0.00
79		1,2-dichlorobenzene	5.000	4.675	6.5	57	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253812.D
Acq On : 21 Apr 2018 1:20 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-3,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 21 14:08:38 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
80	n-butylbenzene	5.000	4.392	12.2	55	0.00
81 C	1,2,4-trichlorobenzene	5.000	4.689	6.2	52	0.00
82	naphthalene	5.000	4.364	12.7	47	0.00
83	1,2,3-trichlorobenzene	5.000	4.442	11.2	46	0.00
84 C	hexachlorobutadiene	5.000	5.016	-0.3	60	0.00

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 1

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157169_Ev2.D
Acq On : 20 Apr 2018 4:16 PM
Operator : AIRLAB15:RY
Sample : WG1108448-3,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 16:56:10 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180420SIM\r157169_Ev2.D
Sub List : Default-LCS-AP2 - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.62	49	132894	10.000	ppbV	#-0.04
Standard Area = 132894			Recovery = 100.00%			
33) 1,4-difluorobenzene	11.89	114	287503	10.000	ppbV	-0.04
Standard Area = 287503			Recovery = 100.00%			
51) chlorobenzene-D5	16.55	54	56135	10.000	ppbV	-0.03
Standard Area = 56135			Recovery = 100.00%			
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.40	62	44819	4.198	ppbV	98
17) 1,1-dichloroethene	6.88	61	57388	4.005	ppbV	97
23) trans-1,2-dichloroethene	8.19	61	66095	4.617	ppbV	98
28) cis-1,2-dichloroethene	9.43	61	60834	4.398	ppbV	95
44) trichloroethene	12.68	130	56245	4.419	ppbV	96
57) tetrachloroethene	15.98	166	60120	4.794	ppbV	96

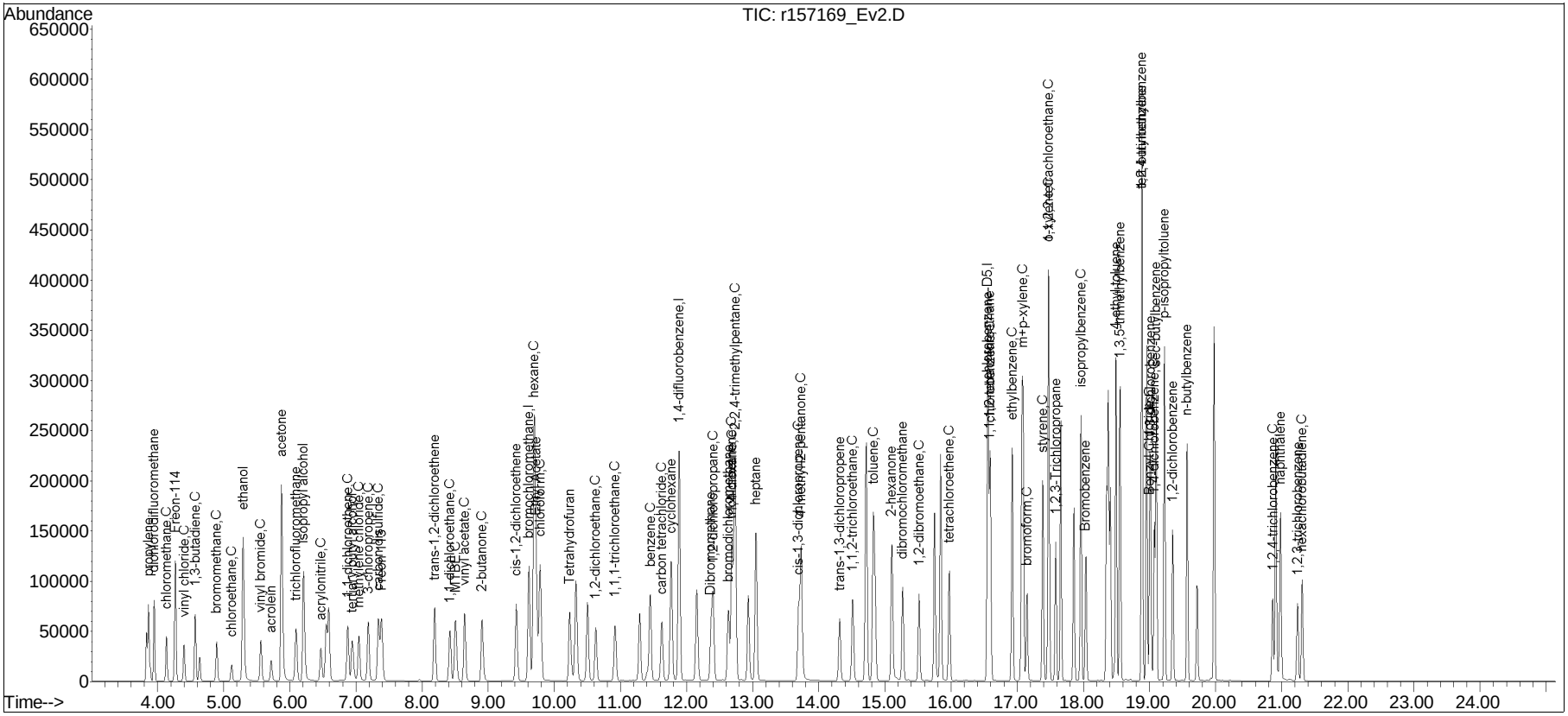
(#) = qualifier out of range (m) = manual integration (+) = signals summed

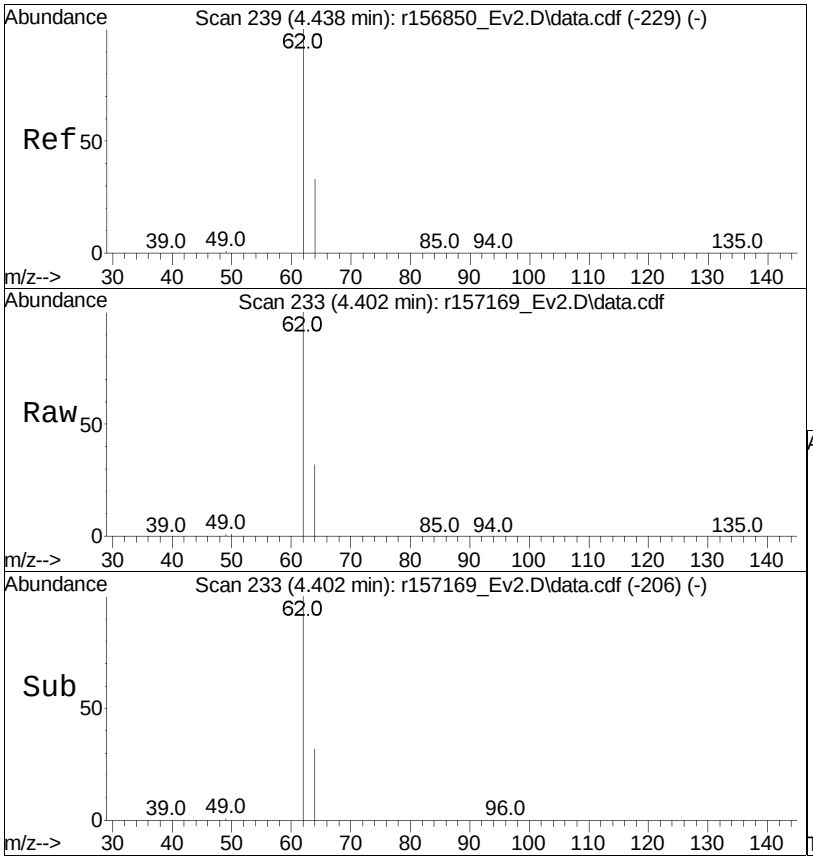
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157169_Ev2.D
Acq On : 20 Apr 2018 4:16 PM
Operator : AIRLAB15:RY
Sample : WG1108448-3,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 20 16:56:10 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Sub List : Default-LCS-AP2 - All compounds listedSIM\r157169_Ev2.D

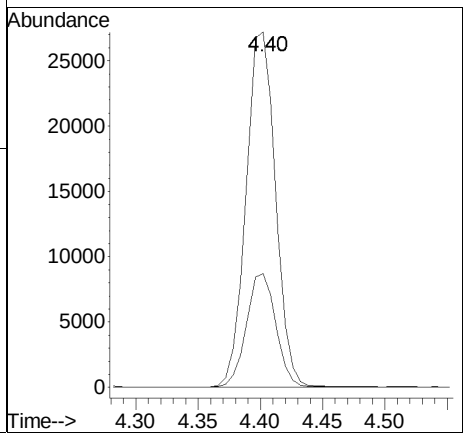


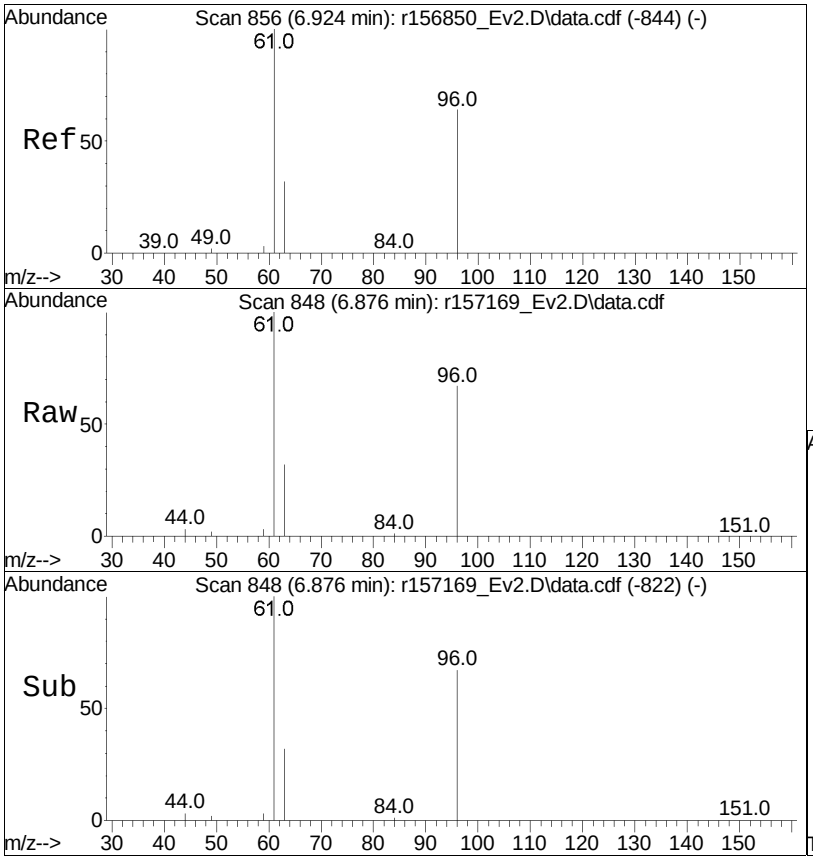


#6
vinyl chloride
Concen: 4.20 ppbV
RT: 4.40 min Scan# 233
Delta R.T. -0.036 min
Lab File: r157169_Ev2.D
Acq: 20 Apr 2018 4:16 PM

Tgt Ion: 62 Resp: 44819

Ion	Ratio	Lower	Upper
62	100		
64	32.0	26.3	39.5

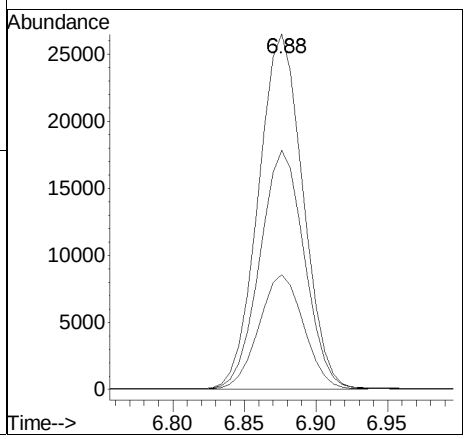


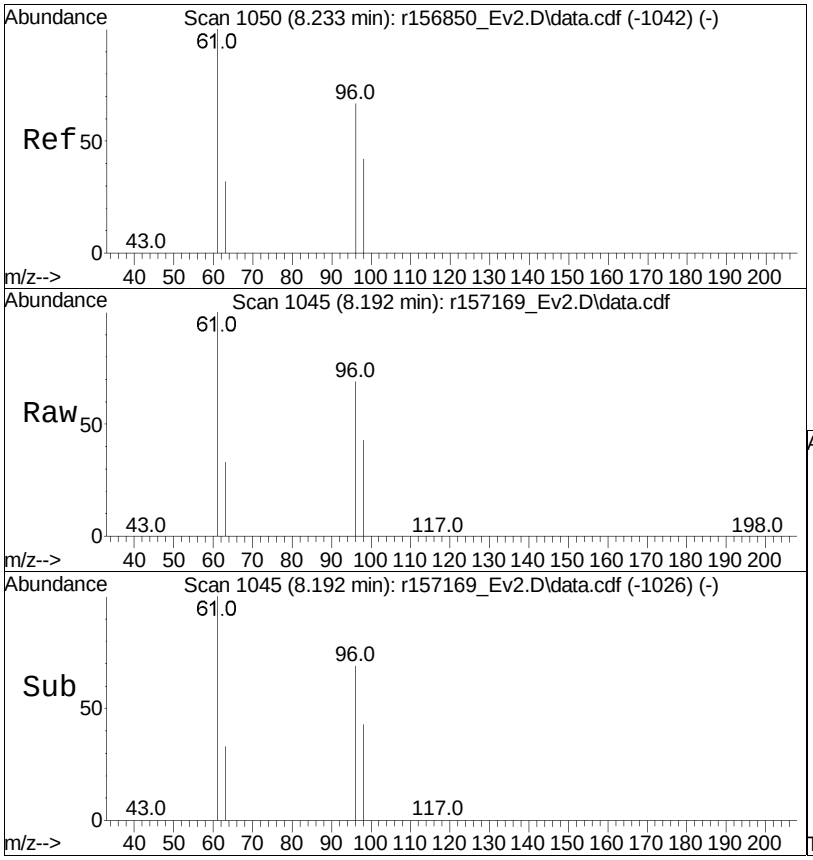


#17
1,1-dichloroethene
Concen: 4.00 ppbV
RT: 6.88 min Scan# 848
Delta R.T. -0.048 min
Lab File: r157169_Ev2.D
Acq: 20 Apr 2018 4:16 PM

Tgt Ion: 61 Resp: 57388

Ion	Ratio	Lower	Upper
61	100		
96	67.2	51.1	76.7
63	32.3	25.9	38.9

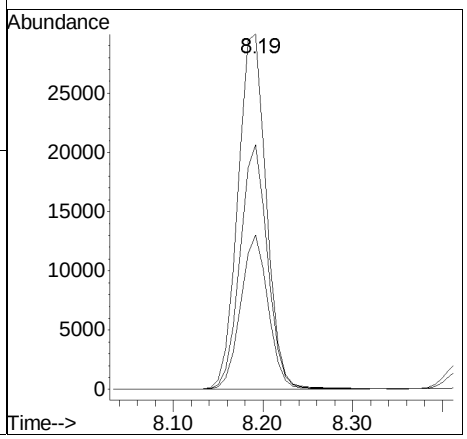


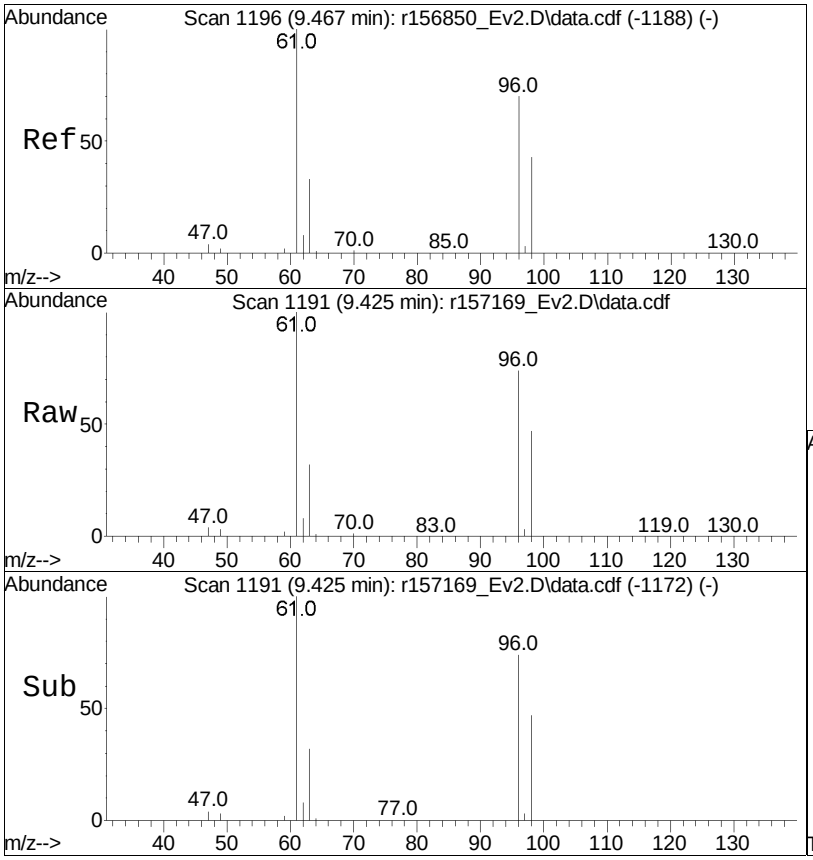


#23
trans-1,2-dichloroethene
Concen: 4.62 ppbV
RT: 8.19 min Scan# 1045
Delta R.T. -0.042 min
Lab File: r157169_Ev2.D
Acq: 20 Apr 2018 4:16 PM

Tgt Ion: 61 Resp: 66095

Ion	Ratio	Lower	Upper
61	100		
96	68.8	54.0	81.0
98	43.5	33.8	50.8

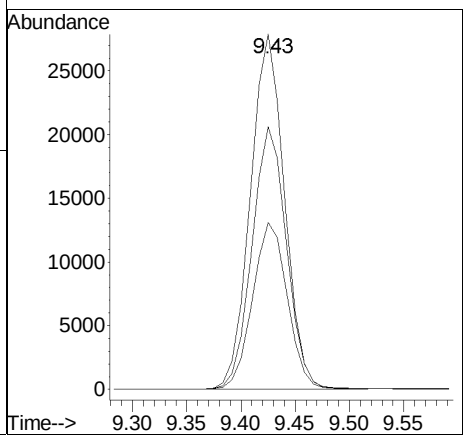


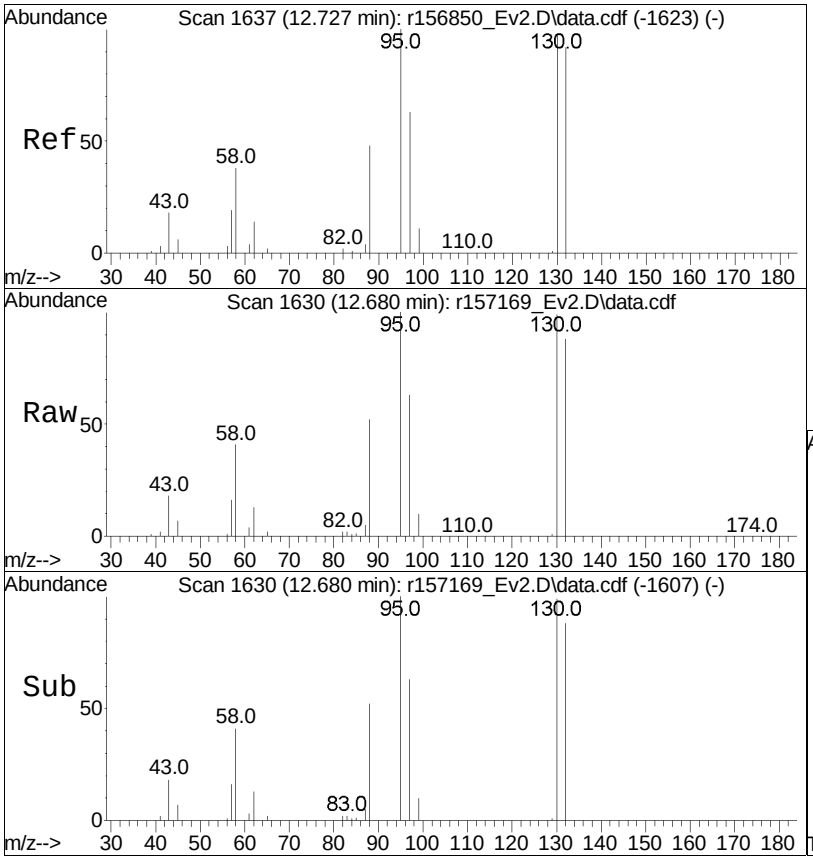


#28
cis-1,2-dichloroethene
Concen: 4.40 ppbV
RT: 9.43 min Scan# 1191
Delta R.T. -0.042 min
Lab File: r157169_Ev2.D
Acq: 20 Apr 2018 4:16 PM

Tgt Ion: 61 Resp: 60834

Ion	Ratio	Lower	Upper
61	100		
96	73.9	56.1	84.1
98	47.0	34.6	52.0

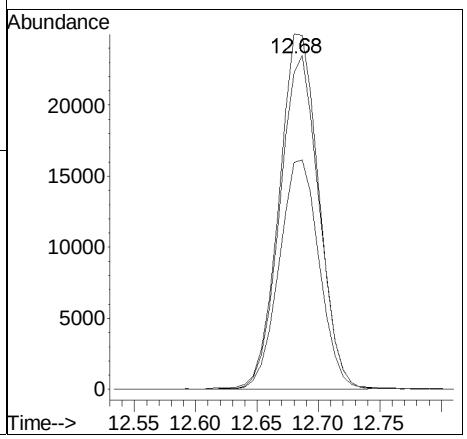


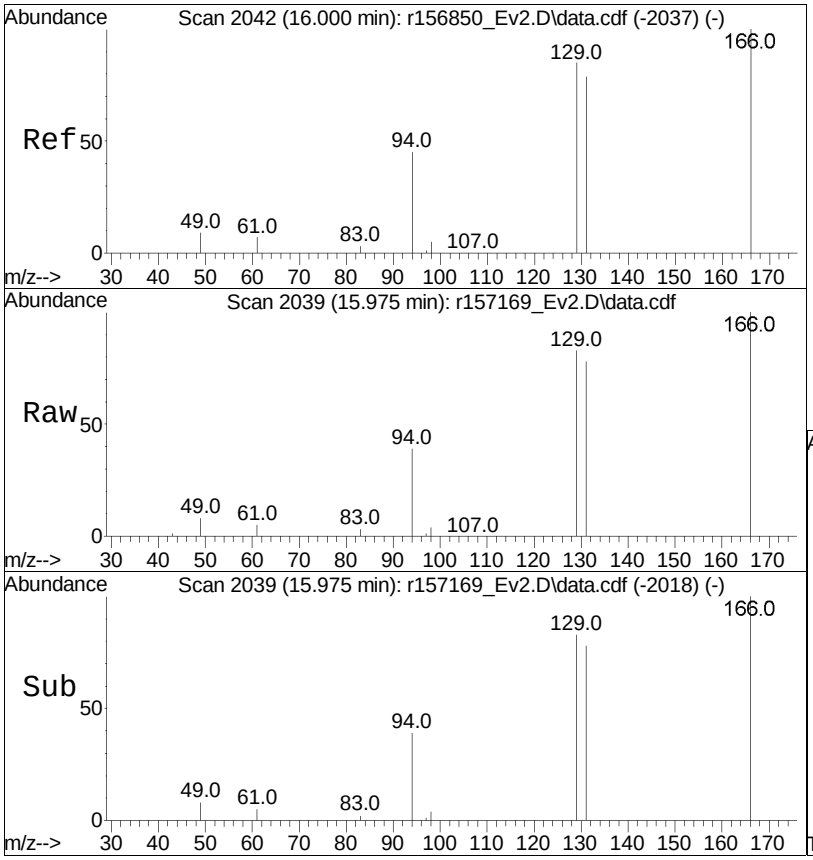


#44
trichloroethene
Concen: 4.42 ppbV
RT: 12.68 min Scan# 1630
Delta R.T. -0.047 min
Lab File: r157169_Ev2.D
Acq: 20 Apr 2018 4:16 PM

Tgt Ion:130 Resp: 56245

Ion	Ratio	Lower	Upper
130	100		
132	89.1	75.5	113.3
97	63.9	51.9	77.9

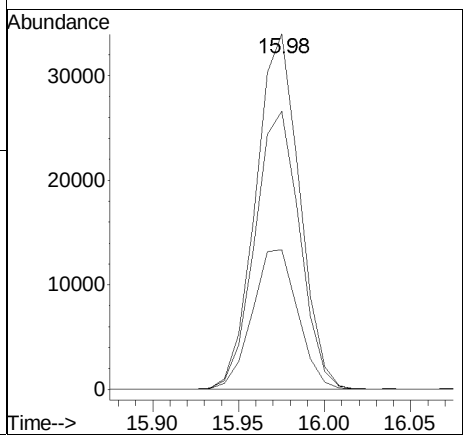




#57
tetrachloroethene
Concen: 4.79 ppbV
RT: 15.98 min Scan# 2039
Delta R.T. -0.025 min
Lab File: r157169_Ev2.D
Acq: 20 Apr 2018 4:16 PM

Tgt Ion:166 Resp: 60120

Ion	Ratio	Lower	Upper
166	100		
131	78.3	63.5	95.3
94	39.3	36.1	54.1



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253812.D
Acq On : 21 Apr 2018 1:20 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-3,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 21 14:08:38 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180421SIM\R253812.D
Sub List : Default-LCS-AP2 - All compounds listed

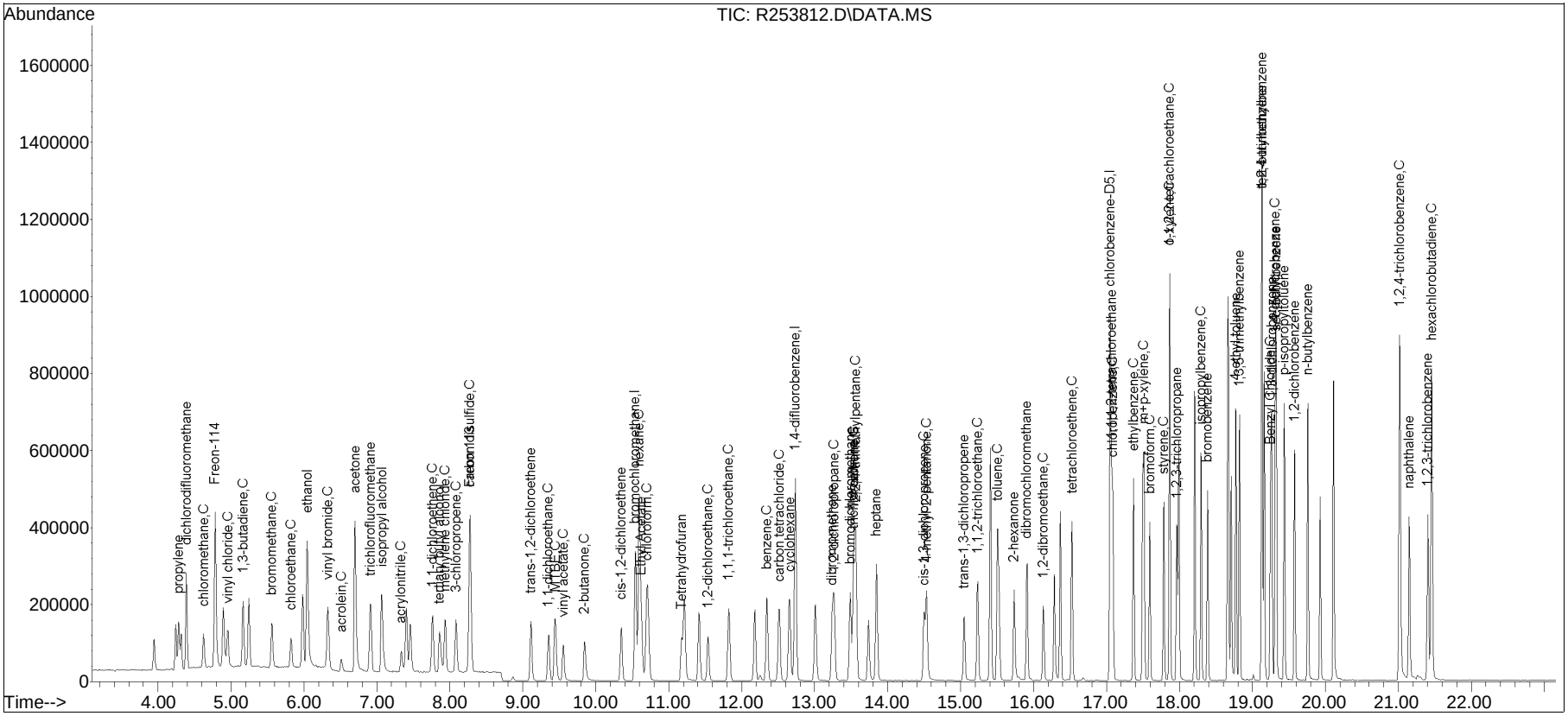
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.539	49	191605	10.000	ppbV	0.00
Standard Area = 191605			Recovery = 100.00%			
33) 1,4-difluorobenzene	12.736	114	388232	10.000	ppbV	# 0.00
Standard Area = 388232			Recovery = 100.00%			
51) chlorobenzene-D5	17.051	54	97750	10.000	ppbV	0.00
Standard Area = 97750			Recovery = 100.00%			
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.961	62	90423	4.492	ppbV	96
17) 1,1-dichloroethene	7.764	61	102667	3.934	ppbV	98
23) trans-1,2-dichloroethene	9.112	61	89917	3.830	ppbV	98
28) cis-1,2-dichloroethene	10.352	61	86460	3.849	ppbV	97
44) trichloroethene	13.531	130	74290	4.339	ppbV	97
57) tetrachloroethene	16.529	166	94687	4.196	ppbV	91

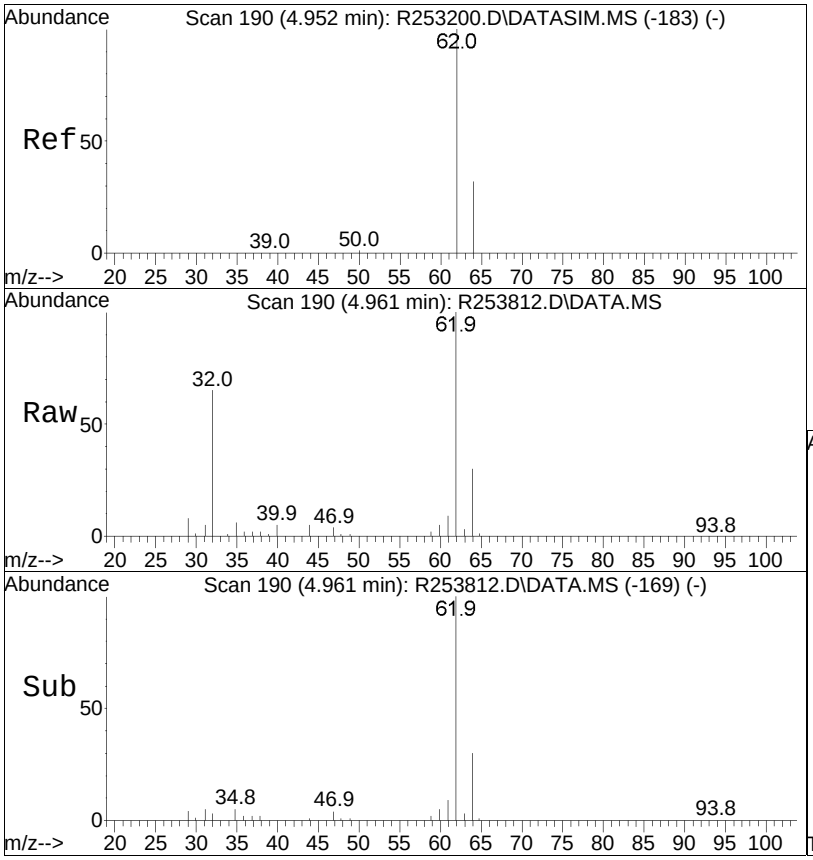
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default-LCS-AP2 - All compounds listedR253812.D

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253812.D
Acq On : 21 Apr 2018 1:20 pm
Operator : AIRPIANO2:RY
Sample : WG1108672-3,3,250,250
Misc : WG1108672,ICAL14572
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Apr 21 14:08:38 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

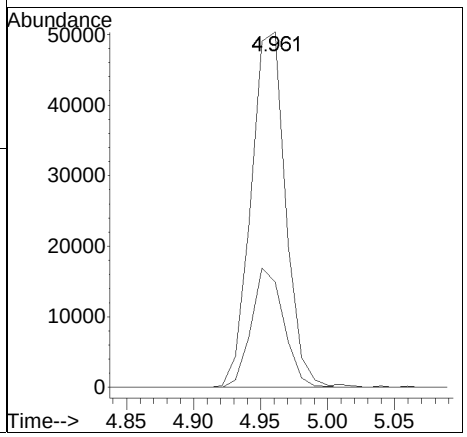


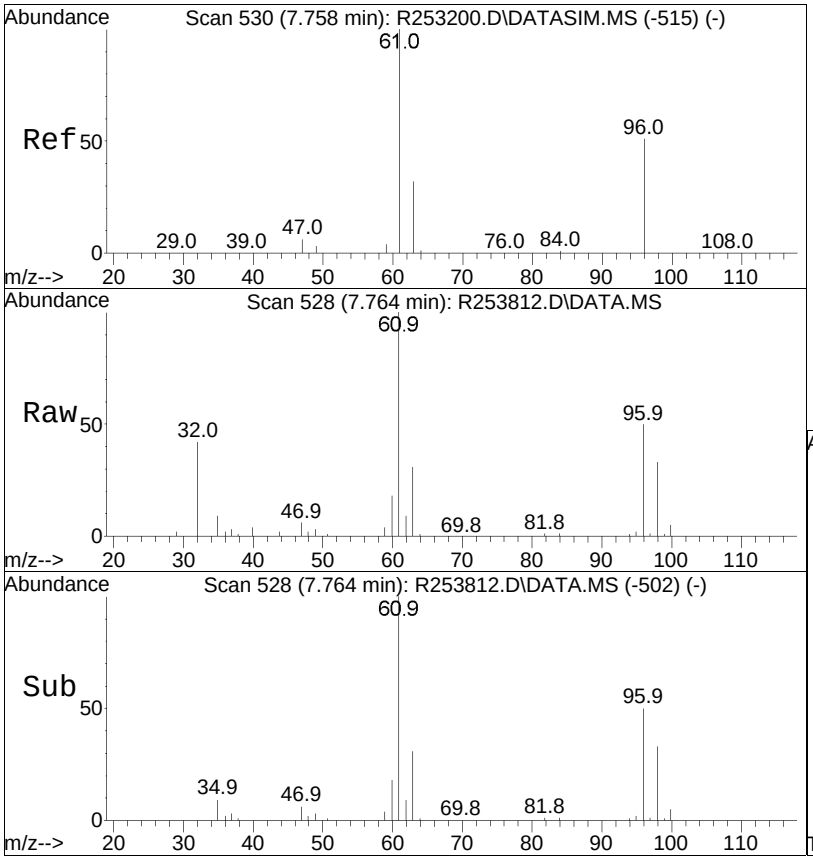


#6
vinyl chloride
Concen: 4.49 ppbV
RT: 4.961 min Scan# 190
Delta R.T. 0.008 min
Lab File: R253812.D
Acq: 21 Apr 2018 1:20 pm

Tgt Ion: 62 Resp: 90423

Ion	Ratio	Lower	Upper
62	100		
64	29.7	25.4	38.0

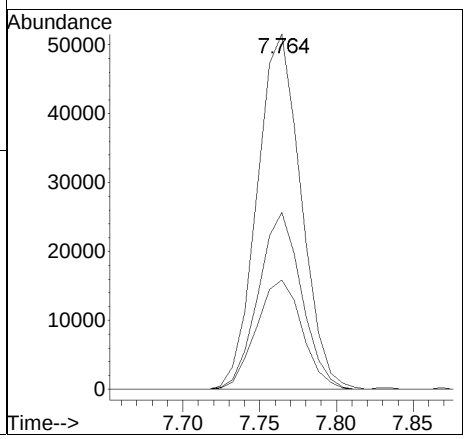


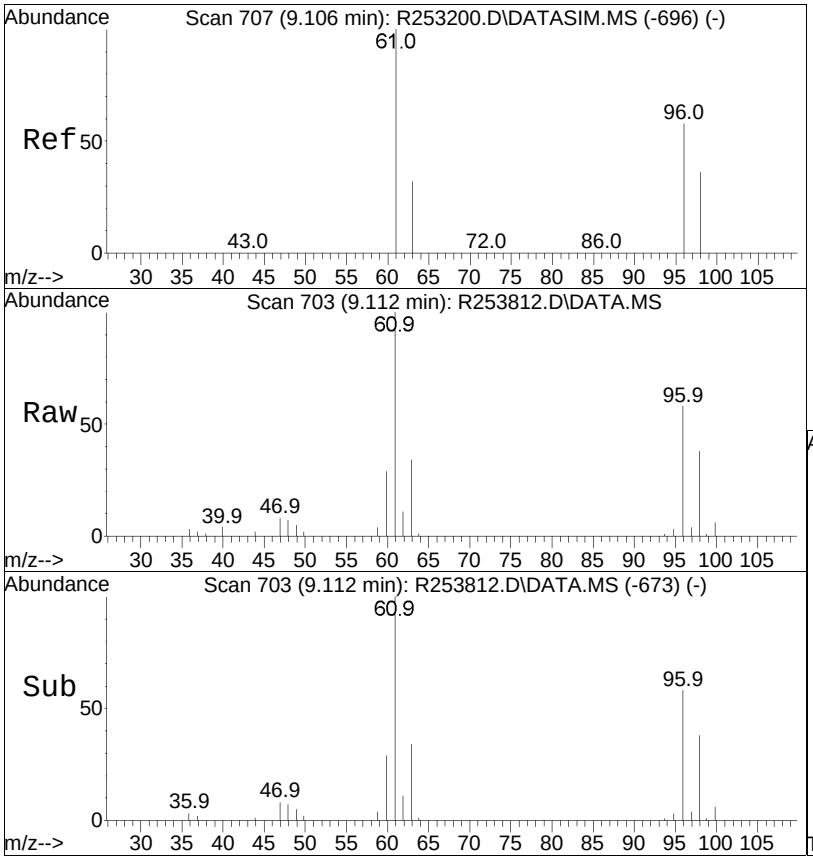


#17
1,1-dichloroethene
Concen: 3.93 ppbV
RT: 7.764 min Scan# 528
Delta R.T. 0.007 min
Lab File: R253812.D
Acq: 21 Apr 2018 1:20 pm

Tgt Ion: 61 Resp: 102667

Ion	Ratio	Lower	Upper
61	100		
96	49.8	41.0	61.6
63	30.8	25.6	38.4

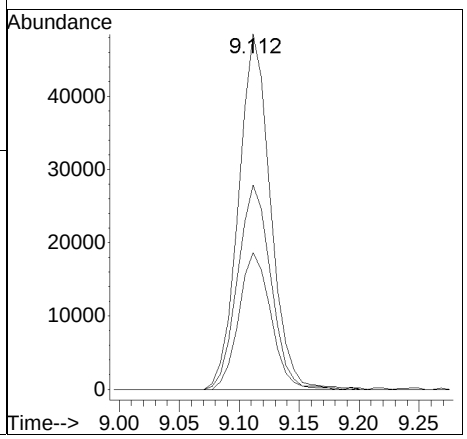


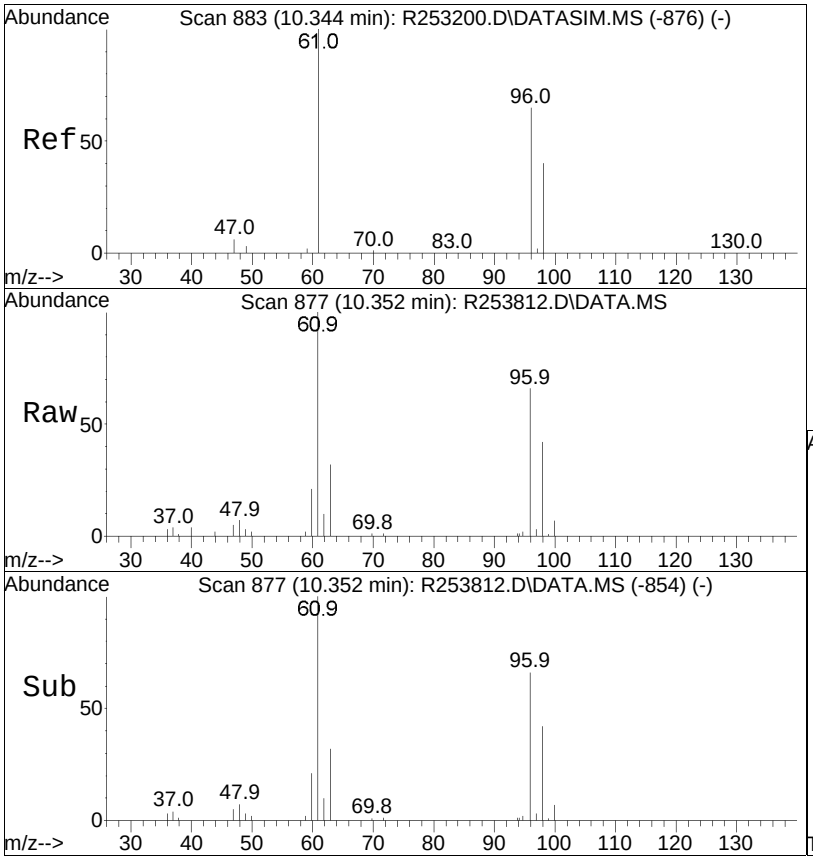


#23
trans-1,2-dichloroethene
Concen: 3.83 ppbV
RT: 9.112 min Scan# 703
Delta R.T. 0.005 min
Lab File: R253812.D
Acq: 21 Apr 2018 1:20 pm

Tgt Ion: 61 Resp: 89917

Ion	Ratio	Lower	Upper
61	100		
96	57.6	46.3	69.5
98	38.5	28.6	42.8

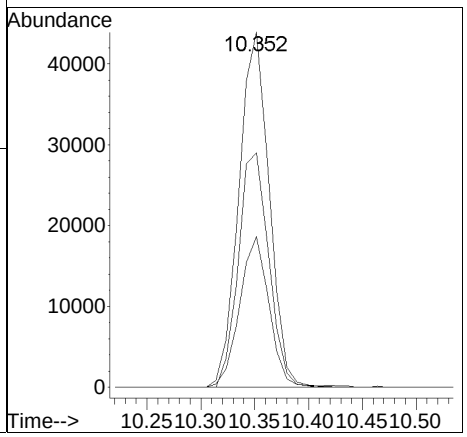


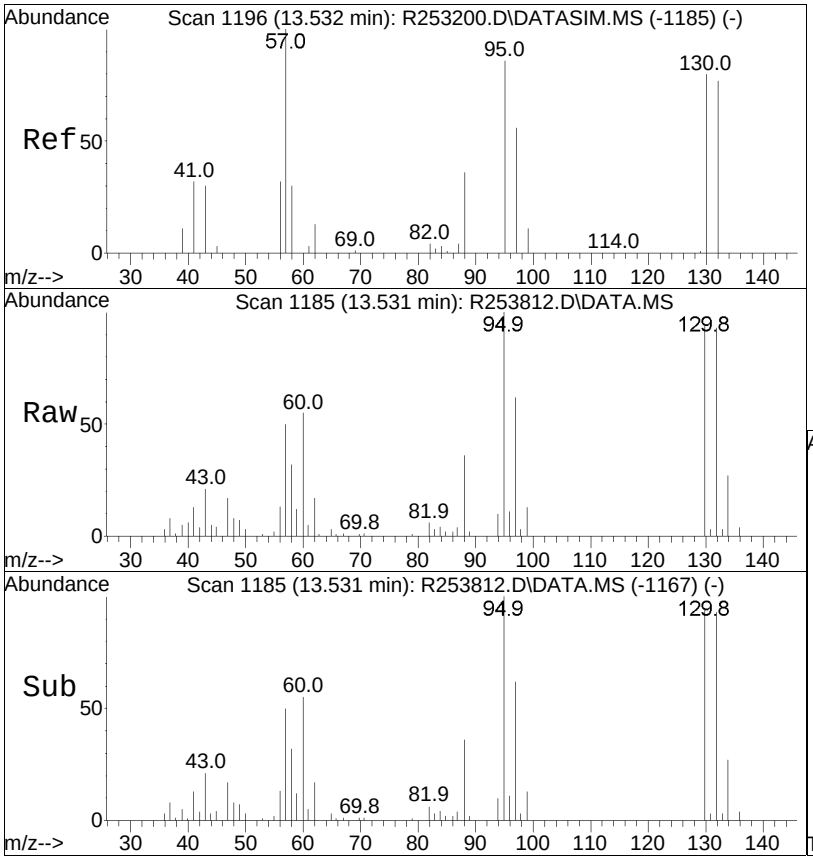


#28
cis-1,2-dichloroethene
Concen: 3.85 ppbV
RT: 10.352 min Scan# 877
Delta R.T. 0.008 min
Lab File: R253812.D
Acq: 21 Apr 2018 1:20 pm

Tgt Ion: 61 Resp: 86460

Ion	Ratio	Lower	Upper
61	100		
96	66.0	51.7	77.5
98	42.4	31.7	47.5

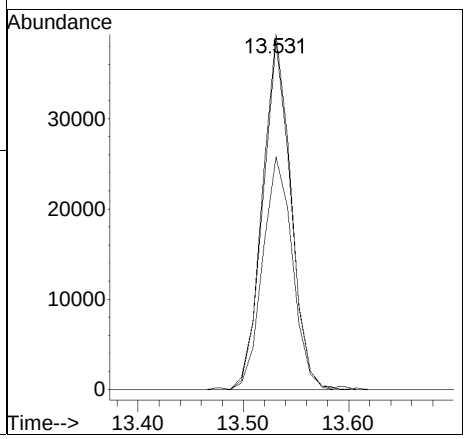


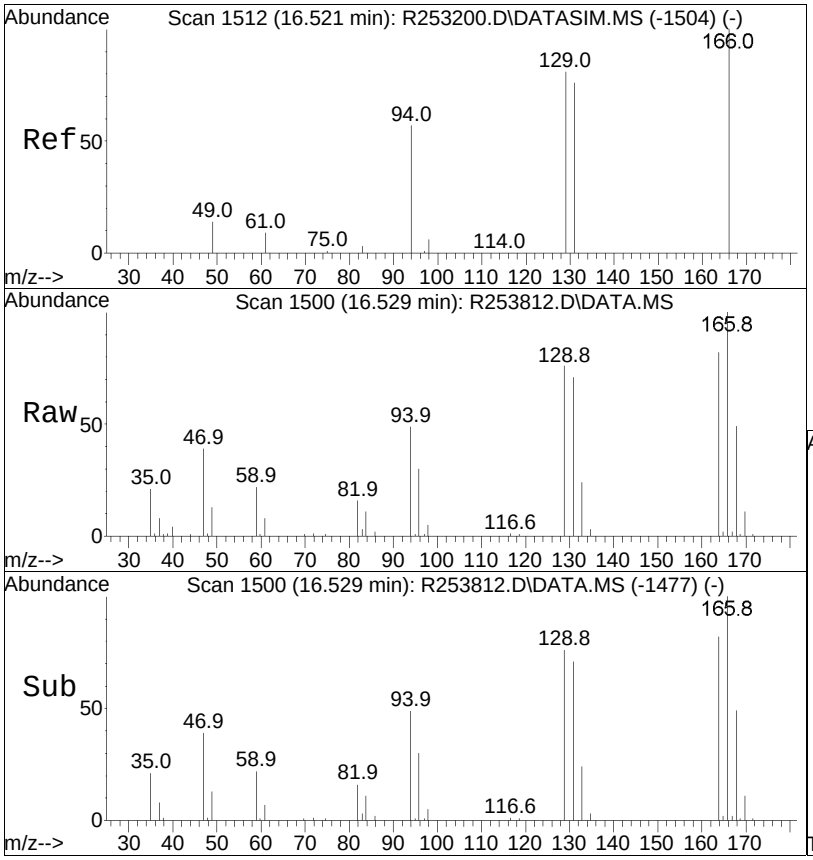


#44
trichloroethene
Concen: 4.34 ppbV
RT: 13.531 min Scan# 1185
Delta R.T. -0.001 min
Lab File: R253812.D
Acq: 21 Apr 2018 1:20 pm

Tgt Ion:130 Resp: 74290

Ion	Ratio	Lower	Upper
130	100		
132	97.9	77.2	115.8
97	65.5	56.5	84.7

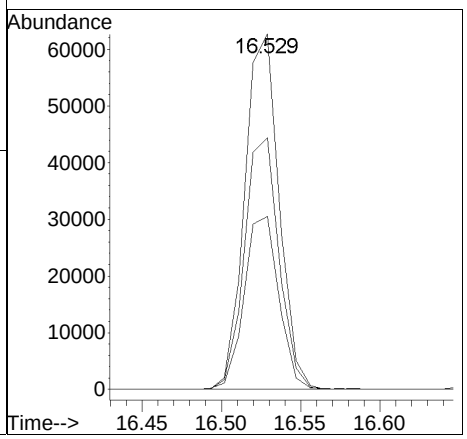




#57
tetrachloroethene
Concen: 4.20 ppbV
RT: 16.529 min Scan# 1500
Delta R.T. 0.008 min
Lab File: R253812.D
Acq: 21 Apr 2018 1:20 pm

Tgt Ion:166 Resp: 94687

Ion	Ratio	Lower	Upper
166	100		
131	70.9	61.0	91.6
94	48.7	46.0	69.0



Duplicate Raw Data

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157176_Ev2.D
Acq On : 20 Apr 2018 9:43 PM
Operator : AIRLAB15:RY
Sample : WG1108448-5,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 21 17:24:54 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\Airlab15\2018\180420SIM\r157169_Ev2.D
Sub List : 9_Chlorinateds - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	9.60	49	91330	10.000	ppbV	#-0.06
Standard Area = 132894			Recovery =		68.72%	
33) 1,4-difluorobenzene	11.87	114	226826	10.000	ppbV	-0.05
Standard Area = 287503			Recovery =		78.90%	
51) chlorobenzene-D5	16.54	54	52155	10.000	ppbV	-0.04
Standard Area = 56135			Recovery =		92.91%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	0.00		0	N.D.		
17) 1,1-dichloroethene	6.75		0	N.D.		
23) trans-1,2-dichloroethene	8.18	61	186	0.019	ppbV #	82
28) cis-1,2-dichloroethene	9.41	61	743	0.078	ppbV	98
44) trichloroethene	12.67	130	625	0.062	ppbV	91
57) tetrachloroethene	15.96	166	52920	4.542	ppbV	98

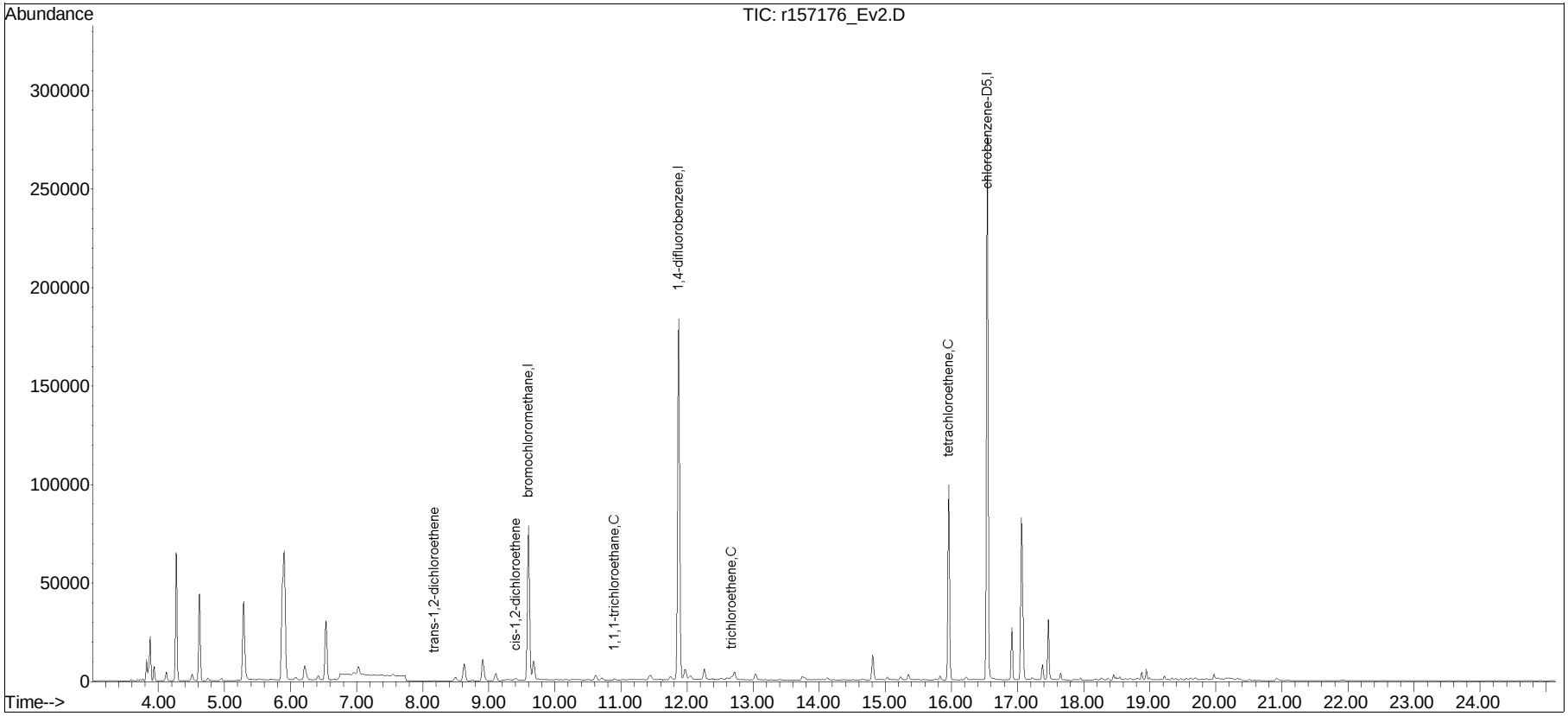
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

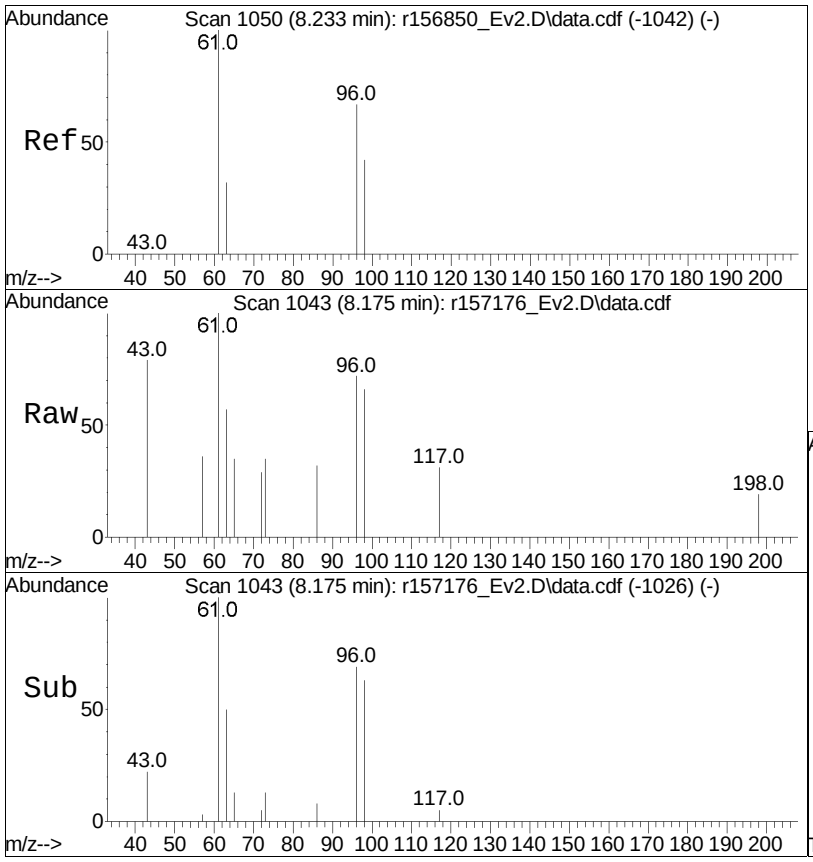
Data Path : O:\Forensics\Data\Airlab15\2018\180420SIM\
Data File : r157176_Ev2.D
Acq On : 20 Apr 2018 9:43 PM
Operator : AIRLAB15:RY
Sample : WG1108448-5,3,250,250
Misc : WG1108448,ICAL14605
ALS Vial : 0 Sample Multiplier: 1

Quant Time: Apr 21 17:24:54 2018
Quant Method : O:\Forensics\Data\Airlab15\2018\180420SIM\TSIM180404.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Apr 05 10:02:48 2018
Response via : Initial Calibration

Sub List : 9_Chlorinateds - .Airlab15\2018\180420SIM\r157169_Ev2.D



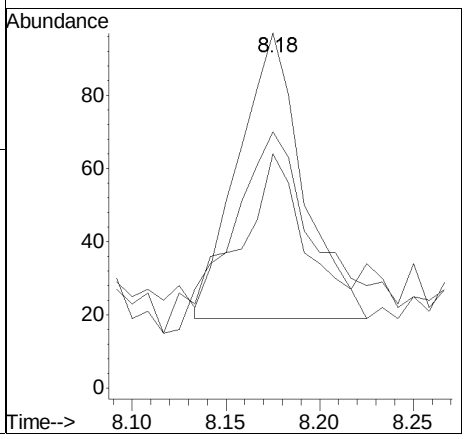
TSIM180404.M Sat Apr 21 17:25:05 2018 Page 2

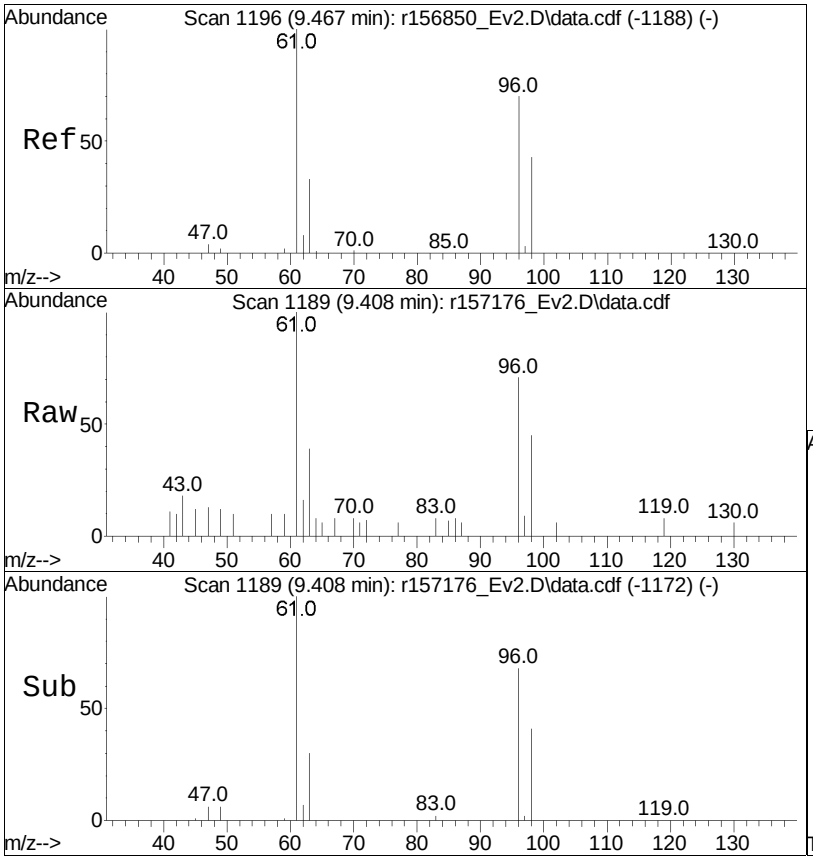


#23
trans-1,2-dichloroethene
Concen: 0.02 ppbV
RT: 8.18 min Scan# 1043
Delta R.T. -0.058 min
Lab File: r157176_Ev2.D
Acq: 20 Apr 2018 9:43 PM

Tgt Ion: 61 Resp: 186

Ion	Ratio	Lower	Upper
61	100		
96	72.2	54.0	81.0
98	66.0	33.8	50.8#

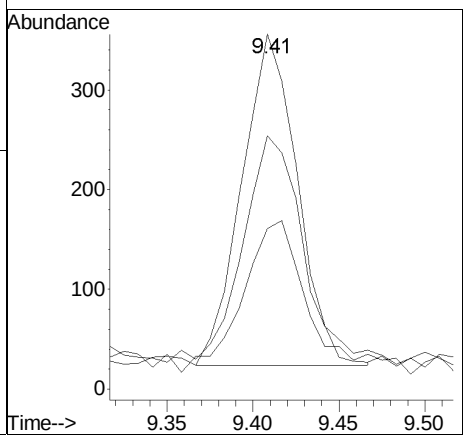


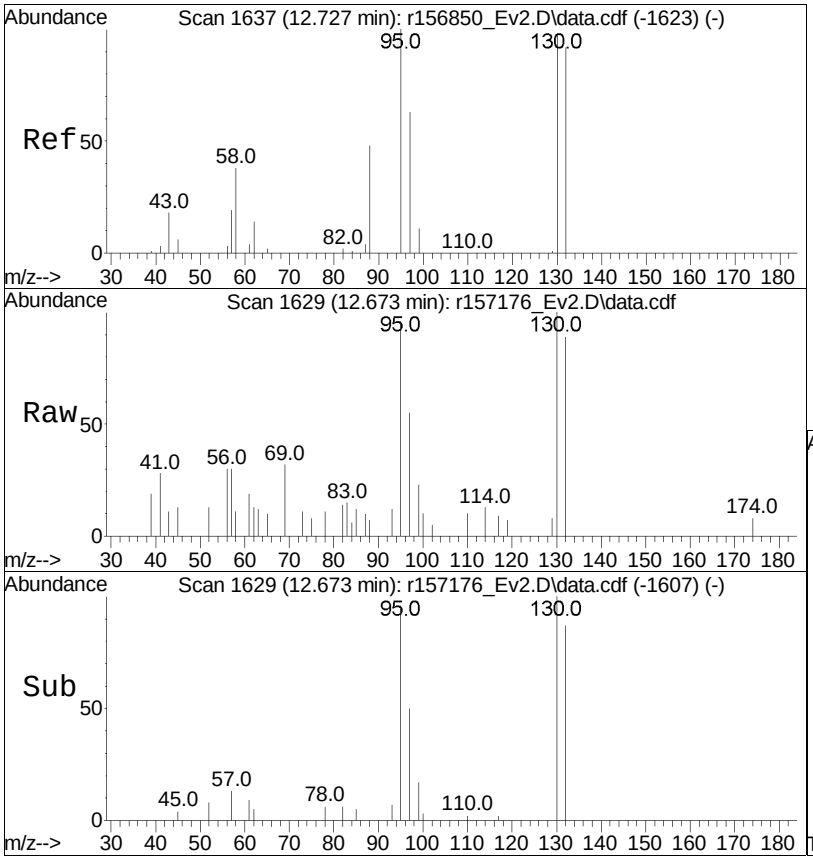


#28
cis-1,2-dichloroethene
Concen: 0.08 ppbV
RT: 9.41 min Scan# 1189
Delta R.T. -0.058 min
Lab File: r157176_Ev2.D
Acq: 20 Apr 2018 9:43 PM

Tgt Ion: 61 Resp: 743

Ion	Ratio	Lower	Upper
61	100		
96	71.3	56.1	84.1
98	45.2	34.6	52.0

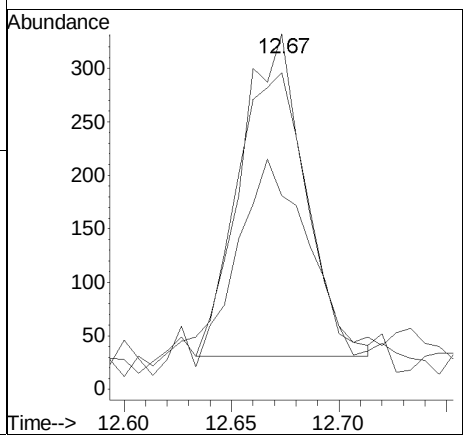


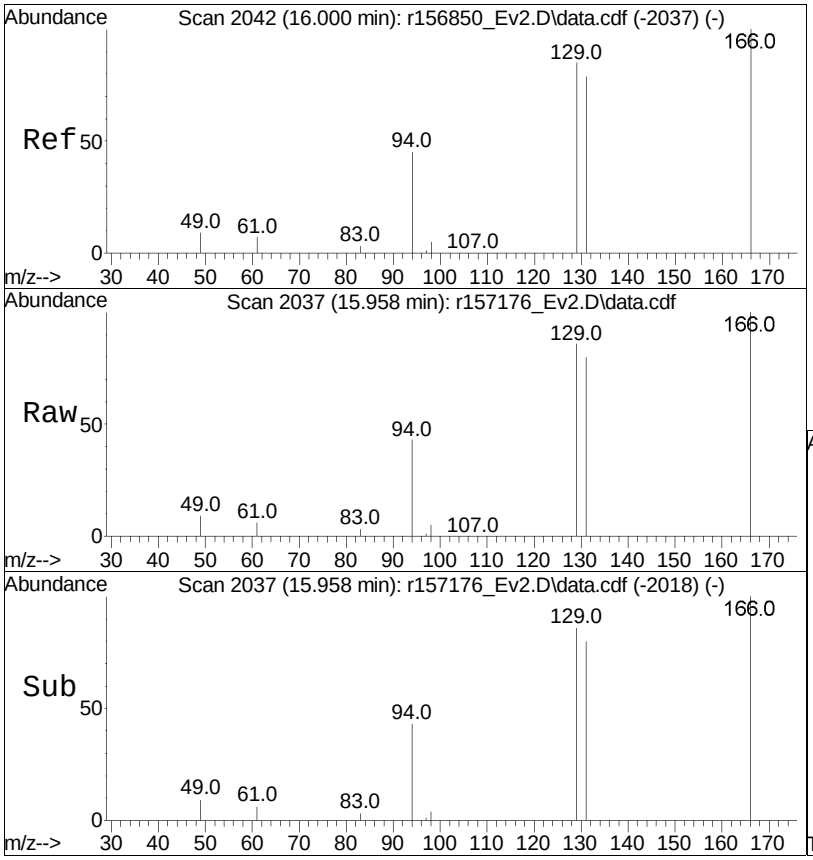


#44
trichloroethene
Concen: 0.06 ppbV
RT: 12.67 min Scan# 1629
Delta R.T. -0.053 min
Lab File: r157176_Ev2.D
Acq: 20 Apr 2018 9:43 PM

Tgt Ion:130 Resp: 625

Ion	Ratio	Lower	Upper
130	100		
132	89.2	75.5	113.3
97	54.5	51.9	77.9

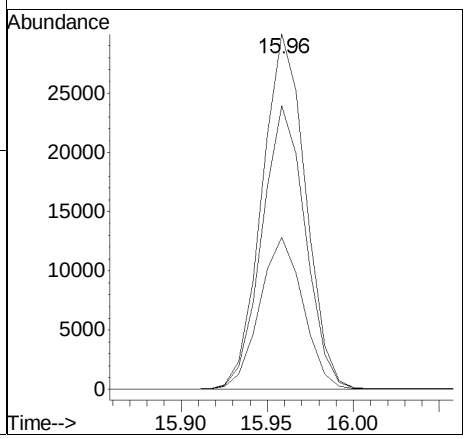




#57
tetrachloroethene
Concen: 4.54 ppbV
RT: 15.96 min Scan# 2037
Delta R.T. -0.042 min
Lab File: r157176_Ev2.D
Acq: 20 Apr 2018 9:43 PM

Tgt Ion:166 Resp: 52920

Ion	Ratio	Lower	Upper
166	100		
131	79.8	63.5	95.3
94	42.8	36.1	54.1



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\Airlab15\	QMethod	: TSIM180404.M
Data File	: r157176_Ev2.D	Operator	: AIRLAB15:RY
Date Inj'd	: 4/20/2018 9:43 PM	Instrument	:
Sample	: WG1108448-5,3,250,250	Quant Date	: 4/21/2018 8:32 am

There are no manual integrations or false positives in this file.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253829.D
Acq On : 22 Apr 2018 12:14 am
Operator : AIRPIANO2:MB
Sample : WG1108672-5,3,25,250
Misc : WG1108672,ICAL14572
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Apr 22 08:49:43 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR2\2018\180421SIM\R253812.D
Sub List : 5_Chlorinateds - .

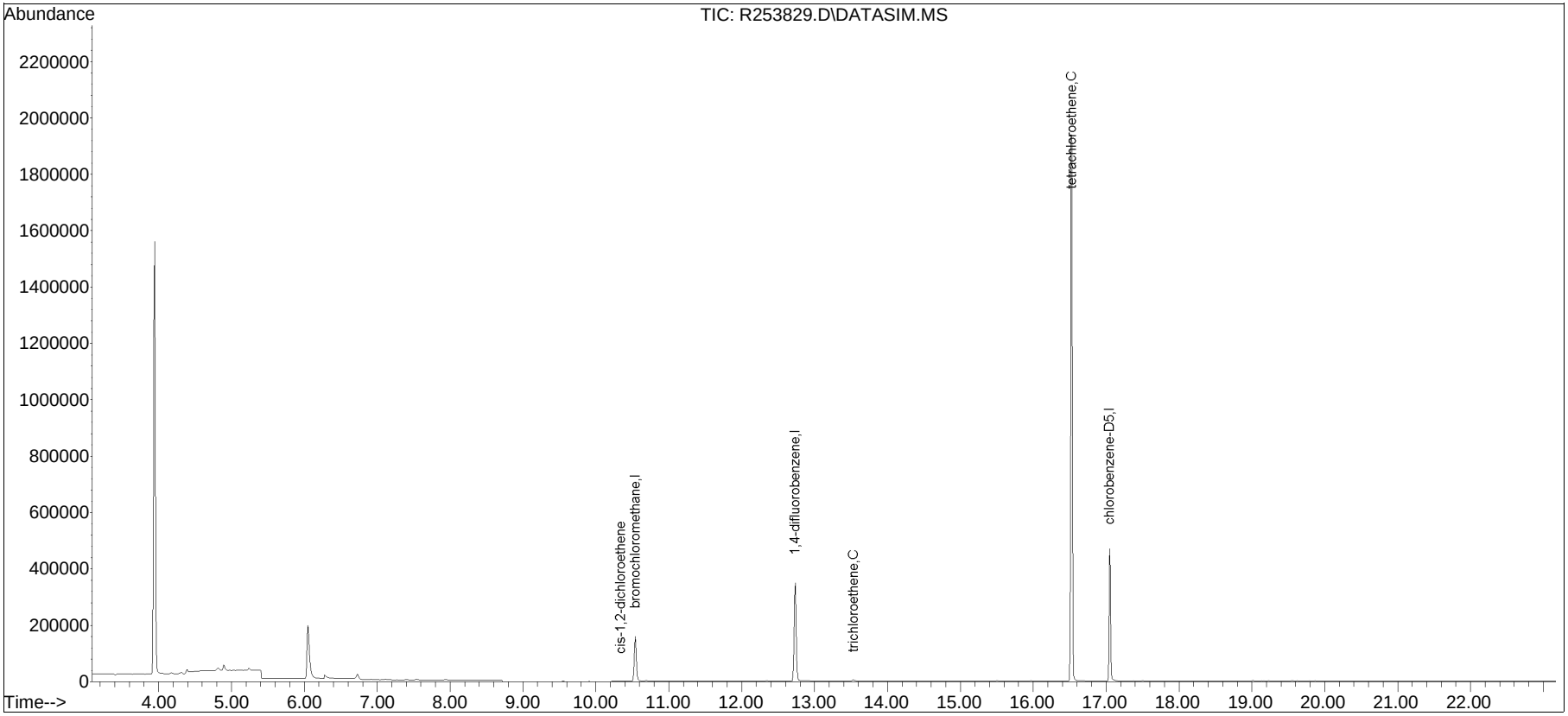
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.541	49	192630	10.000	ppbV	0.00
Standard Area = 191605			Recovery = 100.53%			
33) 1,4-difluorobenzene	12.738	114	374076	10.000	ppbV	0.00
Standard Area = 388232			Recovery = 96.35%			
51) chlorobenzene-D5	17.048	54	81395	10.000	ppbV	0.00
Standard Area = 97750			Recovery = 83.27%			
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.962		0	N.D.		
23) trans-1,2-dichloroethene	9.113		0	N.D.		
28) cis-1,2-dichloroethene	10.343	61	286	0.013	ppbV #	81
44) trichloroethene	13.532	130	2110	0.128	ppbV	98
57) tetrachloroethene	16.530	166	909874	48.420	ppbV #	87

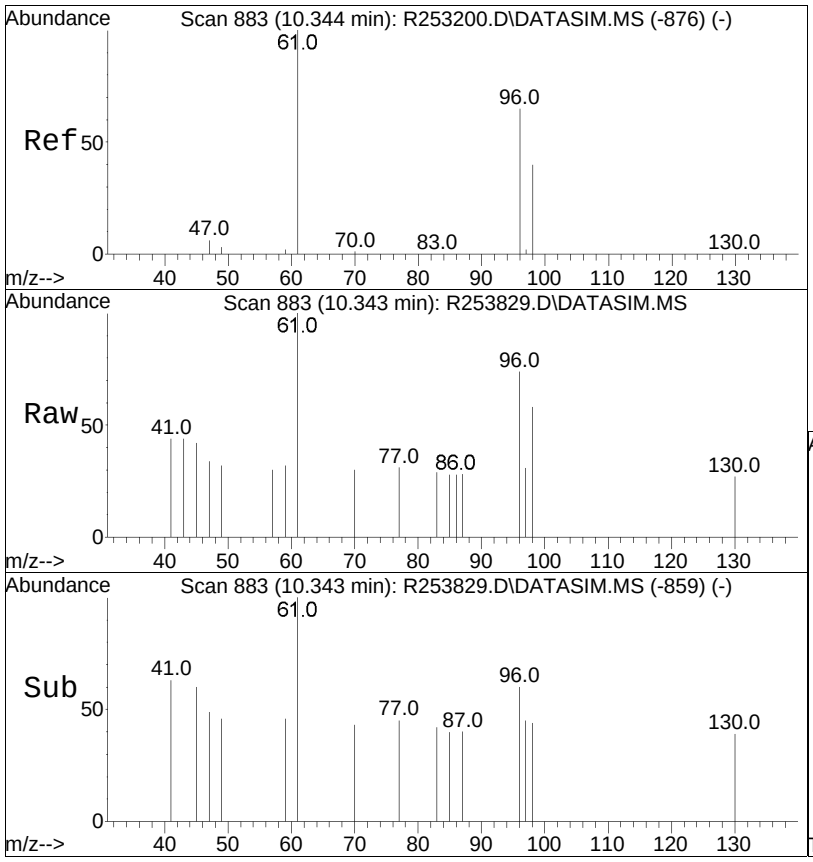
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : 5_Chlorinateds - .AIR2\2018\180421SIM\R253812.D

Data Path : O:\Forensics\Data\AIR2\2018\180421SIM\
Data File : R253829.D
Acq On : 22 Apr 2018 12:14 am
Operator : AIRPIANO2:MB
Sample : WG1108672-5,3,25,250
Misc : WG1108672,ICAL14572
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Apr 22 08:49:43 2018
Quant Method : O:\Forensics\Data\AIR2\2018\180421SIM\TSIM180325.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Mon Mar 26 12:17:28 2018
Response via : Initial Calibration

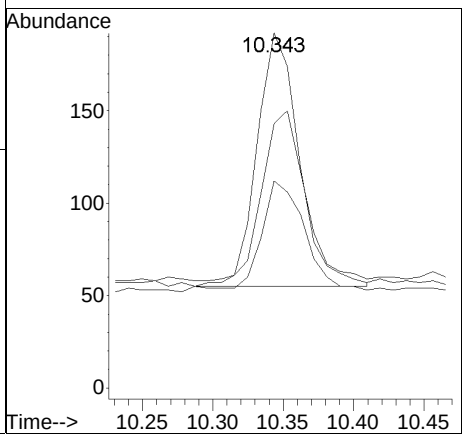


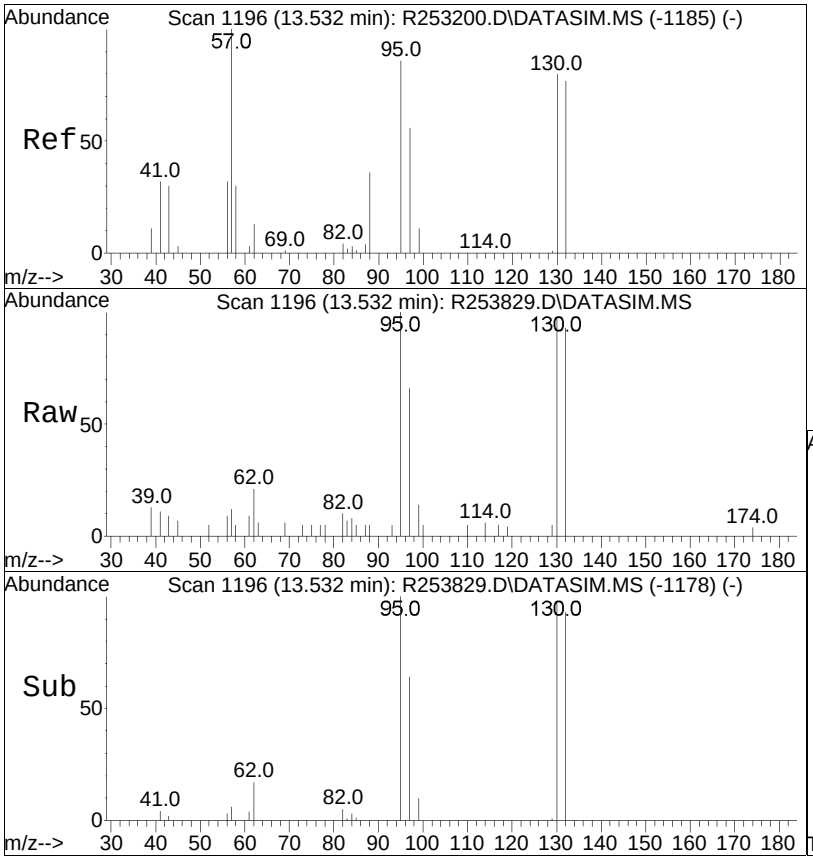


#28
cis-1,2-dichloroethene
Concen: 0.01 ppbV
RT: 10.343 min Scan# 883
Delta R.T. -0.000 min
Lab File: R253829.D
Acq: 22 Apr 2018 12:14 am

Tgt Ion: 61 Resp: 286

Ion	Ratio	Lower	Upper
61	100		
96	74.5	51.7	77.5
98	58.3	31.7	47.5#

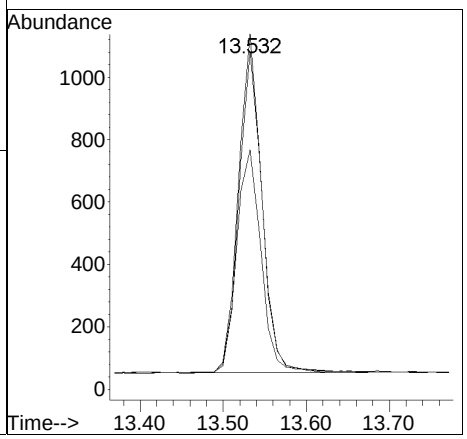


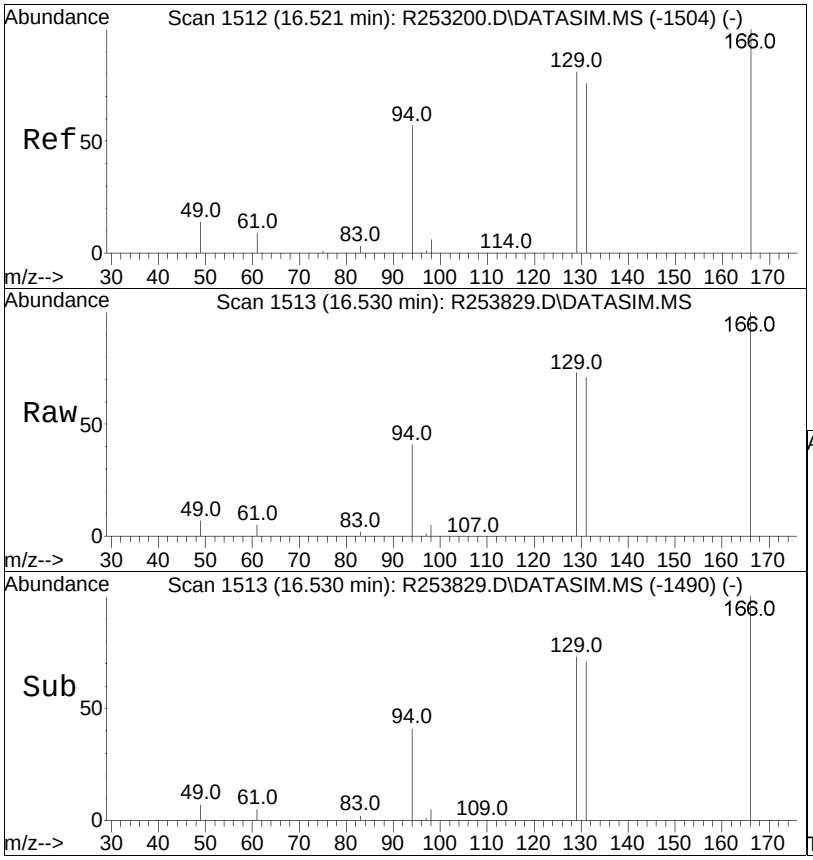


#44
trichloroethene
Concen: 0.13 ppbV
RT: 13.532 min Scan# 1196
Delta R.T. -0.000 min
Lab File: R253829.D
Acq: 22 Apr 2018 12:14 am

Tgt Ion:130 Resp: 2110

Ion	Ratio	Lower	Upper
130	100		
132	95.3	77.2	115.8
97	67.4	56.5	84.7

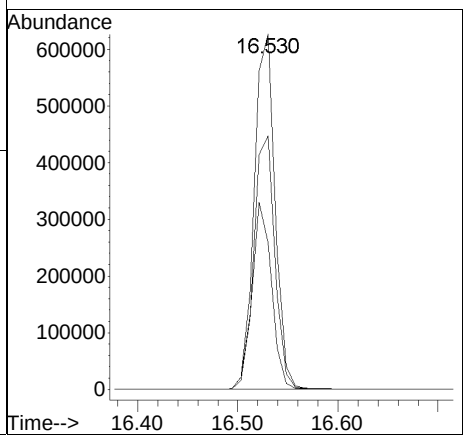




#57
tetrachloroethene
Concen: 48.42 ppbV
RT: 16.530 min Scan# 1513
Delta R.T. 0.009 min
Lab File: R253829.D
Acq: 22 Apr 2018 12:14 am

Tgt Ion:166 Resp: 909874

Ion	Ratio	Lower	Upper
166	100		
131	71.4	61.0	91.6
94	41.2	46.0	69.0#



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\AIR2\2018Q	Method	: TSIM180325.M
Data File	: R253829.D	Operator	: AIRPIANO2:MB
Date Inj'd	: 4/22/2018 12:14 am	Instrument	: Airpiano 2
Sample	: WG1108672-5,3,25,250	Quant Date	: 4/22/2018 8:49 am

There are no manual integrations or false positives in this file.

Alpha Report

ANALYTICAL REPORT

Lab Number:	L1812962
Client:	CH2MHILL 1880 Way Cross Road Cincinatti, OH 45420
ATTN:	Marie Chiller
Phone:	(513) 673-2201
Project Name:	DOW HANGING ROCK
Project Number:	693874.01.RR
Report Date:	04/23/18

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), NJ NELAP (MA015), CT (PH-0141), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-13-00067), USFWS (Permit #LE2069641).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1812962-01	S01-HGR-OA02-041218	AIR	IRONTON, OH	04/12/18 16:12	04/13/18
L1812962-02	S01-B505-IA06-041218	AIR	IRONTON, OH	04/12/18 16:15	04/13/18
L1812962-03	S01-B505-IA10-041218	AIR	IRONTON, OH	04/12/18 16:17	04/13/18
L1812962-04	S01-B505-IA11-041218	AIR	IRONTON, OH	04/12/18 16:18	04/13/18
L1812962-05	S01-B505-IA12-041218	AIR	IRONTON, OH	04/12/18 16:22	04/13/18
L1812962-06	S01-B505-IA12-041218-FD01	AIR	IRONTON, OH	04/12/18 16:22	04/13/18
L1812962-07	S01-B505-IA07-041218	AIR	IRONTON, OH	04/12/18 16:21	04/13/18
L1812962-08	S01-B505-IA09-041218	AIR	IRONTON, OH	04/12/18 16:19	04/13/18

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: DOW HANGING ROCK **Lab Number:** L1812962
Project Number: 693874.01.RR **Report Date:** 04/23/18

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on April 11, 2018. The canister certification results are provided as an addendum.

Sample Receipt

The canister ID number for the sample designated S01-B505-IA12-041218 (L1812962-05) is listed on the CoC as 946 but should be 949.

The canister ID number for the sample designated S01-B505-IA07-041218 (L1812962-07) is listed on the CoC as 986 but should be 968.

The sample end times were provided by the client in an email after receipt of the samples. A revised CoC was not provided.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 04/23/18

AIR

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID: L1812962-01
Client ID: S01-HGR-OA02-041218
Sample Location: IRONTON, OH

Date Collected: 04/12/18 16:12
Date Received: 04/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/20/18 19:19
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	71		60-140
bromochloromethane	62		60-140
chlorobenzene-d5	83		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID: L1812962-02
Client ID: S01-B505-IA06-041218
Sample Location: IRONTON, OH

Date Collected: 04/12/18 16:15
Date Received: 04/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/20/18 19:55
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.043	0.020	--	0.170	0.079	--		1
Trichloroethene	0.104	0.020	--	0.559	0.107	--		1
Tetrachloroethene	4.46	0.020	--	30.2	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	86		60-140
bromochloromethane	90		60-140
chlorobenzene-d5	86		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID: L1812962-03
Client ID: S01-B505-IA10-041218
Sample Location: IRONTON, OH

Date Collected: 04/12/18 16:17
Date Received: 04/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/20/18 20:31
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.075	0.020	--	0.297	0.079	--		1
Trichloroethene	0.137	0.020	--	0.736	0.107	--		1
Tetrachloroethene	6.71	0.020	--	45.5	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	75		60-140
bromochloromethane	68		60-140
chlorobenzene-d5	84		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID: L1812962-04
Client ID: S01-B505-IA11-041218
Sample Location: IRONTON, OH

Date Collected: 04/12/18 16:18
Date Received: 04/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/20/18 21:07
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.075	0.020	--	0.297	0.079	--		1
Trichloroethene	0.070	0.020	--	0.376	0.107	--		1
Tetrachloroethene	4.51	0.020	--	30.6	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	82		60-140
bromochloromethane	72		60-140
chlorobenzene-d5	94		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID: L1812962-05
Client ID: S01-B505-IA12-041218
Sample Location: IRONTON, OH

Date Collected: 04/12/18 16:22
Date Received: 04/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/21/18 15:35
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.030	0.020	--	0.161	0.107	--		1
Tetrachloroethene	0.482	0.020	--	3.27	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	107		60-140
bromochloromethane	112		60-140
chlorobenzene-d5	90		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID: L1812962-06
Client ID: S01-B505-IA12-041218-FD01
Sample Location: IRONTON, OH

Date Collected: 04/12/18 16:22
Date Received: 04/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/21/18 16:45
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.031	0.020	--	0.167	0.107	--		1
Tetrachloroethene	0.496	0.020	--	3.36	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	107		60-140
bromochloromethane	113		60-140
chlorobenzene-d5	89		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID: L1812962-07
Client ID: S01-B505-IA07-041218
Sample Location: IRONTON, OH

Date Collected: 04/12/18 16:21
Date Received: 04/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/21/18 17:21
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.028	0.020	--	0.111	0.079	--		1
Trichloroethene	0.111	0.020	--	0.597	0.107	--		1
Tetrachloroethene	2.35	0.020	--	15.9	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	104		60-140
bromochloromethane	110		60-140
chlorobenzene-d5	90		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

SAMPLE RESULTS

Lab ID: L1812962-08
Client ID: S01-B505-IA09-041218
Sample Location: IRONTON, OH

Date Collected: 04/12/18 16:19
Date Received: 04/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/21/18 00:27
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.040	0.020	--	0.159	0.079	--		1
Trichloroethene	0.099	0.020	--	0.532	0.107	--		1
Tetrachloroethene	2.56	0.020	--	17.4	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	86		60-140
bromochloromethane	90		60-140
chlorobenzene-d5	85		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR
Lab Number: L1812962
Report Date: 04/23/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 04/20/18 17:58

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-04,08 Batch: WG1108448-4								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR
Lab Number: L1812962
Report Date: 04/23/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 04/21/18 14:48

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 05-07 Batch: WG1108672-4								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Lab Control Sample Analysis
Batch Quality Control

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-04,08 Batch: WG1108448-3								
Propylene	95		-		70-130	-		25
Dichlorodifluoromethane	85		-		70-130	-		25
Chloromethane	89		-		70-130	-		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	92		-		70-130	-		25
Vinyl chloride	84		-		70-130	-		25
1,3-Butadiene	98		-		70-130	-		25
Bromomethane	84		-		70-130	-		25
Chloroethane	89		-		70-130	-		25
Ethyl Alcohol	79		-		70-130	-		25
Vinyl bromide	85		-		70-130	-		25
Acetone	87		-		70-130	-		25
Trichlorofluoromethane	79		-		70-130	-		25
iso-Propyl Alcohol	79		-		70-130	-		25
Acrylonitrile	80		-		70-130	-		25
1,1-Dichloroethene	80		-		70-130	-		25
tert-Butyl Alcohol[1]	72		-		70-130	-		25
Methylene chloride	84		-		70-130	-		25
3-Chloropropene	88		-		70-130	-		25
Carbon disulfide	85		-		70-130	-		25
1,1,2-Trichloro-1,2,2-Trifluoroethane	84		-		70-130	-		25
trans-1,2-Dichloroethene	92		-		70-130	-		25
1,1-Dichloroethane	90		-		70-130	-		25
Methyl tert butyl ether	88		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: 693874.01.RR

Lab Number: L1812962

Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-04,08 Batch: WG1108448-3								
Vinyl acetate	110		-		70-130	-		25
2-Butanone	92		-		70-130	-		25
cis-1,2-Dichloroethene	88		-		70-130	-		25
Ethyl Acetate	94		-		70-130	-		25
Chloroform	91		-		70-130	-		25
Tetrahydrofuran	90		-		70-130	-		25
1,2-Dichloroethane	81		-		70-130	-		25
n-Hexane	93		-		70-130	-		25
1,1,1-Trichloroethane	102		-		70-130	-		25
Benzene	88		-		70-130	-		25
Carbon tetrachloride	89		-		70-130	-		25
Cyclohexane	97		-		70-130	-		25
Dibromomethane[1]	75		-		70-130	-		25
1,2-Dichloropropane	84		-		70-130	-		25
Bromodichloromethane	102		-		70-130	-		25
1,4-Dioxane	97		-		70-130	-		25
Trichloroethene	88		-		70-130	-		25
2,2,4-Trimethylpentane	97		-		70-130	-		25
cis-1,3-Dichloropropene	97		-		70-130	-		25
4-Methyl-2-pentanone	101		-		70-130	-		25
trans-1,3-Dichloropropene	82		-		70-130	-		25
1,1,2-Trichloroethane	91		-		70-130	-		25
Toluene	92		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: 693874.01.RR

Lab Number: L1812962

Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-04,08 Batch: WG1108448-3								
2-Hexanone	106		-		70-130	-		25
Dibromochloromethane	116		-		70-130	-		25
1,2-Dibromoethane	95		-		70-130	-		25
Tetrachloroethene	96		-		70-130	-		25
1,1,1,2-Tetrachloroethane	95		-		70-130	-		25
Chlorobenzene	95		-		70-130	-		25
Ethylbenzene	99		-		70-130	-		25
p/m-Xylene	99		-		70-130	-		25
Bromoform	116		-		70-130	-		25
Styrene	102		-		70-130	-		25
1,1,2,2-Tetrachloroethane	102		-		70-130	-		25
o-Xylene	100		-		70-130	-		25
1,2,3-Trichloropropane[1]	90		-		70-130	-		25
Isopropylbenzene	99		-		70-130	-		25
Bromobenzene[1]	92		-		70-130	-		25
4-Ethyltoluene	108		-		70-130	-		25
1,3,5-Trimethylbenzene	103		-		70-130	-		25
1,2,4-Trimethylbenzene	107		-		70-130	-		25
Benzyl chloride	116		-		70-130	-		25
1,3-Dichlorobenzene	102		-		70-130	-		25
1,4-Dichlorobenzene	98		-		70-130	-		25
sec-Butylbenzene	100		-		70-130	-		25
p-Isopropyltoluene	94		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: 693874.01.RR

Lab Number: L1812962

Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-04,08 Batch: WG1108448-3								
1,2-Dichlorobenzene	102		-		70-130	-		25
n-Butylbenzene	103		-		70-130	-		25
1,2,4-Trichlorobenzene	98		-		70-130	-		25
Naphthalene	94		-		70-130	-		25
1,2,3-Trichlorobenzene	97		-		70-130	-		25
Hexachlorobutadiene	108		-		70-130	-		25

Lab Control Sample Analysis
Batch Quality Control

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 05-07 Batch: WG1108672-3								
Propylene	125		-		70-130	-		25
Dichlorodifluoromethane	94		-		70-130	-		25
Chloromethane	97		-		70-130	-		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	85		-		70-130	-		25
Vinyl chloride	90		-		70-130	-		25
1,3-Butadiene	107		-		70-130	-		25
Bromomethane	86		-		70-130	-		25
Chloroethane	87		-		70-130	-		25
Ethyl Alcohol	97		-		70-130	-		25
Vinyl bromide	84		-		70-130	-		25
Acetone	90		-		70-130	-		25
Trichlorofluoromethane	73		-		70-130	-		25
iso-Propyl Alcohol	81		-		70-130	-		25
Acrylonitrile	80		-		70-130	-		25
1,1-Dichloroethene	79		-		70-130	-		25
tert-Butyl Alcohol[1]	75		-		70-130	-		25
Methylene chloride	88		-		70-130	-		25
3-Chloropropene	108		-		70-130	-		25
Carbon disulfide	80		-		70-130	-		25
1,1,2-Trichloro-1,2,2-Trifluoroethane	78		-		70-130	-		25
trans-1,2-Dichloroethene	77		-		70-130	-		25
1,1-Dichloroethane	81		-		70-130	-		25
Methyl tert butyl ether	83		-		70-130	-		25

Lab Control Sample Analysis
Batch Quality Control

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 05-07 Batch: WG1108672-3								
Vinyl acetate	99		-		70-130	-		25
2-Butanone	97		-		70-130	-		25
cis-1,2-Dichloroethene	77		-		70-130	-		25
Ethyl Acetate	90		-		70-130	-		25
Chloroform	77		-		70-130	-		25
Tetrahydrofuran	88		-		70-130	-		25
1,2-Dichloroethane	78		-		70-130	-		25
n-Hexane	100		-		70-130	-		25
1,1,1-Trichloroethane	88		-		70-130	-		25
Benzene	84		-		70-130	-		25
Carbon tetrachloride	90		-		70-130	-		25
Cyclohexane	99		-		70-130	-		25
Dibromomethane[1]	72		-		70-130	-		25
1,2-Dichloropropane	89		-		70-130	-		25
Bromodichloromethane	96		-		70-130	-		25
1,4-Dioxane	92		-		70-130	-		25
Trichloroethene	87		-		70-130	-		25
2,2,4-Trimethylpentane	106		-		70-130	-		25
cis-1,3-Dichloropropene	86		-		70-130	-		25
4-Methyl-2-pentanone	108		-		70-130	-		25
trans-1,3-Dichloropropene	74		-		70-130	-		25
1,1,2-Trichloroethane	89		-		70-130	-		25
Toluene	79		-		70-130	-		25

Lab Control Sample Analysis
Batch Quality Control

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 05-07 Batch: WG1108672-3								
2-Hexanone	95		-		70-130	-		25
Dibromochloromethane	92		-		70-130	-		25
1,2-Dibromoethane	78		-		70-130	-		25
Tetrachloroethene	84		-		70-130	-		25
1,1,1,2-Tetrachloroethane	75		-		70-130	-		25
Chlorobenzene	79		-		70-130	-		25
Ethylbenzene	80		-		70-130	-		25
p/m-Xylene	82		-		70-130	-		25
Bromoform	100		-		70-130	-		25
Styrene	80		-		70-130	-		25
1,1,2,2-Tetrachloroethane	85		-		70-130	-		25
o-Xylene	85		-		70-130	-		25
1,2,3-Trichloropropane[1]	81		-		70-130	-		25
Isopropylbenzene	81		-		70-130	-		25
Bromobenzene[1]	80		-		70-130	-		25
4-Ethyltoluene	97		-		70-130	-		25
1,3,5-Trimethylbenzene	88		-		70-130	-		25
1,2,4-Trimethylbenzene	96		-		70-130	-		25
Benzyl chloride	95		-		70-130	-		25
1,3-Dichlorobenzene	94		-		70-130	-		25
1,4-Dichlorobenzene	91		-		70-130	-		25
sec-Butylbenzene	84		-		70-130	-		25
p-Isopropyltoluene	78		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: 693874.01.RR

Lab Number: L1812962

Report Date: 04/23/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 05-07 Batch: WG1108672-3								
1,2-Dichlorobenzene	94		-		70-130	-		25
n-Butylbenzene	88		-		70-130	-		25
1,2,4-Trichlorobenzene	94		-		70-130	-		25
Naphthalene	87		-		70-130	-		25
1,2,3-Trichlorobenzene	89		-		70-130	-		25
Hexachlorobutadiene	100		-		70-130	-		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-04,08 QC Batch ID: WG1108448-5 QC Sample: L1812962-04 Client ID: S01-B505-IA11-041218						
Vinyl chloride	ND	ND	ppbV	NC		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
cis-1,2-Dichloroethene	0.075	0.078	ppbV	4		25
Trichloroethene	0.070	0.062	ppbV	12		25
Tetrachloroethene	4.51	4.54	ppbV	1		25
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 05-07 QC Batch ID: WG1108672-5 QC Sample: L1813132-04 Client ID: DUP Sample						
Vinyl chloride	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC		25
Trichloroethene	1.28	1.28	ppbV	0		25
Tetrachloroethene	467	484	ppbV	4		25

Project Name: DOW HANGING ROCK

Lab Number: L1812962

Project Number: 693874.01.RR

Report Date: 04/23/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1812962-01	S01-HGR-OA02-041218	0948	Flow 5	04/11/18	262888		-	-	-	Pass	10.0	9.5	5
L1812962-01	S01-HGR-OA02-041218	602	6.0L Can	04/11/18	262888	L1811914-10	Pass	-30.0	-7.5	-	-	-	-
L1812962-02	S01-B505-IA06-041218	0062	Flow 5	04/11/18	262888		-	-	-	Pass	10.0	9.7	3
L1812962-02	S01-B505-IA06-041218	1533	6.0L Can	04/11/18	262888	L1811914-08	Pass	-30.0	-7.0	-	-	-	-
L1812962-03	S01-B505-IA10-041218	0080	Flow 4	04/11/18	262888		-	-	-	Pass	9.9	9.8	1
L1812962-03	S01-B505-IA10-041218	753	6.0L Can	04/11/18	262888	L1811914-03	Pass	-30.0	-6.8	-	-	-	-
L1812962-04	S01-B505-IA11-041218	0258	Flow 4	04/11/18	262888		-	-	-	Pass	10.0	9.9	1
L1812962-04	S01-B505-IA11-041218	1551	6.0L Can	04/11/18	262888	L1811914-05	Pass	-30.0	-6.6	-	-	-	-
L1812962-05	S01-B505-IA12-041218	0945	Flow 5	04/11/18	262888		-	-	-	Pass	9.9	7.6	26
L1812962-05	S01-B505-IA12-041218	949	6.0L Can	04/11/18	262888	L1811914-04	Pass	-30.0	-7.4	-	-	-	-
L1812962-06	S01-B505-IA12-041218-FD01	0618	Flow 5	04/11/18	262888		-	-	-	Pass	10.0	9.7	3
L1812962-06	S01-B505-IA12-041218-FD01	594	6.0L Can	04/11/18	262888	L1811914-02	Pass	-30.0	-7.8	-	-	-	-
L1812962-07	S01-B505-IA07-041218	0968	Flow 5	04/11/18	262888		-	-	-	Pass	9.2	10.0	8
L1812962-07	S01-B505-IA07-041218	968	6.0L Can	04/11/18	262888	L1811914-09	Pass	-30.0	-5.7	-	-	-	-
L1812962-08	S01-B505-IA09-041218	0341	Flow 5	04/11/18	262888		-	-	-	Pass	10.0	9.5	5

Project Name: DOW HANGING ROCK

Lab Number: L1812962

Project Number: 693874.01.RR

Report Date: 04/23/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1812962-08	S01-B505-IA09-041218	1634	6.0L Can	04/11/18	262888	L1811914-06	Pass	-30.0	-7.1	-	-	-	-

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1811914
Report Date: 04/23/18

Air Canister Certification Results

Lab ID: L1811914-02
Client ID: CAN 594 FC 0258
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/07/18 00:35
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1811914

Project Number: CANISTER QC INDIV **Report Date:** 04/23/18

Air Canister Certification Results

Lab ID: L1811914-02
Client ID: CAN 594 FC 0258
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1811914
Report Date: 04/23/18

Air Canister Certification Results

Lab ID: L1811914-02
Client ID: CAN 594 FC 0258
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	92		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	93		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1811914
Report Date: 04/23/18

Air Canister Certification Results

Lab ID: L1811914-03
Client ID: CAN 753 FC 0968
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/07/18 01:13
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1811914

Project Number: CANISTER QC INDIV **Report Date:** 04/23/18

Air Canister Certification Results

Lab ID: L1811914-03
Client ID: CAN 753 FC 0968
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1811914

Project Number: CANISTER QC INDIV **Report Date:** 04/23/18

Air Canister Certification Results

Lab ID: L1811914-03
Client ID: CAN 753 FC 0968
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	92		60-140
bromochloromethane	95		60-140
chlorobenzene-d5	94		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1811914
Report Date: 04/23/18

Air Canister Certification Results

Lab ID: L1811914-04
Client ID: CAN 949 FC 0945
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/07/18 01:51
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1811914
Report Date: 04/23/18

Air Canister Certification Results

Lab ID: L1811914-04
Client ID: CAN 949 FC 0945
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1811914

Project Number: CANISTER QC INDIV **Report Date:** 04/23/18

Air Canister Certification Results

Lab ID: L1811914-04
Client ID: CAN 949 FC 0945
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	93		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	94		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1811914
Report Date: 04/23/18

Air Canister Certification Results

Lab ID: L1811914-05
Client ID: CAN 1551 FC 0948
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/07/18 02:29
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1811914
Report Date: 04/23/18

Air Canister Certification Results

Lab ID: L1811914-05
Client ID: CAN 1551 FC 0948
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1811914

Project Number: CANISTER QC INDIV **Report Date:** 04/23/18

Air Canister Certification Results

Lab ID: L1811914-05
Client ID: CAN 1551 FC 0948
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	92		60-140
bromochloromethane	95		60-140
chlorobenzene-d5	93		60-140

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1811914

Project Number: CANISTER QC INDIV **Report Date:** 04/23/18

Air Canister Certification Results

Lab ID: L1811914-06
Client ID: CAN 1634 FC 0080
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/07/18 03:07
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1811914

Project Number: CANISTER QC INDIV **Report Date:** 04/23/18

Air Canister Certification Results

Lab ID: L1811914-06
Client ID: CAN 1634 FC 0080
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1811914

Project Number: CANISTER QC INDIV **Report Date:** 04/23/18

Air Canister Certification Results

Lab ID: L1811914-06
Client ID: CAN 1634 FC 0080
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	92		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	93		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1811914
Report Date: 04/23/18

Air Canister Certification Results

Lab ID: L1811914-08
Client ID: CAN 1533 FC 0341
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/10/18 00:11
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	89		60-140
bromochloromethane	93		60-140
chlorobenzene-d5	88		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1811914
Report Date: 04/23/18

Air Canister Certification Results

Lab ID: L1811914-09
Client ID: CAN 968 FC 0062
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/10/18 00:47
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	89		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	89		60-140

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1811914

Project Number: CANISTER QC INDIV **Report Date:** 04/23/18

Air Canister Certification Results

Lab ID: L1811914-10
Client ID: CAN 602 FC 0618
Sample Location:

Date Collected: 04/05/18 16:00
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/10/18 01:22
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	92		60-140
bromochloromethane	93		60-140
chlorobenzene-d5	90		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1812962
Report Date: 04/23/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
N/A	Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1812962-01A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1812962-02A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1812962-03A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1812962-04A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1812962-05A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1812962-06A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1812962-07A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1812962-08A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)

*Values in parentheses indicate holding time in days

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1812962
Project Number:	693874.01.RR	**Report Date:**	04/23/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1812962
Project Number:	693874.01.RR	**Report Date:**	04/23/18

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 1

Date Rec'd in Lab: 4/13/18

ALPHA Job #: L1812962

ALPHA ANALYTICAL — CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: ~~Jacobs CH2M~~ / Dow
Address: 1080 Waycross Rd
Cincinatti, OH 45240
Phone: 513-673-2201
Fax:
Email: Marie.Chiller@CH2M.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Dow Hanging Rock
Project Location: Ironton, OH
Project #: 643874.01.RR
Project Manager: Marie Chiller
ALPHA Quote #:

Turn-Around Time

☐ Standard ☒ RUSH (only confirmed if pre-approved)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☒

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-15	TO-15 SIM	APH Subset Non-petroleum HCs ☐	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
812962-01	SOI-HGR-0A02-041218	4/12/18	0812		-29.50"	-6.03"	AA	PK	6L	602	0948						
-07	SOI-B505-IA06-041218		0815		-29.16"	-6.07"				1533	0062						
-03	SOI-B505-IA10-041218		0818		-29.05"	-5.71"				753	80						
-04	SOI-B505-IA11-041218		0819		-29.32"	-5.81"				1551	0258						(PK)
	~~SOI-B505-IA09-041218~~		0821		~~-29.13"~~	~~-6.57"~~				986	0968						
-05	SOI-B505-IA12-041218		0825		-29.59					946	945						
-06	SOI-B505-IA12-041218-FD01		0825		-29.70"					594	618						
-07	SOI-B505-IA07-041218		0824		-29.46"	-4.82"				986	0968						
-08	SOI-B505-IA09-041218		0821		-29.13"	-6.57"				1634	341						

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
Patrick Kish FedEx	4/12/18	FedEx Mark Beals AMC	4/13/18 10:44

Alpha
Summary Forms

Organic Summary Forms

Form 1
Volatile Organics

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Lab ID	: L1812962-01	**Date Collected**	: 04/12/18 16:12
Client ID	: S01-HGR-OA02-041218	**Date Received**	: 04/13/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 04/20/18 19:19
Sample Matrix	: AIR	**Dilution Factor**	: 1
Analytical Method	: 48,TO-15-SIM	**Analyst**	: RY
Lab File ID	: R157172_EV2	**Instrument ID**	: AIRLAB15
Sample Amount	: 250 ml	**GC Column**	: RTX-1

		ppbV			ug/m3			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
79-01-6	Trichloroethene	ND	0.020	--	ND	0.107	--	U
127-18-4	Tetrachloroethene	ND	0.020	--	ND	0.136	--	U

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1812962
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1812962-02	Date Collected	: 04/12/18 16:15
Client ID	: S01-B505-IA06-041218	Date Received	: 04/13/18
Sample Location	: IRONTON, OH	Date Analyzed	: 04/20/18 19:55
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R157173_EV2	Instrument ID	: AIRLAB15
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	0.043	0.020	--	0.170	0.079	--	
79-01-6	Trichloroethene	0.104	0.020	--	0.559	0.107	--	
127-18-4	Tetrachloroethene	4.46	0.020	--	30.2	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1812962
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1812962-03	Date Collected	: 04/12/18 16:17
Client ID	: S01-B505-IA10-041218	Date Received	: 04/13/18
Sample Location	: IRONTON, OH	Date Analyzed	: 04/20/18 20:31
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R157174_EV2	Instrument ID	: AIRLAB15
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	0.075	0.020	--	0.297	0.079	--	
79-01-6	Trichloroethene	0.137	0.020	--	0.736	0.107	--	
127-18-4	Tetrachloroethene	6.71	0.020	--	45.5	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1812962
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1812962-04	Date Collected	: 04/12/18 16:18
Client ID	: S01-B505-IA11-041218	Date Received	: 04/13/18
Sample Location	: IRONTON, OH	Date Analyzed	: 04/20/18 21:07
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R157175_EV2	Instrument ID	: AIRLAB15
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	0.075	0.020	--	0.297	0.079	--	
79-01-6	Trichloroethene	0.070	0.020	--	0.376	0.107	--	
127-18-4	Tetrachloroethene	4.51	0.020	--	30.6	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1812962
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1812962-05	Date Collected	: 04/12/18 16:22
Client ID	: S01-B505-IA12-041218	Date Received	: 04/13/18
Sample Location	: IRONTON, OH	Date Analyzed	: 04/21/18 15:35
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: MB
Lab File ID	: R253815	Instrument ID	: AIRPIANO2
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
79-01-6	Trichloroethene	0.030	0.020	--	0.161	0.107	--	
127-18-4	Tetrachloroethene	0.482	0.020	--	3.27	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1812962
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1812962-06	Date Collected	: 04/12/18 16:22
Client ID	: S01-B505-IA12-041218-FD01	Date Received	: 04/13/18
Sample Location	: IRONTON, OH	Date Analyzed	: 04/21/18 16:45
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: MB
Lab File ID	: R253816	Instrument ID	: AIRPIANO2
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
79-01-6	Trichloroethene	0.031	0.020	--	0.167	0.107	--	
127-18-4	Tetrachloroethene	0.496	0.020	--	3.36	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1812962
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1812962-07	Date Collected	: 04/12/18 16:21
Client ID	: S01-B505-IA07-041218	Date Received	: 04/13/18
Sample Location	: IRONTON, OH	Date Analyzed	: 04/21/18 17:21
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: MB
Lab File ID	: R253817	Instrument ID	: AIRPIANO2
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	0.028	0.020	--	0.111	0.079	--	
79-01-6	Trichloroethene	0.111	0.020	--	0.597	0.107	--	
127-18-4	Tetrachloroethene	2.35	0.020	--	15.9	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1812962
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1812962-08	Date Collected	: 04/12/18 16:19
Client ID	: S01-B505-IA09-041218	Date Received	: 04/13/18
Sample Location	: IRONTON, OH	Date Analyzed	: 04/21/18 00:27
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R157180_EV2	Instrument ID	: AIRLAB15
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	0.040	0.020	--	0.159	0.079	--	
79-01-6	Trichloroethene	0.099	0.020	--	0.532	0.107	--	
127-18-4	Tetrachloroethene	2.56	0.020	--	17.4	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1812962
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: WG1108448-4	Date Collected	: NA
Client ID	: WG1108448-4BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 04/20/18 17:58
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R157171_EV2	Instrument ID	: AIRLAB15
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
79-01-6	Trichloroethene	ND	0.020	--	ND	0.107	--	U
127-18-4	Tetrachloroethene	ND	0.020	--	ND	0.136	--	U

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1812962
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: WG1108448-5	Date Collected	: 04/12/18 16:18
Client ID	: S01-B505-IA11-041218DUP	Date Received	: 04/13/18
Sample Location	:	Date Analyzed	: 04/20/18 21:43
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R157176_EV2	Instrument ID	: AIRLAB15
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	0.078	0.020	--	0.309	0.079	--	
79-01-6	Trichloroethene	0.062	0.020	--	0.333	0.107	--	
127-18-4	Tetrachloroethene	4.54	0.020	--	30.8	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1812962
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: WG1108672-4	Date Collected	: NA
Client ID	: WG1108672-4BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 04/21/18 14:48
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R253814	Instrument ID	: AIRPIANO2
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
79-01-6	Trichloroethene	ND	0.020	--	ND	0.107	--	U
127-18-4	Tetrachloroethene	ND	0.020	--	ND	0.136	--	U

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1812962
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: WG1108672-5	Date Collected	: 04/12/18 08:50
Client ID	: SP-E APT 1DUP	Date Received	: 04/16/18
Sample Location	:	Date Analyzed	: 04/22/18 00:14
Sample Matrix	: AIR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: MB
Lab File ID	: R253829	Instrument ID	: AIRPIANO2
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.200	--	ND	0.511	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--	U
79-01-6	Trichloroethene	1.28	0.200	--	6.88	1.07	--	
127-18-4	Tetrachloroethene	484.	0.200	--	3280	1.36	--	

Form 2
Surrogate Recovery
AIRVOA

Client: CH2MHILL
Project Name: DOW HANGING ROCK

Lab Number: L1812962
Project Number: 693874.01.RR
Matrix:

CLIENT ID (LAB SAMPLE NO.)	SMC1	SMC2	SMC3	SMC4	TOT OUT

QC LIMITS
(-) S1 =

*** Values outside of QC limits**

FORM II TO15-SIM

Lab Duplicates
Form 3

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Client Sample ID	: S01-B505-IA11-041218	**Matrix**	: AIR
Lab Sample ID	: L1812962-04	**Analysis Date**	: 04/20/18 21:07
Lab File ID	: R157175_EV2	**DUP File ID**	: r157176_Ev2
Dup Sample ID	: WG1108448-5	**DUP Analysis Date**	: 04/20/18 21:43

Parameter	Sample Concentration (ppbV)	Duplicate Concentration (ppbV)	RPD	RPD Limit
Vinyl chloride	ND	ND	NC	25
1,1-Dichloroethene	ND	ND	NC	25
trans-1,2-Dichloroethene	ND	ND	NC	25
cis-1,2-Dichloroethene	0.075	0.078	4	25
Trichloroethene	0.070	0.062	12	25
Tetrachloroethene	4.51	4.54	1	25

Lab Duplicates
Form 3

Client	: CH2MHILL	Lab Number	: L1812962
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Client Sample ID	: NA	Matrix	: AIR
Lab Sample ID	: NA	Analysis Date	: 04/21/18 23:42
Lab File ID	: R253828	DUP File ID	: R253829
Dup Sample ID	: WG1108672-5	DUP Analysis Date	: 04/22/18 00:14

Parameter	Sample Concentration (ppbV)	Duplicate Concentration (ppbV)	RPD	RPD Limit
Vinyl chloride	ND	ND	NC	25
trans-1,2-Dichloroethene	ND	ND	NC	25
cis-1,2-Dichloroethene	ND	ND	NC	25
Trichloroethene	1.28	1.28	0	25
Tetrachloroethene	467	484	4	25

Laboratory Control Sample
Form 3

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Matrix	: AIR		
LCS Sample ID	: WG1108448-3	**Analysis Date** : 04/20/18 16:16	**File ID** : r157169_Ev2
LCSD Sample ID	:	**Analysis Date** :	**File ID** :

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ppbV)	Found (ppbV)	%R	True (ppbV)	Found (ppbV)	%R	RPD	Recovery Limits	RPD Limit
Propylene	5	4.77	95				-	70-130	25
Dichlorodifluoromethane	5	4.24	85				-	70-130	25
Chloromethane	5	4.47	89				-	70-130	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	5	4.60	92				-	70-130	25
Vinyl chloride	5	4.20	84				-	70-130	25
1,3-Butadiene	5	4.92	98				-	70-130	25
Bromomethane	5	4.20	84				-	70-130	25
Chloroethane	5	4.45	89				-	70-130	25
Ethyl Alcohol	25	19.7	79				-	70-130	25
Vinyl bromide	5	4.24	85				-	70-130	25
Acetone	25	21.7	87				-	70-130	25
Trichlorofluoromethane	5	3.97	79				-	70-130	25
iso-Propyl Alcohol	12.5	9.90	79				-	70-130	25
Acrylonitrile	5	3.99	80				-	70-130	25
1,1-Dichloroethene	5	4.00	80				-	70-130	25
tert-Butyl Alcohol	5	3.58	72				-	70-130	25
Methylene chloride	5	4.19	84				-	70-130	25
3-Chloropropene	5	4.40	88				-	70-130	25
Carbon disulfide	5	4.25	85				-	70-130	25
1,1,2-Trichloro-1,2,2-Trifluoroethane	5	4.22	84				-	70-130	25
trans-1,2-Dichloroethene	5	4.62	92				-	70-130	25
1,1-Dichloroethane	5	4.49	90				-	70-130	25
Methyl tert butyl ether	5	4.42	88				-	70-130	25
Vinyl acetate	5	5.52	110				-	70-130	25

Laboratory Control Sample
Form 3

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Matrix	: AIR		
LCS Sample ID	: WG1108448-3	**Analysis Date** : 04/20/18 16:16	**File ID** : r157169_Ev2
LCSD Sample ID	:	**Analysis Date** :	**File ID** :

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ppbV)	Found (ppbV)	%R	True (ppbV)	Found (ppbV)	%R	RPD	Recovery Limits	RPD Limit
2-Butanone	5	4.62	92				-	70-130	25
cis-1,2-Dichloroethene	5	4.40	88				-	70-130	25
Ethyl Acetate	5	4.71	94				-	70-130	25
Chloroform	5	4.54	91				-	70-130	25
Tetrahydrofuran	5	4.50	90				-	70-130	25
1,2-Dichloroethane	5	4.05	81				-	70-130	25
n-Hexane	5	4.66	93				-	70-130	25
1,1,1-Trichloroethane	5	5.08	102				-	70-130	25
Benzene	5	4.42	88				-	70-130	25
Carbon tetrachloride	5	4.46	89				-	70-130	25
Cyclohexane	5	4.84	97				-	70-130	25
Dibromomethane	5	3.76	75				-	70-130	25
1,2-Dichloropropane	5	4.22	84				-	70-130	25
Bromodichloromethane	5	5.08	102				-	70-130	25
1,4-Dioxane	5	4.85	97				-	70-130	25
Trichloroethene	5	4.42	88				-	70-130	25
2,2,4-Trimethylpentane	5	4.85	97				-	70-130	25
cis-1,3-Dichloropropene	5	4.83	97				-	70-130	25
4-Methyl-2-pentanone	5	5.06	101				-	70-130	25
trans-1,3-Dichloropropene	5	4.12	82				-	70-130	25
1,1,2-Trichloroethane	5	4.53	91				-	70-130	25
Toluene	5	4.62	92				-	70-130	25
2-Hexanone	5	5.31	106				-	70-130	25
Dibromochloromethane	5	5.78	116				-	70-130	25
1,2-Dibromoethane	5	4.77	95				-	70-130	25
Tetrachloroethene	5	4.79	96				-	70-130	25
1,1,1,2-Tetrachloroethane	5	4.75	95				-	70-130	25
Chlorobenzene	5	4.77	95				-	70-130	25

Laboratory Control Sample
Form 3

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Matrix	: AIR		
LCS Sample ID	: WG1108448-3	**Analysis Date** : 04/20/18 16:16	**File ID** : r157169_Ev2
LCSD Sample ID	:	**Analysis Date** :	**File ID** :

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ppbV)	Found (ppbV)	%R	True (ppbV)	Found (ppbV)	%R	RPD	Recovery Limits	RPD Limit
Ethylbenzene	5	4.97	99				-	70-130	25
p/m-Xylene	10	9.92	99				-	70-130	25
Bromoform	5	5.79	116				-	70-130	25
Styrene	5	5.10	102				-	70-130	25
1,1,2,2-Tetrachloroethane	5	5.08	102				-	70-130	25
o-Xylene	5	5.02	100				-	70-130	25
1,2,3-Trichloropropane	5	4.52	90				-	70-130	25
Isopropylbenzene	5	4.97	99				-	70-130	25
Bromobenzene	5	4.59	92				-	70-130	25
4-Ethyltoluene	5	5.42	108				-	70-130	25
1,3,5-Trimethylbenzene	5	5.17	103				-	70-130	25
1,2,4-Trimethylbenzene	5	5.35	107				-	70-130	25
Benzyl chloride	5	5.81	116				-	70-130	25
1,3-Dichlorobenzene	5	5.11	102				-	70-130	25
1,4-Dichlorobenzene	5	4.91	98				-	70-130	25
sec-Butylbenzene	5	4.98	100				-	70-130	25
p-Isopropyltoluene	5	4.72	94				-	70-130	25
1,2-Dichlorobenzene	5	5.12	102				-	70-130	25
n-Butylbenzene	5	5.15	103				-	70-130	25
1,2,4-Trichlorobenzene	5	4.88	98				-	70-130	25
Naphthalene	5	4.71	94				-	70-130	25
1,2,3-Trichlorobenzene	5	4.87	97				-	70-130	25
Hexachlorobutadiene	5	5.42	108				-	70-130	25

Laboratory Control Sample
Form 3

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Matrix	: AIR		
LCS Sample ID	: WG1108672-3	**Analysis Date** : 04/21/18 13:20	**File ID** : R253812
LCSD Sample ID	:	**Analysis Date** :	**File ID** :

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ppbV)	Found (ppbV)	%R	True (ppbV)	Found (ppbV)	%R	RPD	Recovery Limits	RPD Limit
Propylene	5	6.26	125				-	70-130	25
Dichlorodifluoromethane	5	4.69	94				-	70-130	25
Chloromethane	5	4.84	97				-	70-130	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	5	4.26	85				-	70-130	25
Vinyl chloride	5	4.49	90				-	70-130	25
1,3-Butadiene	5	5.37	107				-	70-130	25
Bromomethane	5	4.28	86				-	70-130	25
Chloroethane	5	4.34	87				-	70-130	25
Ethyl Alcohol	25	24.3	97				-	70-130	25
Vinyl bromide	5	4.22	84				-	70-130	25
Acetone	25	22.6	90				-	70-130	25
Trichlorofluoromethane	5	3.63	73				-	70-130	25
iso-Propyl Alcohol	12.5	10.1	81				-	70-130	25
Acrylonitrile	5	3.99	80				-	70-130	25
1,1-Dichloroethene	5	3.93	79				-	70-130	25
tert-Butyl Alcohol	5	3.75	75				-	70-130	25
Methylene chloride	5	4.42	88				-	70-130	25
3-Chloropropene	5	5.42	108				-	70-130	25
Carbon disulfide	5	3.99	80				-	70-130	25
1,1,2-Trichloro-1,2,2-Trifluoroethane	5	3.91	78				-	70-130	25
trans-1,2-Dichloroethene	5	3.83	77				-	70-130	25
1,1-Dichloroethane	5	4.04	81				-	70-130	25
Methyl tert butyl ether	5	4.16	83				-	70-130	25
Vinyl acetate	5	4.94	99				-	70-130	25

Laboratory Control Sample
Form 3

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Matrix	: AIR		
LCS Sample ID	: WG1108672-3	**Analysis Date** : 04/21/18 13:20	**File ID** : R253812
LCSD Sample ID	:	**Analysis Date** :	**File ID** :

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ppbV)	Found (ppbV)	%R	True (ppbV)	Found (ppbV)	%R	RPD	Recovery Limits	RPD Limit
2-Butanone	5	4.83	97				-	70-130	25
cis-1,2-Dichloroethene	5	3.85	77				-	70-130	25
Ethyl Acetate	5	4.50	90				-	70-130	25
Chloroform	5	3.87	77				-	70-130	25
Tetrahydrofuran	5	4.41	88				-	70-130	25
1,2-Dichloroethane	5	3.92	78				-	70-130	25
n-Hexane	5	4.98	100				-	70-130	25
1,1,1-Trichloroethane	5	4.41	88				-	70-130	25
Benzene	5	4.21	84				-	70-130	25
Carbon tetrachloride	5	4.48	90				-	70-130	25
Cyclohexane	5	4.94	99				-	70-130	25
Dibromomethane	5	3.60	72				-	70-130	25
1,2-Dichloropropane	5	4.43	89				-	70-130	25
Bromodichloromethane	5	4.81	96				-	70-130	25
1,4-Dioxane	5	4.60	92				-	70-130	25
Trichloroethene	5	4.34	87				-	70-130	25
2,2,4-Trimethylpentane	5	5.32	106				-	70-130	25
cis-1,3-Dichloropropene	5	4.32	86				-	70-130	25
4-Methyl-2-pentanone	5	5.38	108				-	70-130	25
trans-1,3-Dichloropropene	5	3.70	74				-	70-130	25
1,1,2-Trichloroethane	5	4.43	89				-	70-130	25
Toluene	5	3.97	79				-	70-130	25
2-Hexanone	5	4.76	95				-	70-130	25
Dibromochloromethane	5	4.60	92				-	70-130	25
1,2-Dibromoethane	5	3.89	78				-	70-130	25
Tetrachloroethene	5	4.20	84				-	70-130	25
1,1,1,2-Tetrachloroethane	5	3.76	75				-	70-130	25
Chlorobenzene	5	3.95	79				-	70-130	25

Laboratory Control Sample
Form 3

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Matrix	: AIR		
LCS Sample ID	: WG1108672-3	**Analysis Date** : 04/21/18 13:20	**File ID** : R253812
LCSD Sample ID	:	**Analysis Date** :	**File ID** :

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ppbV)	Found (ppbV)	%R	True (ppbV)	Found (ppbV)	%R	RPD	Recovery Limits	RPD Limit
Ethylbenzene	5	3.98	80				-	70-130	25
p/m-Xylene	10	8.20	82				-	70-130	25
Bromoform	5	5.02	100				-	70-130	25
Styrene	5	4.01	80				-	70-130	25
1,1,2,2-Tetrachloroethane	5	4.23	85				-	70-130	25
o-Xylene	5	4.24	85				-	70-130	25
1,2,3-Trichloropropane	5	4.04	81				-	70-130	25
Isopropylbenzene	5	4.05	81				-	70-130	25
Bromobenzene	5	4.00	80				-	70-130	25
4-Ethyltoluene	5	4.86	97				-	70-130	25
1,3,5-Trimethylbenzene	5	4.38	88				-	70-130	25
1,2,4-Trimethylbenzene	5	4.80	96				-	70-130	25
Benzyl chloride	5	4.73	95				-	70-130	25
1,3-Dichlorobenzene	5	4.70	94				-	70-130	25
1,4-Dichlorobenzene	5	4.56	91				-	70-130	25
sec-Butylbenzene	5	4.20	84				-	70-130	25
p-Isopropyltoluene	5	3.92	78				-	70-130	25
1,2-Dichlorobenzene	5	4.68	94				-	70-130	25
n-Butylbenzene	5	4.39	88				-	70-130	25
1,2,4-Trichlorobenzene	5	4.69	94				-	70-130	25
Naphthalene	5	4.36	87				-	70-130	25
1,2,3-Trichlorobenzene	5	4.44	89				-	70-130	25
Hexachlorobutadiene	5	5.02	100				-	70-130	25

Method Blank Summary
Form 4
AIRVOA

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Lab Sample ID	: WG1108448-4	**Lab File ID**	: r157171_Ev2
Instrument ID	: AIRLAB15		
Matrix	: AIR	**Analysis Date**	: 04/20/18 17:58

Client Sample No.	Lab Sample ID	Analysis Date
WG1108448-3LCS	WG1108448-3	04/20/18 16:16
S01-HGR-OA02-041218	L1812962-01	04/20/18 19:19
S01-B505-IA06-041218	L1812962-02	04/20/18 19:55
S01-B505-IA10-041218	L1812962-03	04/20/18 20:31
S01-B505-IA11-041218	L1812962-04	04/20/18 21:07
S01-B505-IA11-041218DUP	WG1108448-5	04/20/18 21:43
S01-B505-IA09-041218	L1812962-08	04/21/18 00:27

Method Blank Summary
Form 4
AIRVOA

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Lab Sample ID	: WG1108672-4	**Lab File ID**	: R253814
Instrument ID	: AIRPIANO2		
Matrix	: AIR	**Analysis Date**	: 04/21/18 14:48

Client Sample No.	Lab Sample ID	Analysis Date
WG1108672-3LCS	WG1108672-3	04/21/18 13:20
S01-B505-IA12-041218	L1812962-05	04/21/18 15:35
S01-B505-IA12-041218-FD01	L1812962-06	04/21/18 16:45
S01-B505-IA07-041218	L1812962-07	04/21/18 17:21
SP-E APT 1DUP	WG1108672-5	04/22/18 00:14

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Instrument ID	: AIRPIANO2	**Analysis Date**	: 03/25/18 21:42
Tune Standard	: WG1100531-1	**Tune File ID**	: R253193_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	8.0 - 40.0% of mass 95	23.7
75	30.0 - 66.0% of mass 95	53.5
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0 (0)1
174	50.0 - 120.0% of mass 95	72.5
175	4.0 - 9.0% of mass 174	5.2 (7.1)1
176	93.0 - 101% of mass 174	68.8 (94.9)1
177	5.0 - 9.0% of mass 176	4.7 (6.8)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
STD0.02	R1057975-1	R253194	03/25/18 22:16
STD0.04	R1057975-2	R253195	03/25/18 22:50
STD0.1	R1057975-3	R253196	03/25/18 23:28
STD0.2	R1057975-4	R253197	03/26/18 00:02
STD0.5	R1057975-5	R253198	03/26/18 00:37
STD1.0	R1057975-6	R253199	03/26/18 01:14
STD5.0	R1057975-7	R253200	03/26/18 01:49
STD10.0	R1057975-8	R253201	03/26/18 02:26
STD20.0	R1057975-9	R253202	03/26/18 03:00
STD50.0	R1057975-10	R253203	03/26/18 03:35
ICV Quant	R1057975-11	R253208	03/26/18 10:23

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Instrument ID	: AIRPIANO2	**Analysis Date**	: 04/21/18 11:32
Tune Standard	: WG1108672-1	**Tune File ID**	: R253809_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	8.0 - 40.0% of mass 95	24.3
75	30.0 - 66.0% of mass 95	52.4
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.5 (.5)1
174	50.0 - 120.0% of mass 95	91.5
175	4.0 - 9.0% of mass 174	7.2 (7.9)1
176	93.0 - 101% of mass 174	88.7 (96.9)1
177	5.0 - 9.0% of mass 176	5.7 (6.4)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
WG1108672-2CCAL	WG1108672-2	R253812	04/21/18 13:20
WG1108672-3LCS	WG1108672-3	R253812	04/21/18 13:20
WG1108672-4BLANK	WG1108672-4	R253814	04/21/18 14:48
S01-B505-IA12-041218	L1812962-05	R253815	04/21/18 15:35
S01-B505-IA12-041218-FD01	L1812962-06	R253816	04/21/18 16:45
S01-B505-IA07-041218	L1812962-07	R253817	04/21/18 17:21
WG1108672-5DUP	WG1108672-5	R253829	04/22/18 00:14

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Instrument ID	: AIRLAB15	**Analysis Date**	: 04/04/18 17:34
Tune Standard	: WG1103790-1	**Tune File ID**	: R156843_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	8.0 - 40.0% of mass 95	18.9
75	30.0 - 66.0% of mass 95	43.1
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	0.3 (.5)1
174	50.0 - 120.0% of mass 95	58.8
175	4.0 - 9.0% of mass 174	3.9 (6.7)1
176	93.0 - 101% of mass 174	54.9 (93.4)1
177	5.0 - 9.0% of mass 176	3.4 (6.2)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
STD0.02	R1061018-1	R156844_EV2	04/04/18 18:10
STD0.04	R1061018-2	R156845_EV2	04/04/18 18:44
STD0.1	R1061018-3	R156846_EV2	04/04/18 19:21
STD0.2	R1061018-4	R156847_EV2	04/04/18 19:58
STD0.5	R1061018-5	R156848_EV2	04/04/18 20:33
STD1.0	R1061018-6	R156849_EV2	04/04/18 21:11
STD5.0	R1061018-7	R156850_EV2	04/04/18 21:48
STD010	R1061018-8	R156851_EV2	04/04/18 22:25
STD020	R1061018-9	R156852_EV2	04/04/18 23:01
STD050	R1061018-10	R156853_EV2	04/04/18 23:39
ICV QUANT REPORT	R1061018-11	R156858_EV2	04/05/18 10:22

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Instrument ID	: AIRLAB15	**Analysis Date**	: 04/20/18 14:23
Tune Standard	: WG1108448-1	**Tune File ID**	: r157166_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	8.0 - 40.0% of mass 95	17.3
75	30.0 - 66.0% of mass 95	41.4
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.6
173	Less than 2.0% of mass 174	0.3 (.5)1
174	50.0 - 120.0% of mass 95	60.4
175	4.0 - 9.0% of mass 174	4 (6.7)1
176	93.0 - 101% of mass 174	57.6 (95.3)1
177	5.0 - 9.0% of mass 176	3.6 (6.3)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
WG1108448-2CCAL	WG1108448-2	R157169_EV2	04/20/18 16:16
WG1108448-3LCS	WG1108448-3	R157169_EV2	04/20/18 16:16
WG1108448-4BLANK	WG1108448-4	R157171_EV2	04/20/18 17:58
S01-HGR-OA02-041218	L1812962-01	R157172_EV2	04/20/18 19:19
S01-B505-IA06-041218	L1812962-02	R157173_EV2	04/20/18 19:55
S01-B505-IA10-041218	L1812962-03	R157174_EV2	04/20/18 20:31
S01-B505-IA11-041218	L1812962-04	R157175_EV2	04/20/18 21:07
WG1108448-5DUP	WG1108448-5	R157176_EV2	04/20/18 21:43
S01-B505-IA09-041218	L1812962-08	R157180_EV2	04/21/18 00:27

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1812962**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**: 693874.01.RR**
Instrument ID	**: AIRPIANO2**	**Ical Ref**	**: ICAL14572**
Calibration dates	**: 03/25/18 22:16 03/26/18 03:35**		

Calibration Files
0.02=R253194.D 0.04=R253195.D 0.1 =R253196.D 0.2 =R253197.D 0.5 =R253198.D 1.0 =R253199.D
5.0 =R253200.D 10.0=R253201.D 20.0=R253202.D 50.0=R253203.D

		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
1)	I	bromochloromethane	----------ISTD----------											
2)		propylene				0.665	0.614	0.588	0.544	0.539	0.580	0.518	0.5783	8.66
3)		dichlorodifluoromethane			1.960	2.299	2.137	1.968	1.925	1.803	2.048	1.820	1.9949	8.24
4)	C	chloromethane			0.939	1.087	0.999	0.951	0.899	0.861	0.896	0.780	0.9265	9.92
5)		Freon-114	2.860	2.682	2.557	3.083	2.838	2.745	2.626	2.519	2.683	2.334	2.6927	7.69
6)	C	vinyl chloride	1.137	1.048	0.997	1.222	1.113	1.075	1.019	0.974	1.028	0.893	1.0505	8.78
7)	C	1,3-butadiene	0.750	0.730	0.639	0.800	0.743	0.702	0.673	0.654	0.691	0.597	0.6979	8.59
8)	C	bromomethane	0.973	0.909	0.878	1.045	0.953	0.923	0.880	0.841	0.883	0.766	0.9051	8.40
9)	C	chloroethane	0.583	0.539	0.489	0.592	0.547	0.524	0.496	0.476	0.498	0.429	0.5172	9.64
10)		ethanol					0.760	0.675	0.629	0.590	0.648	0.544	0.6408	11.59
11)	C	vinyl bromide	0.882	0.831	0.794	0.978	0.884	0.864	0.827	0.790	0.839	0.731	0.8420	7.92
12)	C	acrolein		0.585	0.463	0.497	0.433	0.309	0.395	0.379	0.402	0.349	0.4237	19.58
13)		acetone				1.245	1.441	1.002	1.160	0.872	1.246	1.048	1.1447	16.45
14)		trichlorofluoromethane	2.024	1.865	1.790	2.196	2.551	1.943	2.337	1.814	1.992	2.095	2.0605	11.77
15)		isopropyl alcohol				1.902	1.885	1.121	0.966	0.907	1.107	1.012	1.2714	33.95#
16)	C	acrylonitrile			0.527	0.636	0.594	0.489	0.518	0.516	0.561	0.515	0.5445	9.00
17)	C	1,1-dichloroethene	1.473	1.308	1.253	1.552	1.412	1.380	1.313	1.281	1.378	1.271	1.3622	7.08
18)		tertiary butyl alcohol				1.460	1.338	1.238	1.262	1.204	1.413	1.328	1.3205	7.07
19)	C	methylene chloride					1.086	1.049	0.981	0.953	1.019	0.937	1.0039	5.75
20)	C	3-chloropropene	1.024	0.845	0.827	0.995	0.921	0.902	0.879	0.872	0.950	0.880	0.9095	6.99
21)	C	carbon disulfide			2.249	2.642	2.378	2.316	2.256	2.239	2.475	2.356	2.3639	5.82
22)		Freon 113	1.663	1.530	1.438	1.760	1.609	1.573	1.514	1.502	1.655	1.576	1.5819	5.91
23)		trans-1,2-dichloroethene	1.259	1.157	1.123	1.391	1.267	1.237	1.196	1.170	1.270	1.184	1.2253	6.28
24)	C	1,1-dichloroethane	1.608	1.496	1.428	1.764	1.619	1.576	1.512	1.464	1.581	1.449	1.5497	6.54
25)	C	MTBE	1.891	1.754	1.667	2.073	1.909	1.859	1.831	1.811	1.983	1.857	1.8634	6.08
26)	C	vinyl acetate					1.420	1.373	1.442	1.505	1.782	1.702	1.5374	10.80
27)	C	2-butanone				1.802	1.653	1.587	1.574	1.540	1.679	1.552	1.6267	5.71
28)		cis-1,2-dichloroethene	1.220	1.125	1.078	1.325	1.217	1.180	1.145	1.115	1.204	1.114	1.1722	6.19
29)		Ethyl Acetate				0.236	0.237	0.228	0.249	0.250	0.282	0.268	0.2501	7.71
30)	C	chloroform	1.827	1.660	1.568	1.944	1.788	1.744	1.685	1.651	1.814	1.693	1.7375	6.25
31)		Tetrahydrofuran				1.033	0.975	0.943	0.817	0.796	0.898	0.835	0.8995	9.85
32)	C	1,2-dichloroethane	1.290	1.196	1.130	1.351	1.243	1.202	1.169	1.127	1.212	1.128	1.2047	6.14
33)	I	1,4-difluorobenzene	----------ISTD----------											
34)	C	hexane			0.475	0.576	0.526	0.514	0.506	0.500	0.553	0.541	0.5238	6.14
35)	s	1,2-dichloroethane-D4	0.322	0.322	0.321	0.321	0.318	0.317	0.315	0.313	0.309	0.309	0.3168	1.61
36)	C	1,1,1-trichloroethane	0.728	0.688	0.640	0.793	0.731	0.710	0.686	0.673	0.730	0.710	0.7089	5.85
37)	C	benzene		1.124	1.008	1.224	1.119	1.082	1.040	1.017	1.088	1.022	1.0806	6.41
38)	C	carbon tetrachloride	0.713	0.647	0.626	0.774	0.716	0.700	0.686	0.678	0.755	0.743	0.7039	6.60

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1812962**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**: 693874.01.RR**
Instrument ID	**: AIRPIANO2**	**Ical Ref**	**: ICAL14572**
Calibration dates	**: 03/25/18 22:16 03/26/18 03:35**		

Calibration Files
0.02=R253194.D 0.04=R253195.D 0.1 =R253196.D 0.2 =R253197.D 0.5 =R253198.D 1.0 =R253199.D
5.0 =R253200.D 10.0=R253201.D 20.0=R253202.D 50.0=R253203.D

		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
39)		cyclohexane			0.483	0.591	0.546	0.529	0.509	0.500	0.542	0.519	0.5275	6.29
40)		dibromomethane	0.687	0.532	0.433	0.506	0.450	0.432	0.421	0.411	0.453	0.442	0.4767	17.39
41)	C	1,2-dichloropropane	0.490	0.436	0.404	0.485	0.443	0.432	0.422	0.410	0.450	0.437	0.4409	6.43
42)		bromodichloromethane	0.865	0.747	0.742	0.913	0.845	0.825	0.805	0.792	0.865	0.841	0.8241	6.51
43)	C	1,4-dioxane			0.187	0.237	0.218	0.211	0.220	0.217	0.254	0.244	0.2236	9.51
44)	C	trichloroethene	0.461	0.414	0.392	0.474	0.440	0.431	0.425	0.428	0.479	0.466	0.4410	6.47
45)	C	2,2,4-trimethylpentane			1.539	1.879	1.742	1.703	1.677	1.652	1.817	1.735	1.7179	6.02
46)		heptane			0.558	0.678	0.634	0.608	0.601	0.589	0.650	0.629	0.6184	6.09
47)	C	cis-1,3-dichloropropene	0.568	0.529	0.509	0.633	0.589	0.575	0.585	0.584	0.646	0.628	0.5846	7.50
48)	C	4-methyl-2-pentanone				0.879	0.841	0.833	0.849	0.836	0.929	0.904	0.8674	4.35
49)		trans-1,3-dichloropropene	0.549	0.503	0.491	0.606	0.575	0.558	0.574	0.577	0.653	0.637	0.5724	9.03
50)	C	1,1,2-trichloroethane	0.440	0.423	0.386	0.488	0.448	0.437	0.429	0.422	0.463	0.449	0.4386	6.17
51)	I	chlorobenzene-D5	----------ISTD----------											
52)	C	toluene		5.376	5.011	6.127	5.601	5.510	5.404	5.314	5.721	5.277	5.4823	5.76
53)	s	toluene-D8	3.828	3.783	3.792	3.811	3.797	3.788	3.768	3.761	3.673	3.570	3.7570	2.07
54)		2-hexanone				3.310	3.255	3.315	3.529	3.546	4.006	3.791	3.5359	7.87
55)		dibromochloromethane	3.108	2.861	2.700	3.397	3.141	3.080	3.124	3.155	3.538	3.356	3.1460	7.84
56)	C	1,2-dibromoethane	2.981	2.785	2.660	3.309	3.069	2.979	3.000	2.998	3.291	3.108	3.0180	6.59
57)	C	tetrachloroethene	2.294	2.119	1.999	2.490	2.283	2.235	2.245	2.279	2.593	2.549	2.3087	8.10
58)		1,1,1,2-tetrachloroethane	2.118	2.016	1.873	2.386	2.179	2.147	2.174	2.180	2.441	2.372	2.1885	7.95
59)	C	chlorobenzene	4.486	3.956	3.727	4.764	4.377	4.282	4.295	4.268	4.664	4.411	4.3230	7.08
60)	C	ethylbenzene	6.597	6.258	5.912	7.464	6.914	6.852	6.863	6.858	7.446	6.858	6.8022	6.94
61)	C	m+p-xylene	5.224	4.751	4.492	5.672	5.295	5.281	5.459	5.459	6.044	5.536	5.3213	8.30
62)	C	bromoform	2.604	2.424	2.260	2.901	2.725	2.699	2.883	3.043	3.537	3.421	2.8497	14.17
63)	C	styrene	3.647	3.343	3.156	4.030	3.827	3.831	4.041	4.078	4.475	4.162	3.8590	10.18
64)	C	1,1,2,2-tetrachloroethane	4.299	4.072	3.886	4.932	4.623	4.508	4.708	4.786	5.388	4.618	4.5820	9.38
65)	C	o-xylene	5.307	4.917	4.684	5.880	5.438	5.441	5.673	5.778	6.463	5.602	5.5182	9.03
66)		1,2,3-trichloropropane	3.182	3.136	2.794	3.620	3.377	3.304	3.340	3.343	3.665	3.483	3.3244	7.56
67)	s	bromofluorobenzene	1.890	1.905	1.928	1.945	1.968	1.992	2.033	2.039	2.038	2.004	1.9741	2.83
68)	C	isopropylbenzene				7.127	6.686	6.675	6.893	6.881	7.504	6.781	6.9353	4.24
69)		bromobenzene	3.848	3.384	3.327	4.145	3.869	3.797	3.924	3.932	4.361	4.153	3.8740	8.34
70)		4-ethyl toluene	5.152	5.163	5.173	6.983	6.844	7.006	7.644	7.740	8.342	7.552	6.7599	17.53
71)		1,3,5-trimethylbenzene	4.394	4.339	4.358	6.175	5.839	5.776	6.250	6.325	6.840	6.296	5.6592	16.60
72)		tert-butylbenzene				6.040	5.745	5.805	6.446	6.627	7.351	5.978	6.2847	9.08
73)		1,2,4-trimethylbenzene	4.102	4.086	4.228	5.755	5.692	5.783	6.512	6.733	7.560	6.172	5.6623	21.01
74)	C	Benzyl Chloride				3.804	3.962	4.240	5.424	5.657	6.471	6.189	5.1066	21.44
75)		1,3-dichlorobenzene	3.002	2.922	2.999	4.023	3.958	4.026	4.565	4.707	5.206	4.828	4.0236	20.49
76)	C	1,4-dichlorobenzene	3.242	2.959	3.092	4.004	4.085	4.127	4.693	4.874	5.418	4.855	4.1350	20.25

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1812962**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**: 693874.01.RR**
Instrument ID	**: AIRPIANO2**	**Ical Ref**	**: ICAL14572**
Calibration dates	**: 03/25/18 22:16 03/26/18 03:35**		

Calibration Files
0.02=R253194.D 0.04=R253195.D 0.1 =R253196.D 0.2 =R253197.D 0.5 =R253198.D 1.0 =R253199.D
5.0 =R253200.D 10.0=R253201.D 20.0=R253202.D 50.0=R253203.D

	Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
77)	sec-butylbenzene				0.840	0.815	0.828	0.919	0.928	1.012	0.859	0.8859	7.99
78)	p-isopropyltoluene				6.709	6.575	6.733	7.680	7.809	8.535	7.520	7.3658	9.83
79)	1,2-dichlorobenzene	2.981	2.854	2.871	3.796	3.790	3.779	4.279	4.413	4.821	4.517	3.8102	18.74
80)	n-butylbenzene				5.787	6.221	6.916	7.839	7.933	8.440	7.484	7.2314	13.35
81) C	1,2,4-trichlorobenzene		1.456	1.887	2.592	3.004	2.989	4.018	4.358	4.642	4.308	3.2507	35.26#
82)	naphthalene		2.509	3.480	5.642	7.127	7.058	8.519	8.899	8.748	8.346	6.7032	35.15#
83)	1,2,3-trichlorobenzene		0.799	1.444	1.847	2.593	2.506	3.546	3.795	3.863	3.969	2.7069	43.01#
84) C	hexachlorobutadiene		1.832	1.863	2.403	2.416	2.402	3.108	3.378	3.594	3.646	2.7380	25.89

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1812962**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**: 693874.01.RR**
Instrument ID	**: AIRLAB15**	**Ical Ref**	**: ICAL14605**
Calibration dates	**: 04/04/18 18:10 04/04/18 23:39**		

Calibration Files

0.02=r156844_Ev2.D 0.04=r156845_Ev2.D 0.1 =r156846_Ev2.D 0.2 =r156847_Ev2.D 0.5 =r156848_Ev2.D

1.0 =r156849_Ev2.D 5.0 =r156850_Ev2.D 10.0=r156851_Ev2.D 20.0=r156852_Ev2.D 50.0=r156853_Ev2.D

		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
1)	I	bromochloromethane	----------ISTD----------											
2)		propylene				0.808	0.869	0.806	0.793	0.724	0.715	0.699	0.530	0.7430	13.93
3)		dichlorodifluoromethane	1.557	1.386	1.305	1.523	1.414	1.388	1.279	1.301	1.288	0.993	1.3434	11.64
4)	C	chloromethane		0.849	0.762	0.885	0.822	0.801	0.755	0.857	0.856	0.676	0.8071	8.18
5)		Freon-114	1.648	1.616	1.558	1.797	1.699	1.653	1.530	1.667	1.727	1.379	1.6274	7.18
6)	C	vinyl chloride	0.903	0.830	0.762	0.893	0.832	0.817	0.757	0.784	0.794	0.660	0.8033	8.74
7)	C	1,3-butadiene	0.685	0.711	0.585	0.698	0.645	0.636	0.601	0.662	0.699	0.572	0.6493	7.73
8)	C	bromomethane	0.576	0.784	0.638	0.751	0.690	0.665	0.621	0.621	0.648	0.544	0.6537	11.23
9)	C	chloroethane	0.579	0.418	0.351	0.463	0.424	0.423	0.272	0.400	0.419	0.347	0.4096	19.70
10)		ethanol					0.706	0.655	0.613	0.604	0.644	0.514	0.6226	10.33
11)	C	vinyl bromide	0.831	0.705	0.619	0.704	0.667	0.642	0.609	0.613	0.636	0.515	0.6543	12.63
12)		acrolein	0.658	0.456	0.304	0.384	0.349	0.321	0.317	0.321	0.352	0.305	0.3769	28.96
13)		acetone				1.303	1.169	1.073	0.904	0.855	0.842	0.599	0.9634	24.41
14)		trichlorofluoromethane	1.369	1.345	1.251	1.473	1.401	1.335	1.237	1.176	1.099	0.850	1.2536	14.36
15)		isopropyl alcohol				2.101	1.512	1.294	1.143	1.062	1.150	0.865	1.3039	30.99#
16)	C	acrylonitrile	0.677	0.650	0.522	0.656	0.616	0.605	0.595	0.598	0.656	0.565	0.6141	7.75
17)	C	1,1-dichloroethene	1.155	1.090	1.083	1.252	1.168	1.131	1.056	1.013	1.006	0.830	1.0783	10.64
18)		tertiary butyl alcohol	1.497	1.409	1.232	1.344	1.203	1.107	1.140	1.054	1.164	0.995	1.2145	13.12
19)	C	methylene chloride					1.108	1.078	0.998	0.977	1.015	0.827	1.0003	9.86
20)	C	3-chloropropene				1.297	1.238	1.231	1.377	1.130	1.102	0.869	1.1776	14.03
21)	C	carbon disulfide				2.189	2.112	2.077	2.047	2.062	2.195	1.846	2.0754	5.65
22)		Freon 113	1.565	1.338	1.307	1.508	1.386	1.367	1.258	1.222	1.226	1.021	1.3199	11.68
23)		trans-1,2-dichloroethene	1.159	1.079	1.016	1.247	1.170	1.137	1.068	1.027	1.021	0.847	1.0771	10.27
24)	C	1,1-dichloroethane	1.591	1.332	1.388	1.641	1.457	1.431	1.325	1.289	1.256	1.015	1.3725	12.91
25)	C	MTBE	1.922	1.867	1.662	1.927	2.006	1.922	1.805	1.765	1.781	1.401	1.8056	9.63
26)	C	vinyl acetate				1.835	2.004	2.049	2.037	1.825	2.106	1.780	1.388	1.8779	12.35
27)	C	2-butanone					2.192	2.075	2.010	1.786	1.904	1.957	1.243	1.8809	16.43
28)		cis-1,2-dichloroethene	1.132	1.060	0.966	1.160	1.086	1.100	1.031	1.011	1.016	0.844	1.0408	8.74
29)		Ethyl Acetate					0.295	0.281	0.268	0.263	0.256	0.267	0.239	0.2669	6.75
30)	C	chloroform	1.452	1.244	1.201	1.399	1.333	1.325	1.242	1.202	1.217	1.032	1.2646	9.39
31)		Tetrahydrofuran				1.110	1.281	1.238	1.220	1.202	1.192	1.224	1.037	1.1880	6.55
32)	C	1,2-dichloroethane	1.016	0.995	0.917	1.063	0.988	0.956	0.893	0.853	0.831	0.649	0.9160	12.99
33)	I	1,4-difluorobenzene	----------ISTD----------											
34)	C	hexane				0.595	0.658	0.635	0.649	0.622	0.608	0.622	0.534	0.6154	6.30
35)	s	1,2-dichloroethane-D4	0.273	0.278	0.272	0.275	0.272	0.274	0.272	0.267	0.249	0.204	0.2634	8.53
36)	C	1,1,1-trichloroethane	0.530	0.395	0.380	0.509	0.538	0.560	0.491	0.547	0.554	0.433	0.4937	13.66
37)	C	benzene		1.163	1.106	1.257	1.172	1.187	1.118	1.109	1.175	1.053	1.1490	5.15
38)	C	carbon tetrachloride	0.510	0.471	0.424	0.483	0.469	0.472	0.456	0.457	0.470	0.387	0.4598	7.29

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1812962**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**: 693874.01.RR**
Instrument ID	**: AIRLAB15**	**Ical Ref**	**: ICAL14605**
Calibration dates	**: 04/04/18 18:10 04/04/18 23:39**		

Calibration Files
0.02=r156844_Ev2.D 0.04=r156845_Ev2.D 0.1 =r156846_Ev2.D 0.2 =r156847_Ev2.D 0.5 =r156848_Ev2.D
1.0 =r156849_Ev2.D 5.0 =r156850_Ev2.D 10.0=r156851_Ev2.D 20.0=r156852_Ev2.D 50.0=r156853_Ev2.D

		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
39)		cyclohexane	0.606	0.645	0.617	0.663	0.657	0.678	0.651	0.638	0.672	0.594	0.6421	4.44
40)		Dibromomethane	0.556	0.493	0.385	0.408	0.373	0.373	0.351	0.343	0.353	0.300	0.3935	19.32
41)	C	1,2-dichloropropane	0.448	0.512	0.452	0.507	0.493	0.474	0.450	0.439	0.453	0.383	0.4611	8.20
42)		bromodichloromethane	0.523	0.483	0.553	0.600	0.589	0.595	0.599	0.603	0.632	0.538	0.5715	8.01
43)	C	1,4-dioxane		0.246	0.199	0.269	0.230	0.233	0.233	0.225	0.253	0.232	0.2357	8.26
44)	C	trichloroethene	0.547	0.419	0.428	0.472	0.445	0.428	0.419	0.423	0.445	0.401	0.4427	9.35
45)	C	2,2,4-trimethylpentane	2.055	1.938	1.857	2.229	2.132	2.115	2.023	1.991	2.072	1.801	2.0212	6.41
46)		heptane	1.042	0.983	0.869	1.021	1.013	1.027	0.983	0.973	1.000	0.808	0.9718	7.71
47)	C	cis-1,3-dichloropropene	0.527	0.478	0.438	0.524	0.512	0.532	0.555	0.574	0.626	0.549	0.5315	9.61
48)	C	4-methyl-2-pentanone	0.976	0.912	0.903	1.087	1.077	1.139	1.101	1.119	1.169	0.928	1.0412	9.71
49)		trans-1,3-dichloropropene	0.486	0.378	0.403	0.487	0.463	0.502	0.523	0.544	0.591	0.516	0.4893	12.90
50)	C	1,1,2-trichloroethane	0.506	0.431	0.406	0.451	0.421	0.429	0.414	0.411	0.436	0.382	0.4289	7.71
51)	I	chlorobenzene-D5	----------ISTD----------											
52)	C	toluene	7.240	6.641	6.015	7.047	6.683	6.547	6.218	6.171	6.338	5.938	6.4839	6.63
53)	s	toluene-D8	4.517	4.452	4.493	4.556	4.540	4.397	4.416	4.383	4.476	4.541	4.4772	1.40
54)		2-hexanone	4.011	3.838	4.141	4.778	4.939	5.055	5.184	5.008	5.071	4.377	4.6402	10.79
55)		dibromochloromethane	1.872	2.386	2.066	2.461	2.397	2.429	2.522	2.602	2.762	2.556	2.4052	10.78
56)	C	1,2-dibromoethane	3.514	3.034	2.691	3.116	3.003	2.991	2.906	2.981	3.182	2.999	3.0416	6.92
57)	C	tetrachloroethene	2.041	2.372	2.131	2.473	2.263	2.267	2.161	2.137	2.277	2.219	2.2341	5.65
58)		1,1,1,2-tetrachloroethane	2.271	1.484	1.670	2.071	1.929	1.930	1.946	1.991	2.100	1.961	1.9354	11.38
59)	C	chlorobenzene	5.412	4.682	4.403	5.200	4.895	4.889	4.655	4.709	5.052	4.788	4.8685	6.01
60)	C	ethylbenzene	7.471	7.246	6.861	8.294	8.011	8.115	8.039	8.033	8.300	7.510	7.7880	6.25
61)	C	m+p-xylene	6.131	5.866	5.663	7.030	6.800	6.820	6.589	6.678	6.751	5.973	6.4300	7.41
62)	C	bromoform	2.183	1.502	1.471	1.790	1.757	1.803	1.999	2.124	2.294	2.193	1.9116	15.25
63)	C	styrene	4.632	4.100	4.100	4.869	4.890	4.928	5.141	5.345	5.709	5.239	4.8954	10.50
64)	C	1,1,2,2-tetrachloroethane	4.445	4.065	3.970	4.811	4.698	4.624	4.685	4.730	5.017	4.491	4.5535	7.14
65)	C	o-xylene	6.451	5.722	5.700	6.990	6.798	6.881	6.866	6.790	6.944	5.996	6.5138	7.91
66)		1,2,3-Trichloropropane	3.718	3.647	3.382	4.047	3.858	3.718	3.667	3.781	3.962	3.592	3.7371	5.08
67)	s	bromofluorobenzene	1.378	2.084	1.991	2.343	2.457	2.370	2.451	2.743	2.443	2.532	2.2791	16.75
68)	C	isopropylbenzene	7.870	7.232	6.924	8.500	8.201	8.169	8.379	8.457	8.756	7.726	8.0215	7.29
69)		Bromobenzene	5.120	4.447	4.061	4.831	4.585	4.540	4.683	4.790	5.066	4.539	4.6661	6.63
70)		4-ethyl toluene	7.542	6.983	7.146	8.994	8.843	8.928	9.376	9.570	9.800	8.592	8.5774	11.75
71)		1,3,5-trimethylbenzene	6.326	6.210	6.185	7.928	7.805	7.896	8.125	8.189	8.389	7.327	7.4379	11.73
72)		tert-butylbenzene				7.578	7.494	7.610	7.840	8.036	8.161	6.750	7.6383	6.06
73)		1,2,4-trimethylbenzene	5.829	6.002	5.907	7.573	7.574	7.735	8.039	8.223	8.368	6.843	7.2092	13.71
74)	C	Benzyl Chloride	3.026	3.003	2.981	3.575	3.832	4.038	4.819	5.219	5.977	5.637	4.2107	26.84
75)		1,3-dichlorobenzene	3.993	3.998	4.031	4.853	4.813	4.698	4.992	5.227	5.519	4.893	4.7017	11.31
76)	C	1,4-dichlorobenzene	4.144	4.127	3.894	4.727	4.610	4.640	4.914	5.191	5.391	4.848	4.6487	10.29

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1812962**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**: 693874.01.RR**
Instrument ID	**: AIRLAB15**	**Ical Ref**	**: ICAL14605**
Calibration dates	**: 04/04/18 18:10 04/04/18 23:39**		

Calibration Files

0.02=r156844_Ev2.D 0.04=r156845_Ev2.D 0.1 =r156846_Ev2.D 0.2 =r156847_Ev2.D 0.5 =r156848_Ev2.D

1.0 =r156849_Ev2.D 5.0 =r156850_Ev2.D 10.0=r156851_Ev2.D 20.0=r156852_Ev2.D 50.0=r156853_Ev2.D

	Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
77)	sec-butylbenzene	0.907	0.830	0.849	1.068	1.044	1.074	1.151	1.151	1.160	0.992	1.0225	12.14
78)	p-isopropyltoluene	7.160	6.903	7.204	8.977	8.843	9.101	9.667	9.808	9.796	8.108	8.5567	13.27
79)	1,2-dichlorobenzene	3.798	3.923	3.752	4.443	4.390	4.443	4.777	4.967	5.168	4.624	4.4284	10.94
80)	n-butylbenzene	5.661	6.428	6.632	8.392	8.556	8.882	9.539	9.466	9.291	8.005	8.0852	17.08
81) C	1,2,4-trichlorobenzene		1.617	1.937	2.718	2.948	3.205	4.017	4.252	4.071	3.675	3.1600	29.89
82)	naphthalene		0.549	0.594	0.929	1.013	1.101	1.142	1.181	1.097	0.964	0.9523	24.25
83)	1,2,3-trichlorobenzene		2.159	2.085	2.698	2.837	3.060	3.809	3.973	3.637	3.312	3.0633	22.30
84) C	hexachlorobutadiene	2.245	2.203	2.247	2.730	2.679	2.767	3.359	3.400	3.009	2.697	2.7338	15.78

Continuing Calibration
Form 7

Client	: CH2MHILL	Lab Number	: L1812962		
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR		
Instrument ID	: AIRLAB15	Calibration Date	: 04/20/18 16:16		
Lab File ID	: R157169_EV2	Init. Calib. Date(s)	: 04/04/18	04/04/18	
Sample No	: WG1108448-2	Init. Calib. Times	: 18:10	23:39	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
bromochloromethane	1	1	-	0	30	99	-.04
propylene	0.743	0.709	-	4.6	30	97	-.03
dichlorodifluoromethane	1.343	1.139	-	15.2	30	88	-.04
chloromethane	0.807	0.722	-	10.5	30	95	-.04
Freon-114	1.627	1.498	-	7.9	30	97	-.04
vinyl chloride	0.803	0.675	-	15.9	30	88	-.04
1,3-butadiene	0.649	0.639	-	1.5	30	106	-.04
bromomethane	0.654	0.549	-	16.1	30	88	-.04
chloroethane	0.41	0.365	-	11	30	133	-.04
ethanol	0.623	0.49	-	21.3	30	79	-.04
vinyl bromide	0.654	0.554	-	15.3	30	90	-.05
acrolein	0.377	0.251	-	33.4*	30	79	-.04
acetone	0.963	0.838	-	13	30	92	-.05
trichlorofluoromethane	1.254	0.995	-	20.7	30	80	-.05
isopropyl alcohol	1.304	1.033	-	20.8	30	90	-.04
acrylonitrile	0.614	0.49	-	20.2	30	82	-.04
1,1-dichloroethene	1.078	0.864	-	19.9	30	81	-.05
tertiary butyl alcohol	1.215	0.87	-	28.4	30	76	-.04
methylene chloride	1	0.838	-	16.2	30	83	-.05
3-chloropropene	1.178	1.038	-	11.9	30	75	-.04
carbon disulfide	2.075	1.763	-	15	30	86	-.05
Freon 113	1.32	1.113	-	15.7	30	88	-.05
trans-1,2-dichloroethene	1.077	0.995	-	7.6	30	92	-.04
1,1-dichloroethane	1.372	1.234	-	10.1	30	92	-.05
MTBE	1.806	1.596	-	11.6	30	88	-.04
vinyl acetate	1.878	2.073	-	-10.4	30	113	-.04
2-butanone	1.881	1.736	-	7.7	30	97	-.04
cis-1,2-dichloroethene	1.041	0.916	-	12	30	88	-.04
Ethyl Acetate	0.267	0.252	-	5.6	30	95	-.04
chloroform	1.265	1.148	-	9.2	30	92	-.04
Tetrahydrofuran	1.188	1.07	-	9.9	30	88	-.04
1,2-dichloroethane	0.916	0.741	-	19.1	30	82	-.04
1,4-difluorobenzene	1	1	-	0	30	103	-.04
hexane	0.615	0.573	-	6.8	30	95	-.04
1,1,1-trichloroethane	0.494	0.502	-	-1.6	30	105	-.05
benzene	1.149	1.015	-	11.7	30	93	-.04
carbon tetrachloride	0.46	0.41	-	10.9	30	92	-.04
cyclohexane	0.642	0.621	-	3.3	30	98	-.04
Dibromomethane	0.394	0.296	-	24.9	30	87	-.05
1,2-dichloropropane	0.461	0.389	-	15.6	30	88	-.04
bromodichloromethane	0.572	0.58	-	-1.4	30	99	-.04
1,4-dioxane	0.236	0.229	-	3	30	101	-.05
trichloroethene	0.443	0.391	-	11.7	30	96	-.05
2,2,4-trimethylpentane	2.021	1.959	-	3.1	30	99	-.04
heptane	0.972	0.926	-	4.7	30	97	-.05

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: CH2MHILL	Lab Number	: L1812962		
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR		
Instrument ID	: AIRLAB15	Calibration Date	: 04/20/18 16:16		
Lab File ID	: R157169_EV2	Init. Calib. Date(s)	: 04/04/18	04/04/18	
Sample No	: WG1108448-2	Init. Calib. Times	: 18:10	23:39	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
cis-1,3-dichloropropene	0.531	0.513	-	3.4	30	95	-.04
4-methyl-2-pentanone	1.041	1.053	-	-1.2	30	98	-.04
trans-1,3-dichloropropene	0.489	0.404	-	17.4	30	79	-.04
1,1,2-trichloroethane	0.429	0.388	-	9.6	30	96	-.04
chlorobenzene-D5	1	1	-	0	30	95	-.03
toluene	6.484	5.988	-	7.6	30	92	-.03
2-hexanone	4.64	4.925	-	-6.1	30	90	-.04
dibromochloromethane	2.405	2.778	-	-15.5	30	105	-.03
1,2-dibromoethane	3.042	2.904	-	4.5	30	95	-.03
tetrachloroethene	2.234	2.142	-	4.1	30	94	-.03
1,1,1,2-tetrachloroethane	1.935	1.837	-	5.1	30	90	-.03
chlorobenzene	4.868	4.646	-	4.6	30	95	-.03
ethylbenzene	7.788	7.743	-	0.6	30	92	-.02
m+p-xylene	6.43	6.378	-	0.8	30	92	-.03
bromoform	1.912	2.215	-	-15.8	30	105	-.03
styrene	4.895	4.993	-	-2	30	92	-.03
1,1,2,2-tetrachloroethane	4.554	4.627	-	-1.6	30	94	-.02
o-xylene	6.514	6.533	-	-0.3	30	90	-.02
1,2,3-Trichloropropane	3.737	3.377	-	9.6	30	88	-.03
isopropylbenzene	8.022	7.967	-	0.7	30	90	-.02
Bromobenzene	4.666	4.285	-	8.2	30	87	-.02
4-ethyl toluene	8.577	9.302	-	-8.5	30	94	-.02
1,3,5-trimethylbenzene	7.438	7.685	-	-3.3	30	90	-.02
tert-butylbenzene	7.638	7.087	-	7.2	30	86	-.03
1,2,4-trimethylbenzene	7.209	7.714	-	-7	30	91	-.03
Benzyl Chloride	4.211	4.891	-	-16.1	30	96	-.02
1,3-dichlorobenzene	4.702	4.806	-	-2.2	30	91	-.03
1,4-dichlorobenzene	4.649	4.565	-	1.8	30	88	-.02
sec-butylbenzene	10.225	10.173	-	0.5	30	84	-.02
p-isopropyltoluene	8.557	8.077	-	5.6	30	79	-.02
1,2-dichlorobenzene	4.428	4.535	-	-2.4	30	90	-.02
n-butylbenzene	8.085	8.334	-	-3.1	30	83	-.02
1,2,4-trichlorobenzene	3.16	3.085	-	2.4	30	73	-.02
naphthalene	9.523	8.979	-	5.7	30	75	-.02
1,2,3-trichlorobenzene	3.063	2.983	-	2.6	30	74	-.02
hexachlorobutadiene	2.734	2.964	-	-8.4	30	84	-.02

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: CH2MHILL	Lab Number	: L1812962		
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR		
Instrument ID	: AIRPIANO2	Calibration Date	: 04/21/18 13:20		
Lab File ID	: R253812	Init. Calib. Date(s)	: 03/25/18	03/26/18	
Sample No	: WG1108672-2	Init. Calib. Times	: 22:16	03:35	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
bromochloromethane	1	1	-	0	30	70	0
propylene	0.578	0.725	-	-25.4	30	93	0
dichlorodifluoromethane	1.995	1.872	-	6.2	30	68	0
chloromethane	0.926	0.898	-	3	30	70	0
Freon-114	2.693	2.297	-	14.7	30	61	0
vinyl chloride	1.051	0.944	-	10.2	30	65	0
1,3-butadiene	0.698	0.749	-	-7.3	30	78	0
bromomethane	0.905	0.775	-	14.4	30	62	0
chloroethane	0.517	0.449	-	13.2	30	64	0
ethanol	0.641	0.624	-	2.7	30	70	0
vinyl bromide	0.842	0.711	-	15.6	30	60	0
acrolein	0.424	0.24	-	43.4*	30	43	0
acetone	1.145	1.033	-	9.8	30	63	0
trichlorofluoromethane	2.061	1.497	-	27.4	30	45	0
isopropyl alcohol	1.271	1.032	-	18.8	30	75	0
acrylonitrile	0.545	0.435	-	20.2	30	59	0
1,1-dichloroethene	1.362	1.072	-	21.3	30	57	0
tertiary butyl alcohol	1.32	0.991	-	24.9	30	55	0
methylene chloride	1.004	0.887	-	11.7	30	63	0
3-chloropropene	0.91	0.986	-	-8.4	30	79	0
carbon disulfide	2.364	1.885	-	20.3	30	59	0
Freon 113	1.582	1.238	-	21.7	30	57	0
trans-1,2-dichloroethene	1.225	0.939	-	23.3	30	55	0
1,1-dichloroethane	1.55	1.254	-	19.1	30	58	0
MTBE	1.863	1.551	-	16.7	30	59	0
vinyl acetate	1.537	1.518	-	1.2	30	74	0
2-butanone	1.627	1.571	-	3.4	30	70	0
cis-1,2-dichloroethene	1.172	0.902	-	23	30	55	0
Ethyl Acetate	0.25	0.225	-	10	30	63	0
chloroform	1.738	1.345	-	22.6	30	56	0
Tetrahydrofuran	0.9	0.794	-	11.8	30	68	0
1,2-dichloroethane	1.205	0.946	-	21.5	30	57	0
1,4-difluorobenzene	1	1	-	0	30	62	0
hexane	0.524	0.522	-	0.4	30	64	0
1,1,1-trichloroethane	0.709	0.626	-	11.7	30	57	0
benzene	1.081	0.91	-	15.8	30	54	0
carbon tetrachloride	0.704	0.63	-	10.5	30	57	0
cyclohexane	0.527	0.521	-	1.1	30	63	0
dibromomethane	0.477	0.343	-	28.1	30	50	0
1,2-dichloropropane	0.441	0.39	-	11.6	30	57	0
bromodichloromethane	0.824	0.792	-	3.9	30	61	0
1,4-dioxane	0.224	0.206	-	8	30	58	0
trichloroethene	0.441	0.383	-	13.2	30	56	0
2,2,4-trimethylpentane	1.718	1.83	-	-6.5	30	68	0
heptane	0.618	0.69	-	-11.7	30	71	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: CH2MHILL	**Lab Number**	: L1812962		
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR		
Instrument ID	: AIRPIANO2	**Calibration Date**	: 04/21/18 13:20		
Lab File ID	: R253812	**Init. Calib. Date(s)**	: 03/25/18	03/26/18	
Sample No	: WG1108672-2	**Init. Calib. Times**	: 22:16	03:35	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
cis-1,3-dichloropropene	0.585	0.505	-	13.7	30	54	0
4-methyl-2-pentanone	0.867	0.934	-	-7.7	30	68	0
trans-1,3-dichloropropene	0.572	0.424	-	25.9	30	46	0
1,1,2-trichloroethane	0.439	0.388	-	11.6	30	56	0
chlorobenzene-D5	1	1	-	0	30	68	0
toluene	5.482	4.356	-	20.5	30	55	0
2-hexanone	3.536	3.363	-	4.9	30	65	0
dibromochloromethane	3.146	2.892	-	8.1	30	63	0
1,2-dibromoethane	3.018	2.346	-	22.3	30	53	0
tetrachloroethene	2.309	1.937	-	16.1	30	59	0
1,1,1,2-tetrachloroethane	2.188	1.648	-	24.7	30	51	0
chlorobenzene	4.323	3.412	-	21.1	30	54	0
ethylbenzene	6.802	5.413	-	20.4	30	54	0
m+p-xylene	5.321	4.362	-	18	30	54	0
bromoform	2.85	2.864	-	-0.5	30	67	0
styrene	3.859	3.092	-	19.9	30	52	0
1,1,2,2-tetrachloroethane	4.582	3.877	-	15.4	30	56	0
o-xylene	5.518	4.685	-	15.1	30	56	0
1,2,3-trichloropropane	3.324	2.686	-	19.2	30	55	0
isopropylbenzene	6.935	5.614	-	19	30	55	0
bromobenzene	3.874	3.096	-	20.1	30	54	0
4-ethyl toluene	6.76	6.57	-	2.8	30	58	0
1,3,5-trimethylbenzene	5.659	4.963	-	12.3	30	54	0
tert-butylbenzene	6.285	5.224	-	16.9	30	55	0
1,2,4-trimethylbenzene	5.662	5.432	-	4.1	30	57	0
Benzyl Chloride	5.107	4.833	-	5.4	30	61	0
1,3-dichlorobenzene	4.024	3.781	-	6	30	56	0
1,4-dichlorobenzene	4.135	3.769	-	8.9	30	55	0
sec-butylbenzene	8.859	7.448	-	15.9	30	55	0
p-isopropyltoluene	7.366	5.778	-	21.6	30	51	0
1,2-dichlorobenzene	3.81	3.562	-	6.5	30	57	0
n-butylbenzene	7.231	6.351	-	12.2	30	55	0
1,2,4-trichlorobenzene	3.251	3.049	-	6.2	30	52	0
naphthalene	6.703	5.85	-	12.7	30	47	0
1,2,3-trichlorobenzene	2.707	2.405	-	11.2	30	46	0
hexachlorobutadiene	2.738	2.747	-	-0.3	30	60	0

* Value outside of QC limits.

Internal Standard Area and RT Summary
Form 8

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Instrument ID	: AIRLAB15	**Analysis Date**	: 04/20/18 16:16
Sample No	: WG1108448-2	**Lab File ID**	: R157169_EV2

	Bromochloromethane		1,4-Difluorobenzene		Chlorobenzene-d5	
	Area	RT	Area	RT	Area	RT
WG1108448-2	132894	9.62	287503	11.89	56135	16.55
Upper Limit	186052	9.95	402504	12.22	78589	16.88
Lower Limit	79736	9.29	172502	11.56	33681	16.22
Sample ID						
WG1108448-3 LCS	132894	9.62	287503	11.89	56135	16.55
WG1108448-4 BLANK	123603	9.61	265728	11.88	52009	16.55
S01-HGR-OA02-041218	82600	9.58	203992	11.87	46534	16.54
S01-B505-IA06-041218	120004	9.60	247938	11.87	48428	16.54
S01-B505-IA10-041218	90747	9.60	216902	11.87	47073	16.54
S01-B505-IA11-041218	95489	9.60	236917	11.87	52636	16.54
S01-B505-IA11-041218 DUP	91330	9.60	226826	11.87	52155	16.54
S01-B505-IA09-041218	119538	9.59	248372	11.87	47762	16.54

Area Upper Limit = +40% of internal standard area
Area Lower Limit = - 40% of internal standard area

RT Upper Limit = +0.33 minutes of internal standard RT
RT Lower Limit = -0.33 minutes of internal standard RT

* Values outside of QC limits

Internal Standard Area and RT Summary
Form 8

Client	: CH2MHILL	**Lab Number**	: L1812962
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Instrument ID	: AIRPIANO2	**Analysis Date**	: 04/21/18 13:20
Sample No	: WG1108672-2	**Lab File ID**	: R253812

	Bromochloromethane		1,4-Difluorobenzene		Chlorobenzene-d5	
	Area	RT	Area	RT	Area	RT
WG1108672-2	191605	10.54	388232	12.74	97750	17.05
Upper Limit	268247	10.87	543525	13.07	136850	17.38
Lower Limit	114963	10.21	232939	12.41	58650	16.72
Sample ID						
WG1108672-3 LCS	191605	10.54	388232	12.74	97750	17.05
WG1108672-4 BLANK	211811	10.54	423616	12.74	91106	17.05
S01-B505-IA12-041218	215253	10.54	413838	12.74	87770	17.05
S01-B505-IA12-041218-FD01	216213	10.54	414230	12.74	86988	17.05
S01-B505-IA07-041218	210360	10.54	404919	12.74	88374	17.05
SP-E APT 1 DUP	192630	10.54	374076	12.74	81395	17.05

Area Upper Limit = +40% of internal standard area
Area Lower Limit = - 40% of internal standard area

RT Upper Limit = +0.33 minutes of internal standard RT
RT Lower Limit = -0.33 minutes of internal standard RT

* Values outside of QC limits

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Mr. Gregory Rudloff
United States Environmental Protection Agency (USEPA)
Region 5
77 W. Jackson Blvd. LU-9J
Chicago, IL 60604

May 21, 2018

Subject: One-Month Post Interim Measures Indoor Air Analytical Data Submittal for the Hanging Rock Plant, Ironton, OH EPA ID# OHR 000 157 727 and OHD 039 128 913

Dear Mr. Rudloff,

On behalf of Mr. Timothy King of The Dow Chemical Company, CH2M HILL, Inc. is submitting the 1-month post short-term interim measures completed indoor air sampling analytical results at Building 505, Hanging Rock Plant in Ironton, Ohio.

The 1-month post indoor air detections were below the Ohio Environmental Protection Agency response guidance accelerated response and chronic response action levels and below the USEPA vapor intrusion screening levels.

The indoor air sampling was conducted on May 4, 2018, within 30 days of the interim measures being completed on April 5, 2018. Nine indoor air samples, one duplicate, and one outside/ambient air sample were collected. Seven of the nine indoor air samples were collected from previous sampling locations. The other two samples were collected in rooms in the southeast warehouse section of the building – office R16 and R17 (breakroom). The canisters were shipped to Alpha Analytical located in Mansfield, Massachusetts, and analyzed for PCE, TCE, 1,1-DCE, trans-1,2-DCE, cis-1,2-DCE, and vinyl chloride by USEPA Method TO-15 SIM. The 2.5-month post-sampling event will be conducted the week of June 4, 2018, during the Phase 3 source area investigation field work.

Attached are the laboratory analytical data package, the unvalidated data tabulated with previous results, and a figure showing the data and sample locations within the building.

Please contact me at (513) 673-2201 or Mr. King at (304) 747-3763 should you have any questions or comments.

Sincerely,

Marie W. Chiller, CH2M HILL Inc.
Site Manager

Attachments

cc: Timothy King/The Dow Chemical Company

Table 1. Building 505 September 2017, April 2018, and May 2018 Outdoor and Indoor Air Analytical Results [a]

Vapor Intrusion Investigation Summary, Dow Hanging Rock, Ironton, Ohio

		Analyte	TETRACHLOROETHYLENE (PCE)	TRICHLOROETHYLENE (TCE)	CIS-1,2-DICHLOROETHYLENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
		USEPA Indoor Air RSL[b]	175	9	NA	NA	876	28
		Ohio EPA Response Action Level[c]	180	8.8	NA	NA	NA	28
		Unit	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3
Sample Location	**Sample ID**	**Date**	**Building 505**					
Outdoor Air								
S01-HGR-OA01	S01-HGR-OA01-090817	9/8/17	**0.068 J**	0.107 U	0.079 U	0.079 U	0.079 U	0.018U
S01-HGR-OA02	S01-HGR-OA02-041218	4/12/18	0.136 U	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
S01-HGR-OA03	S01-HER-OA-050418	5/4/18	**0.156**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
Indoor Air								
IA06	S01-B505-IA06-090817	9/8/17	**326**	**1.04**	**0.079**	**0.024 J**	0.079 U	0.018U
	S01-B505-IA06-041218	4/12/18	**30.2**	**0.559**	**0.17**	0.079 U	0.079 U	0.051 U
	S01-B505-IA06-050418	5/4/18	**11.7**	**0.242**	**0.079**	0.079 U	0.079 U	0.051 U
IA07	S01-B505-IA07-090817	9/8/17	**220**	**0.451**	**0.06 J**	**0.024 J**	0.079 U	0.018U
	S01-B505-IA07-041218	4/12/18	**15.9**	**0.597**	**0.111**	0.079 U	0.079 U	0.051 U
	S01-B505-IA07-050418	5/4/18	**12.6**	**0.408**	**0.083**	0.079 U	0.079 U	0.051 U
IA08	S01-B505-IA08-090817	9/8/17	**197**	**0.403**	**0.052 J**	0.079 U	0.079 U	0.018U
	S01-B505-IA08-050418	5/4/18	**6.64**	**0.220**	0.079 U	0.079 U	0.079 U	0.051 U
IA09	S01-B505-IA09-090817	9/8/17	**268**	**0.543**	**0.067 J**	**0.028 J**	0.079 U	0.018U
	S01-HGR-090817-FD02	9/8/17	**262**	**0.527**	**0.071 J**	0.079 U	0.079 U	0.018U
	S01-B505-IA09-041218	4/12/18	**17.4**	**0.532**	**0.159**	0.079 U	0.079 U	0.051 U
	S01-B505-IA09-050418	5/4/18	**7.46**	**0.247**	**0.079**	0.079 U	0.079 U	0.051 U
	S01-B505-FD01-050418	5/4/18	**8.41**	**0.290**	0.079 U	0.079 U	0.079 U	0.051 U
IA10	S01-B505-IA10-090817	9/8/17	**324**	**1.00**	**0.099**	**0.024 J**	0.079 U	0.018U
	S01-B505-IA10-041218	4/12/18	**45.5**	**0.736**	**0.297**	0.079 U	0.079 U	0.051 U
	S01-B505-IA10-050418	5/4/18	**14.6**	**0.575**	**0.103**	0.079 U	0.079 U	0.051 U
IA11	S01-B505-IA11-041218	4/12/18	**30.6**	**0.376**	**0.297**	0.079 U	0.079 U	0.051 U
	S01-B505-IA11-050418	5/4/18	**9.56**	**0.220**	**0.095**	0.079 U	0.079 U	0.051 U
IA12	S01-B505-IA12-041218	4/12/18	**3.27**	**0.161**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-041218-FD01	4/12/18	**3.36**	**0.167**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-050418	5/4/18	**1.58**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
IA13	S01-B505-IA13-050418	5/4/18	**19.0**	**0.177**	0.079 U	0.079 U	0.079 U	0.051 U
IA14	S01-B505-IA14-050418	5/4/18	**8.21**	**0.193**	**0.230**	0.079 U	0.079 U	0.051 U

Notes:

[a]: The May 2018 data are preliminary. This data has not yet been validated.

[b]: RSL is a risk-based screening level derived from the lowest of the cancer-based (TCR = 1 x 10^{-5}) or the noncancer-based (THQ = 1) industrial indoor air Regional Screening Levels (RSLs) [EPA, 2018], which ever is lower.

[c]: Ohio EPA response guidance provides an Accelerated Response Action Level for trichloroethylene (TCE) based on a THQ=1 and Chronic Response Action Levels for tetrachloroethylene (PCE)and vinyl chloride (based on a THQ=1 or TCR=1 x 10^{-5}). Source - Ohio EPA Guidance Document Recommendations Reguarding Response Action Levels and Timeframes for Common Contaminants of Concern at Vapor Intrusion Sites in Ohio (Ohio EPA, August 2016).

Bold text indicates a detection

Shading indicates a VISL exceedance

= - detected result

µg/m^3 - micrograms per cubic meter

J - estimated result

N/A - not applicable

TCR - target risk for carcinogens

THQ - target hazard quotient for non-carcinogens

U - not detected, reporting limit shown

VISL = vapor intrusion screening level

EPA, 2017. Regoional Screening Levels (RSLs). November. https://www.epa.gov/risk/regional-screening-levels-rsls

N

0 8 16 24

SCALE IN FEET
(APPROXIMATE)

Location	Date	PCE ug/m³	TCE ug/m³
IA08	9/8/17	197	0.403
	5/4/18	6.64	0.220

Location	Date	PCE ug/m³	TCE ug/m³
IA09	9/8/17	268	0.543
	4/12/18	17.4	0.532
	5/4/18	8.41	0.290

Location	Date	PCE ug/m³	TCE ug/m³
IA10	9/8/17	324	1.000
	4/12/18	45.5	0.736
	5/4/18	14.6	0.575

AEROSOL CAN USE AND STORAGE AREA

Location	Date	PCE ug/m³	TCE ug/m³
IA11	4/12/18	30.6	0.376
	5/4/18	9.56	0.220

OFF L8
OFF L9 (KITCHENETTE/ COFFEE ROOM)
OFF L10 (PROJECT FILE STORAGE AND LARGE COPIER)
OFF I14 (PLANT DRAWINGS STORAGE)
OFF L14
OFF R1
OFF R2
OFF R3
OFF R4
OFF R4A
STORE ROOM (WAREHOUSE SHELFING, SMALL PARTS, AEROSOL CANS, ETC.)
STORE ROOM (EQUIPMENT, TOTES, PALLETS, SHELFING, ETC.)
OFF L7
OFF L15 (CONFERENCE ROOM)
KITCHEN/ BREAKROOM
MEN'S ROOM
LADIES' ROOM
IA-09
IA-10
OFF R9
OFF R8
IA-11
SEALED CRACK IN FLOOR
OFF L6
OFF R19
OFF R7 (COPY ROOM)
OFF R6 (ELECTRONIC STORAGE/ MAINTENANCE SHOP)
APU
OFF R5 (PROCESS CONTROL PARTS STORAGE)
OFF R20
IA-08
OFF L5
OFF L11
OFF L12
OFF L13
OFF R18 (CLEANING SUPPLIES STORAGE)
SEALED CRACK IN FLOOR
JANITOR
APU
IA-12
OFF L4 (STORAGE ROOM)
CONFERENCE ROOM 16
OFF L3
OFF L2
OFF L1
IA-07
OFF R10 (ELECTRICAL ROOM)
OFF R11
OFF R12
OFF R13
IA-06
OFF R14
OFF R16
IA-13
OFF R15
IA-14
OFF R17 (BREAK ROOM AND RESTROOM)
SEALED GAP BETWEEN FLOOR AND FIRE WATER LINE RISER

Location	Date	PCE ug/m³	TCE ug/m³
IA12	4/12/18	3.27	0.161
	5/4/18	1.58	0.107 U

Location	Date	PCE ug/m³	TCE ug/m³
IA07	9/8/17	220	0.451
	4/12/18	15.9	0.597
	5/4/18	12.6	0.408

Location	Date	PCE ug/m³	TCE ug/m³
IA06	9/8/17	326	1.04
	4/12/18	30.2	0.559
	5/4/18	11.7	0.242

Location	Date	PCE ug/m³	TCE ug/m³
IA14	5/4/18	8.21	0.193

Location	Date	PCE ug/m³	TCE ug/m³
IA13	5/4/18	19	0.177

Legend

APU AIR PURIFYING UNIT

INDOOR AIR SAMPLE

GARAGE DOOR

Notes:

µg/m³ = MICROGRAMS PER CUBIC METER
SHADED DATA EXCEEDS THE SCREENING LEVEL
U = NOT DETECTED
J = ESTIMATED RESULT

Location	Date	PCE ug/m³	TCE ug/m³
Outdoor Air	9/8/17	**0.068 J**	0.107 U
	4/12/18	0.136 U	0.107 U
	5/4/18	**0.156**	0.107 U

Analyte	Unit	Ohio EPA Response Action Level	USEPA Regional Screening Level
Tetrachloroethylene (PCE)	µg/m³	180	175
Trichloroethylene (TCE)	µg/m³	8.8	9

Figure 1
Building 505 Layout and PCE and TCE Indoor Sampling Air Results
Hanging Rock Facility
Ironton, OH

JACOBS

ALPHA ANALYTICAL

World Class Chemistry

www.alphalab.com

Lab Number: L1816546

Client: Jacobs

ATTN: Marie Chiller

Project Name: DOW HANGING ROCK

Project Number: 693874.01.RR

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Sample Delivery Group Information

Sample Delivery Group Summary

Alpha Job Number : L1816546

Account Name : CH2MHILL
Project Number : 693874.01.RR
Project Name : DOW HANGING ROCK

Received : 08-MAY-2018
Reviewer : Christopher Collins

Delivery Information

Samples Delivered By : Express Ship
FedEx (780838633607)

Chain of Custody : Present

Cooler Information

Cooler	Seal/Seal#	Preservation	Temperature(°C)	Additional Information
N/A	Present/Intact/N/A			

Condition Information

All samples on COC received?	**YES**
Extra samples received?	**NO**
Are there any sample container discrepancies?	**NO**
Are there any discrepancies between sample labels & COC?	**NO**
Are samples in appropriate containers for requested analysis?	**YES**
Are samples properly preserved for requested analysis?	**YES**
Are samples within holding time for requested analysis?	**YES**
All sampling equipment returned?	**YES**

Volatile Organics/VPH

Reagent Water Vials Frozen by Client?	**NA**

LIMS Chain of Custody

ALPHA ANALYTICAL LABORATORIES, INC.
LOGIN CHAIN OF CUSTODY REPORT
May 15 2018, 03:23 pm

Login Number: L1816546
Account: DOW-CH2M CH2MHILLProject: 693874.01.RR
Received: 08MAY18 Due Date: 15MAY18

Sample #	Client ID	Mat	PR	Collected
L1816546-01	S01-B505-IA14-050418	10	S0	04MAY18 16:13

Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. A2-DPKG-FULL Package Due Date: 05/15/18

A2-DPKG-FULL,CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM

Sample #	Client ID	Mat	PR	Collected
L1816546-02	S01-B505-IA11-050418	10	S0	04MAY18 16:31

Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 05/15/18

CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM

Sample #	Client ID	Mat	PR	Collected
L1816546-03	S01-B505-IA06-050418	10	S0	04MAY18 16:19

Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 05/15/18

CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM

Sample #	Client ID	Mat	PR	Collected
L1816546-04	S01-B505-IA09-050418	10	S0	04MAY18 16:23

Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 05/15/18

CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM

Sample #	Client ID	Mat	PR	Collected
L1816546-05	S01-B505-FD01-050418	10	S0	04MAY18 16:23

Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 05/15/18

CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM

Sample #	Client ID	Mat	PR	Collected
L1816546-06	S01-B505-IA10-050418	10	S0	04MAY18 16:21

Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 05/15/18

CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM

Sample #	Client ID	Mat	PR	Collected
L1816546-07	S01-B505-IA12-050418	10	S0	04MAY18 16:33

Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 05/15/18

ALPHA ANALYTICAL LABORATORIES, INC.
LOGIN CHAIN OF CUSTODY REPORT
May 15 2018, 03:23 pm

Login Number: L1816546
Account: DOW-CH2M CH2MHILLProject: 693874.01.RR
Received: 08MAY18 Due Date: 15MAY18

Sample #	Client ID	Mat	PR	Collected

CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM

L1816546-08 S01-B505-IA08-050418 10 S0 04MAY18 16:37
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 05/15/18

CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM

L1816546-09 S01-B505-IA07-050418 10 S0 04MAY18 16:35
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 05/15/18

CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM

L1816546-10 S01-B505-IA13-050418 10 S0 04MAY18 16:45
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 05/15/18

CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM

L1816546-11 S01-HER-OA-050418 10 S0 04MAY18 16:04
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 05/15/18

CAN-CERT,CAN-RENT,FLOW-CERT,FLOW-RENT,TO15-SIM

L1816546-12 UNUSED CAN #1655 10 S0
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 05/15/18

CAN-CERT,CAN-RENT,CLEAN-FEE,FLOW-CERT,FLOW-RENT

L1816546-13 UNUSED CAN# 1598 10 S0
Report: 1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, VC. Package Due Date: 05/15/18

CAN-CERT,CAN-RENT,CLEAN-FEE,FLOW-CERT,FLOW-RENT

Logged By: Bethany Bedard

Container Tracking

ALPHA ANALYTICAL LABORATORIES
Container Tracking Report

Container ID	Type	Status	Transaction Date	From Response	From Location	From Operator	To Response	To Location	To Operator

Chain of Custody

AIR ANALYSIS

PAGE 1 OF 2

Date Rec'd in Lab: 5/8/18

ALPHA Job #: L1816546

CHAIN OF CUSTODY

ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Jacobs/ Dow
Address: 1880 Waycross Rd
Cincinatti, OH 45420
Phone: 513-673-2201
Fax:
Email: Marie.Chiller@Jacobs.Com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Dow Hanging Rock
Project Location: Ironton, OH
Project #: 693874.01.RR
Project Manager: Marie Chiller
ALPHA Quote #:

Turn-Around Time

☐ Standard ☒ RUSH (only confirmed if pre-approved!) 7 day
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☒ Per SOW

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-15	TO-15 SIM	APH Subtract Non-petroleum HCs ☐	Fixed Gases	Sulfides & Mercaptans by TO-15			Sample Comments (i.e. PID)
816546-01	SØ1-B505-IA14-050418	5/4/18	08:19	16:13	-29.46	-5.73	AA	JS	6L	766	0967		X						
-02	SØ1-B505-IA11-050418	5/4/18	08:22	16:31	-29.75	-6.71	AA	JS	6L	1514	0845		X						
-03	SØ1-B505-IA06-050418	5/4/18	08:23	16:19	-30.00	-6.47	AA	JS	6L	1663	0058		X						
-04	SØ1-B505-IA09-050418	5/4/18	08:24	16:23	-29.61	-6.36	AA	JS	6L	1702	0246		X						
-05	SØ1-B505-FDØ1-050418	5/4/18	08:24	16:23	-29.53	-6.53	AA	JS	6L	1053	0963		X						
-06	SØ1-B505-IA10-050418	5/4/18	08:30	16:21	-29.56	-6.53	AA	JS	6L	635	0364		X						
-07	SØ1-B505-IA12-050418	5/4/18	08:33	16:33	-29.36	-6.33	AA	JS	6L	2119	0293		X						
-08	SØ1-B505-IA08-050418	5/4/18	08:34	16:37	-29.51	-6.29	AA	JS	6L	2256	0635		X						
-09	SØ1-B505-IA07-050418	5/4/18	08:36	16:35	-29.52	-6.22	AA	JS	6L	2563	0208		X						
-10	SØ1-B505-IA13-050418	5/4/18	08:49	16:45	-29.42	-6.60	AA	JS	6L	601	0643		X						

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
Jenn Simms [signature] Fed Ex	05/06/18 13:30	Fed Ex [signature] -AAL	5/8/18 09:50

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Form No: 101-02 Rev: (25-Sep-15)

AIR ANALYSIS

PAGE 2 OF 2

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 5/8/18

ALPHA Job #: L1816546

Client Information

Client: Jacobs / Dow
Address: 1880 Waycross Rd
Cincinatti, OH 45420
Phone: 513-673-2201
Fax:
Email: Marie.Chiller@Jacobs.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Dow Hanging Rock
Project Location: Ironton, OH
Project #: 693874.01.RR
Project Manager: Marie Chiller
ALPHA Quote #:

Turn-Around Time

☐ Standard ☒ RUSH (only confirmed if pre-approved!) 7-day

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:

Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ~~X~~ Per SOW

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS TO-15	TO-15 SIM	APH (Subtract Non-petroleum HCs ☐)	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
-11	SD1-HGR-OA03-050418	5/4/18	08:51	16:04	-29.85	-2.53	AA	JS	6L	1676	0089		X				

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
Jenn Simms FedEx	5/06/18 13:30	FedEx Ken Eberly AAC	5/8/18 09:50

Form No: 101-02 Rev: (25-Sep-15)

Organics

GC/MS VOA
Air Analysis
Selective Ion Monitoring

Initial Calibration

Response Factor Report Air Piano 1

Method Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Method File : TSIM180226.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Tue Feb 27 08:55:14 2018
Response Via : Initial Calibration

Calibration Files
0.02=R157600.D 0.04=R157601.D 0.1 =R157602.D 0.2 =R157603.D 0.5 =R157604.D 1.0 =R157605.D
5.0 =R157606.D 10.0=R157607.D 20.0=R157608.D 50.0=R157609.D

		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
1)	I	bromochloromethane	----------ISTD----------											
2)		propylene				0.646	0.581	0.558	0.482	0.500	0.462	0.438	0.5239	14.15
3)		dichlorodifluorome...	1.141	1.128	0.982	1.268	1.229	1.037	1.154	1.071	1.275	0.939	1.1223	10.31
4)	C	chloromethane		0.609	0.600	0.639	0.608	0.602	0.575	0.566	0.531	0.467	0.5775	8.95
5)		Freon-114	1.461	1.420	1.394	1.555	1.550	1.521	1.465	1.398	1.377	1.201	1.4343	7.28
6)	C	vinyl chloride	0.603	0.586	0.583	0.649	0.632	0.624	0.604	0.579	0.565	0.500	0.5926	7.05
7)	C	1,3-butadiene	0.431	0.414	0.390	0.435	0.424	0.420	0.409	0.401	0.383	0.342	0.4049	6.86
8)	C	bromomethane	0.561	0.496	0.486	0.536	0.531	0.498	0.516	0.472	0.481	0.414	0.4989	8.17
9)	C	chloroethane	0.351	0.277	0.266	0.300	0.289	0.284	0.279	0.257	0.259	0.228	0.2790	11.61
10)		ethanol				0.660	0.504	0.452	0.429	0.444	0.399	0.337	0.4608	22.08
11)	C	vinyl bromide	0.490	0.441	0.424	0.465	0.477	0.467	0.452	0.434	0.450	0.387	0.4487	6.55
12)	C	acrolein	0.356	0.289	0.262	0.250	0.237	0.233	0.232	0.228	0.230	0.194	0.2510	17.65
13)		acetone				0.946	0.819	0.796	0.703	0.711	0.715	0.591	0.7546	14.85
14)		trichlorofluoromet...	1.315	1.225	1.243	1.339	1.333	1.307	1.277	1.225	1.259	1.086	1.2608	5.91
15)		isopropyl alcohol				1.685	1.203	1.043	0.850	0.840	0.856	0.726	1.0289	32.01#
16)	C	acrylonitrile	0.476	0.446	0.368	0.475	0.462	0.452	0.416	0.416	0.415	0.359	0.4285	9.66
17)	C	1,1-dichloroethene	1.004	0.964	0.938	1.033	1.030	1.002	0.980	0.962	0.949	0.830	0.9692	6.07
18)		tertiary butyl alc...			1.313	1.194	1.150	1.149	1.107	1.104	1.072	0.952	1.1301	9.14
19)	C	methylene chloride					0.827	0.830	0.792	0.786	0.759	0.663	0.7761	7.92
20)	C	3-chloropropene				0.883	0.821	0.811	0.801	0.822	0.781	0.696	0.8021	7.01
21)	C	carbon disulfide			1.607	1.686	1.647	1.595	1.596	1.532	1.579	1.323	1.5705	6.99
22)		Freon 113	1.030	0.956	0.940	1.043	1.057	1.022	1.007	0.953	1.005	0.851	0.9864	6.29
23)		trans-1,2-dichloro...	0.900	0.871	0.864	0.967	0.935	0.926	0.890	0.884	0.897	0.821	0.8954	4.55
24)	C	1,1-dichloroethane	1.143	1.094	1.082	1.203	1.173	1.169	1.116	1.094	1.111	1.004	1.1190	5.08
25)	C	MTBE	1.405	1.273	1.277	1.382	1.393	1.395	1.303	1.303	1.310	1.203	1.3244	5.05
26)	C	vinyl acetate					1.255	1.174	1.221	1.327	1.367	1.328	1.2787	5.79
27)	C	2-butanone				1.439	1.369	1.359	1.312	1.388	1.349	1.229	1.3493	4.87
28)		cis-1,2-dichloroet...	0.987	0.930	0.957	1.043	1.024	1.001	0.978	0.956	0.960	0.881	0.9718	4.79
29)		Ethyl Acetate			0.218	0.193	0.222	0.230	0.221	0.232	0.241	0.220	0.2221	6.38
30)	C	chloroform	1.416	1.336	1.330	1.445	1.423	1.396	1.368	1.348	1.384	1.256	1.3703	4.05
31)		Tetrahydrofuran			0.824	0.762	0.682	0.718	0.739	0.787	0.748	0.707	0.7457	6.12

Response Factor Report Air Piano 1

Method Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Method File : TSIM180226.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Tue Feb 27 08:55:14 2018
Response Via : Initial Calibration

Calibration Files
0.02=R157600.D 0.04=R157601.D 0.1 =R157602.D 0.2 =R157603.D 0.5 =R157604.D 1.0 =R157605.D
5.0 =R157606.D 10.0=R157607.D 20.0=R157608.D 50.0=R157609.D

		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
32)	C	1,2-dichloroethane	0.877	0.864	0.838	0.897	0.863	0.840	0.834	0.833	0.825	0.760	0.8432	4.38
33)	I	1,4-difluorobenzene	ISTD											
34)	C	hexane	0.828	0.788	0.778	0.841	0.822	0.754	0.755	0.793	0.782	0.729	0.7870	4.54
35)	s	1,2-dichloroethane-D4	0.390	0.385	0.406	0.403	0.396	0.380	0.367	0.396	0.380	0.374	0.3878	3.24
36)	C	1,1,1-trichloroethane	0.773	0.735	0.738	0.794	0.785	0.735	0.729	0.755	0.740	0.713	0.7496	3.51
37)	C	benzene		1.181	1.140	1.227	1.167	1.130	1.101	1.151	1.125	1.042	1.1403	4.54
38)	C	carbon tetrachloride	0.702	0.711	0.690	0.754	0.716	0.696	0.703	0.732	0.736	0.691	0.7130	2.99
39)		cyclohexane	0.639	0.616	0.631	0.687	0.664	0.614	0.625	0.661	0.639	0.596	0.6373	4.25
40)		dibromomethane	0.714	0.568	0.493	0.505	0.463	0.456	0.450	0.462	0.462	0.435	0.5008	16.77
41)	C	1,2-dichloropropane	0.508	0.524	0.498	0.556	0.521	0.508	0.505	0.518	0.512	0.482	0.5132	3.74
42)		bromodichloromethane	0.884	0.849	0.818	0.913	0.883	0.865	0.874	0.907	0.898	0.853	0.8744	3.34
43)	C	1,4-dioxane		0.206	0.203	0.215	0.224	0.213	0.223	0.232	0.241	0.230	0.2207	5.69
44)	C	trichloroethene	0.428	0.413	0.363	0.436	0.409	0.409	0.408	0.416	0.422	0.401	0.4104	4.76
45)	C	2,2,4-trimethylpen...	2.056	1.979	2.002	2.255	2.151	2.049	2.020	2.123	2.044	1.925	2.0602	4.59
46)		heptane	0.857	0.855	0.861	0.938	0.903	0.851	0.845	0.919	0.851	0.808	0.8688	4.48
47)	C	cis-1,3-dichloropr...	2.349	2.228	2.294	2.553	2.505	2.438	2.580	2.753	2.696	2.606	2.5002	6.87
48)	C	4-methyl-2-pentanone	0.759	0.853	0.991	1.124	1.109	1.082	1.160	1.278	1.169	1.132	1.0659	14.66
49)		trans-1,3-dichloro...	0.520	0.488	0.530	0.594	0.596	0.585	0.649	0.648	0.675	0.659	0.5944	10.87
50)	C	1,1,2-trichloroethane	0.422	0.410	0.413	0.465	0.447	0.447	0.447	0.454	0.456	0.424	0.4385	4.46
51)	I	chlorobenzene-D5	ISTD											
52)	C	toluene		4.478	4.308	4.562	4.372	4.557	4.607	4.438	4.614	4.240	4.4640	3.02
53)	s	toluene-D8	3.243	3.087	3.175	3.065	3.043	3.299	3.301	3.143	3.331	3.212	3.1898	3.27
54)		2-hexanone			2.643	2.928	3.485	3.650	4.101	4.189	4.255	3.829	3.6350	16.29
55)		dibromochloromethane	2.424	2.243	2.246	2.457	2.414	2.558	2.702	2.623	2.863	2.712	2.5240	8.09
56)	C	1,2-dibromoethane	2.357	2.279	2.214	2.451	2.398	2.498	2.645	2.540	2.710	2.546	2.4637	6.34
57)	C	tetrachloroethene	1.676	1.650	1.556	1.720	1.638	1.738	1.789	1.690	1.902	1.824	1.7184	5.82
58)		1,1,1,2-tetrachlor...	1.652	1.650	1.473	1.681	1.604	1.706	1.787	1.710	1.859	1.757	1.6879	6.26
59)	C	chlorobenzene	3.165	3.161	3.053	3.412	3.263	3.417	3.516	3.368	3.610	3.409	3.3373	5.21
60)	C	ethylbenzene	5.946	5.470	5.162	5.850	5.497	5.808	6.035	5.893	6.168	5.715	5.7546	5.24
61)	C	m+p-xylene	4.501	4.131	3.932	4.501	4.306	4.506	4.751	4.673	4.860	4.410	4.4569	6.29

Method Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Method File : TSIM180226.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Tue Feb 27 08:55:14 2018
Response Via : Initial Calibration

Calibration Files
0.02=R157600.D 0.04=R157601.D 0.1 =R157602.D 0.2 =R157603.D 0.5 =R157604.D 1.0 =R157605.D
5.0 =R157606.D 10.0=R157607.D 20.0=R157608.D 50.0=R157609.D

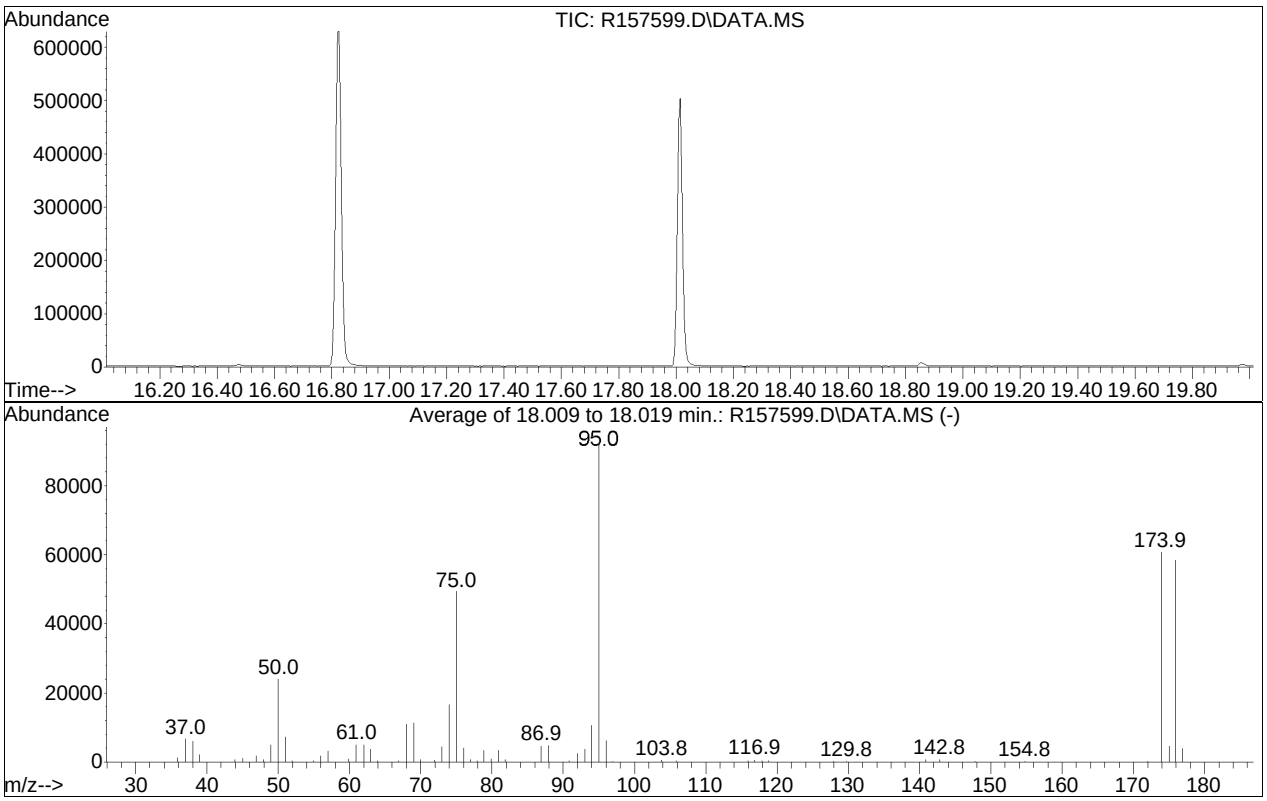
		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
62)	C	bromoform	2.509	2.079	1.910	2.132	2.068	2.195	2.421	2.413	2.646	2.590	2.2964	10.95
63)	C	styrene	2.527	2.562	2.471	2.908	2.859	3.058	3.332	3.300	3.511	3.293	2.9822	12.60
64)	C	1,1,2,2-tetrachlor...	3.936	3.664	3.626	4.070	3.896	4.122	4.343	4.251	4.519	3.974	4.0401	7.01
65)	C	o-xylene	4.798	4.433	4.281	4.714	4.456	4.676	4.952	4.840	5.088	4.575	4.6814	5.34
66)		1,2,3-trichloropro...	3.007	2.723	2.781	3.163	3.033	3.091	3.257	3.213	3.302	3.055	3.0626	6.23
67)	s	bromofluorobenzene	1.779	1.736	1.765	1.745	1.697	1.812	1.843	1.795	1.913	1.860	1.7947	3.59
68)	C	isopropylbenzene	5.515	4.945	4.939	5.467	5.265	5.397	5.534	5.638	5.960	5.417	5.4078	5.66
69)		bromobenzene	3.280	3.125	3.153	3.560	3.362	3.498	3.644	3.636	3.880	3.568	3.4705	6.87
70)		4-ethyl toluene	4.847	4.710	4.818	5.526	5.460	5.677	6.212	6.162	6.263	5.890	5.5564	10.73
71)		1,3,5-trimethylben...	4.707	4.186	4.264	4.807	4.660	4.840	5.235	5.195	5.288	5.007	4.8190	7.94
72)		tert-butylbenzene	4.361	4.114	3.969	4.589	4.433	4.608	5.076	5.066	5.032	4.414	4.5662	8.55
73)		1,2,4-trimethylben...	4.094	4.064	4.051	4.639	4.548	4.836	5.376	5.413	5.372	4.724	4.7117	11.53
74)	C	Benzyl Chloride				3.420	3.493	3.744	4.733	4.955	5.139	5.036	4.3603	17.70
75)		1,3-dichlorobenzene	2.745	2.550	2.650	3.049	2.974	3.173	3.528	3.501	3.532	3.530	3.1232	12.47
76)	C	1,4-dichlorobenzene	2.794	2.794	2.737	3.123	3.113	3.254	3.583	3.577	3.552	3.614	3.2141	11.08
77)		sec-butylbenzene	6.013	5.946	5.952	6.775	6.637	6.958	7.578	7.553	7.369	6.701	6.7482	9.37
78)		p-isopropyltoluene	5.047	4.805	4.647	5.333	5.219	5.572	6.045	6.128	5.768	5.354	5.3920	9.16
79)		1,2-dichlorobenzene	2.594	2.485	2.548	2.894	2.868	3.058	3.295	3.328	3.173	3.362	2.9605	11.30
80)		n-butylbenzene	4.428	4.501	5.026	5.772	5.978	6.350	6.953	7.074	6.240	6.323	5.8645	15.96
81)	C	1,2,4-trichloroben...		1.445	1.593	1.678	2.044	2.296	2.809	3.055	1.940	2.547	2.1562	26.01
82)		naphthalene		4.761	4.481	5.952	5.386	5.570	7.006	7.195	4.288	5.577	5.5796	18.33
83)		1,2,3-trichloroben...		1.290	1.527	1.496	1.885	2.144	2.714	2.933	1.649	2.240	1.9865	28.57
84)	C	hexachlorobutadiene		1.475	1.587	1.550	1.800	1.943	2.314	2.507	1.478	2.095	1.8610	20.42

(#) = Out of Range

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157599.D
Acq On : 26 Feb 2018 9:29 pm
Operator : AIRPIANO1:MB
Sample : WG1092763-1,3,250,250
Misc : WG1092763
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Tue Feb 27 08:55:14 2018



AutoFind: Scans 1575, 1576, 1577; Background Corrected with Scan 1568

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	26.0	24021	PASS
75	95	30	66	53.4	49387	PASS
95	95	100	100	100.0	92448	PASS
96	95	5	9	6.7	6172	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	65.8	60789	PASS
175	174	4	9	7.8	4733	PASS
176	174	93	101	96.2	58469	PASS
177	176	5	9	6.8	3970	PASS

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157600.D
Acq On : 26 Feb 2018 10:00 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.02
Misc : WG1092763
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 27 12:45:09 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.181	49	212164	10.000	ppbV	0.00
Standard Area = 218948			Recovery = 96.90%			
33) 1,4-difluorobenzene	12.401	114	291155	10.000	ppbV	0.00
Standard Area = 315293			Recovery = 92.34%			
51) chlorobenzene-D5	16.823	54	82318	10.000	ppbV	0.00
Standard Area = 85423			Recovery = 96.37%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.066	65	113428	10.045	ppbV	0.01
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.45%			
53) toluene-D8	15.128	98	266923	10.166	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.66%			
67) bromofluorobenzene	18.012	95	146437	9.912	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.12%			
Target Compounds						Qvalue
2) propylene	4.051	41	276M6	0.025	ppbV	
3) dichlorodifluoromethane	4.152	85	484	0.020	ppbV #	85
4) chloromethane	4.364	50	269M4	0.022	ppbV	
5) Freon-114	4.520	85	620	0.020	ppbV #	89
6) vinyl chloride	4.677	62	256	0.020	ppbV #	52
7) 1,3-butadiene	4.867	54	183	0.021	ppbV #	49
8) bromomethane	5.245	94	238	0.022	ppbV #	76
9) chloroethane	5.505	64	149	0.025	ppbV #	52
10) ethanol	5.719	31	4719	0.483	ppbV	98
11) vinyl bromide	5.989	106	208	0.022	ppbV	97
12) acrolein	6.176	56	151	0.028	ppbV #	74
13) acetone	6.390	43	4344	0.271	ppbV #	98
14) trichlorofluoromethane	6.566	101	558	0.021	ppbV	91
15) isopropyl alcohol	6.743	45	8511	0.390	ppbV	98
16) acrylonitrile	6.995	53	202	0.022	ppbV #	78
17) 1,1-dichloroethene	7.395	61	426M4	0.021	ppbV	
18) tertiary butyl alcohol	7.572	59	624	0.026	ppbV #	1
19) methylene chloride	7.572	49	567	0.034	ppbV	95
20) 3-chloropropene	7.721	41	359M4	0.021	ppbV	
21) carbon disulfide	7.897	76	962	0.029	ppbV #	1
22) Freon 113	7.916	101	437	0.021	ppbV #	86
23) trans-1,2-dichloroethene	8.745	61	382	0.020	ppbV #	84
24) 1,1-dichloroethane	8.991	63	485	0.020	ppbV #	75

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157600.D
Acq On : 26 Feb 2018 10:00 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.02
Misc : WG1092763
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 27 12:45:09 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	9.130	73	596	0.021	ppbV	#	37
26) vinyl acetate	9.211	43	582	0.021	ppbV	#	64
27) 2-butanone	9.547	43	712	0.025	ppbV	#	73
28) cis-1,2-dichloroethene	9.996	61	419	0.020	ppbV	#	78
29) Ethyl Acetate	0.000		0	N.D.	d		
30) chloroform	10.341	83	601	0.021	ppbV	#	86
31) Tetrahydrofuran	10.889	42	327M6	0.021	ppbV		
32) 1,2-dichloroethane	11.188	62	372	0.021	ppbV	#	51
34) hexane	10.234	57	482M4	0.021	ppbV		
36) 1,1,1-trichloroethane	11.477	97	450M4	0.021	ppbV		
37) benzene	11.994	78	740	0.022	ppbV	#	65
38) carbon tetrachloride	12.157	117	409	0.020	ppbV	#	88
39) cyclohexane	12.297	56	372	0.020	ppbV	#	82
40) dibromomethane	12.902	93	416	0.029	ppbV		91
41) 1,2-dichloropropane	12.925	63	296M4	0.020	ppbV		
42) bromodichloromethane	13.146	83	515	0.020	ppbV	#	87
43) 1,4-dioxane	13.298	88	125M4	0.019	ppbV		
44) trichloroethene	13.205	130	249	0.021	ppbV		96
45) 2,2,4-trimethylpentane	13.216	57	1197	0.020	ppbV	#	71
46) heptane	13.519	43	499M4	0.020	ppbV		
47) cis-1,3-dichloropropene	14.187	75	1368M4	0.019	ppbV		
48) 4-methyl-2-pentanone	14.307	43	442M3	0.014	ppbV		
49) trans-1,3-dichloropropene	14.798	75	303	0.018	ppbV	#	2
50) 1,1,2-trichloroethane	14.963	97	246	0.019	ppbV		96
52) toluene	15.231	91	804	0.022	ppbV		94
54) 2-hexanone	0.000		0	N.D.	d		
55) dibromochloromethane	15.654	129	399	0.019	ppbV	#	89
56) 1,2-dibromoethane	15.891	107	388	0.019	ppbV		98
57) tetrachloroethene	16.283	166	276	0.020	ppbV	#	81
58) 1,1,1,2-tetrachloroethane	16.847	131	272	0.020	ppbV	#	85
59) chlorobenzene	16.862	112	521	0.019	ppbV	#	84
60) ethylbenzene	17.161	91	979	0.021	ppbV		97
61) m+p-xylene	17.295	91	1482	0.040	ppbV		93
62) bromoform	17.380	173	413	0.022	ppbV		92
63) styrene	17.594	104	416	0.017	ppbV	#	88
64) 1,1,2,2-tetrachloroethane	17.673	83	648	0.019	ppbV		100
65) o-xylene	17.668	91	790	0.021	ppbV		94
66) 1,2,3-trichloropropane	17.773	75	495	0.020	ppbV	#	65
68) isopropylbenzene	18.106	105	908	0.020	ppbV		96
69) bromobenzene	18.196	77	540	0.019	ppbV		87

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157600.D
Acq On : 26 Feb 2018 10:00 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.02
Misc : WG1092763
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 27 12:45:09 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

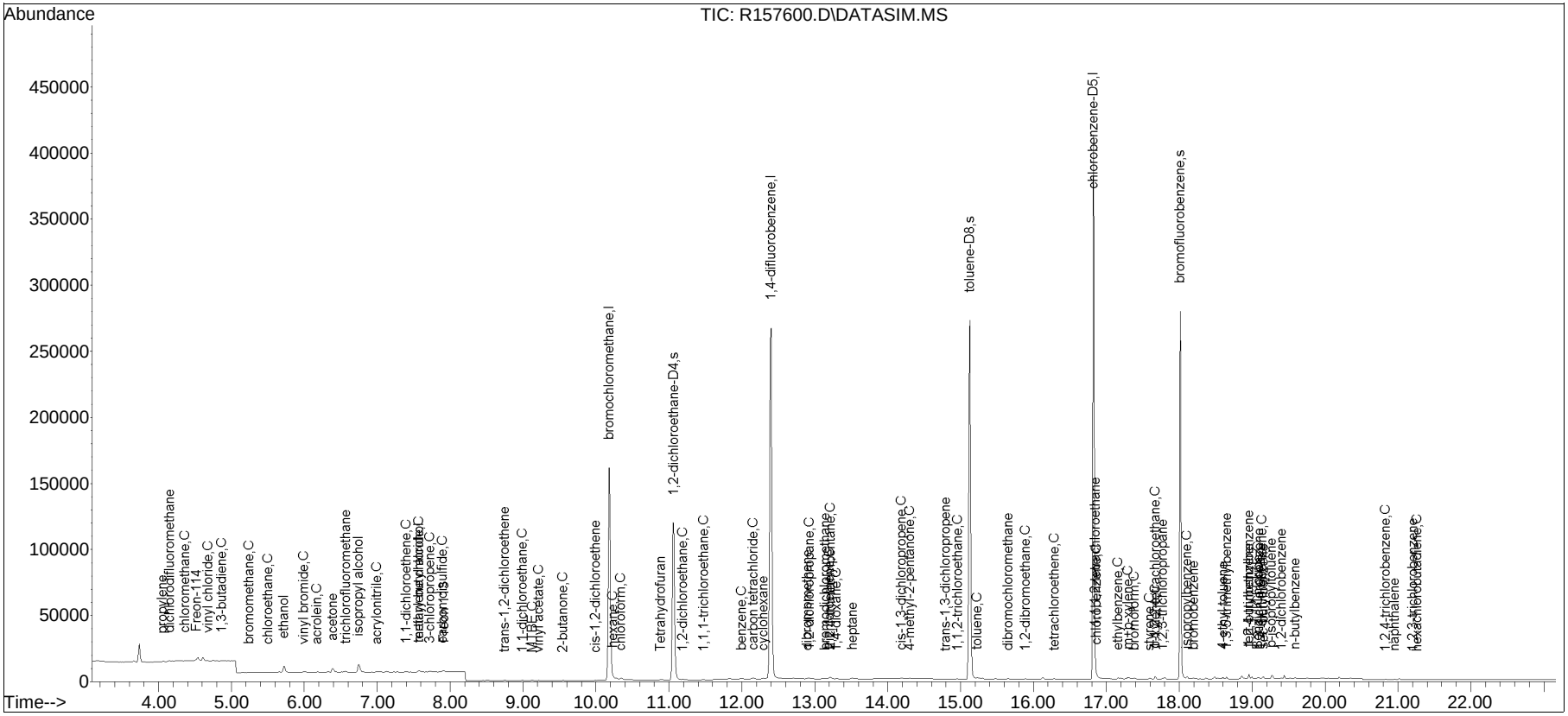
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.599	105	798	0.017	ppbV #	91
71) 1,3,5-trimethylbenzene	18.649	105	775	0.020	ppbV #	89
72) tert-butylbenzene	18.951	119	718M4	0.019	ppbV	
73) 1,2,4-trimethylbenzene	18.957	105	674	0.017	ppbV	92
74) Benzyl Chloride	19.078	91	489	0.014	ppbV #	54
75) 1,3-dichlorobenzene	19.090	146	452	0.018	ppbV #	75
76) 1,4-dichlorobenzene	19.138	146	460M4	0.017	ppbV	
77) sec-butylbenzene	19.157	105	990	0.018	ppbV #	82
78) p-isopropyltoluene	19.265	119	831	0.019	ppbV	91
79) 1,2-dichlorobenzene	19.404	146	427	0.018	ppbV #	87
80) n-butylbenzene	19.586	91	729	0.015	ppbV #	88
81) 1,2,4-trichlorobenzene	20.828	180	227	0.013	ppbV #	32
82) naphthalene	20.948	128	1103	0.024	ppbV #	83
83) 1,2,3-trichlorobenzene	21.200	180	217	0.013	ppbV #	32
84) hexachlorobutadiene	21.260	225	251	0.016	ppbV #	89

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0226SIM_ICAL\R157606.D

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157600.D
Acq On : 26 Feb 2018 10:00 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.02
Misc : WG1092763
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 27 12:45:09 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

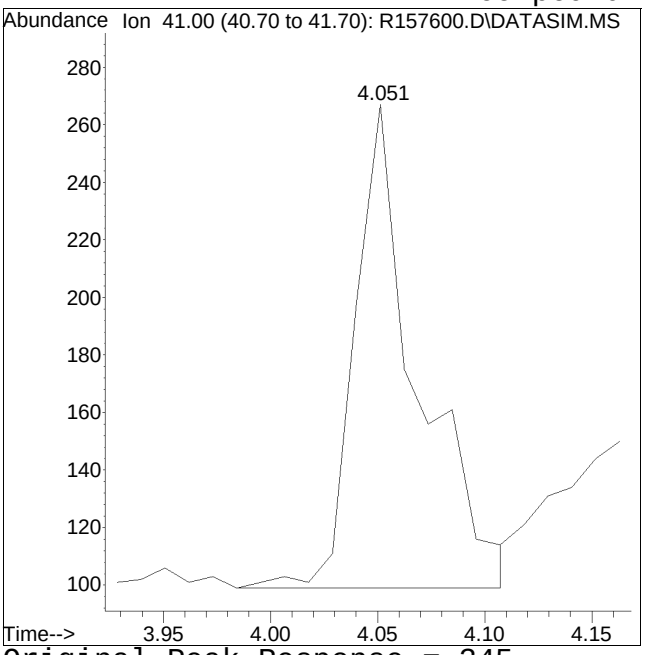


Manual Integration/Negative Proof Report

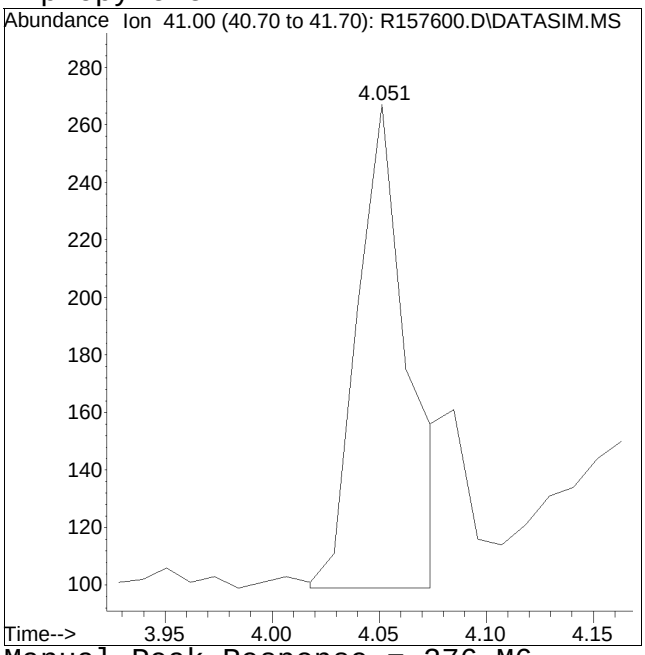
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #2: propylene



Original Peak Response = 345



Manual Peak Response = 276 M6

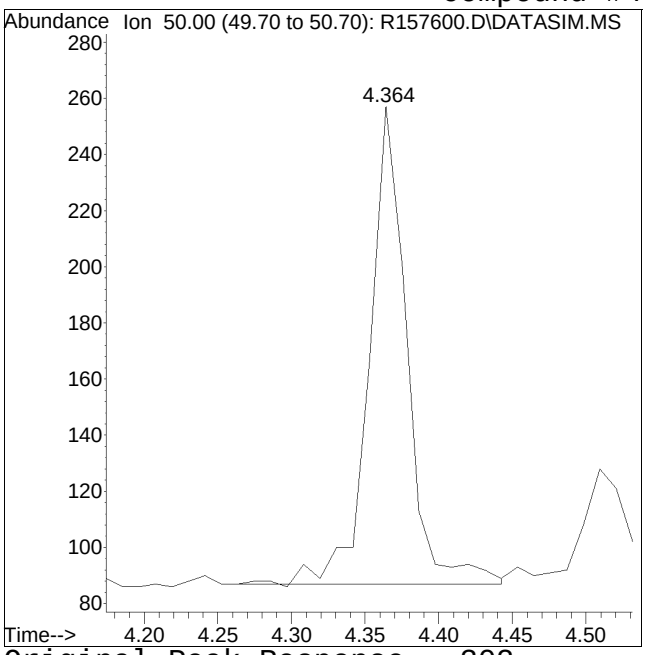
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

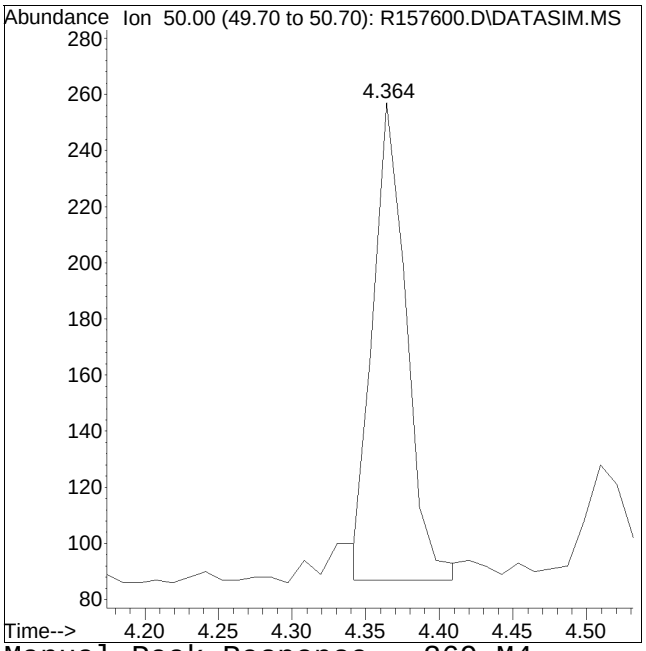
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #4: chloromethane



Original Peak Response = 302



Manual Peak Response = 269 M4

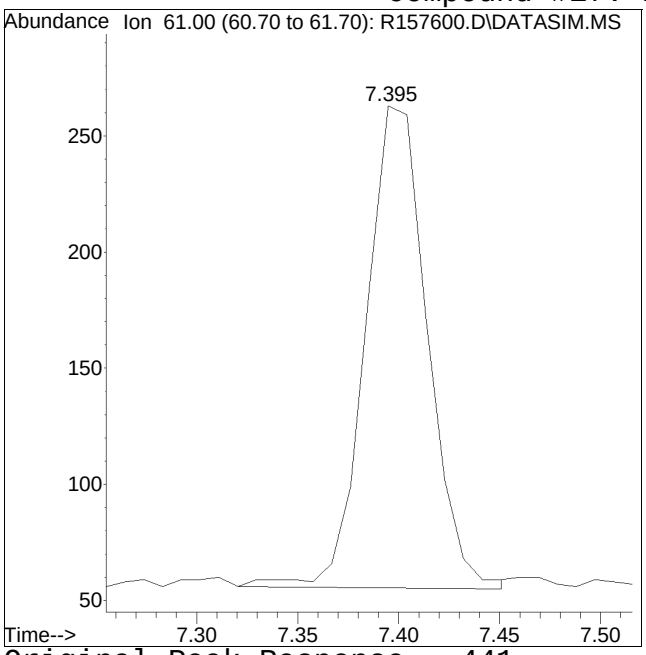
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

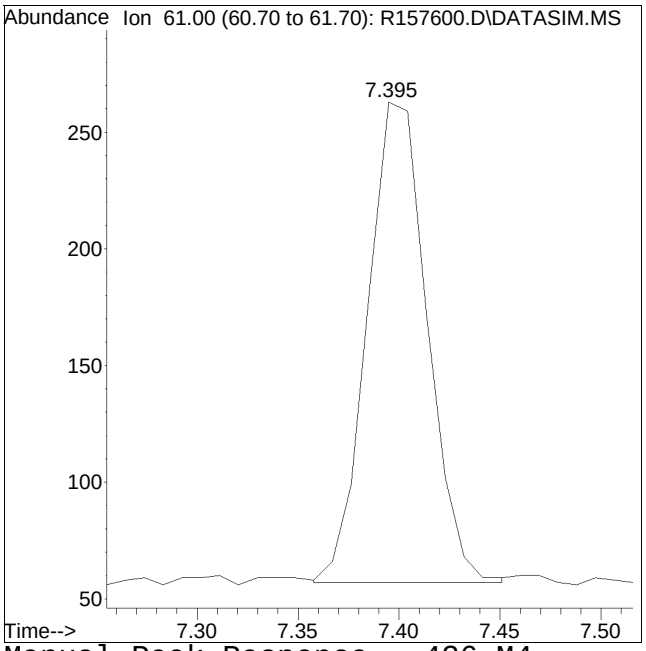
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #17: 1,1-dichloroethene



Original Peak Response = 441



Manual Peak Response = 426 M4

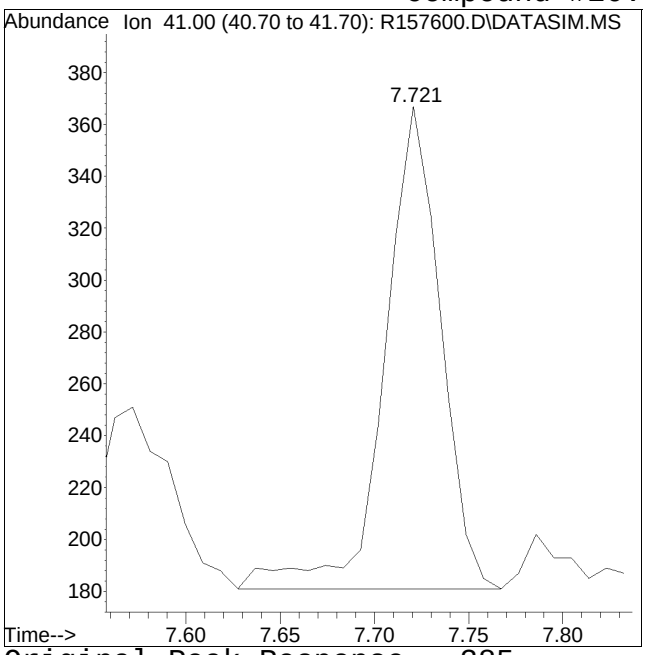
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

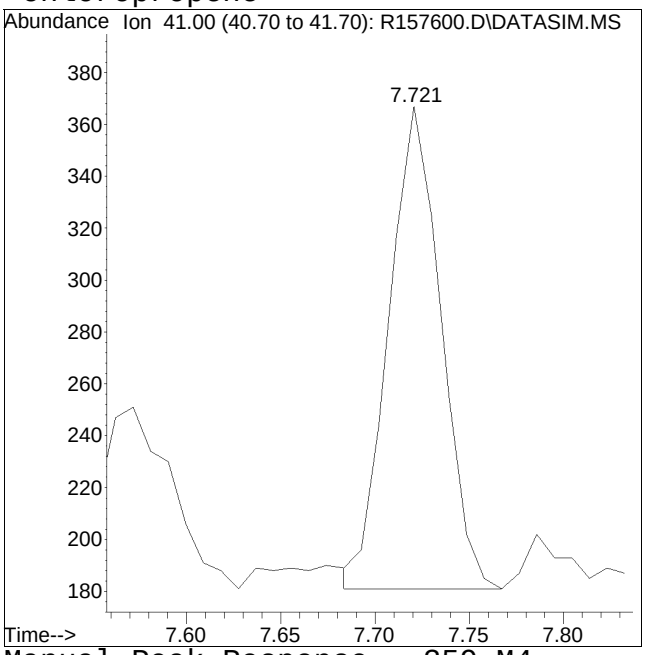
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #20: 3-chloropropene



Original Peak Response = 385



Manual Peak Response = 359 M4

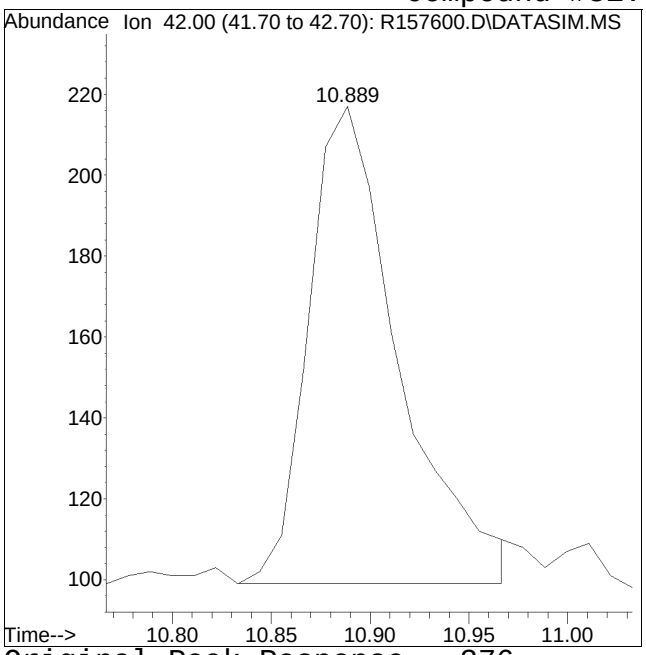
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

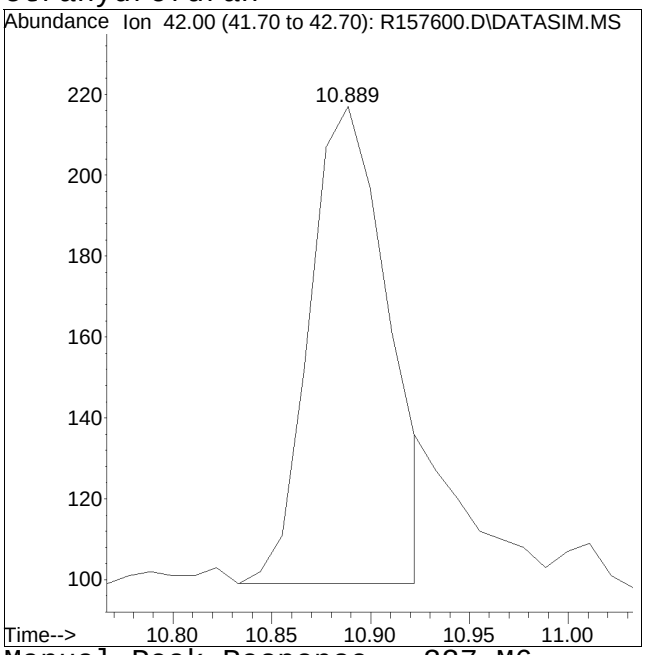
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #31: Tetrahydrofuran



Original Peak Response = 376



Manual Peak Response = 327 M6

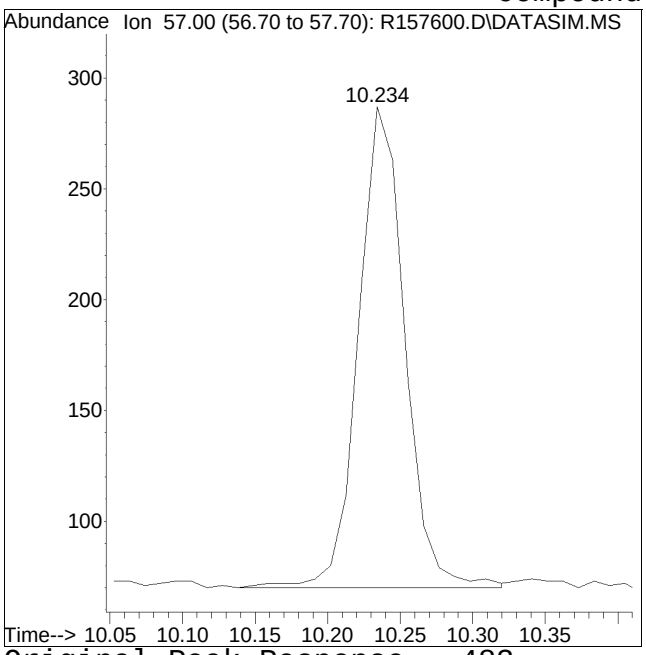
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

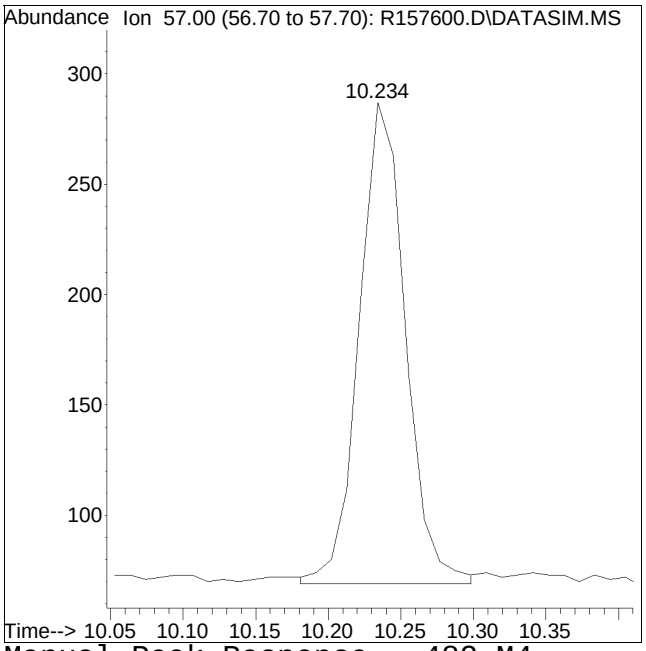
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #34: hexane



Original Peak Response = 483



Manual Peak Response = 482 M4

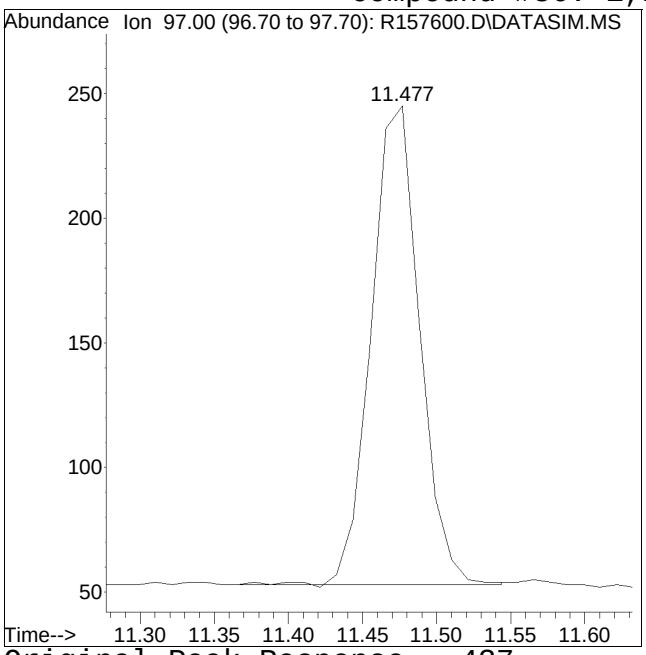
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

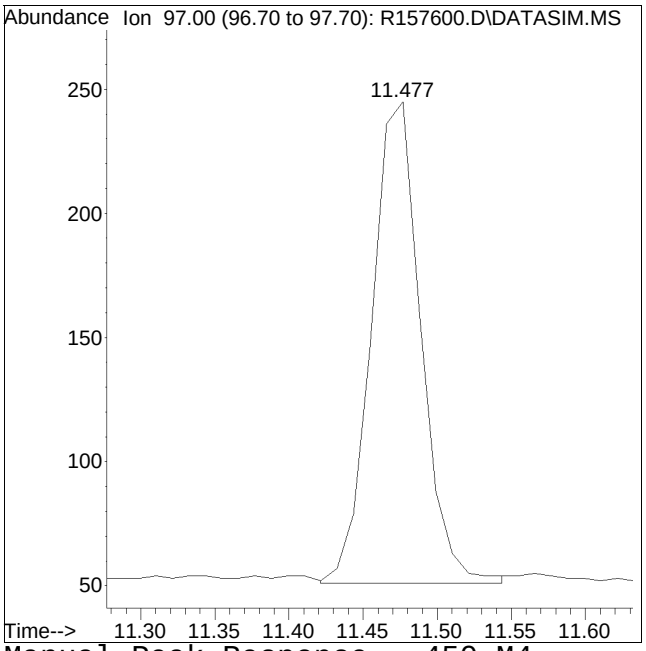
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #36: 1,1,1-trichloroethane



Original Peak Response = 437



Manual Peak Response = 450 M4

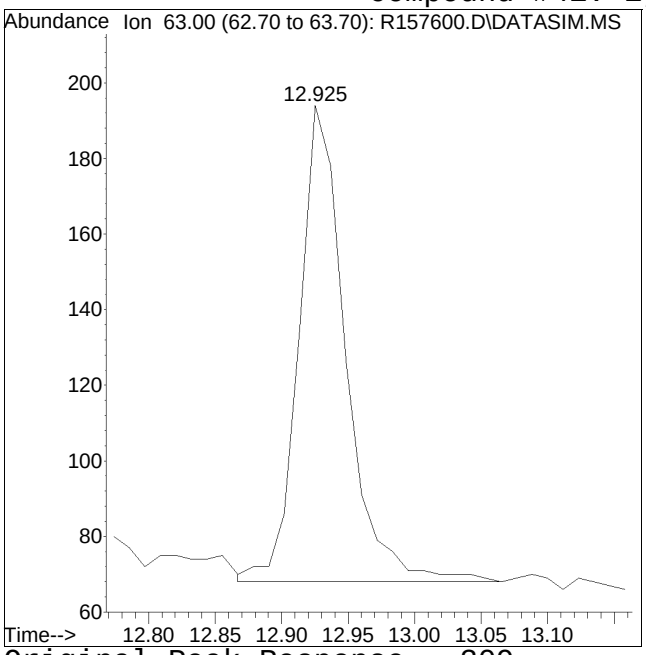
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

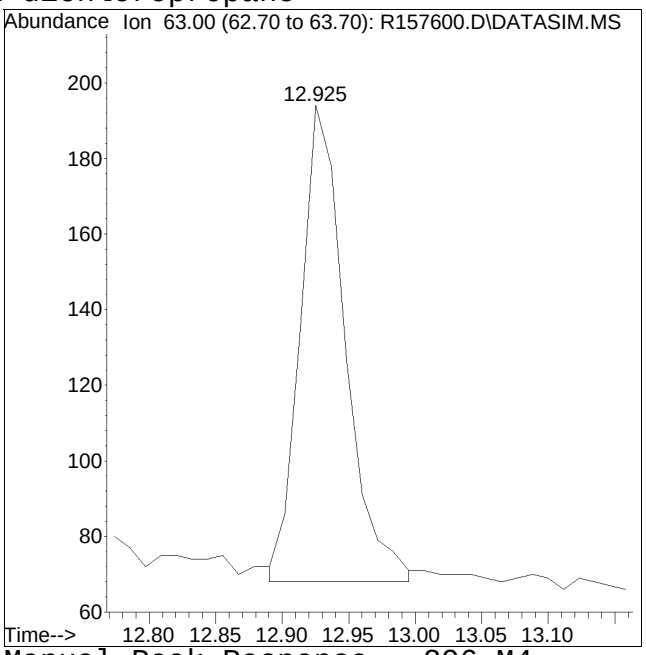
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #41: 1,2-dichloropropane



Original Peak Response = 309



Manual Peak Response = 296 M4

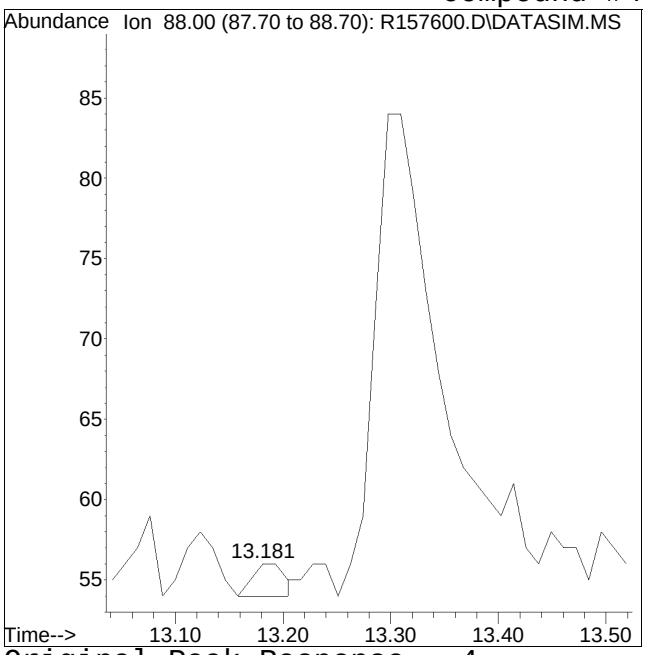
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

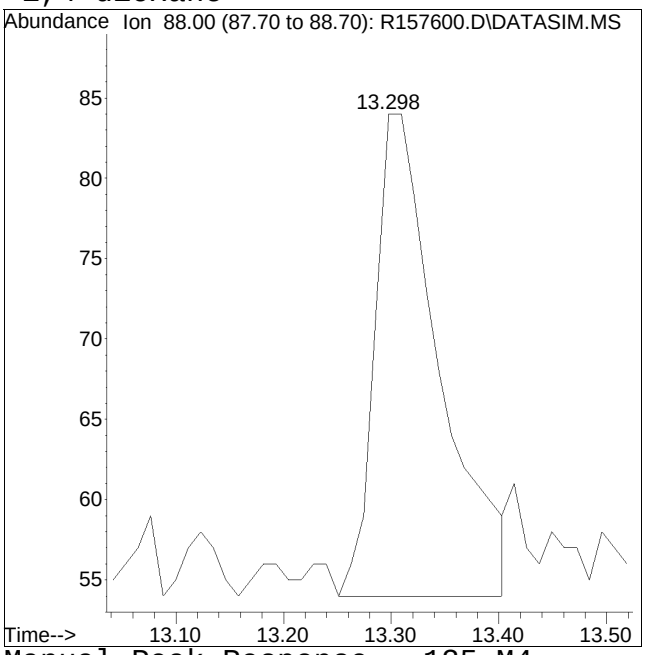
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #43: 1,4-dioxane



Original Peak Response = 4



Manual Peak Response = 125 M4

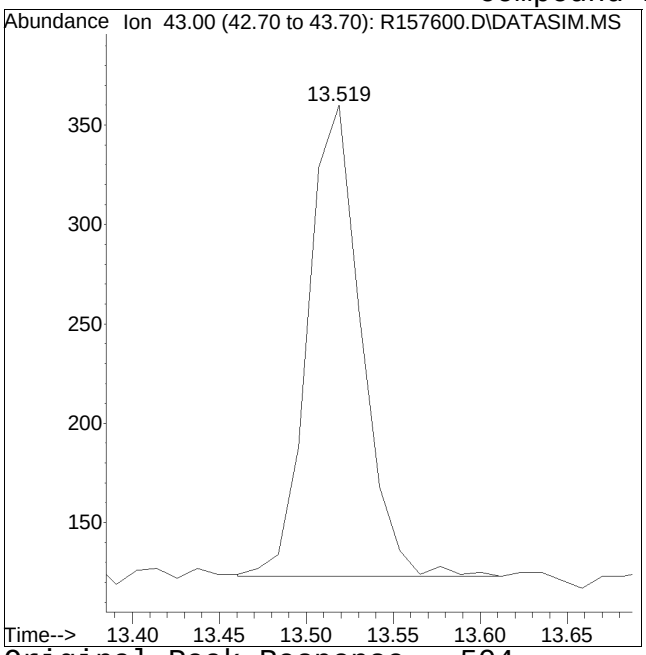
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

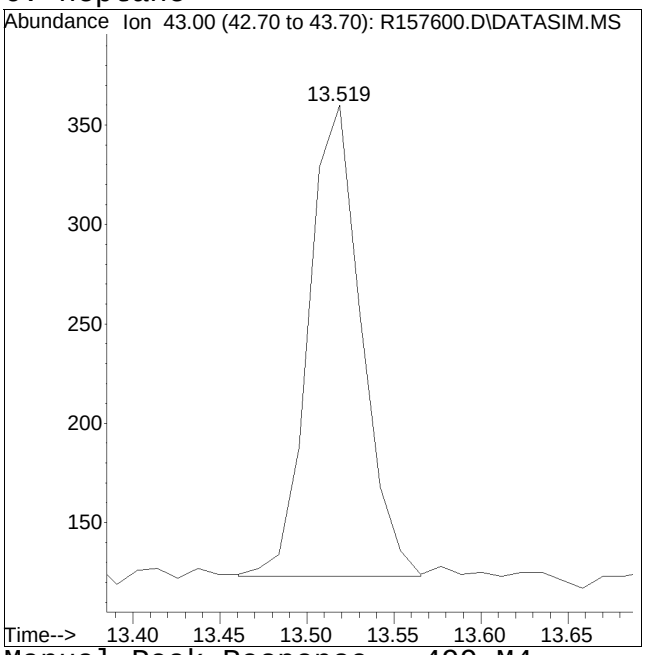
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #46: heptane



Original Peak Response = 504



Manual Peak Response = 499 M4

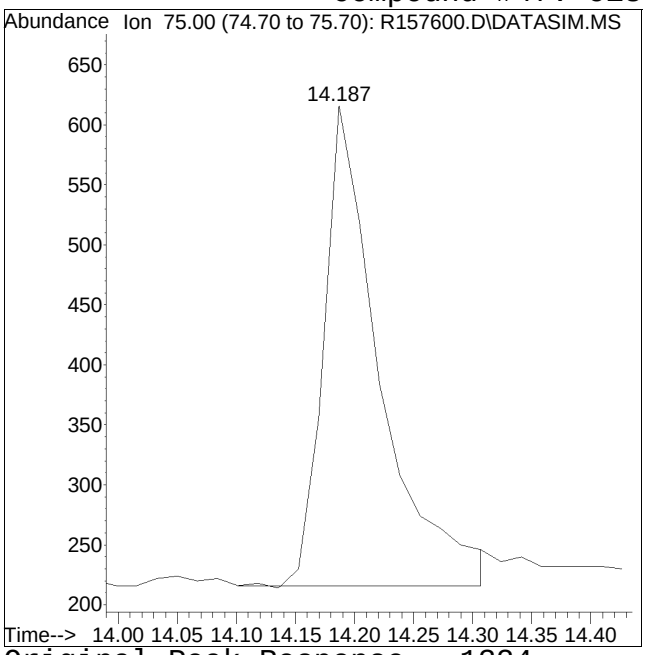
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

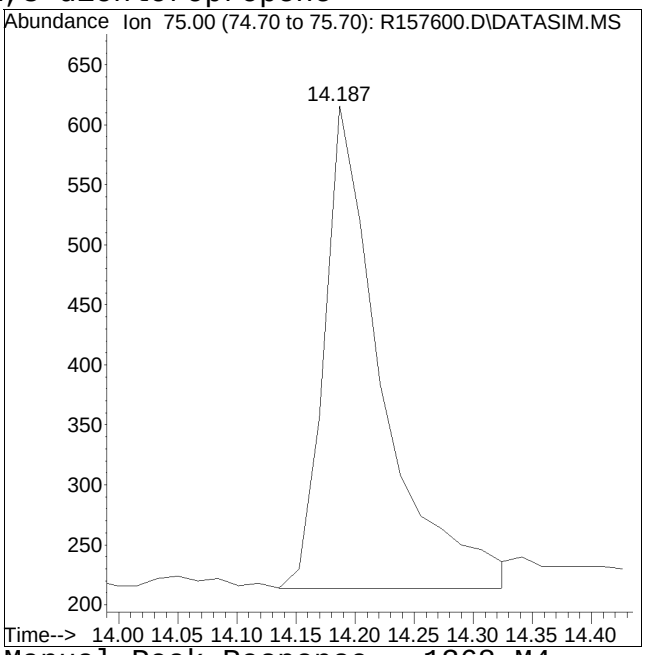
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #47: cis-1,3-dichloropropene



Original Peak Response = 1324



Manual Peak Response = 1368 M4

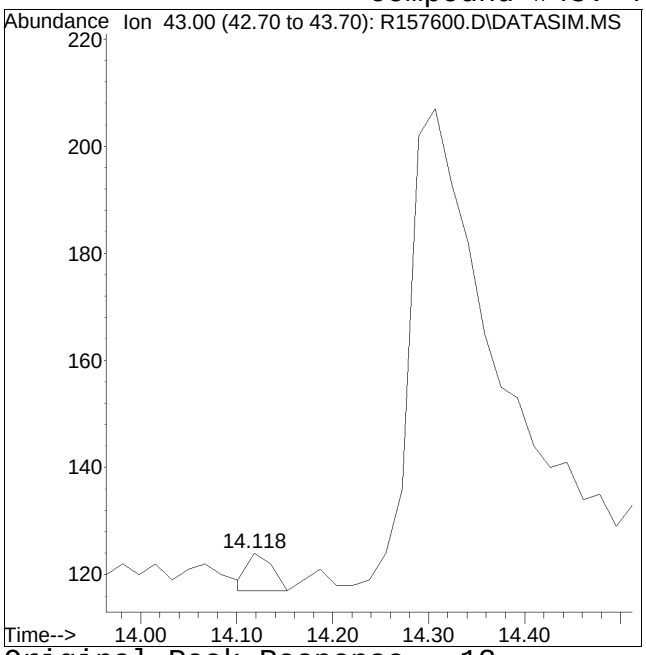
M4 = Poor automated baseline construction.

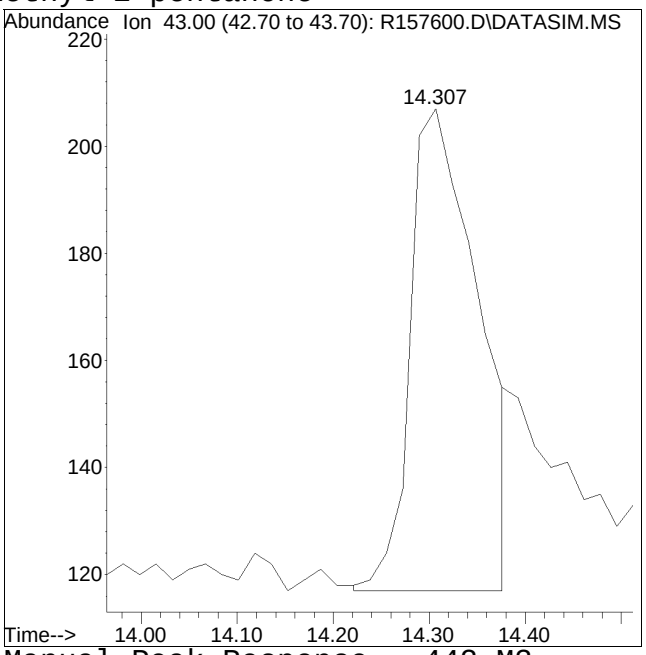
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #48: 4-methyl-2-pentanone





Original Peak Response = 12 Manual Peak Response = 442 M3

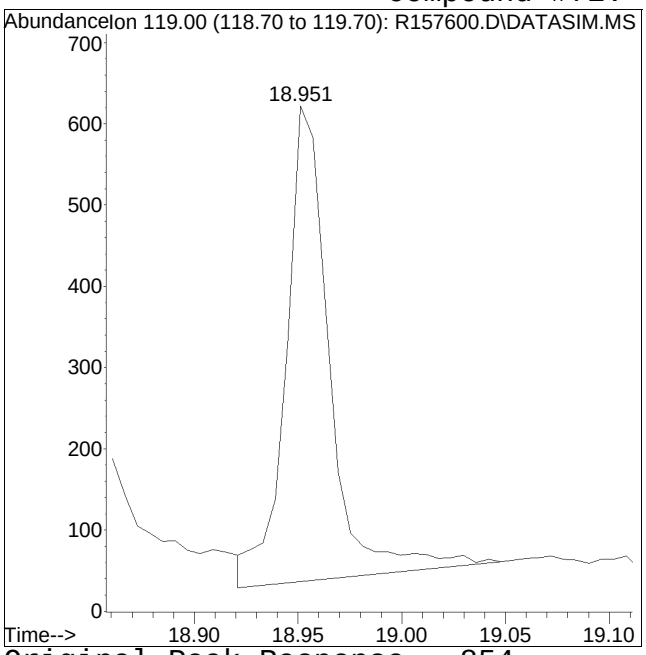
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

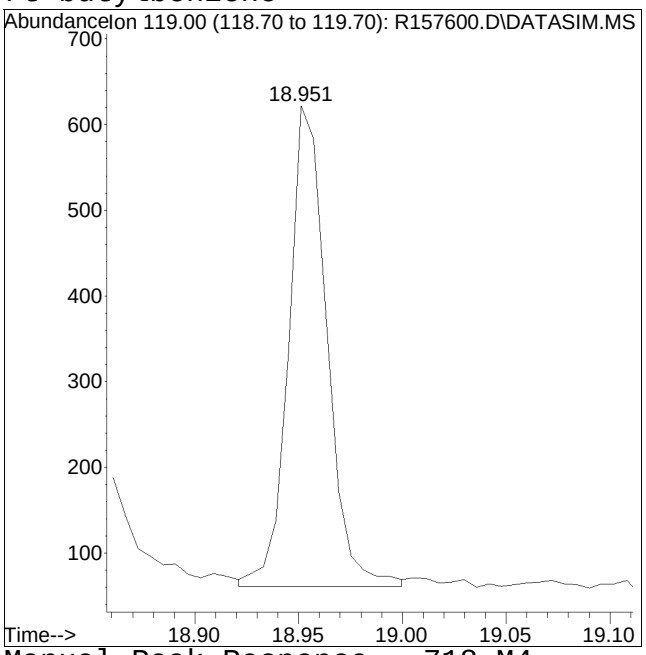
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #72: tert-butylbenzene



Original Peak Response = 854



Manual Peak Response = 718 M4

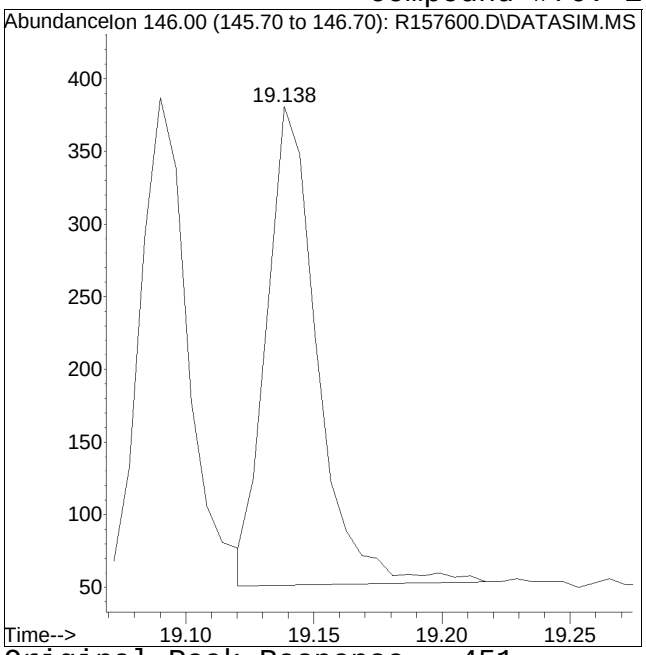
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

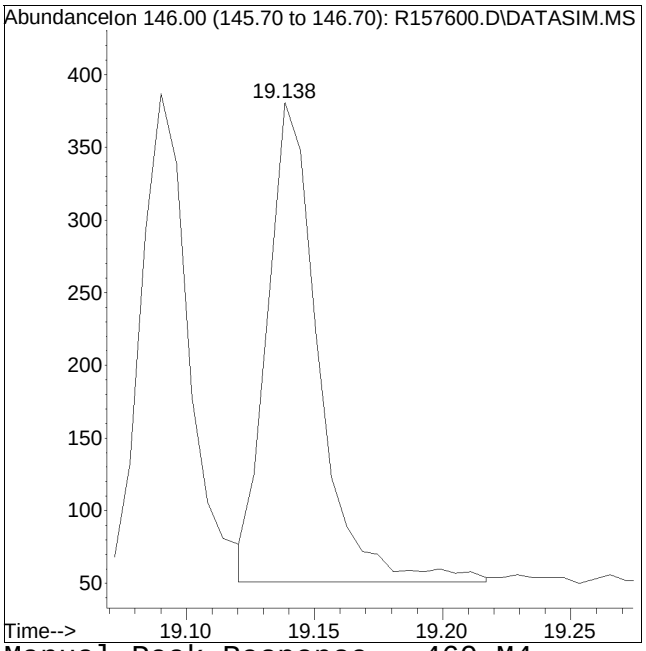
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157600.D
Date Inj'd : 2/26/2018 10:00 pm
Sample : ITO15-SIMSTD0.02

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #76: 1,4-dichlorobenzene



Original Peak Response = 451



Manual Peak Response = 460 M4

M4 = Poor automated baseline construction.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157601.D
Acq On : 26 Feb 2018 10:31 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.04
Misc : WG1092763
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 27 12:45:14 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.181	49	213906	10.000	ppbV	0.00
Standard Area = 218948			Recovery = 97.70%			
33) 1,4-difluorobenzene	12.401	114	292809	10.000	ppbV	0.00
Standard Area = 315293			Recovery = 92.87%			
51) chlorobenzene-D5	16.822	54	83917	10.000	ppbV	0.00
Standard Area = 85423			Recovery = 98.24%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.066	65	112836	9.936	ppbV	0.01
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.36%			
53) toluene-D8	15.128	98	259031	9.677	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 96.77%			
67) bromofluorobenzene	18.012	95	145717	9.675	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 96.75%			
Target Compounds						Qvalue
2) propylene	4.051	41	490M6	0.044	ppbV	
3) dichlorodifluoromethane	4.152	85	965M4	0.040	ppbV	
4) chloromethane	4.364	50	521M4	0.042	ppbV	
5) Freon-114	4.520	85	1215M4	0.040	ppbV	
6) vinyl chloride	4.677	62	501M4	0.040	ppbV	
7) 1,3-butadiene	4.867	54	354	0.041	ppbV #	66
8) bromomethane	5.254	94	424	0.040	ppbV	82
9) chloroethane	5.505	64	237M4	0.040	ppbV	
10) ethanol	5.719	31	5601	0.568	ppbV	96
11) vinyl bromide	5.989	106	377	0.039	ppbV	99
12) acrolein	6.175	56	247	0.046	ppbV	97
13) acetone	6.390	43	6209M4	0.385	ppbV	
14) trichlorofluoromethane	6.566	101	1048	0.039	ppbV	99
15) isopropyl alcohol	6.743	45	9240	0.420	ppbV	98
16) acrylonitrile	6.995	53	382M6	0.042	ppbV	
17) 1,1-dichloroethene	7.404	61	825	0.040	ppbV #	88
18) tertiary butyl alcohol	7.572	59	1177	0.049	ppbV #	3
19) methylene chloride	7.572	49	903	0.054	ppbV	96
20) 3-chloropropene	7.721	41	751	0.044	ppbV #	85
21) carbon disulfide	7.897	76	1555	0.046	ppbV #	1
22) Freon 113	7.916	101	818	0.039	ppbV	92
23) trans-1,2-dichloroethene	8.745	61	745	0.039	ppbV #	91
24) 1,1-dichloroethane	8.991	63	936	0.039	ppbV #	82

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157601.D
Acq On : 26 Feb 2018 10:31 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.04
Misc : WG1092763
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 27 12:45:14 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
25) MTBE	9.121	73	1089	0.038	ppbV #	60
26) vinyl acetate	9.219	43	1014	0.037	ppbV #	75
27) 2-butanone	9.547	43	1172	0.041	ppbV #	85
28) cis-1,2-dichloroethene	9.996	61	796	0.038	ppbV #	84
29) Ethyl Acetate	0.000		0	N.D.	d	
30) chloroform	10.341	83	1143	0.039	ppbV #	90
31) Tetrahydrofuran	10.877	42	701M4	0.044	ppbV	
32) 1,2-dichloroethane	11.188	62	739	0.041	ppbV #	70
34) hexane	10.234	57	923	0.040	ppbV #	55
36) 1,1,1-trichloroethane	11.477	97	861	0.039	ppbV #	94
37) benzene	11.994	78	1383M4	0.041	ppbV	
38) carbon tetrachloride	12.157	117	833	0.040	ppbV #	93
39) cyclohexane	12.297	56	722	0.039	ppbV #	83
40) dibromomethane	12.902	93	665	0.045	ppbV	93
41) 1,2-dichloropropane	12.925	63	614	0.041	ppbV #	82
42) bromodichloromethane	13.146	83	994	0.039	ppbV #	95
43) 1,4-dioxane	13.286	88	241M4	0.037	ppbV	
44) trichloroethene	13.204	130	484	0.040	ppbV	96
45) 2,2,4-trimethylpentane	13.216	57	2318	0.038	ppbV #	81
46) heptane	13.519	43	1001M4	0.039	ppbV	
47) cis-1,3-dichloropropene	14.187	75	2610M4	0.036	ppbV	
48) 4-methyl-2-pentanone	14.290	43	999M4	0.032	ppbV	
49) trans-1,3-dichloropropene	14.787	75	571M4	0.033	ppbV	
50) 1,1,2-trichloroethane	14.952	97	480	0.037	ppbV	89
52) toluene	15.231	91	1503	0.040	ppbV	95
54) 2-hexanone	15.582	43	814M3	0.027	ppbV	
55) dibromochloromethane	15.654	129	753M4	0.036	ppbV	
56) 1,2-dibromoethane	15.891	107	765	0.037	ppbV	95
57) tetrachloroethene	16.283	166	554	0.038	ppbV #	89
58) 1,1,1,2-tetrachloroethane	16.847	131	554	0.039	ppbV	91
59) chlorobenzene	16.862	112	1061M4	0.038	ppbV	
60) ethylbenzene	17.161	91	1836	0.038	ppbV	99
61) m+p-xylene	17.295	91	2773M4	0.074	ppbV	
62) bromoform	17.380	173	698M4	0.036	ppbV	
63) styrene	17.589	104	860	0.034	ppbV	96
64) 1,1,2,2-tetrachloroethane	17.668	83	1230	0.036	ppbV	100
65) o-xylene	17.668	91	1488	0.038	ppbV	93
66) 1,2,3-trichloropropane	17.773	75	914	0.036	ppbV #	78
68) isopropylbenzene	18.106	105	1660M4	0.037	ppbV	
69) bromobenzene	18.196	77	1049	0.036	ppbV	91

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157601.D
Acq On : 26 Feb 2018 10:31 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.04
Misc : WG1092763
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 27 12:45:14 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

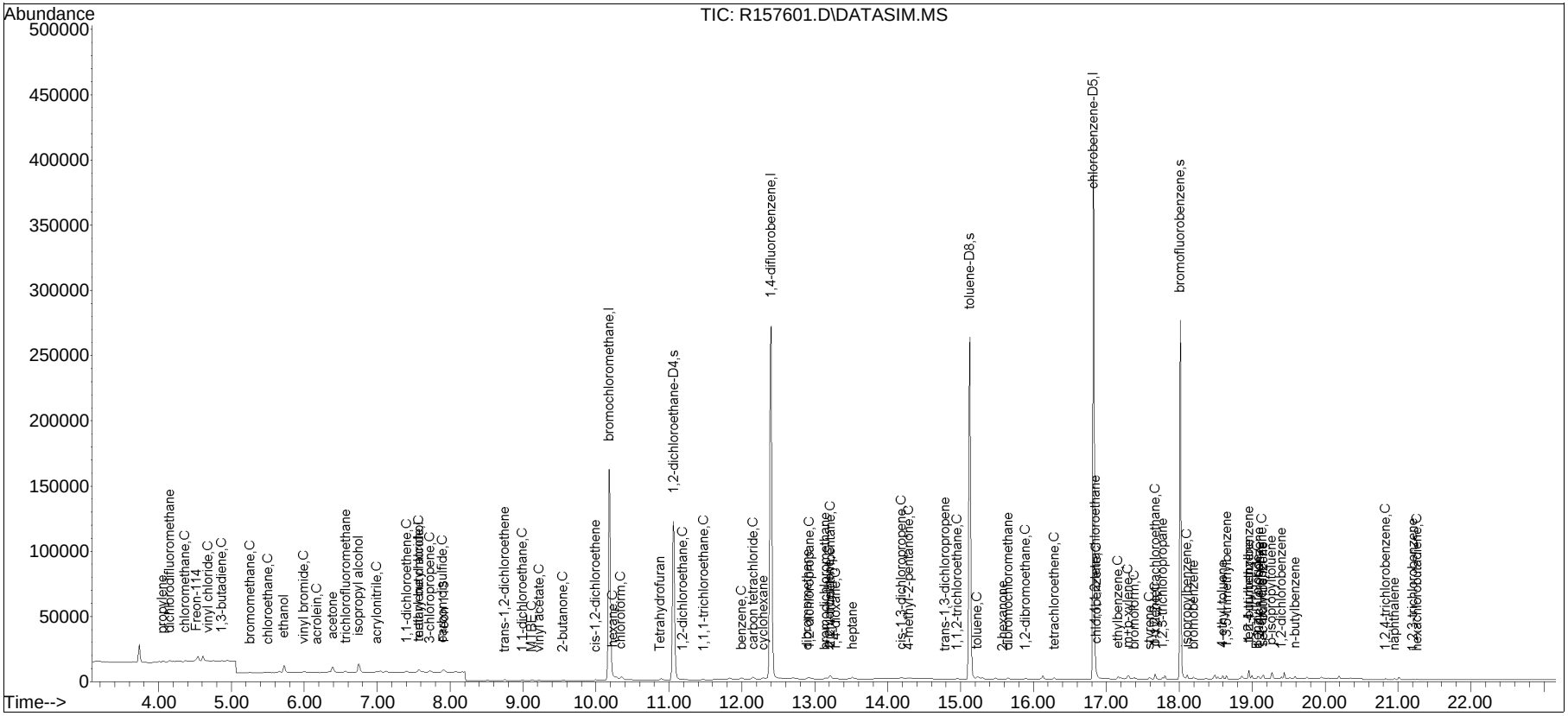
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) 4-ethyl toluene	18.594	105	1581M6	0.034	ppbV		
71) 1,3,5-trimethylbenzene	18.649	105	1405M4	0.035	ppbV		
72) tert-butylbenzene	18.951	119	1381M4	0.036	ppbV		
73) 1,2,4-trimethylbenzene	18.957	105	1364	0.034	ppbV		94
74) Benzyl Chloride	19.072	91	934M4	0.026	ppbV		
75) 1,3-dichlorobenzene	19.090	146	856	0.033	ppbV	#	87
76) 1,4-dichlorobenzene	19.138	146	938M4	0.035	ppbV		
77) sec-butylbenzene	19.150	105	1996	0.035	ppbV		95
78) p-isopropyltoluene	19.265	119	1613	0.036	ppbV		96
79) 1,2-dichlorobenzene	19.398	146	834	0.034	ppbV	#	87
80) n-butylbenzene	19.585	91	1511	0.031	ppbV		93
81) 1,2,4-trichlorobenzene	20.828	180	485	0.027	ppbV	#	56
82) naphthalene	20.948	128	1598	0.034	ppbV	#	88
83) 1,2,3-trichlorobenzene	21.200	180	433	0.026	ppbV	#	52
84) hexachlorobutadiene	21.260	225	495	0.032	ppbV	#	87

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0226SIM_ICAL\R157606.D

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157601.D
Acq On : 26 Feb 2018 10:31 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.04
Misc : WG1092763
ALS Vial : 5 Sample Multiplier: 1

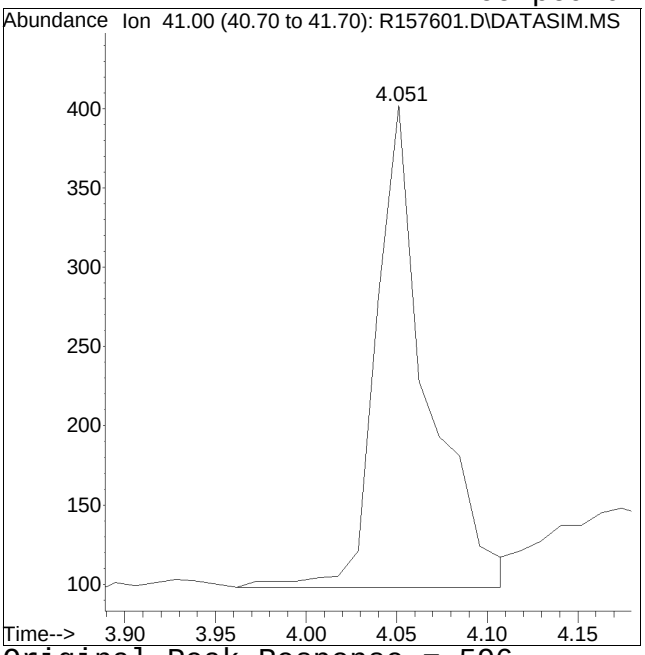
Quant Time: Feb 27 12:45:14 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration



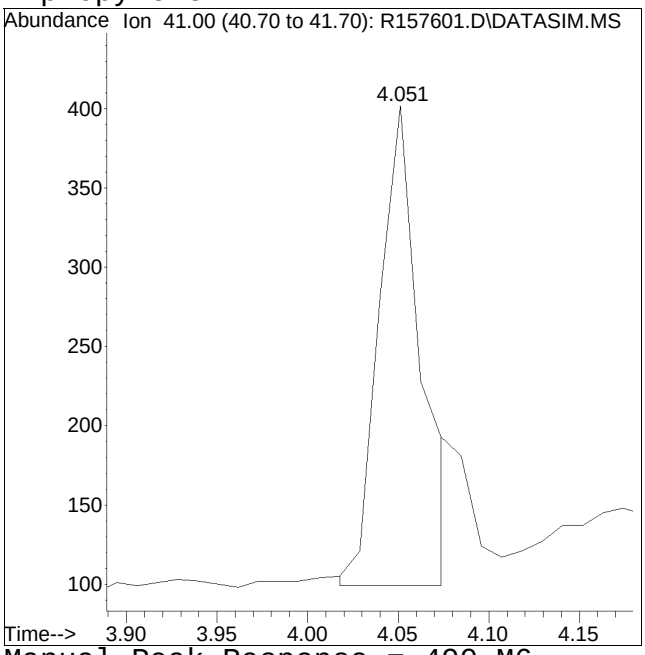
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04
Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #2: propylene



Original Peak Response = 596



Manual Peak Response = 490 M6

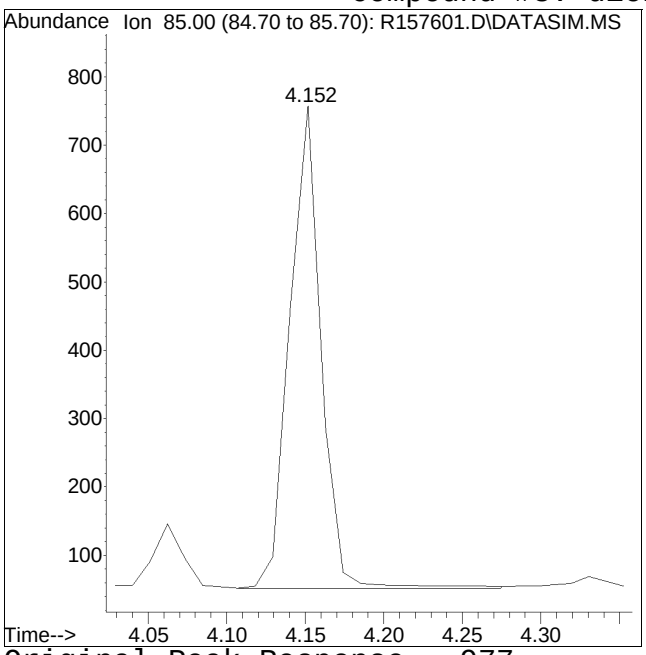
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

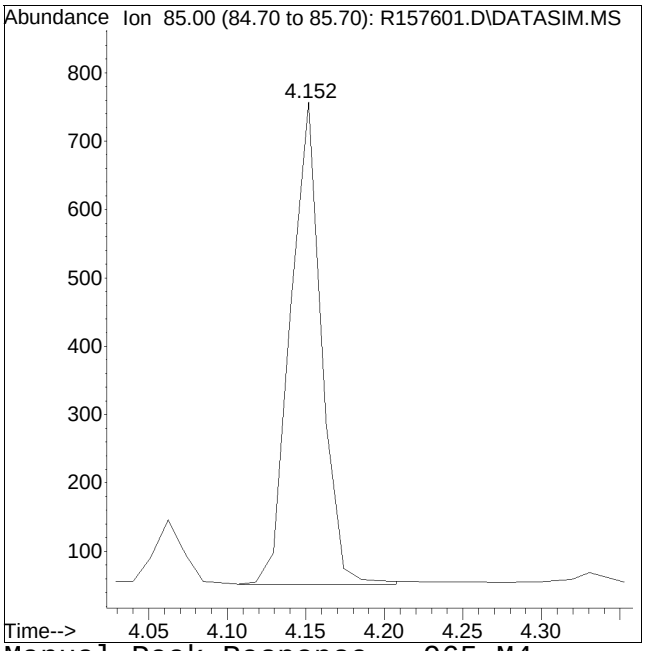
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #3: dichlorodifluoromethane



Original Peak Response = 977



Manual Peak Response = 965 M4

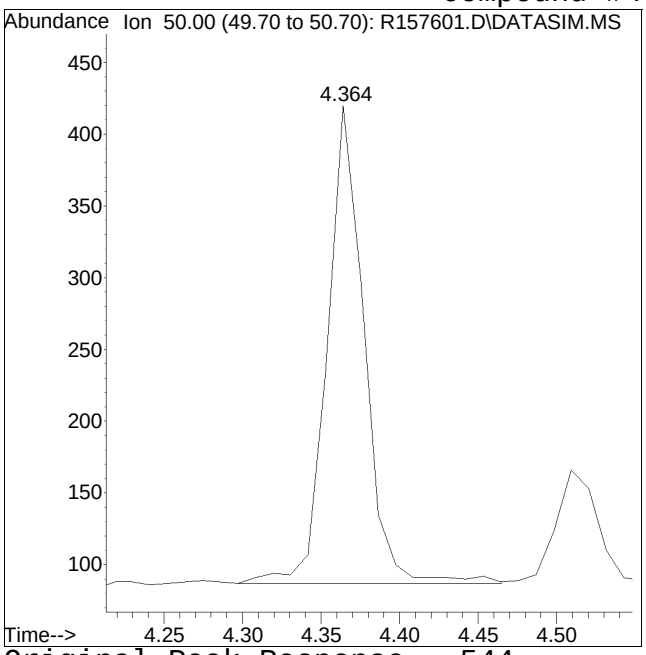
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

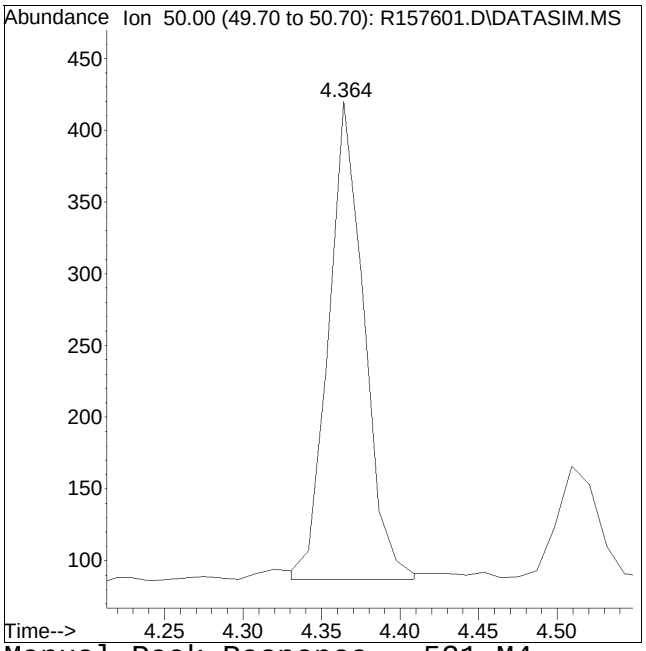
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #4: chloromethane



Original Peak Response = 544



Manual Peak Response = 521 M4

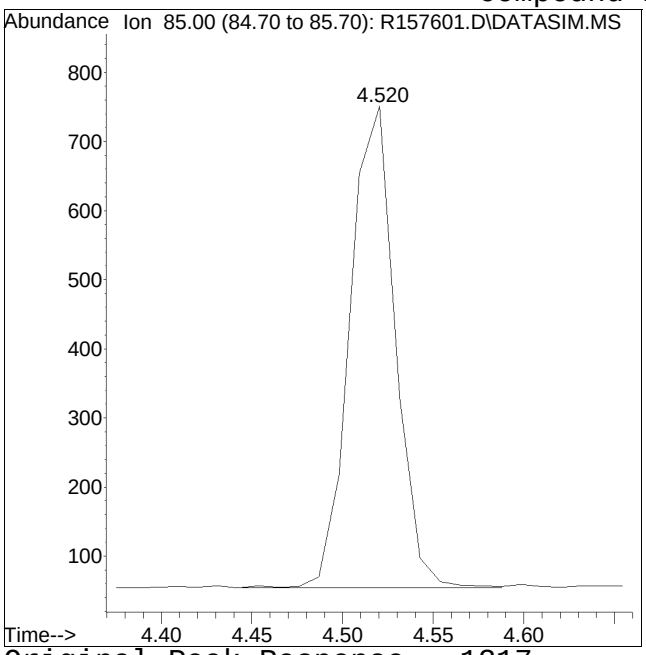
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

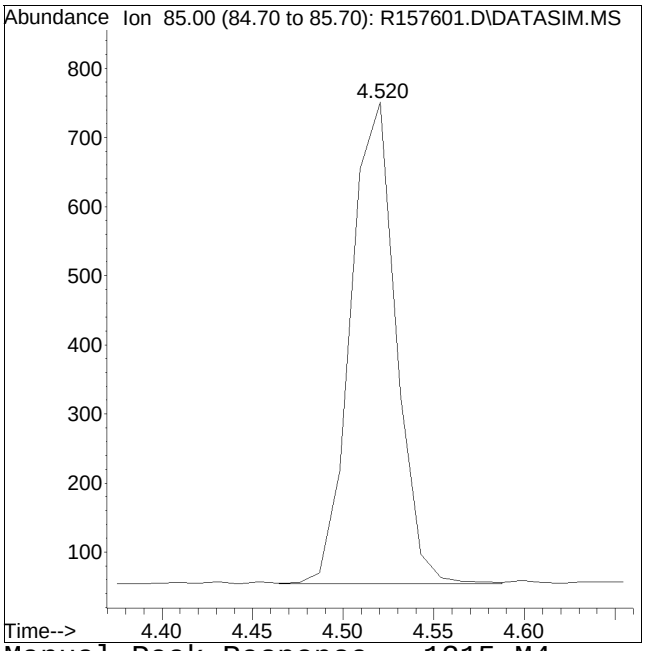
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #5: Freon-114



Original Peak Response = 1217



Manual Peak Response = 1215 M4

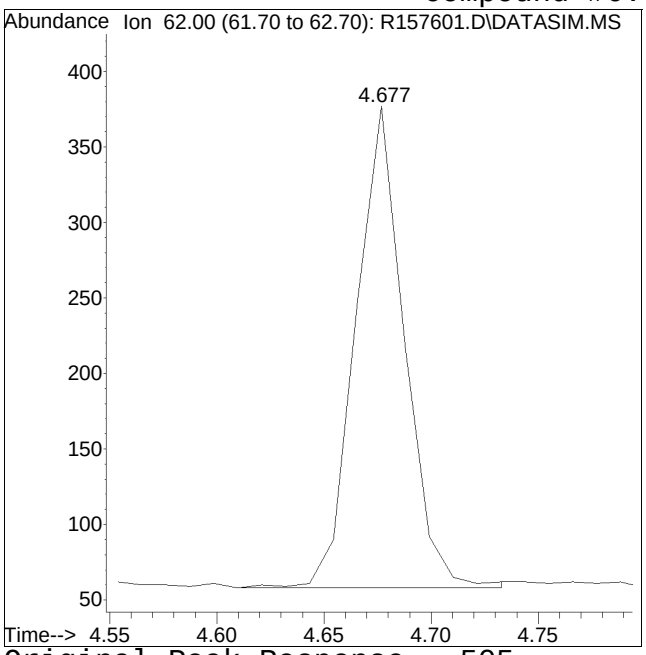
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

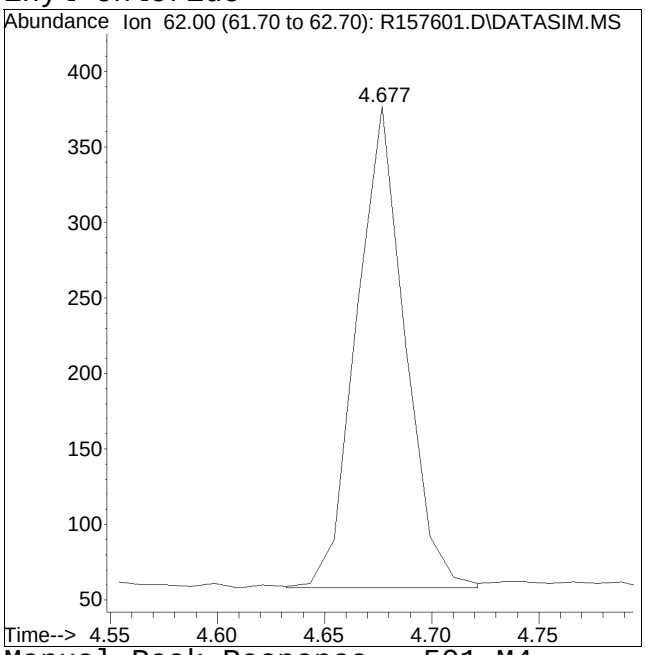
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #6: vinyl chloride



Original Peak Response = 505



Manual Peak Response = 501 M4

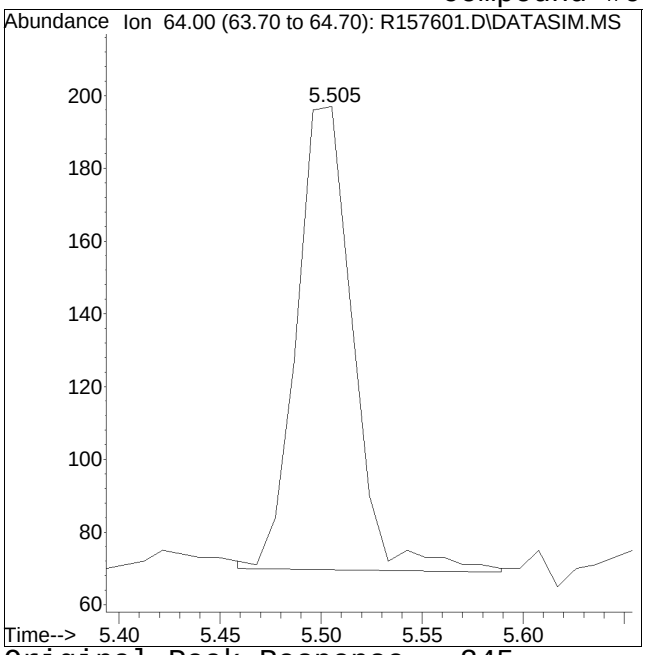
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

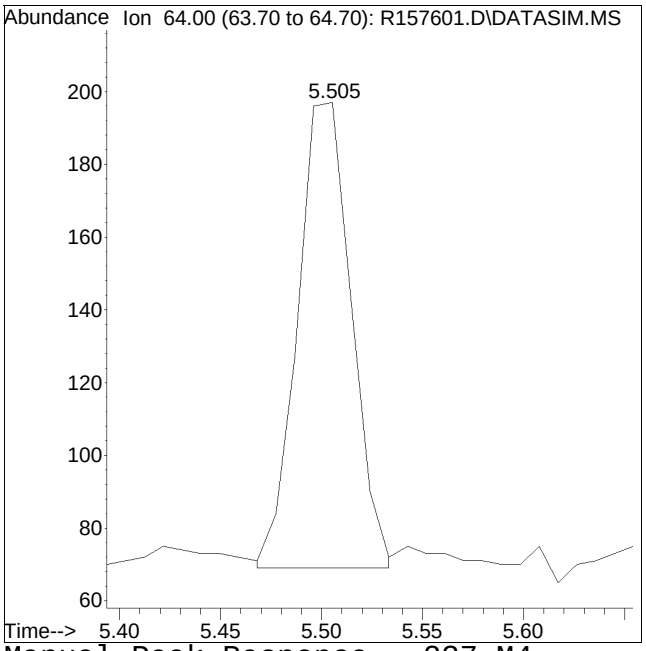
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #9: chloroethane



Original Peak Response = 245



Manual Peak Response = 237 M4

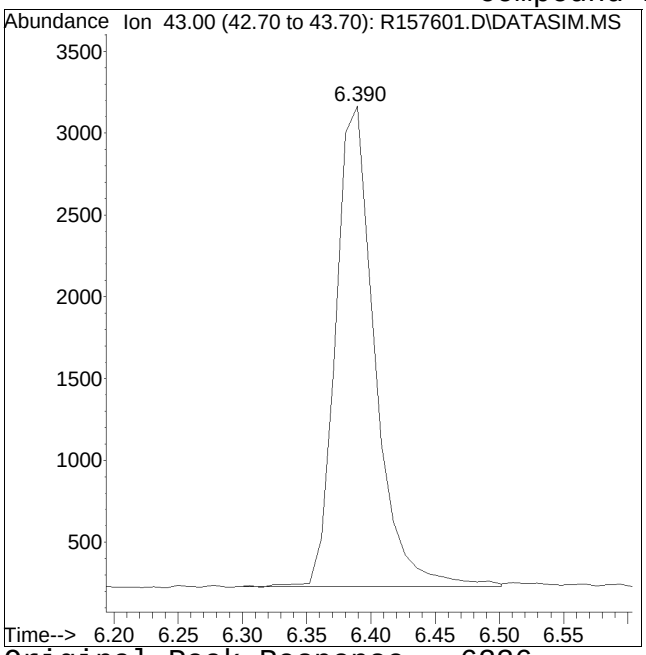
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

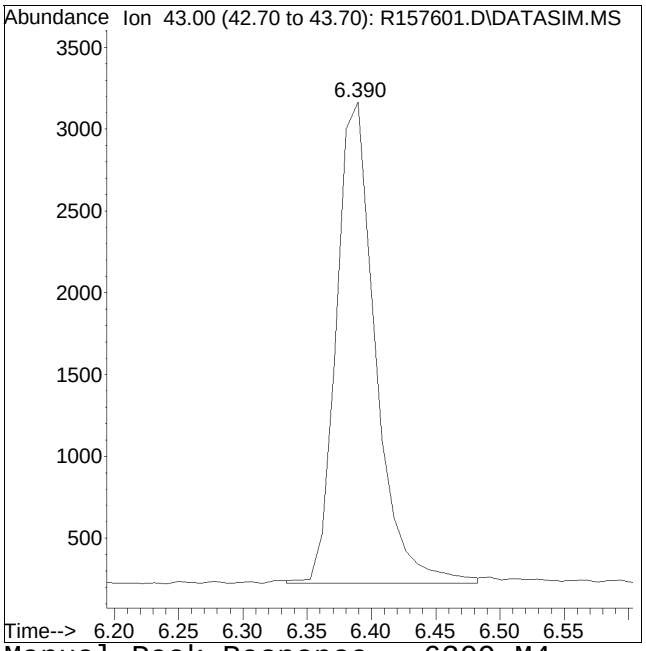
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #13: acetone



Original Peak Response = 6236



Manual Peak Response = 6209 M4

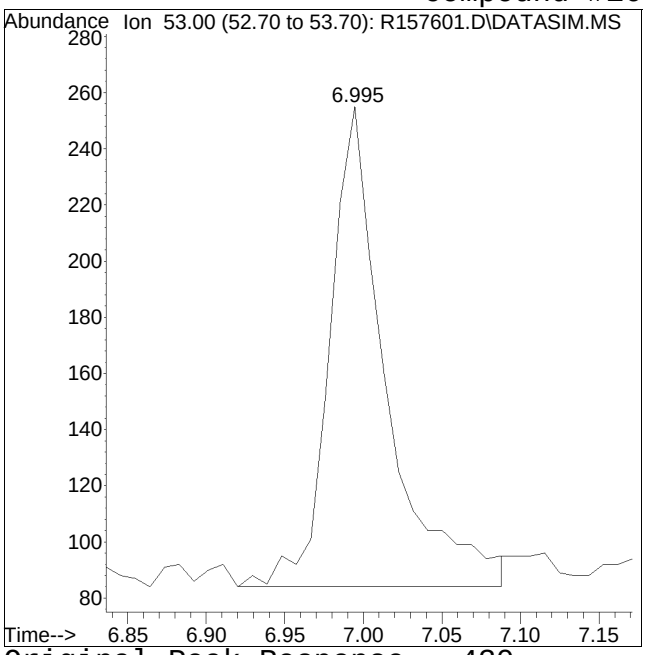
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

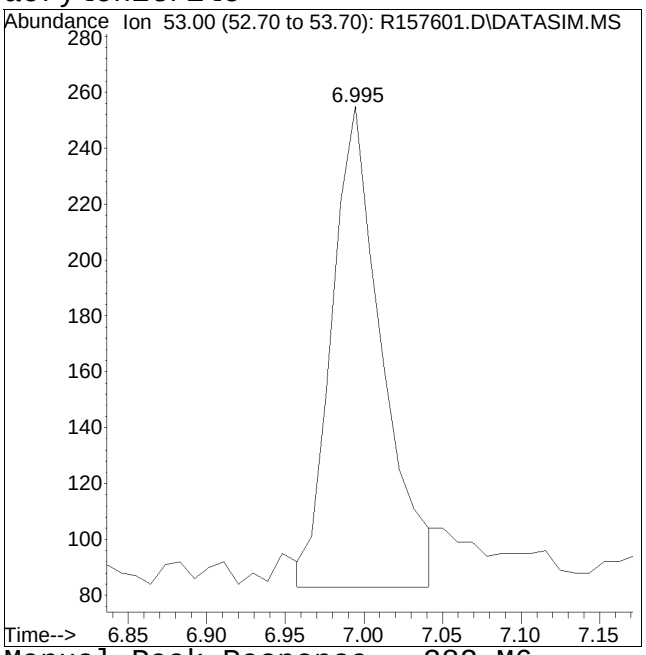
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #16: acrylonitrile



Original Peak Response = 430



Manual Peak Response = 382 M6

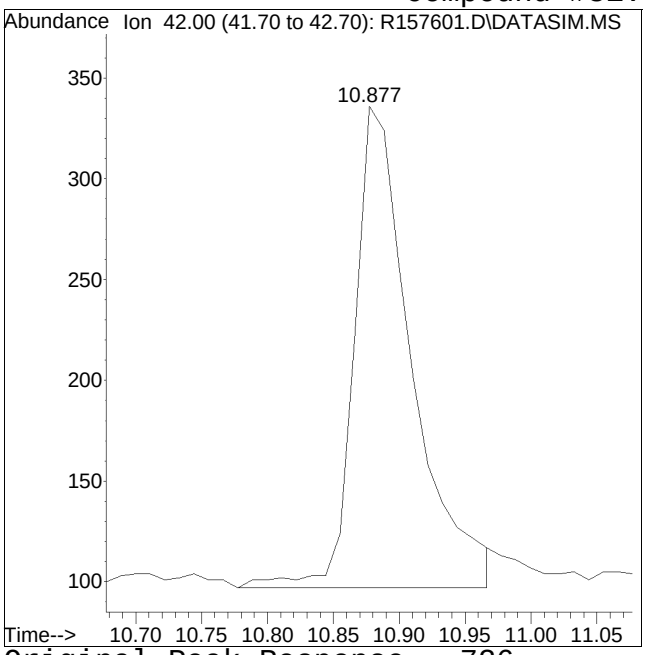
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

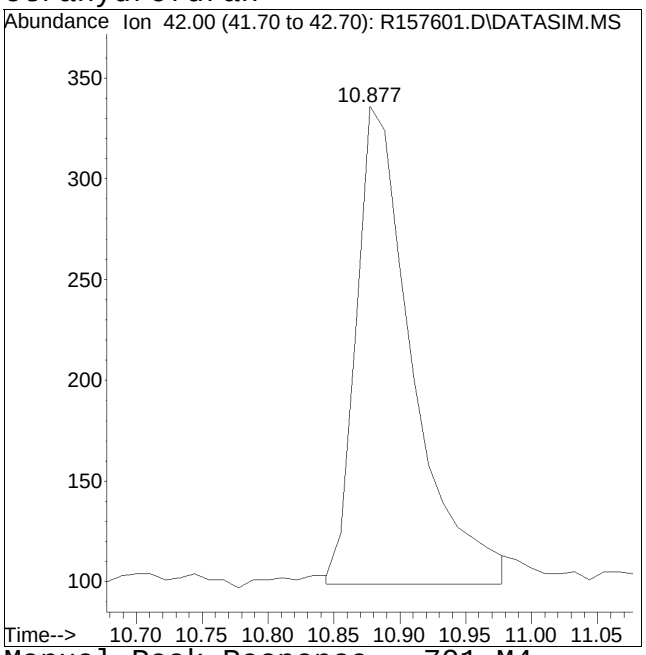
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #31: Tetrahydrofuran



Original Peak Response = 726



Manual Peak Response = 701 M4

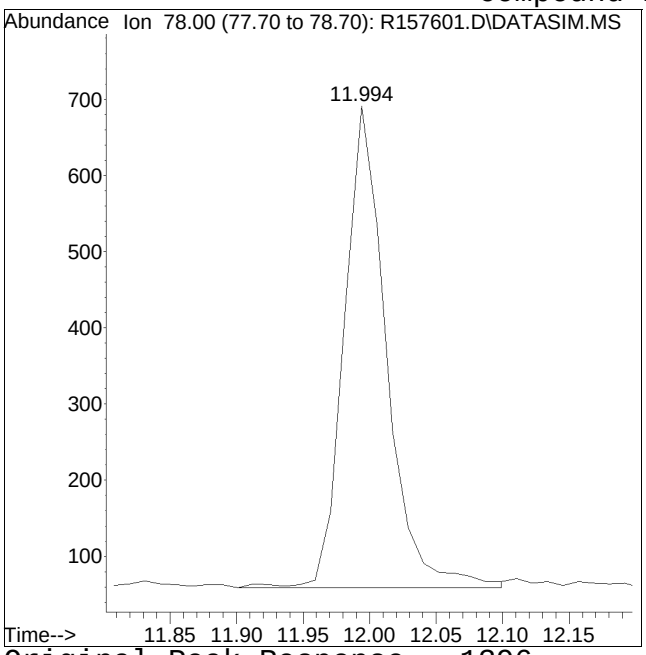
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

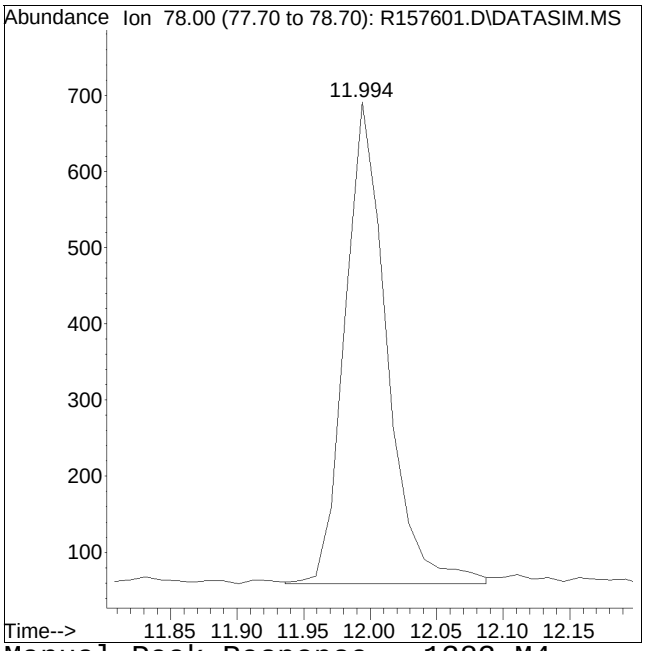
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #37: benzene



Original Peak Response = 1396



Manual Peak Response = 1383 M4

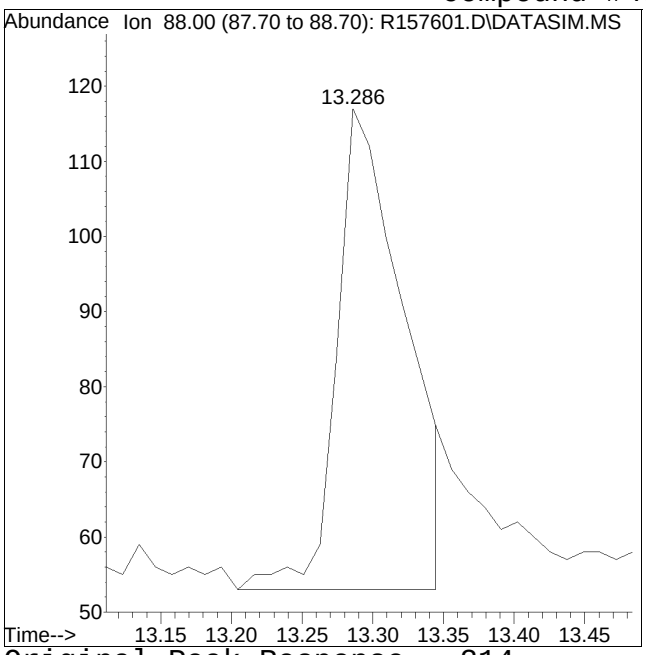
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

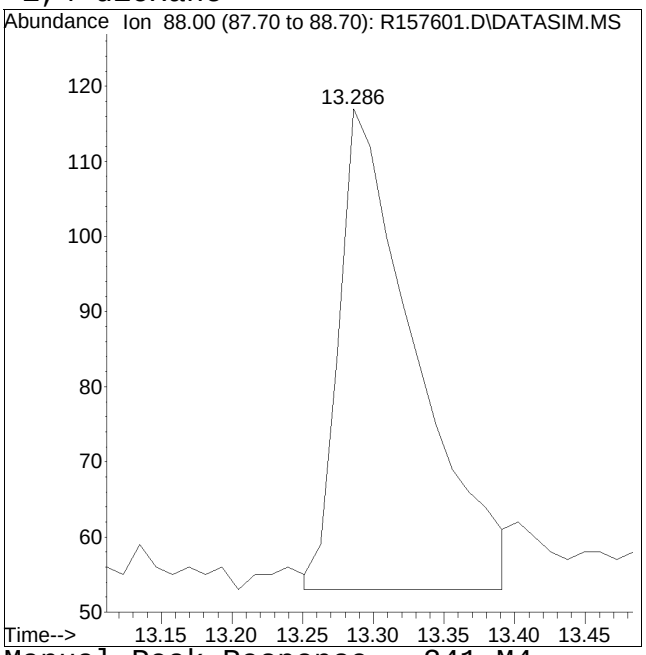
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #43: 1,4-dioxane



Original Peak Response = 214



Manual Peak Response = 241 M4

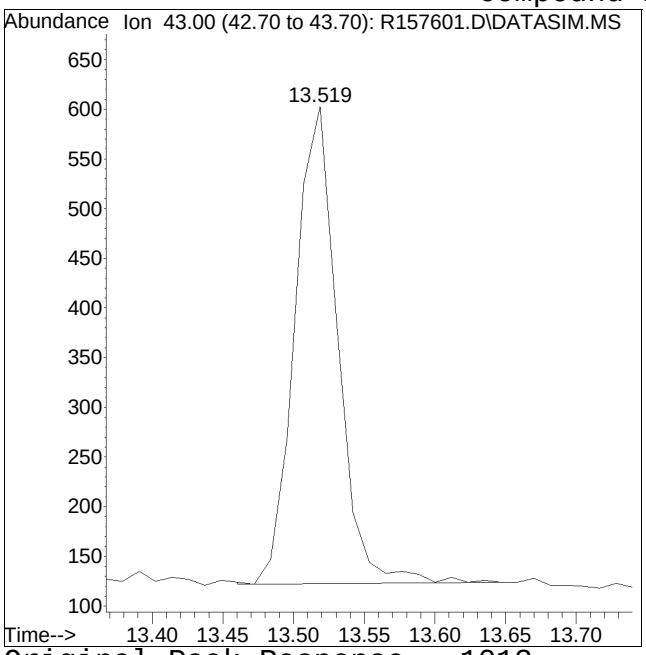
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

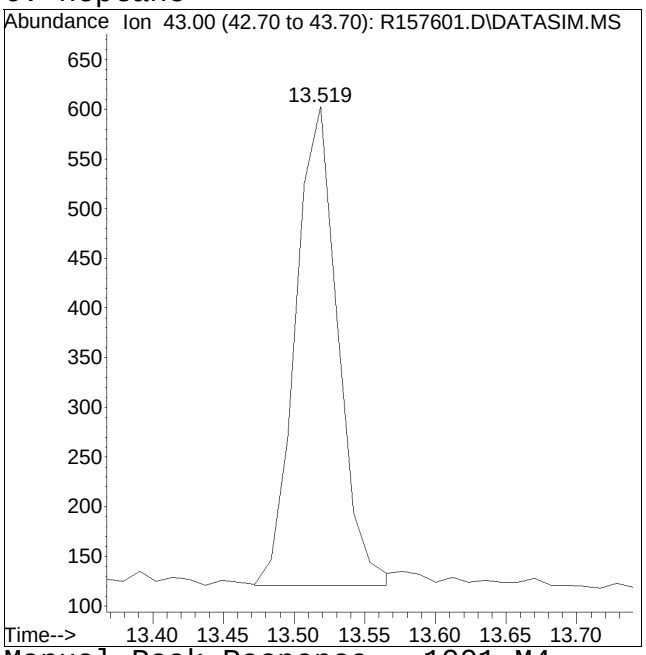
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #46: heptane



Original Peak Response = 1013



Manual Peak Response = 1001 M4

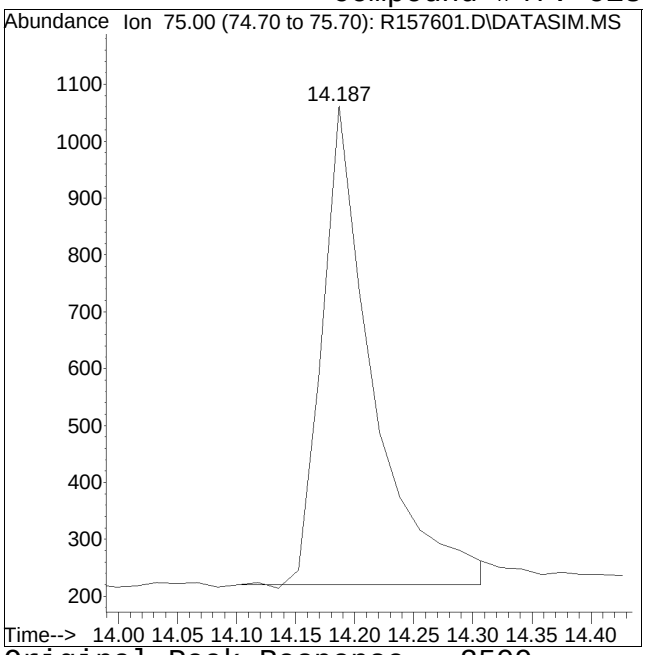
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

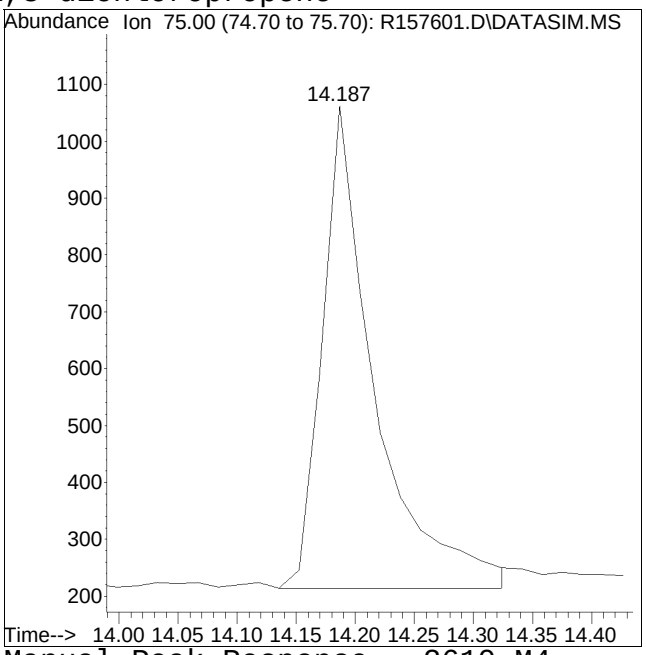
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #47: cis-1,3-dichloropropene



Original Peak Response = 2509



Manual Peak Response = 2610 M4

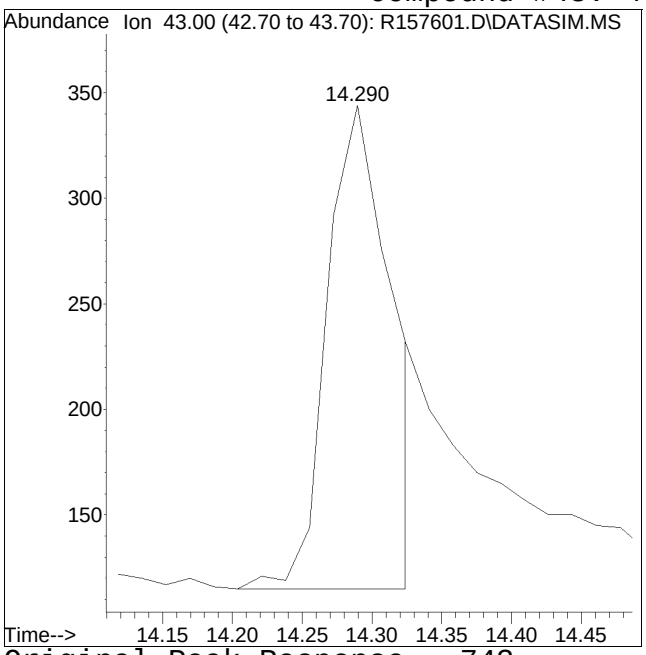
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

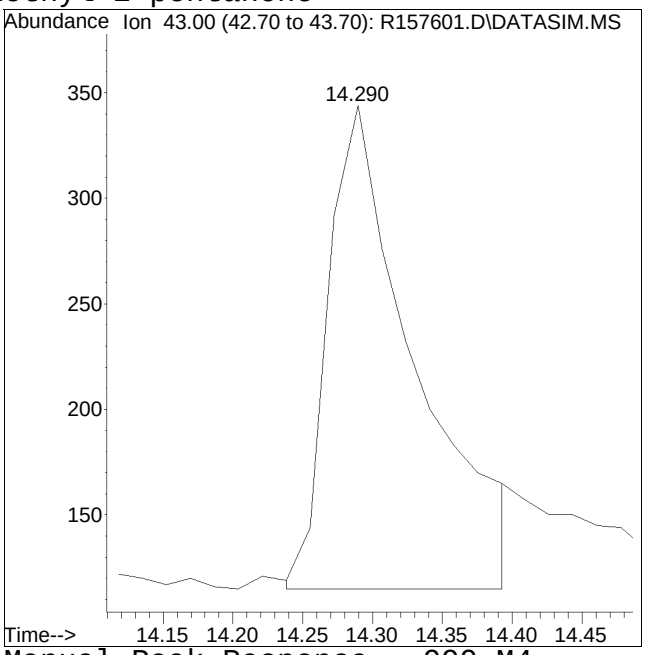
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #48: 4-methyl-2-pentanone



Original Peak Response = 743



Manual Peak Response = 999 M4

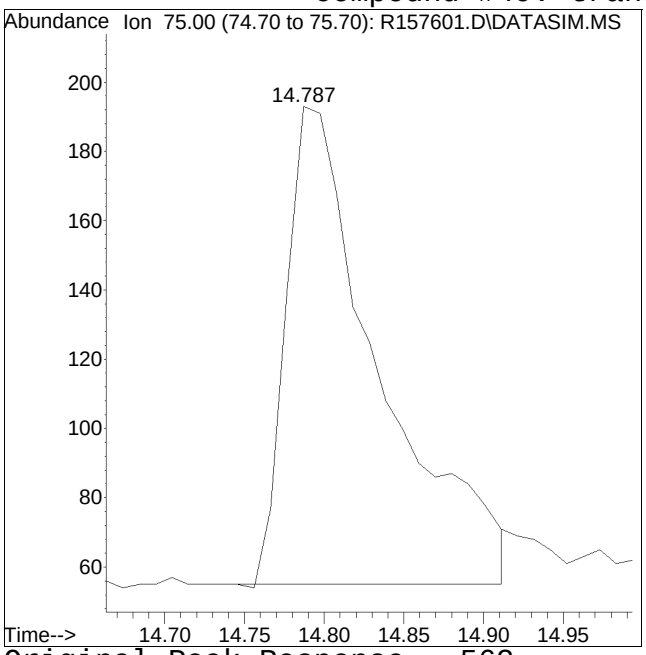
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

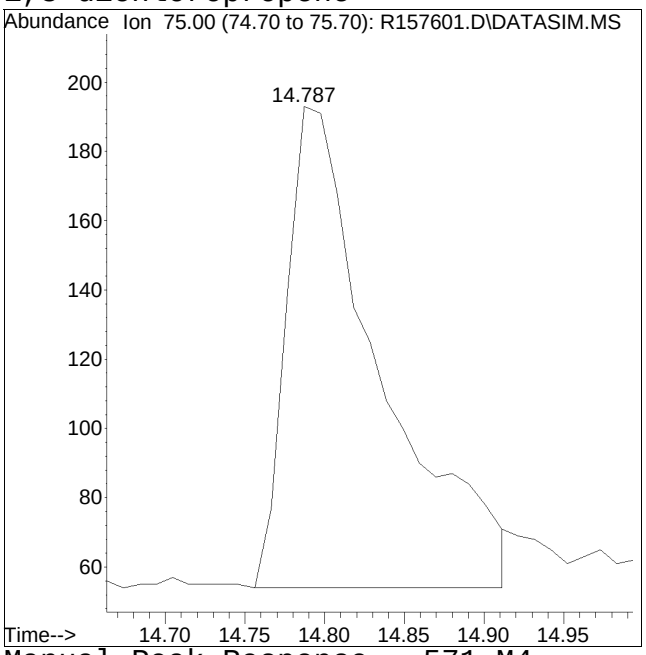
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #49: trans-1,3-dichloropropene



Original Peak Response = 562



Manual Peak Response = 571 M4

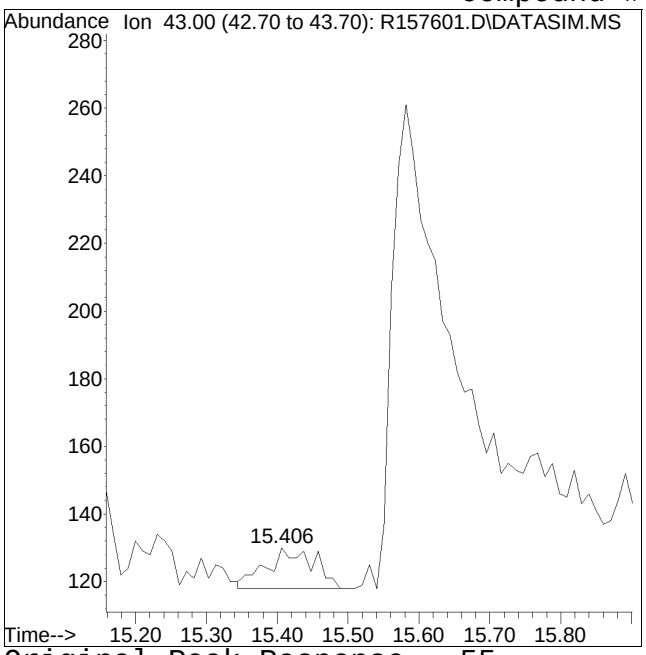
M4 = Poor automated baseline construction.

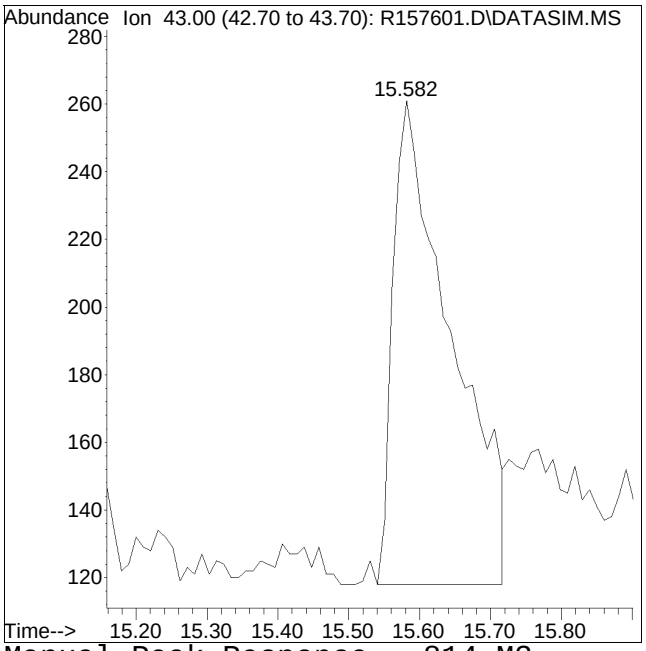
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #54: 2-hexanone





Original Peak Response = 55 Manual Peak Response = 814 M3

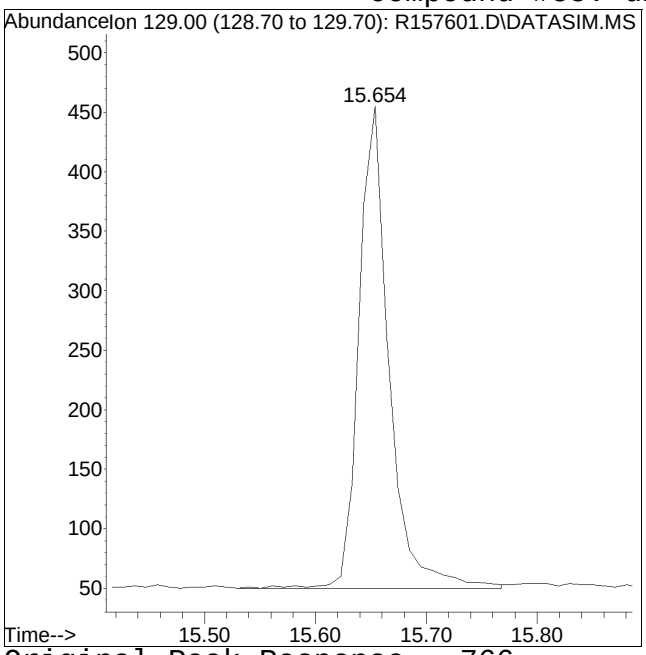
M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Manual Integration/Negative Proof Report

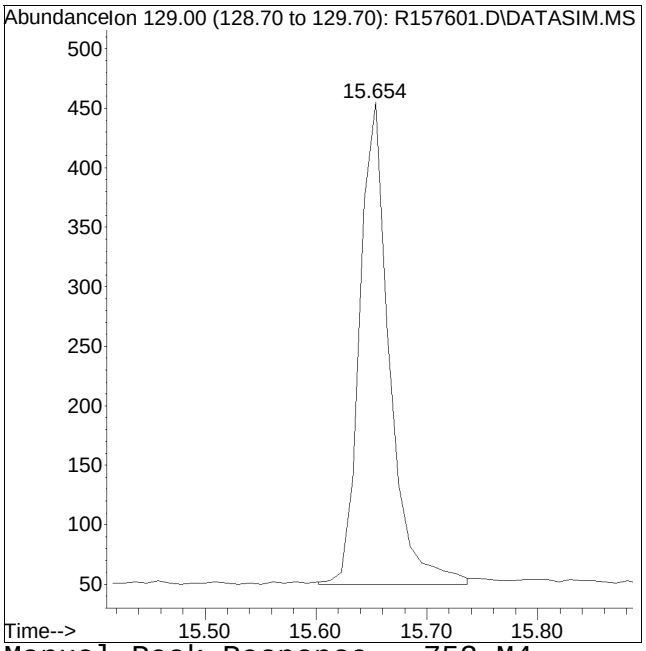
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #55: dibromochloromethane



Original Peak Response = 766



Manual Peak Response = 753 M4

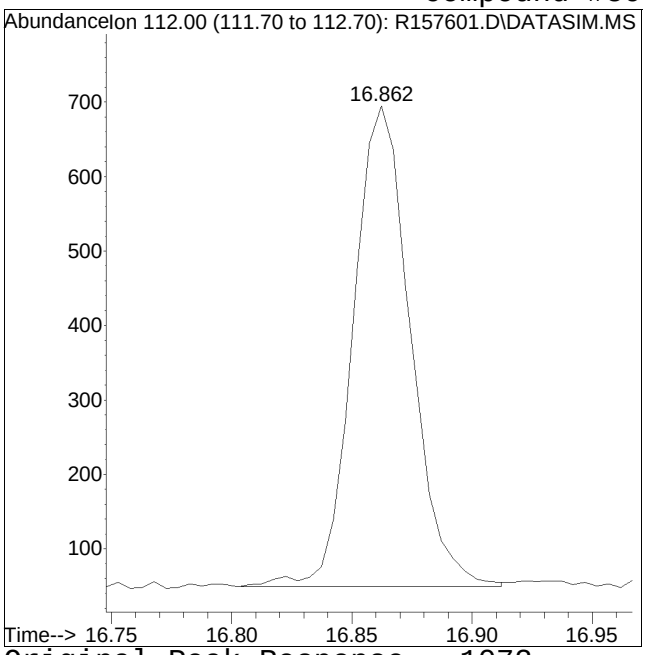
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

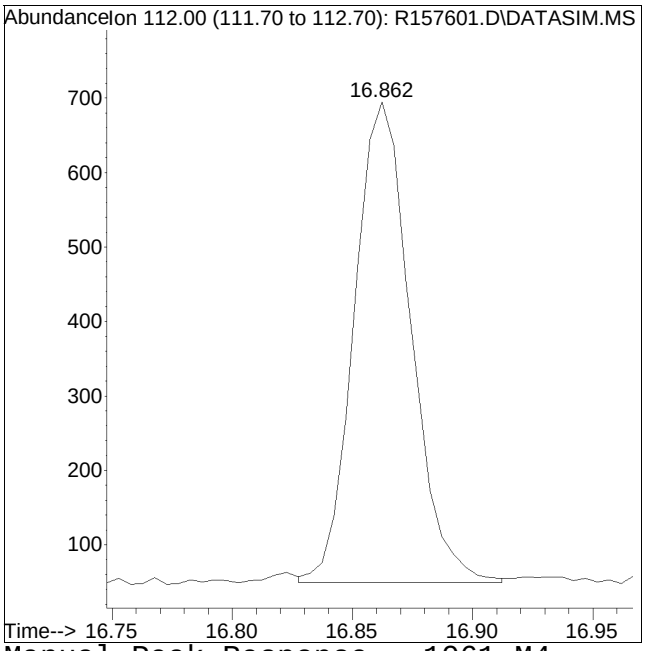
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #59: chlorobenzene



Original Peak Response = 1072



Manual Peak Response = 1061 M4

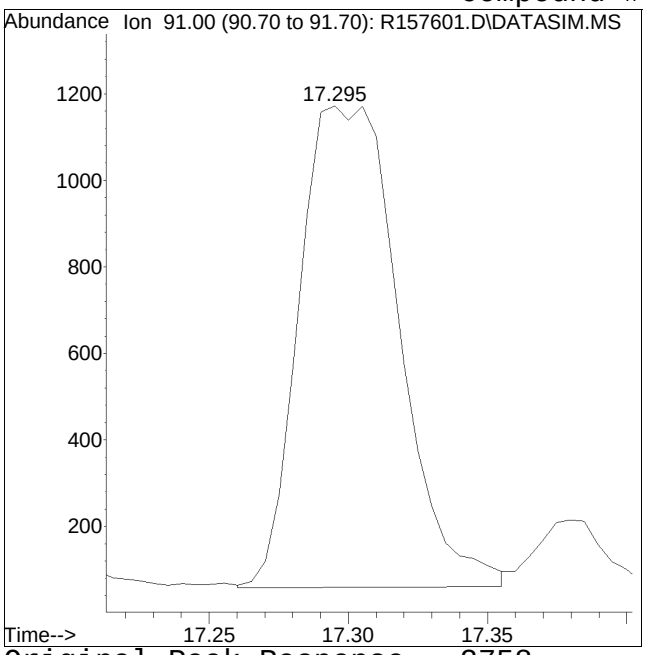
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

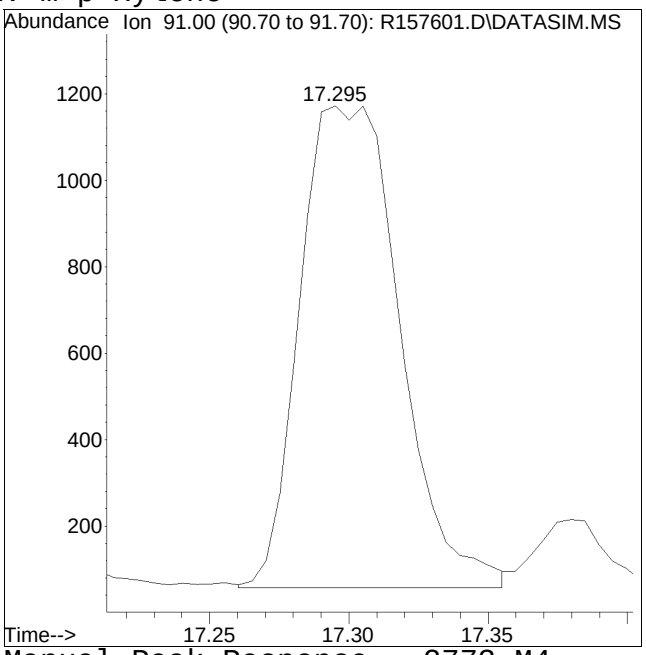
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #61: m+p-xylene



Original Peak Response = 2758



Manual Peak Response = 2773 M4

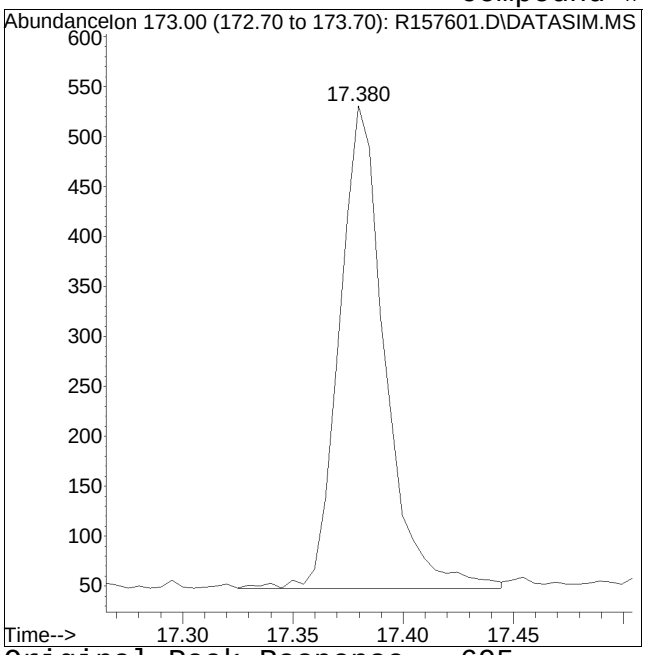
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

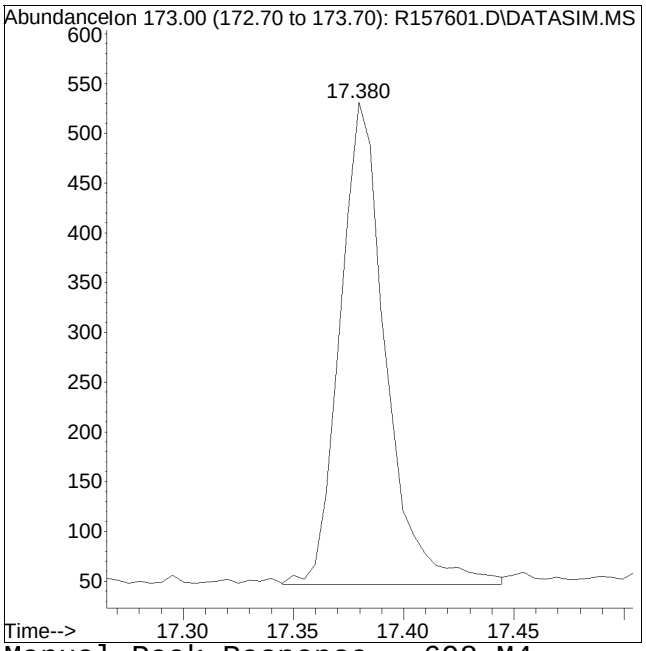
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #62: bromoform



Original Peak Response = 695



Manual Peak Response = 698 M4

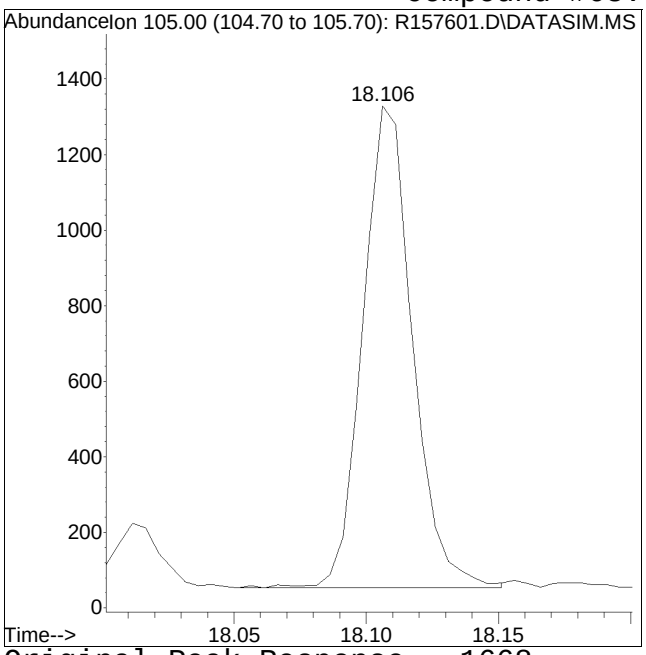
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

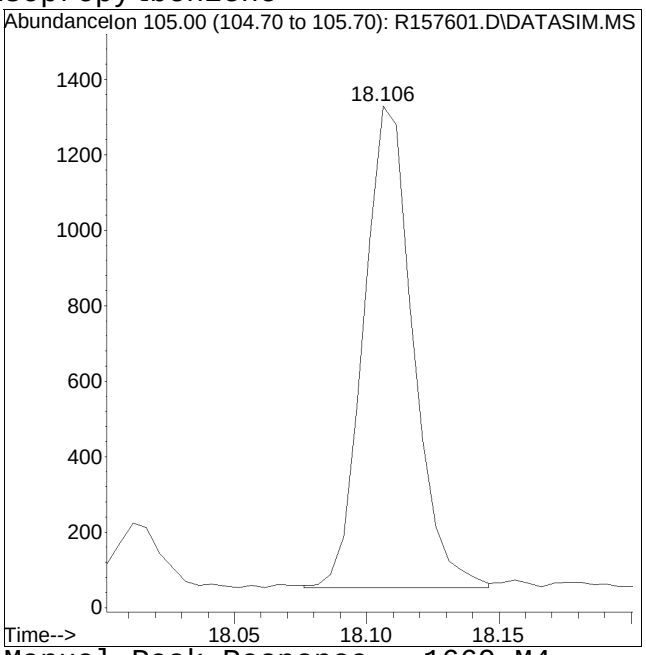
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #68: isopropylbenzene



Original Peak Response = 1668



Manual Peak Response = 1660 M4

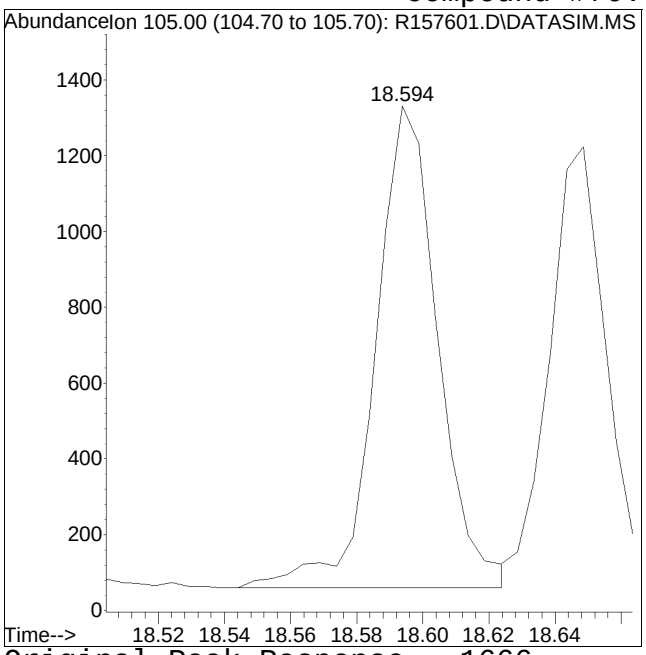
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

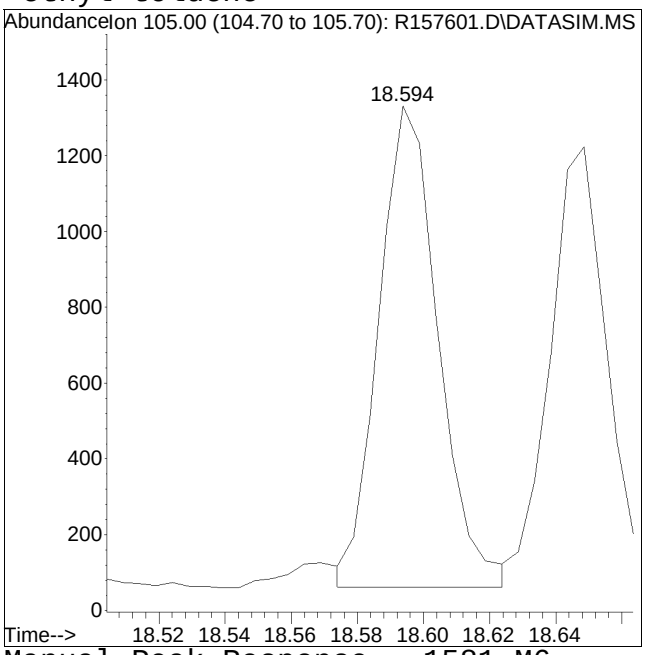
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #70: 4-ethyl toluene



Original Peak Response = 1666



Manual Peak Response = 1581 M6

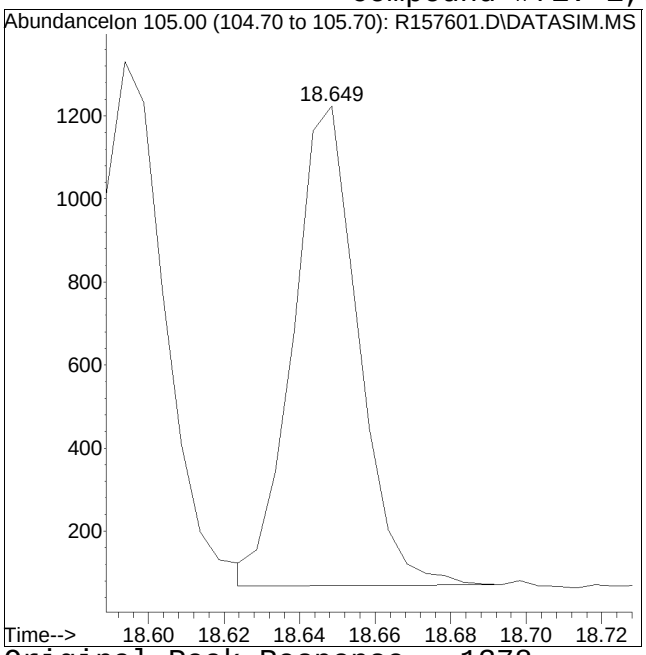
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

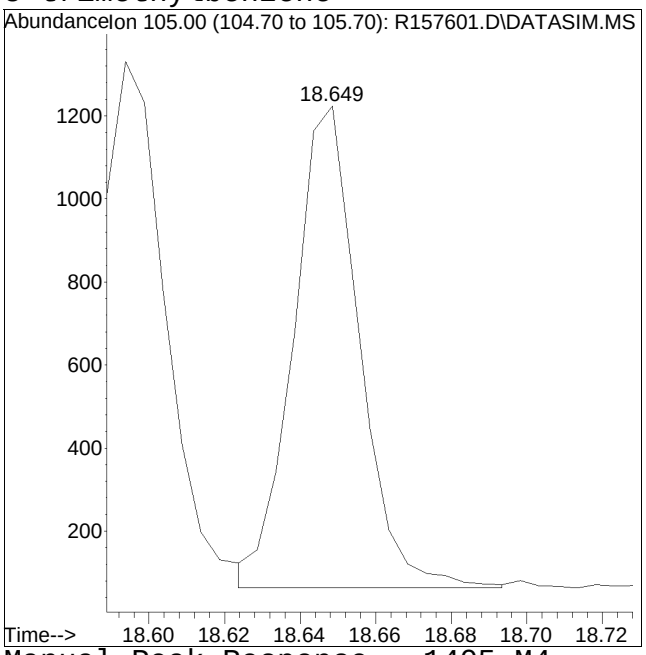
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #71: 1,3,5-trimethylbenzene



Original Peak Response = 1378



Manual Peak Response = 1405 M4

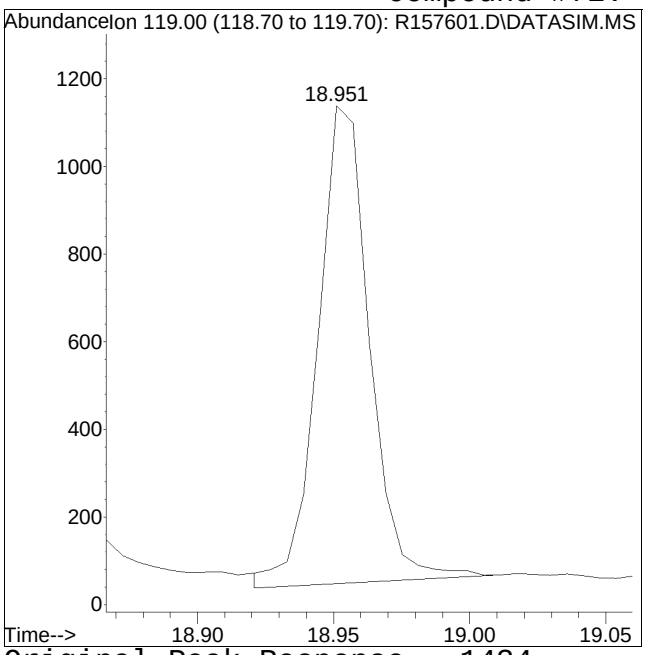
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

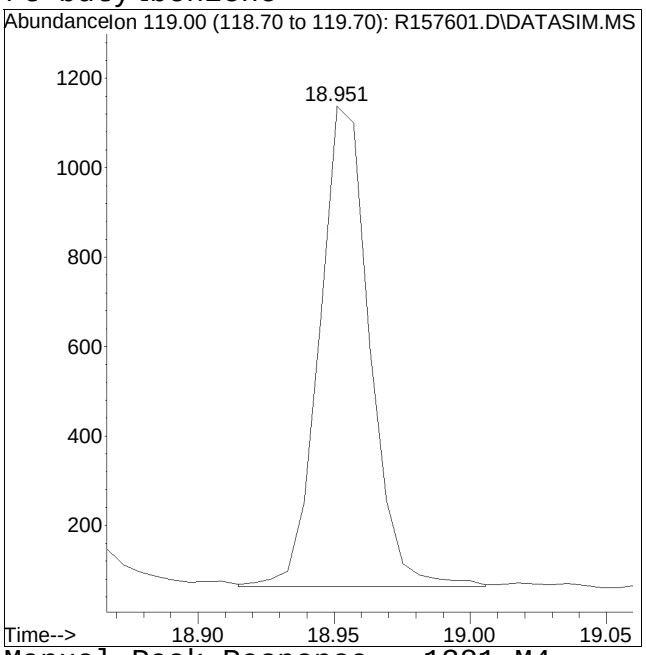
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #72: tert-butylbenzene



Original Peak Response = 1434



Manual Peak Response = 1381 M4

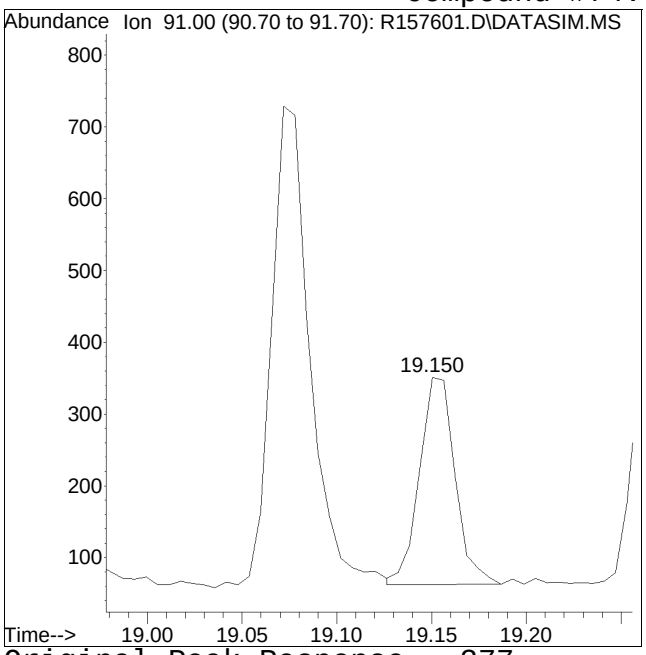
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

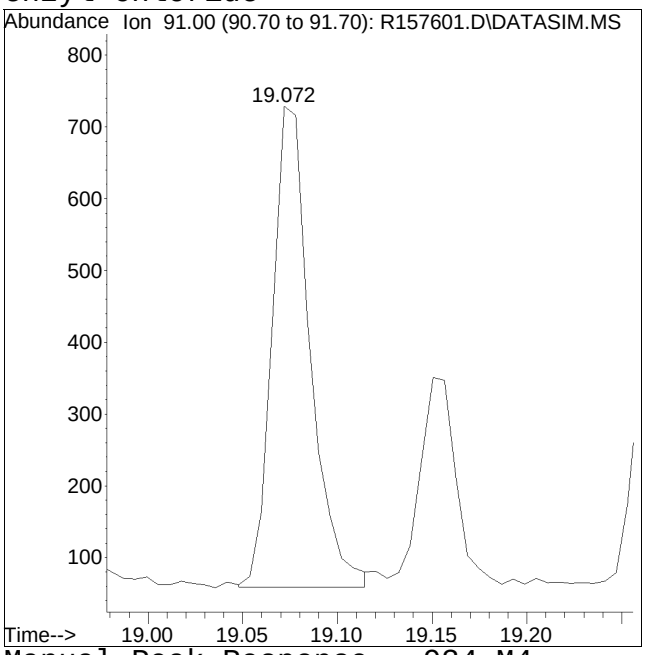
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #74: Benzyl Chloride



Original Peak Response = 377



Manual Peak Response = 934 M4

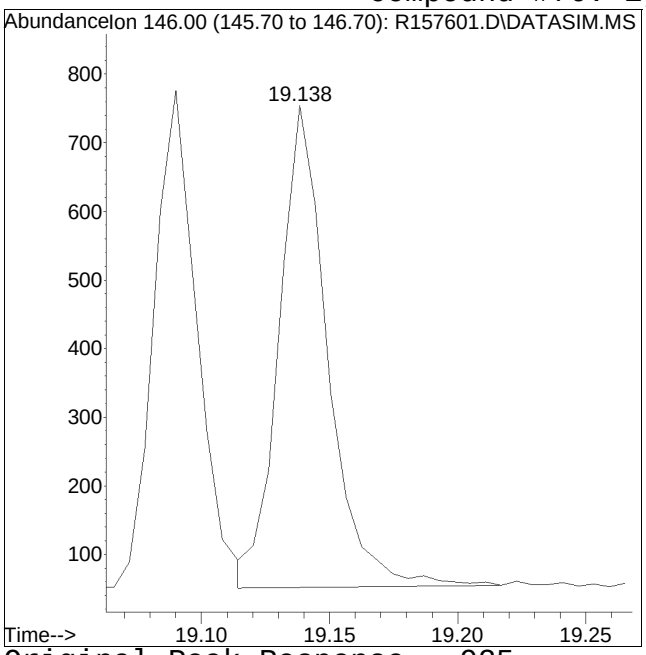
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

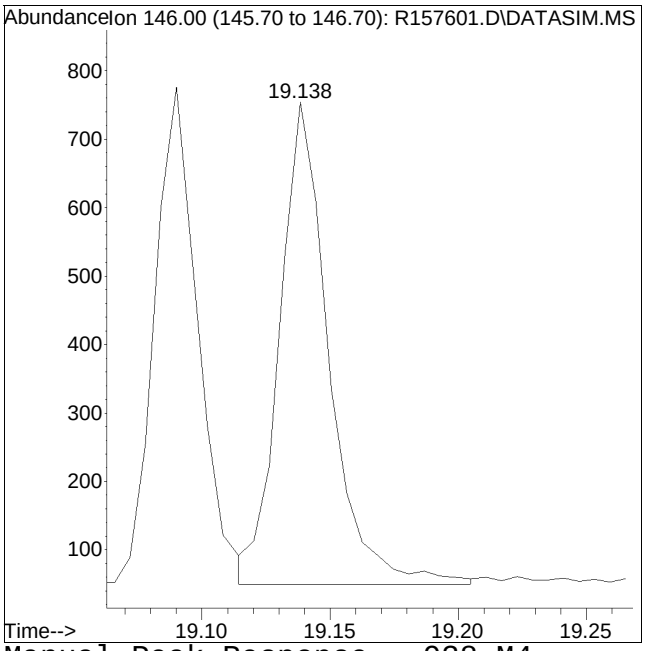
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157601.D
Date Inj'd : 2/26/2018 10:31 pm
Sample : ITO15-SIMSTD0.04

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #76: 1,4-dichlorobenzene



Original Peak Response = 925



Manual Peak Response = 938 M4

M4 = Poor automated baseline construction.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157602.D
Acq On : 26 Feb 2018 11:05 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.1
Misc : WG1092763
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 27 12:45:19 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.181	49	210563	10.000	ppbV	0.00
Standard Area = 218948			Recovery = 96.17%			
33) 1,4-difluorobenzene	12.401	114	283326	10.000	ppbV	0.00
Standard Area = 315293			Recovery = 89.86%			
51) chlorobenzene-D5	16.823	54	81658	10.000	ppbV	0.00
Standard Area = 85423			Recovery = 95.59%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.066	65	114890	10.456	ppbV	0.01
Spiked Amount 10.000	Range 70 - 130		Recovery = 104.56%			
53) toluene-D8	15.128	98	259285	9.954	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.54%			
67) bromofluorobenzene	18.012	95	144152	9.836	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.36%			
Target Compounds						Qvalue
2) propylene	4.051	41	1099M6	0.100	ppbV	
3) dichlorodifluoromethane	4.152	85	2067	0.087	ppbV	96
4) chloromethane	4.364	50	1264M4	0.104	ppbV	
5) Freon-114	4.521	85	2936	0.097	ppbV	98
6) vinyl chloride	4.677	62	1227	0.098	ppbV	89
7) 1,3-butadiene	4.867	54	822M4	0.096	ppbV	
8) bromomethane	5.254	94	1024	0.097	ppbV	92
9) chloroethane	5.505	64	561	0.095	ppbV #	82
10) ethanol	5.719	31	8560	0.882	ppbV	95
11) vinyl bromide	5.989	106	893	0.095	ppbV	100
12) acrolein	6.185	56	552	0.104	ppbV #	89
13) acetone	6.380	43	11754	0.740	ppbV #	97
14) trichlorofluoromethane	6.566	101	2617	0.099	ppbV	97
15) isopropyl alcohol	6.743	45	12123	0.560	ppbV	98
16) acrylonitrile	6.995	53	774M6	0.086	ppbV	
17) 1,1-dichloroethene	7.404	61	1975	0.097	ppbV	96
18) tertiary butyl alcohol	7.562	59	2765	0.116	ppbV #	57
19) methylene chloride	7.572	49	2035M4	0.125	ppbV	
20) 3-chloropropene	7.721	41	1676	0.099	ppbV	89
21) carbon disulfide	7.897	76	3384	0.102	ppbV #	1
22) Freon 113	7.916	101	1980	0.095	ppbV	97
23) trans-1,2-dichloroethene	8.754	61	1819	0.096	ppbV	91
24) 1,1-dichloroethane	8.991	63	2279	0.097	ppbV	91

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157602.D
Acq On : 26 Feb 2018 11:05 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.1
Misc : WG1092763
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 27 12:45:19 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
25) MTBE	9.121	73	2689	0.096	ppbV #	73
26) vinyl acetate	9.211	43	2856	0.106	ppbV #	90
27) 2-butanone	9.530	43	3006	0.106	ppbV #	97
28) cis-1,2-dichloroethene	9.996	61	2016	0.099	ppbV	90
29) Ethyl Acetate	10.309	61	458M4	0.098	ppbV	
30) chloroform	10.341	83	2800	0.097	ppbV #	95
31) Tetrahydrofuran	10.866	42	1736	0.111	ppbV	96
32) 1,2-dichloroethane	11.188	62	1765	0.099	ppbV #	88
34) hexane	10.234	57	2203	0.099	ppbV #	52
36) 1,1,1-trichloroethane	11.477	97	2092M4	0.098	ppbV	
37) benzene	11.994	78	3229	0.100	ppbV #	88
38) carbon tetrachloride	12.157	117	1954	0.097	ppbV #	96
39) cyclohexane	12.297	56	1788	0.099	ppbV	93
40) dibromomethane	12.902	93	1396M4	0.098	ppbV	
41) 1,2-dichloropropane	12.925	63	1412	0.097	ppbV #	93
42) bromodichloromethane	13.146	83	2318M6	0.094	ppbV	
43) 1,4-dioxane	13.263	88	575M4	0.092	ppbV	
44) trichloroethene	13.193	130	1029	0.088	ppbV	96
45) 2,2,4-trimethylpentane	13.216	57	5671	0.097	ppbV #	90
46) heptane	13.519	43	2440	0.099	ppbV #	95
47) cis-1,3-dichloropropene	14.187	75	6499	0.092	ppbV #	90
48) 4-methyl-2-pentanone	14.255	43	2809M4	0.093	ppbV	
49) trans-1,3-dichloropropene	14.777	75	1503	0.089	ppbV #	73
50) 1,1,2-trichloroethane	14.952	97	1169	0.094	ppbV	96
52) toluene	15.231	91	3518	0.097	ppbV	100
54) 2-hexanone	15.540	43	2158	0.073	ppbV #	92
55) dibromochloromethane	15.654	129	1834	0.089	ppbV	96
56) 1,2-dibromoethane	15.881	107	1808	0.090	ppbV	98
57) tetrachloroethene	16.283	166	1271	0.091	ppbV #	92
58) 1,1,1,2-tetrachloroethane	16.847	131	1203	0.087	ppbV	94
59) chlorobenzene	16.862	112	2493M6	0.091	ppbV	
60) ethylbenzene	17.161	91	4215	0.090	ppbV	99
61) m+p-xylene	17.305	91	6422	0.176	ppbV	97
62) bromoform	17.380	173	1560	0.083	ppbV	98
63) styrene	17.589	104	2018	0.083	ppbV	92
64) 1,1,2,2-tetrachloroethane	17.668	83	2961	0.090	ppbV	98
65) o-xylene	17.668	91	3496	0.091	ppbV	98
66) 1,2,3-trichloropropane	17.773	75	2271	0.091	ppbV #	90
68) isopropylbenzene	18.106	105	4033	0.091	ppbV	96
69) bromobenzene	18.191	77	2575	0.091	ppbV	100

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157602.D
Acq On : 26 Feb 2018 11:05 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.1
Misc : WG1092763
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 27 12:45:19 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

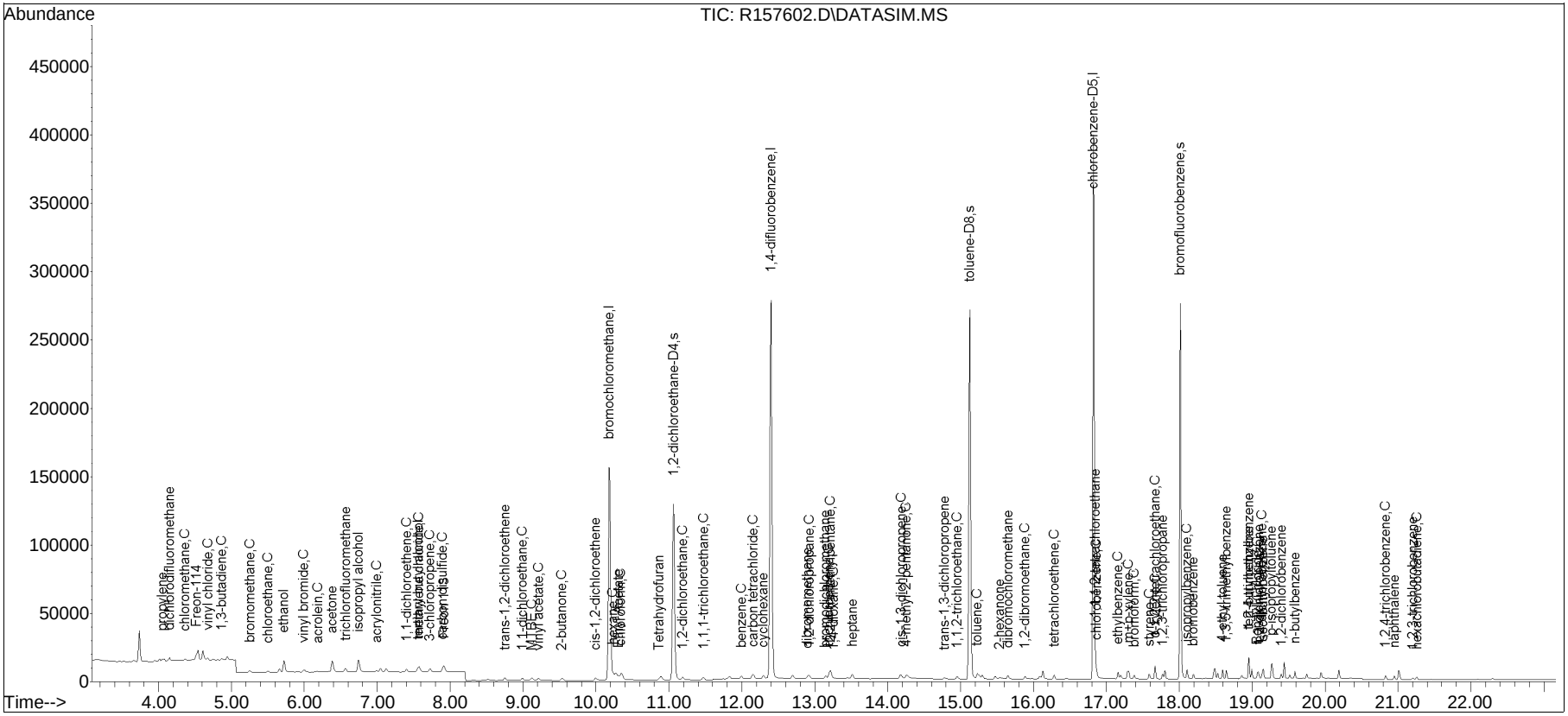
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) 4-ethyl toluene	18.594	105	3934M6	0.087	ppbV		
71) 1,3,5-trimethylbenzene	18.644	105	3482	0.088	ppbV		98
72) tert-butylbenzene	18.951	119	3241M4	0.087	ppbV		
73) 1,2,4-trimethylbenzene	18.951	105	3308	0.086	ppbV	#	91
74) Benzyl Chloride	19.072	91	2427	0.068	ppbV		90
75) 1,3-dichlorobenzene	19.090	146	2164	0.085	ppbV		94
76) 1,4-dichlorobenzene	19.138	146	2235M4	0.085	ppbV		
77) sec-butylbenzene	19.151	105	4860	0.088	ppbV		98
78) p-isopropyltoluene	19.265	119	3795	0.086	ppbV		97
79) 1,2-dichlorobenzene	19.398	146	2081	0.086	ppbV		96
80) n-butylbenzene	19.586	91	4104	0.086	ppbV		98
81) 1,2,4-trichlorobenzene	20.828	180	1301	0.074	ppbV	#	75
82) naphthalene	20.948	128	3659	0.080	ppbV		98
83) 1,2,3-trichlorobenzene	21.200	180	1247	0.077	ppbV	#	72
84) hexachlorobutadiene	21.260	225	1296	0.085	ppbV	#	86

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0226SIM_ICAL\R157606.D

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157602.D
Acq On : 26 Feb 2018 11:05 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.1
Misc : WG1092763
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 27 12:45:19 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

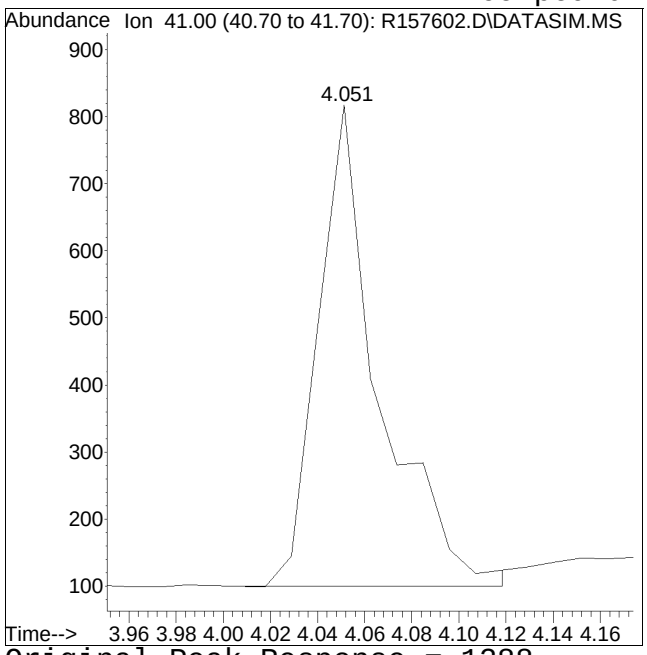


Manual Integration/Negative Proof Report

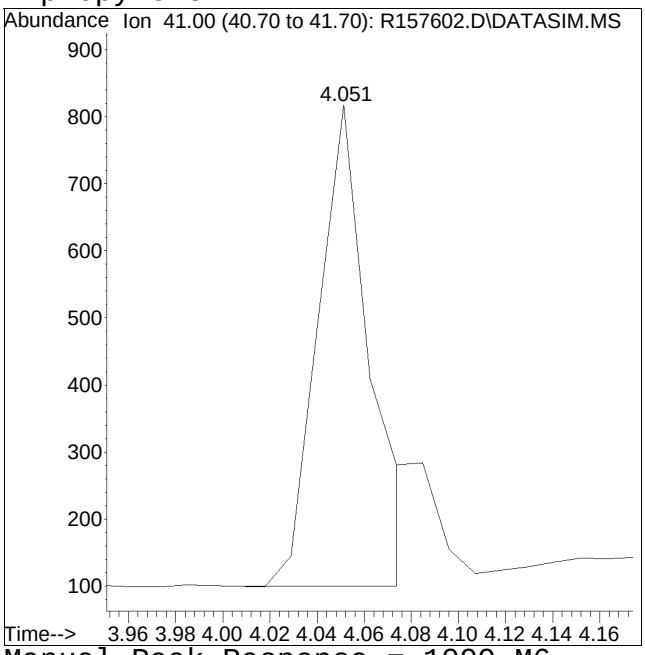
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #2: propylene



Original Peak Response = 1288



Manual Peak Response = 1099 M6

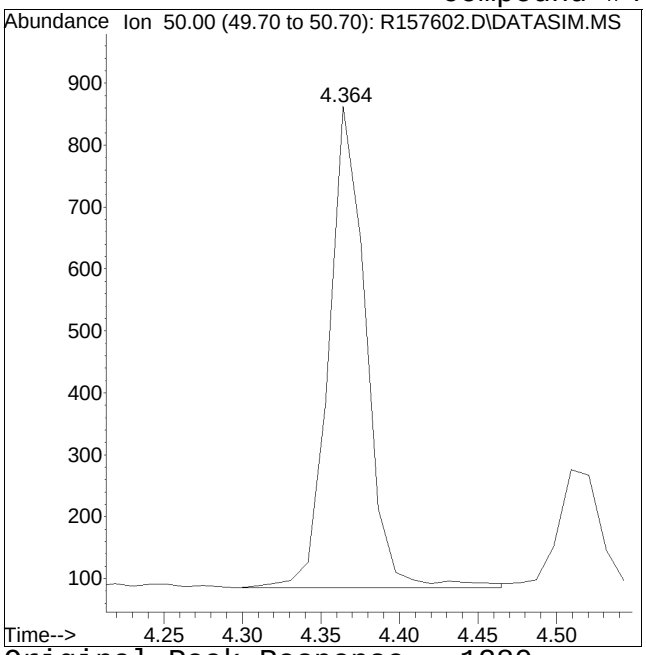
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

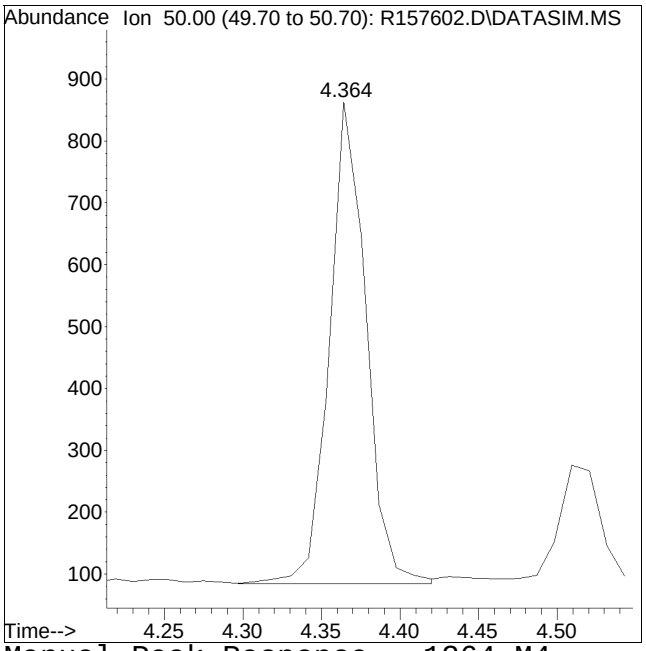
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #4: chloromethane



Original Peak Response = 1280



Manual Peak Response = 1264 M4

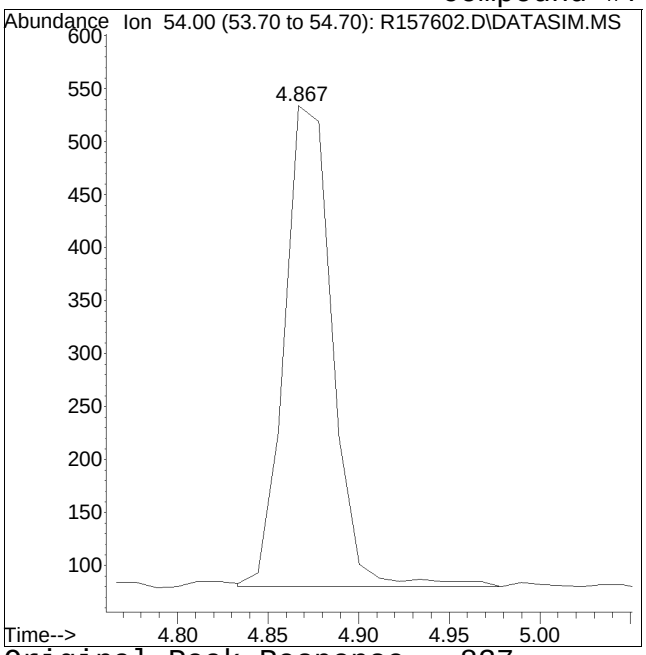
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

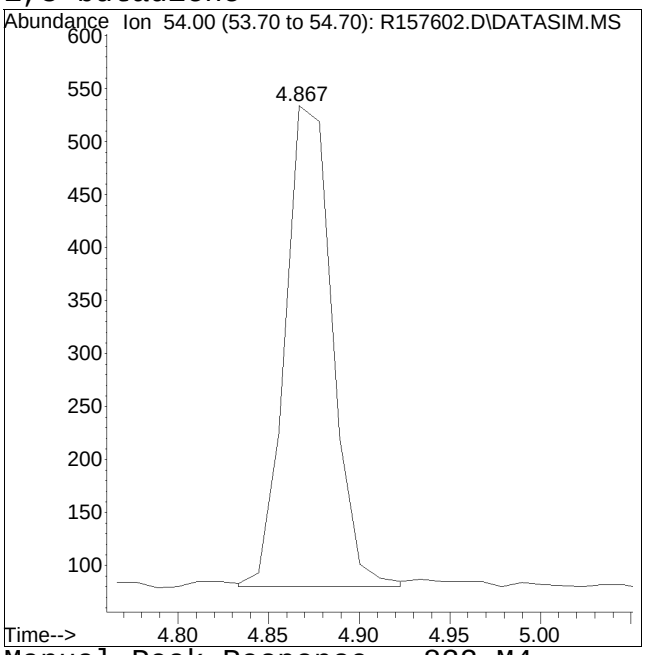
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #7: 1,3-butadiene



Original Peak Response = 837



Manual Peak Response = 822 M4

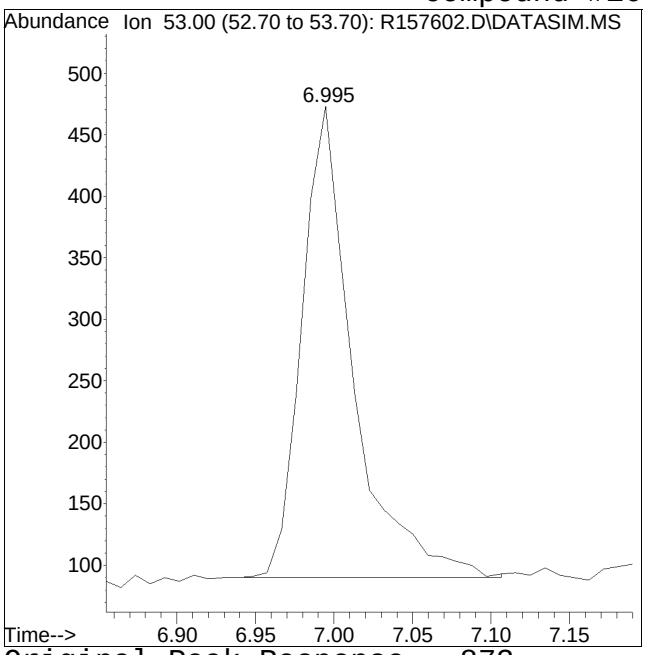
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

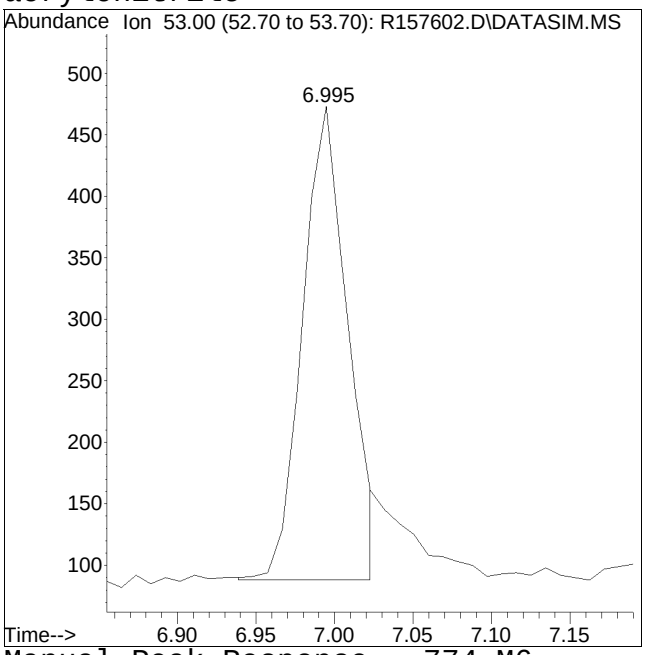
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #16: acrylonitrile



Original Peak Response = 873



Manual Peak Response = 774 M6

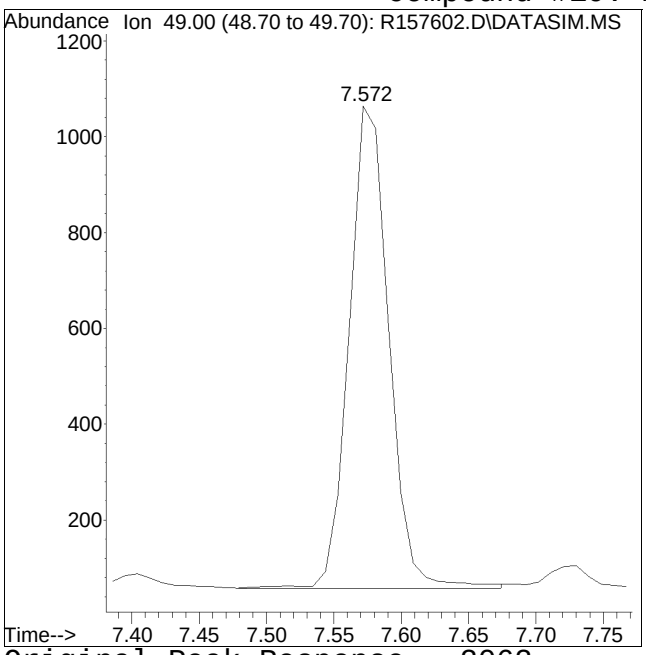
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

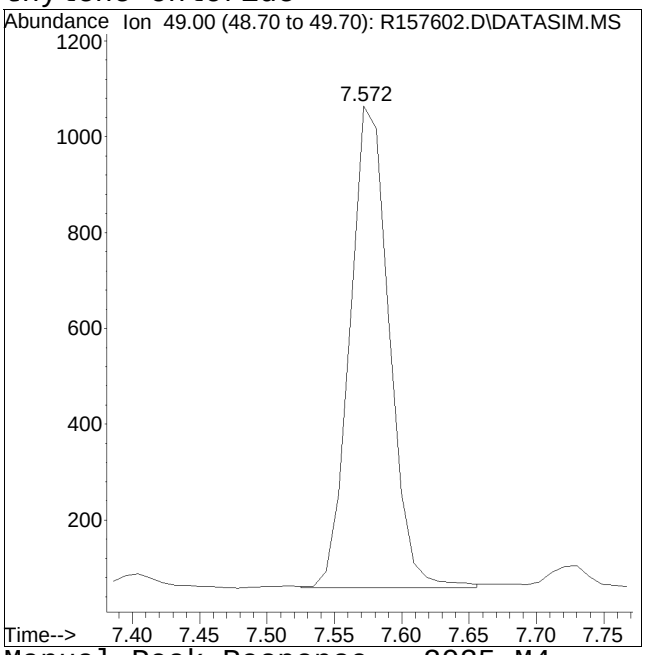
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #19: methylene chloride



Original Peak Response = 2062



Manual Peak Response = 2035 M4

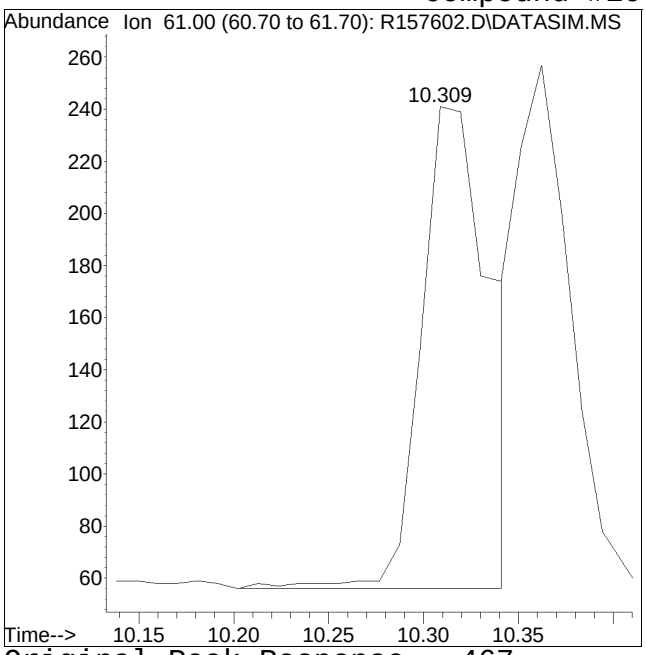
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

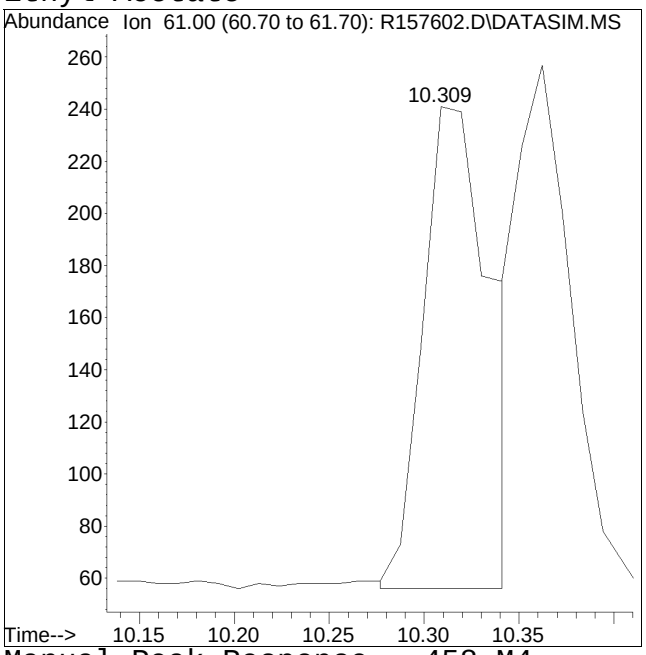
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #29: Ethyl Acetate



Original Peak Response = 467



Manual Peak Response = 458 M4

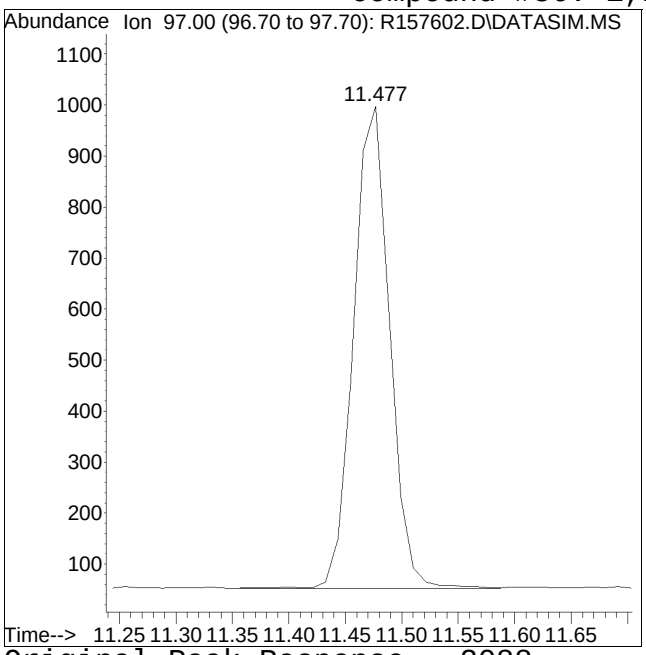
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

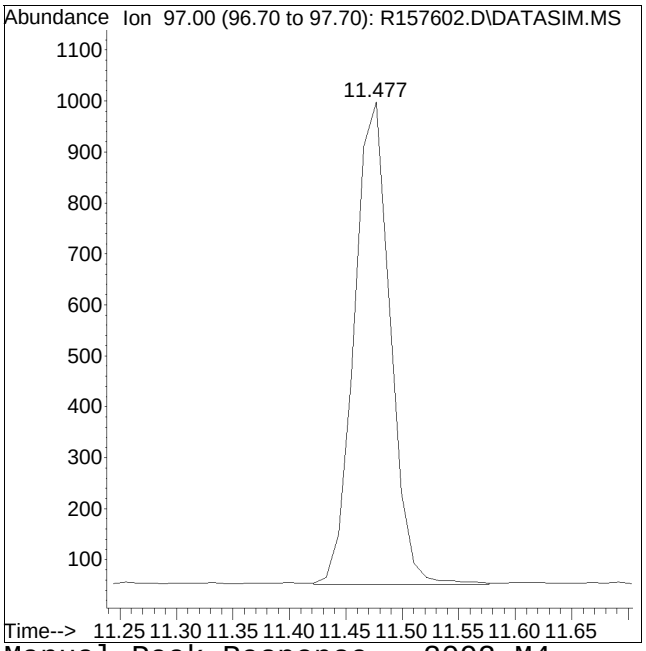
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #36: 1,1,1-trichloroethane



Original Peak Response = 2088



Manual Peak Response = 2092 M4

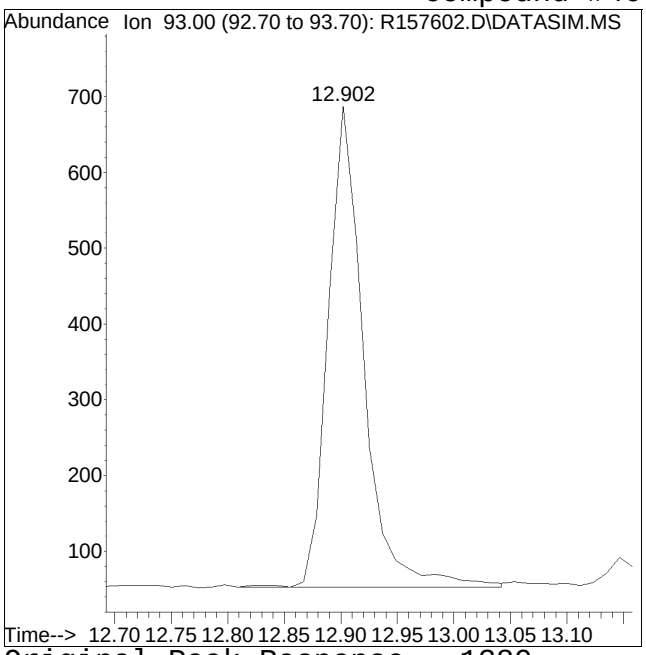
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

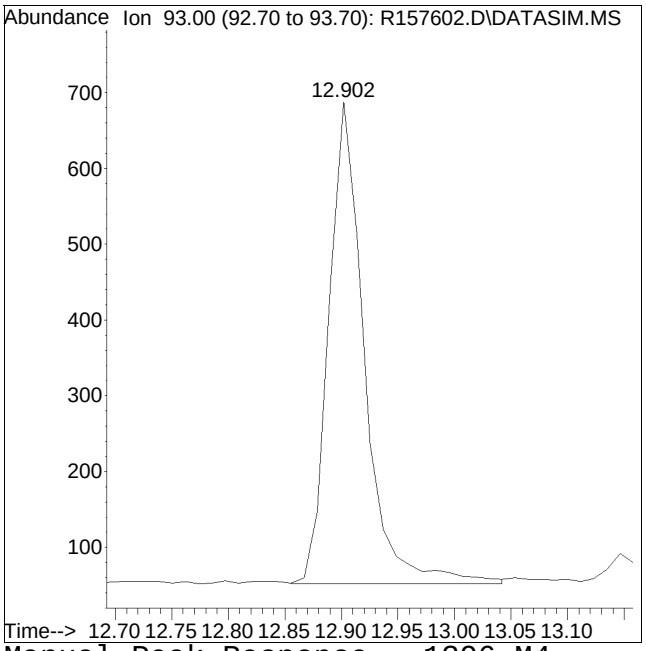
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #40: dibromomethane



Original Peak Response = 1389



Manual Peak Response = 1396 M4

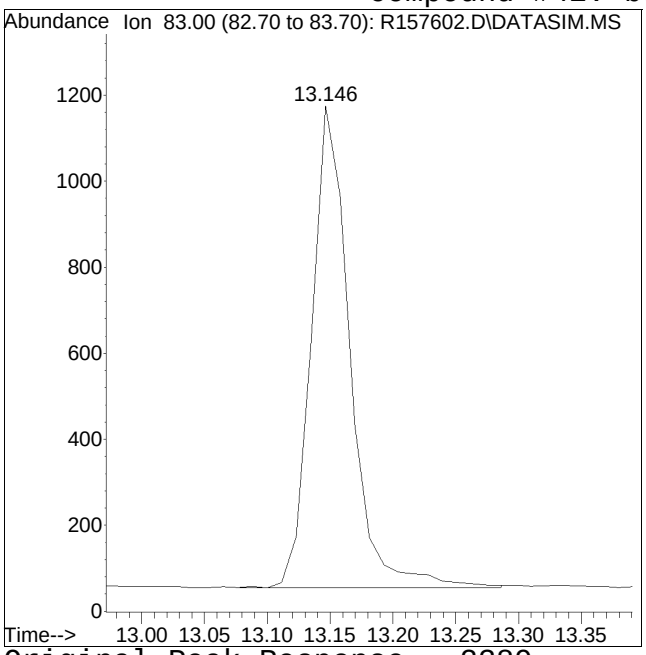
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

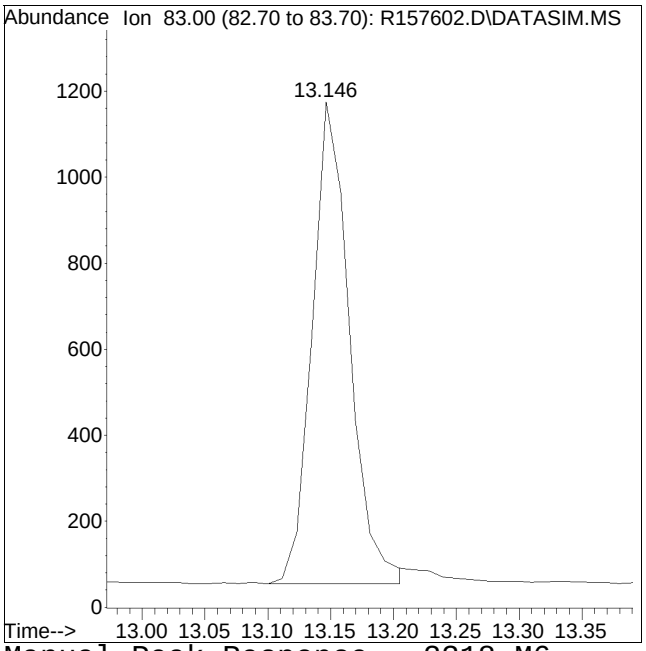
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #42: bromodichloromethane



Original Peak Response = 2389



Manual Peak Response = 2318 M6

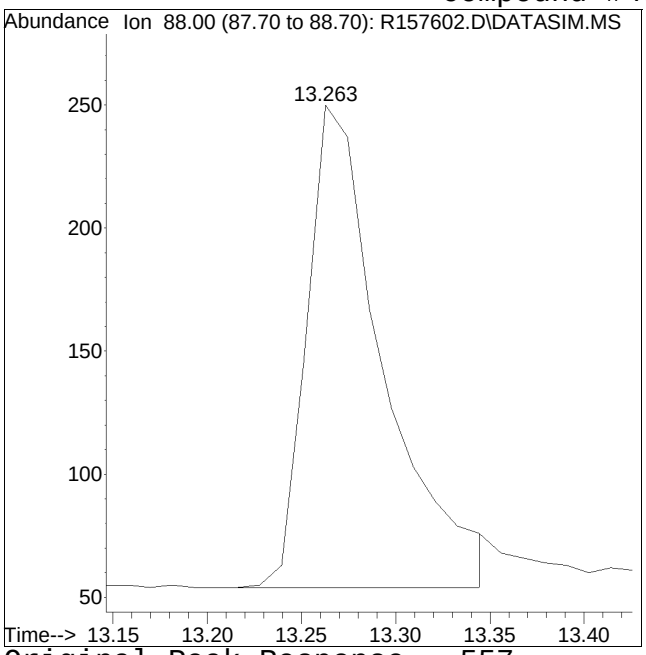
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

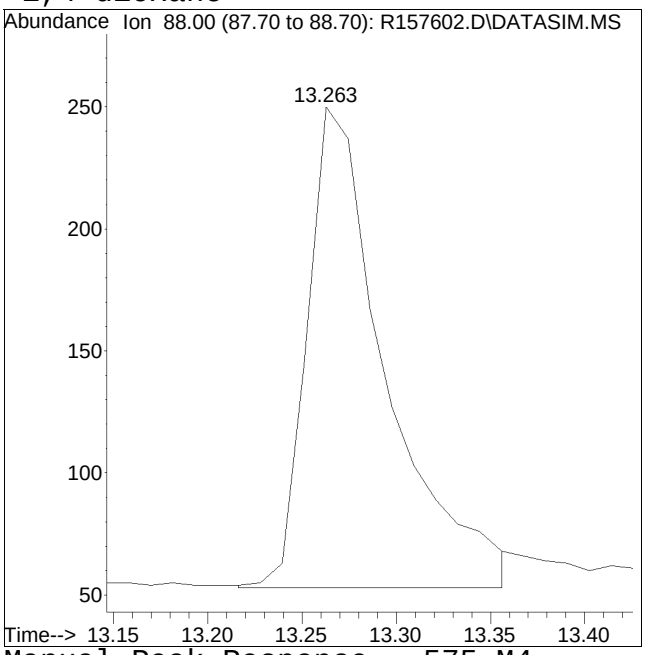
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #43: 1,4-dioxane



Original Peak Response = 557



Manual Peak Response = 575 M4

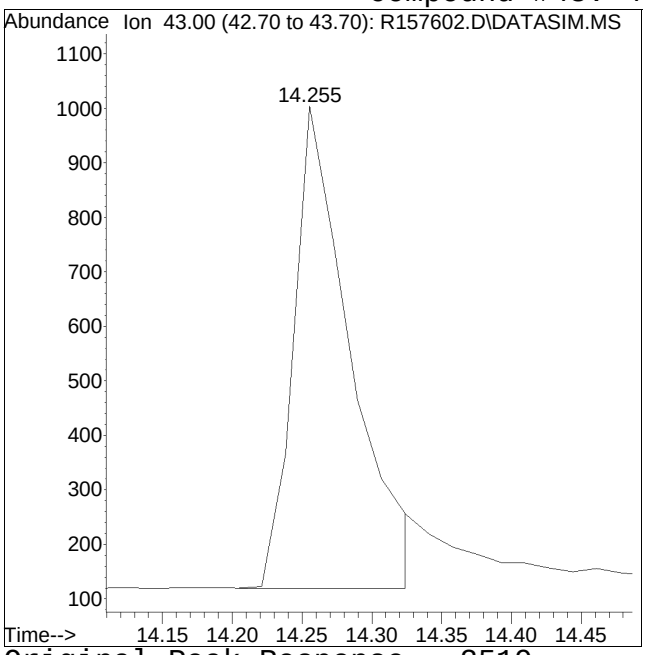
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

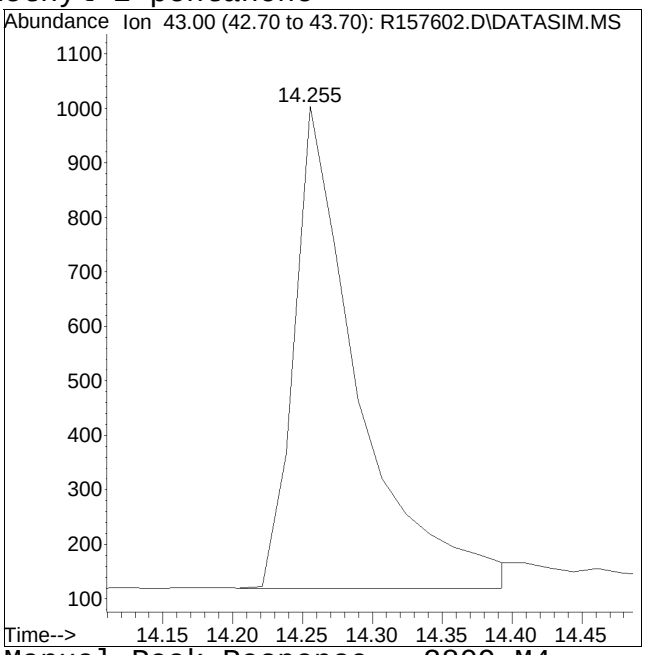
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #48: 4-methyl-2-pentanone



Original Peak Response = 2519



Manual Peak Response = 2809 M4

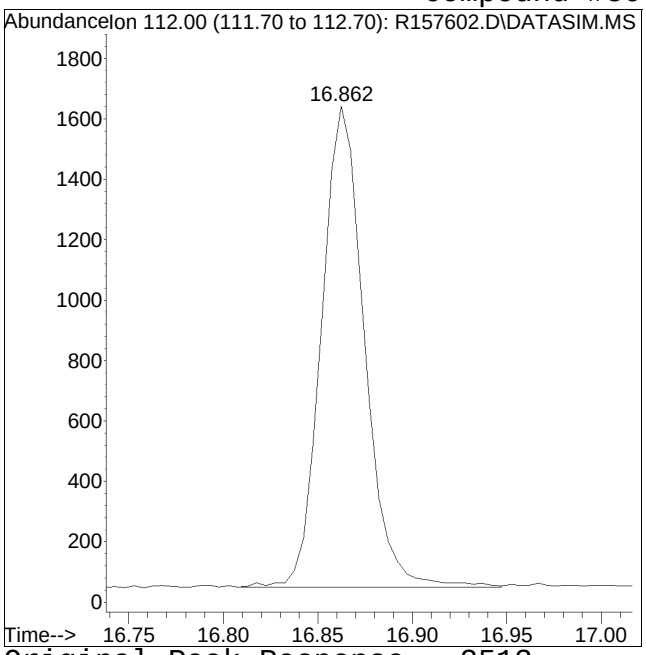
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

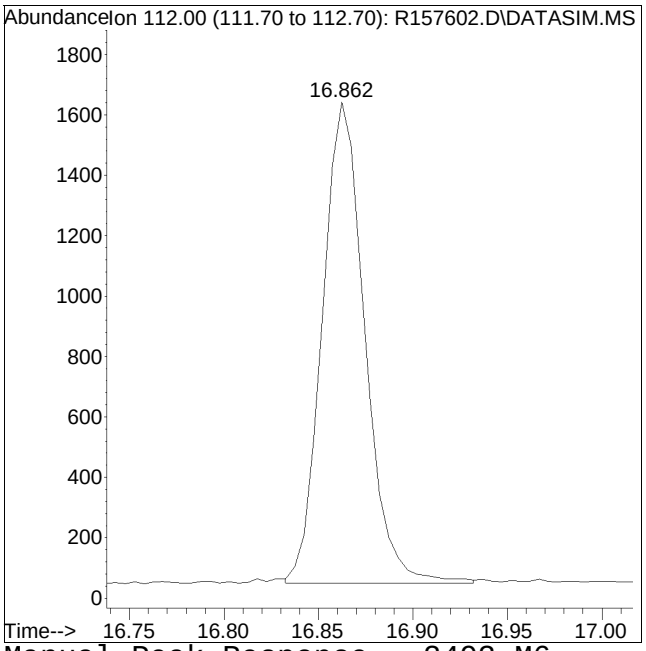
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #59: chlorobenzene



Original Peak Response = 2513



Manual Peak Response = 2493 M6

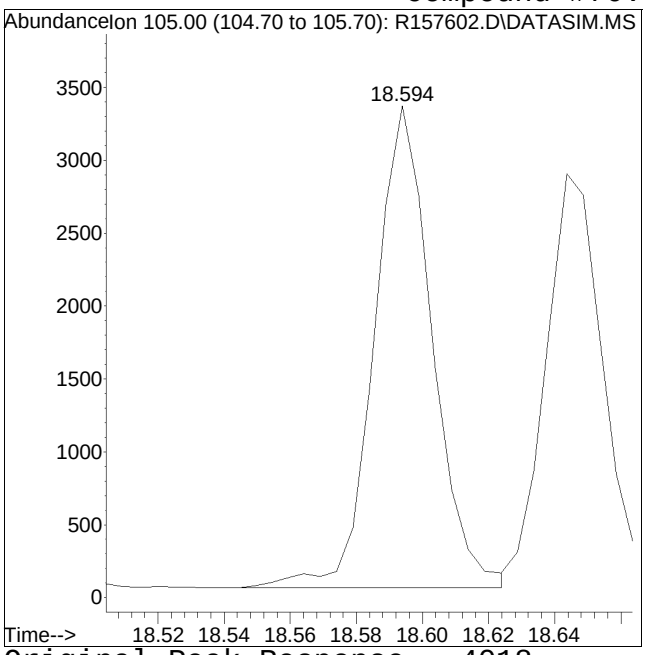
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

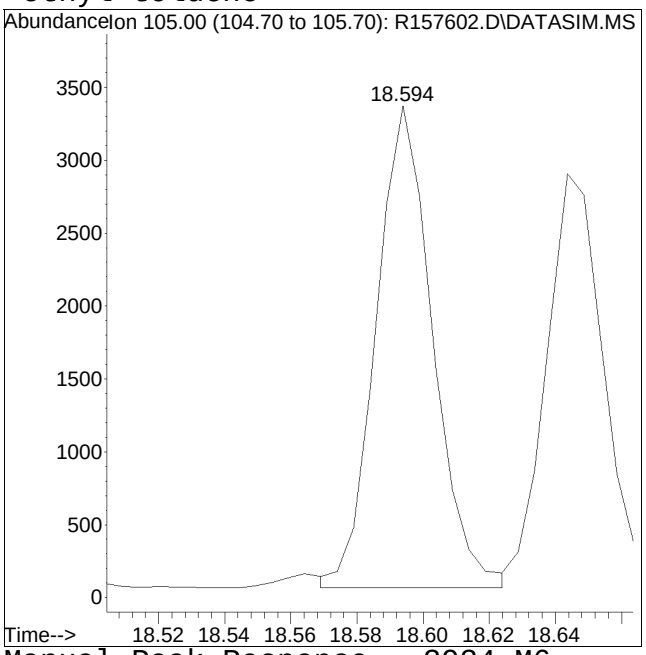
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #70: 4-ethyl toluene



Original Peak Response = 4018



Manual Peak Response = 3934 M6

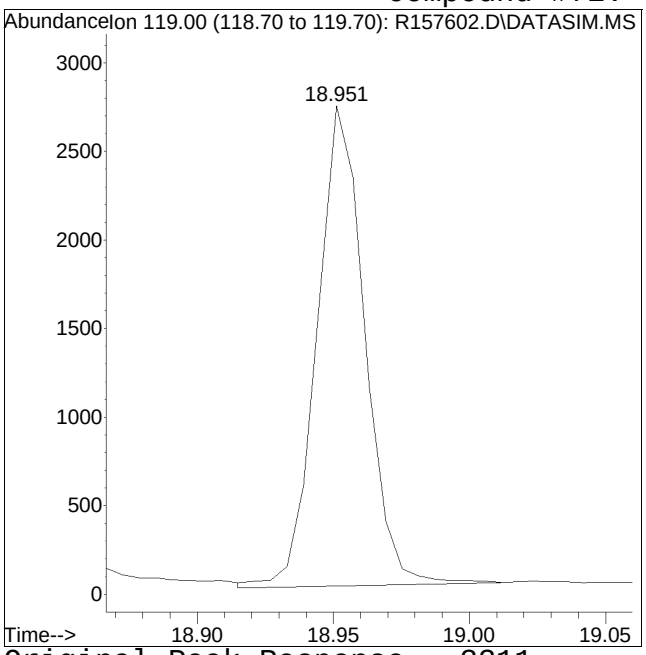
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

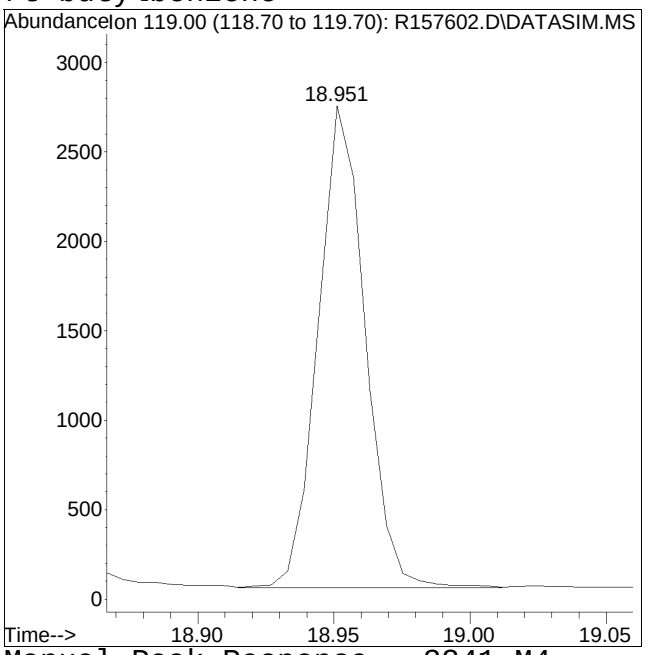
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #72: tert-butylbenzene



Original Peak Response = 3311



Manual Peak Response = 3241 M4

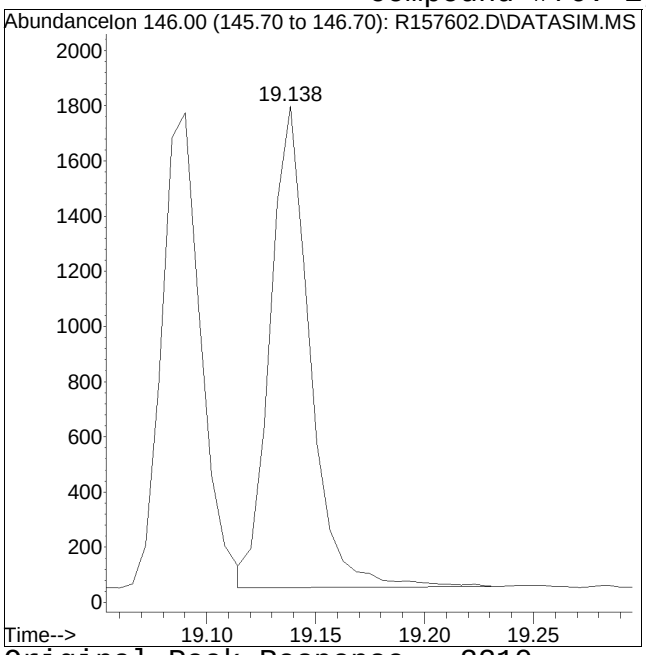
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

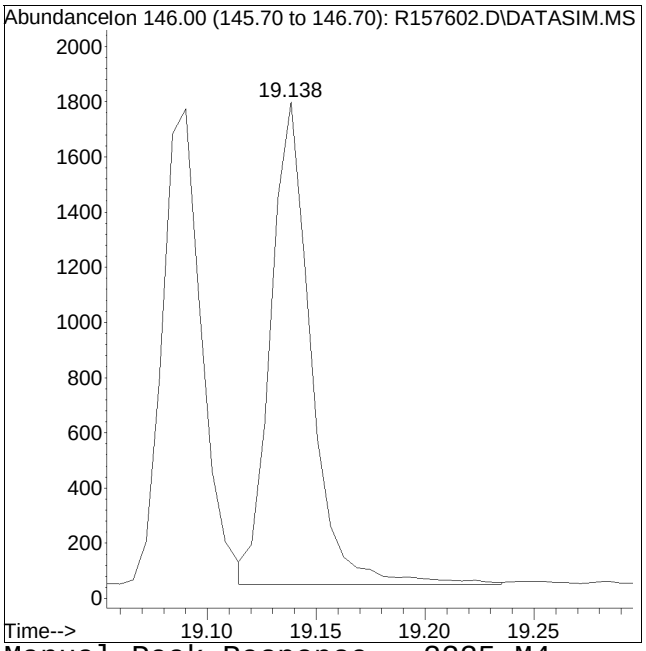
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157602.D
Date Inj'd : 2/26/2018 11:05 pm
Sample : ITO15-SIMSTD0.1

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #76: 1,4-dichlorobenzene



Original Peak Response = 2210



Manual Peak Response = 2235 M4

M4 = Poor automated baseline construction.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157603.D
Acq On : 26 Feb 2018 11:36 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.2
Misc : WG1092763
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 27 12:45:24 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.181	49	208410	10.000	ppbV	0.00
Standard Area = 218948			Recovery = 95.19%			
33) 1,4-difluorobenzene	12.401	114	280422	10.000	ppbV	0.00
Standard Area = 315293			Recovery = 88.94%			
51) chlorobenzene-D5	16.822	54	82831	10.000	ppbV	0.00
Standard Area = 85423			Recovery = 96.97%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.066	65	113143	10.403	ppbV	0.01
Spiked Amount 10.000	Range 70 - 130		Recovery = 104.03%			
53) toluene-D8	15.128	98	253875	9.609	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 96.09%			
67) bromofluorobenzene	18.012	95	144574	9.725	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 97.25%			
Target Compounds						Qvalue
2) propylene	4.051	41	2693	0.247	ppbV	97
3) dichlorodifluoromethane	4.152	85	5286	0.226	ppbV	97
4) chloromethane	4.364	50	2662M4	0.221	ppbV	
5) Freon-114	4.520	85	6481	0.217	ppbV	99
6) vinyl chloride	4.677	62	2705	0.219	ppbV	94
7) 1,3-butadiene	4.867	54	1813M4	0.215	ppbV	
8) bromomethane	5.245	94	2233M4	0.215	ppbV	
9) chloroethane	5.496	64	1251M4	0.215	ppbV	
10) ethanol	5.719	31	13764M4	1.433	ppbV	
11) vinyl bromide	5.989	106	1938	0.207	ppbV	98
12) acrolein	6.175	56	1041	0.199	ppbV	92
13) acetone	6.371	43	19720	1.254	ppbV #	96
14) trichlorofluoromethane	6.566	101	5580	0.212	ppbV	99
15) isopropyl alcohol	6.734	45	17560	0.819	ppbV	100
16) acrylonitrile	6.985	53	1980	0.222	ppbV	97
17) 1,1-dichloroethene	7.395	61	4307M4	0.213	ppbV	
18) tertiary butyl alcohol	7.544	59	4977	0.211	ppbV #	73
19) methylene chloride	7.572	49	3835	0.237	ppbV	99
20) 3-chloropropene	7.721	41	3679	0.220	ppbV	94
21) carbon disulfide	7.897	76	7027	0.215	ppbV #	1
22) Freon 113	7.916	101	4349	0.212	ppbV	99
23) trans-1,2-dichloroethene	8.745	61	4029	0.216	ppbV	99
24) 1,1-dichloroethane	8.991	63	5015	0.215	ppbV	96

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157603.D
Acq On : 26 Feb 2018 11:36 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.2
Misc : WG1092763
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 27 12:45:24 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
25) MTBE	9.113	73	5762	0.209	ppbV #	92
26) vinyl acetate	9.211	43	5227	0.196	ppbV #	95
27) 2-butanone	9.522	43	5999	0.213	ppbV #	97
28) cis-1,2-dichloroethene	9.988	61	4348	0.215	ppbV	99
29) Ethyl Acetate	10.309	61	804	0.174	ppbV	76
30) chloroform	10.341	83	6024	0.211	ppbV	97
31) Tetrahydrofuran	10.855	42	3175M6	0.204	ppbV	
32) 1,2-dichloroethane	11.188	62	3740	0.213	ppbV	94
34) hexane	10.234	57	4719M4	0.214	ppbV	
36) 1,1,1-trichloroethane	11.477	97	4455	0.212	ppbV #	92
37) benzene	11.994	78	6880	0.215	ppbV	92
38) carbon tetrachloride	12.157	117	4228	0.211	ppbV	98
39) cyclohexane	12.297	56	3853	0.216	ppbV	94
40) dibromomethane	12.902	93	2832	0.202	ppbV	90
41) 1,2-dichloropropane	12.925	63	3116	0.217	ppbV	96
42) bromodichloromethane	13.146	83	5120M6	0.209	ppbV	
43) 1,4-dioxane	13.251	88	1206M4	0.195	ppbV	
44) trichloroethene	13.193	130	2443	0.212	ppbV	95
45) 2,2,4-trimethylpentane	13.216	57	12645	0.219	ppbV #	94
46) heptane	13.507	43	5258	0.216	ppbV #	98
47) cis-1,3-dichloropropene	14.170	75	14319	0.204	ppbV #	90
48) 4-methyl-2-pentanone	14.238	43	6306M4	0.211	ppbV	
49) trans-1,3-dichloropropene	14.767	75	3331	0.200	ppbV #	81
50) 1,1,2-trichloroethane	14.952	97	2609	0.212	ppbV	97
52) toluene	15.231	91	7557	0.204	ppbV	98
54) 2-hexanone	15.520	43	4851	0.161	ppbV #	95
55) dibromochloromethane	15.644	129	4070	0.195	ppbV	96
56) 1,2-dibromoethane	15.881	107	4060	0.199	ppbV	99
57) tetrachloroethene	16.283	166	2850	0.200	ppbV	93
58) 1,1,1,2-tetrachloroethane	16.842	131	2784	0.199	ppbV	97
59) chlorobenzene	16.862	112	5653M6	0.204	ppbV	
60) ethylbenzene	17.156	91	9692	0.203	ppbV	98
61) m+p-xylene	17.290	91	14914M4	0.404	ppbV	
62) bromoform	17.380	173	3532	0.186	ppbV	99
63) styrene	17.584	104	4818	0.195	ppbV	98
64) 1,1,2,2-tetrachloroethane	17.668	83	6742	0.201	ppbV	98
65) o-xylene	17.663	91	7810	0.201	ppbV	99
66) 1,2,3-trichloropropane	17.768	75	5240	0.207	ppbV	95
68) isopropylbenzene	18.106	105	9056	0.202	ppbV	97
69) bromobenzene	18.191	77	5897	0.205	ppbV	99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157603.D
Acq On : 26 Feb 2018 11:36 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.2
Misc : WG1092763
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 27 12:45:24 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

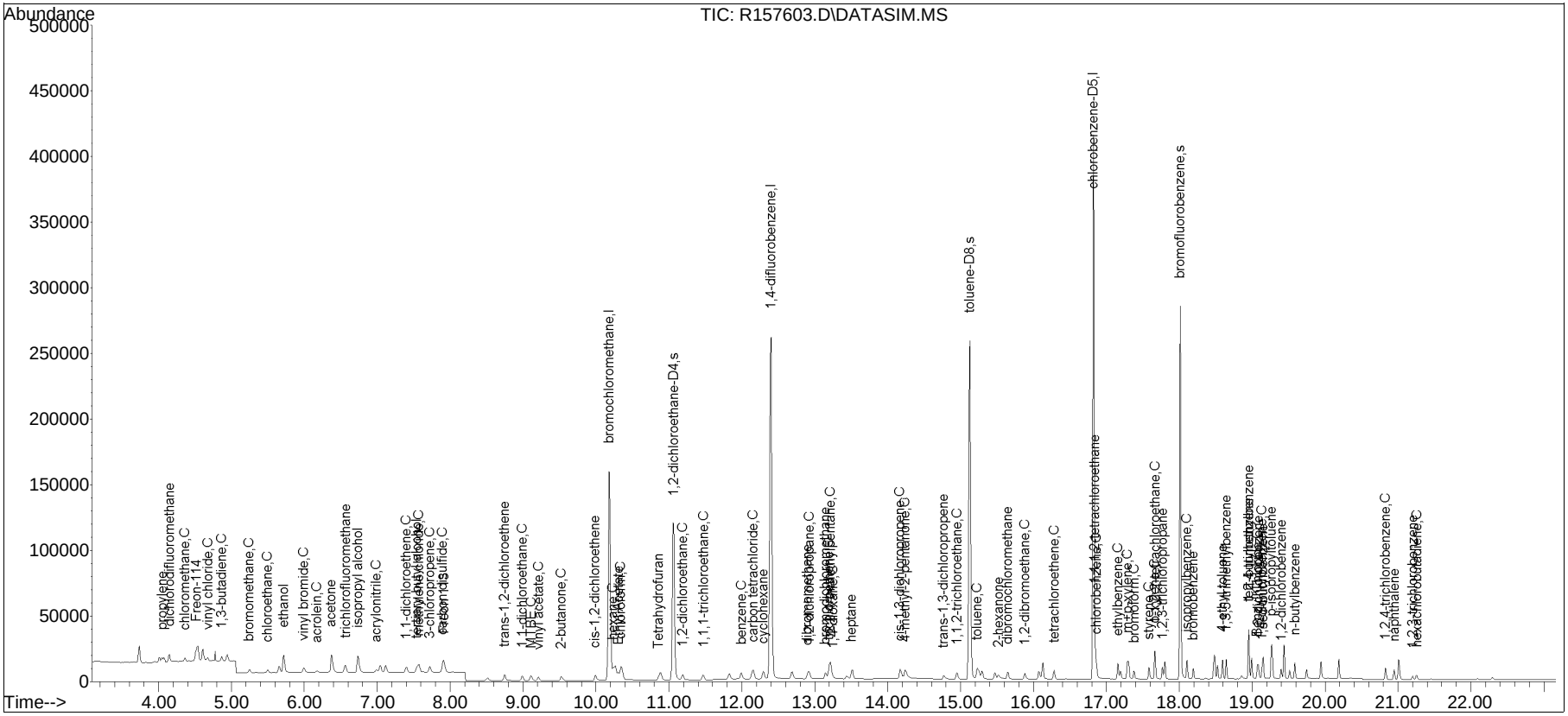
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.594	105	9154M6	0.199	ppbV	
71) 1,3,5-trimethylbenzene	18.644	105	7963M4	0.199	ppbV	
72) tert-butylbenzene	18.951	119	7603	0.201	ppbV	98
73) 1,2,4-trimethylbenzene	18.951	105	7685	0.197	ppbV	93
74) Benzyl Chloride	19.072	91	5666	0.157	ppbV	96
75) 1,3-dichlorobenzene	19.084	146	5051	0.195	ppbV #	86
76) 1,4-dichlorobenzene	19.132	146	5173M3	0.194	ppbV	
77) sec-butylbenzene	19.150	105	11223	0.201	ppbV	98
78) p-isopropyltoluene	19.265	119	8835	0.198	ppbV	99
79) 1,2-dichlorobenzene	19.398	146	4794	0.195	ppbV	98
80) n-butylbenzene	19.585	91	9562	0.197	ppbV	98
81) 1,2,4-trichlorobenzene	20.828	180	2779	0.156	ppbV #	82
82) naphthalene	20.948	128	9860	0.213	ppbV	98
83) 1,2,3-trichlorobenzene	21.200	180	2478	0.151	ppbV #	80
84) hexachlorobutadiene	21.260	225	2568	0.167	ppbV #	83

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0226SIM_ICAL\R157606.D

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157603.D
Acq On : 26 Feb 2018 11:36 pm
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.2
Misc : WG1092763
ALS Vial : 6 Sample Multiplier: 1

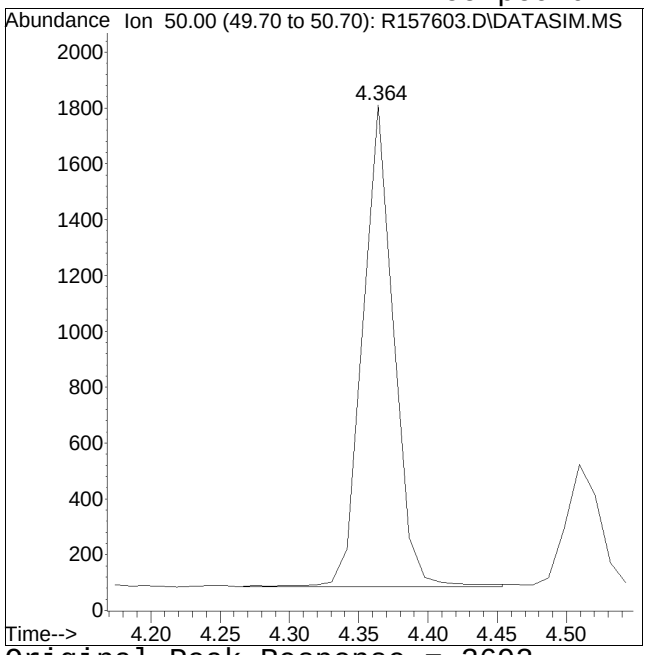
Quant Time: Feb 27 12:45:24 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration



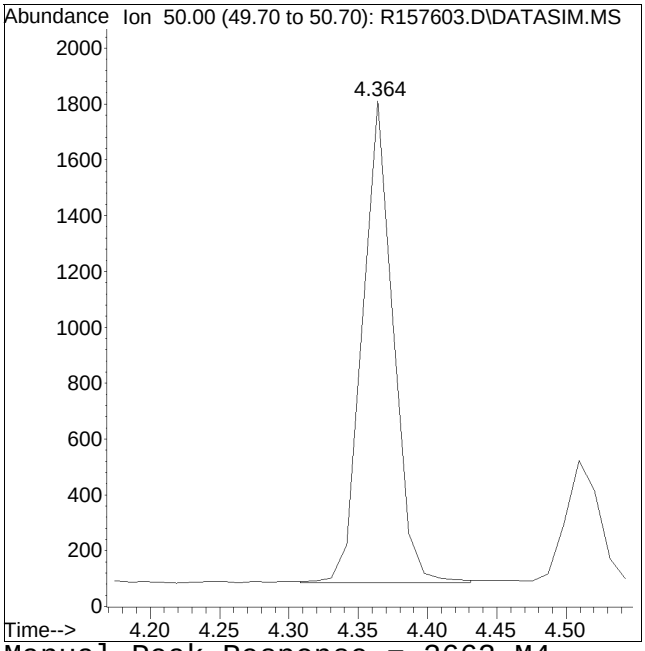
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2
Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #4: chloromethane



Original Peak Response = 2692



Manual Peak Response = 2662 M4

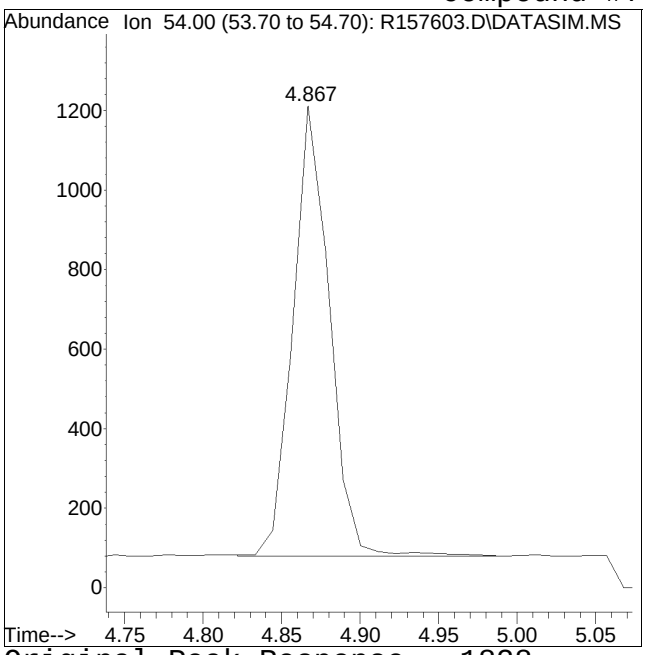
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

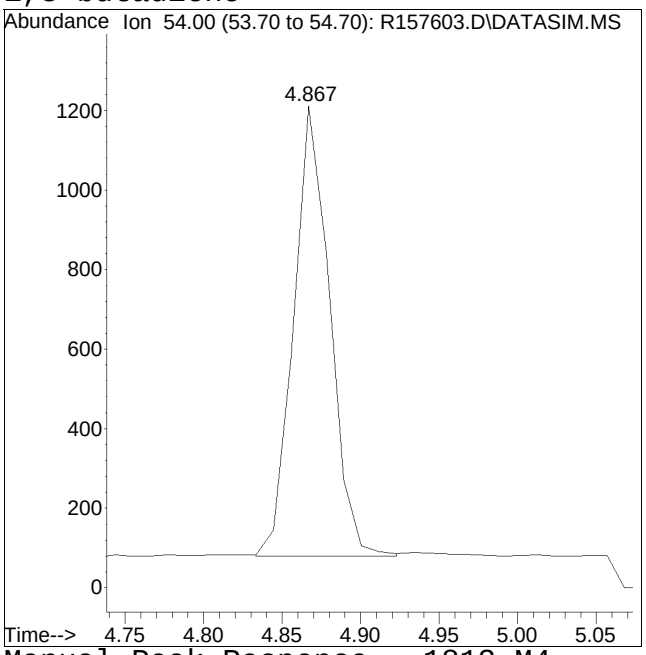
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #7: 1,3-butadiene



Original Peak Response = 1828



Manual Peak Response = 1813 M4

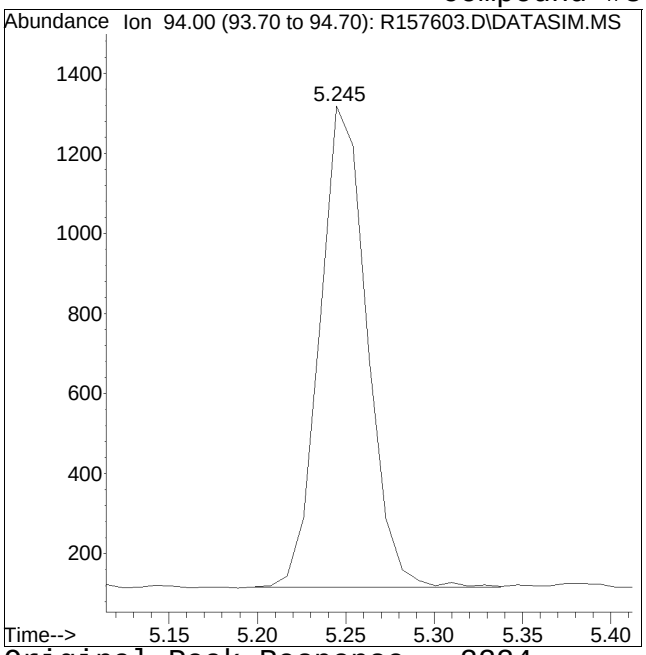
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

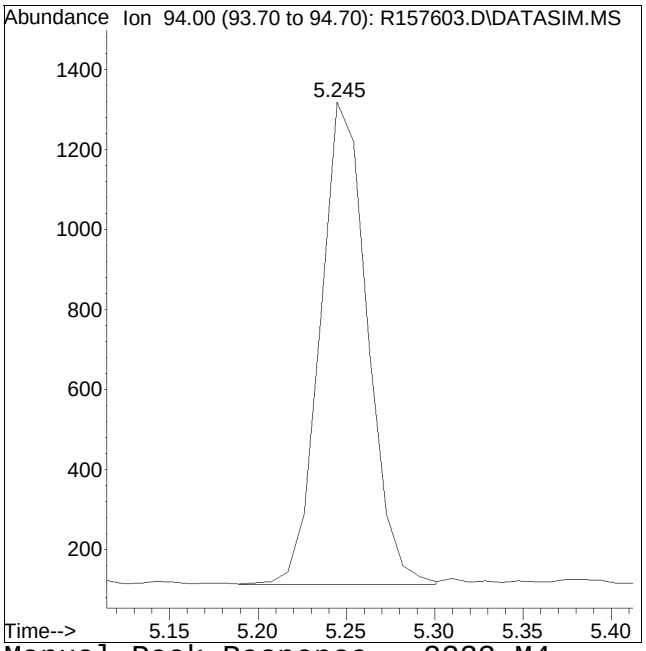
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #8: bromomethane



Original Peak Response = 2224



Manual Peak Response = 2233 M4

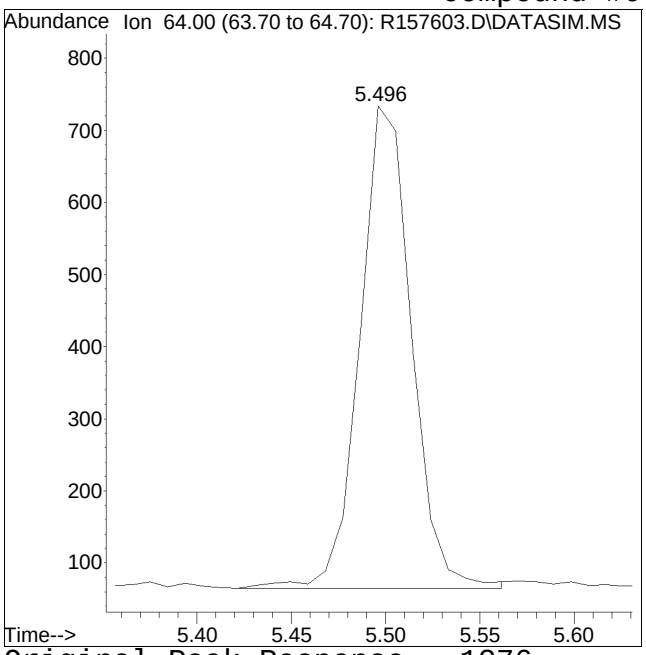
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

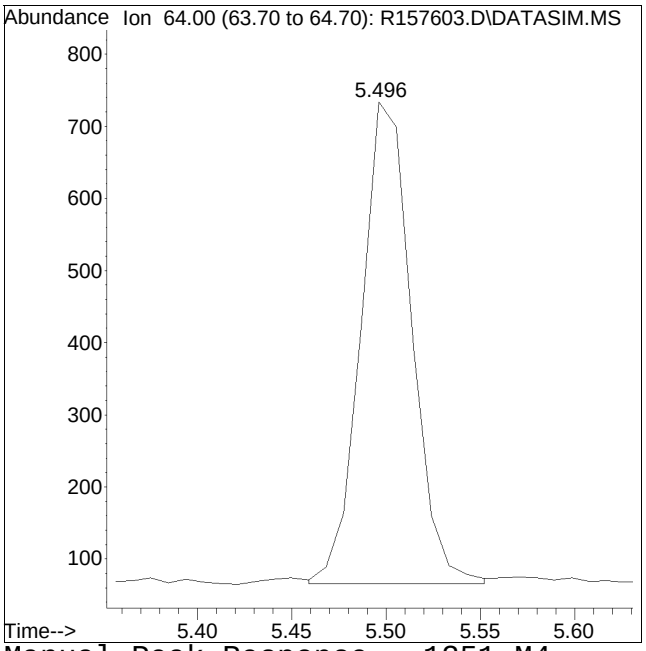
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #9: chloroethane



Original Peak Response = 1276



Manual Peak Response = 1251 M4

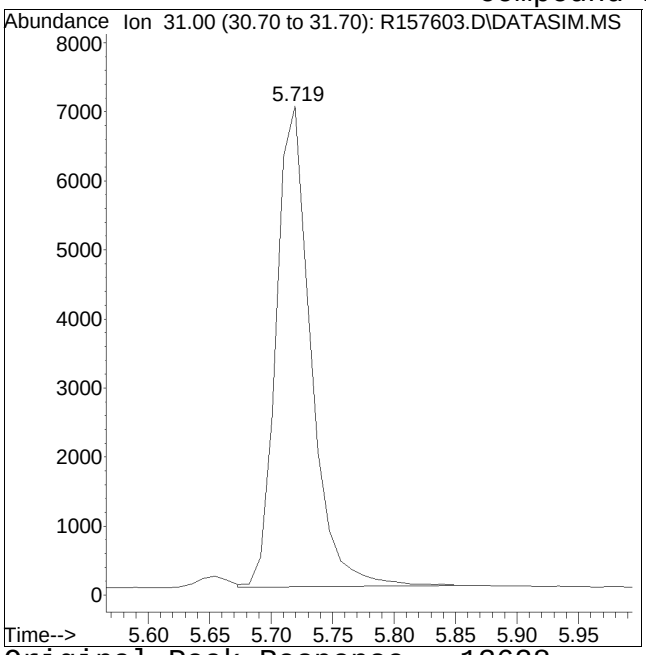
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

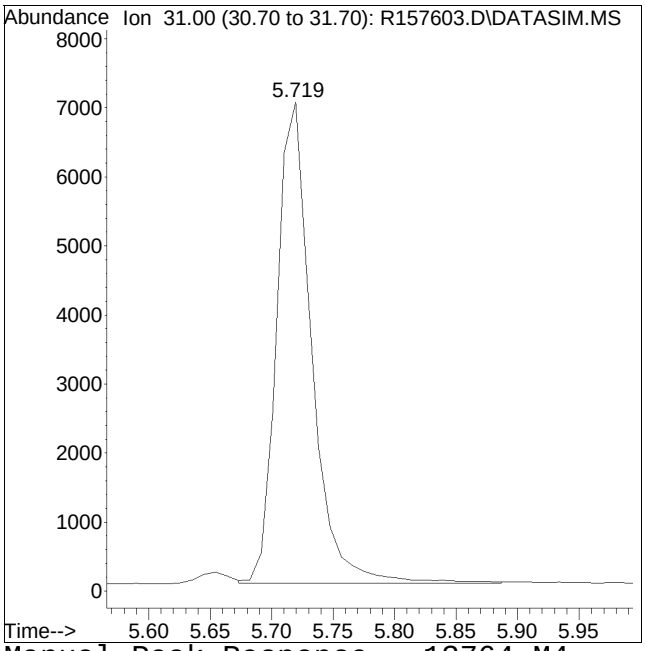
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #10: ethanol



Original Peak Response = 13628



Manual Peak Response = 13764 M4

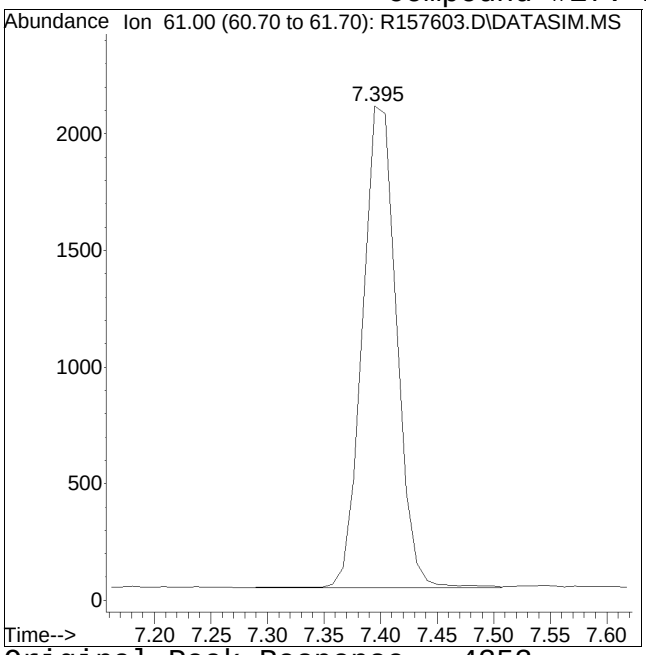
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

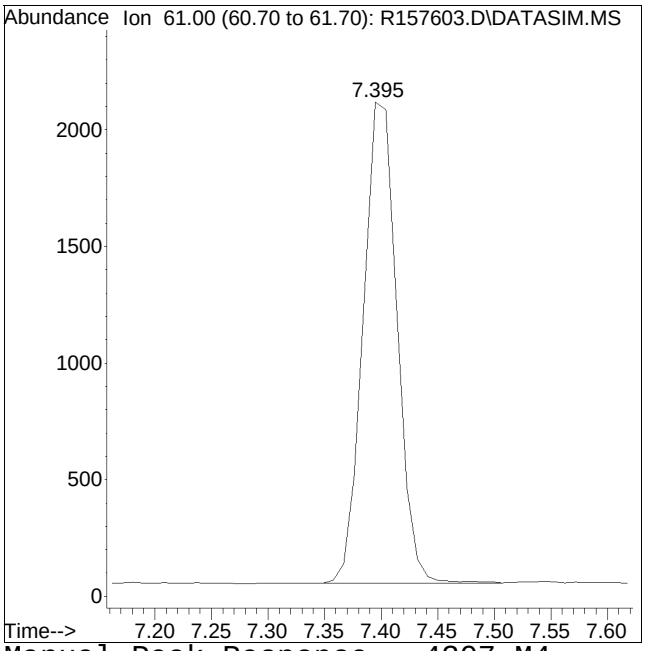
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #17: 1,1-dichloroethene



Original Peak Response = 4353



Manual Peak Response = 4307 M4

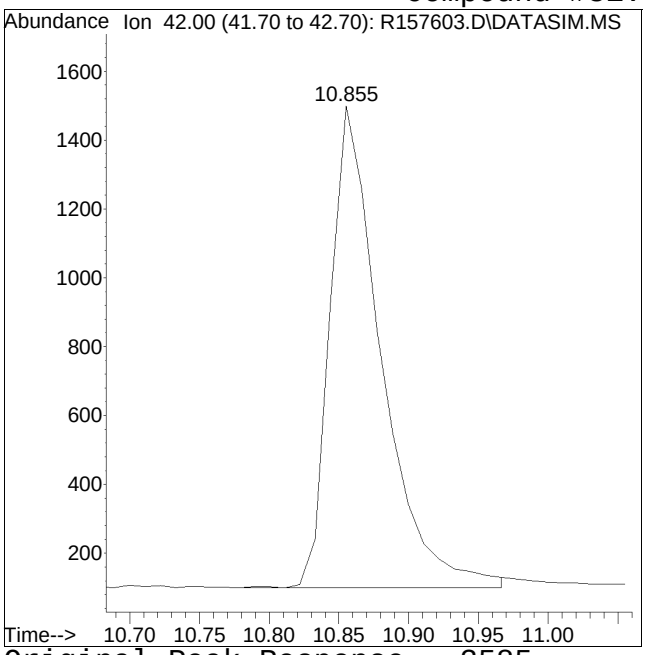
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

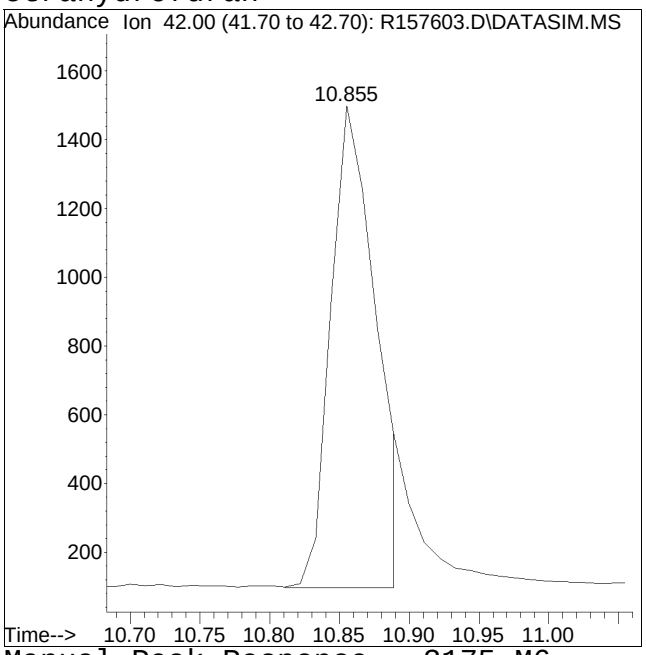
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #31: Tetrahydrofuran



Original Peak Response = 3585



Manual Peak Response = 3175 M6

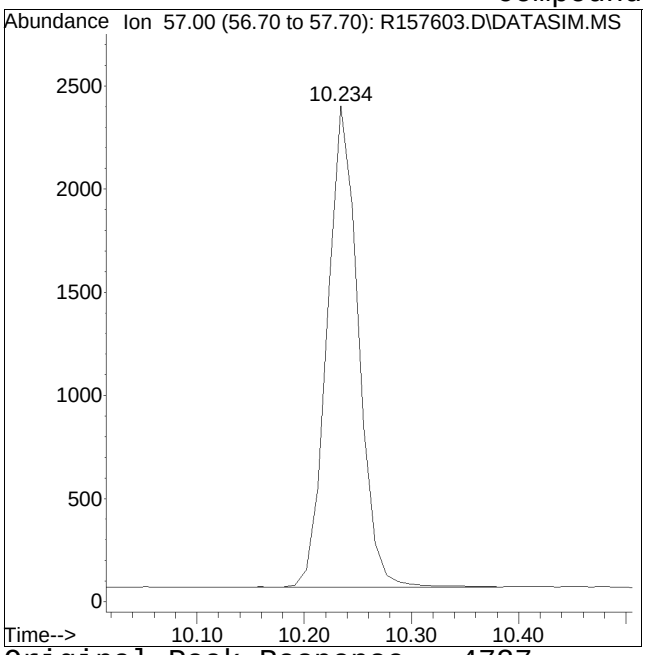
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

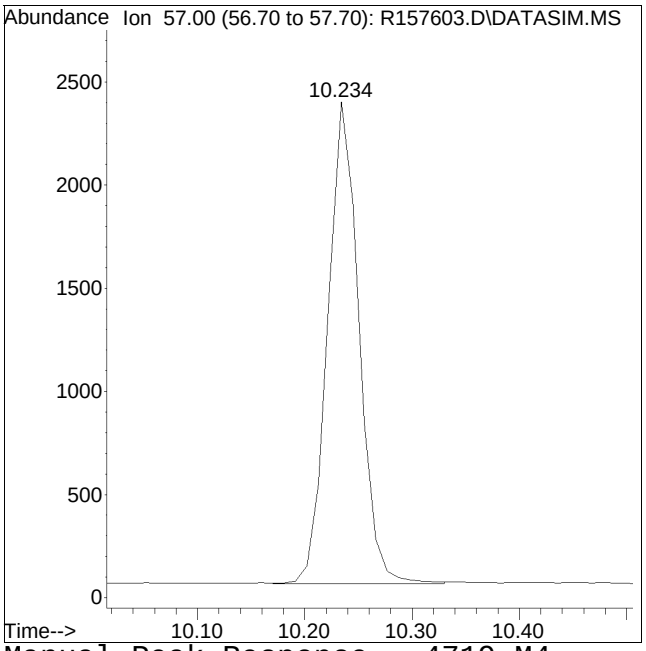
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #34: hexane



Original Peak Response = 4727



Manual Peak Response = 4719 M4

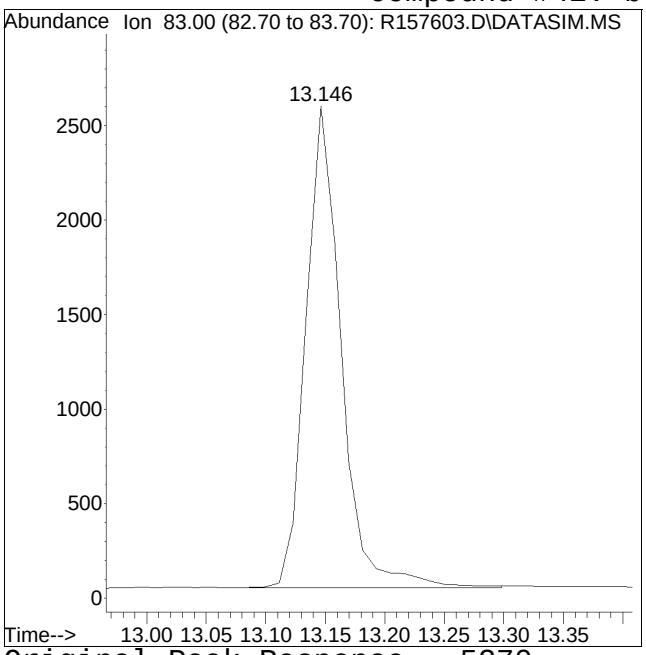
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

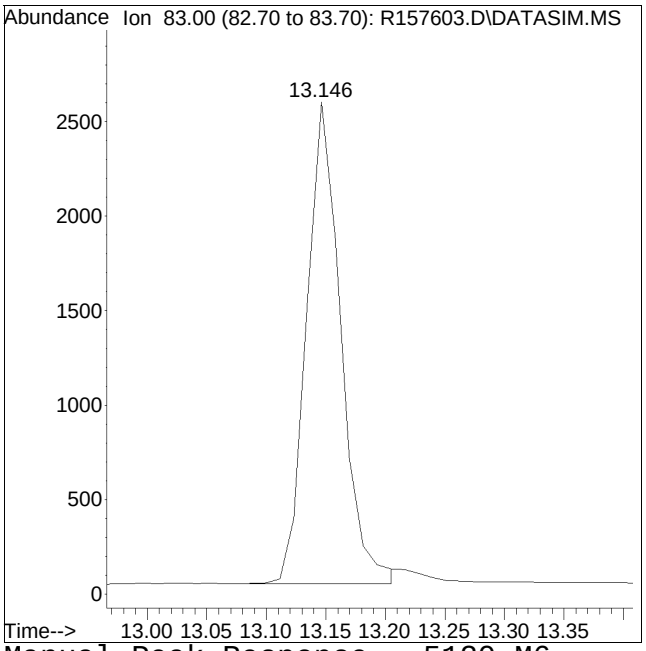
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #42: bromodichloromethane



Original Peak Response = 5270



Manual Peak Response = 5120 M6

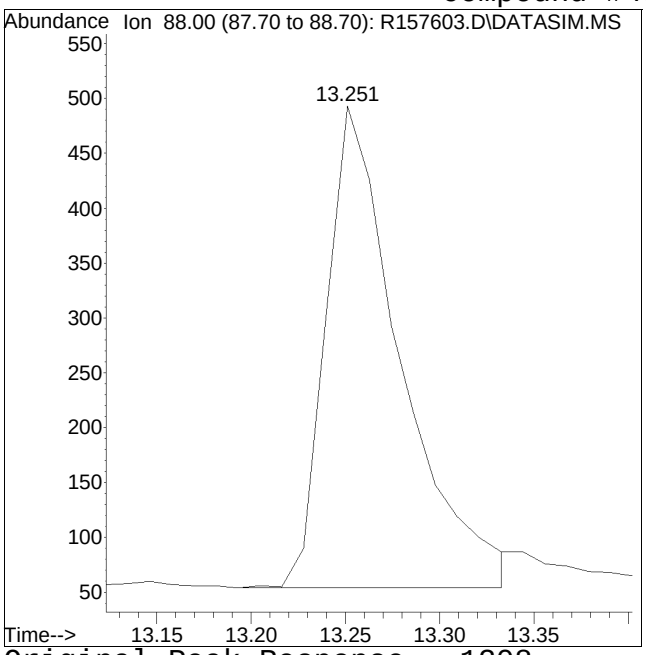
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

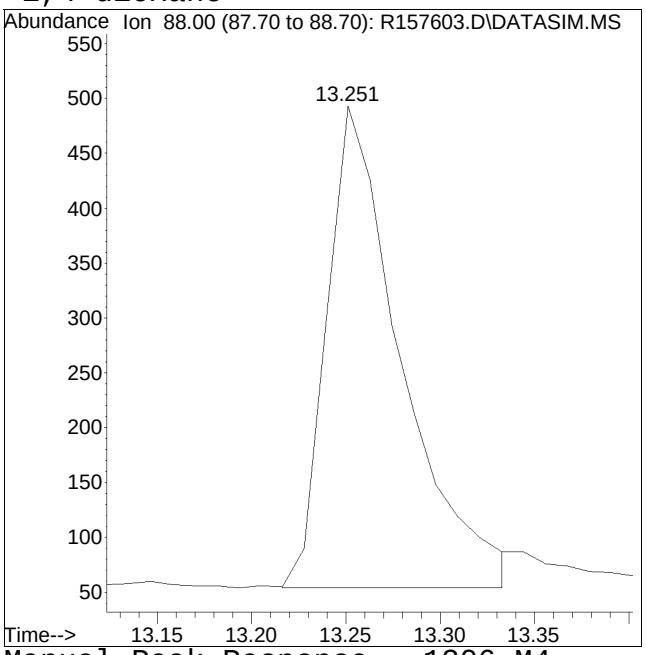
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #43: 1,4-dioxane



Original Peak Response = 1208



Manual Peak Response = 1206 M4

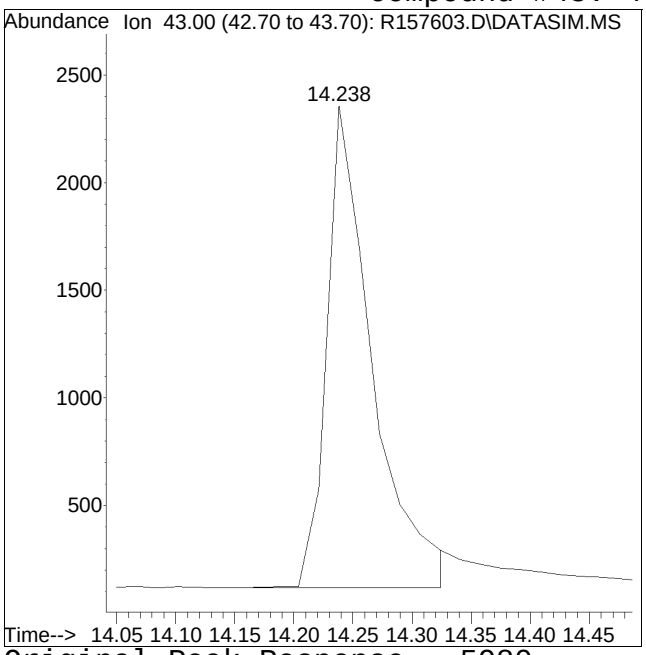
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

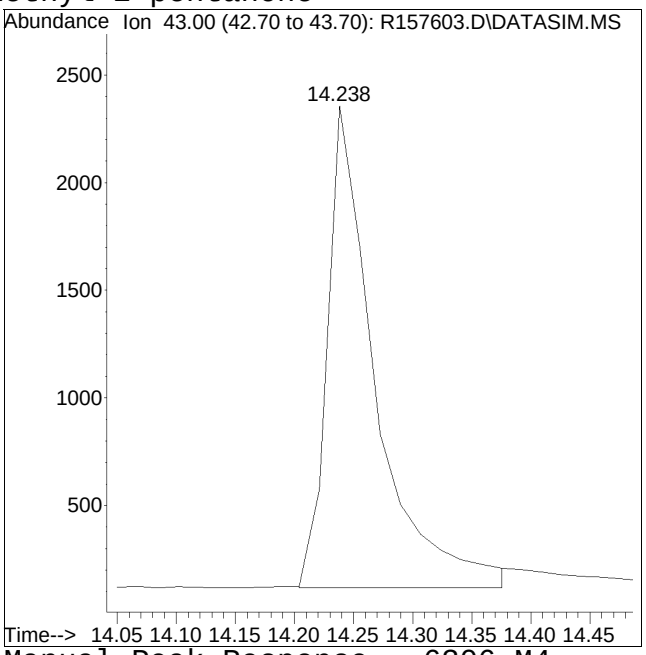
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #48: 4-methyl-2-pentanone



Original Peak Response = 5980



Manual Peak Response = 6306 M4

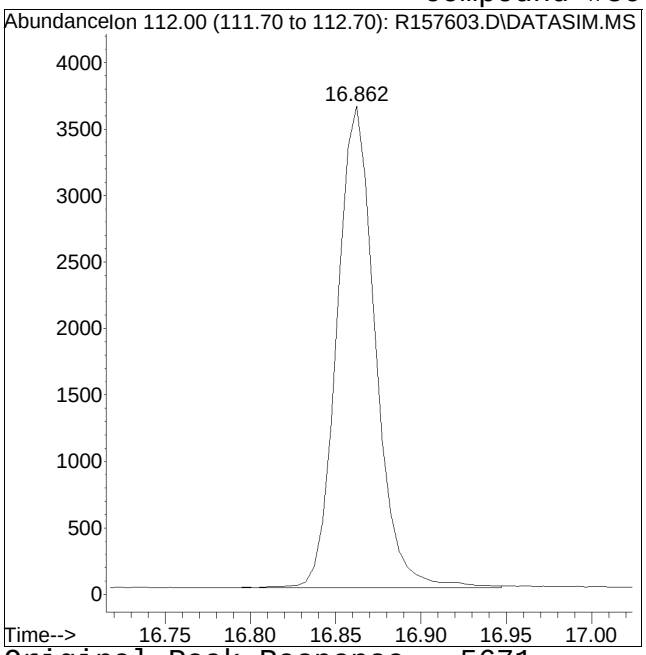
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

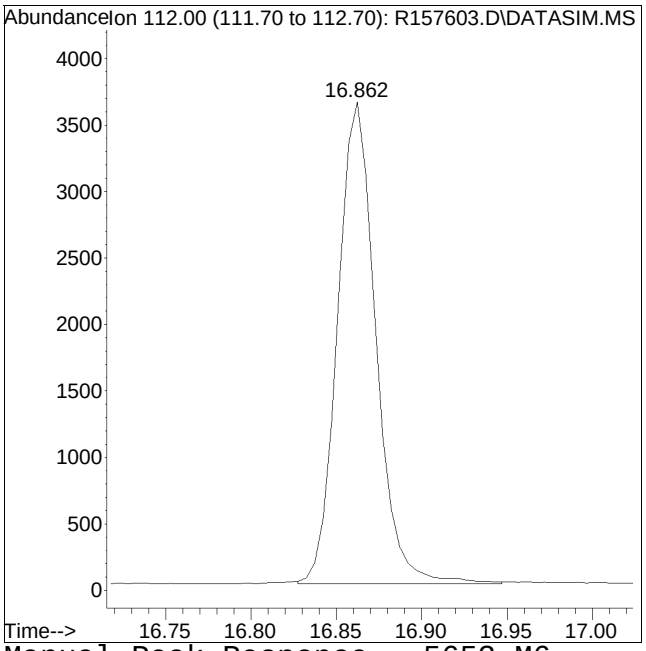
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #59: chlorobenzene



Original Peak Response = 5671



Manual Peak Response = 5653 M6

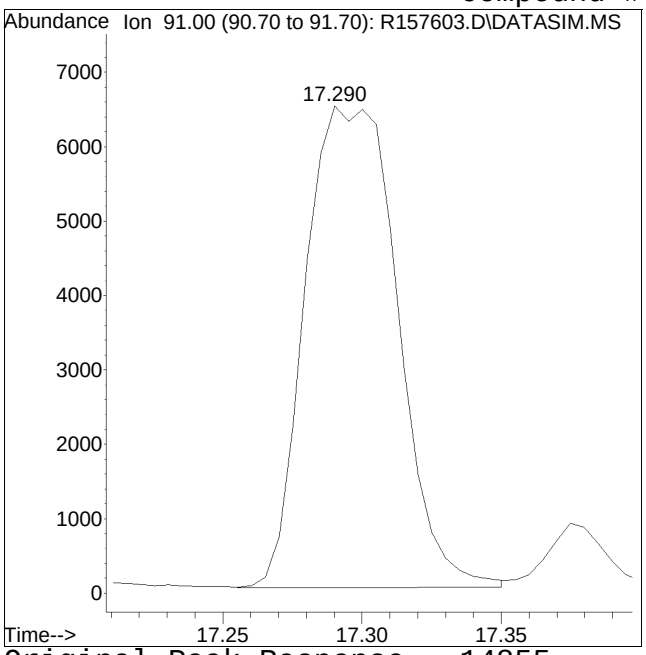
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

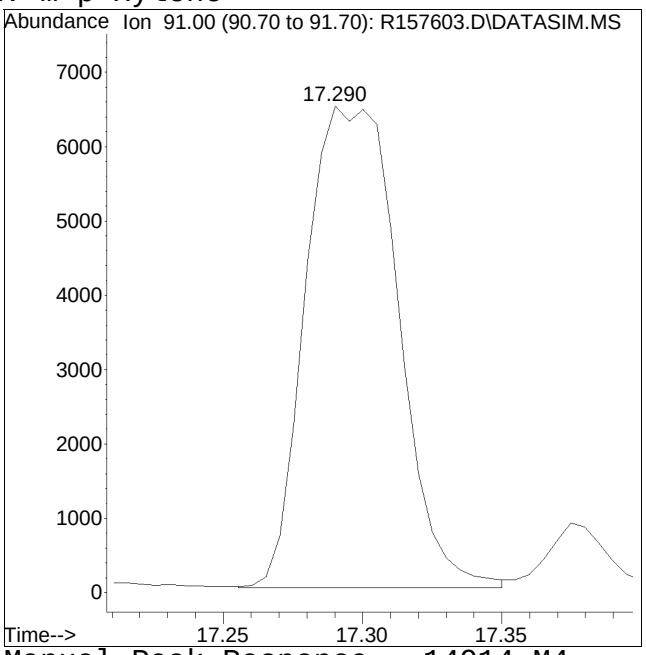
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #61: m+p-xylene



Original Peak Response = 14855



Manual Peak Response = 14914 M4

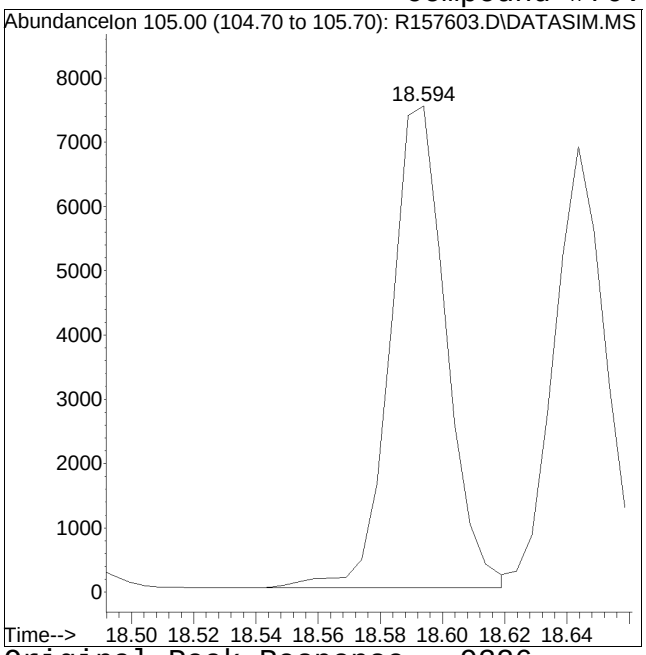
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

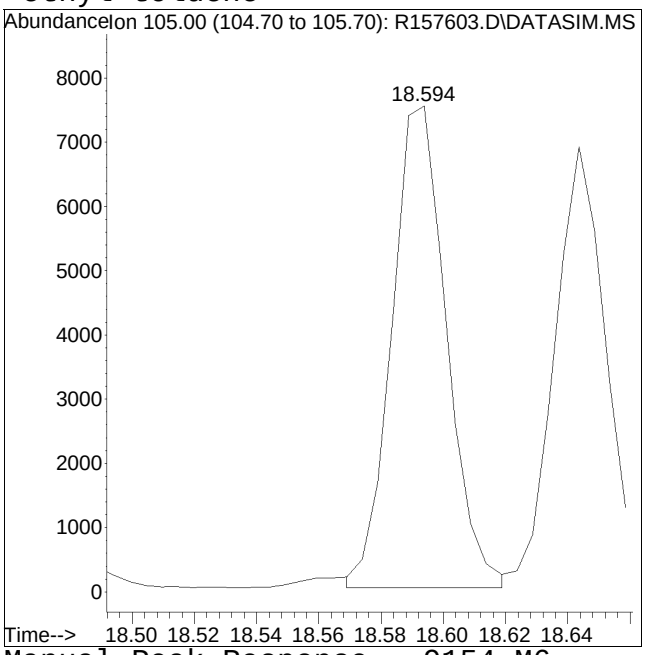
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #70: 4-ethyl toluene



Original Peak Response = 9326



Manual Peak Response = 9154 M6

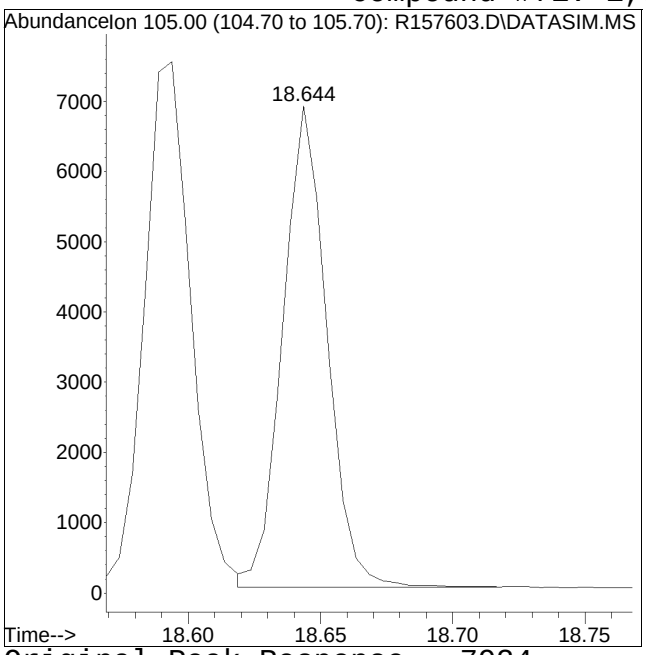
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

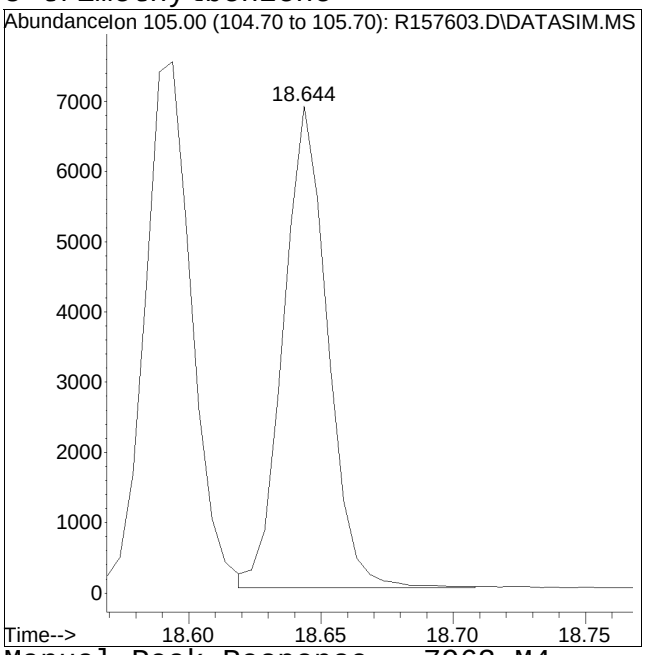
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #71: 1,3,5-trimethylbenzene



Original Peak Response = 7924



Manual Peak Response = 7963 M4

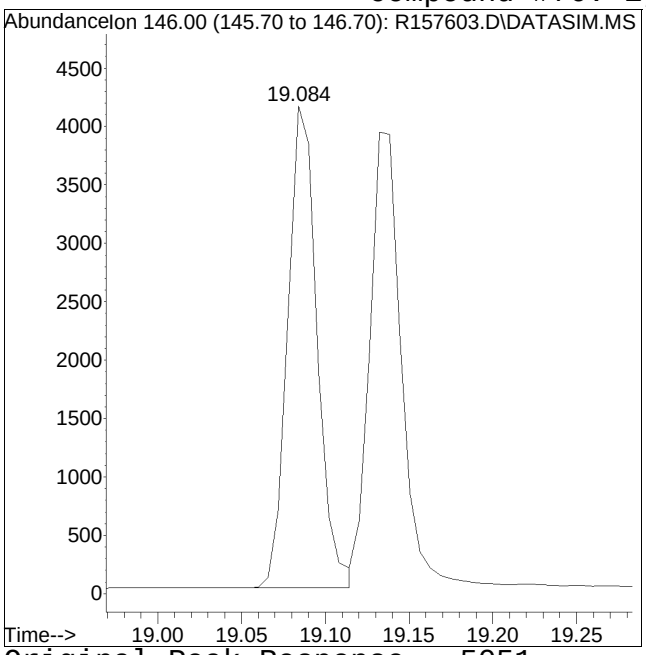
M4 = Poor automated baseline construction.

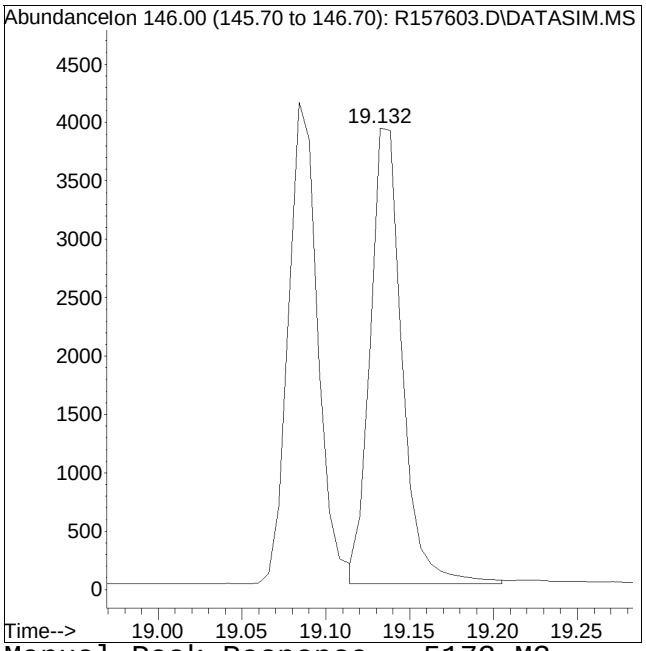
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157603.D
Date Inj'd : 2/26/2018 11:36 pm
Sample : ITO15-SIMSTD0.2

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #76: 1,4-dichlorobenzene





Original Peak Response = 5051 Manual Peak Response = 5173 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157604.D
Acq On : 27 Feb 2018 12:07 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.5
Misc : WG1092763
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 27 12:45:29 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.181	49	217975	10.000	ppbV	0.00
Standard Area = 218948			Recovery = 99.56%			
33) 1,4-difluorobenzene	12.401	114	291237	10.000	ppbV	0.00
Standard Area = 315293			Recovery = 92.37%			
51) chlorobenzene-D5	16.822	54	84088	10.000	ppbV	0.00
Standard Area = 85423			Recovery = 98.44%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.066	65	115290	10.207	ppbV	0.01
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.07%			
53) toluene-D8	15.128	98	255846	9.539	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 95.39%			
67) bromofluorobenzene	18.012	95	142708	9.456	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.56%			
Target Compounds						Qvalue
2) propylene	4.051	41	6336	0.555	ppbV	99
3) dichlorodifluoromethane	4.152	85	13395	0.548	ppbV	99
4) chloromethane	4.364	50	6626	0.526	ppbV	98
5) Freon-114	4.520	85	16895	0.540	ppbV	100
6) vinyl chloride	4.677	62	6891	0.534	ppbV	98
7) 1,3-butadiene	4.867	54	4616M6	0.523	ppbV	
8) bromomethane	5.254	94	5783	0.532	ppbV	99
9) chloroethane	5.505	64	3155M4	0.519	ppbV	
10) ethanol	5.710	31	27444M4	2.732	ppbV	
11) vinyl bromide	5.989	106	5199	0.532	ppbV	100
12) acrolein	6.175	56	2586	0.473	ppbV	96
13) acetone	6.362	43	44629	2.713	ppbV #	95
14) trichlorofluoromethane	6.566	101	14526	0.529	ppbV	100
15) isopropyl alcohol	6.725	45	32790	1.462	ppbV	100
16) acrylonitrile	6.985	53	5030	0.539	ppbV	98
17) 1,1-dichloroethene	7.404	61	11225	0.531	ppbV	99
18) tertiary butyl alcohol	7.534	59	12532	0.509	ppbV #	91
19) methylene chloride	7.572	49	9010	0.533	ppbV	98
20) 3-chloropropene	7.720	41	8946	0.512	ppbV	97
21) carbon disulfide	7.897	76	17945	0.524	ppbV #	30
22) Freon 113	7.916	101	11515M4	0.536	ppbV	
23) trans-1,2-dichloroethene	8.745	61	10193	0.522	ppbV	99
24) 1,1-dichloroethane	8.991	63	12788	0.524	ppbV	99

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157604.D
Acq On : 27 Feb 2018 12:07 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.5
Misc : WG1092763
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 27 12:45:29 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	9.105	73	15185	0.526	ppbV		98
26) vinyl acetate	9.203	43	13674	0.491	ppbV		98
27) 2-butanone	9.514	43	14920	0.507	ppbV		99
28) cis-1,2-dichloroethene	9.988	61	11165	0.527	ppbV		98
29) Ethyl Acetate	10.298	61	2415M6	0.499	ppbV		
30) chloroform	10.341	83	15507	0.519	ppbV		98
31) Tetrahydrofuran	10.844	42	7430M6	0.457	ppbV		
32) 1,2-dichloroethane	11.188	62	9409	0.512	ppbV		97
34) hexane	10.234	57	11971M4	0.522	ppbV		
36) 1,1,1-trichloroethane	11.477	97	11424	0.523	ppbV		91
37) benzene	11.994	78	16991	0.512	ppbV		95
38) carbon tetrachloride	12.157	117	10420	0.502	ppbV		99
39) cyclohexane	12.297	56	9670	0.521	ppbV		96
40) dibromomethane	12.902	93	6739	0.462	ppbV		91
41) 1,2-dichloropropane	12.925	63	7581	0.507	ppbV		100
42) bromodichloromethane	13.146	83	12856M6	0.505	ppbV		
43) 1,4-dioxane	13.239	88	3257M4	0.507	ppbV		
44) trichloroethene	13.193	130	5954	0.498	ppbV		97
45) 2,2,4-trimethylpentane	13.216	57	31327	0.522	ppbV		96
46) heptane	13.507	43	13144	0.519	ppbV		98
47) cis-1,3-dichloropropene	14.170	75	36474	0.501	ppbV	#	94
48) 4-methyl-2-pentanone	14.221	43	16152	0.520	ppbV	#	97
49) trans-1,3-dichloropropene	14.766	75	8679	0.501	ppbV		94
50) 1,1,2-trichloroethane	14.952	97	6504	0.509	ppbV		98
52) toluene	15.231	91	18383	0.490	ppbV		99
54) 2-hexanone	15.499	43	14651M4	0.479	ppbV		
55) dibromochloromethane	15.643	129	10149	0.478	ppbV		98
56) 1,2-dibromoethane	15.881	107	10081	0.487	ppbV		99
57) tetrachloroethene	16.283	166	6885	0.476	ppbV		96
58) 1,1,1,2-tetrachloroethane	16.842	131	6742	0.475	ppbV		95
59) chlorobenzene	16.862	112	13717	0.489	ppbV		100
60) ethylbenzene	17.156	91	23110	0.478	ppbV		99
61) m+p-xylene	17.300	91	36207M4	0.966	ppbV		
62) bromoform	17.380	173	8693	0.450	ppbV		98
63) styrene	17.584	104	12021	0.479	ppbV		99
64) 1,1,2,2-tetrachloroethane	17.663	83	16382	0.482	ppbV		99
65) o-xylene	17.663	91	18736	0.476	ppbV		99
66) 1,2,3-trichloropropane	17.768	75	12753	0.495	ppbV		97
68) isopropylbenzene	18.106	105	22137	0.487	ppbV		100
69) bromobenzene	18.191	77	14135	0.484	ppbV		99

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157604.D
Acq On : 27 Feb 2018 12:07 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.5
Misc : WG1092763
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 27 12:45:29 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

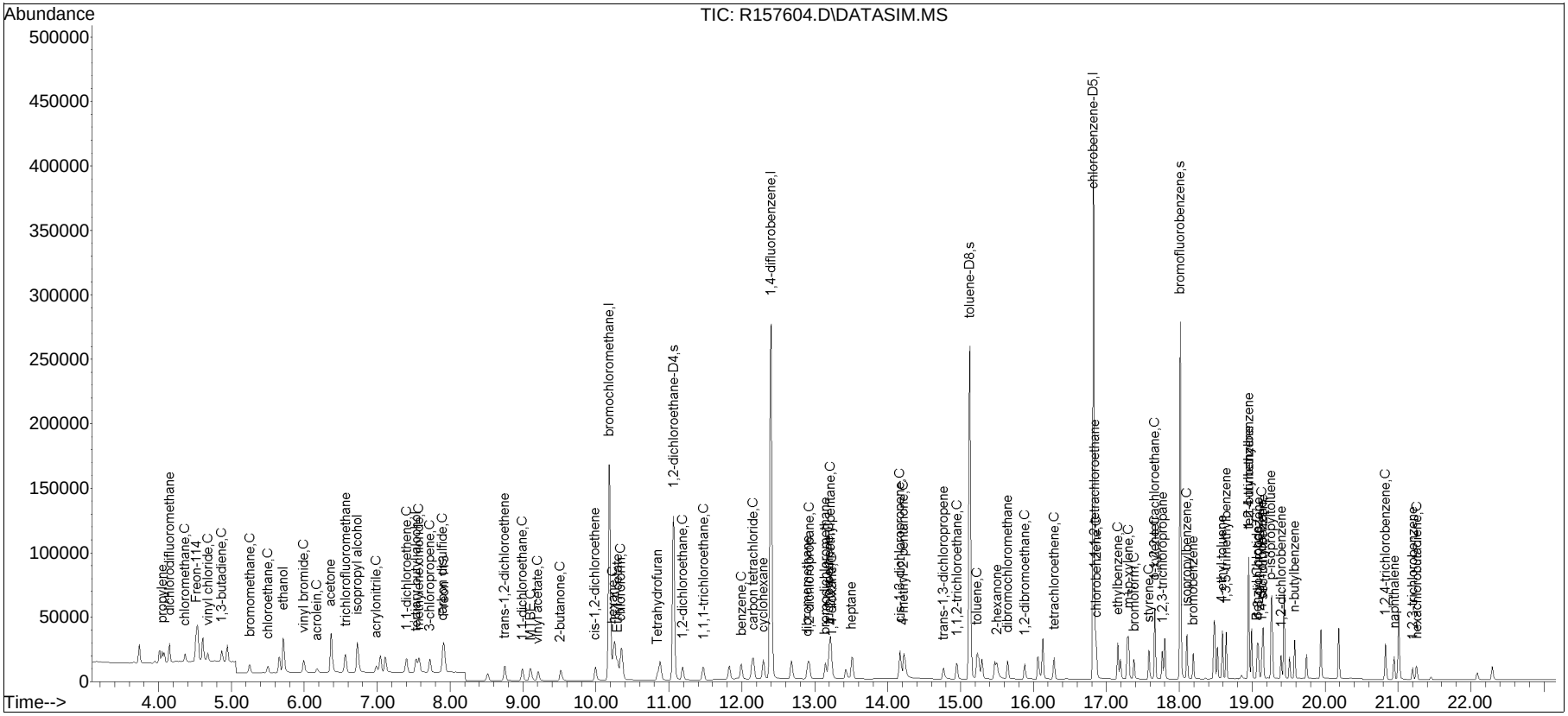
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.589	105	22955M6	0.491	ppbV	
71) 1,3,5-trimethylbenzene	18.644	105	19594M4	0.484	ppbV	
72) tert-butylbenzene	18.951	119	18640	0.485	ppbV	99
73) 1,2,4-trimethylbenzene	18.951	105	19122	0.483	ppbV	97
74) Benzyl Chloride	19.066	91	14687	0.401	ppbV	96
75) 1,3-dichlorobenzene	19.084	146	12502	0.476	ppbV	91
76) 1,4-dichlorobenzene	19.132	146	13089M4	0.484	ppbV	
77) sec-butylbenzene	19.150	105	27905	0.492	ppbV	97
78) p-isopropyltoluene	19.259	119	21944	0.484	ppbV	98
79) 1,2-dichlorobenzene	19.398	146	12060	0.484	ppbV	95
80) n-butylbenzene	19.579	91	25135	0.510	ppbV	96
81) 1,2,4-trichlorobenzene	20.828	180	8594	0.474	ppbV #	90
82) naphthalene	20.948	128	22647	0.483	ppbV	96
83) 1,2,3-trichlorobenzene	21.200	180	7926	0.474	ppbV #	88
84) hexachlorobutadiene	21.260	225	7569M4	0.484	ppbV	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0226SIM_ICAL\R157606.D

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157604.D
Acq On : 27 Feb 2018 12:07 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD0.5
Misc : WG1092763
ALS Vial : 6 Sample Multiplier: 1

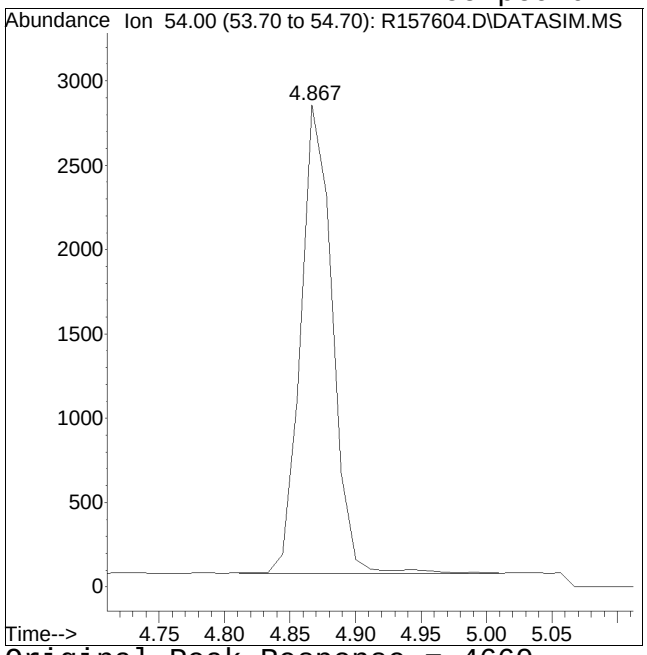
Quant Time: Feb 27 12:45:29 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration



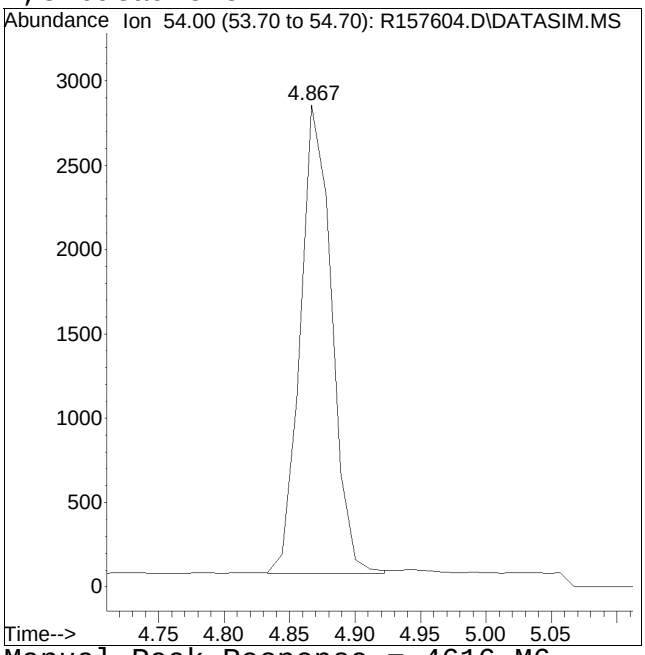
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5
Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #7: 1,3-butadiene



Original Peak Response = 4660



Manual Peak Response = 4616 M6

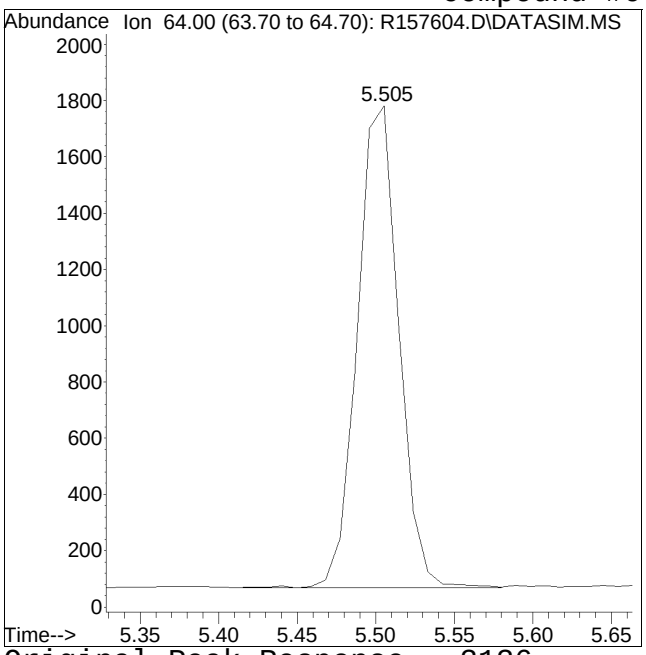
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

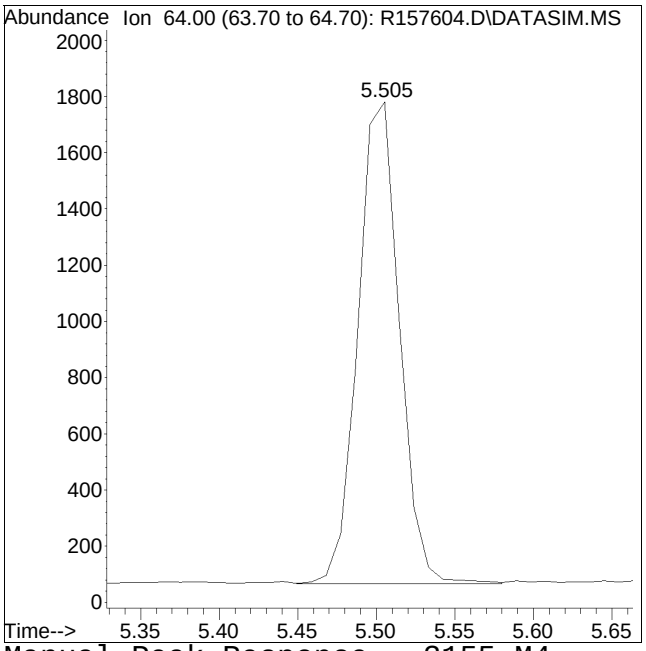
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #9: chloroethane



Original Peak Response = 3136



Manual Peak Response = 3155 M4

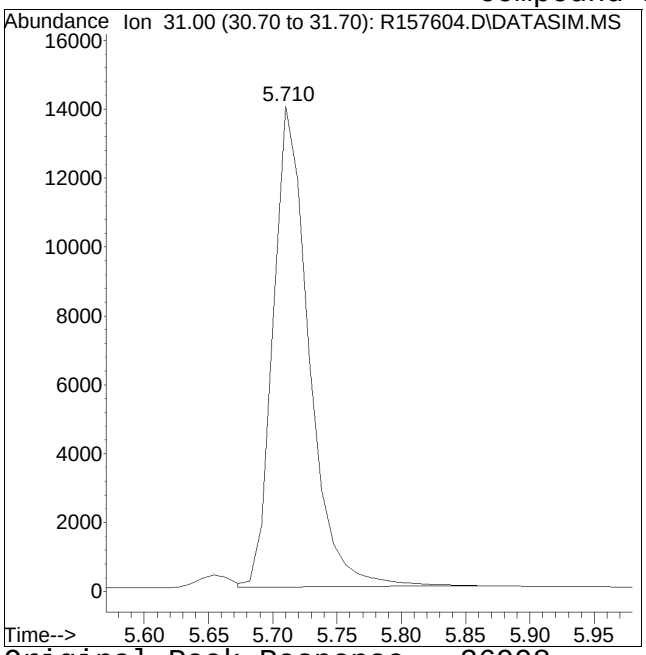
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

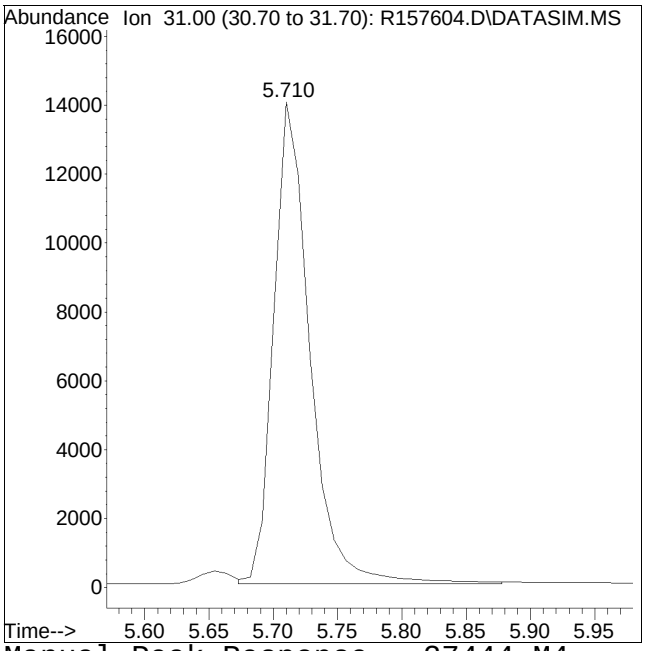
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #10: ethanol



Original Peak Response = 26998



Manual Peak Response = 27444 M4

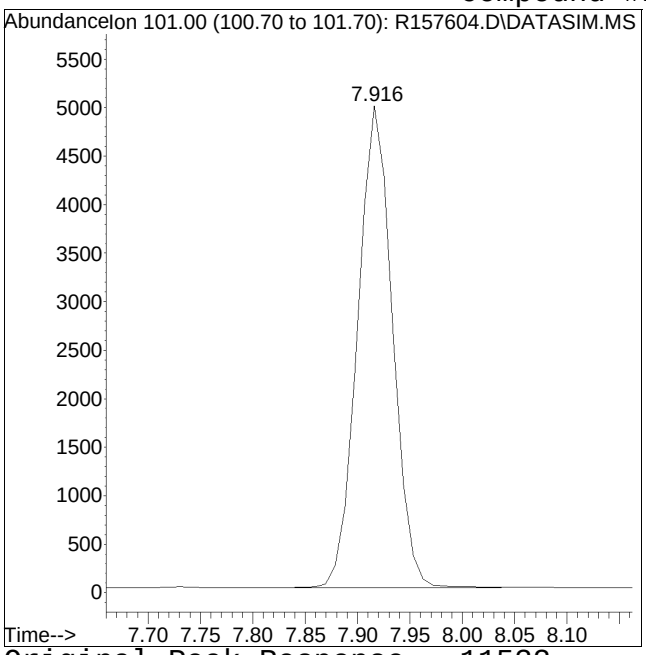
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

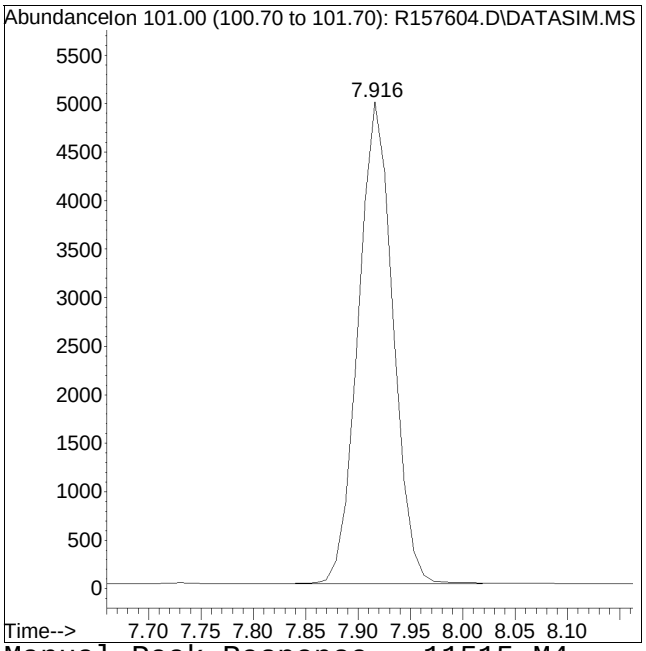
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #22: Freon 113



Original Peak Response = 11532



Manual Peak Response = 11515 M4

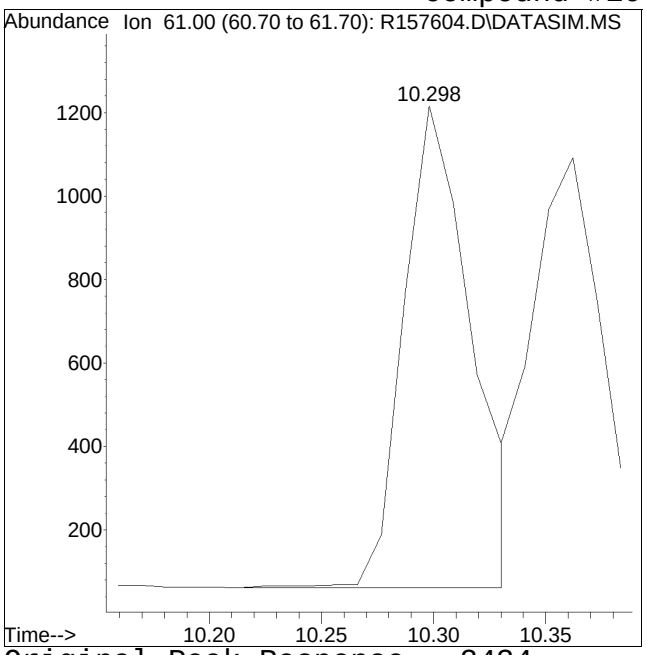
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

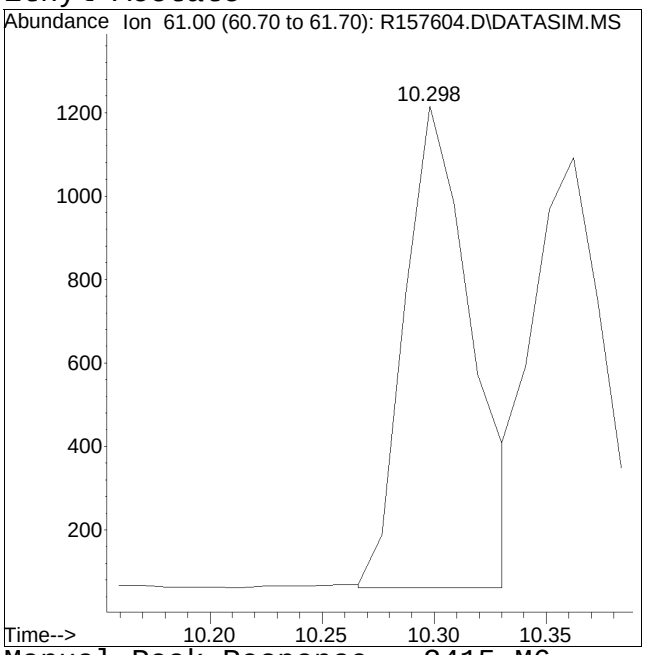
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #29: Ethyl Acetate



Original Peak Response = 2434



Manual Peak Response = 2415 M6

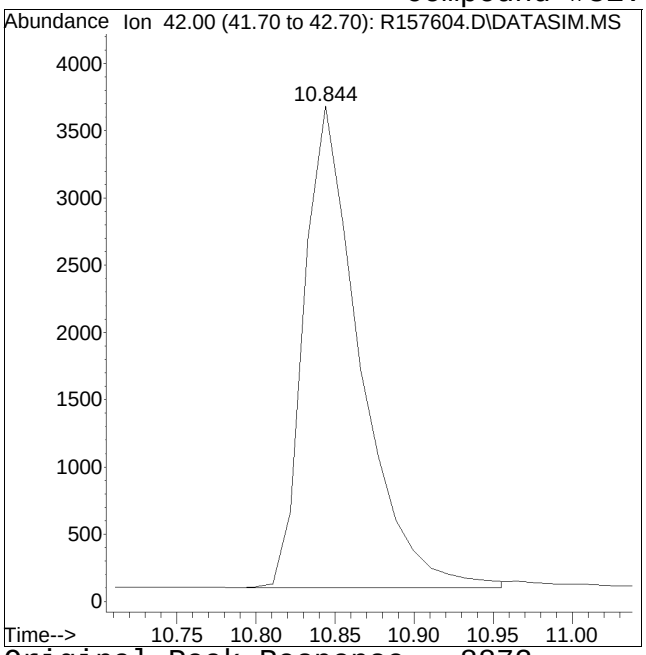
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

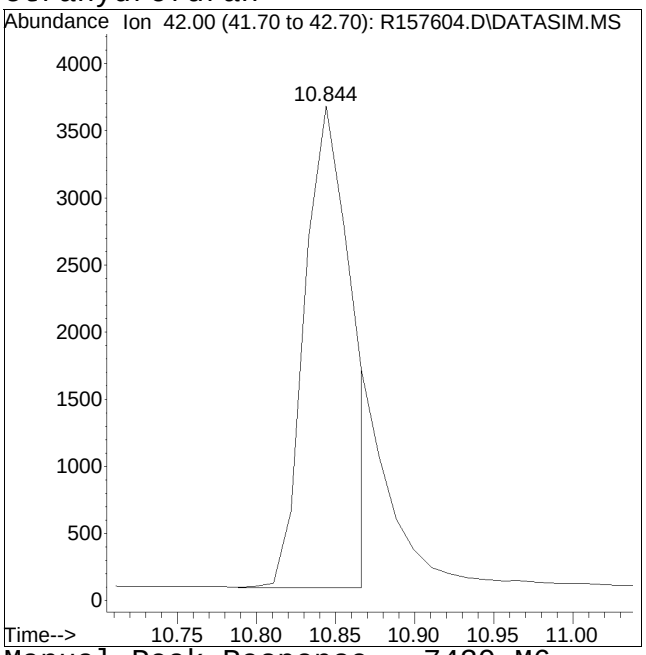
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #31: Tetrahydrofuran



Original Peak Response = 8872



Manual Peak Response = 7430 M6

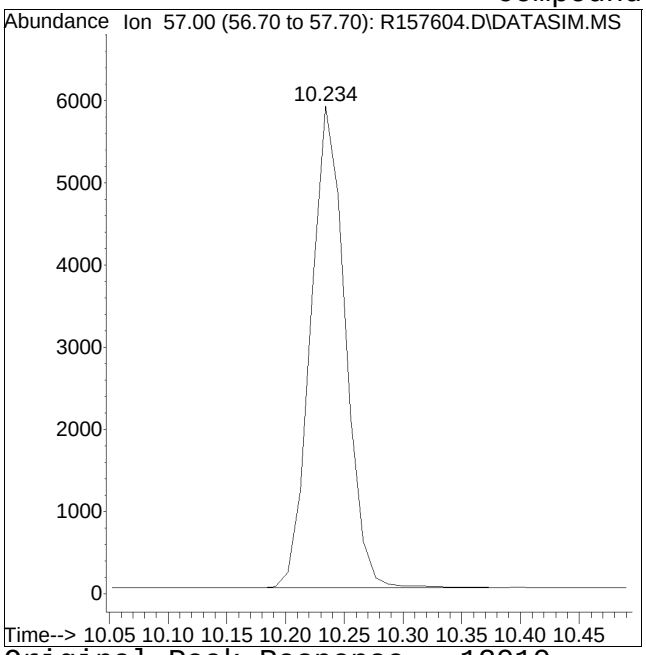
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

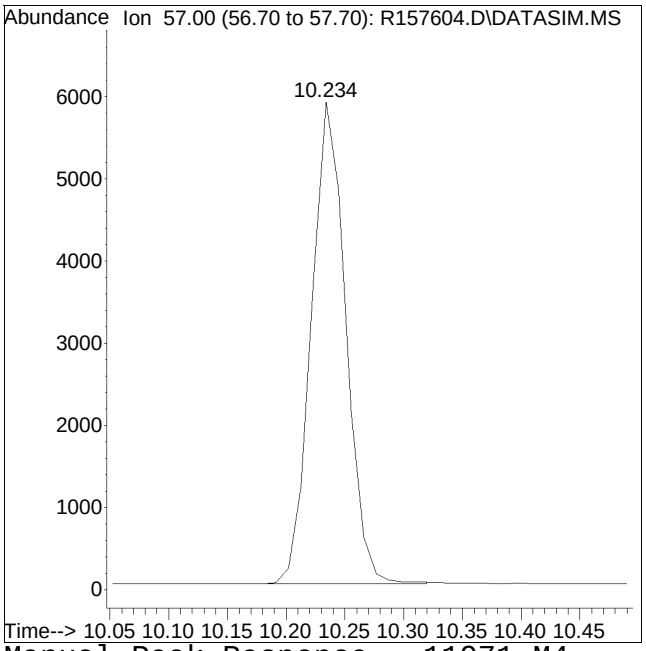
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #34: hexane



Original Peak Response = 12010



Manual Peak Response = 11971 M4

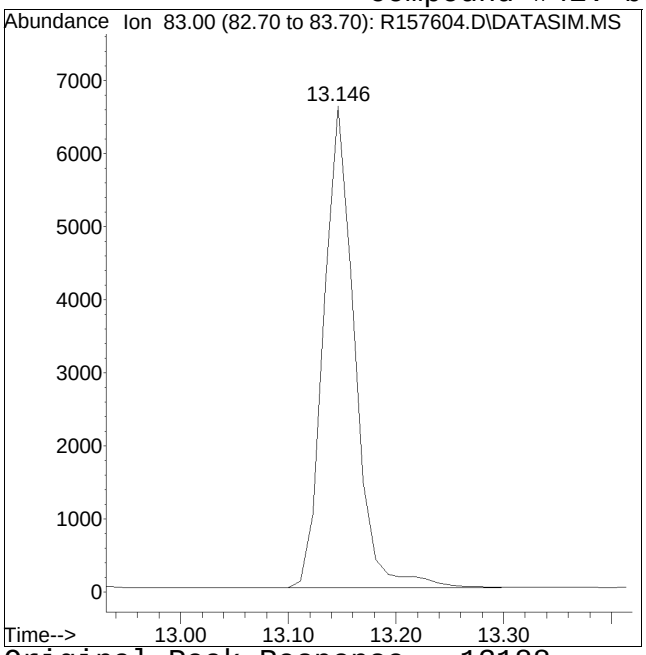
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

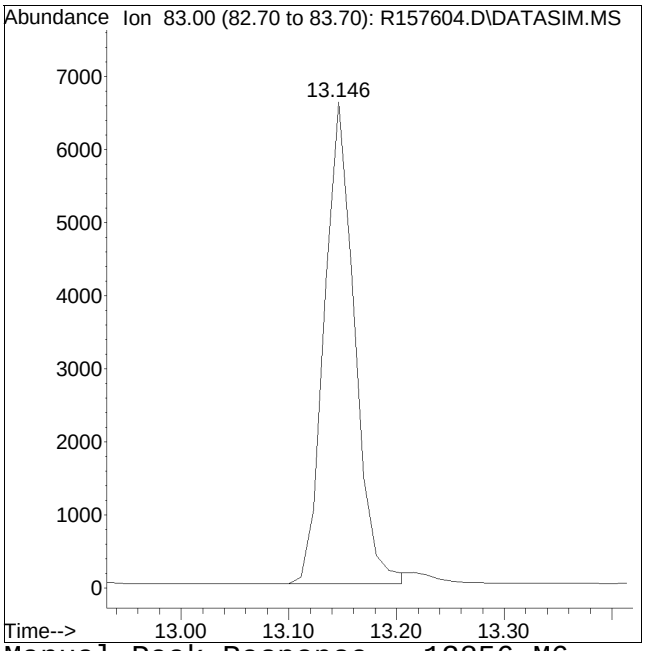
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #42: bromodichloromethane



Original Peak Response = 13188



Manual Peak Response = 12856 M6

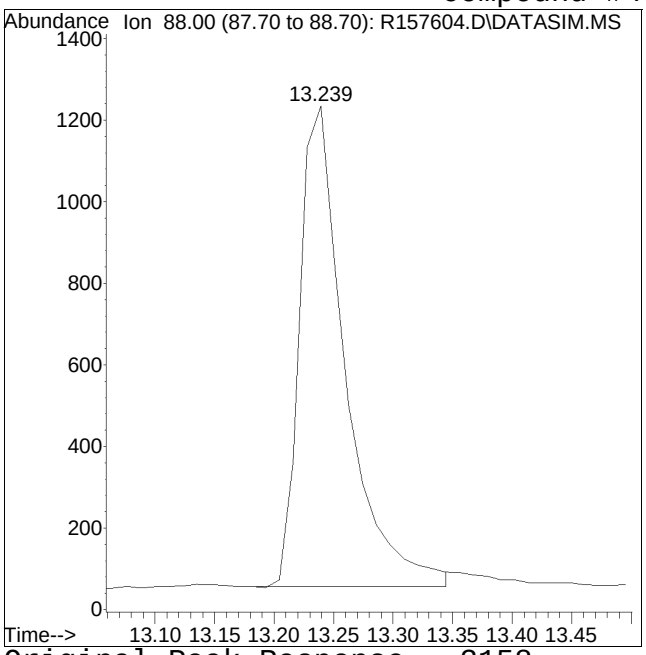
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

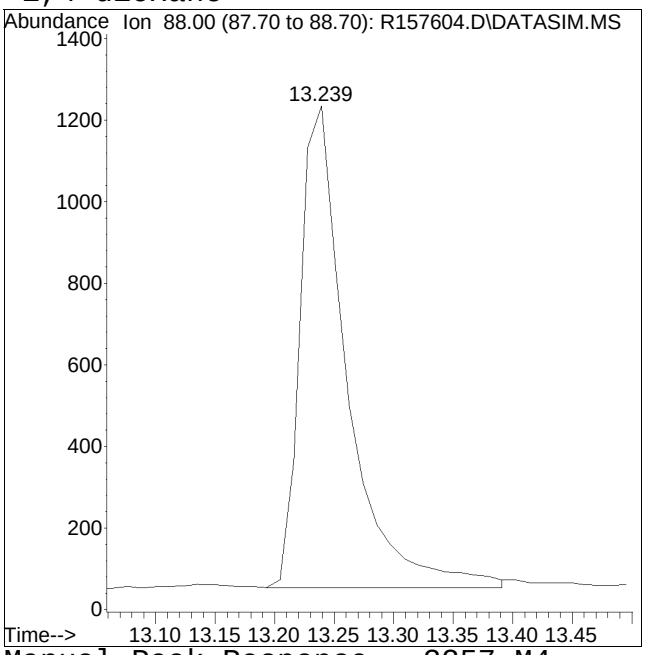
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #43: 1,4-dioxane



Original Peak Response = 3158



Manual Peak Response = 3257 M4

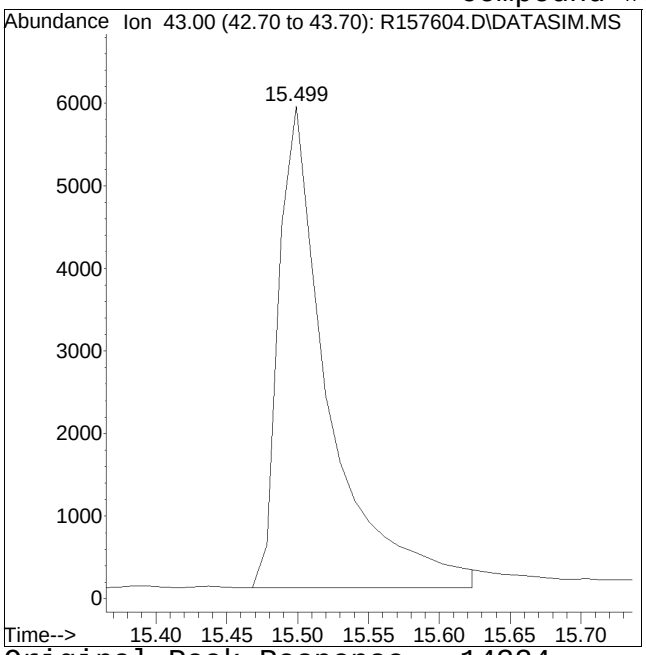
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

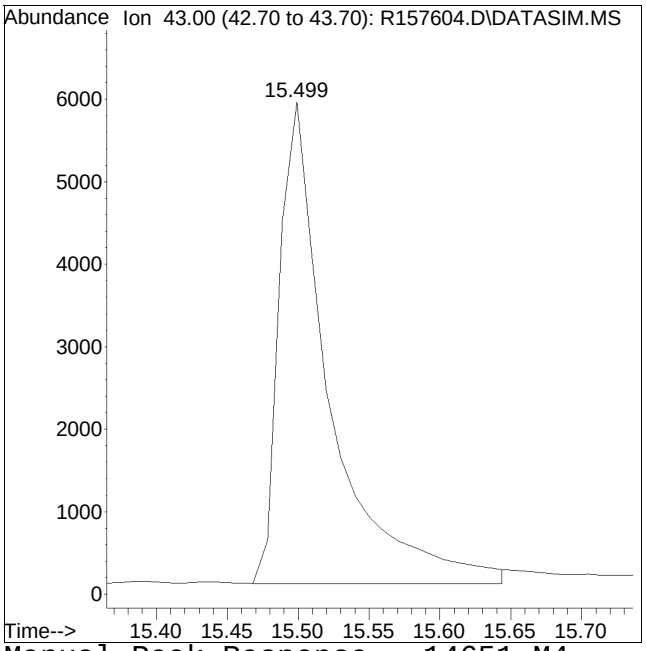
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #54: 2-hexanone



Original Peak Response = 14324



Manual Peak Response = 14651 M4

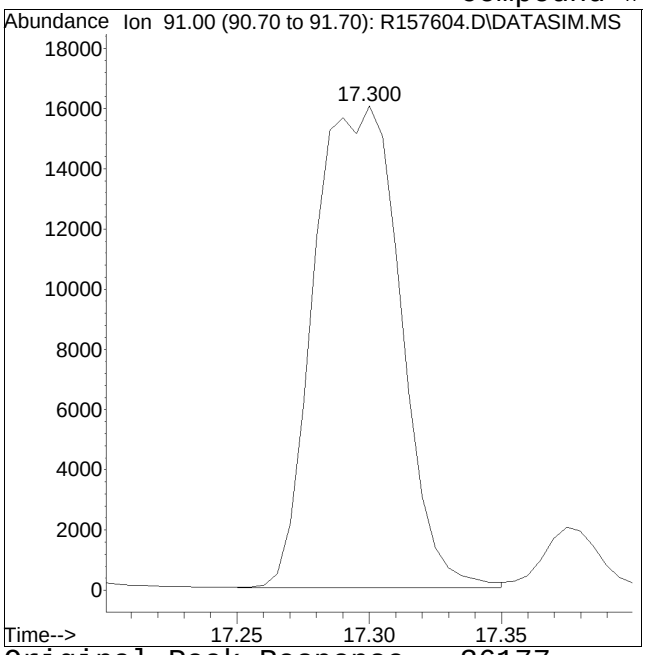
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

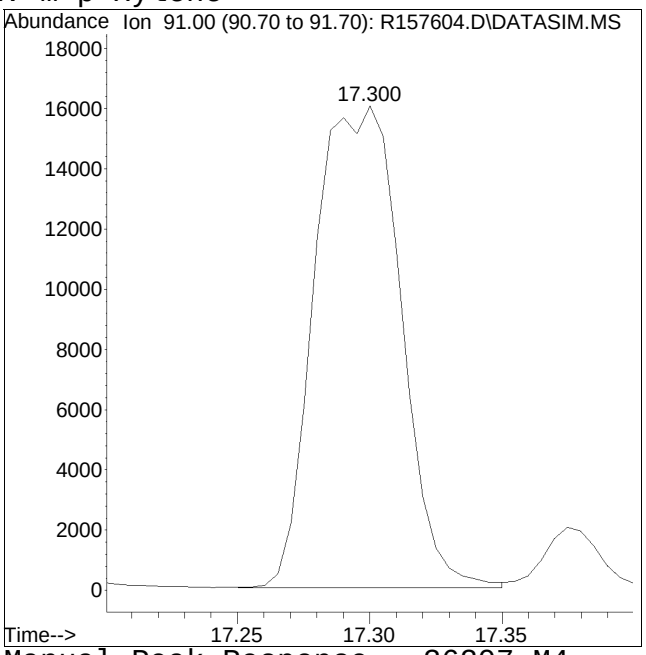
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #61: m+p-xylene



Original Peak Response = 36177



Manual Peak Response = 36207 M4

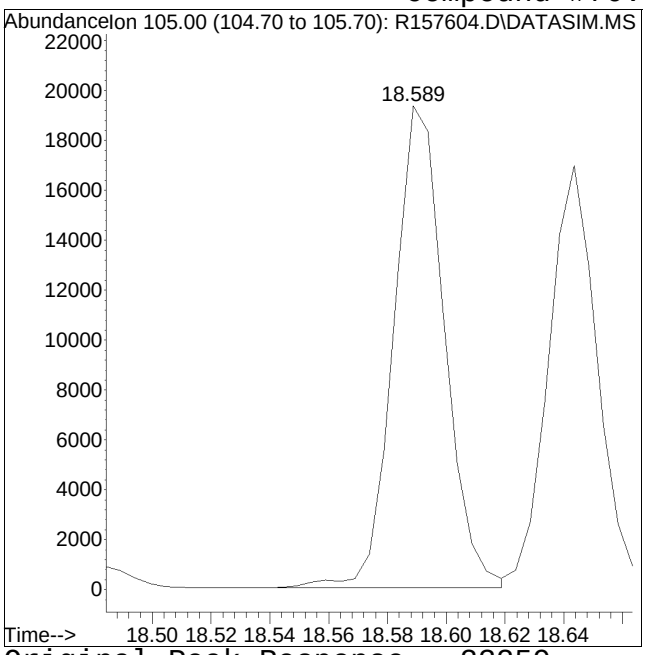
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

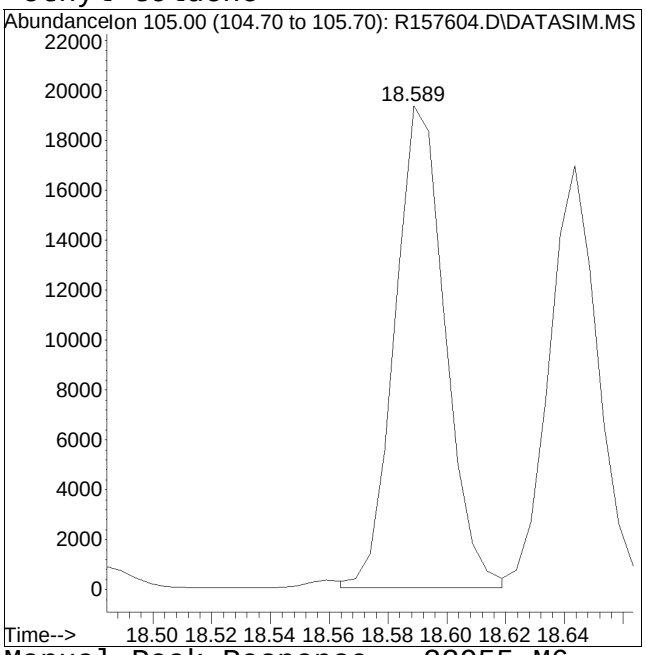
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #70: 4-ethyl toluene



Original Peak Response = 23259



Manual Peak Response = 22955 M6

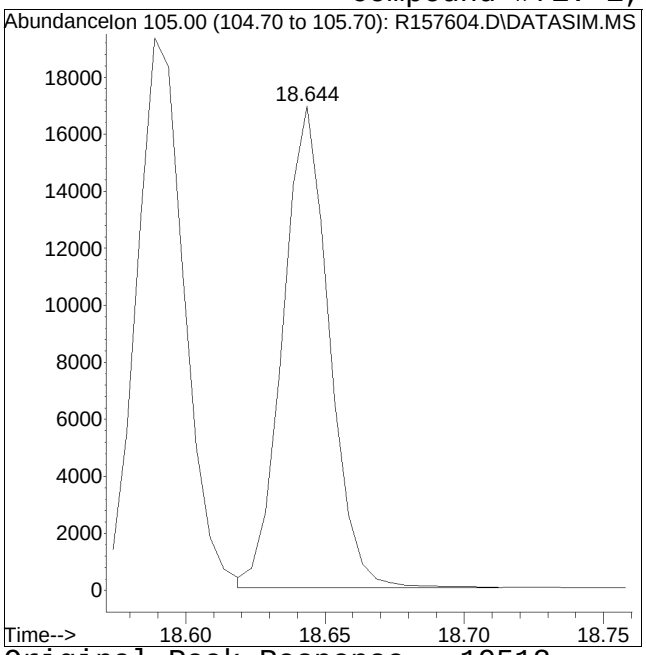
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

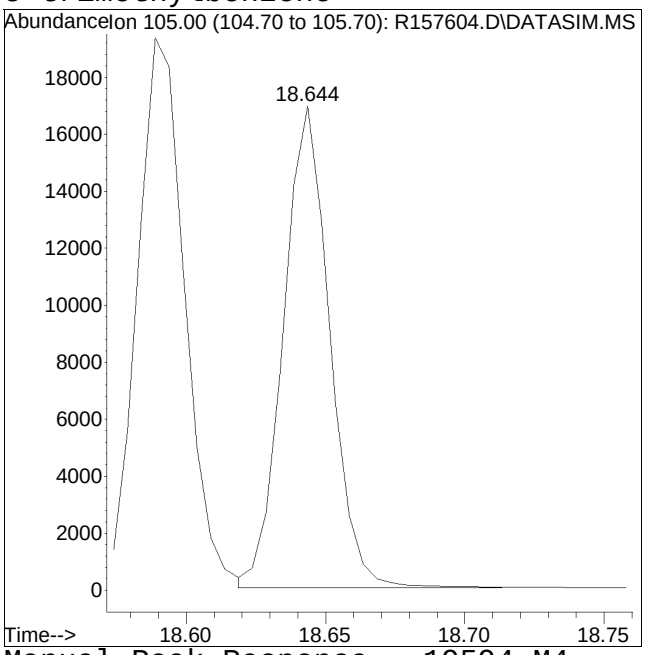
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #71: 1,3,5-trimethylbenzene



Original Peak Response = 19512



Manual Peak Response = 19594 M4

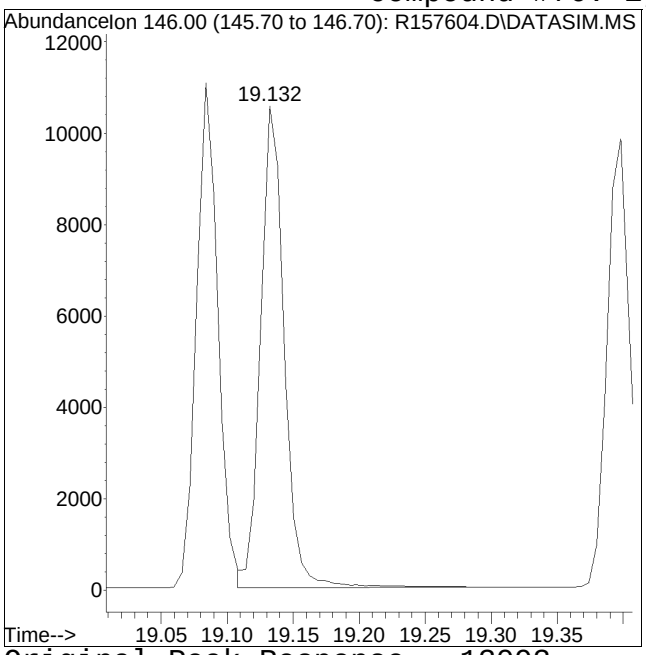
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

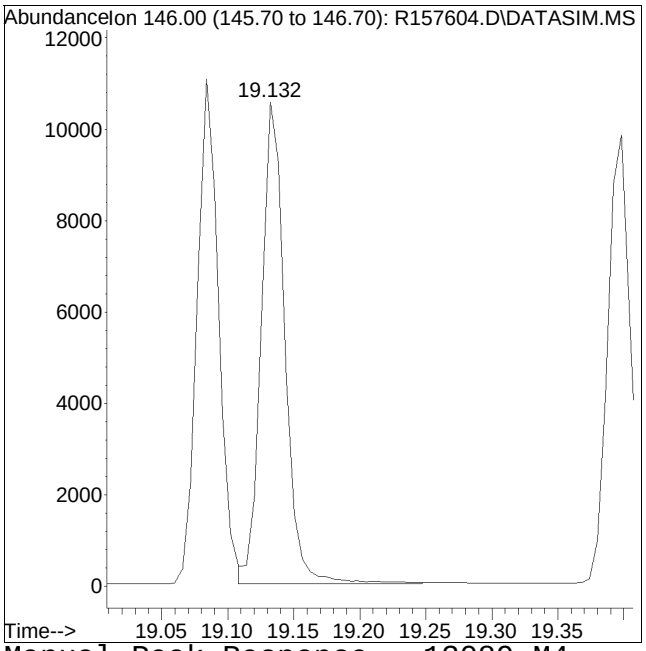
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #76: 1,4-dichlorobenzene



Original Peak Response = 13093



Manual Peak Response = 13089 M4

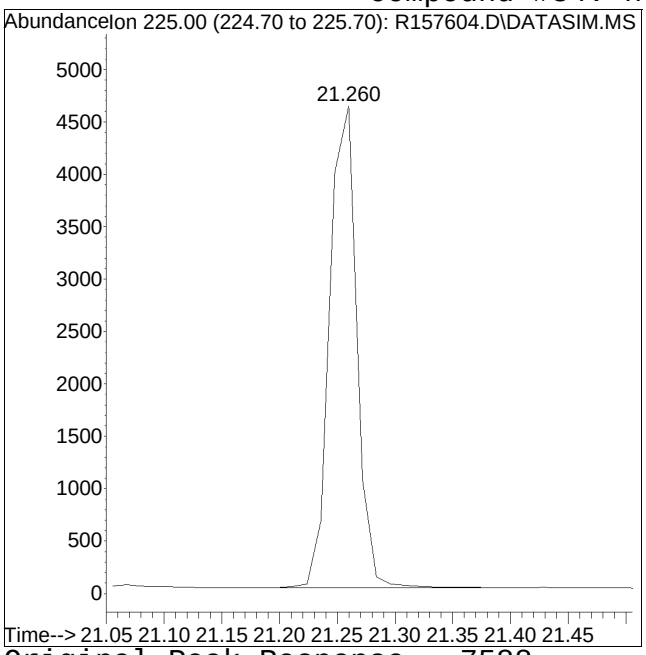
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

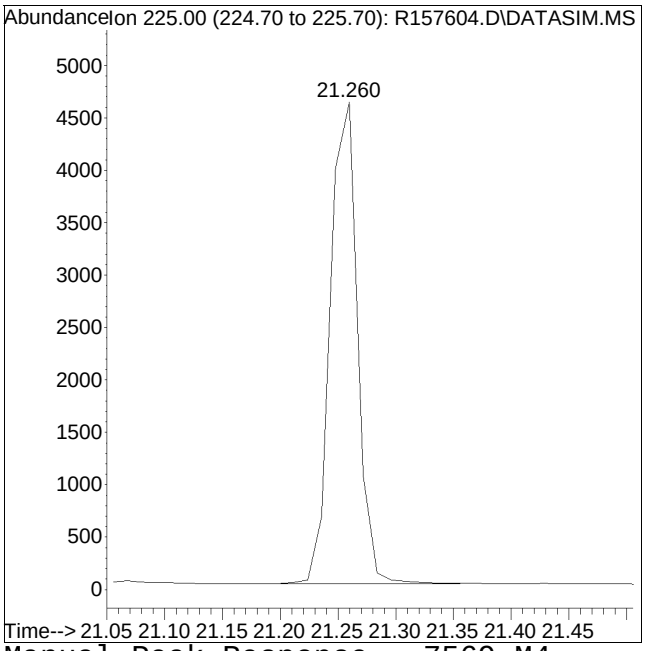
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157604.D
Date Inj'd : 2/27/2018 12:07 am
Sample : ITO15-SIMSTD0.5

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #84: hexachlorobutadiene



Original Peak Response = 7588



Manual Peak Response = 7569 M4

M4 = Poor automated baseline construction.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157605.D
Acq On : 27 Feb 2018 12:41 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD1.0
Misc : WG1092763
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 27 12:45:34 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.181	49	215105	10.000	ppbV	0.00
Standard Area = 218948			Recovery = 98.24%			
33) 1,4-difluorobenzene	12.401	114	308679	10.000	ppbV	0.00
Standard Area = 315293			Recovery = 97.90%			
51) chlorobenzene-D5	16.822	54	84884	10.000	ppbV	0.00
Standard Area = 85423			Recovery = 99.37%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.066	65	117318	9.800	ppbV	0.01
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.00%			
53) toluene-D8	15.128	98	280002	10.341	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 103.41%			
67) bromofluorobenzene	18.012	95	153840	10.098	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.98%			
Target Compounds						Qvalue
2) propylene	4.051	41	12013	1.066	ppbV	99
3) dichlorodifluoromethane	4.152	85	22313	0.924	ppbV	100
4) chloromethane	4.364	50	12947	1.042	ppbV	99
5) Freon-114	4.520	85	32728M4	1.061	ppbV	
6) vinyl chloride	4.677	62	13430M4	1.054	ppbV	
7) 1,3-butadiene	4.867	54	9028M6	1.037	ppbV	
8) bromomethane	5.254	94	10711	0.998	ppbV	98
9) chloroethane	5.505	64	6103	1.017	ppbV	98
10) ethanol	5.710	31	48564M4	4.900	ppbV	
11) vinyl bromide	5.989	106	10043	1.040	ppbV	99
12) acrolein	6.175	56	5010	0.928	ppbV	99
13) acetone	6.362	43	85616	5.275	ppbV #	98
14) trichlorofluoromethane	6.566	101	28104	1.036	ppbV	100
15) isopropyl alcohol	6.715	45	56085	2.534	ppbV	99
16) acrylonitrile	6.985	53	9715	1.054	ppbV	99
17) 1,1-dichloroethene	7.404	61	21546	1.034	ppbV	98
18) tertiary butyl alcohol	7.525	59	24710	1.017	ppbV	96
19) methylene chloride	7.572	49	17852	1.069	ppbV	99
20) 3-chloropropene	7.721	41	17448	1.011	ppbV	98
21) carbon disulfide	7.897	76	34306	1.016	ppbV #	67
22) Freon 113	7.916	101	21976	1.036	ppbV	99
23) trans-1,2-dichloroethene	8.745	61	19918	1.034	ppbV	100
24) 1,1-dichloroethane	8.991	63	25143	1.045	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157605.D
Acq On : 27 Feb 2018 12:41 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD1.0
Misc : WG1092763
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 27 12:45:34 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	9.097	73	29997	1.053	ppbV		99
26) vinyl acetate	9.203	43	25252	0.918	ppbV		98
27) 2-butanone	9.506	43	29226	1.007	ppbV		98
28) cis-1,2-dichloroethene	9.988	61	21523	1.030	ppbV		99
29) Ethyl Acetate	10.298	61	4956M6	1.037	ppbV		
30) chloroform	10.341	83	30035	1.019	ppbV		98
31) Tetrahydrofuran	10.833	42	15436M6	0.962	ppbV		
32) 1,2-dichloroethane	11.188	62	18075	0.997	ppbV		98
34) hexane	10.234	57	23265M6	0.958	ppbV		
36) 1,1,1-trichloroethane	11.477	97	22686	0.980	ppbV		91
37) benzene	11.994	78	34866	0.991	ppbV		97
38) carbon tetrachloride	12.157	117	21497	0.977	ppbV		99
39) cyclohexane	12.297	56	18965	0.964	ppbV		98
40) dibromomethane	12.902	93	14070	0.910	ppbV		85
41) 1,2-dichloropropane	12.925	63	15666	0.989	ppbV		98
42) bromodichloromethane	13.146	83	26686M6	0.989	ppbV		
43) 1,4-dioxane	13.228	88	6582	0.966	ppbV		90
44) trichloroethene	13.193	130	12613	0.996	ppbV		98
45) 2,2,4-trimethylpentane	13.216	57	63246	0.995	ppbV		99
46) heptane	13.507	43	26258M6	0.979	ppbV		
47) cis-1,3-dichloropropene	14.170	75	75241	0.975	ppbV		97
48) 4-methyl-2-pentanone	14.221	43	33397	1.015	ppbV	#	85
49) trans-1,3-dichloropropene	14.756	75	18065	0.985	ppbV	#	90
50) 1,1,2-trichloroethane	14.942	97	13796	1.019	ppbV		92
52) toluene	15.231	91	38684	1.021	ppbV		98
54) 2-hexanone	15.489	43	30980	1.004	ppbV		97
55) dibromochloromethane	15.644	129	21711	1.013	ppbV		99
56) 1,2-dibromoethane	15.881	107	21200	1.014	ppbV		97
57) tetrachloroethene	16.283	166	14754	1.012	ppbV		98
58) 1,1,1,2-tetrachloroethane	16.842	131	14480	1.011	ppbV		99
59) chlorobenzene	16.862	112	29007	1.024	ppbV		98
60) ethylbenzene	17.156	91	49304	1.009	ppbV		99
61) m+p-xylene	17.300	91	76494	2.022	ppbV		98
62) bromoform	17.375	173	18634	0.956	ppbV		99
63) styrene	17.579	104	25961	1.026	ppbV		99
64) 1,1,2,2-tetrachloroethane	17.663	83	34985	1.020	ppbV		99
65) o-xylene	17.663	91	39688	0.999	ppbV		98
66) 1,2,3-trichloropropane	17.763	75	26240	1.009	ppbV		97
68) isopropylbenzene	18.106	105	45814	0.998	ppbV		99
69) bromobenzene	18.191	77	29689	1.008	ppbV		97

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157605.D
Acq On : 27 Feb 2018 12:41 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD1.0
Misc : WG1092763
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 27 12:45:34 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

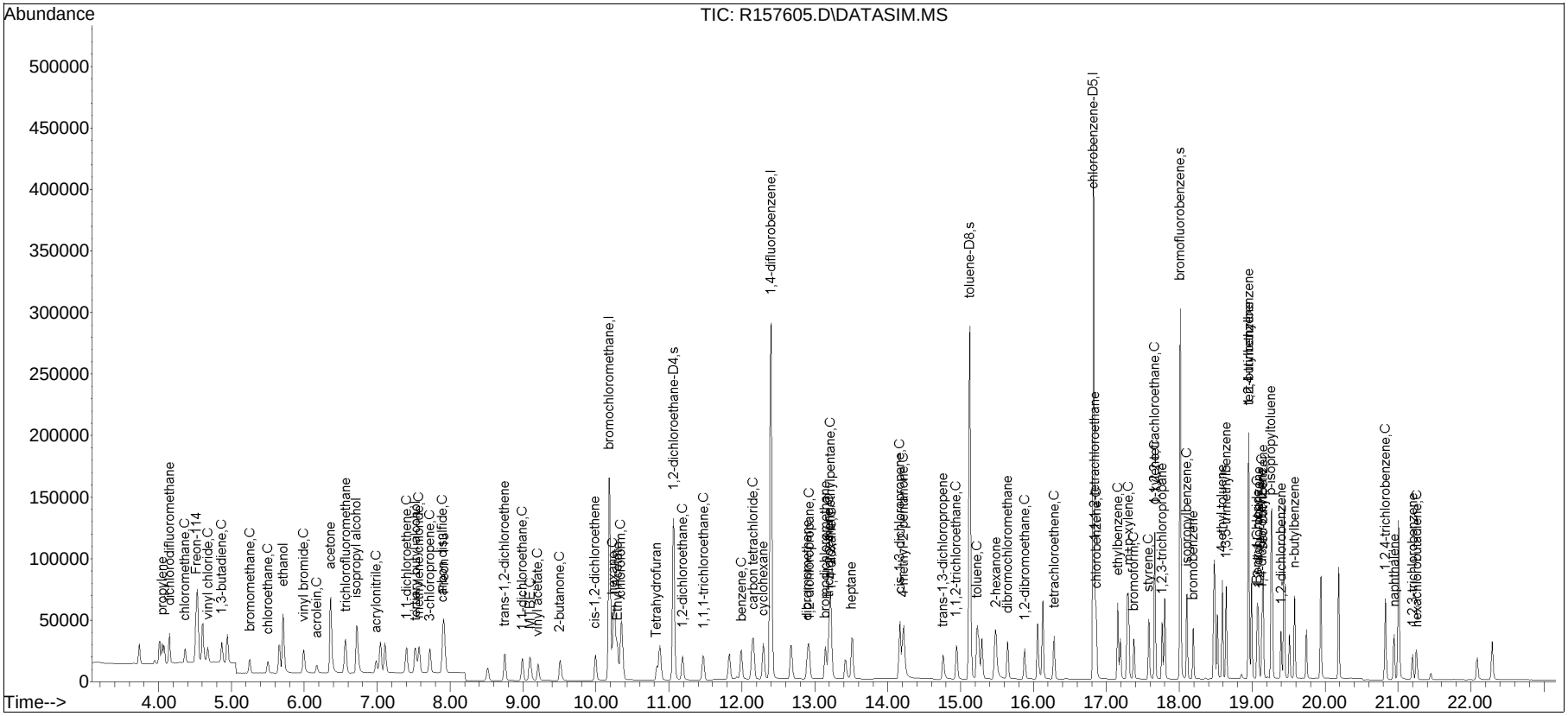
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) 4-ethyl toluene	18.589	105	48187M6	1.022	ppbV		
71) 1,3,5-trimethylbenzene	18.644	105	41087M4	1.004	ppbV		
72) tert-butylbenzene	18.951	119	39116	1.009	ppbV		97
73) 1,2,4-trimethylbenzene	18.951	105	41052	1.026	ppbV		97
74) Benzyl Chloride	19.066	91	31783	0.859	ppbV		97
75) 1,3-dichlorobenzene	19.084	146	26932	1.016	ppbV		94
76) 1,4-dichlorobenzene	19.132	146	27624M4	1.013	ppbV		
77) sec-butylbenzene	19.150	105	59060	1.031	ppbV		96
78) p-isopropyltoluene	19.259	119	47297	1.033	ppbV		98
79) 1,2-dichlorobenzene	19.398	146	25954	1.033	ppbV		92
80) n-butylbenzene	19.579	91	53902	1.083	ppbV		98
81) 1,2,4-trichlorobenzene	20.828	180	19490	1.065	ppbV	#	93
82) naphthalene	20.948	128	47281	0.998	ppbV		95
83) 1,2,3-trichlorobenzene	21.200	180	18200	1.079	ppbV	#	92
84) hexachlorobutadiene	21.260	225	16497	1.044	ppbV	#	79

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0226SIM_ICAL\R157606.D

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157605.D
Acq On : 27 Feb 2018 12:41 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD1.0
Misc : WG1092763
ALS Vial : 6 Sample Multiplier: 1

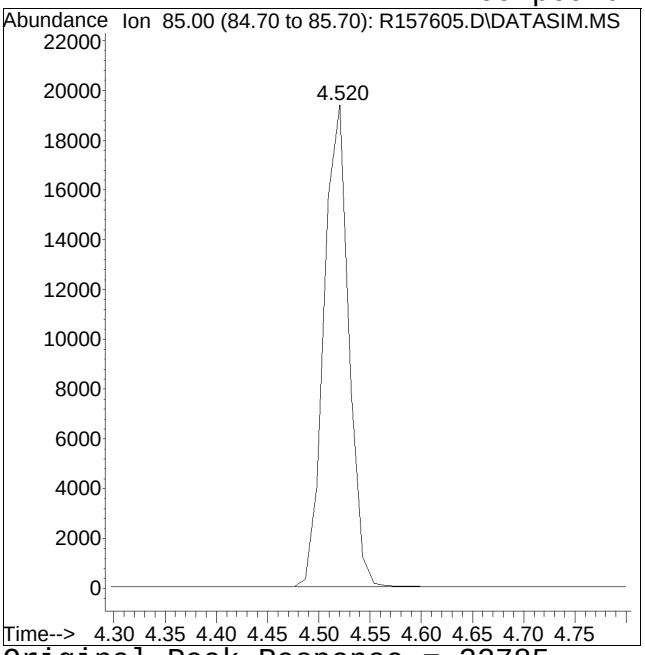
Quant Time: Feb 27 12:45:34 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration



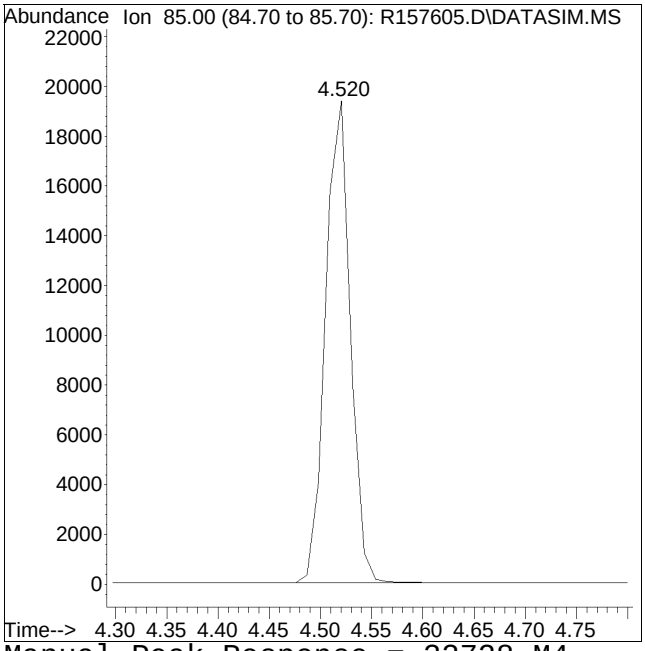
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157605.D
Date Inj'd : 2/27/2018 12:41 am
Sample : ITO15-SIMSTD1.0
Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #5: Freon-114



Original Peak Response = 32785



Manual Peak Response = 32728 M4

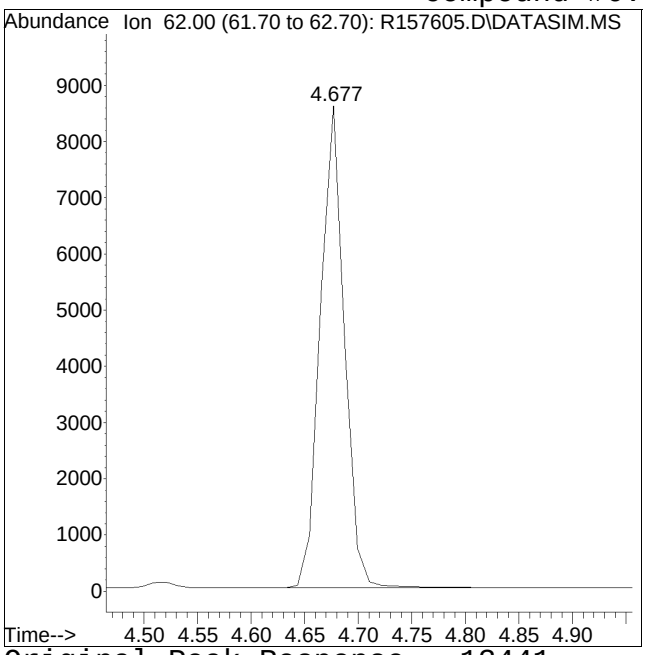
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

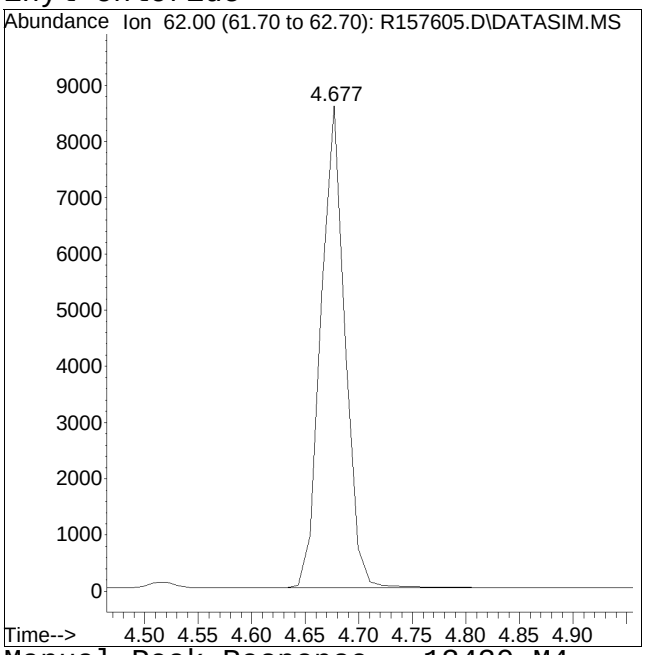
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157605.D
Date Inj'd : 2/27/2018 12:41 am
Sample : ITO15-SIMSTD1.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #6: vinyl chloride



Original Peak Response = 13441



Manual Peak Response = 13430 M4

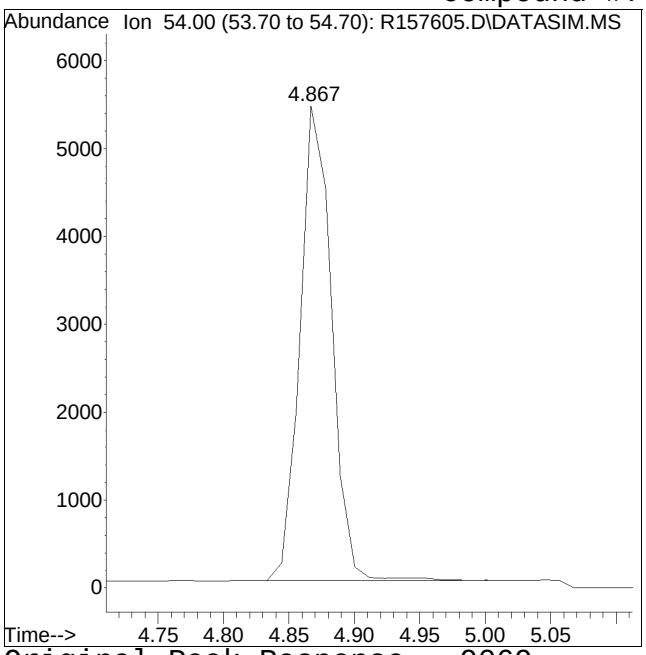
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

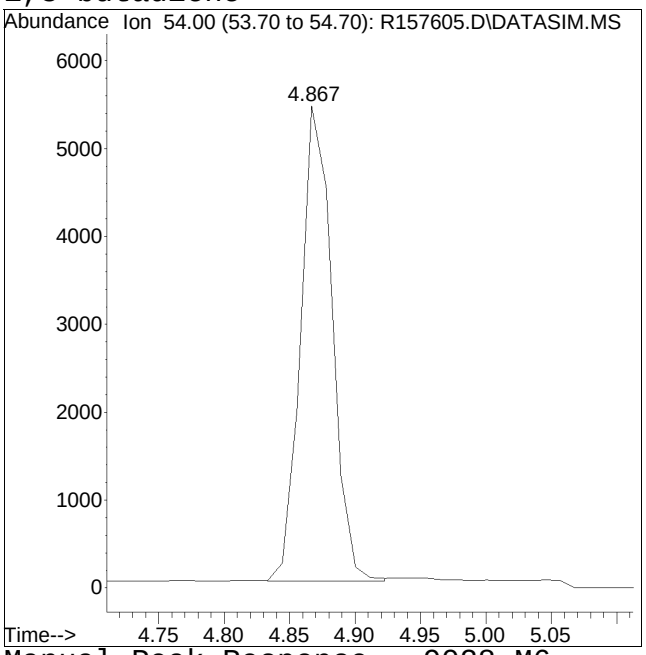
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157605.D
Date Inj'd : 2/27/2018 12:41 am
Sample : ITO15-SIMSTD1.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #7: 1,3-butadiene



Original Peak Response = 9069



Manual Peak Response = 9028 M6

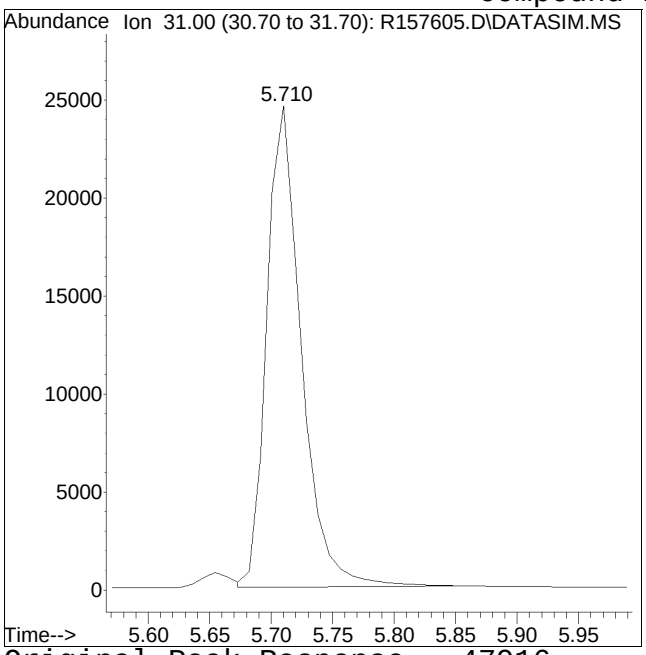
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

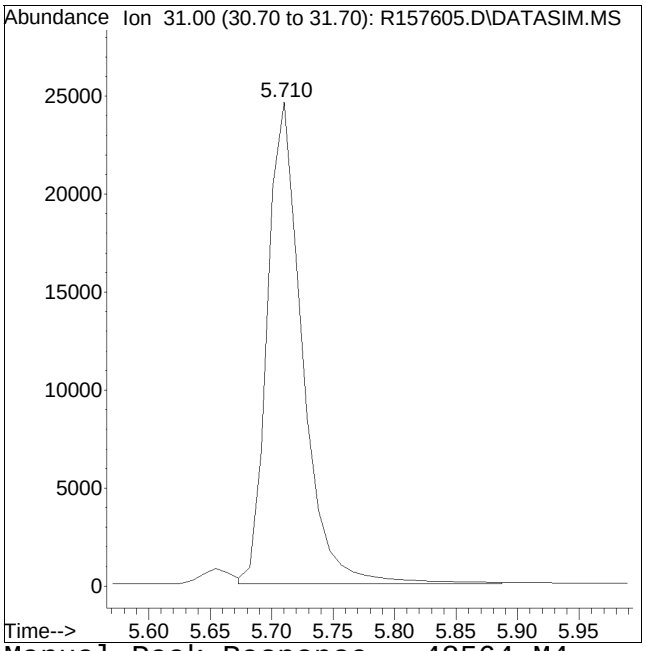
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157605.D
Date Inj'd : 2/27/2018 12:41 am
Sample : ITO15-SIMSTD1.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #10: ethanol



Original Peak Response = 47916



Manual Peak Response = 48564 M4

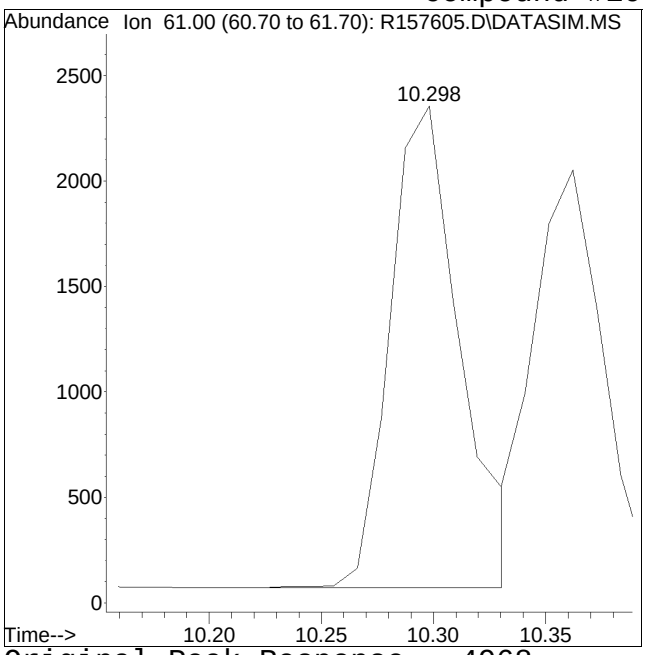
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

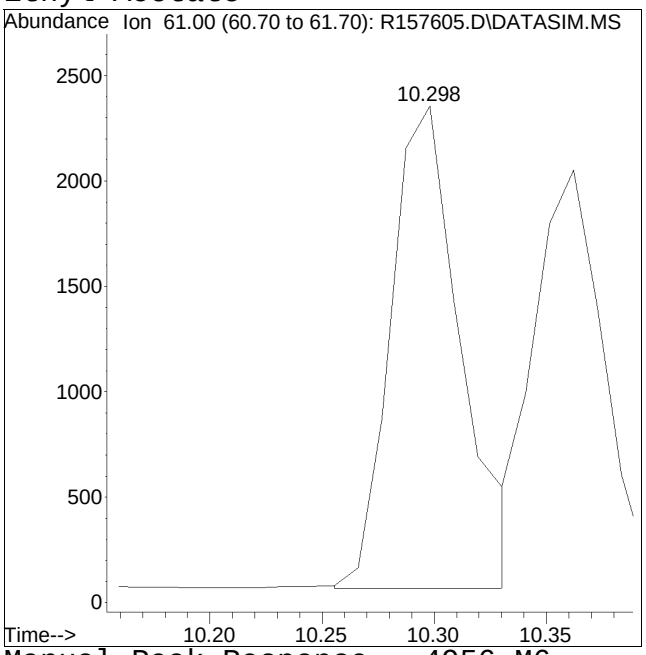
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157605.D
Date Inj'd : 2/27/2018 12:41 am
Sample : ITO15-SIMSTD1.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #29: Ethyl Acetate



Original Peak Response = 4968



Manual Peak Response = 4956 M6

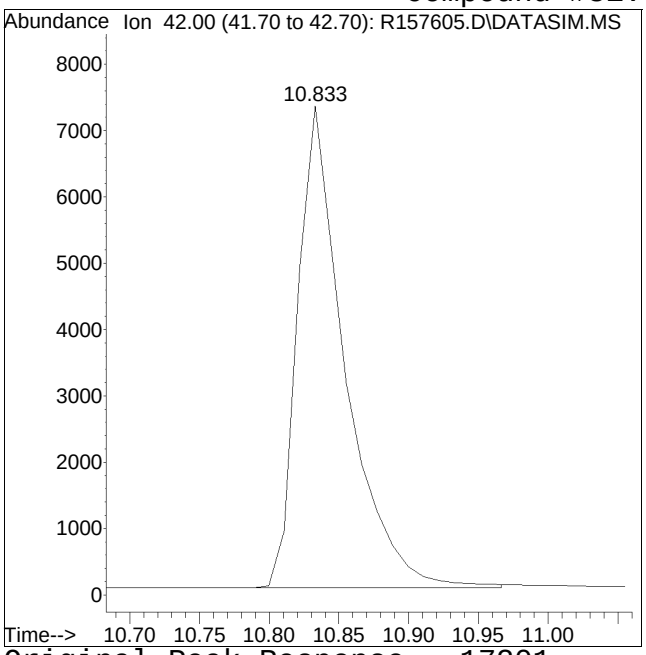
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

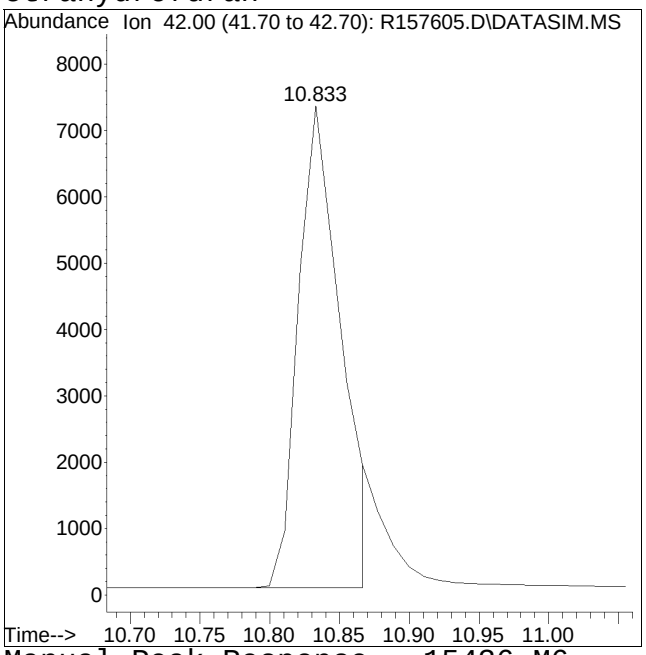
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157605.D
Date Inj'd : 2/27/2018 12:41 am
Sample : ITO15-SIMSTD1.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #31: Tetrahydrofuran



Original Peak Response = 17201



Manual Peak Response = 15436 M6

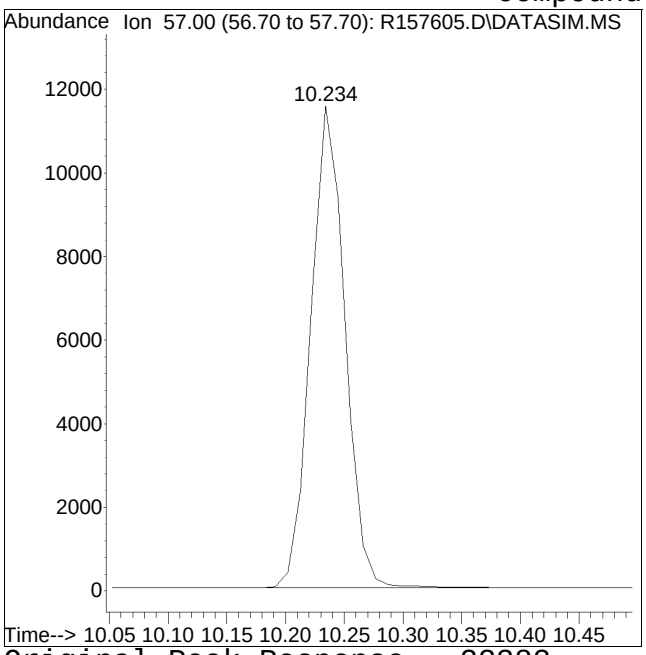
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

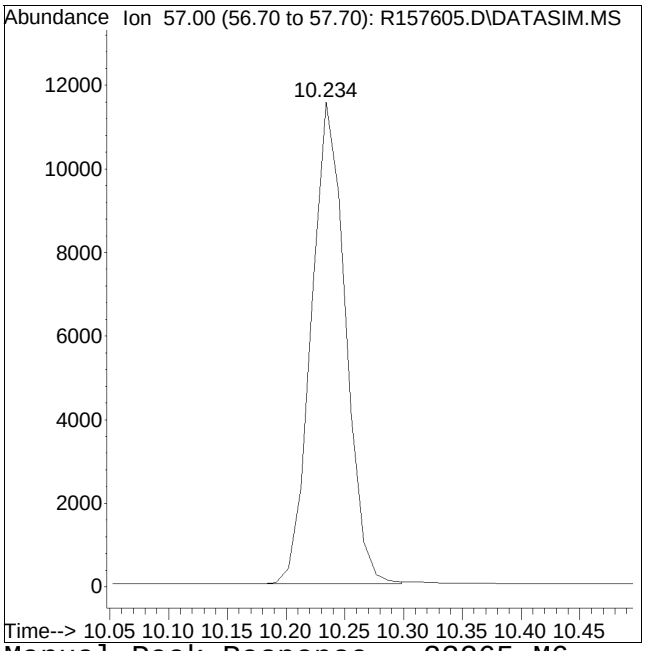
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157605.D
Date Inj'd : 2/27/2018 12:41 am
Sample : ITO15-SIMSTD1.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #34: hexane



Original Peak Response = 23382



Manual Peak Response = 23265 M6

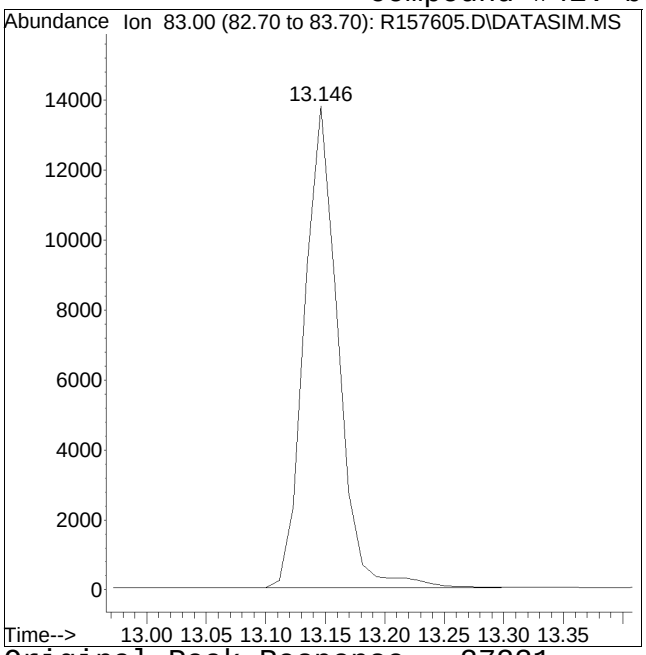
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

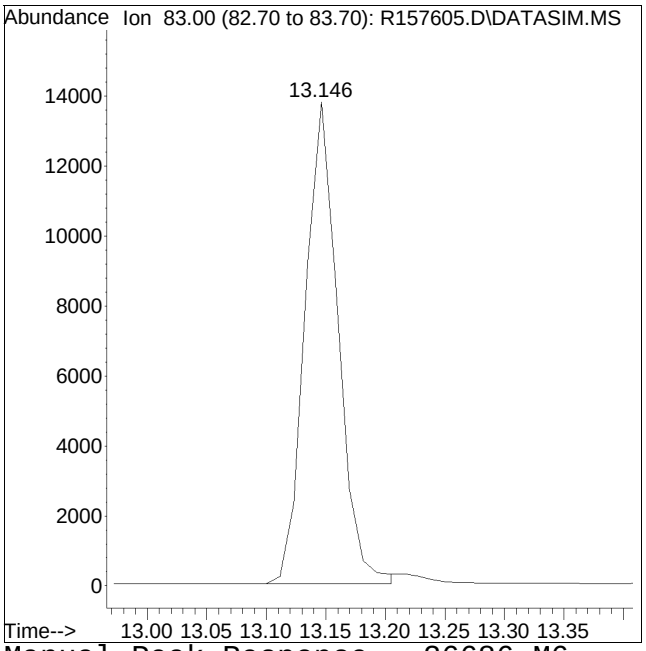
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157605.D
Date Inj'd : 2/27/2018 12:41 am
Sample : ITO15-SIMSTD1.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #42: bromodichloromethane



Original Peak Response = 27231



Manual Peak Response = 26686 M6

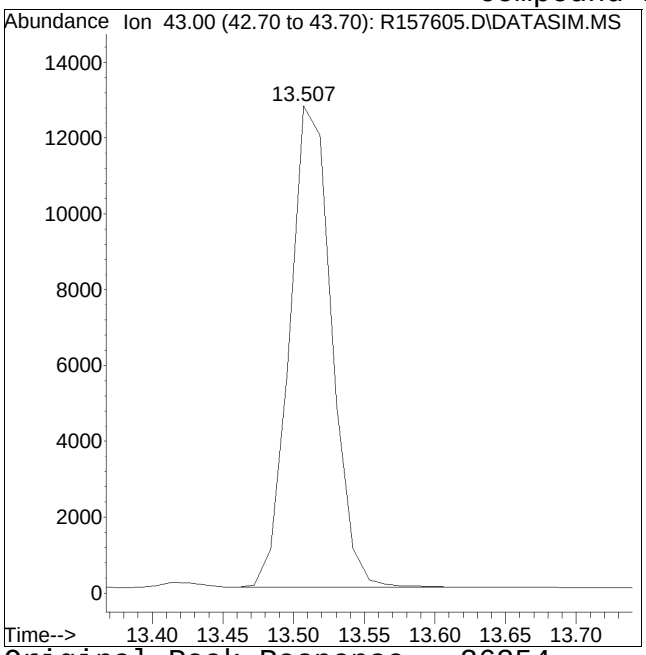
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

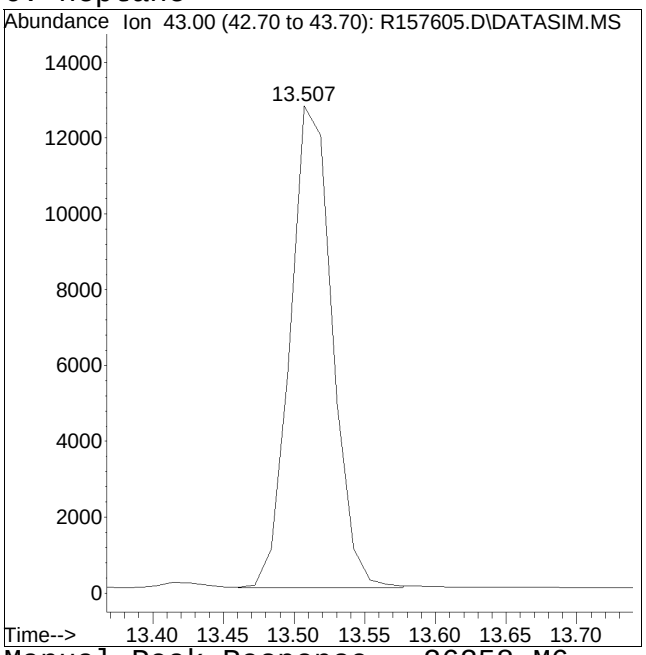
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157605.D
Date Inj'd : 2/27/2018 12:41 am
Sample : ITO15-SIMSTD1.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #46: heptane



Original Peak Response = 26254



Manual Peak Response = 26258 M6

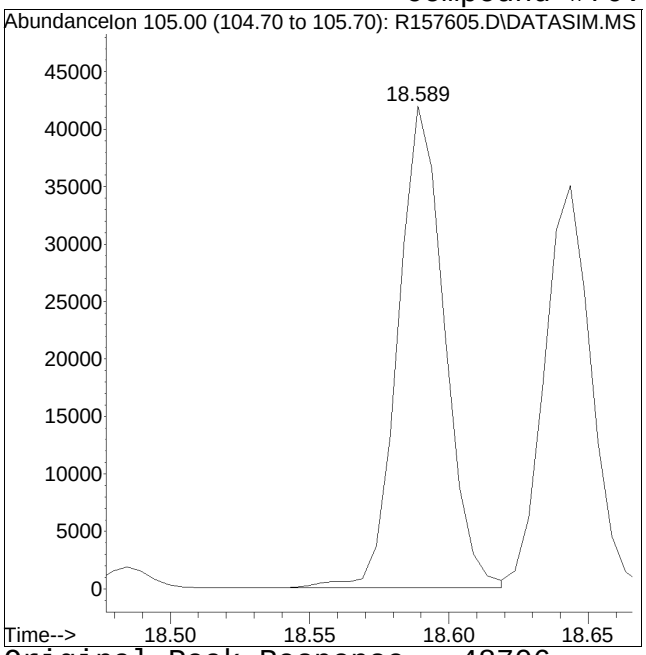
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

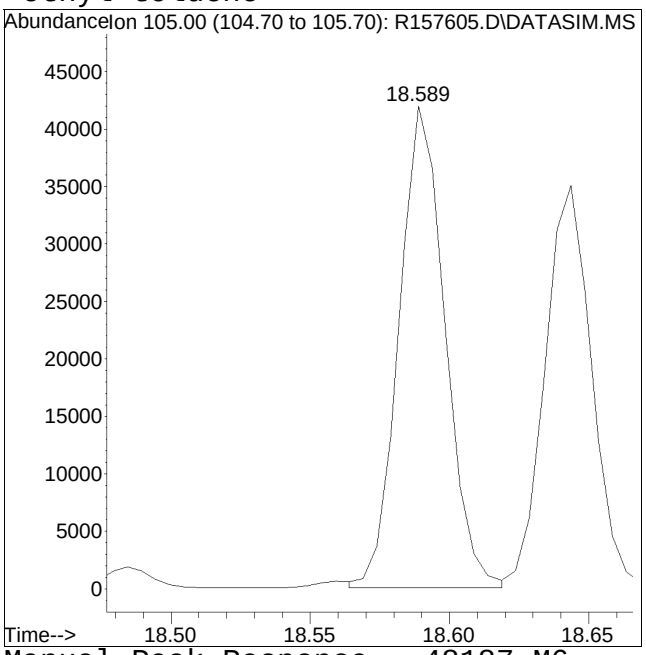
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157605.D
Date Inj'd : 2/27/2018 12:41 am
Sample : ITO15-SIMSTD1.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #70: 4-ethyl toluene



Original Peak Response = 48706



Manual Peak Response = 48187 M6

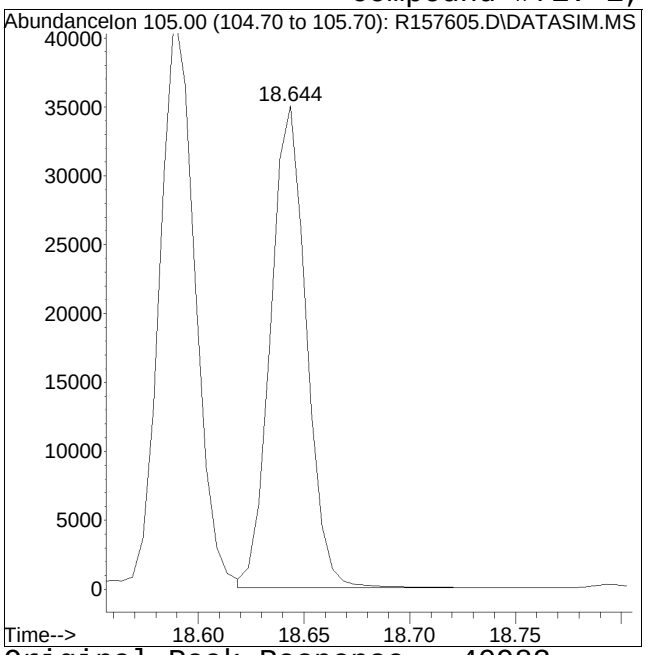
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

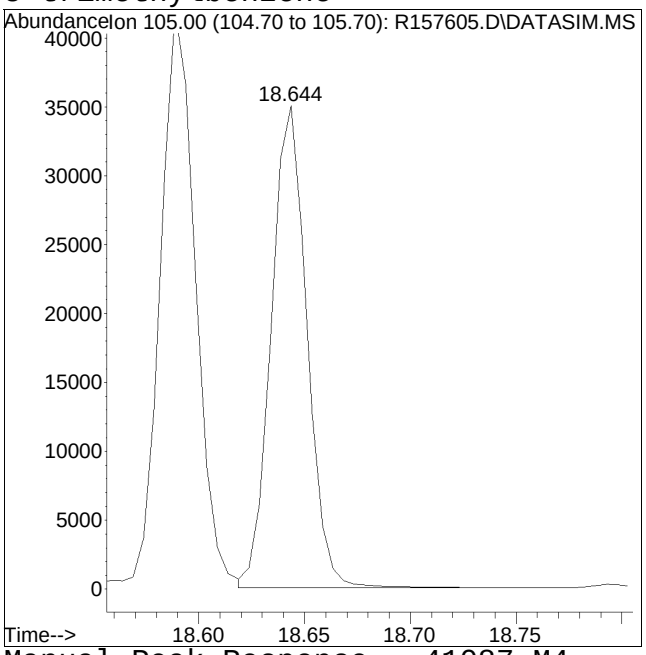
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157605.D
Date Inj'd : 2/27/2018 12:41 am
Sample : ITO15-SIMSTD1.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #71: 1,3,5-trimethylbenzene



Original Peak Response = 40983



Manual Peak Response = 41087 M4

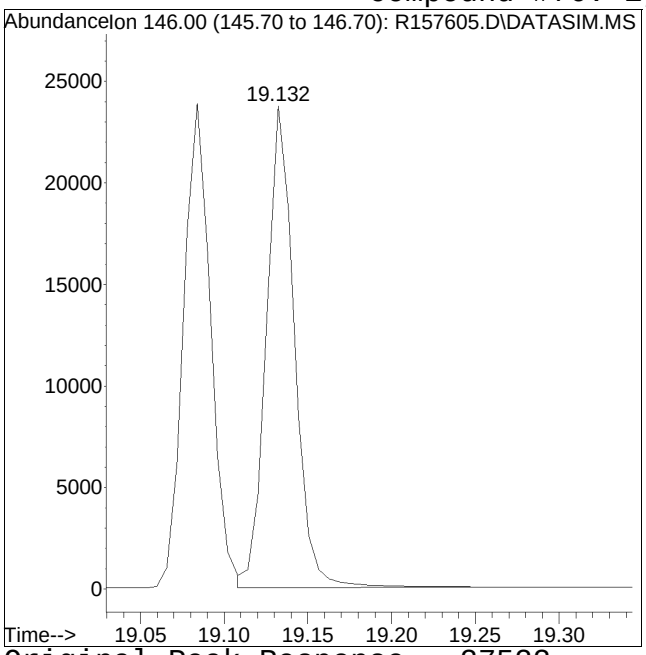
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

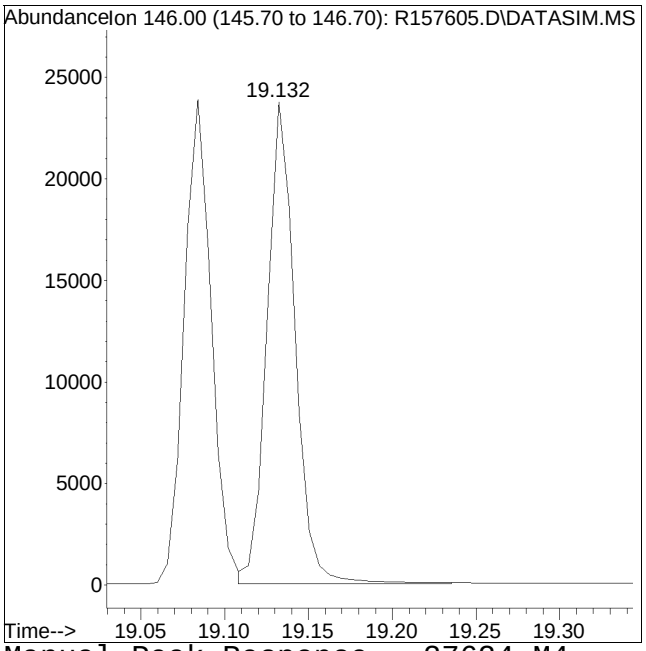
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157605.D
Date Inj'd : 2/27/2018 12:41 am
Sample : ITO15-SIMSTD1.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #76: 1,4-dichlorobenzene



Original Peak Response = 27522



Manual Peak Response = 27624 M4

M4 = Poor automated baseline construction.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157606.D
Acq On : 27 Feb 2018 1:13 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD5.0
Misc : WG1092763
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 27 12:45:39 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.181	49	218948	10.000	ppbV	0.00
Standard Area = 218948			Recovery = 100.00%			
33) 1,4-difluorobenzene	12.401	114	315293	10.000	ppbV	0.00
Standard Area = 315293			Recovery = 100.00%			
51) chlorobenzene-D5	16.822	54	85423	10.000	ppbV	0.00
Standard Area = 85423			Recovery = 100.00%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.055	65	115853	9.474	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.74%			
53) toluene-D8	15.128	98	282022	10.350	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 103.50%			
67) bromofluorobenzene	18.012	95	157438	10.269	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.69%			
Target Compounds						Qvalue
2) propylene	4.051	41	52806M6	4.603	ppbV	
3) dichlorodifluoromethane	4.152	85	126297	5.140	ppbV	100
4) chloromethane	4.364	50	62987	4.982	ppbV	100
5) Freon-114	4.520	85	160355	5.106	ppbV	100
6) vinyl chloride	4.677	62	66133	5.097	ppbV	100
7) 1,3-butadiene	4.867	54	44767	5.050	ppbV	100
8) bromomethane	5.254	94	56449	5.168	ppbV	100
9) chloroethane	5.505	64	30532	4.997	ppbV	100
10) ethanol	5.701	31	235078M6	23.300	ppbV	
11) vinyl bromide	5.989	106	49487	5.037	ppbV	100
12) acrolein	6.166	56	25377M6	4.617	ppbV	
13) acetone	6.343	43	385070	23.308	ppbV	100
14) trichlorofluoromethane	6.566	101	139834	5.065	ppbV	100
15) isopropyl alcohol	6.706	45	232794	10.333	ppbV	100
16) acrylonitrile	6.976	53	45563M6	4.857	ppbV	
17) 1,1-dichloroethene	7.404	61	107309	5.057	ppbV	100
18) tertiary butyl alcohol	7.497	59	121267	4.901	ppbV	100
19) methylene chloride	7.572	49	86665	5.100	ppbV	100
20) 3-chloropropene	7.720	41	87654	4.991	ppbV	100
21) carbon disulfide	7.897	76	174687	5.080	ppbV	100
22) Freon 113	7.916	101	110277	5.106	ppbV	100
23) trans-1,2-dichloroethene	8.745	61	97418	4.969	ppbV	100
24) 1,1-dichloroethane	8.990	63	122213	4.988	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157606.D
Acq On : 27 Feb 2018 1:13 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD5.0
Misc : WG1092763
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 27 12:45:39 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
25) MTBE	9.080	73	142633	4.919	ppbV	100
26) vinyl acetate	9.195	43	133719M4	4.776	ppbV	
27) 2-butanone	9.489	43	143599	4.861	ppbV	100
28) cis-1,2-dichloroethene	9.988	61	107042	5.031	ppbV	100
29) Ethyl Acetate	10.277	61	24199	4.976	ppbV	100
30) chloroform	10.341	83	149780	4.992	ppbV	100
31) Tetrahydrofuran	10.811	42	80851M6	4.952	ppbV	
32) 1,2-dichloroethane	11.188	62	91305	4.946	ppbV	100
34) hexane	10.234	57	119098	4.800	ppbV	100
36) 1,1,1-trichloroethane	11.466	97	114870	4.860	ppbV	100
37) benzene	11.994	78	173621	4.829	ppbV	100
38) carbon tetrachloride	12.157	117	110765	4.927	ppbV	100
39) cyclohexane	12.297	56	98500	4.902	ppbV	100
40) dibromomethane	12.890	93	70951	4.493	ppbV	100
41) 1,2-dichloropropane	12.913	63	79556	4.917	ppbV	100
42) bromodichloromethane	13.146	83	137808M6	4.998	ppbV	
43) 1,4-dioxane	13.193	88	35100M4	5.044	ppbV	
44) trichloroethene	13.193	130	64396	4.976	ppbV	100
45) 2,2,4-trimethylpentane	13.216	57	318464	4.903	ppbV	100
46) heptane	13.507	43	133246	4.864	ppbV	100
47) cis-1,3-dichloropropene	14.170	75	406689	5.159	ppbV	100
48) 4-methyl-2-pentanone	14.187	43	182901	5.442	ppbV	100
49) trans-1,3-dichloropropene	14.756	75	102322	5.460	ppbV	100
50) 1,1,2-trichloroethane	14.942	97	70392M4	5.092	ppbV	
52) toluene	15.220	91	196782	5.160	ppbV	100
54) 2-hexanone	15.468	43	175166	5.641	ppbV	100
55) dibromochloromethane	15.643	129	115399	5.352	ppbV	100
56) 1,2-dibromoethane	15.870	107	112959	5.367	ppbV	100
57) tetrachloroethene	16.283	166	76393	5.204	ppbV	100
58) 1,1,1,2-tetrachloroethane	16.842	131	76305	5.292	ppbV	100
59) chlorobenzene	16.857	112	150194	5.268	ppbV	100
60) ethylbenzene	17.156	91	257785	5.244	ppbV	100
61) m+p-xylene	17.300	91	405811	10.659	ppbV	100
62) bromoform	17.375	173	103420	5.272	ppbV	100
63) styrene	17.579	104	142301	5.586	ppbV	100
64) 1,1,2,2-tetrachloroethane	17.663	83	185512	5.375	ppbV	100
65) o-xylene	17.663	91	211501	5.289	ppbV	100
66) 1,2,3-trichloropropane	17.763	75	139115	5.318	ppbV	100
68) isopropylbenzene	18.101	105	236385	5.117	ppbV	100
69) bromobenzene	18.186	77	155625	5.249	ppbV	100

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157606.D
Acq On : 27 Feb 2018 1:13 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD5.0
Misc : WG1092763
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 27 12:45:39 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

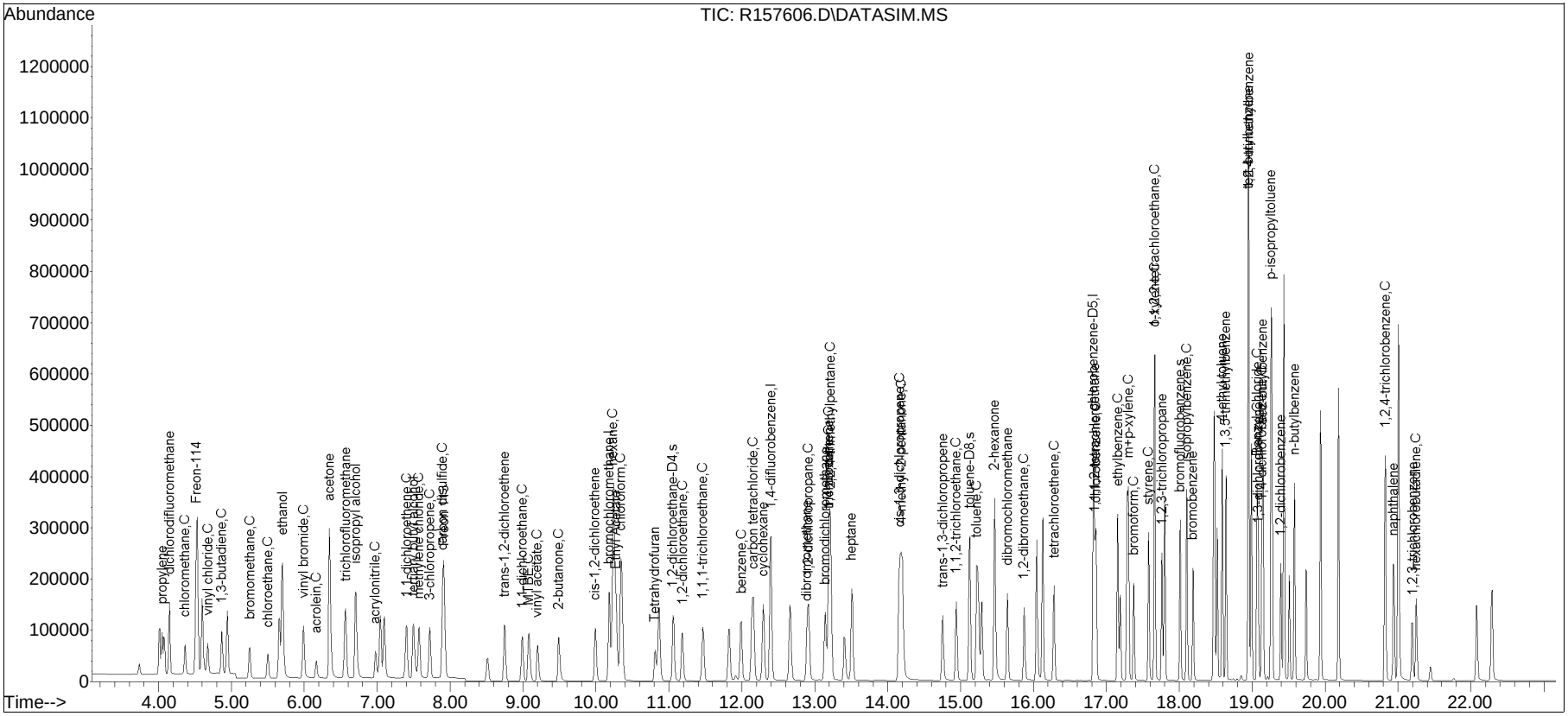
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.589	105	265325M6	5.590	ppbV	
71) 1,3,5-trimethylbenzene	18.639	105	223579	5.431	ppbV	100
72) tert-butylbenzene	18.945	119	216816	5.558	ppbV	100
73) 1,2,4-trimethylbenzene	18.951	105	229629	5.705	ppbV	100
74) Benzyl Chloride	19.066	91	202158	5.428	ppbV	100
75) 1,3-dichlorobenzene	19.084	146	150698	5.648	ppbV	100
76) 1,4-dichlorobenzene	19.132	146	153047M3	5.574	ppbV	
77) sec-butylbenzene	19.144	105	323685	5.615	ppbV	100
78) p-isopropyltoluene	19.259	119	258210	5.606	ppbV	100
79) 1,2-dichlorobenzene	19.392	146	140738	5.565	ppbV	100
80) n-butylbenzene	19.579	91	296965	5.928	ppbV	100
81) 1,2,4-trichlorobenzene	20.828	180	119957	6.513	ppbV	100
82) naphthalene	20.936	128	299081	6.275	ppbV	100
83) 1,2,3-trichlorobenzene	21.200	180	115931	6.832	ppbV	100
84) hexachlorobutadiene	21.248	225	98843	6.217	ppbV	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0226SIM_ICAL\R157606.D

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157606.D
Acq On : 27 Feb 2018 1:13 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD5.0
Misc : WG1092763
ALS Vial : 7 Sample Multiplier: 1

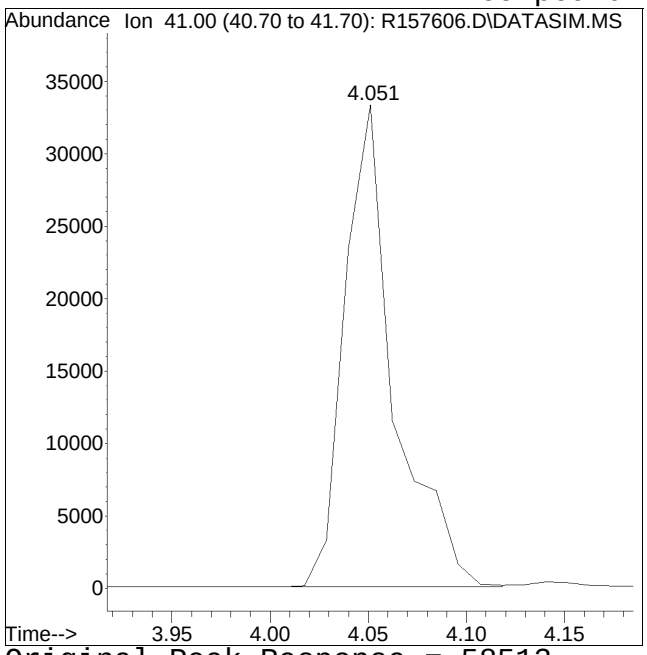
Quant Time: Feb 27 12:45:39 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration



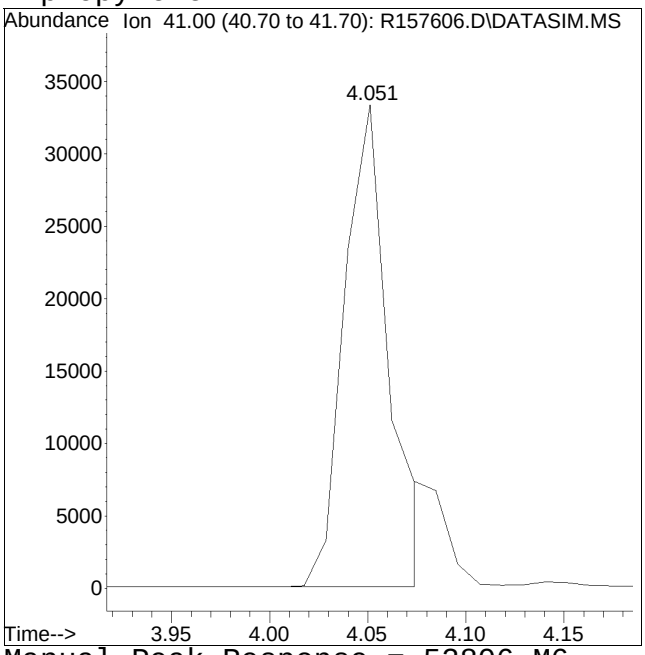
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157606.D
Date Inj'd : 2/27/2018 1:13 am
Sample : ITO15-SIMSTD5.0
Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #2: propylene



Original Peak Response = 58513



Manual Peak Response = 52806 M6

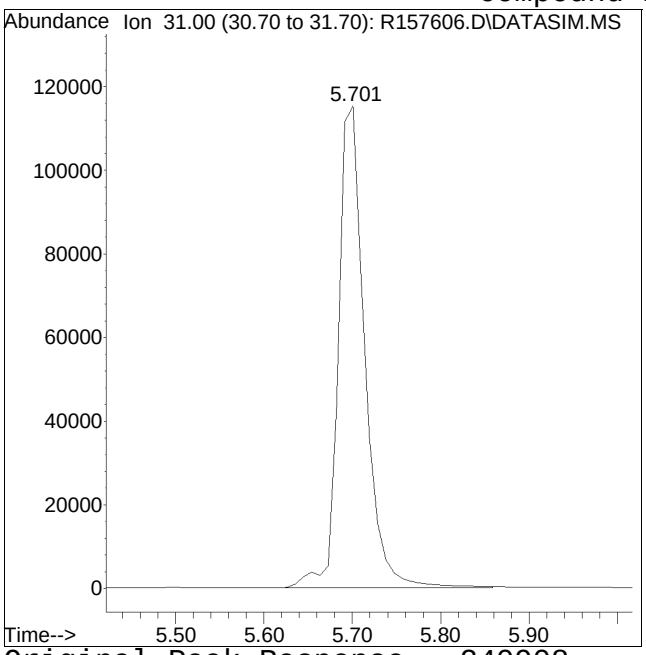
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

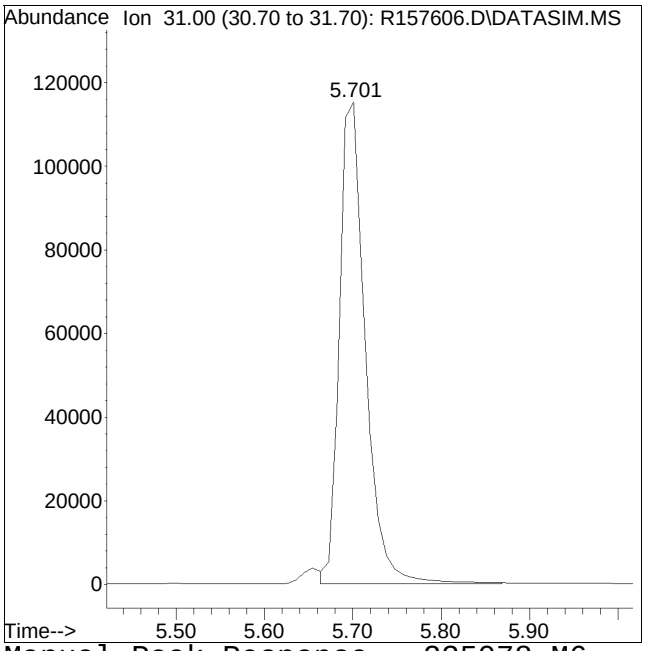
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157606.D
Date Inj'd : 2/27/2018 1:13 am
Sample : ITO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #10: ethanol



Original Peak Response = 240908



Manual Peak Response = 235078 M6

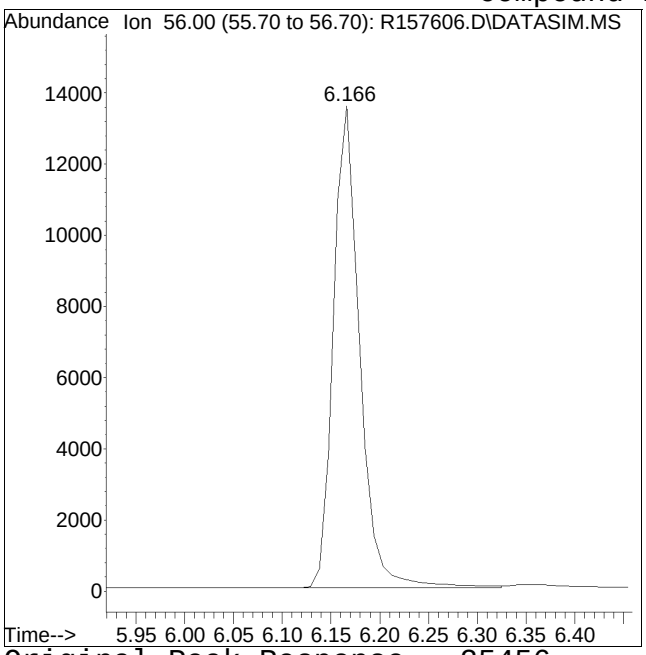
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

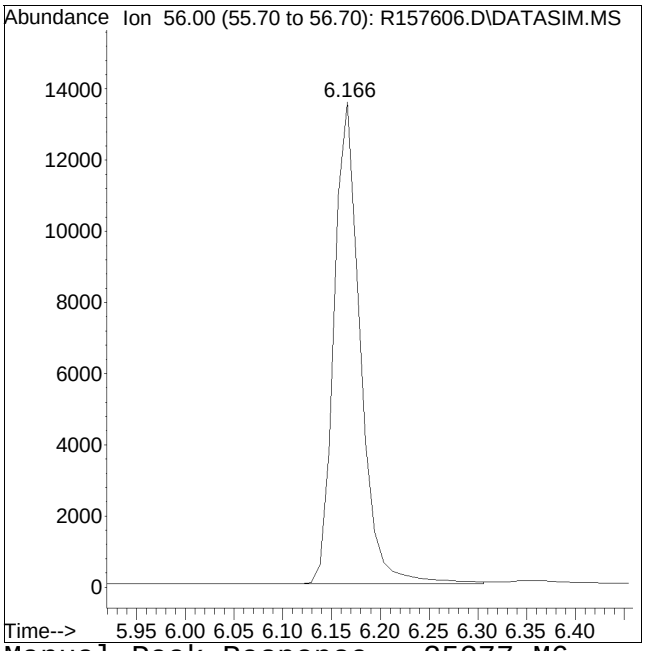
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157606.D
Date Inj'd : 2/27/2018 1:13 am
Sample : ITO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #12: acrolein



Original Peak Response = 25456



Manual Peak Response = 25377 M6

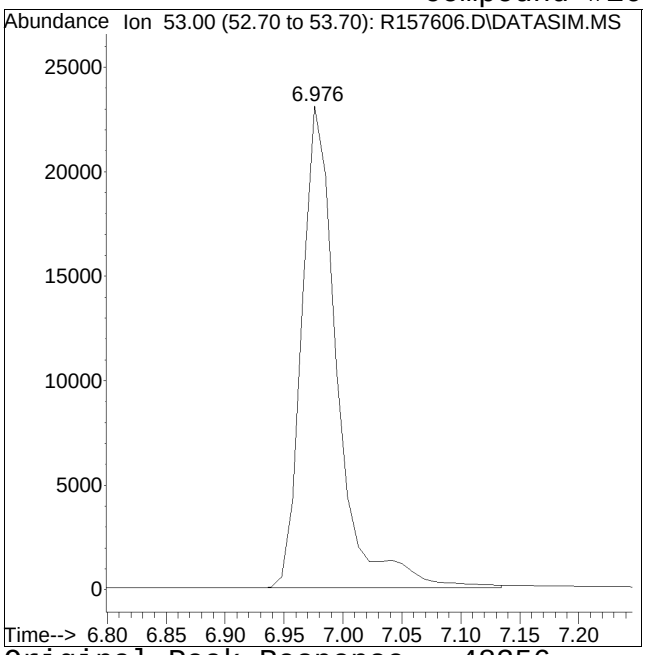
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

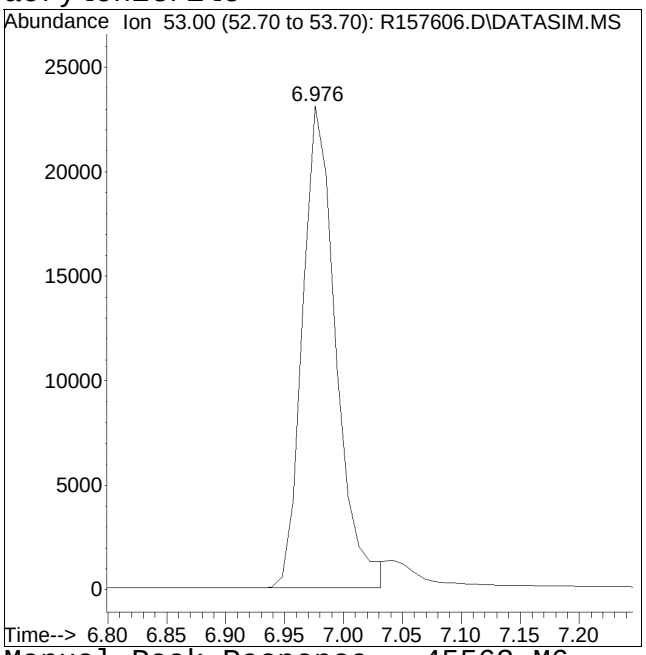
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157606.D
Date Inj'd : 2/27/2018 1:13 am
Sample : ITO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #16: acrylonitrile



Original Peak Response = 48356



Manual Peak Response = 45563 M6

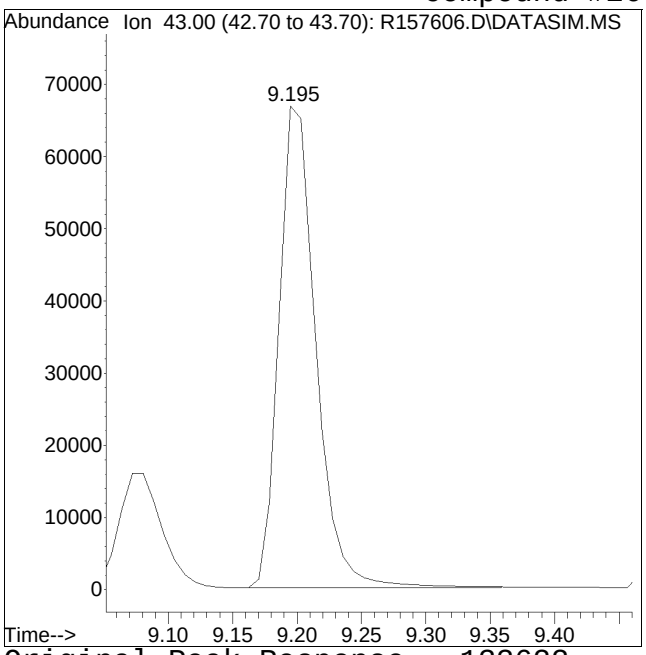
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

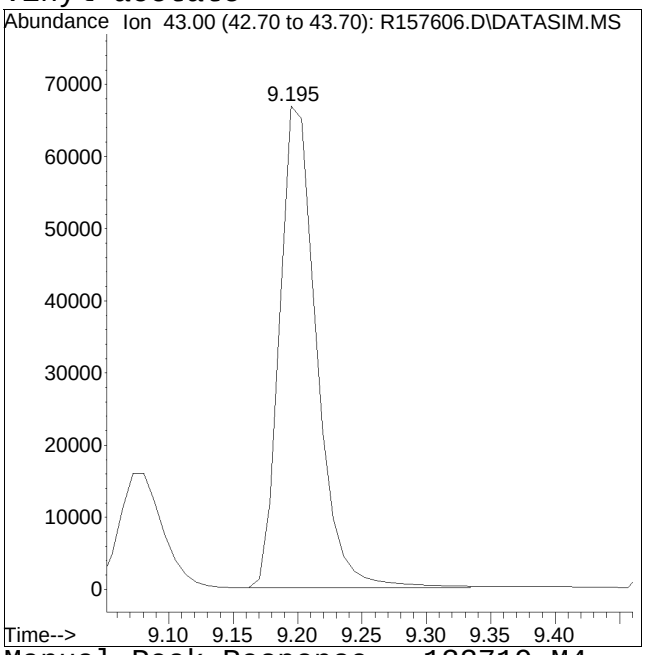
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157606.D
Date Inj'd : 2/27/2018 1:13 am
Sample : ITO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #26: vinyl acetate



Original Peak Response = 133622



Manual Peak Response = 133719 M4

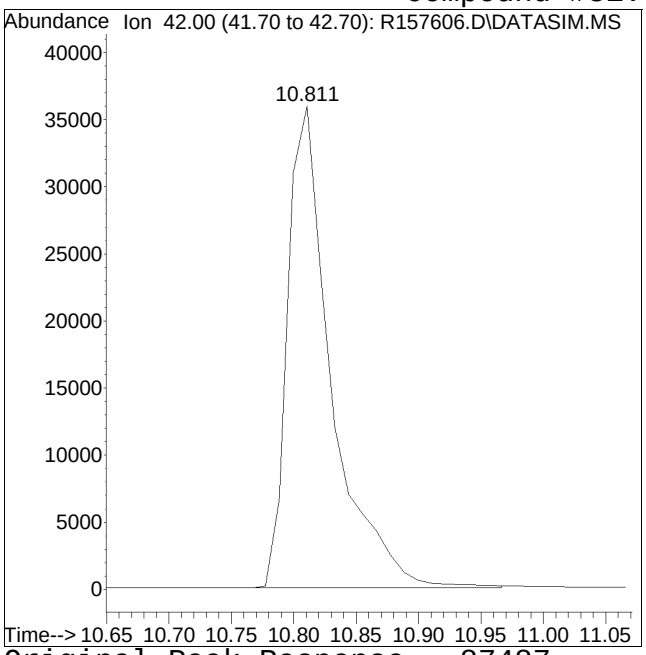
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

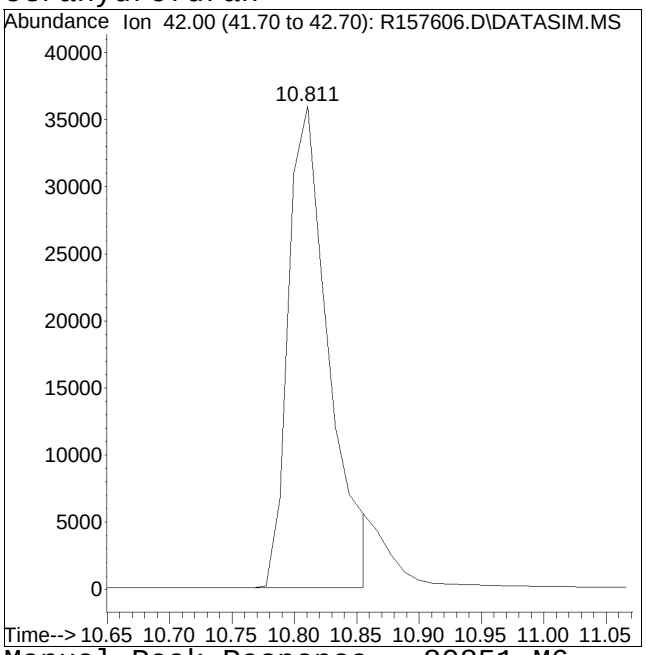
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157606.D
Date Inj'd : 2/27/2018 1:13 am
Sample : ITO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #31: Tetrahydrofuran



Original Peak Response = 87487



Manual Peak Response = 80851 M6

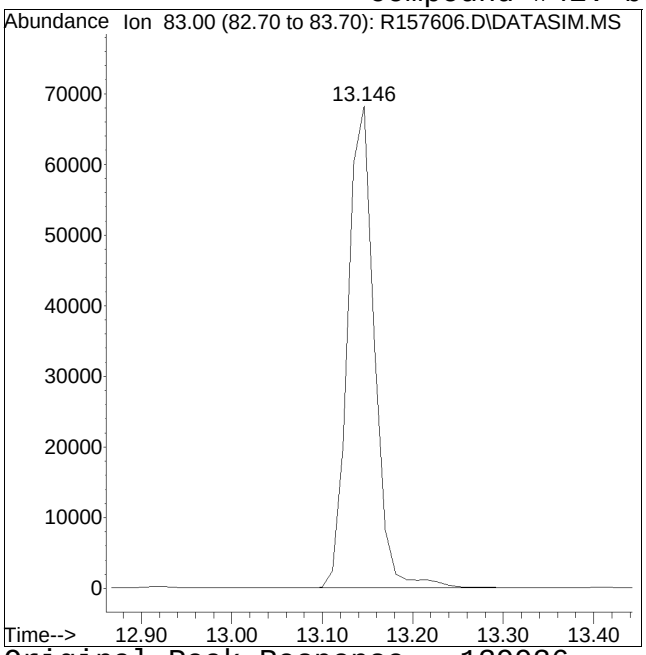
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

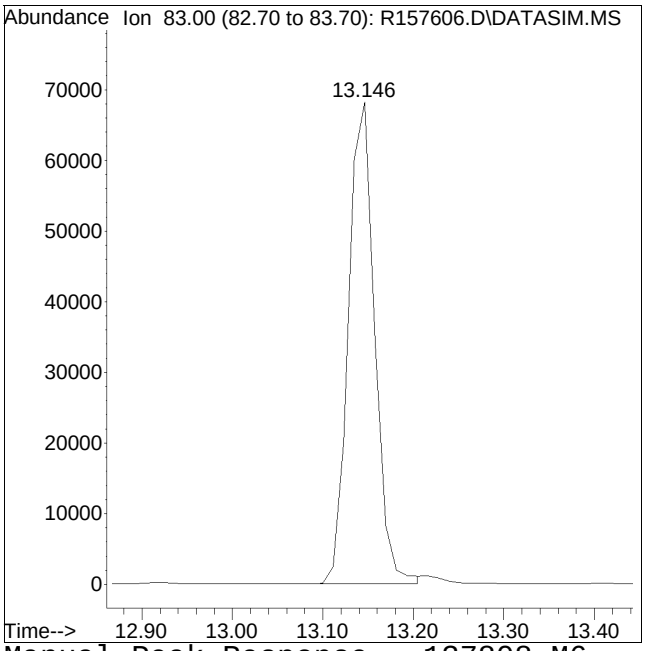
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157606.D
Date Inj'd : 2/27/2018 1:13 am
Sample : ITO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #42: bromodichloromethane



Original Peak Response = 139936



Manual Peak Response = 137808 M6

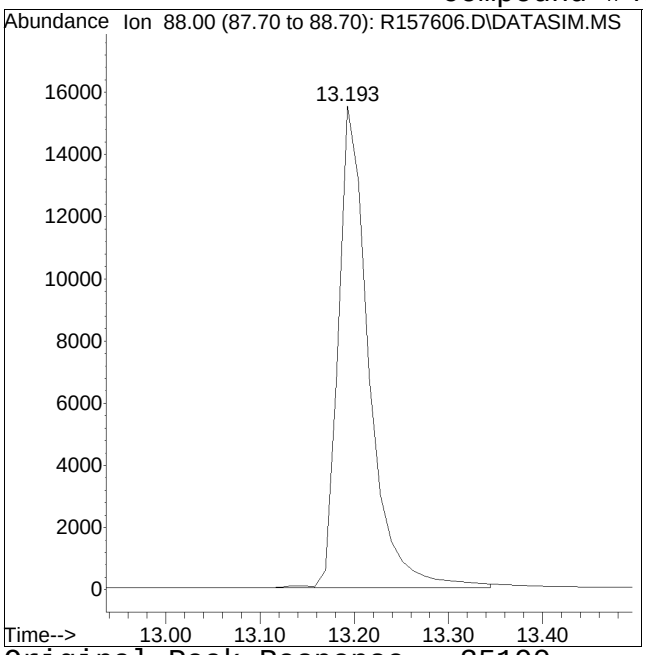
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

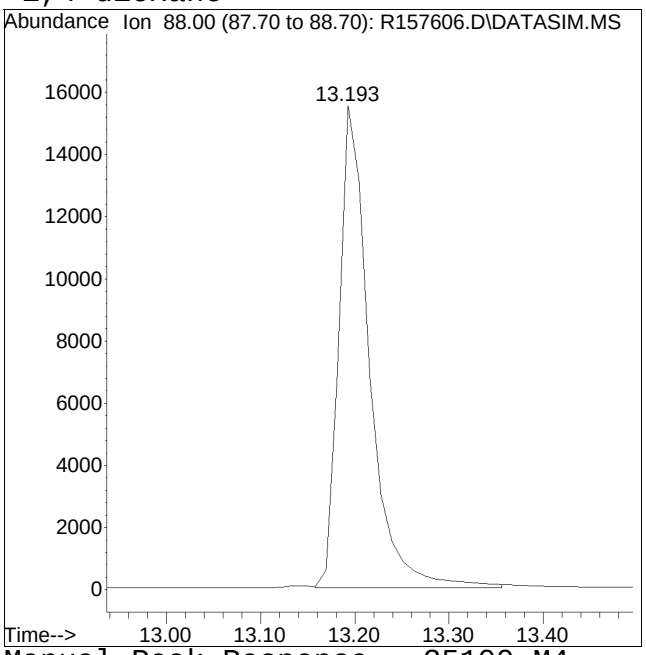
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157606.D
Date Inj'd : 2/27/2018 1:13 am
Sample : ITO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #43: 1,4-dioxane



Original Peak Response = 35190



Manual Peak Response = 35100 M4

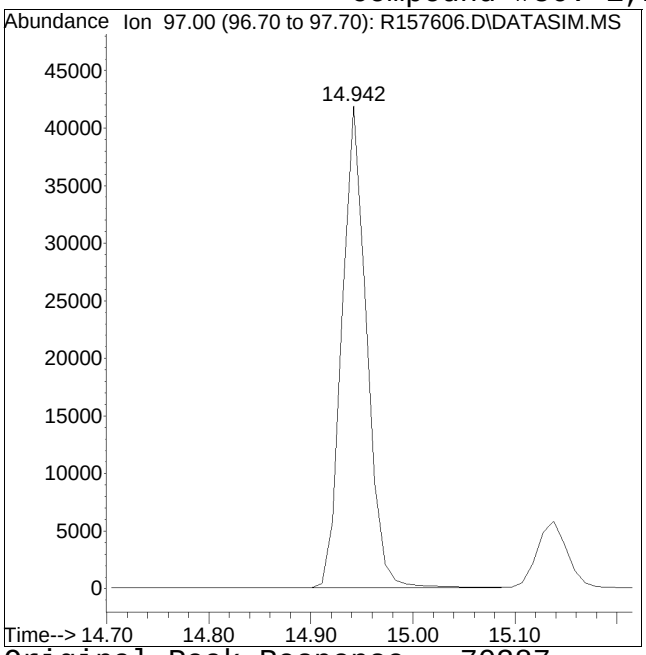
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

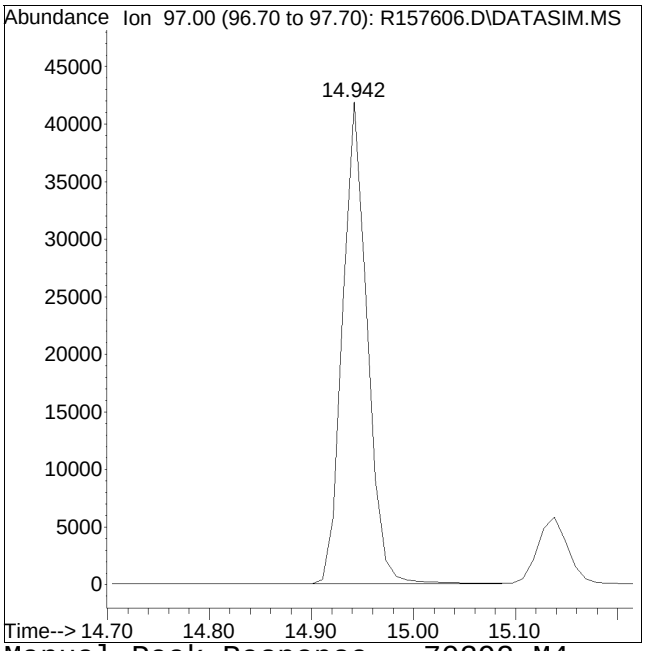
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157606.D
Date Inj'd : 2/27/2018 1:13 am
Sample : ITO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #50: 1,1,2-trichloroethane



Original Peak Response = 70387



Manual Peak Response = 70392 M4

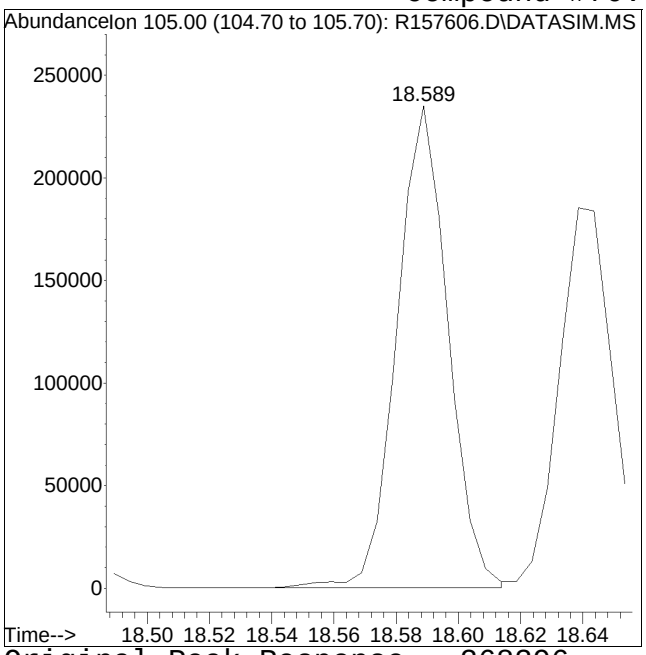
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

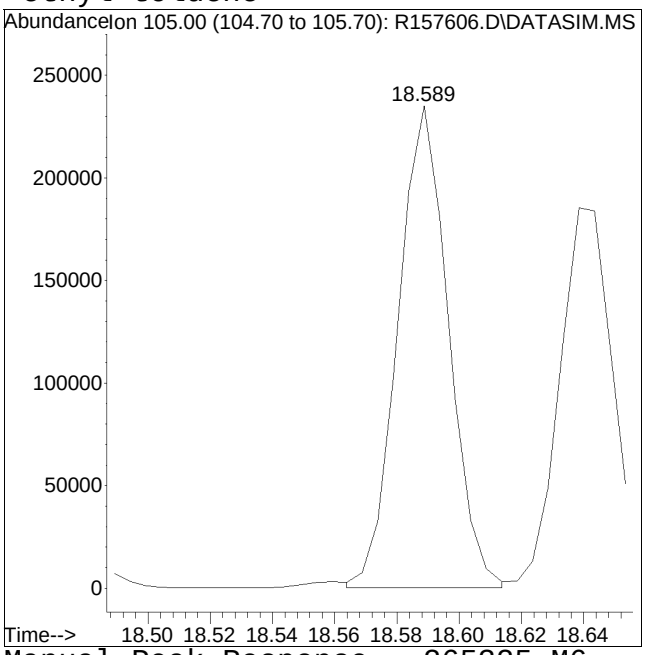
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157606.D
Date Inj'd : 2/27/2018 1:13 am
Sample : ITO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #70: 4-ethyl toluene



Original Peak Response = 268396



Manual Peak Response = 265325 M6

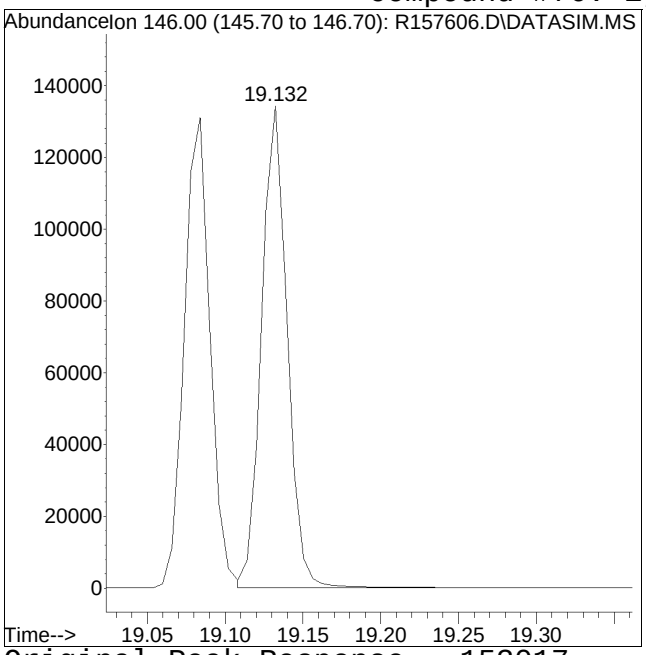
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

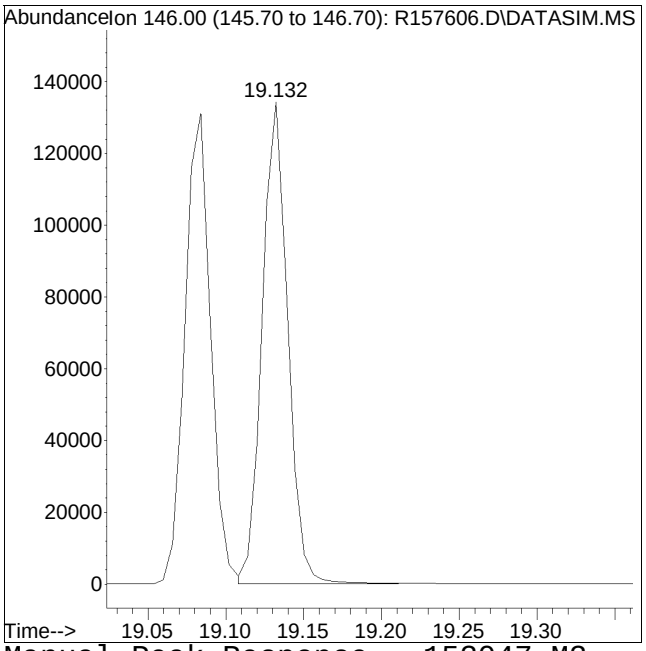
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157606.D
Date Inj'd : 2/27/2018 1:13 am
Sample : ITO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #76: 1,4-dichlorobenzene



Original Peak Response = 153017



Manual Peak Response = 153047 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157607.D
Acq On : 27 Feb 2018 1:47 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD10.0
Misc : WG1092763
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 27 12:45:44 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.181	49	209996	10.000	ppbV	0.00
Standard Area = 218948			Recovery = 95.91%			
33) 1,4-difluorobenzene	12.401	114	283319	10.000	ppbV	0.00
Standard Area = 315293			Recovery = 89.86%			
51) chlorobenzene-D5	16.822	54	82686	10.000	ppbV	0.00
Standard Area = 85423			Recovery = 96.80%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.066	65	112314	10.221	ppbV	0.01
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.21%			
53) toluene-D8	15.128	98	259856	9.852	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.52%			
67) bromofluorobenzene	18.012	95	148461	10.004	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.04%			
Target Compounds						Qvalue
2) propylene	4.051	41	104910M6	9.535	ppbV	
3) dichlorodifluoromethane	4.152	85	224900	9.542	ppbV	100
4) chloromethane	4.364	50	118913	9.806	ppbV	100
5) Freon-114	4.520	85	293663	9.750	ppbV	99
6) vinyl chloride	4.677	62	121652	9.776	ppbV	100
7) 1,3-butadiene	4.867	54	84240	9.908	ppbV	94
8) bromomethane	5.254	94	99133	9.462	ppbV	100
9) chloroethane	5.505	64	53991	9.214	ppbV	96
10) ethanol	5.691	31	466704M6	48.231	ppbV	
11) vinyl bromide	5.989	106	91220	9.680	ppbV	99
12) acrolein	6.166	56	47929	9.092	ppbV	98
13) acetone	6.343	43	746550	47.114	ppbV	100
14) trichlorofluoromethane	6.566	101	257313	9.718	ppbV	100
15) isopropyl alcohol	6.697	45	440748	20.398	ppbV	99
16) acrylonitrile	6.976	53	87459M6	9.720	ppbV	
17) 1,1-dichloroethene	7.404	61	202025	9.927	ppbV	97
18) tertiary butyl alcohol	7.488	59	231899	9.772	ppbV	97
19) methylene chloride	7.572	49	165141	10.133	ppbV	94
20) 3-chloropropene	7.721	41	172552	10.244	ppbV	97
21) carbon disulfide	7.897	76	321637	9.753	ppbV	100
22) Freon 113	7.916	101	200222	9.666	ppbV	98
23) trans-1,2-dichloroethene	8.745	61	185710	9.876	ppbV	97
24) 1,1-dichloroethane	8.991	63	229648	9.773	ppbV	99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157607.D
Acq On : 27 Feb 2018 1:47 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD10.0
Misc : WG1092763
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 27 12:45:44 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
25) MTBE	9.081	73	273700	9.841	ppbV	100
26) vinyl acetate	9.195	43	278664M4	10.378	ppbV	
27) 2-butanone	9.489	43	291530	10.289	ppbV	99
28) cis-1,2-dichloroethene	9.988	61	200804	9.839	ppbV	96
29) Ethyl Acetate	10.277	61	48689M6	10.439	ppbV	
30) chloroform	10.341	83	283064	9.837	ppbV	98
31) Tetrahydrofuran	10.800	42	165184M6	10.549	ppbV	
32) 1,2-dichloroethane	11.188	62	174928	9.880	ppbV	99
34) hexane	10.234	57	224675	10.077	ppbV	99
36) 1,1,1-trichloroethane	11.466	97	213771	10.065	ppbV	97
37) benzene	11.994	78	326155	10.095	ppbV	98
38) carbon tetrachloride	12.157	117	207337	10.264	ppbV	99
39) cyclohexane	12.297	56	187210	10.369	ppbV	97
40) dibromomethane	12.890	93	130919	9.226	ppbV	96
41) 1,2-dichloropropane	12.914	63	146822	10.098	ppbV	98
42) bromodichloromethane	13.146	83	257059M6	10.376	ppbV	
43) 1,4-dioxane	13.193	88	65782M6	10.521	ppbV	
44) trichloroethene	13.193	130	117735	10.124	ppbV	99
45) 2,2,4-trimethylpentane	13.216	57	601365	10.303	ppbV	97
46) heptane	13.507	43	260460	10.581	ppbV	98
47) cis-1,3-dichloropropene	14.170	75	779992	11.012	ppbV	98
48) 4-methyl-2-pentanone	14.187	43	362134	11.992	ppbV	98
49) trans-1,3-dichloropropene	14.756	75	183568	10.900	ppbV	97
50) 1,1,2-trichloroethane	14.942	97	128736	10.363	ppbV	96
52) toluene	15.221	91	366964	9.942	ppbV	100
54) 2-hexanone	15.468	43	346349	11.523	ppbV	99
55) dibromochloromethane	15.644	129	216866	10.391	ppbV	99
56) 1,2-dibromoethane	15.871	107	210052	10.311	ppbV	99
57) tetrachloroethene	16.283	166	139775	9.837	ppbV	98
58) 1,1,1,2-tetrachloroethane	16.842	131	141390	10.131	ppbV	99
59) chlorobenzene	16.857	112	278453	10.091	ppbV	100
60) ethylbenzene	17.156	91	487296	10.241	ppbV	100
61) m+p-xylene	17.300	91	772702	20.967	ppbV	100
62) bromoform	17.375	173	199540	10.509	ppbV	99
63) styrene	17.579	104	272880	11.066	ppbV	99
64) 1,1,2,2-tetrachloroethane	17.663	83	351524	10.523	ppbV	99
65) o-xylene	17.663	91	400234	10.340	ppbV	99
66) 1,2,3-trichloropropane	17.763	75	265704	10.493	ppbV	98
68) isopropylbenzene	18.101	105	466207	10.426	ppbV	99
69) bromobenzene	18.186	77	300650	10.477	ppbV	98

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157607.D
Acq On : 27 Feb 2018 1:47 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD10.0
Misc : WG1092763
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 27 12:45:44 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

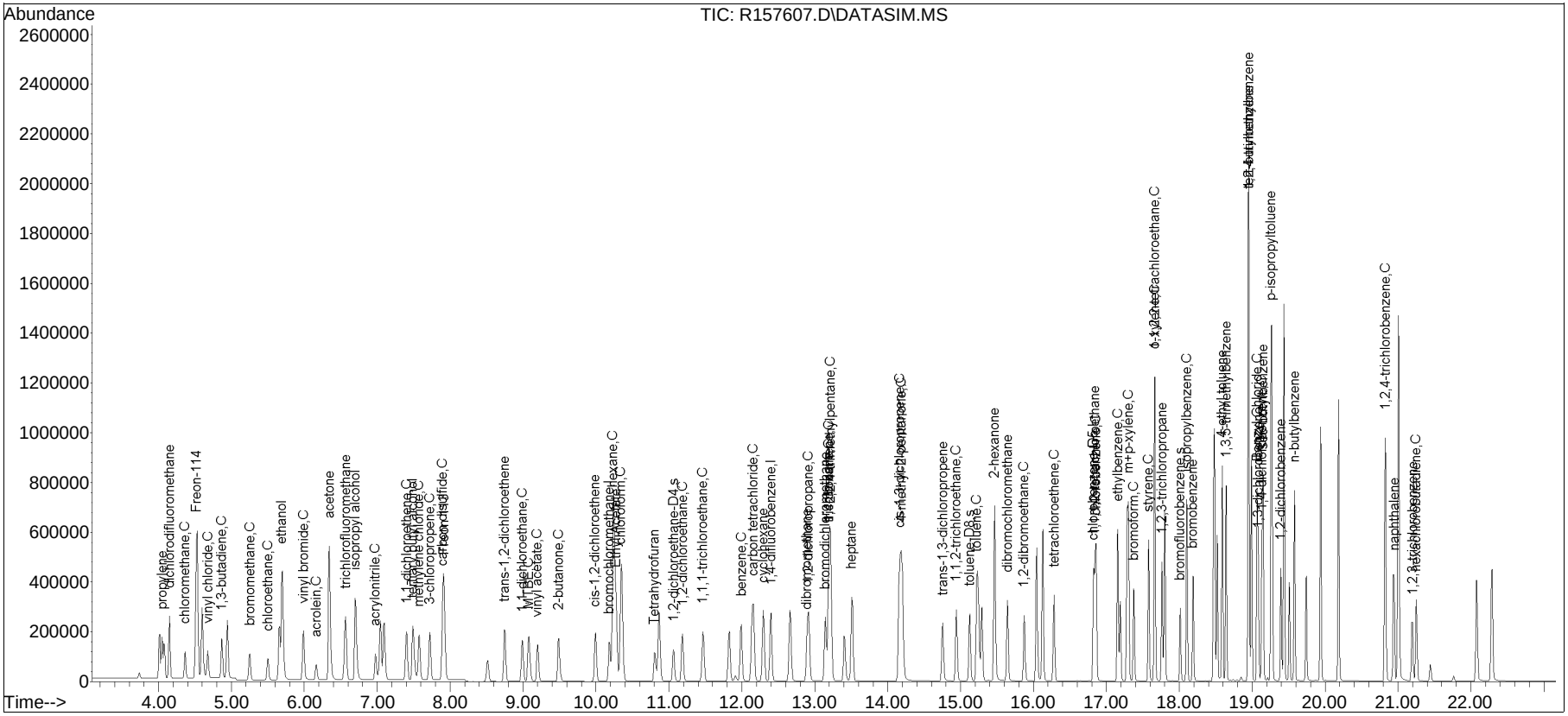
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) 4-ethyl toluene	18.589	105	509476M6	11.089	ppbV		
71) 1,3,5-trimethylbenzene	18.644	105	429595M4	10.781	ppbV		
72) tert-butylbenzene	18.951	119	418858	11.094	ppbV		98
73) 1,2,4-trimethylbenzene	18.951	105	447551	11.488	ppbV		98
74) Benzyl Chloride	19.066	91	409739	11.365	ppbV		100
75) 1,3-dichlorobenzene	19.084	146	289466	11.209	ppbV		97
76) 1,4-dichlorobenzene	19.132	146	295732M4	11.128	ppbV		
77) sec-butylbenzene	19.150	105	624511	11.192	ppbV		95
78) p-isopropyltoluene	19.259	119	506733	11.366	ppbV		100
79) 1,2-dichlorobenzene	19.392	146	275201	11.242	ppbV		99
80) n-butylbenzene	19.579	91	584918	12.062	ppbV		100
81) 1,2,4-trichlorobenzene	20.828	180	252565	14.166	ppbV		99
82) naphthalene	20.948	128	594896	12.895	ppbV	#	93
83) 1,2,3-trichlorobenzene	21.200	180	242558	14.767	ppbV		100
84) hexachlorobutadiene	21.248	225	207259	13.469	ppbV		99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0226SIM_ICAL\R157606.D

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157607.D
Acq On : 27 Feb 2018 1:47 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD10.0
Misc : WG1092763
ALS Vial : 7 Sample Multiplier: 1

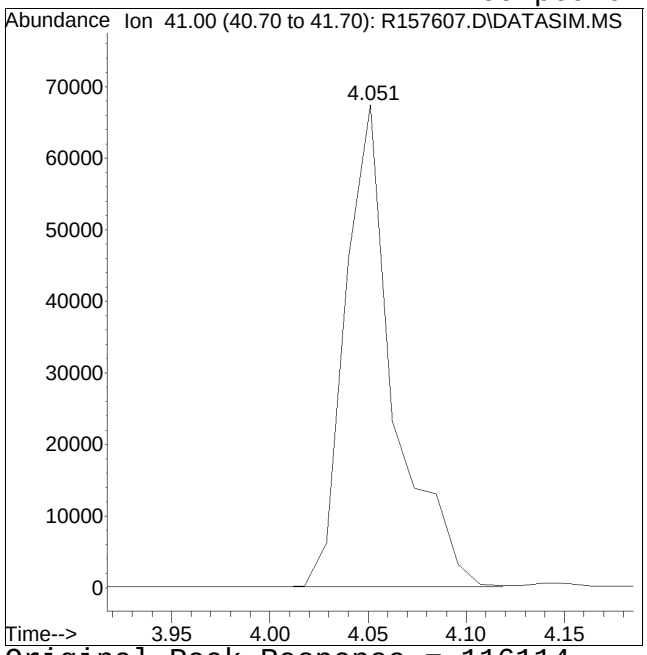
Quant Time: Feb 27 12:45:44 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration



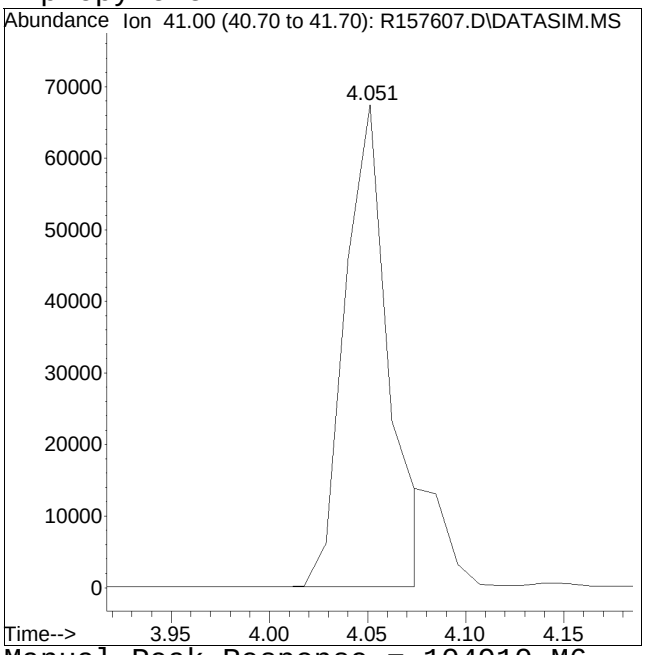
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157607.D
Date Inj'd : 2/27/2018 1:47 am
Sample : ITO15-SIMSTD10.0
Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #2: propylene



Original Peak Response = 116114



Manual Peak Response = 104910 M6

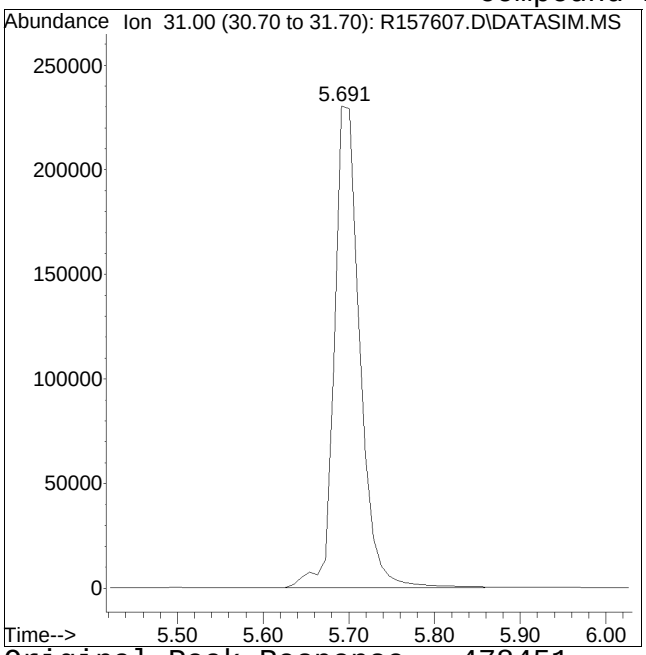
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

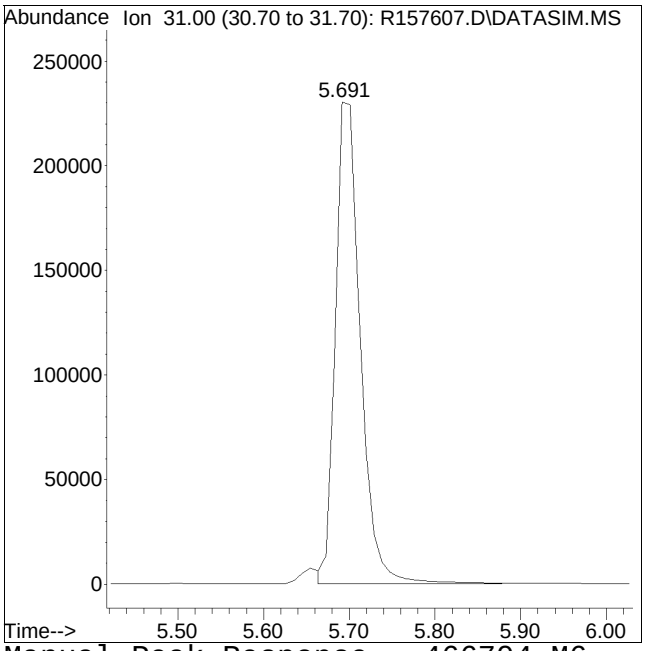
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157607.D
Date Inj'd : 2/27/2018 1:47 am
Sample : ITO15-SIMSTD10.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #10: ethanol



Original Peak Response = 478451



Manual Peak Response = 466704 M6

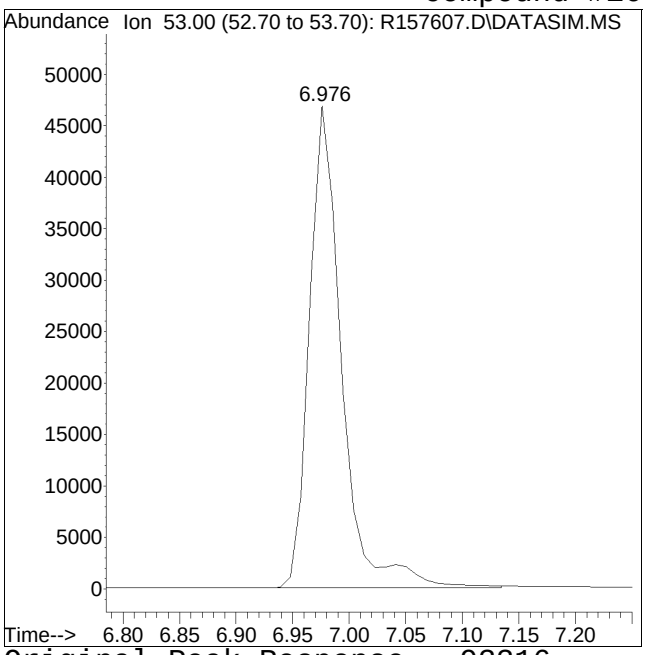
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

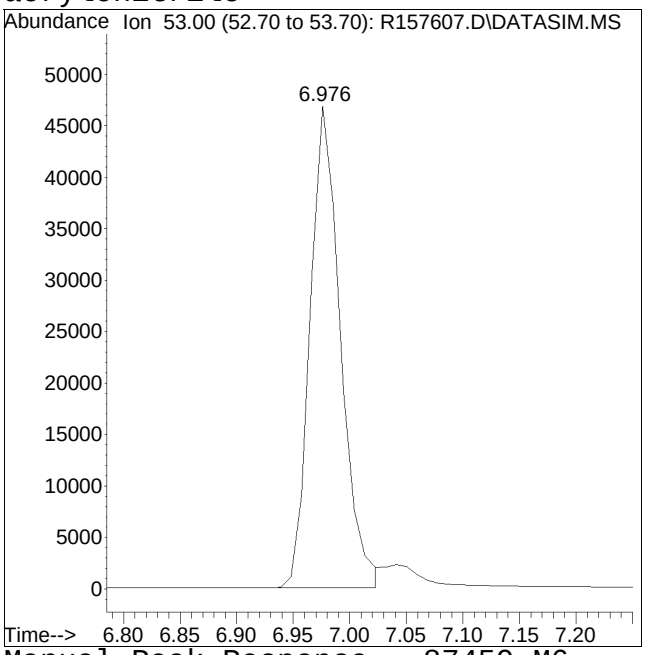
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157607.D
Date Inj'd : 2/27/2018 1:47 am
Sample : ITO15-SIMSTD10.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #16: acrylonitrile



Original Peak Response = 93316



Manual Peak Response = 87459 M6

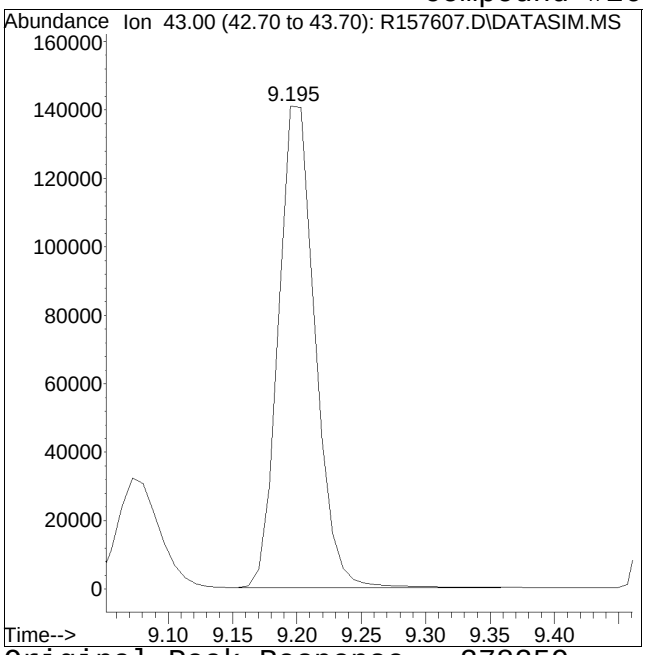
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

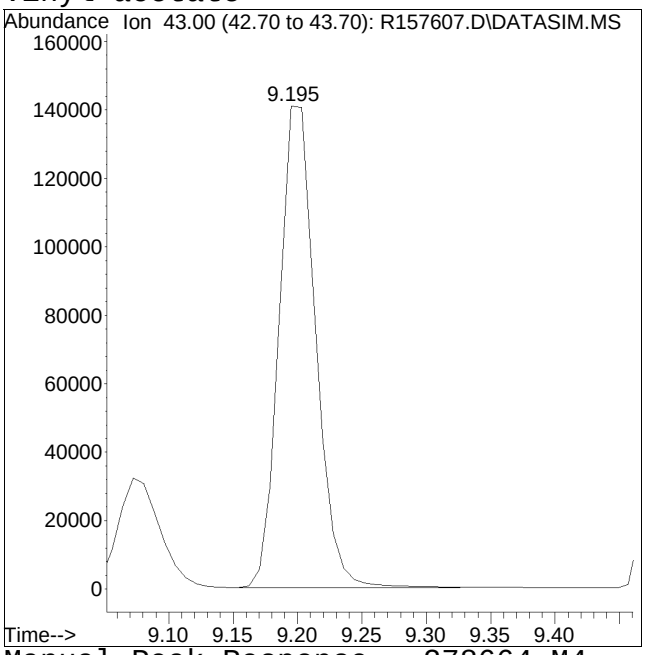
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157607.D
Date Inj'd : 2/27/2018 1:47 am
Sample : ITO15-SIMSTD10.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #26: vinyl acetate



Original Peak Response = 278259



Manual Peak Response = 278664 M4

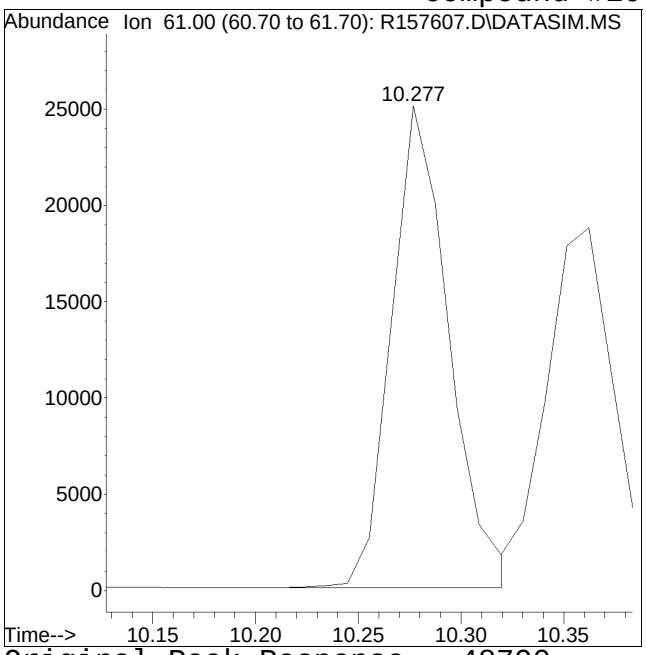
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

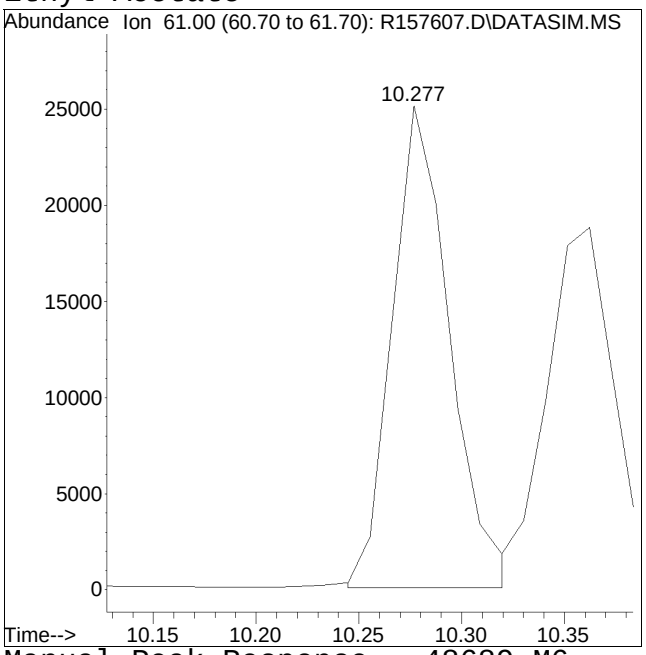
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157607.D
Date Inj'd : 2/27/2018 1:47 am
Sample : ITO15-SIMSTD10.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #29: Ethyl Acetate



Original Peak Response = 48790



Manual Peak Response = 48689 M6

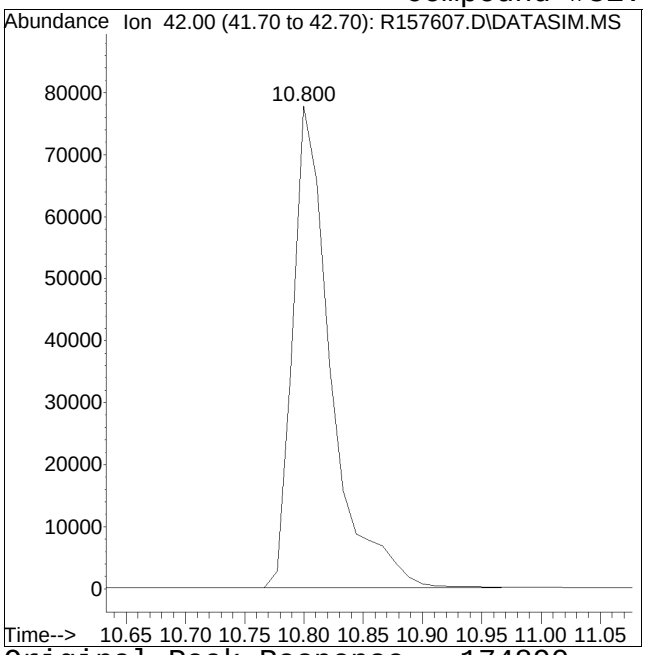
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

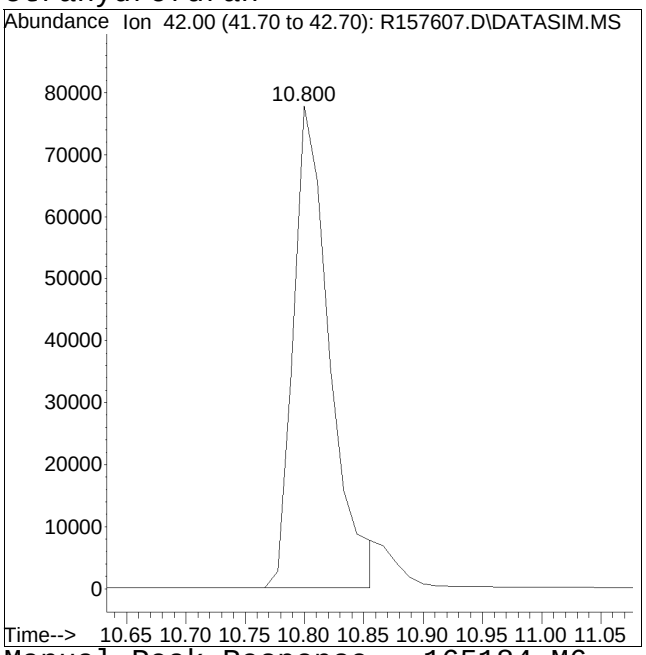
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157607.D
Date Inj'd : 2/27/2018 1:47 am
Sample : ITO15-SIMSTD10.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #31: Tetrahydrofuran



Original Peak Response = 174890



Manual Peak Response = 165184 M6

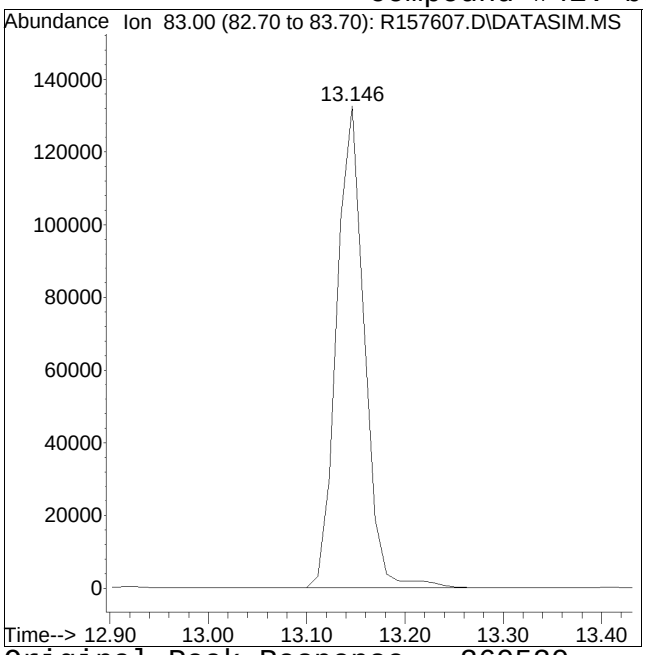
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

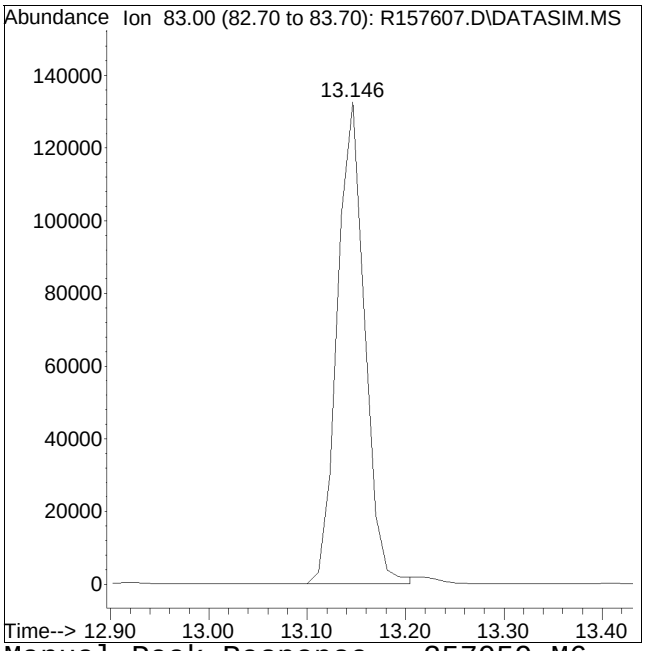
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157607.D
Date Inj'd : 2/27/2018 1:47 am
Sample : ITO15-SIMSTD10.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #42: bromodichloromethane



Original Peak Response = 260520



Manual Peak Response = 257059 M6

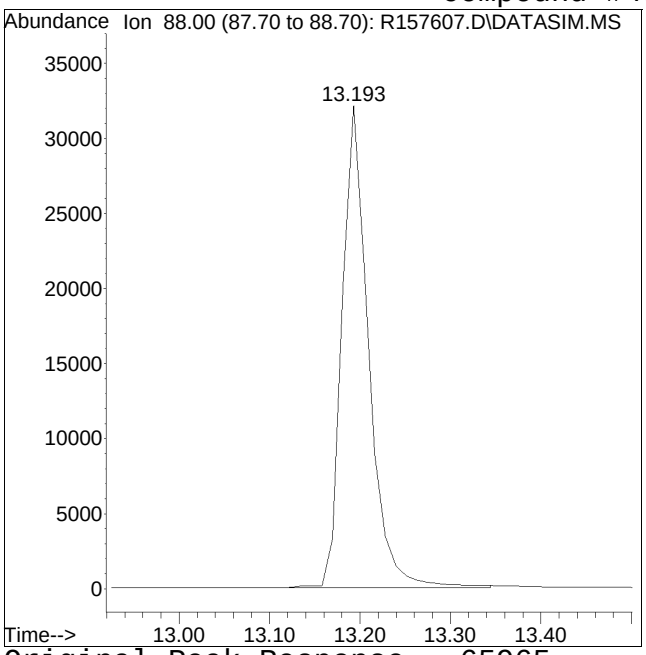
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

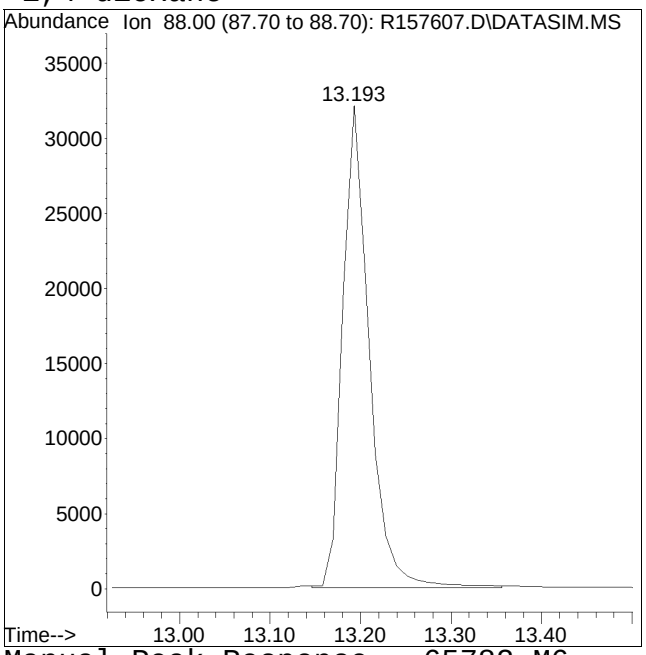
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157607.D
Date Inj'd : 2/27/2018 1:47 am
Sample : ITO15-SIMSTD10.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #43: 1,4-dioxane



Original Peak Response = 65965



Manual Peak Response = 65782 M6

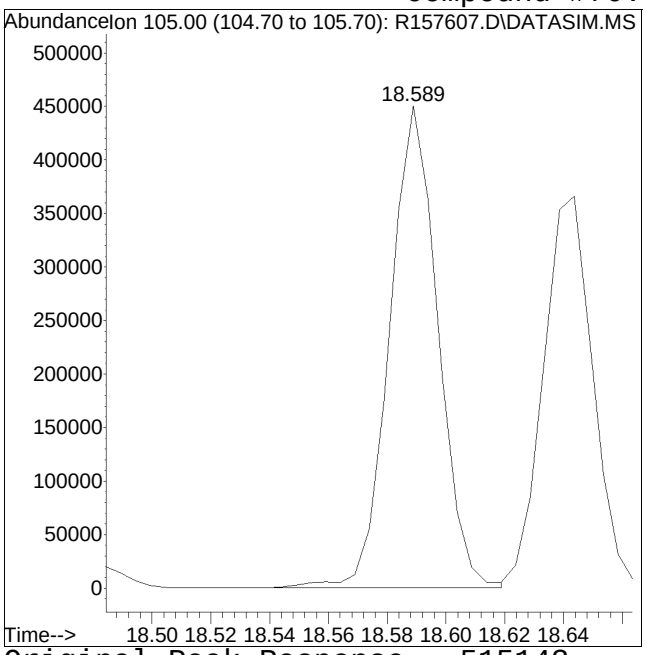
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

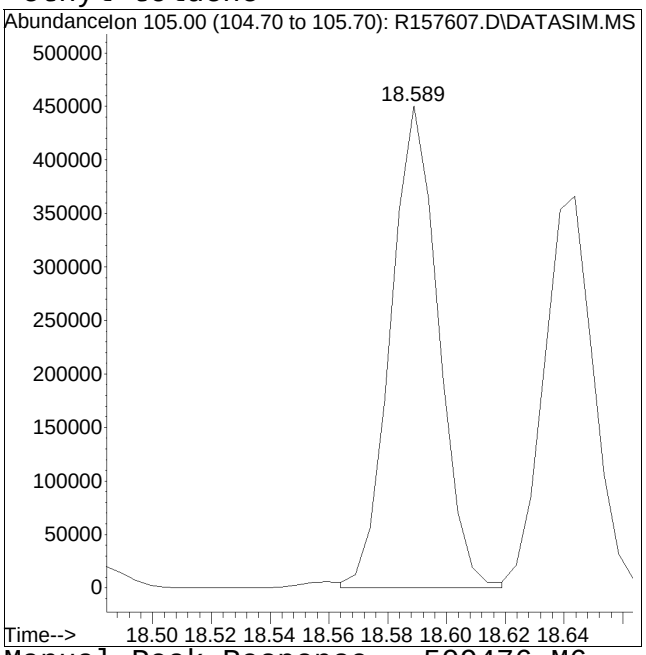
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157607.D
Date Inj'd : 2/27/2018 1:47 am
Sample : ITO15-SIMSTD10.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #70: 4-ethyl toluene



Original Peak Response = 515143



Manual Peak Response = 509476 M6

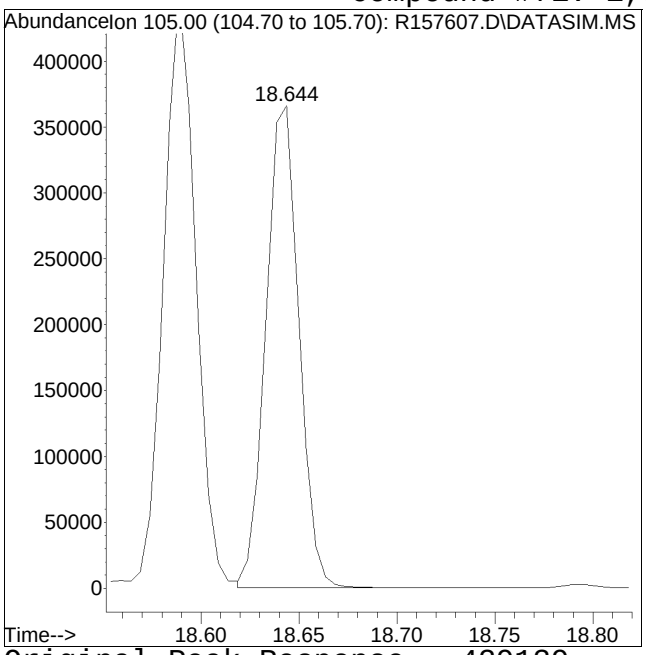
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

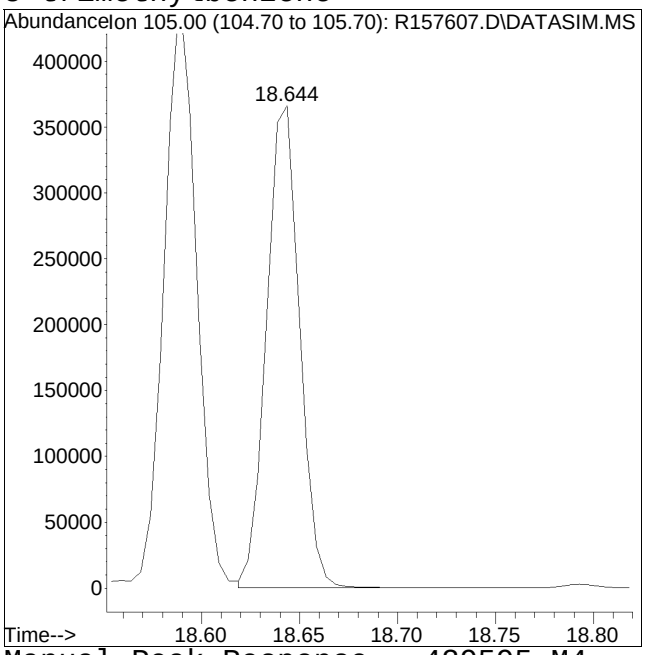
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157607.D
Date Inj'd : 2/27/2018 1:47 am
Sample : ITO15-SIMSTD10.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #71: 1,3,5-trimethylbenzene



Original Peak Response = 429139



Manual Peak Response = 429595 M4

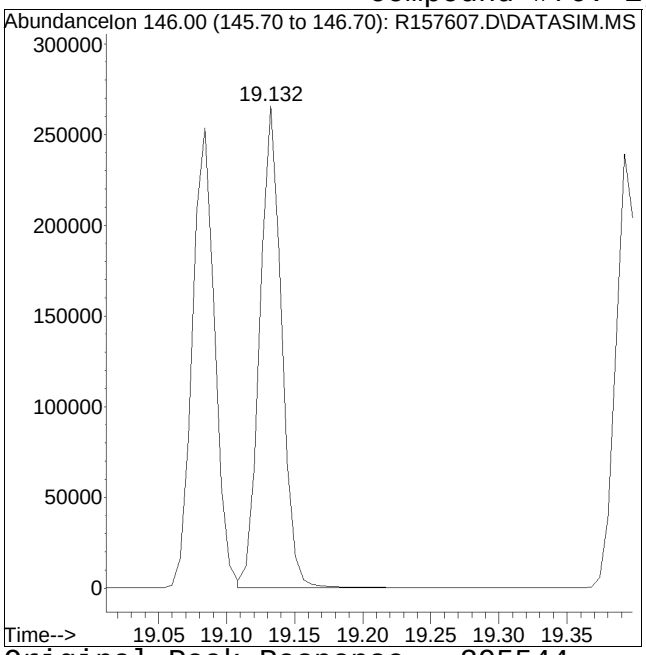
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

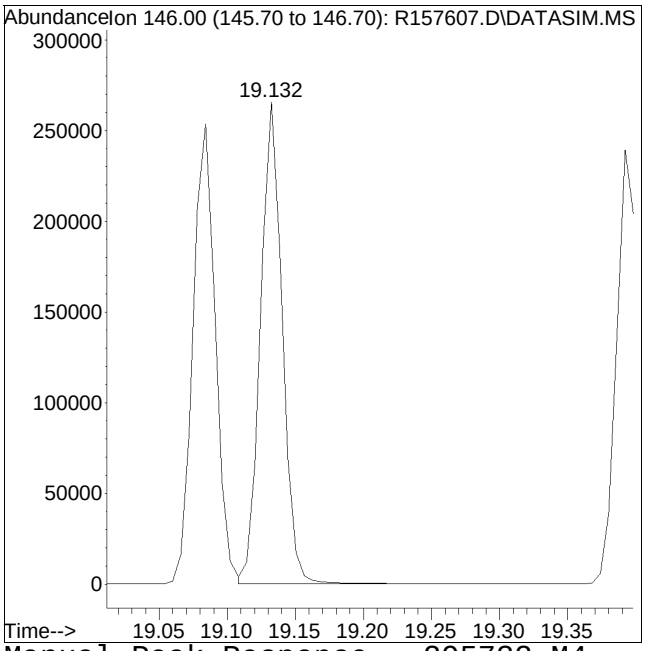
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157607.D
Date Inj'd : 2/27/2018 1:47 am
Sample : ITO15-SIMSTD10.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #76: 1,4-dichlorobenzene



Original Peak Response = 295544



Manual Peak Response = 295732 M4

M4 = Poor automated baseline construction.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157608.D
Acq On : 27 Feb 2018 2:18 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD20.0
Misc : WG1092763
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 27 12:45:49 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.181	49	221561	10.000	ppbV	0.00
Standard Area = 218948			Recovery = 101.19%			
33) 1,4-difluorobenzene	12.401	114	313930	10.000	ppbV	0.00
Standard Area = 315293			Recovery = 99.57%			
51) chlorobenzene-D5	16.822	54	85398	10.000	ppbV	0.00
Standard Area = 85423			Recovery = 99.97%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.066	65	119386	9.806	ppbV	0.01
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.06%			
53) toluene-D8	15.128	98	284438	10.442	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 104.42%			
67) bromofluorobenzene	18.012	95	163372	10.659	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 106.59%			
Target Compounds						Qvalue
2) propylene	4.051	41	204784M6	17.641	ppbV	
3) dichlorodifluoromethane	4.152	85	564941	22.719	ppbV	99
4) chloromethane	4.364	50	235440	18.402	ppbV	100
5) Freon-114	4.520	85	610179	19.201	ppbV	98
6) vinyl chloride	4.677	62	250565	19.085	ppbV	100
7) 1,3-butadiene	4.867	54	169854M6	18.935	ppbV	
8) bromomethane	5.245	94	212923	19.262	ppbV	99
9) chloroethane	5.505	64	114594	18.535	ppbV	100
10) ethanol	5.691	31	883116M6	86.500	ppbV	
11) vinyl bromide	5.989	106	199399	20.055	ppbV	100
12) acrolein	6.157	56	101798	18.303	ppbV	99
13) acetone	6.334	43	1584106	94.754	ppbV	99
14) trichlorofluoromethane	6.566	101	557898	19.971	ppbV	100
15) isopropyl alcohol	6.697	45	948140	41.590	ppbV	99
16) acrylonitrile	6.976	53	183922	19.374	ppbV	99
17) 1,1-dichloroethene	7.404	61	420409	19.579	ppbV	100
18) tertiary butyl alcohol	7.488	59	475010	18.971	ppbV	99
19) methylene chloride	7.572	49	336196	19.552	ppbV	99
20) 3-chloropropene	7.721	41	346289	19.486	ppbV	99
21) carbon disulfide	7.897	76	699752	20.110	ppbV	94
22) Freon 113	7.916	101	445474	20.382	ppbV	99
23) trans-1,2-dichloroethene	8.745	61	397346	20.028	ppbV	97
24) 1,1-dichloroethane	8.991	63	492501	19.865	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157608.D
Acq On : 27 Feb 2018 2:18 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD20.0
Misc : WG1092763
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 27 12:45:49 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	9.072	73	580518	19.784	ppbV		100
26) vinyl acetate	9.195	43	605674M4	21.379	ppbV		
27) 2-butanone	9.481	43	597867	19.998	ppbV		100
28) cis-1,2-dichloroethene	9.988	61	425388	19.756	ppbV		100
29) Ethyl Acetate	10.277	61	106878	21.719	ppbV		84
30) chloroform	10.341	83	613215	20.198	ppbV		99
31) Tetrahydrofuran	10.800	42	331505M6	20.065	ppbV		
32) 1,2-dichloroethane	11.188	62	365705	19.576	ppbV		100
34) hexane	10.234	57	490899	19.870	ppbV		99
36) 1,1,1-trichloroethane	11.466	97	464885	19.754	ppbV		100
37) benzene	11.994	78	706365	19.732	ppbV		100
38) carbon tetrachloride	12.157	117	461921	20.638	ppbV		100
39) cyclohexane	12.297	56	401227	20.056	ppbV		99
40) dibromomethane	12.890	93	290234	18.460	ppbV		100
41) 1,2-dichloropropane	12.913	63	321561	19.960	ppbV		99
42) bromodichloromethane	13.146	83	564012M6	20.546	ppbV		
43) 1,4-dioxane	13.181	88	151259M6	21.832	ppbV		
44) trichloroethene	13.193	130	265194	20.581	ppbV		100
45) 2,2,4-trimethylpentane	13.216	57	1283127	19.839	ppbV		100
46) heptane	13.507	43	534620	19.602	ppbV		100
47) cis-1,3-dichloropropene	14.170	75	1692415	21.563	ppbV		99
48) 4-methyl-2-pentanone	14.187	43	734201	21.942	ppbV	#	92
49) trans-1,3-dichloropropene	14.756	75	423680	22.704	ppbV		98
50) 1,1,2-trichloroethane	14.942	97	286380	20.806	ppbV		99
52) toluene	15.220	91	788103	20.673	ppbV		99
54) 2-hexanone	15.458	43	726807	23.414	ppbV	#	96
55) dibromochloromethane	15.644	129	488982	22.686	ppbV		99
56) 1,2-dibromoethane	15.871	107	462829	21.998	ppbV		99
57) tetrachloroethene	16.283	166	324811	22.134	ppbV		100
58) 1,1,1,2-tetrachloroethane	16.842	131	317549	22.031	ppbV		99
59) chlorobenzene	16.857	112	616504	21.632	ppbV		100
60) ethylbenzene	17.156	91	1053536	21.438	ppbV		99
61) m+p-xylene	17.300	91	1659996	43.614	ppbV		99
62) bromoform	17.375	173	451930	23.045	ppbV		99
63) styrene	17.579	104	599607	23.544	ppbV		99
64) 1,1,2,2-tetrachloroethane	17.663	83	771775	22.369	ppbV		100
65) o-xylene	17.663	91	869077	21.739	ppbV		99
66) 1,2,3-trichloropropane	17.763	75	564013	21.565	ppbV		99
68) isopropylbenzene	18.101	105	1017970	22.043	ppbV		99
69) bromobenzene	18.186	77	662679	22.359	ppbV		100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157608.D
Acq On : 27 Feb 2018 2:18 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD20.0
Misc : WG1092763
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 27 12:45:49 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

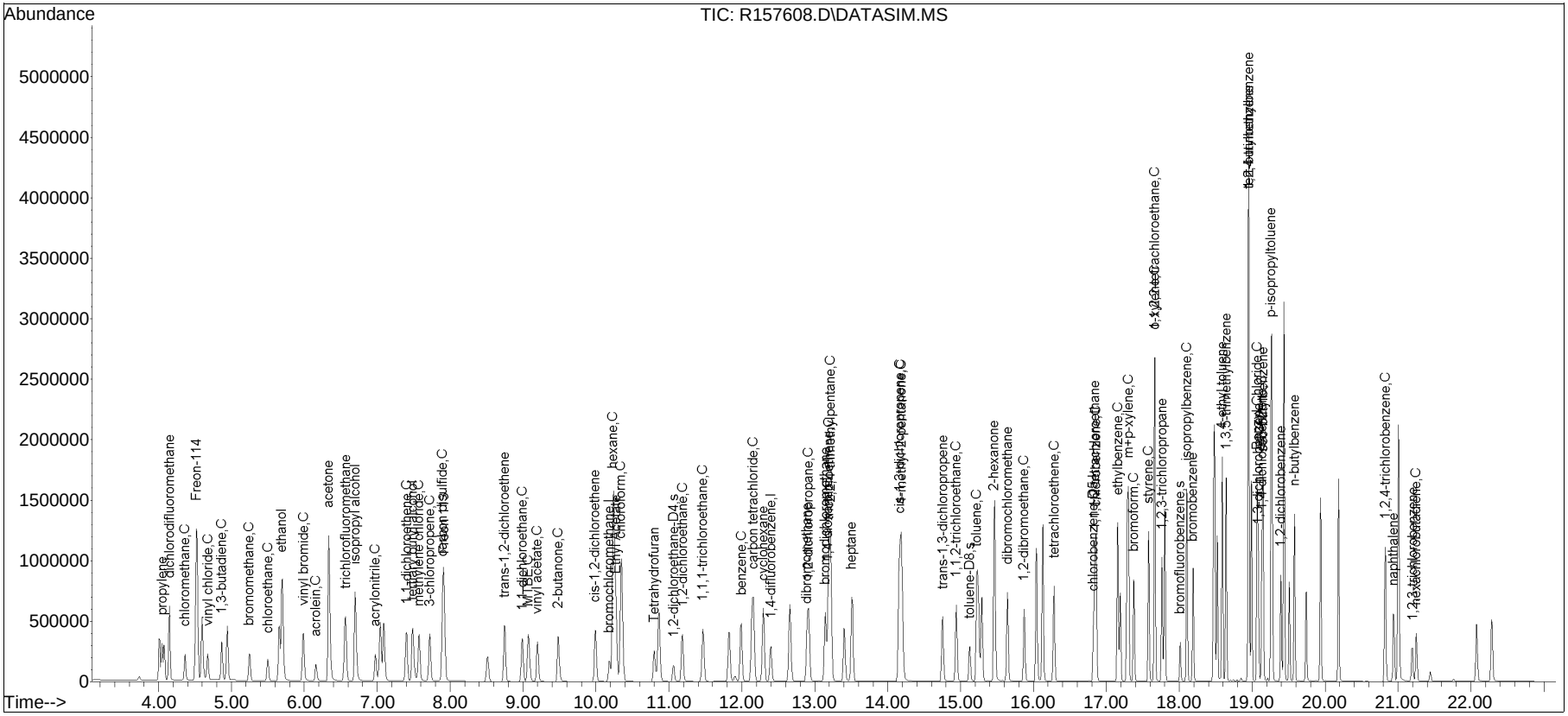
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) 4-ethyl toluene	18.589	105	1069730M6	22.544	ppbV	
71) 1,3,5-trimethylbenzene	18.644	105	903179M4	21.947	ppbV	
72) tert-butylbenzene	18.951	119	859365	22.038	ppbV	96
73) 1,2,4-trimethylbenzene	18.951	105	917521	22.803	ppbV	98
74) Benzyl Chloride	19.066	91	877775	23.573	ppbV	99
75) 1,3-dichlorobenzene	19.084	146	603332	22.621	ppbV	97
76) 1,4-dichlorobenzene	19.132	146	606615M4	22.101	ppbV	
77) sec-butylbenzene	19.150	105	1258559	21.839	ppbV	93
78) p-isopropyltoluene	19.259	119	985066	21.393	ppbV	99
79) 1,2-dichlorobenzene	19.392	146	541934	21.436	ppbV	98
80) n-butylbenzene	19.579	91	1065742	21.280	ppbV	98
81) 1,2,4-trichlorobenzene	20.828	180	331424	17.999	ppbV	100
82) naphthalene	20.936	128	732418	15.371	ppbV	100
83) 1,2,3-trichlorobenzene	21.200	180	281619	16.601	ppbV	100
84) hexachlorobutadiene	21.248	225	252453	15.885	ppbV	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0226SIM_ICAL\R157606.D

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157608.D
Acq On : 27 Feb 2018 2:18 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD20.0
Misc : WG1092763
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 27 12:45:49 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

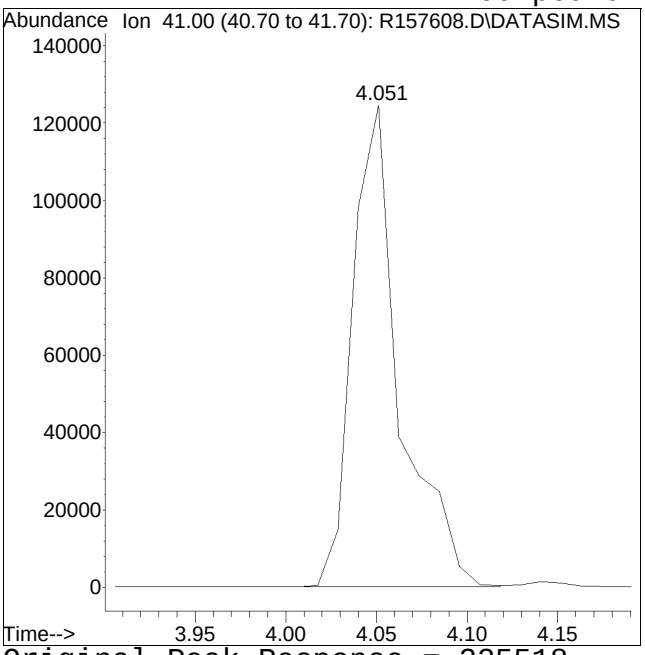


Manual Integration/Negative Proof Report

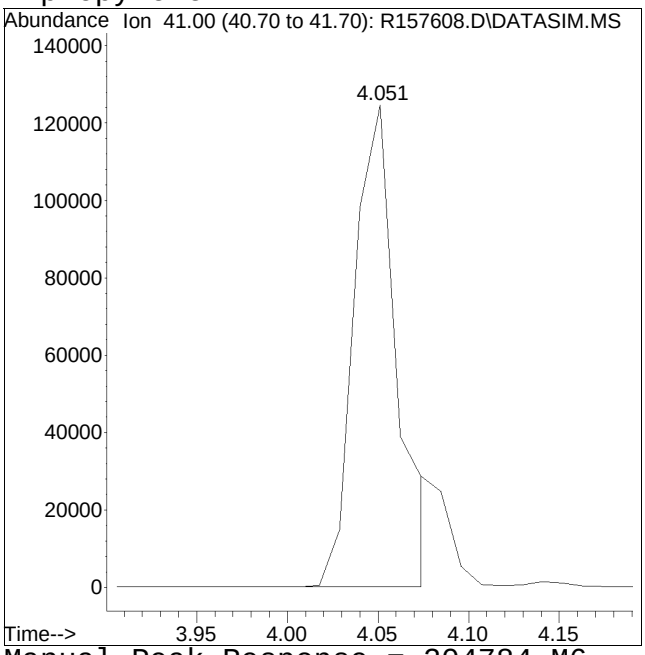
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157608.D
Date Inj'd : 2/27/2018 2:18 am
Sample : ITO15-SIMSTD20.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #2: propylene



Original Peak Response = 225518



Manual Peak Response = 204784 M6

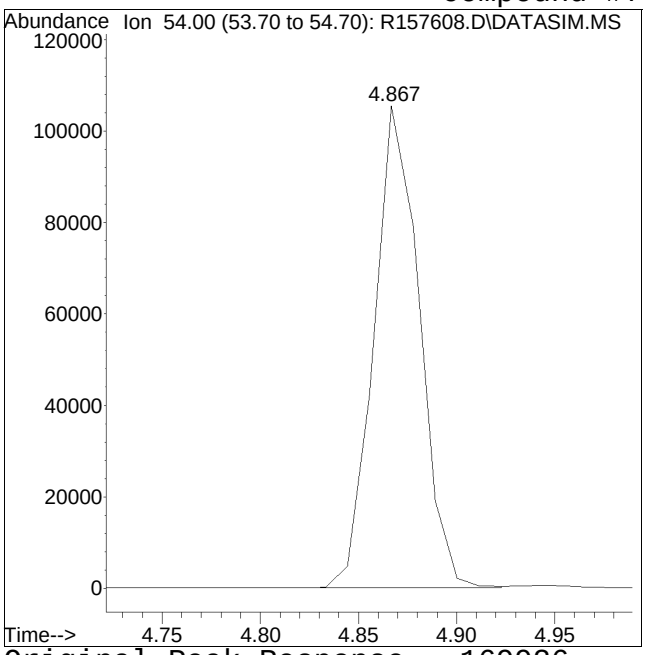
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

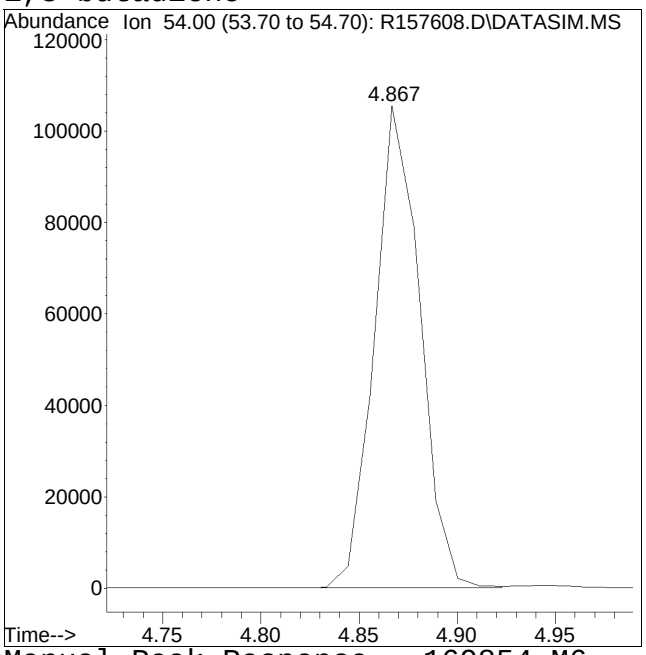
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157608.D
Date Inj'd : 2/27/2018 2:18 am
Sample : ITO15-SIMSTD20.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #7: 1,3-butadiene



Original Peak Response = 169926



Manual Peak Response = 169854 M6

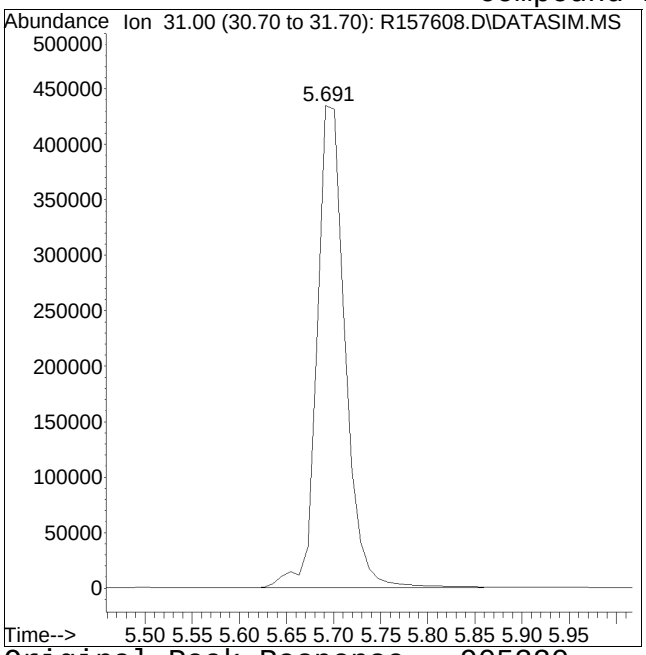
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

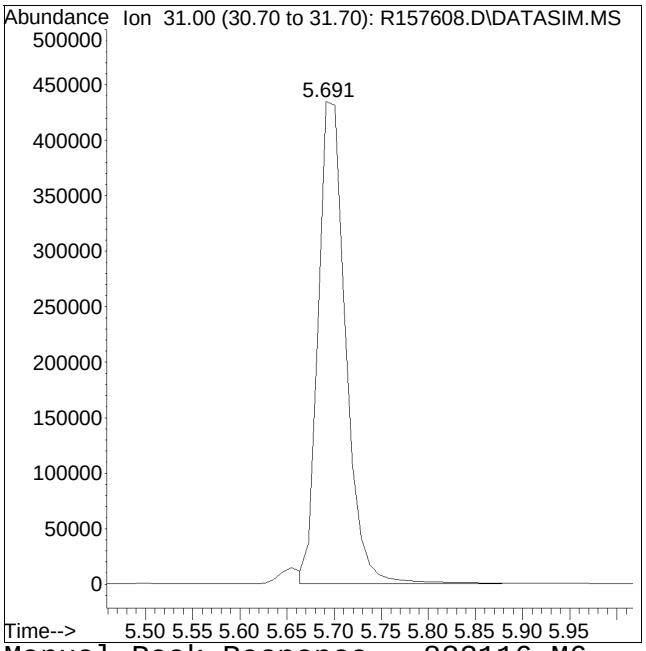
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157608.D
Date Inj'd : 2/27/2018 2:18 am
Sample : ITO15-SIMSTD20.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #10: ethanol



Original Peak Response = 905320



Manual Peak Response = 883116 M6

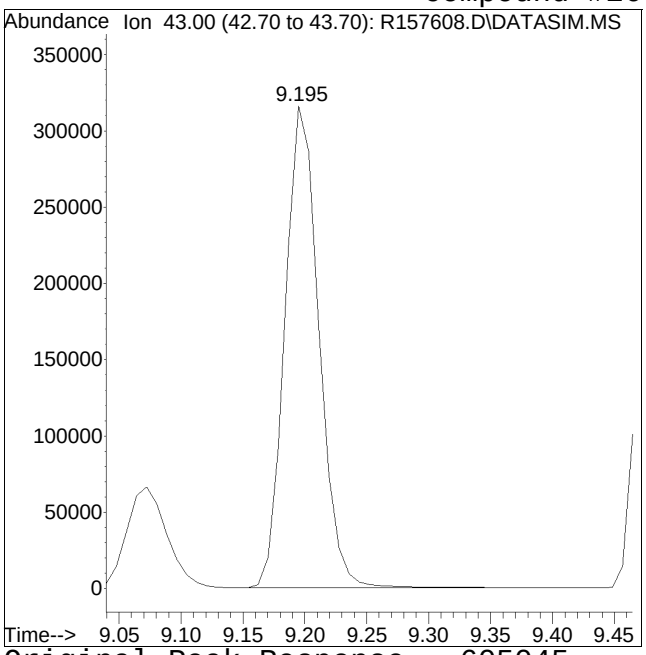
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

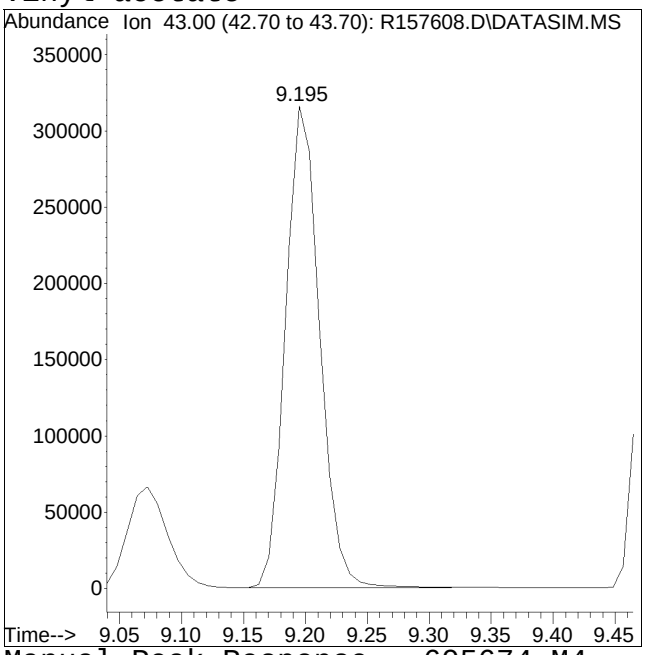
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157608.D
Date Inj'd : 2/27/2018 2:18 am
Sample : ITO15-SIMSTD20.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #26: vinyl acetate



Original Peak Response = 605045



Manual Peak Response = 605674 M4

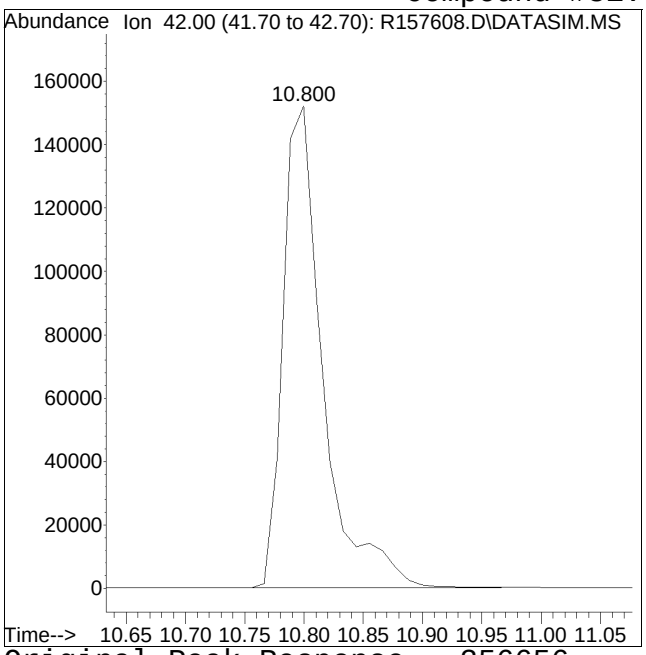
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

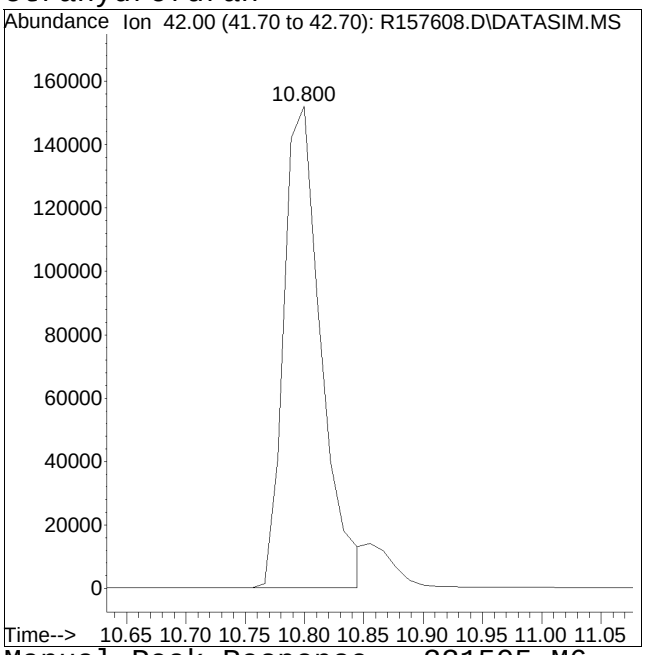
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157608.D
Date Inj'd : 2/27/2018 2:18 am
Sample : ITO15-SIMSTD20.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #31: Tetrahydrofuran



Original Peak Response = 356656



Manual Peak Response = 331505 M6

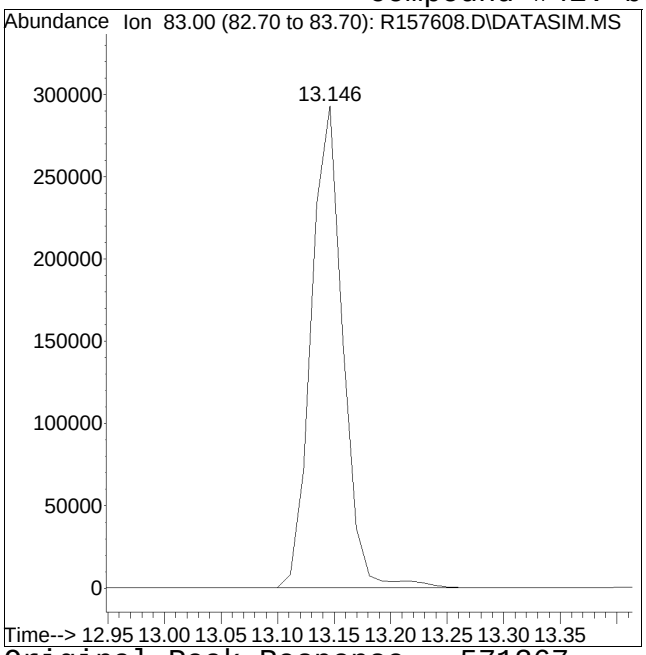
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

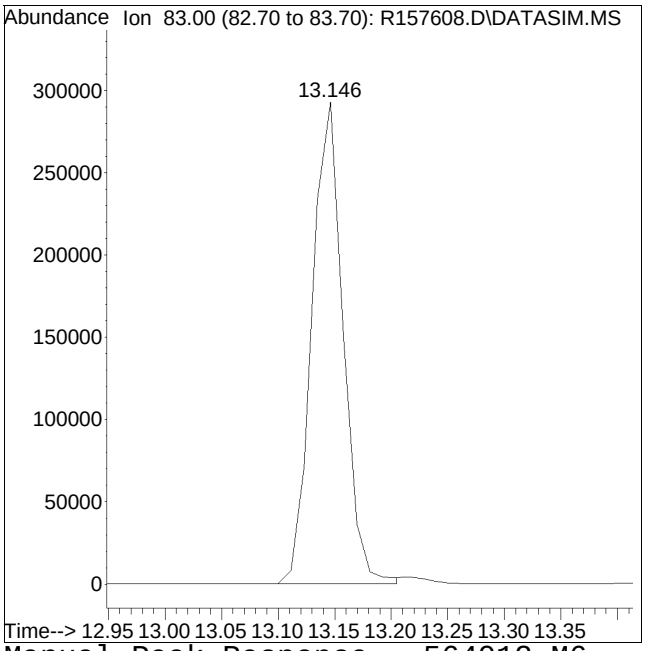
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157608.D
Date Inj'd : 2/27/2018 2:18 am
Sample : ITO15-SIMSTD20.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #42: bromodichloromethane



Original Peak Response = 571367



Manual Peak Response = 564012 M6

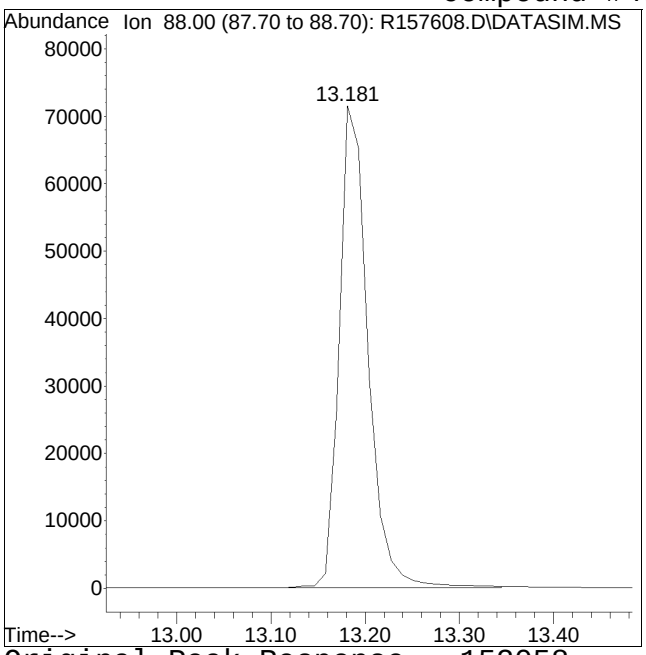
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

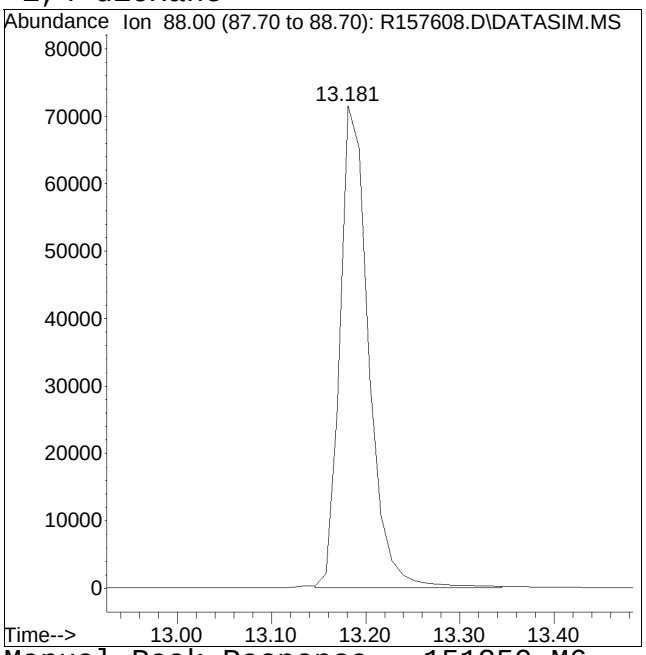
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157608.D
Date Inj'd : 2/27/2018 2:18 am
Sample : ITO15-SIMSTD20.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #43: 1,4-dioxane



Original Peak Response = 152058



Manual Peak Response = 151259 M6

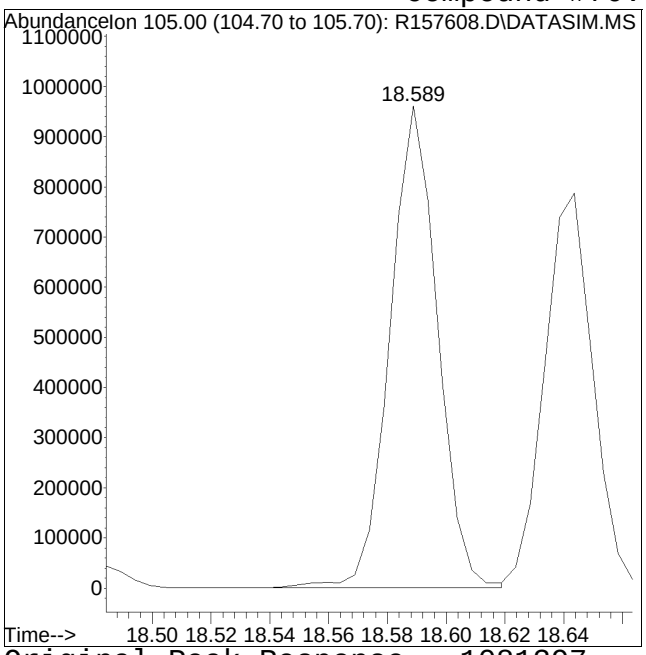
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

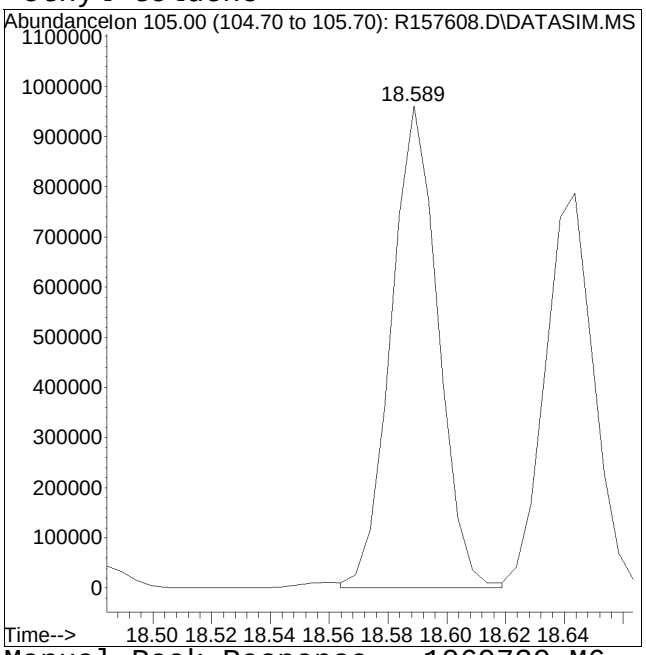
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157608.D
Date Inj'd : 2/27/2018 2:18 am
Sample : ITO15-SIMSTD20.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #70: 4-ethyl toluene



Original Peak Response = 1081397



Manual Peak Response = 1069730 M6

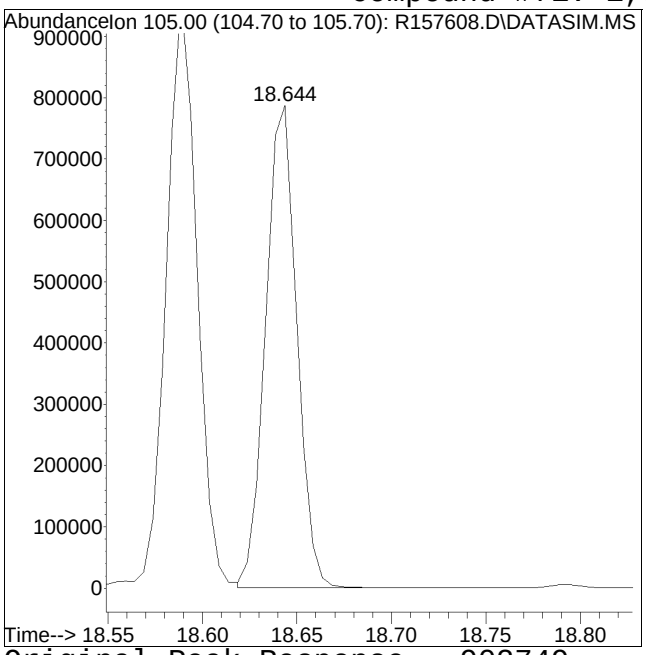
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

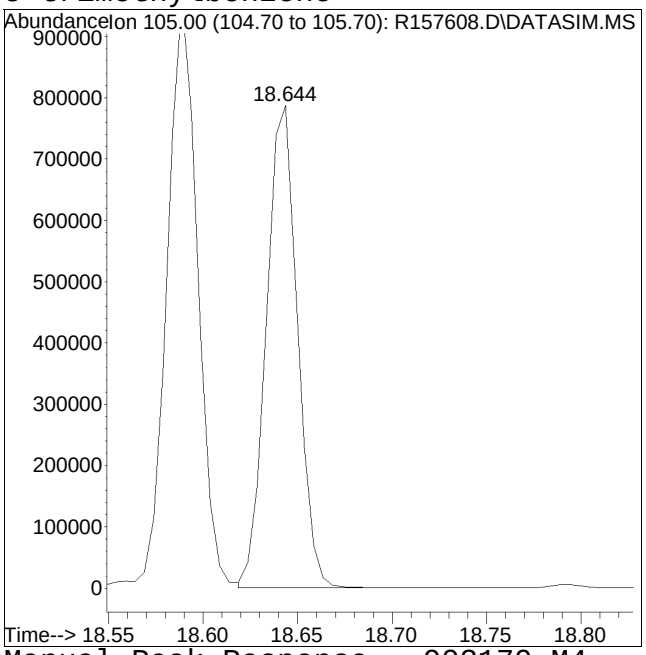
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157608.D
Date Inj'd : 2/27/2018 2:18 am
Sample : ITO15-SIMSTD20.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #71: 1,3,5-trimethylbenzene



Original Peak Response = 902749



Manual Peak Response = 903179 M4

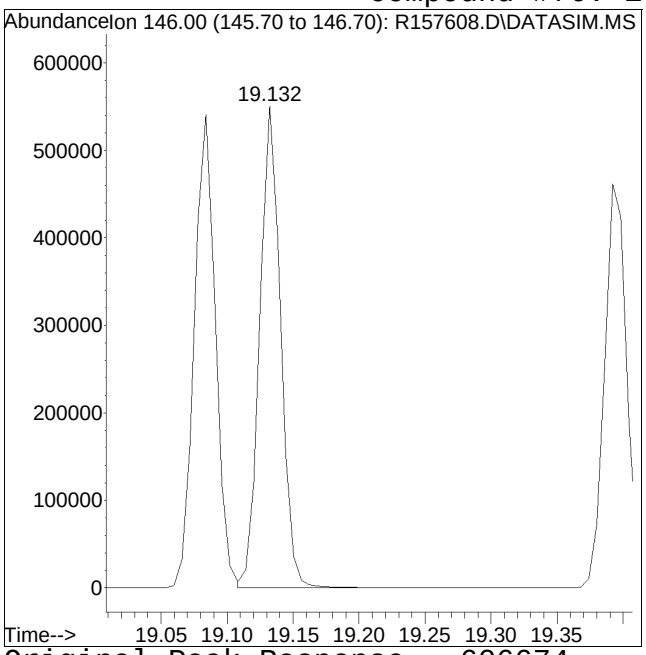
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

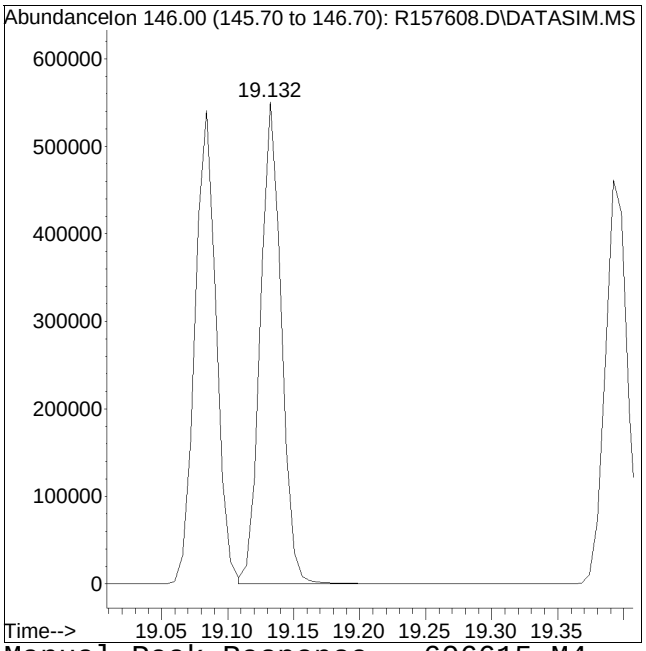
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157608.D
Date Inj'd : 2/27/2018 2:18 am
Sample : ITO15-SIMSTD20.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #76: 1,4-dichlorobenzene



Original Peak Response = 606674



Manual Peak Response = 606615 M4

M4 = Poor automated baseline construction.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157609.D
Acq On : 27 Feb 2018 2:50 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD50.0
Misc : WG1092763
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 27 12:45:54 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.181	49	225351	10.000	ppbV	0.00
Standard Area = 218948			Recovery = 102.92%			
33) 1,4-difluorobenzene	12.402	114	307980	10.000	ppbV	0.00
Standard Area = 315293			Recovery = 97.68%			
51) chlorobenzene-D5	16.823	54	85159	10.000	ppbV	0.00
Standard Area = 85423			Recovery = 99.69%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.066	65	115287	9.652	ppbV	0.01
Spiked Amount 10.000	Range 70 - 130		Recovery = 96.52%			
53) toluene-D8	15.128	98	273536	10.070	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.70%			
67) bromofluorobenzene	18.012	95	158421	10.365	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 103.65%			
Target Compounds						Qvalue
2) propylene	4.051	41	493116m	41.764	ppbV	
3) dichlorodifluoromethane	4.152	85	1058294	41.843	ppbV	100
4) chloromethane	4.364	50	525651	40.394	ppbV	100
5) Freon-114	4.521	85	1353033	41.861	ppbV	97
6) vinyl chloride	4.677	62	562917	42.155	ppbV	100
7) 1,3-butadiene	4.867	54	385085M6	42.206	ppbV	
8) bromomethane	5.254	94	466309	41.476	ppbV	100
9) chloroethane	5.505	64	256807	40.839	ppbV	98
10) ethanol	5.710	31	1901022M6	183.071	ppbV	
11) vinyl bromide	5.989	106	436348	43.149	ppbV	100
12) acrolein	6.157	56	218437	38.614	ppbV	100
13) acetone	6.334	43	3330775	195.881	ppbV	97
14) trichlorofluoromethane	6.567	101	1223662	43.067	ppbV	100
15) isopropyl alcohol	6.706	45	2043827	88.144	ppbV	100
16) acrylonitrile	6.976	53	404183M6	41.860	ppbV	
17) 1,1-dichloroethene	7.404	61	934801	42.802	ppbV	99
18) tertiary butyl alcohol	7.488	59	1072337	42.107	ppbV	100
19) methylene chloride	7.572	49	747170	42.722	ppbV	97
20) 3-chloropropene	7.721	41	784445	43.399	ppbV	97
21) carbon disulfide	7.898	76	1490900	42.126	ppbV	96
22) Freon 113	7.916	101	958421	43.114	ppbV	99
23) trans-1,2-dichloroethene	8.745	61	924709	45.826	ppbV	98
24) 1,1-dichloroethane	8.991	63	1130946	44.850	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157609.D
Acq On : 27 Feb 2018 2:50 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD50.0
Misc : WG1092763
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 27 12:45:54 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	9.072	73	1355095	45.405	ppbV		100
26) vinyl acetate	9.195	43	1496399M4	51.932	ppbV		
27) 2-butanone	9.473	43	1385028	45.549	ppbV		96
28) cis-1,2-dichloroethene	9.988	61	992806	45.332	ppbV		97
29) Ethyl Acetate	10.277	61	248277	49.605	ppbV		86
30) chloroform	10.352	83	1415626	45.844	ppbV		98
31) Tetrahydrofuran	10.789	42	796379M6	47.391	ppbV		
32) 1,2-dichloroethane	11.188	62	856631	45.084	ppbV		99
34) hexane	10.234	57	1122267	46.304	ppbV		99
36) 1,1,1-trichloroethane	11.466	97	1097571	47.540	ppbV		99
37) benzene	11.994	78	1604494	45.686	ppbV		97
38) carbon tetrachloride	12.157	117	1063378	48.427	ppbV		99
39) cyclohexane	12.297	56	917917	46.770	ppbV		99
40) dibromomethane	12.902	93	670554	43.473	ppbV	#	80
41) 1,2-dichloropropane	12.925	63	742289	46.967	ppbV		96
42) bromodichloromethane	13.146	83	1313407M6	48.770	ppbV		
43) 1,4-dioxane	13.181	88	353941M6	52.074	ppbV		
44) trichloroethene	13.193	130	617444	48.844	ppbV		98
45) 2,2,4-trimethylpentane	13.216	57	2963674	46.709	ppbV		98
46) heptane	13.519	43	1244917	46.526	ppbV	#	95
47) cis-1,3-dichloropropene	14.170	75	4013401	52.122	ppbV		98
48) 4-methyl-2-pentanone	14.187	43	1743468	53.110	ppbV	#	92
49) trans-1,3-dichloropropene	14.756	75	1014714	55.427	ppbV		99
50) 1,1,2-trichloroethane	14.942	97	652728	48.338	ppbV		96
52) toluene	15.231	91	1805230	47.487	ppbV		98
54) 2-hexanone	15.458	43	1630541	52.674	ppbV	#	97
55) dibromochloromethane	15.644	129	1154604	53.716	ppbV		98
56) 1,2-dibromoethane	15.871	107	1084058	51.670	ppbV		99
57) tetrachloroethene	16.283	166	776451	53.060	ppbV		99
58) 1,1,1,2-tetrachloroethane	16.847	131	748148	52.050	ppbV		98
59) chlorobenzene	16.862	112	1451402	51.070	ppbV		98
60) ethylbenzene	17.156	91	2433586	49.659	ppbV		99
61) m+p-xylene	17.305	91	3755549	98.948	ppbV		97
62) bromoform	17.380	173	1102953	56.399	ppbV		99
63) styrene	17.579	104	1402340	55.219	ppbV		99
64) 1,1,2,2-tetrachloroethane	17.663	83	1692025	49.179	ppbV		100
65) o-xylene	17.663	91	1947823	48.859	ppbV		97
66) 1,2,3-trichloropropane	17.763	75	1300691	49.872	ppbV		98
68) isopropylbenzene	18.106	105	2306385	50.082	ppbV		95
69) bromobenzene	18.191	77	1519303	51.406	ppbV		91

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157609.D
Acq On : 27 Feb 2018 2:50 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD50.0
Misc : WG1092763
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 27 12:45:54 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

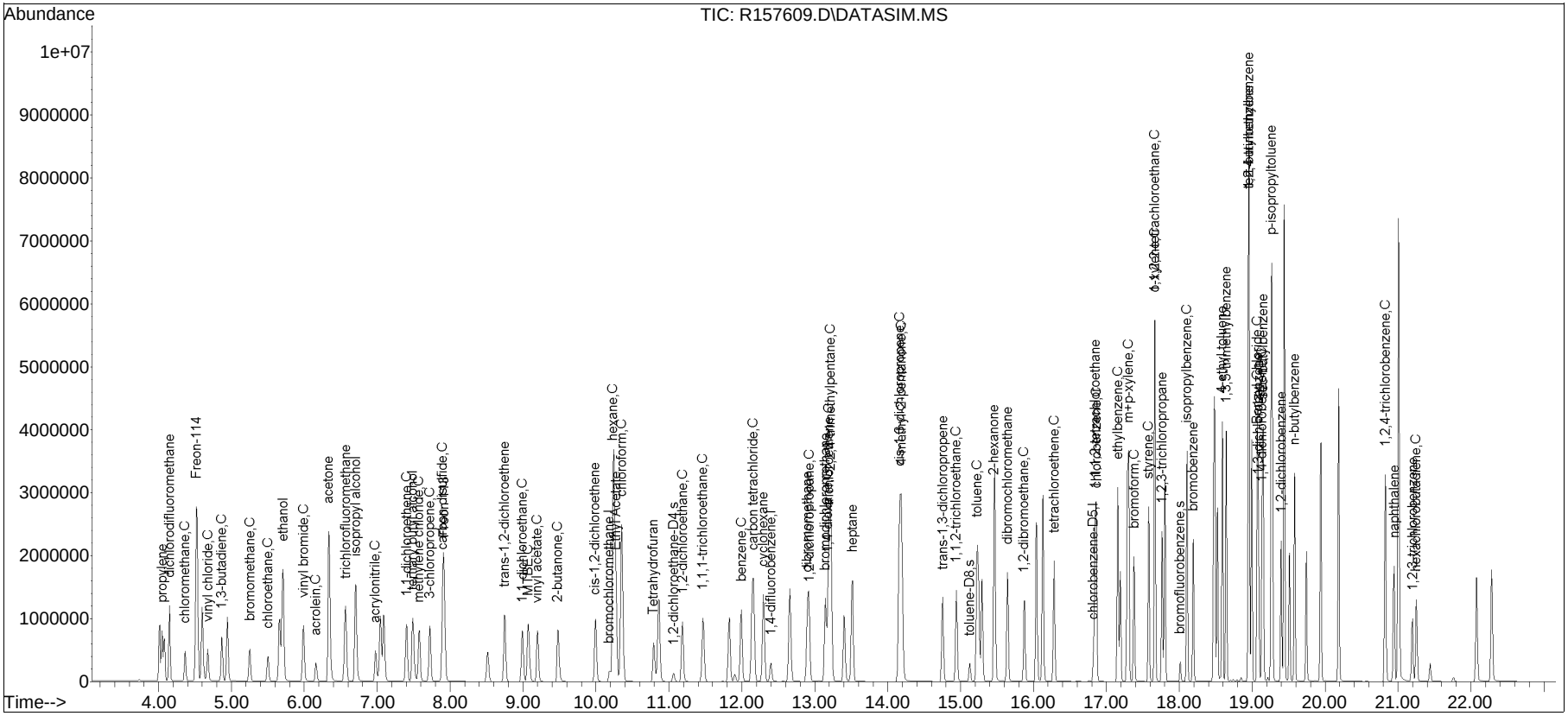
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) 4-ethyl toluene	18.589	105	2508116M6	53.006	ppbV		
71) 1,3,5-trimethylbenzene	18.644	105	2131993M4	51.952	ppbV		
72) tert-butylbenzene	18.951	119	1879282	48.328	ppbV		95
73) 1,2,4-trimethylbenzene	18.951	105	2011486	50.131	ppbV		95
74) Benzyl Chloride	19.066	91	2144500	57.754	ppbV		100
75) 1,3-dichlorobenzene	19.084	146	1503016	56.510	ppbV		92
76) 1,4-dichlorobenzene	19.132	146	1538685M4	56.216	ppbV		
77) sec-butylbenzene	19.151	105	2853239	49.650	ppbV	#	91
78) p-isopropyltoluene	19.265	119	2279884	49.651	ppbV		95
79) 1,2-dichlorobenzene	19.398	146	1431460	56.779	ppbV		94
80) n-butylbenzene	19.580	91	2692238	53.908	ppbV		96
81) 1,2,4-trichlorobenzene	20.828	180	1084296	59.051	ppbV		97
82) naphthalene	20.948	128	2374765	49.979	ppbV		95
83) 1,2,3-trichlorobenzene	21.200	180	953654	56.373	ppbV		99
84) hexachlorobutadiene	21.248	225	891966	56.281	ppbV		96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0226SIM_ICAL\R157606.D

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157609.D
Acq On : 27 Feb 2018 2:50 am
Operator : AIRPIANO1:MB
Sample : ITO15-SIMSTD50.0
Misc : WG1092763
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 27 12:45:54 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

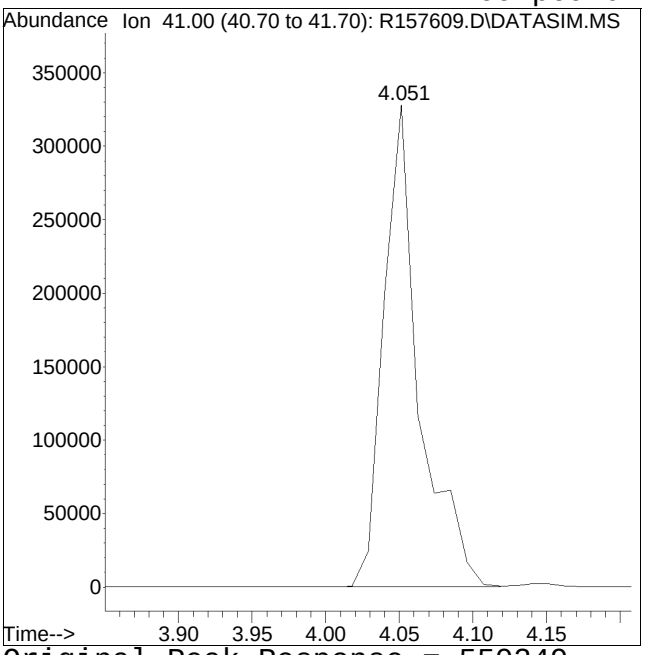


Manual Integration/Negative Proof Report

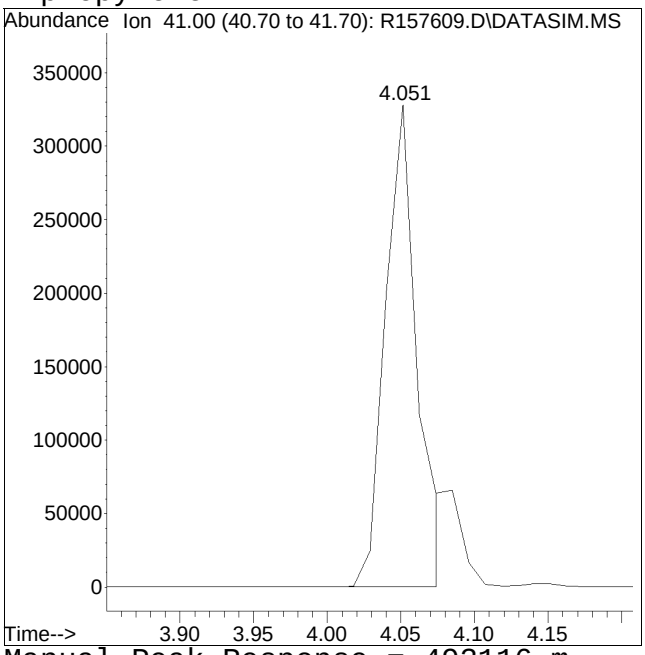
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157609.D
Date Inj'd : 2/27/2018 2:50 am
Sample : ITO15-SIMSTD50.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #2: propylene



Original Peak Response = 550249



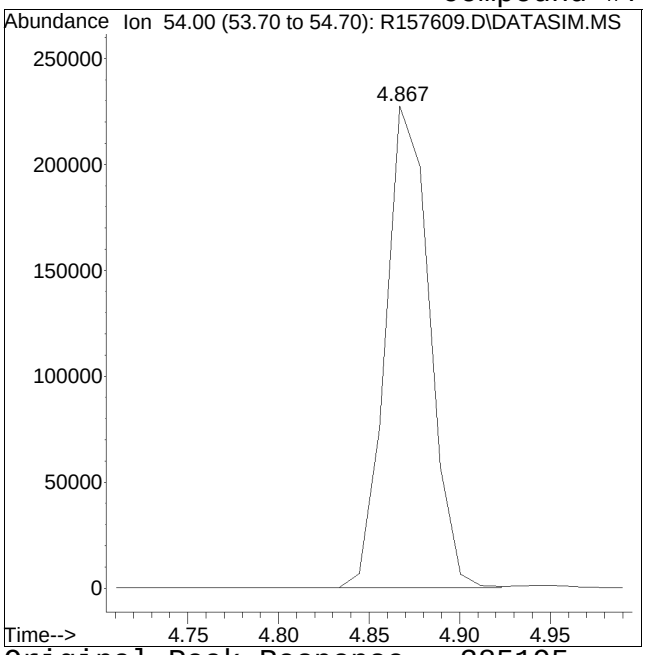
Manual Peak Response = 493116 m

Manual Integration/Negative Proof Report

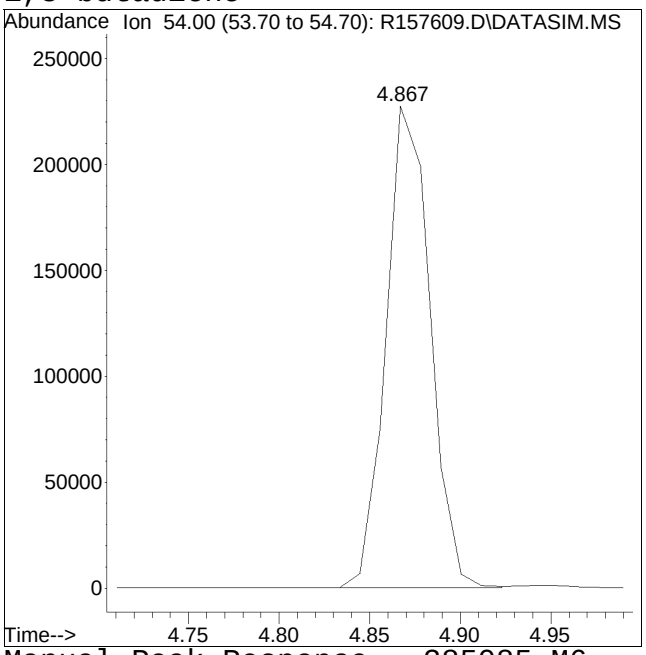
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157609.D
Date Inj'd : 2/27/2018 2:50 am
Sample : ITO15-SIMSTD50.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #7: 1,3-butadiene



Original Peak Response = 385195



Manual Peak Response = 385085 M6

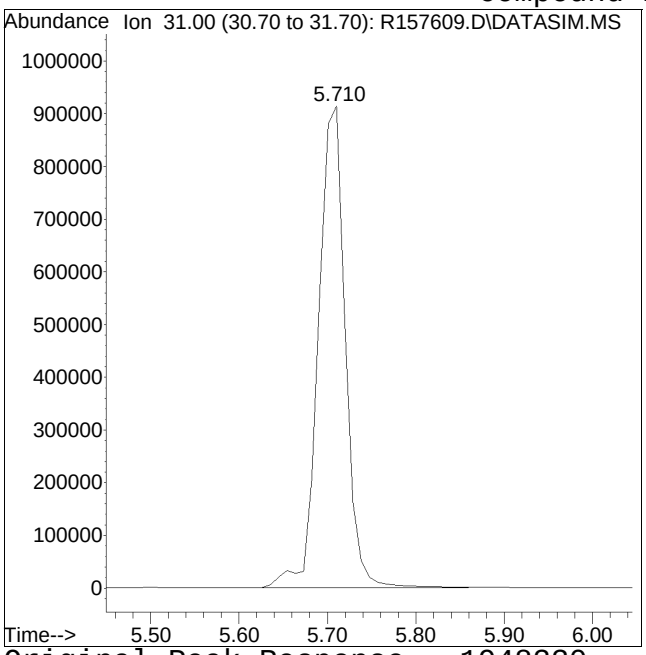
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

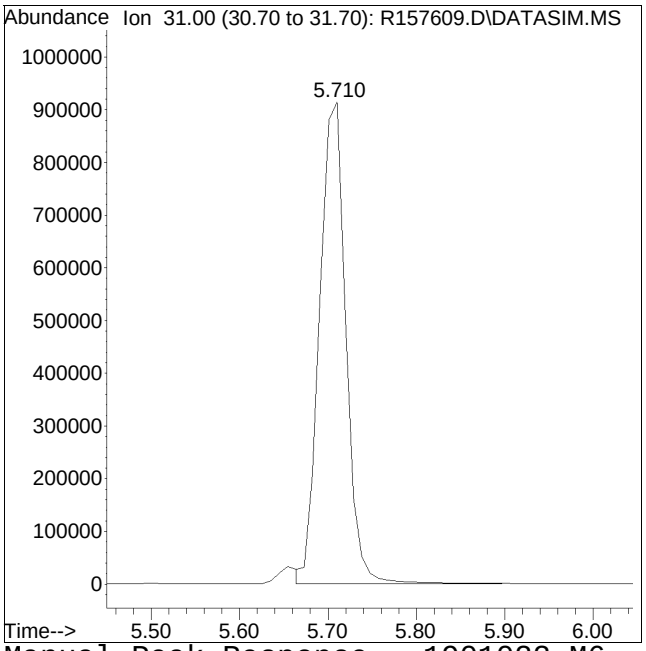
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157609.D
Date Inj'd : 2/27/2018 2:50 am
Sample : ITO15-SIMSTD50.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #10: ethanol



Original Peak Response = 1948330



Manual Peak Response = 1901022 M6

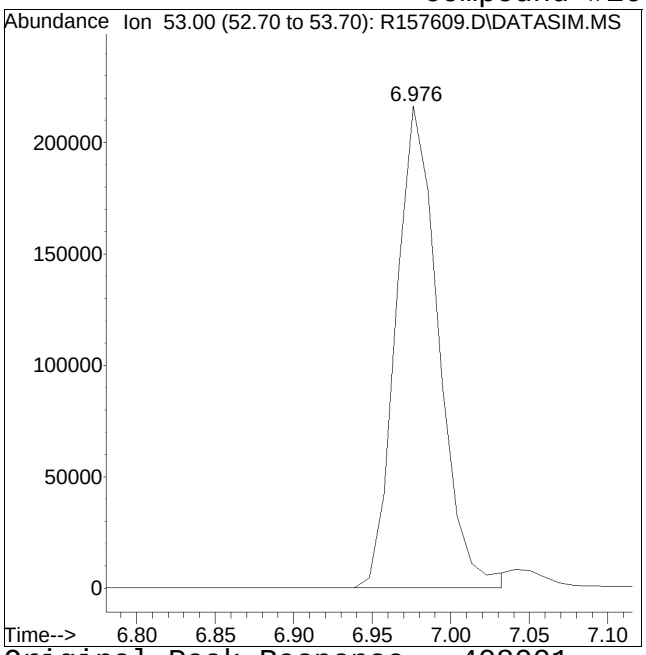
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

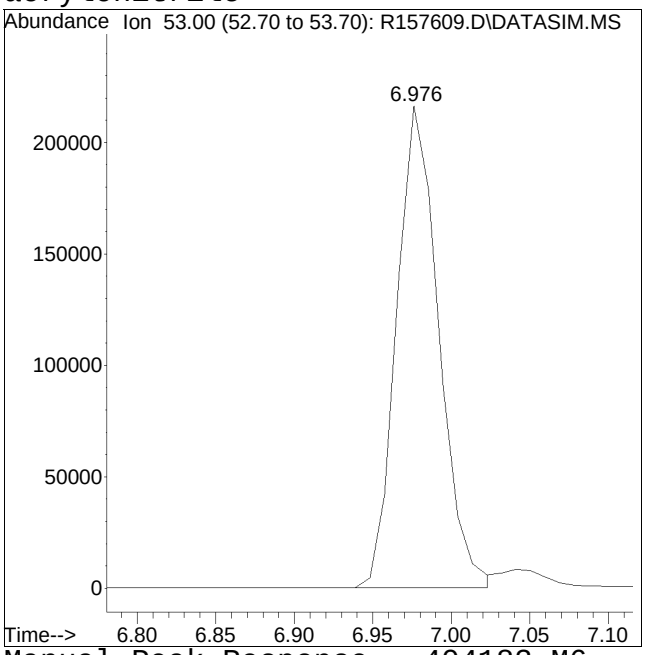
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157609.D
Date Inj'd : 2/27/2018 2:50 am
Sample : ITO15-SIMSTD50.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #16: acrylonitrile



Original Peak Response = 408001



Manual Peak Response = 404183 M6

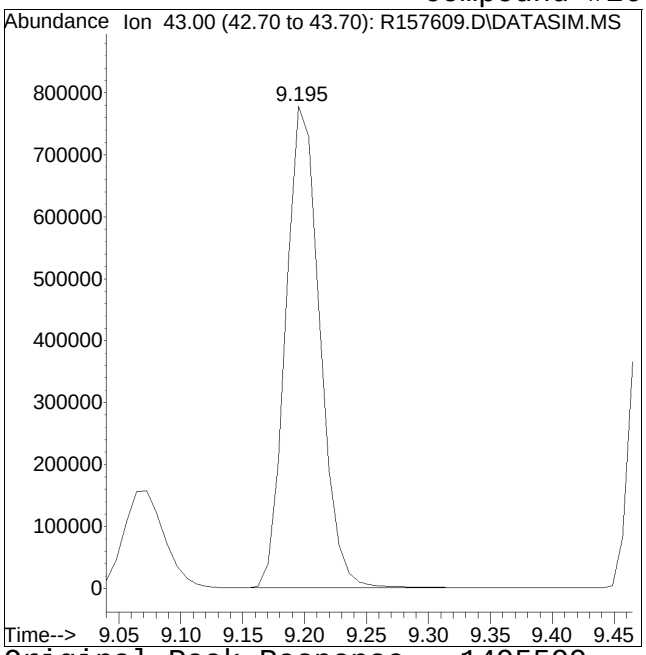
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

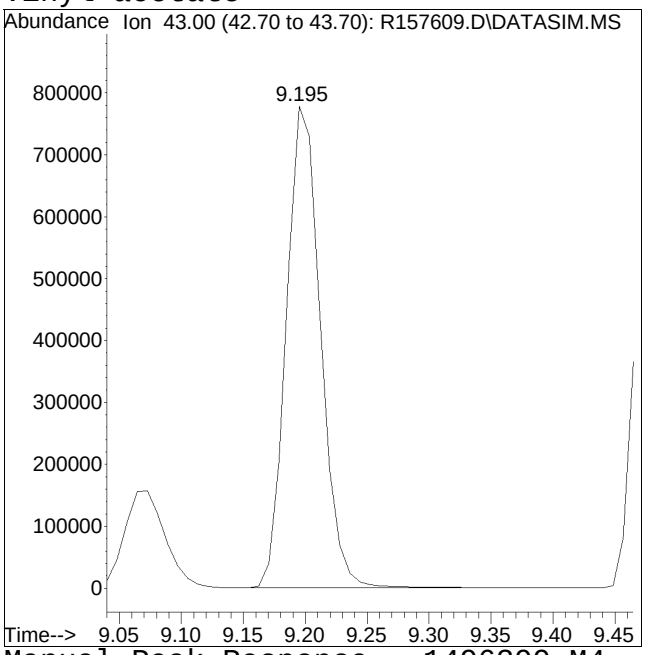
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157609.D
Date Inj'd : 2/27/2018 2:50 am
Sample : ITO15-SIMSTD50.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #26: vinyl acetate



Original Peak Response = 1495599



Manual Peak Response = 1496399 M4

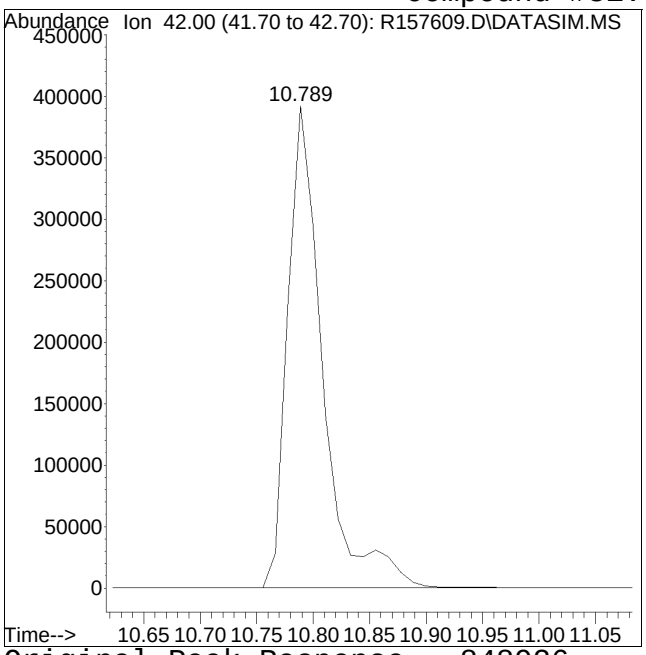
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

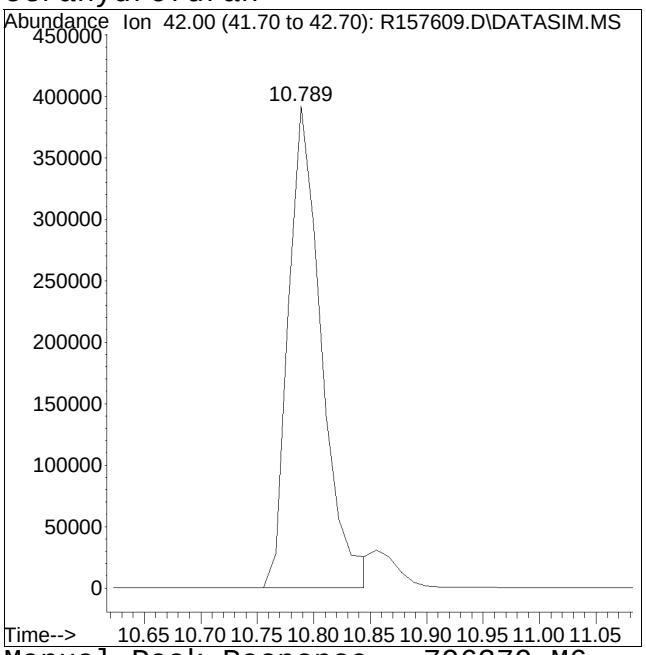
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157609.D
Date Inj'd : 2/27/2018 2:50 am
Sample : ITO15-SIMSTD50.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #31: Tetrahydrofuran



Original Peak Response = 848926



Manual Peak Response = 796379 M6

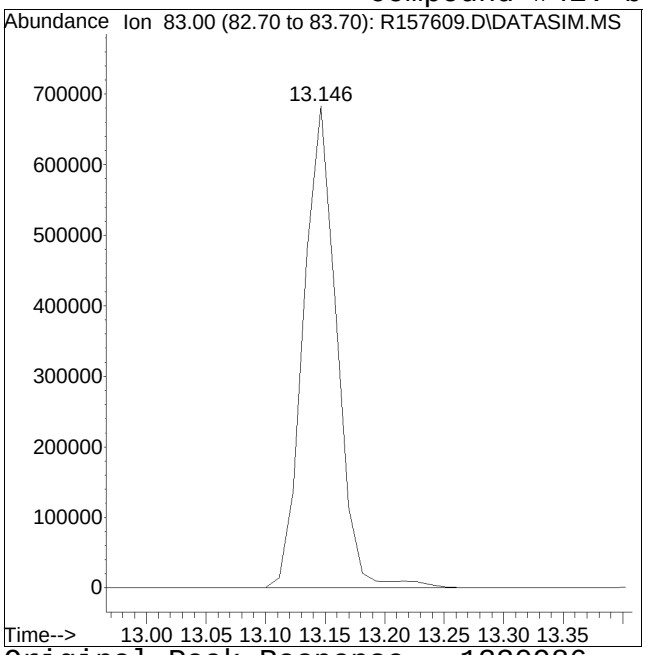
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

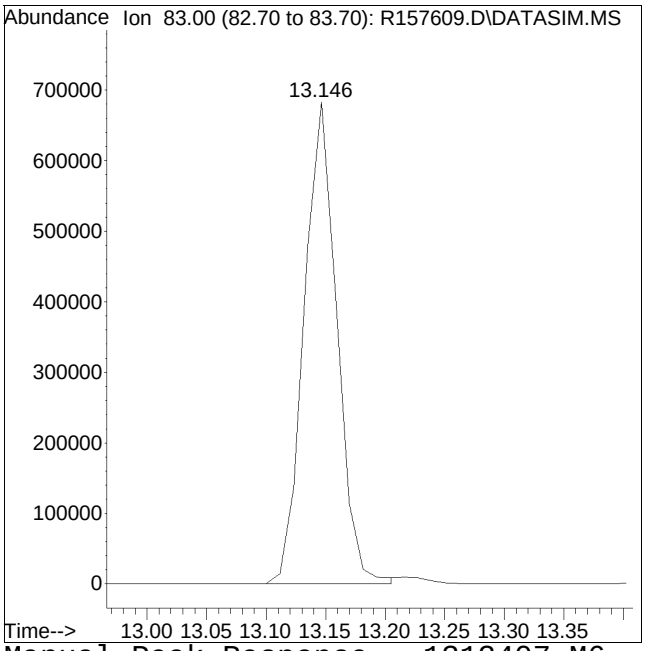
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157609.D
Date Inj'd : 2/27/2018 2:50 am
Sample : ITO15-SIMSTD50.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #42: bromodichloromethane



Original Peak Response = 1330986



Manual Peak Response = 1313407 M6

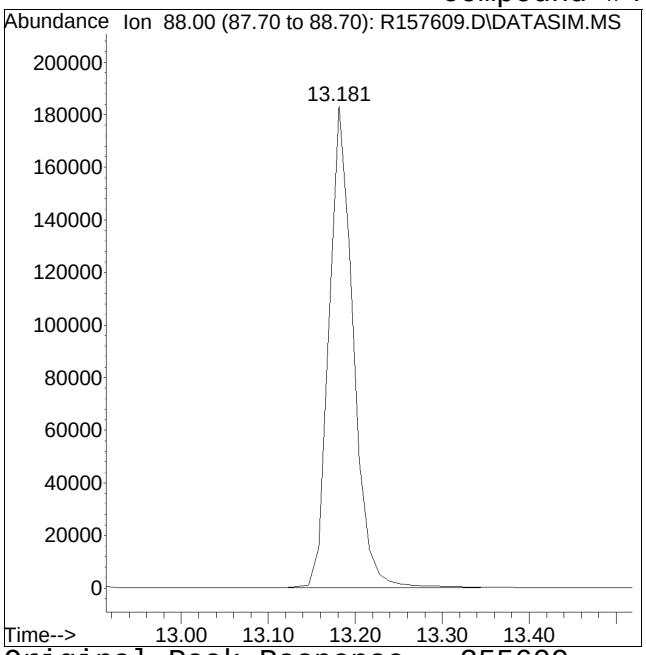
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

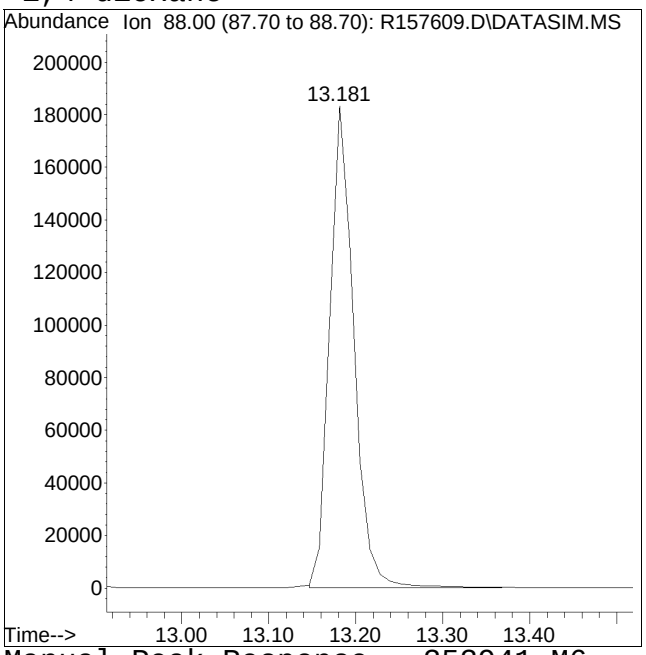
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157609.D
Date Inj'd : 2/27/2018 2:50 am
Sample : ITO15-SIMSTD50.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #43: 1,4-dioxane



Original Peak Response = 355609



Manual Peak Response = 353941 M6

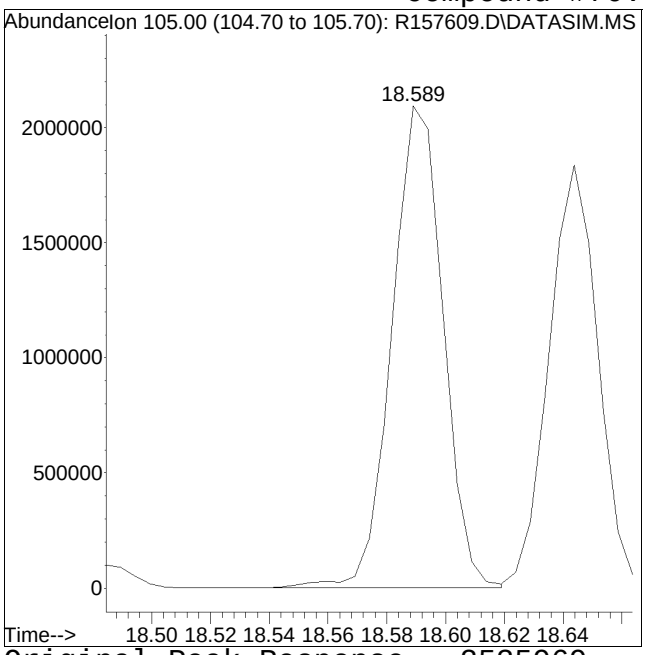
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

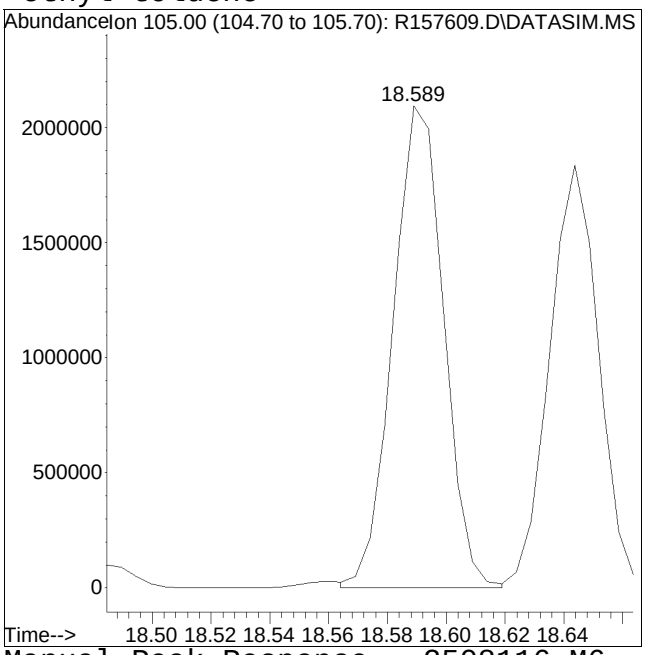
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157609.D
Date Inj'd : 2/27/2018 2:50 am
Sample : ITO15-SIMSTD50.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #70: 4-ethyl toluene



Original Peak Response = 2535969



Manual Peak Response = 2508116 M6

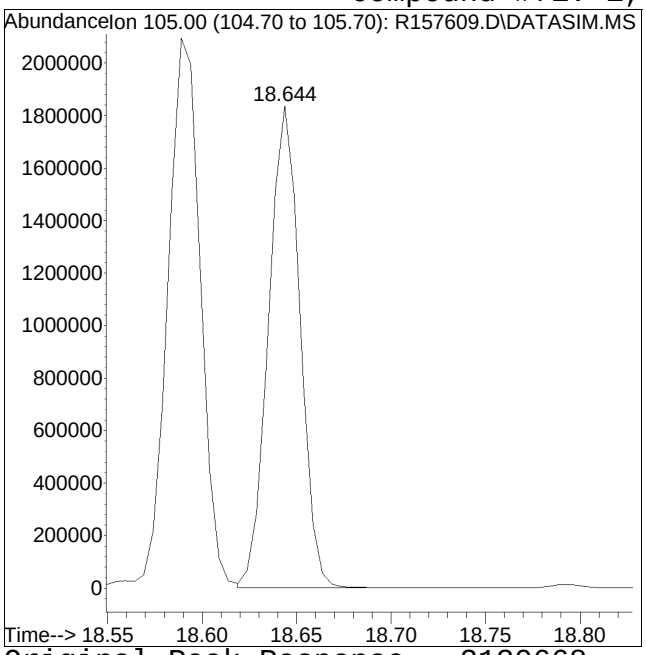
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

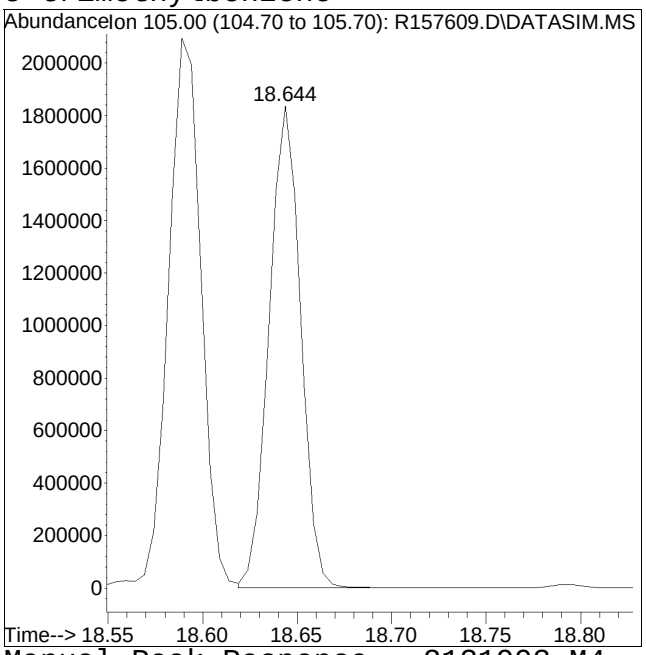
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157609.D
Date Inj'd : 2/27/2018 2:50 am
Sample : ITO15-SIMSTD50.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #71: 1,3,5-trimethylbenzene



Original Peak Response = 2130668



Manual Peak Response = 2131993 M4

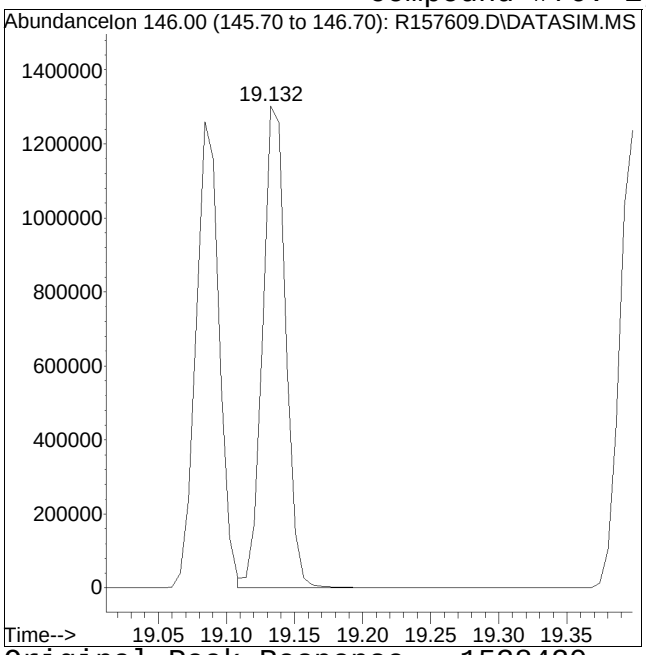
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

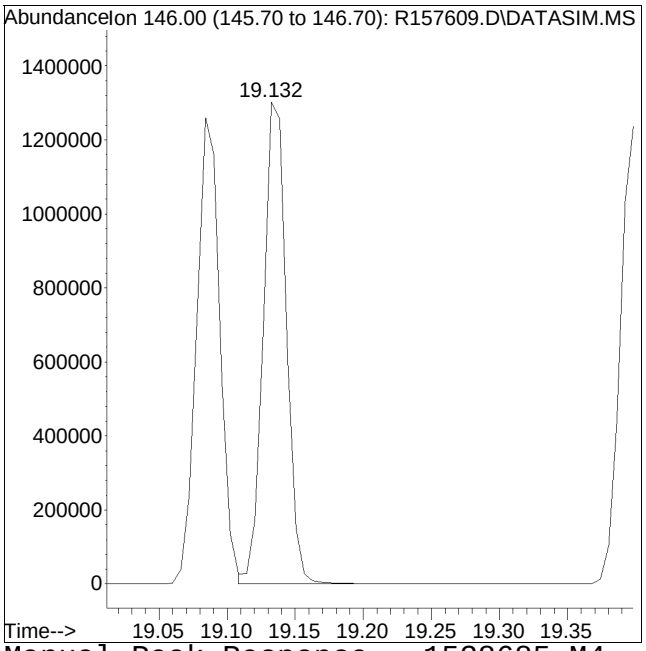
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157609.D
Date Inj'd : 2/27/2018 2:50 am
Sample : ITO15-SIMSTD50.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #76: 1,4-dichlorobenzene



Original Peak Response = 1538420



Manual Peak Response = 1538685 M4

M4 = Poor automated baseline construction.

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157614.D
Acq On : 27 Feb 2018 9:40 am
Operator : AIRPIANO1:MB
Sample : CTO15-SIMSTD5.0
Misc : WG1092763
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 27 12:50:15 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	bromochloromethane	1.000	1.000	0.0	97	0.00
2		propylene	0.524	0.531	-1.3	107	0.00
3		dichlorodifluoromethane	1.122	0.917	18.3	77	0.00
4	C	chloromethane	0.577	0.491	14.9	83	0.00
5		Freon-114	1.434	1.295	9.7	86	0.00
6	C	vinyl chloride	0.593	0.524	11.6	85	0.00
7	C	1,3-butadiene	0.405	0.395	2.5	94	0.00
8	C	bromomethane	0.499	0.448	10.2	85	0.00
9	C	chloroethane	0.279	0.239	14.3	83	0.00
10		ethanol	0.461	0.374	18.9	85	0.00
11	C	vinyl bromide	0.449	0.428	4.7	92	0.00
12	C	acrolein	0.251	0.193	23.1	81	0.00
13		acetone	0.755	0.775	-2.6	107	0.00
14		trichlorofluoromethane	1.261	1.150	8.8	88	0.00
15		isopropyl alcohol	1.029	0.935	9.1	107	0.00
16	C	acrylonitrile	0.428	0.360	15.9	84	0.00
17	C	1,1-dichloroethene	0.969	0.888	8.4	88	0.00
18		tertiary butyl alcohol	1.130	1.011	10.5	89	0.00
19	C	methylene chloride	0.776	0.700	9.8	86	0.00
20	C	3-chloropropene	0.802	0.814	-1.5	99	0.00
21	C	carbon disulfide	1.570	1.410	10.2	86	0.00
22		Freon 113	0.986	0.900	8.7	87	0.00
23		trans-1,2-dichloroethene	0.895	0.827	7.6	91	0.00
24	C	1,1-dichloroethane	1.119	1.067	4.6	93	0.00
25	C	MTBE	1.324	1.377	-4.0	103	0.00
26	C	vinyl acetate	1.279	1.467	-14.7	117	0.00
27	C	2-butanone	1.349	1.388	-2.9	103	0.00
28		cis-1,2-dichloroethene	0.972	0.967	0.5	96	0.00
29		Ethyl Acetate	0.222	0.241	-8.6	106	0.00
30	C	chloroform	1.370	1.328	3.1	95	0.00
31		Tetrahydrofuran	0.746	0.757	-1.5	100	0.00
32	C	1,2-dichloroethane	0.843	0.787	6.6	92	0.00
33	I	1,4-difluorobenzene	1.000	1.000	0.0	99	0.00
34	C	hexane	0.787	0.771	2.0	101	0.00
35	s	1,2-dichloroethane-D4	0.388	0.387	0.3	104	0.00
36	C	1,1,1-trichloroethane	0.750	0.697	7.1	95	0.00
37	C	benzene	1.140	1.055	7.5	95	0.00
38	C	carbon tetrachloride	0.713	0.676	5.2	95	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157614.D
Acq On : 27 Feb 2018 9:40 am
Operator : AIRPIANO1:MB
Sample : CTO15-SIMSTD5.0
Misc : WG1092763
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 27 12:50:15 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
39		cyclohexane	0.637	0.643	-0.9	102	0.00
40		dibromomethane	0.501	0.398	20.6	87	0.00
41	C	1,2-dichloropropane	0.513	0.471	8.2	92	0.00
42		bromodichloromethane	0.874	0.877	-0.3	99	0.00
43	C	1,4-dioxane	0.221	0.231	-4.5	103	0.00
44	C	trichloroethene	0.410	0.381	7.1	92	0.00
45	C	2,2,4-trimethylpentane	2.060	2.026	1.7	99	0.00
46		heptane	0.869	0.864	0.6	101	0.00
47	C	cis-1,3-dichloropropene	2.500	2.591	-3.6	99	0.00
48	C	4-methyl-2-pentanone	1.066	1.187	-11.4	101	0.02
49		trans-1,3-dichloropropene	0.594	0.550	7.4	84	0.00
50	C	1,1,2-trichloroethane	0.438	0.431	1.6	95	0.00
51	I	chlorobenzene-D5	1.000	1.000	0.0	96	0.00
52	C	toluene	4.464	4.540	-1.7	95	0.00
53	s	toluene-D8	3.190	3.570	-11.9	104	0.00
54		2-hexanone	3.635	4.195	-15.4	98	0.00
55		dibromochloromethane	2.524	2.889	-14.5	103	0.00
56	C	1,2-dibromoethane	2.464	2.536	-2.9	92	0.00
57	C	tetrachloroethene	1.718	1.767	-2.9	95	0.00
58		1,1,1,2-tetrachloroethane	1.688	1.629	3.5	88	0.00
59	C	chlorobenzene	3.337	3.428	-2.7	94	0.00
60	C	ethylbenzene	5.755	5.944	-3.3	95	0.00
61	C	m+p-xylene	4.457	4.615	-3.5	93	0.00
62	C	bromoform	2.296	2.602	-13.3	103	0.00
63	C	styrene	2.982	3.214	-7.8	93	0.00
64	C	1,1,2,2-tetrachloroethane	4.040	4.116	-1.9	91	0.00
65	C	o-xylene	4.681	4.778	-2.1	93	0.00
66		1,2,3-trichloropropane	3.063	3.013	1.6	89	0.00
67	s	bromofluorobenzene	1.795	1.965	-9.5	102	0.00
68	C	isopropylbenzene	5.408	5.492	-1.6	95	0.00
69		bromobenzene	3.471	3.436	1.0	91	0.00
70		4-ethyl toluene	5.556	6.392	-15.0	99	0.00
71		1,3,5-trimethylbenzene	4.819	5.091	-5.6	93	0.00
72		tert-butylbenzene	4.566	4.743	-3.9	90	0.00
73		1,2,4-trimethylbenzene	4.712	5.329	-13.1	95	0.00
74	C	Benzyl Chloride	4.360	5.242	-20.2	106	0.00
75		1,3-dichlorobenzene	3.123	3.470	-11.1	95	0.00
76	C	1,4-dichlorobenzene	3.214	3.498	-8.8	94	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157614.D
Acq On : 27 Feb 2018 9:40 am
Operator : AIRPIANO1:MB
Sample : CTO15-SIMSTD5.0
Misc : WG1092763
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 27 12:50:15 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
77		sec-butylbenzene	6.748	7.020	-4.0	89	0.00
78		p-isopropyltoluene	5.392	5.358	0.6	85	0.00
79		1,2-dichlorobenzene	2.960	3.341	-12.9	97	0.00
80		n-butylbenzene	5.865	6.649	-13.4	92	0.00
81	C	1,2,4-trichlorobenzene	2.156	2.806	-30.1#	96	0.00
82		naphthalene	5.580	6.326	-13.4	87	0.01
83		1,2,3-trichlorobenzene	1.986	2.556	-28.7	91	0.00
84	C	hexachlorobutadiene	1.861	2.314	-24.3	96	0.00

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 1

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157614.D
Acq On : 27 Feb 2018 9:40 am
Operator : AIRPIANO1:MB
Sample : CTO15-SIMSTD5.0
Misc : WG1092763
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 27 12:50:15 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.181	49	213442	10.000	ppbV	0.00
Standard Area = 218948			Recovery = 97.49%			
33) 1,4-difluorobenzene	12.401	114	311679	10.000	ppbV	0.00
Standard Area = 315293			Recovery = 98.85%			
51) chlorobenzene-D5	16.822	54	82112	10.000	ppbV	0.00
Standard Area = 85423			Recovery = 96.12%			
System Monitoring Compounds						
35) 1,2-dichloroethane-D4	11.055	65	120579	9.975	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.75%			
53) toluene-D8	15.128	98	293156	11.193	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 111.93%			
67) bromofluorobenzene	18.012	95	161345	10.948	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 109.48%			
Target Compounds						Qvalue
2) propylene	4.051	41	56618M6	5.063	ppbV	
3) dichlorodifluoromethane	4.152	85	97864	4.085	ppbV	100
4) chloromethane	4.364	50	52398	4.251	ppbV	99
5) Freon-114	4.520	85	138190	4.514	ppbV	97
6) vinyl chloride	4.677	62	55927	4.422	ppbV	100
7) 1,3-butadiene	4.867	54	42119	4.874	ppbV	96
8) bromomethane	5.245	94	47774	4.486	ppbV	99
9) chloroethane	5.496	64	25484	4.279	ppbV	91
10) ethanol	5.701	31	199307	20.264	ppbV	100
11) vinyl bromide	5.989	106	45703	4.772	ppbV	99
12) acrolein	6.166	56	20569	3.839	ppbV	99
13) acetone	6.343	43	413549	25.678	ppbV	99
14) trichlorofluoromethane	6.566	101	122692	4.559	ppbV	100
15) isopropyl alcohol	6.697	45	249426	11.357	ppbV	99
16) acrylonitrile	6.976	53	38412M6	4.200	ppbV	
17) 1,1-dichloroethene	7.395	61	94745	4.580	ppbV	95
18) tertiary butyl alcohol	7.497	59	107861	4.472	ppbV	99
19) methylene chloride	7.572	49	74742	4.512	ppbV	98
20) 3-chloropropene	7.721	41	86831	5.072	ppbV	98
21) carbon disulfide	7.897	76	150521	4.490	ppbV	99
22) Freon 113	7.916	101	96080	4.563	ppbV	99
23) trans-1,2-dichloroethene	8.745	61	88311	4.621	ppbV	98
24) 1,1-dichloroethane	8.991	63	113830	4.766	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157614.D
Acq On : 27 Feb 2018 9:40 am
Operator : AIRPIANO1:MB
Sample : CTO15-SIMSTD5.0
Misc : WG1092763
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 27 12:50:15 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
25) MTBE	9.081	73	146940	5.198	ppbV		99
26) vinyl acetate	9.195	43	156540M4	5.736	ppbV		
27) 2-butanone	9.489	43	148078	5.142	ppbV		99
28) cis-1,2-dichloroethene	9.988	61	103226	4.976	ppbV		100
29) Ethyl Acetate	10.277	61	25728	5.427	ppbV		96
30) chloroform	10.341	83	141739	4.846	ppbV		99
31) Tetrahydrofuran	10.811	42	80819M6	5.078	ppbV		
32) 1,2-dichloroethane	11.188	62	84041	4.670	ppbV		100
34) hexane	10.234	57	120204	4.901	ppbV		87
36) 1,1,1-trichloroethane	11.466	97	108678	4.651	ppbV		100
37) benzene	11.994	78	164340	4.624	ppbV		100
38) carbon tetrachloride	12.157	117	105307	4.739	ppbV		99
39) cyclohexane	12.297	56	100263	5.048	ppbV		98
40) dibromomethane	12.890	93	62039	3.974	ppbV		98
41) 1,2-dichloropropane	12.914	63	73392M6	4.589	ppbV		
42) bromodichloromethane	13.146	83	136731M6	5.017	ppbV		
43) 1,4-dioxane	13.193	88	36035M6	5.239	ppbV		
44) trichloroethene	13.193	130	59447	4.647	ppbV		99
45) 2,2,4-trimethylpentane	13.216	57	315789	4.918	ppbV		99
46) heptane	13.507	43	134658	4.973	ppbV		100
47) cis-1,3-dichloropropene	14.170	75	403839	5.182	ppbV		100
48) 4-methyl-2-pentanone	14.204	43	184908	5.566	ppbV	#	83
49) trans-1,3-dichloropropene	14.756	75	85649	4.623	ppbV		100
50) 1,1,2-trichloroethane	14.942	97	67094	4.910	ppbV		99
52) toluene	15.220	91	186396	5.085	ppbV		100
54) 2-hexanone	15.468	43	172221M6	5.770	ppbV		
55) dibromochloromethane	15.644	129	118602	5.723	ppbV		100
56) 1,2-dibromoethane	15.871	107	104133	5.148	ppbV		99
57) tetrachloroethene	16.283	166	72556	5.142	ppbV		99
58) 1,1,1,2-tetrachloroethane	16.842	131	66873	4.825	ppbV		99
59) chlorobenzene	16.857	112	140734	5.136	ppbV		98
60) ethylbenzene	17.156	91	244047	5.165	ppbV		100
61) m+p-xylene	17.300	91	378951	10.355	ppbV		100
62) bromoform	17.375	173	106832	5.666	ppbV		100
63) styrene	17.579	104	131942	5.388	ppbV		100
64) 1,1,2,2-tetrachloroethane	17.663	83	169007	5.095	ppbV		100
65) o-xylene	17.663	91	196185	5.104	ppbV		100
66) 1,2,3-trichloropropane	17.763	75	123695	4.919	ppbV		99
68) isopropylbenzene	18.101	105	225460	5.077	ppbV		99
69) bromobenzene	18.186	77	141084	4.951	ppbV		100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157614.D
Acq On : 27 Feb 2018 9:40 am
Operator : AIRPIANO1:MB
Sample : CTO15-SIMSTD5.0
Misc : WG1092763
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 27 12:50:15 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\R157606.D
Sub List : Default - All compounds listed

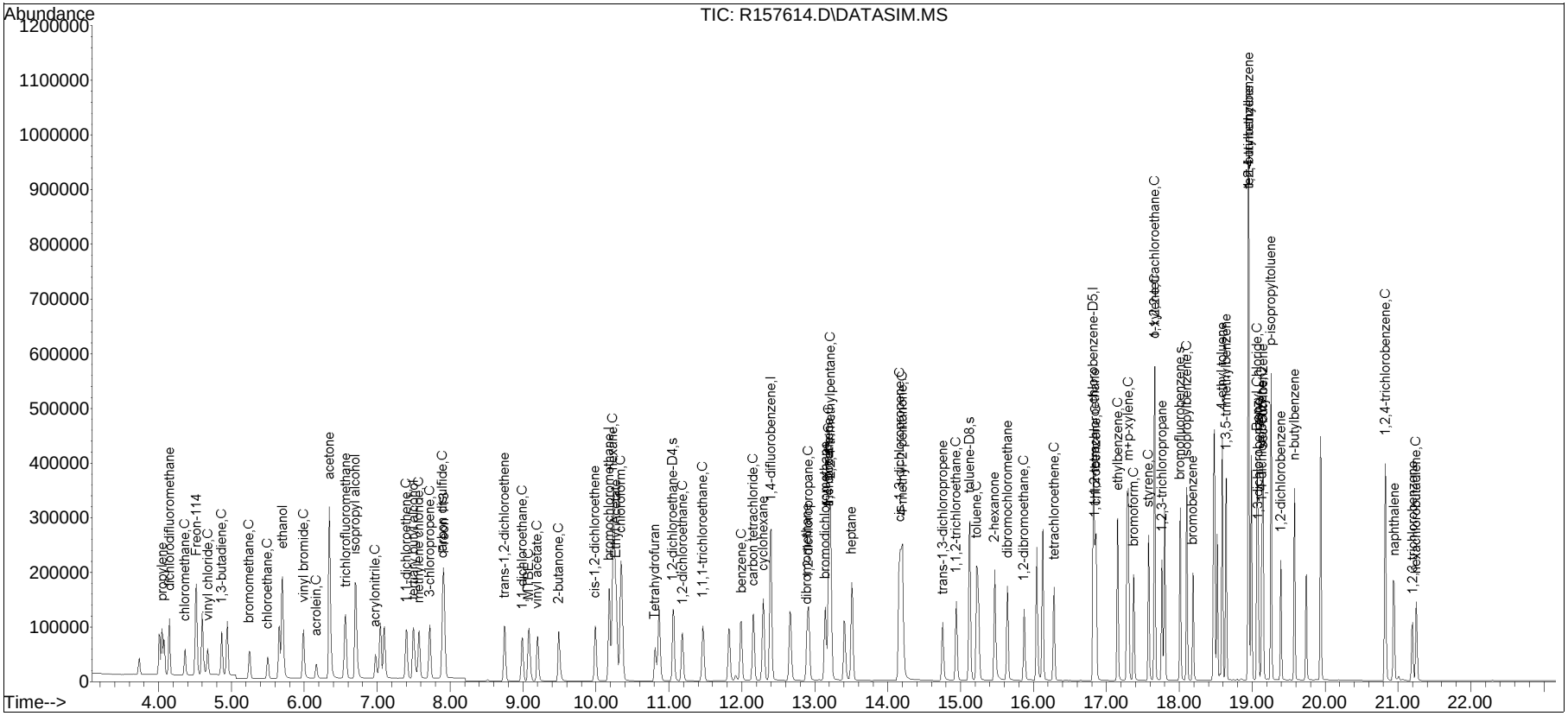
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) 4-ethyl toluene	18.589	105	262441M6	5.752	ppbV		
71) 1,3,5-trimethylbenzene	18.644	105	209004	5.282	ppbV		98
72) tert-butylbenzene	18.951	119	194740	5.194	ppbV		98
73) 1,2,4-trimethylbenzene	18.951	105	218791	5.655	ppbV		97
74) Benzyl Chloride	19.066	91	215222	6.011	ppbV		99
75) 1,3-dichlorobenzene	19.084	146	142469	5.555	ppbV		99
76) 1,4-dichlorobenzene	19.132	146	143614	5.442	ppbV		99
77) sec-butylbenzene	19.150	105	288226	5.202	ppbV		94
78) p-isopropyltoluene	19.259	119	219986	4.969	ppbV		98
79) 1,2-dichlorobenzene	19.392	146	137157	5.642	ppbV		99
80) n-butylbenzene	19.579	91	272984	5.669	ppbV		99
81) 1,2,4-trichlorobenzene	20.828	180	115189	6.506	ppbV		99
82) naphthalene	20.948	128	259735	5.669	ppbV	#	93
83) 1,2,3-trichlorobenzene	21.200	180	104940	6.433	ppbV		99
84) hexachlorobutadiene	21.248	225	95013	6.218	ppbV		100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default - All compounds listed0226SIM_ICAL\R157606.D

Data Path : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\
Data File : R157614.D
Acq On : 27 Feb 2018 9:40 am
Operator : AIRPIANO1:MB
Sample : CTO15-SIMSTD5.0
Misc : WG1092763
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 27 12:50:15 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180226SIM_ICAL\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

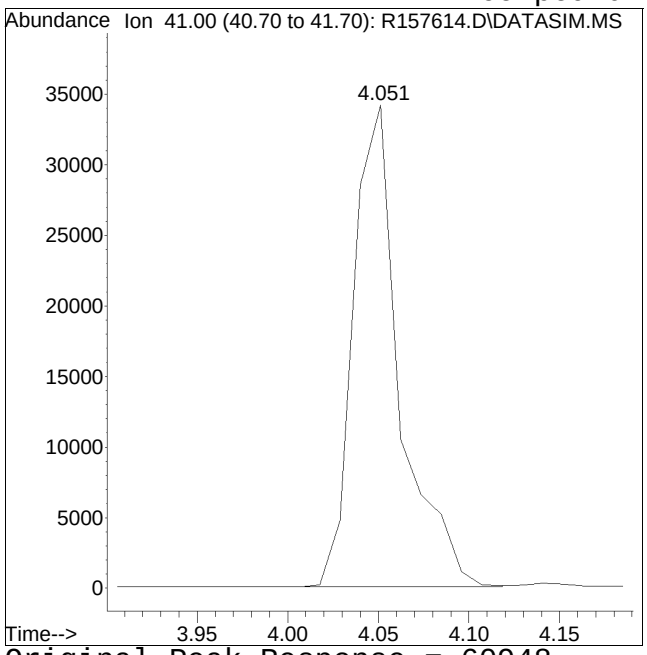


Manual Integration/Negative Proof Report

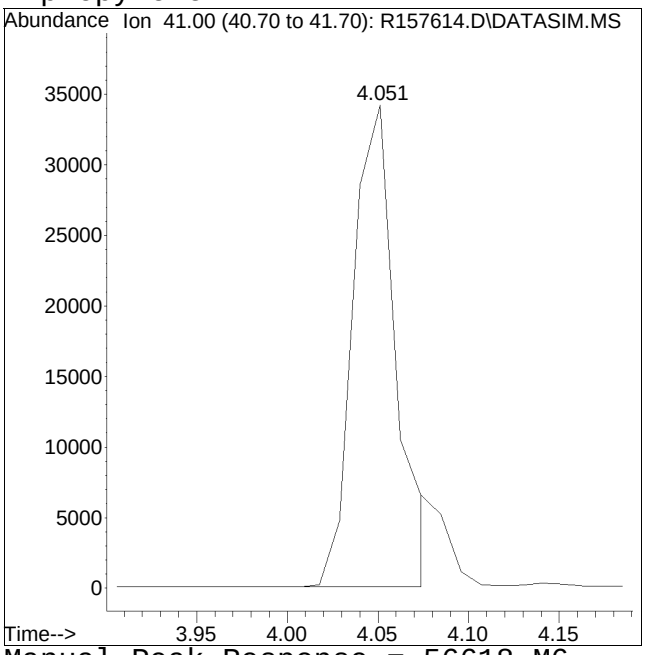
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157614.D
Date Inj'd : 2/27/2018 9:40 am
Sample : CTO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #2: propylene



Original Peak Response = 60948



Manual Peak Response = 56618 M6

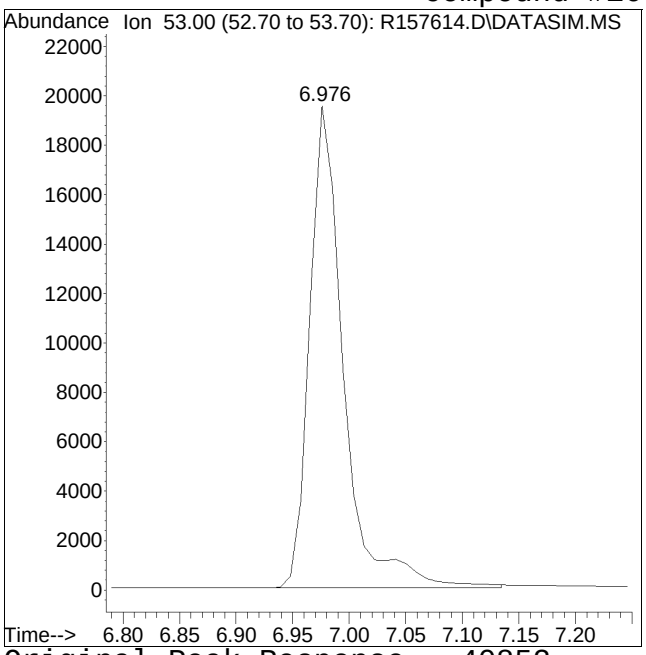
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

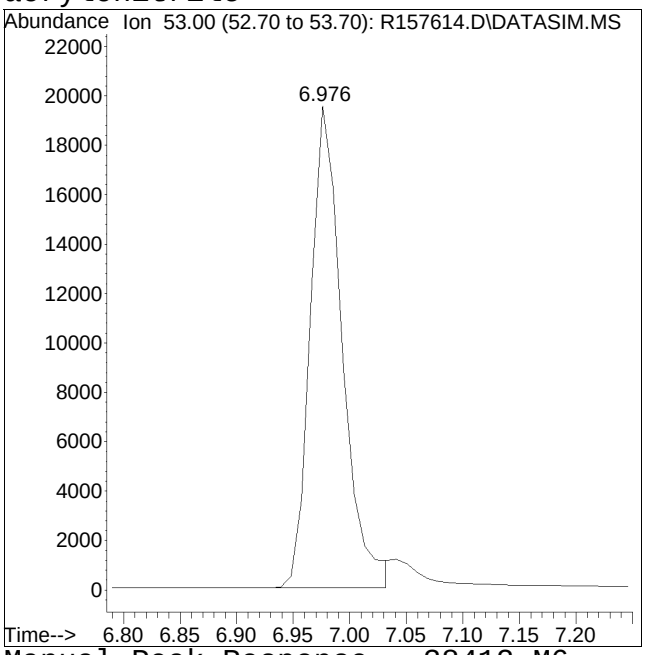
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157614.D
Date Inj'd : 2/27/2018 9:40 am
Sample : CTO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #16: acrylonitrile



Original Peak Response = 40852



Manual Peak Response = 38412 M6

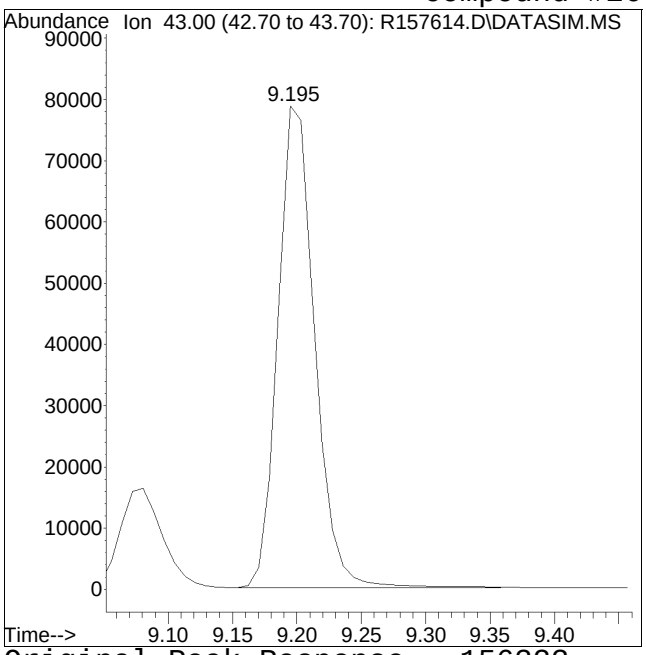
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

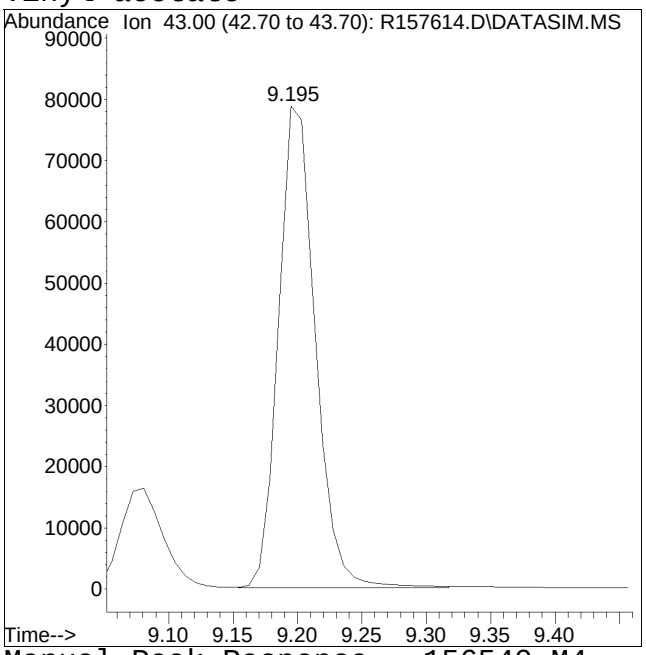
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157614.D
Date Inj'd : 2/27/2018 9:40 am
Sample : CTO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #26: vinyl acetate



Original Peak Response = 156323



Manual Peak Response = 156540 M4

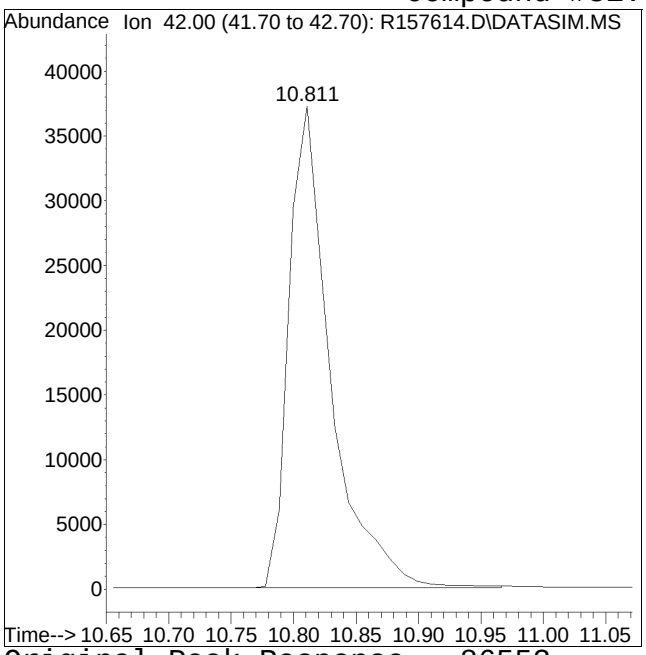
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

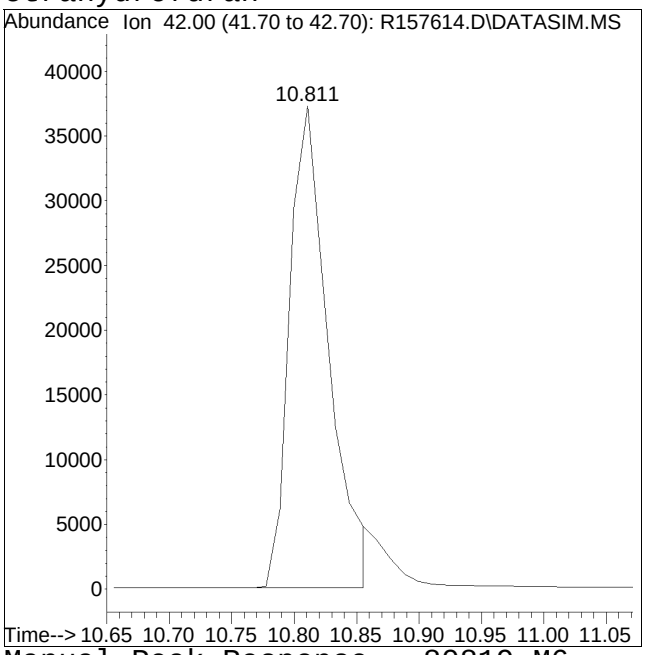
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157614.D
Date Inj'd : 2/27/2018 9:40 am
Sample : CTO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #31: Tetrahydrofuran



Original Peak Response = 86553



Manual Peak Response = 80819 M6

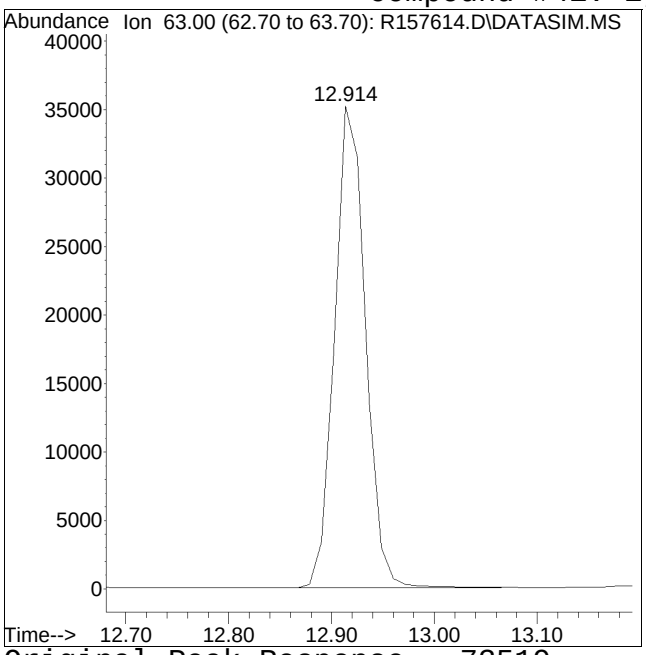
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

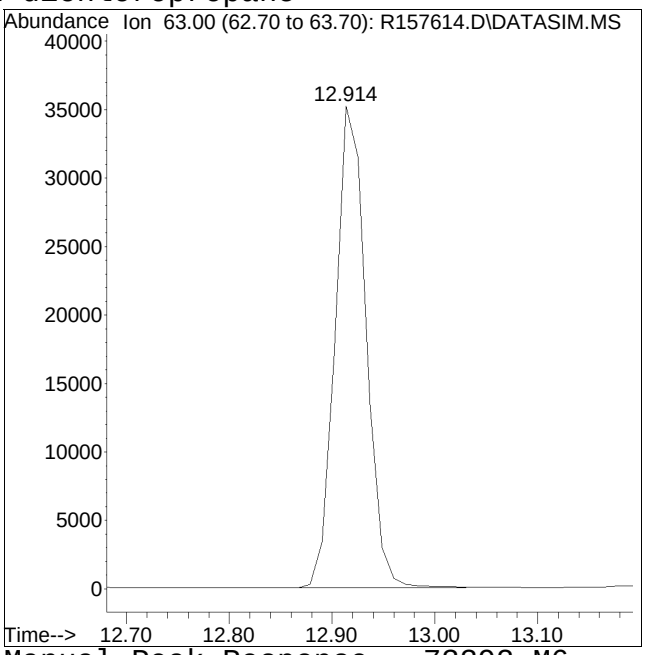
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157614.D
Date Inj'd : 2/27/2018 9:40 am
Sample : CTO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #41: 1,2-dichloropropane



Original Peak Response = 73519



Manual Peak Response = 73392 M6

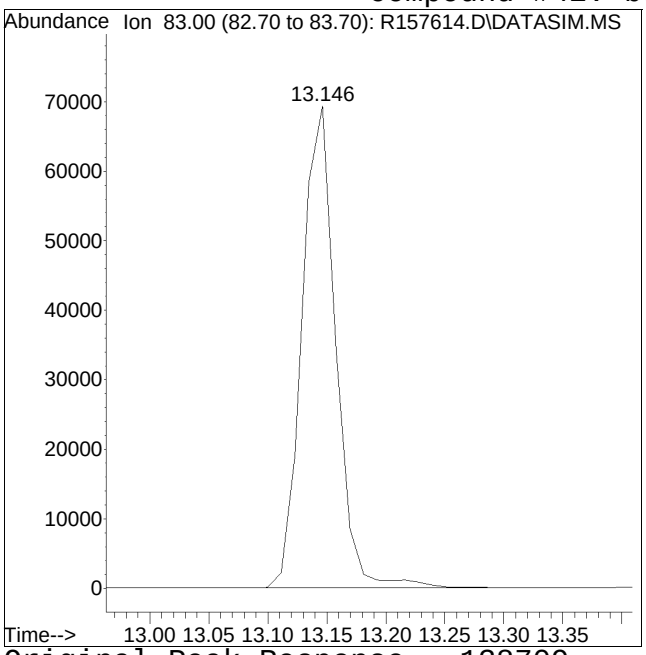
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

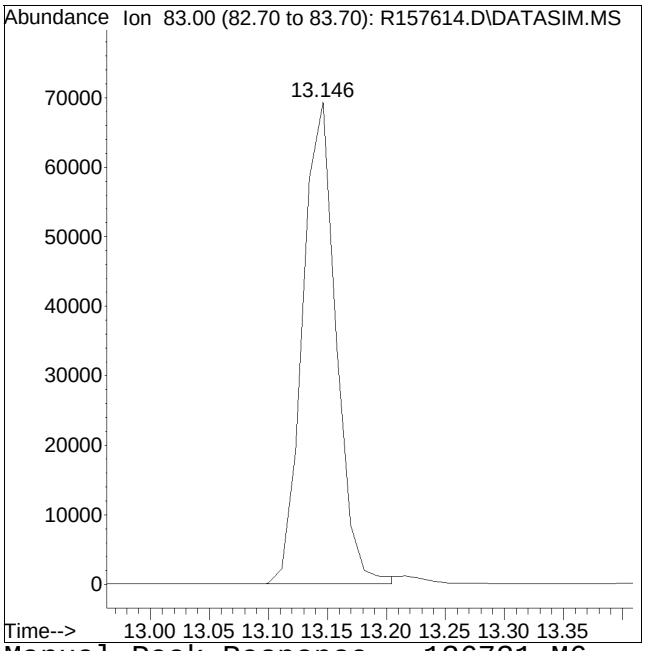
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157614.D
Date Inj'd : 2/27/2018 9:40 am
Sample : CTO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #42: bromodichloromethane



Original Peak Response = 138709



Manual Peak Response = 136731 M6

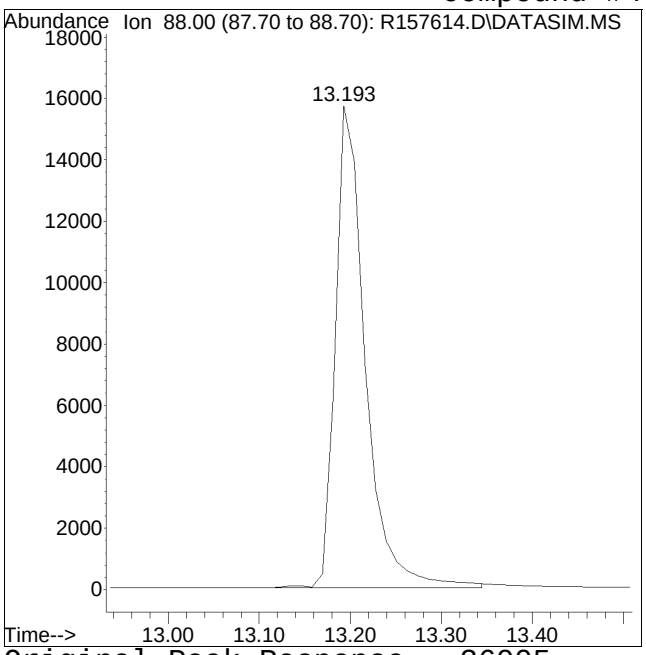
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

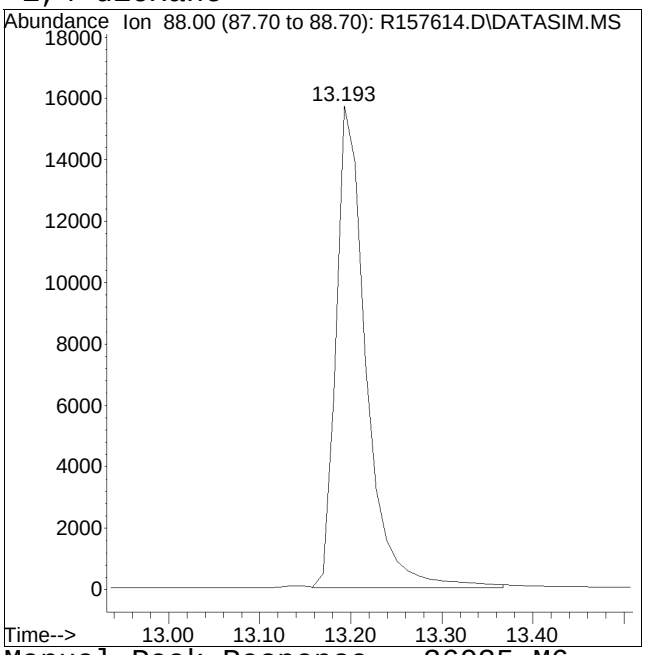
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157614.D
Date Inj'd : 2/27/2018 9:40 am
Sample : CTO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #43: 1,4-dioxane



Original Peak Response = 36005



Manual Peak Response = 36035 M6

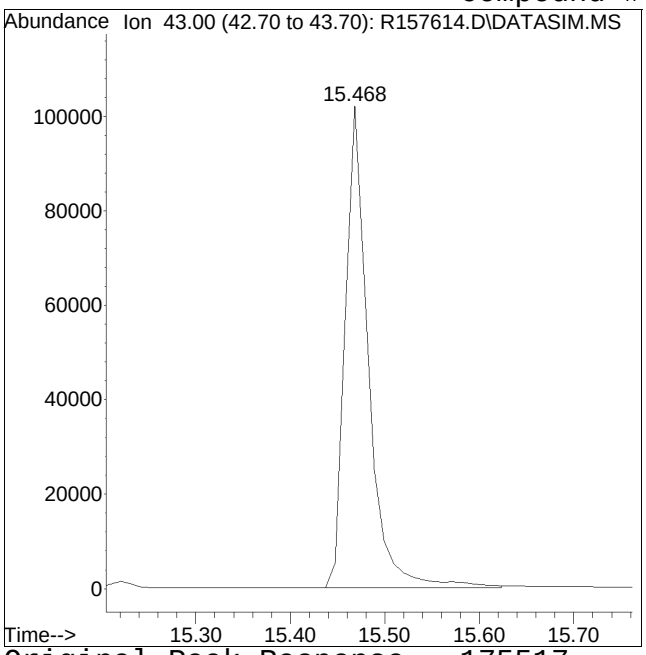
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

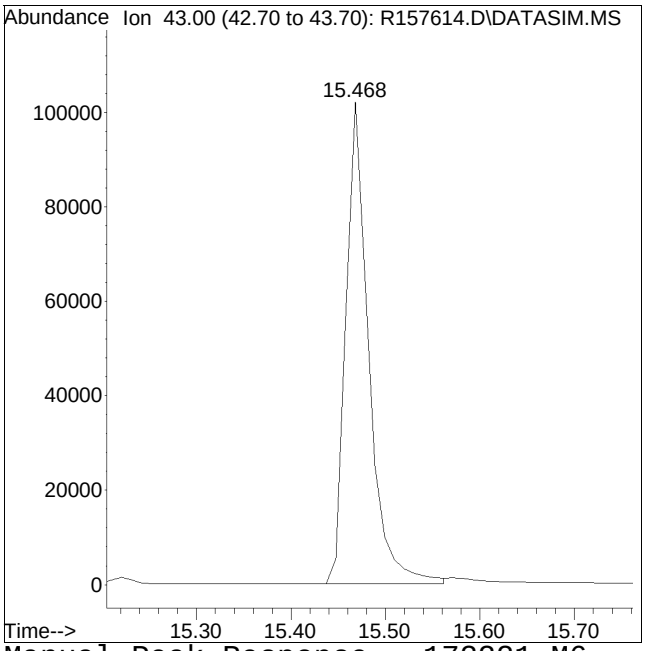
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157614.D
Date Inj'd : 2/27/2018 9:40 am
Sample : CTO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #54: 2-hexanone



Original Peak Response = 175517



Manual Peak Response = 172221 M6

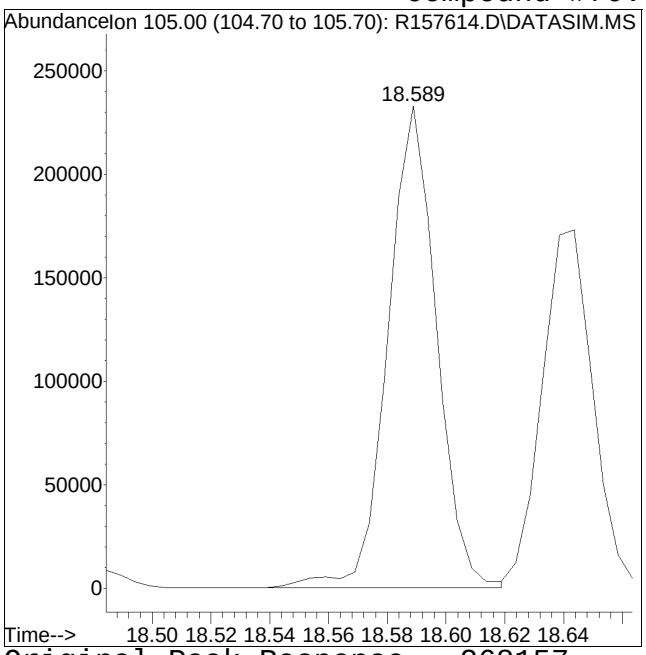
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

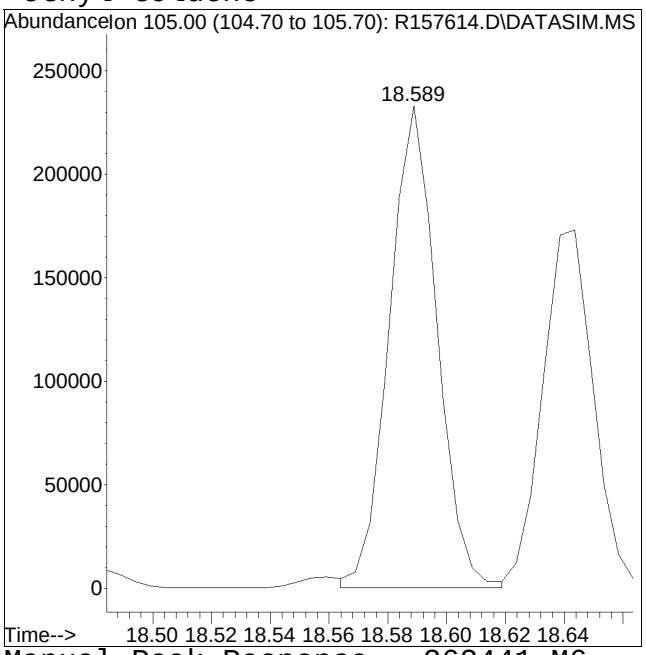
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R157614.D
Date Inj'd : 2/27/2018 9:40 am
Sample : CTO15-SIMSTD5.0

Method : TSIM180226.M
Operator : AIRPIANO1:MB
Instrument : Air Piano 1
Quant Date : 2/27/2018 12:45 pm

Compound #70: 4-ethyl toluene



Original Peak Response = 268157



Manual Peak Response = 262441 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Work Group

ALPHA ANALYTICAL LABORATORIES, INC.

Alpha WORK GROUP REPORT (wk02)

May 15 2018, 02:35 pm

Work Group: WG1115048 for Department: 3 GC/MS

Created: 11-MAY-18 Due: Operator: ry

Sample	Client ID	C	Product	Matrix	Stat	UA	HOLD	DUE	PR	Location
L1816546-01	S01-B505-IA14-050418	S	TO15-SIM	AIR	DONE	U	0603	0515	S0	Can-6
L1816546-02	S01-B505-IA11-050418	S	TO15-SIM	AIR	DONE	U	0603	0515	S0	Can-6
L1816546-03	S01-B505-IA06-050418	S	TO15-SIM	AIR	DONE	U	0603	0515	S0	Can-6
L1816546-04	S01-B505-IA09-050418	S	TO15-SIM	AIR	DONE	U	0603	0515	S0	Can-6
L1816546-05	S01-B505-FD01-050418	S	TO15-SIM	AIR	DONE	U	0603	0515	S0	Can-6
L1816546-06	S01-B505-IA10-050418	S	TO15-SIM	AIR	DONE	U	0603	0515	S0	Can-6
L1816546-07	S01-B505-IA12-050418	S	TO15-SIM	AIR	DONE	U	0603	0515	S0	Can-6
L1816546-08	S01-B505-IA08-050418	S	TO15-SIM	AIR	DONE	U	0603	0515	S0	Can-6
L1816546-09	S01-B505-IA07-050418	S	TO15-SIM	AIR	DONE	U	0603	0515	S0	Can-6
L1816546-10	S01-B505-IA13-050418	S	TO15-SIM	AIR	DONE	U	0603	0515	S0	Can-6
L1816546-11	S01-HER-OA-050418	S	TO15-SIM	AIR	DONE	U	0603	0515	S0	Can-6
L1817136-01	CAN 505 SHELF 4	S	TO15-SIM	AIR	DONE	U	0609	0518	NC	Can-2.7
L1817136-02	CAN 801 SHELF 8	S	TO15-SIM	AIR	DONE	U	0609	0518	NC	Can-1
L1817208-01	CAN 1584 SHELF 57	S	TO15-SIM	AIR	DONE	U	0610	0518	NC	Can-6
L1817208-02	CAN 1653 SHELF 58	S	TO15-SIM	AIR	DONE	U	0610	0518	NC	Can-6
WG1115048-1	MS BFB Tune Standard	S	TO15-SIM	AIR	DONE	U				
WG1115048-2	Continuing Calibrati	S	TO15-SIM	AIR	DONE	U				
WG1115048-3	Laboratory Control S	S	TO15-SIM	AIR	DONE	U				
WG1115048-4	Laboratory Method Bl	S	TO15-SIM	AIR	DONE	U				
WG1115048-5	Duplicate Sample	S	TO15-SIM	AIR	DONE	U				

Comments:

WG1115048-5 L1816546-04

Sequence Logs

Alpha Analytical Air Lab
Instrument Run Log

Instrument ID: Airpiano 1

Internal Standard/Surrogate IDs: SS17-030 / SS17-031

Date: 02/26/18

Internal Standard/Surrogate Volume: 100 ml

Analyst Initials: AR / MB

Sequence File Name: 180226.S

SIM ICAL# **PIANO ICAL #** **Full Scan ICAL#** **TO12 ICAL# 11601** **APH ICAL#14476**

AS Position #	Sample ID	Acquisition Method	Data File ID	Standard ID or Batch ID #, ICAL Ref #	Comment (s)	Product/sublist	Leak Check Pass ?
4	LABAIR-01	TO15_SFS	R157596	250ml			N/A
4	LABAIR-02	TO15_SFS	R157597	250ml			N/A
4	LABAIR-03	TO15_SFS	R157598	250ml			N/A
1	TA1022601	TO15_SFS	R157599	250ml	TUNE		N/A
5	ITO15-SIMSTD0.02	TO15_SFS	R157600	SS18-001D 50ML 0.02	SIM ONLY		N/A
5	ITO15-SIMSTD0.04	TO15_SFS	R157601	SS18-001D 100ML 0.04	SIM ONLY		N/A
5	ITO15-SIMSTD0.1	TO15_SFS	R157602	SS18-001D 250ML 0.1	SIM ONLY		N/A
6	ITO15-SIMSTD0.2	TO15_SFS	R157603	SS18-001C 50ML 0.2			N/A
6	ITO15-SIMSTD0.5	TO15_SFS	R157604	SS18-001C 125ML 0.5			N/A
6	ITO15-SIMSTD1.0	TO15_SFS	R157605	SS18-001C 250ML 1.0			N/A
7	ITO15-SIMSTD5.0	TO15_SFS	R157606	SS18-0017B1 125ML 5.0			N/A
7	ITO15-SIMSTD10.0	TO15_SFS	R157607	SS18-001B1 250ML 10.0			N/A
8	ITO15-SIMSTD20.0	TO15_SFS	R157608	SS18-001A 50ML 20.0			N/A
8	ITO15-SIMSTD50.0	TO15_SFS	R157609	SS18-001A 125ML 50.0			N/A
8	ITO15-LLSTD100.0	TO15_SFS	R157610	SS18-001A 250ML 100.0	FULL SCAN ONLY		N/A
1	BA1022601	TO15_SFS	R157611	250ml			N/A
		Pause					
1	BA1022602	TO15_SFS	R157612	250ml			N/A
2	CTO15-LLSTD10.0	TO15_SFS	R157613	SS18-002B 250ML 10.0	FULL SCAN ICV		N/A
2	CTO15-SIMSTD5.0	TO15_SFS	R157614	SS18-002B 125ML 5.0	SIM ICV		N/A

Alpha Analytical Air Lab
Instrument Run Log

Date(s) of Initial Calibration: Refer to Initial Calibration Summary Form 6

Date Acquired: see Instrument Performance Check Summary and/or quantitation report.

Sample ID information: L1301234-01,3,250,2 { Lab sample ID, dept #, actual volume analyzed (mL), nominal volume analyzed

Dilution Factor: See Form 1 report, or divide nominal volume by actual volume analyzed

Alpha Analytical Air Lab
Instrument Run Log

Instrument ID: Airpiano 1

Internal Standard/Surrogate IDs: SS17-030 / SS17-031

Date: 05/11/18

Internal Standard/Surrogate Volume: 100 ml

Analyst Initials: RY

Sequence File Name: 180511.S

SIM ICAL# 14483 **PIANO ICAL #** **Full Scan ICAL# 14479** **TO12 ICAL# 11601** **APH ICAL#14476**

AS Position #	Sample ID	Acquisition Method	Data File ID	Standard ID or Batch ID #, ICAL Ref #	Comment (s)	Product/s ublist	Check Pass ? Y/N
1	TA1051101	TO15_SFS	R159321	250ml	TUNE		N/A
2	CAPH-10STD10.0	TO15_SFS	R159322	SS18-003B1 250 ml 10.0	APH CC		N/A
3	CTO15-LLSTD10.0	TO15_SFS	R159323	SS18-014F 250 ml 10.0	APH / LL LCS		N/A
3	CTO15-SIMSTD5.0	TO15_SFS	R159324	SS18-014F 125 ml 5.0	SIM LCS		N/A
1	BA1051101	TO15_SFS	R159325	250ml	BLANK		N/A
2	L1817208-01,3,250,250	TO15_SFS	R159326	250ml		A, LL, SIM	N/A
3	L1817208-02,3,250,250	TO15_SFS	R159327	250ml		A, LL, SIM	N/A
4	L1817136-01,3,250,250	TO15_SFS	R159328	250ml		A, LL, SIM	N/A
5	L1817136-02,3,250,250	TO15_SFS	R159329	250ml		A, LL, SIM	N/A
1	L1816546-11,3,250,250	TO15_SFS	R159330	WG1115048,ICAL14483		9 CL BY SIM	Y
2	L1816546-01,3,250,250	TO15_SFS	R159331	WG1115048,ICAL14483		9 CL BY SIM	Y
3	L1816546-02,3,250,250	TO15_SFS	R159332	WG1115048,ICAL14483		9 CL BY SIM	Y
4	L1816546-03,3,250,250	TO15_SFS	R159333	WG1115048,ICAL14483		9 CL BY SIM	Y
5	L1816546-04,3,250,250	TO15_SFS	R159334	WG1115048,ICAL14483		9 CL BY SIM	Y
5	L1816546-04DUP,3,250,250	TO15_SFS	R159335	WG1115048,ICAL14483	TO15-SIM DUP	9 CL BY SIM	Y
6	L1816546-05,3,250,250	TO15_SFS	R159336	WG1115048,ICAL14483		9 CL BY SIM	Y
7	L1816546-06,3,250,250	TO15_SFS	R159337	WG1115048,ICAL14483		9 CL BY SIM	Y
8	L1816546-07,3,250,250	TO15_SFS	R159338	WG1115048,ICAL14483		9 CL BY SIM	Y
9	L1816546-08,3,250,250	TO15_SFS	R159339	WG1115048,ICAL14483		9 CL BY SIM	Y
10	L1816546-09,3,250,250	TO15_SFS	R159340	WG1115048,ICAL14483		9 CL BY SIM	Y
11	L1816546-10,3,250,250	TO15_SFS	R159341	WG1115048,ICAL14483		9 CL BY SIM	Y
12	L1816294-01,3,250,250	TO15_SFS	R159342	WG1115047,ICAL14476		APH	Y

Alpha Analytical Air Lab
Instrument Run Log

13	L1816294-02,3,250,250	TO15_SFS	R159343	WG1115047,ICAL14476		APH	Y
14	L1816294-03,3,250,250	TO15_SFS	R159344	WG1115047,ICAL14476	L1800005-96 FOR DUMMY DUP	APH	Y
14	L1816294-03DUP,3,250,250	TO15_SFS	R159345	WG1115047,ICAL14476	APH / MCP-SIM DUP	APH	Y
15	L1816436-01D,3,25,250	TO15_SFS	R159346	WG1115047,ICAL14476		APH	Y
16	L1816266-31D,3,100,250	TO15_SFS	R159347	WG1114942,ICAL14479	TCE ONLY	9 CL BY FS	Y

Date(s) of Initial Calibration: Refer to Initial Calibration Summary Form 6

Date Acquired: see Instrument Performance Check Summary and/or quantitation report.

Sample ID information: { Lab sample ID, dept #, actual volume analyzed (mL), nominal volume analyzed (mL) }
L1301234-01,3,250,2

Dilution Factor: See Form 1 report, or divide nominal volume by actual volume analyzed

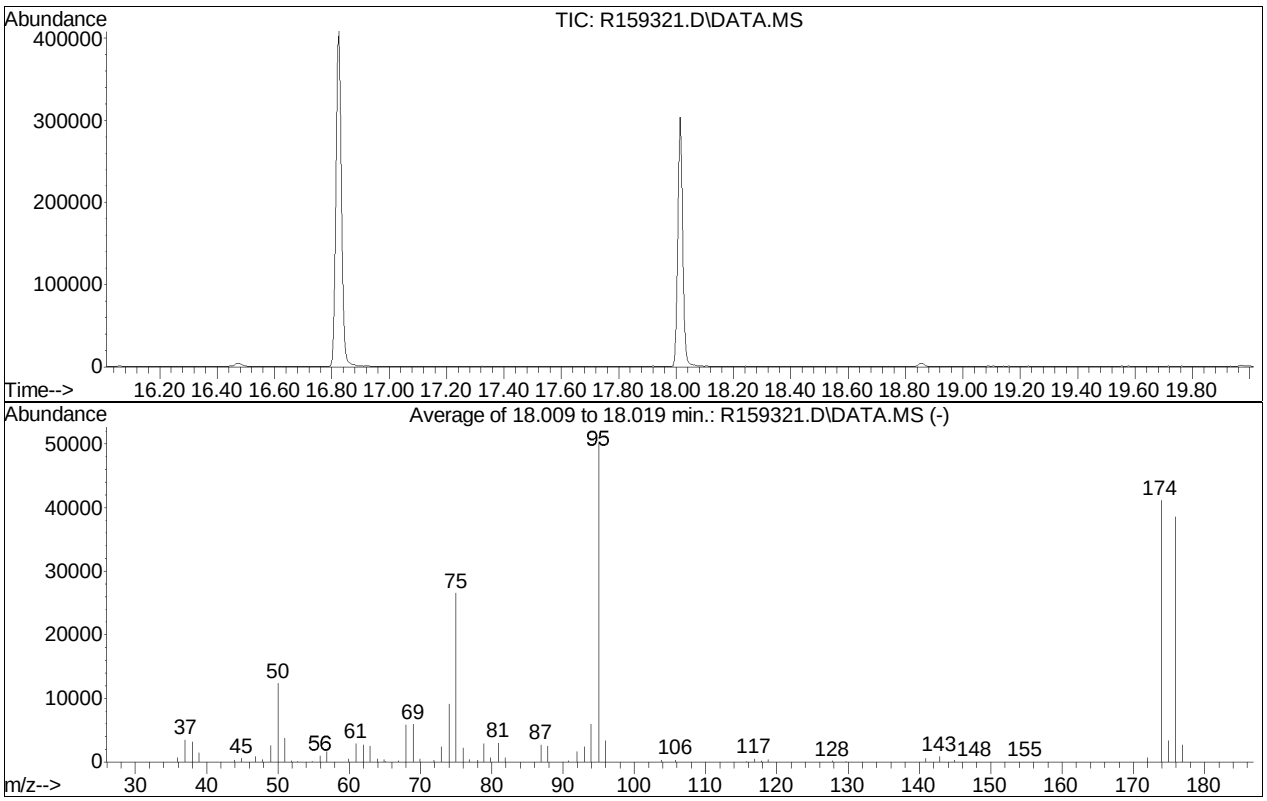
Analytical Event

Continuing Calibration
BFB Tune

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159321.D
Acq On : 11 May 2018 12:25 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-1,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Tue Feb 27 08:55:14 2018



AutoFind: Scans 1575, 1576, 1577; Background Corrected with Scan 1568

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	24.7	12387	PASS
75	95	30	66	52.9	26571	PASS
95	95	100	100	100.0	50216	PASS
96	95	5	9	6.7	3378	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	81.9	41133	PASS
175	174	4	9	8.1	3328	PASS
176	174	93	101	93.8	38573	PASS
177	176	5	9	7.0	2684	PASS

Continuing Calibration

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159324.D
Acq On : 11 May 2018 2:02 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-3,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 11 14:31:27 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	bromochloromethane	1.000	1.000	0.0	68	0.00
2		propylene	0.524	0.318	39.3#	45#	-0.01
3		dichlorodifluoromethane	1.122	1.391	-24.0	82	0.00
4	C	chloromethane	0.577	0.455	21.1	54#	0.00
5		Freon-114	1.434	1.476	-2.9	68	-0.01
6	C	vinyl chloride	0.593	0.521	12.1	58#	0.00
7	C	1,3-butadiene	0.405	0.370	8.6	61	0.00
8	C	bromomethane	0.499	0.548	-9.8	72	0.00
9	C	chloroethane	0.279	0.255	8.6	62	0.00
10		ethanol	0.461	0.393	14.8	62	0.00
11	C	vinyl bromide	0.449	0.511	-13.8	77	0.00
12	C	acrolein	0.251	0.200	20.3	58#	0.00
13		acetone	0.755	0.939	-24.4	90	0.00
14		trichlorofluoromethane	1.261	1.551	-23.0	82	0.00
15		isopropyl alcohol	1.029	0.976	5.2	78	0.00
16	C	acrylonitrile	0.428	0.390	8.9	63	0.00
17	C	1,1-dichloroethene	0.969	0.997	-2.9	69	0.00
18		tertiary butyl alcohol	1.130	1.056	6.5	65	0.00
19	C	methylene chloride	0.776	0.827	-6.6	71	0.00
20	C	3-chloropropene	0.802	0.811	-1.1	69	0.00
21	C	carbon disulfide	1.570	1.601	-2.0	68	0.00
22		Freon 113	0.986	1.100	-11.6	74	0.00
23		trans-1,2-dichloroethene	0.895	0.792	11.5	60	0.00
24	C	1,1-dichloroethane	1.119	1.101	1.6	67	0.00
25	C	MTBE	1.324	1.174	11.3	61	0.00
26	C	vinyl acetate	1.279	1.112	13.1	62	0.00
27	C	2-butanone	1.349	1.210	10.3	62	0.00
28		cis-1,2-dichloroethene	0.972	0.832	14.4	58#	0.00
29		Ethyl Acetate	0.222	0.235	-5.9	72	0.00
30	C	chloroform	1.370	1.541	-12.5	76	0.00
31		Tetrahydrofuran	0.746	0.598	19.8	55#	-0.01
32	C	1,2-dichloroethane	0.843	0.864	-2.5	70	-0.01
33	I	1,4-difluorobenzene	1.000	1.000	0.0	69	-0.01
34	C	hexane	0.787	0.688	12.6	63	0.00
36	C	1,1,1-trichloroethane	0.750	0.796	-6.1	75	0.00
37	C	benzene	1.140	1.032	9.5	64	-0.01
38	C	carbon tetrachloride	0.713	0.827	-16.0	81	0.00
39		cyclohexane	0.637	0.531	16.6	58#	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159324.D
Acq On : 11 May 2018 2:02 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-3,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 11 14:31:27 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
40		dibromomethane	0.501	0.447	10.8	68	0.00
41	C	1,2-dichloropropane	0.513	0.441	14.0	60#	0.00
42		bromodichloromethane	0.874	0.984	-12.6	77	-0.01
43	C	1,4-dioxane	0.221	0.221	0.0	68	0.00
44	C	trichloroethene	0.410	0.423	-3.2	71	0.00
45	C	2,2,4-trimethylpentane	2.060	1.951	5.3	66	0.00
46		heptane	0.869	0.752	13.5	61	0.00
47	C	cis-1,3-dichloropropene	2.500	2.292	8.3	61	0.00
48	C	4-methyl-2-pentanone	1.066	1.105	-3.7	65	0.00
49		trans-1,3-dichloropropene	0.594	0.493	17.0	52#	0.00
50	C	1,1,2-trichloroethane	0.438	0.472	-7.8	73	0.00
51	I	chlorobenzene-D5	1.000	1.000	0.0	65	0.00
52	C	toluene	4.464	4.435	0.6	63	0.00
54		2-hexanone	3.635	3.824	-5.2	61	0.00
55		dibromochloromethane	2.524	3.518	-39.4#	85	0.00
56	C	1,2-dibromoethane	2.464	2.841	-15.3	70	0.00
57	C	tetrachloroethene	1.718	2.087	-21.5	76	0.00
58		1,1,1,2-tetrachloroethane	1.688	2.039	-20.8	74	0.00
59	C	chlorobenzene	3.337	3.879	-16.2	72	0.00
60	C	ethylbenzene	5.755	5.780	-0.4	62	0.00
61	C	m+p-xylene	4.457	4.689	-5.2	64	-0.01
62	C	bromoform	2.296	3.323	-44.7#	89	0.00
63	C	styrene	2.982	3.133	-5.1	61	0.00
64	C	1,1,2,2-tetrachloroethane	4.040	4.869	-20.5	73	0.00
65	C	o-xylene	4.681	5.109	-9.1	67	0.00
66		1,2,3-trichloropropane	3.063	3.347	-9.3	67	0.00
68	C	isopropylbenzene	5.408	5.934	-9.7	70	0.00
69		bromobenzene	3.471	3.560	-2.6	64	0.00
70		4-ethyl toluene	5.556	7.160	-28.9	75	0.00
71		1,3,5-trimethylbenzene	4.819	5.636	-17.0	70	0.00
72		tert-butylbenzene	4.566	5.439	-19.1	70	0.00
73		1,2,4-trimethylbenzene	4.712	5.896	-25.1	71	0.00
74	C	Benzyl Chloride	4.360	5.588	-28.2	77	0.00
75		1,3-dichlorobenzene	3.123	4.400	-40.9#	81	0.00
76	C	1,4-dichlorobenzene	3.214	4.413	-37.3#	80	0.00
77		sec-butylbenzene	6.748	8.187	-21.3	70	0.00
78		p-isopropyltoluene	5.392	6.099	-13.1	66	0.00
79		1,2-dichlorobenzene	2.960	4.155	-40.4#	82	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159324.D
Acq On : 11 May 2018 2:02 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-3,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 11 14:31:27 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
80	n-butylbenzene	5.865	7.093	-20.9	66	0.00
81 C	1,2,4-trichlorobenzene	2.156	3.769	-74.8#	87	0.00
82	naphthalene	5.580	7.531	-35.0#	70	0.01
83	1,2,3-trichlorobenzene	1.986	3.418	-72.1#	82	0.00
84 C	hexachlorobutadiene	1.861	3.392	-82.3#	96	0.00

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 4

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159324.D
Acq On : 11 May 2018 2:02 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-2,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 11 14:31:27 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : Default-LCS-AP2 - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	148232	10.000	ppbV	0.00
Standard Area = 148232			Recovery = 100.00%			
33) 1,4-difluorobenzene	12.39	114	216506	10.000	ppbV	-0.01
Standard Area = 216506			Recovery = 100.00%			
51) chlorobenzene-D5	16.82	54	55667	10.000	ppbV	0.00
Standard Area = 55667			Recovery = 100.00%			
System Monitoring Compounds						
Target Compounds						Qvalue
2) propylene	4.04	41	23580M6	3.036	ppbV	
3) dichlorodifluoromethane	4.15	85	103074	6.196	ppbV	98
4) chloromethane	4.36	50	33710	3.938	ppbV	98
5) Freon-114	4.51	85	109407	5.146	ppbV	97
6) vinyl chloride	4.68	62	38590	4.393	ppbV	98
7) 1,3-butadiene	4.87	54	27390	4.564	ppbV	87
8) bromomethane	5.24	94	40580	5.487	ppbV	100
9) chloroethane	5.50	64	18893	4.568	ppbV	89
10) ethanol	5.69	31	145682M4	21.328	ppbV	
11) vinyl bromide	5.99	106	37880	5.695	ppbV	99
12) acrolein	6.17	56	14800	3.977	ppbV	96
13) acetone	6.34	43	348136	31.125	ppbV	99
14) trichlorofluoromethane	6.56	101	114948	6.150	ppbV	99
15) isopropyl alcohol	6.70	45	180838	11.856	ppbV	100
16) acrylonitrile	6.98	53	28903M6	4.551	ppbV	
17) 1,1-dichloroethene	7.39	61	73926	5.146	ppbV	97
18) tertiary butyl alcohol	7.49	59	78235	4.670	ppbV #	90
19) methylene chloride	7.57	49	61265	5.326	ppbV	93
20) 3-chloropropene	7.72	41	60128	5.057	ppbV	93
21) carbon disulfide	7.90	76	118641	5.096	ppbV	98
22) Freon 113	7.91	101	81501	5.574	ppbV	99
23) trans-1,2-dichloroethene	8.75	61	58733	4.425	ppbV	90
24) 1,1-dichloroethane	8.98	63	81580	4.918	ppbV	99
25) MTBE	9.07	73	86982	4.431	ppbV	97
26) vinyl acetate	9.20	43	82394	4.347	ppbV	99
27) 2-butanone	9.48	43	89688	4.484	ppbV	99
28) cis-1,2-dichloroethene	9.99	61	61677	4.281	ppbV	89
29) Ethyl Acetate	10.28	61	17412	5.289	ppbV	82
30) chloroform	10.34	83	114213	5.623	ppbV	98

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159324.D
Acq On : 11 May 2018 2:02 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-2,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 11 14:31:27 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : Default-LCS-AP2 - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
31) Tetrahydrofuran	10.80	42	44315M6	4.009	ppbV		
32) 1,2-dichloroethane	11.18	62	64035	5.123	ppbV		97
34) hexane	10.23	57	74441	4.369	ppbV		92
36) 1,1,1-trichloroethane	11.47	97	86170	5.309	ppbV		94
37) benzene	11.98	78	111764	4.527	ppbV		96
38) carbon tetrachloride	12.16	117	89489	5.797	ppbV		98
39) cyclohexane	12.30	56	57529	4.170	ppbV		94
40) dibromomethane	12.89	93	48411	4.465	ppbV		89
41) 1,2-dichloropropane	12.91	63	47689	4.292	ppbV		98
42) bromodichloromethane	13.13	83	106527	5.627	ppbV		96
43) 1,4-dioxane	13.19	88	23876	4.997	ppbV		92
44) trichloroethene	13.19	130	45803	5.154	ppbV		97
45) 2,2,4-trimethylpentane	13.22	57	211203	4.735	ppbV		97
46) heptane	13.51	43	81420	4.329	ppbV		99
47) cis-1,3-dichloropropene	14.17	75	248149	4.584	ppbV		100
48) 4-methyl-2-pentanone	14.19	43	119610	5.183	ppbV	#	99
49) trans-1,3-dichloropropene	14.76	75	53353	4.146	ppbV		99
50) 1,1,2-trichloroethane	14.94	97	51122	5.385	ppbV		96
52) toluene	15.22	91	123432	4.967	ppbV		100
54) 2-hexanone	15.47	43	106432	5.260	ppbV	#	93
55) dibromochloromethane	15.64	129	97909	6.968	ppbV		100
56) 1,2-dibromoethane	15.87	107	79065	5.765	ppbV		99
57) tetrachloroethene	16.28	166	58093	6.073	ppbV		95
58) 1,1,1,2-tetrachloroethane	16.84	131	56749	6.040	ppbV		98
59) chlorobenzene	16.86	112	107956	5.811	ppbV		95
60) ethylbenzene	17.16	91	160881	5.022	ppbV		99
61) m+p-xylene	17.29	91	261023	10.521	ppbV		98
62) bromoform	17.37	173	92484	7.235	ppbV		99
63) styrene	17.58	104	87193	5.252	ppbV		98
64) 1,1,2,2-tetrachloroethane	17.66	83	135524	6.026	ppbV		99
65) o-xylene	17.66	91	142198	5.457	ppbV		96
66) 1,2,3-trichloropropane	17.76	75	93162	5.465	ppbV		98
68) isopropylbenzene	18.10	105	165163	5.486	ppbV		99
69) bromobenzene	18.19	77	99094	5.129	ppbV	#	84
70) 4-ethyl toluene	18.59	105	199280	6.443	ppbV		99
71) 1,3,5-trimethylbenzene	18.64	105	156873	5.848	ppbV		99
72) tert-butylbenzene	18.95	119	151394	5.956	ppbV		99
73) 1,2,4-trimethylbenzene	18.95	105	164114	6.257	ppbV		96
74) Benzyl Chloride	19.07	91	155541	6.408	ppbV		96
75) 1,3-dichlorobenzene	19.08	146	122466	7.044	ppbV		95

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159324.D
Acq On : 11 May 2018 2:02 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-2,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 11 14:31:27 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : Default-LCS-AP2 - All compounds listed

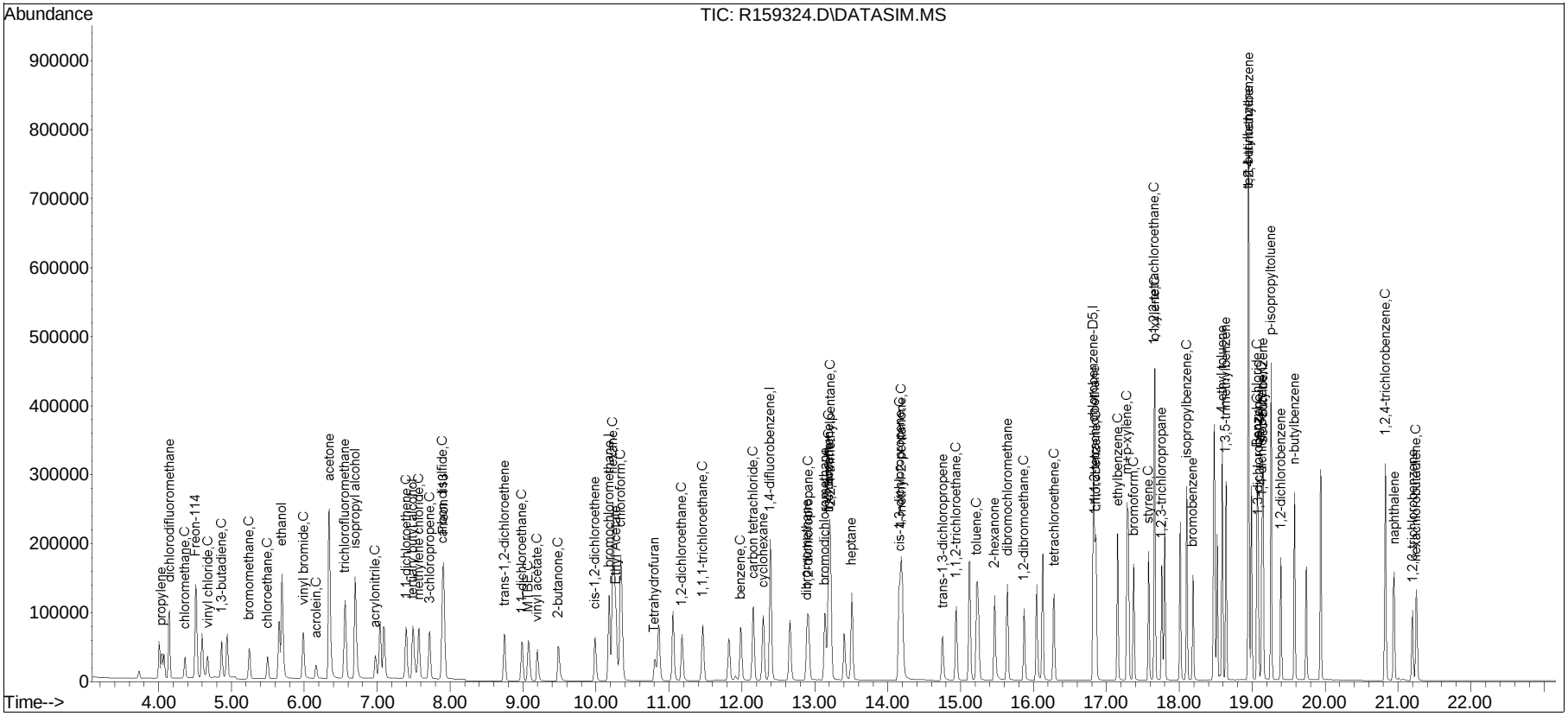
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
76) 1,4-dichlorobenzene	19.13	146	122830	6.865	ppbV	95
77) sec-butylbenzene	19.15	105	227882	6.066	ppbV	94
78) p-isopropyltoluene	19.26	119	169756	5.656	ppbV	99
79) 1,2-dichlorobenzene	19.39	146	115654	7.018	ppbV	93
80) n-butylbenzene	19.58	91	197415	6.047	ppbV	98
81) 1,2,4-trichlorobenzene	20.83	180	104900	8.740	ppbV	98
82) naphthalene	20.95	128	209626	6.749	ppbV #	92
83) 1,2,3-trichlorobenzene	21.20	180	95147	8.604	ppbV	99
84) hexachlorobutadiene	21.25	225	94398	9.112	ppbV	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default-LCS-AP2 - All compounds listedR159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159324.D
Acq On : 11 May 2018 2:02 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-2,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

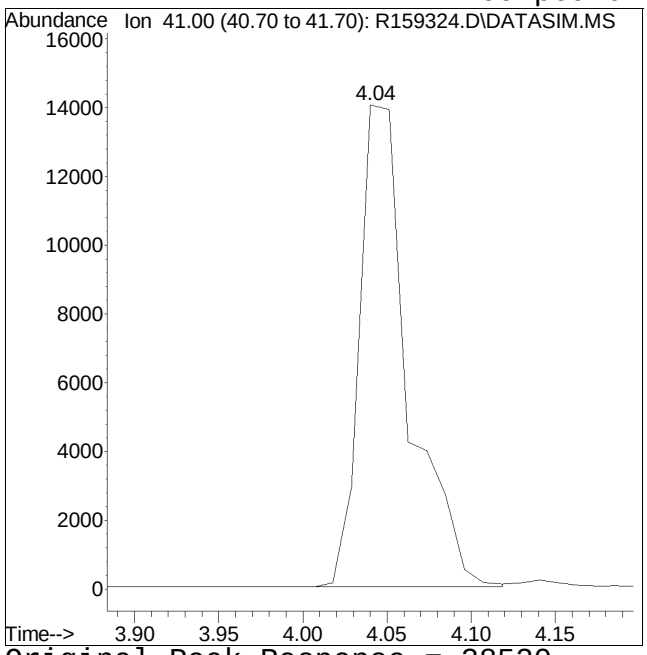
Quant Time: May 11 14:31:27 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration



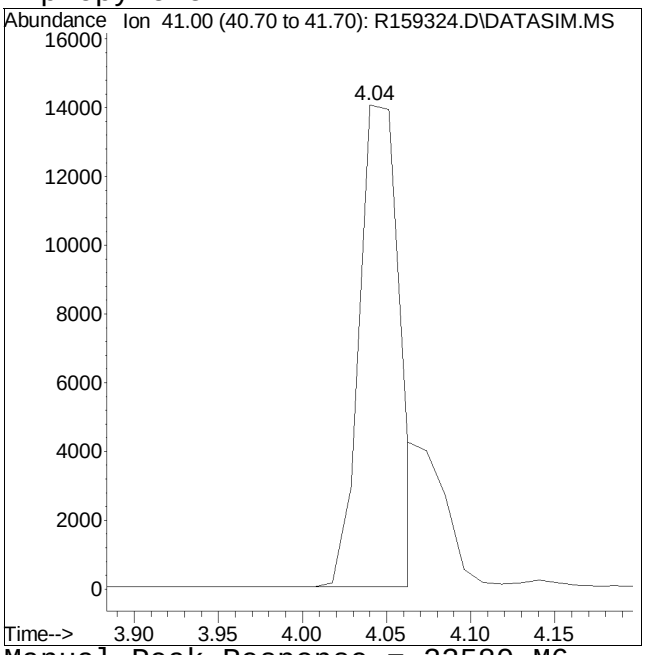
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R159324.D
Date Inj'd : 5/11/2018 2:02 pm
Sample : WG1115048-2,3,250,250
Method : TSIM180226.M
Operator : AIRPIANO1:GJ
Instrument : Air Piano 1
Quant Date : 5/11/2018 2:29 pm

Compound #2: propylene



Original Peak Response = 28520



Manual Peak Response = 23580 M6

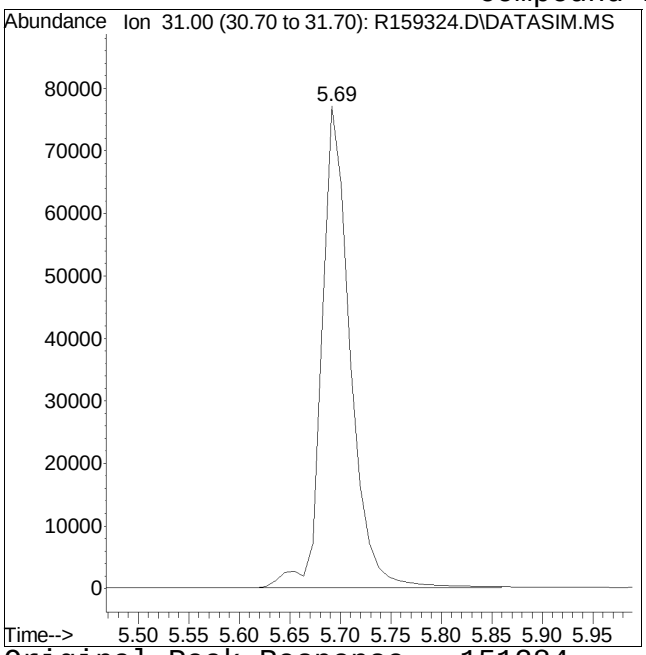
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

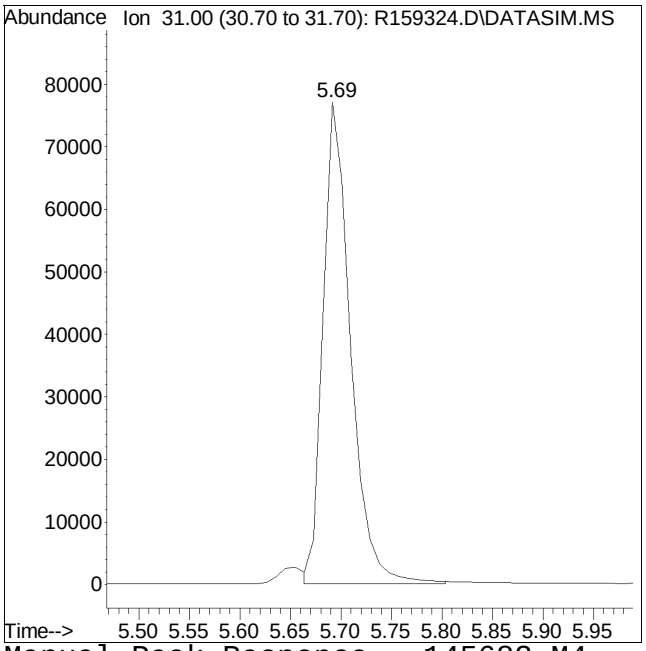
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R159324.D
Date Inj'd : 5/11/2018 2:02 pm
Sample : WG1115048-2,3,250,250

Method : TSIM180226.M
Operator : AIRPIANO1:GJ
Instrument : Air Piano 1
Quant Date : 5/11/2018 2:29 pm

Compound #10: ethanol



Original Peak Response = 151284



Manual Peak Response = 145682 M4

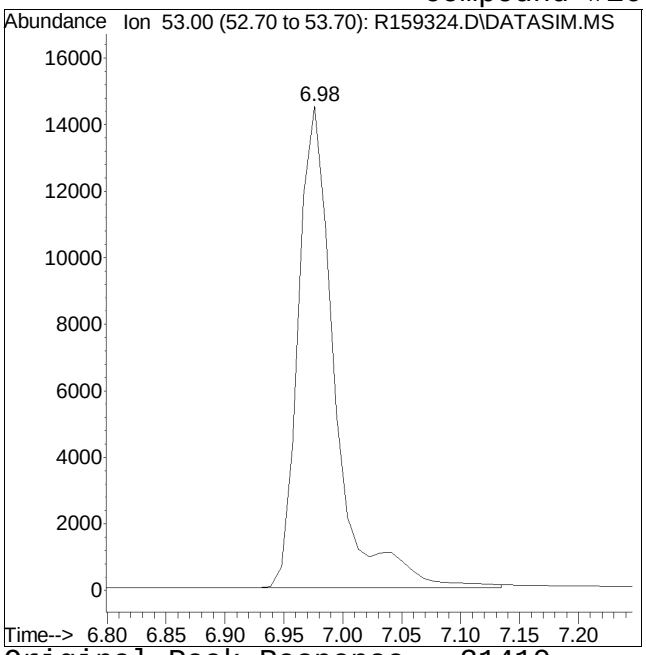
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

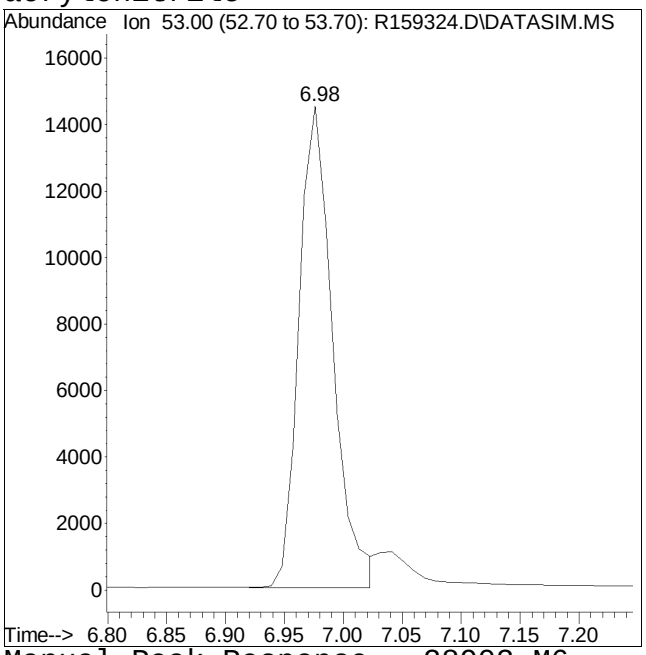
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R159324.D
Date Inj'd : 5/11/2018 2:02 pm
Sample : WG1115048-2,3,250,250

Method : TSIM180226.M
Operator : AIRPIANO1:GJ
Instrument : Air Piano 1
Quant Date : 5/11/2018 2:29 pm

Compound #16: acrylonitrile



Original Peak Response = 31410



Manual Peak Response = 28903 M6

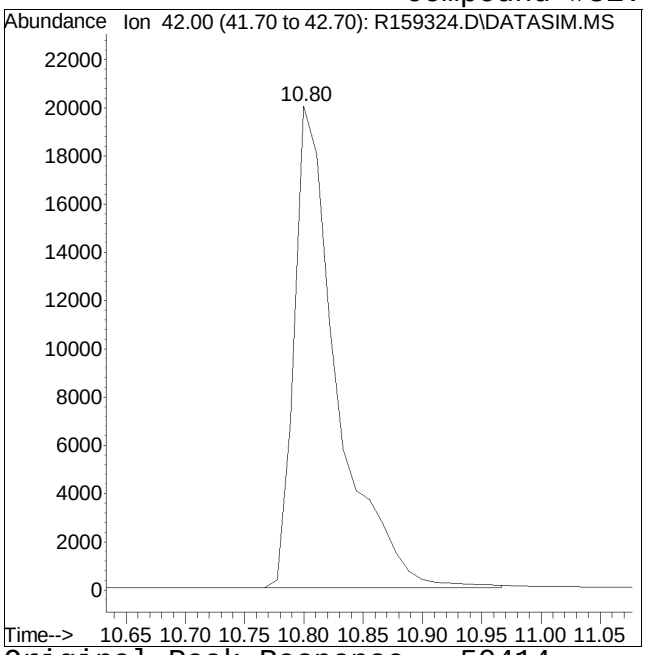
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

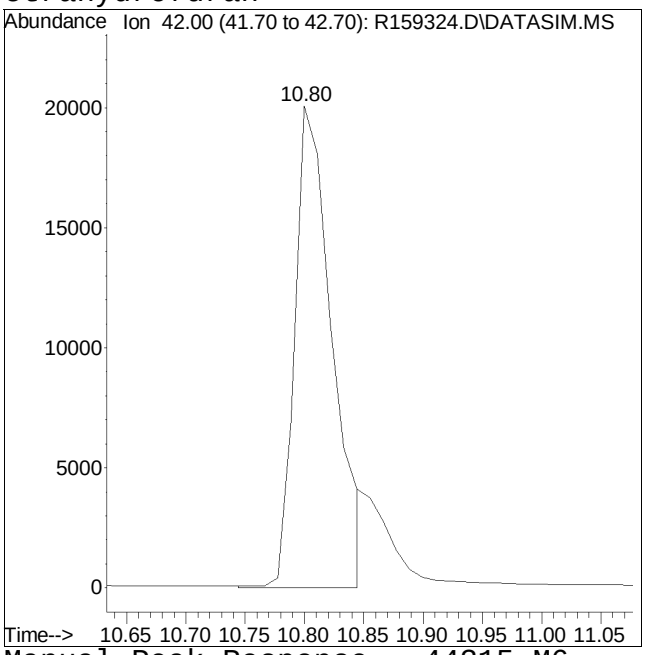
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R159324.D
Date Inj'd : 5/11/2018 2:02 pm
Sample : WG1115048-2,3,250,250

Method : TSIM180226.M
Operator : AIRPIANO1:GJ
Instrument : Air Piano 1
Quant Date : 5/11/2018 2:29 pm

Compound #31: Tetrahydrofuran



Original Peak Response = 50414



Manual Peak Response = 44315 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Sample Raw Data

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159330.D
Acq On : 11 May 2018 6:13 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-11,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 1 Sample Multiplier: 1

Quant Time: May 12 08:01:23 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : 9_Chlorinateds - .

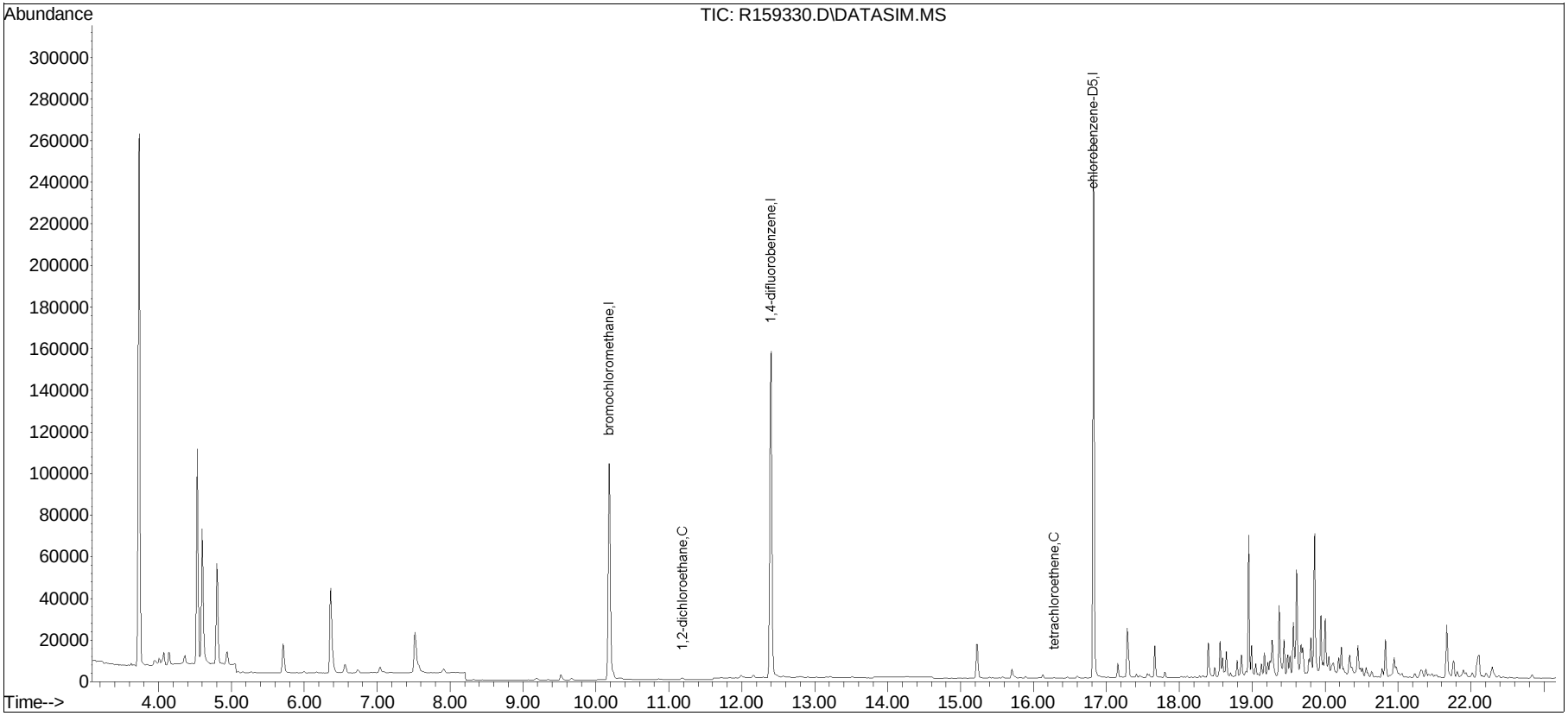
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	127671	10.000	ppbV	0.00
Standard Area = 148232			Recovery =		86.13%	
33) 1,4-difluorobenzene	12.40	114	166633	10.000	ppbV	0.00
Standard Area = 216506			Recovery =		76.96%	
51) chlorobenzene-D5	16.82	54	47378	10.000	ppbV	0.00
Standard Area = 55667			Recovery =		85.11%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.68		0	N.D.		
17) 1,1-dichloroethene	7.39		0	N.D.		
23) trans-1,2-dichloroethene	8.75		0	N.D.		
28) cis-1,2-dichloroethene	10.00		0	N.D.		
44) trichloroethene	13.19		0	N.D.		
57) tetrachloroethene	16.28	166	187	0.023	ppbV #	88

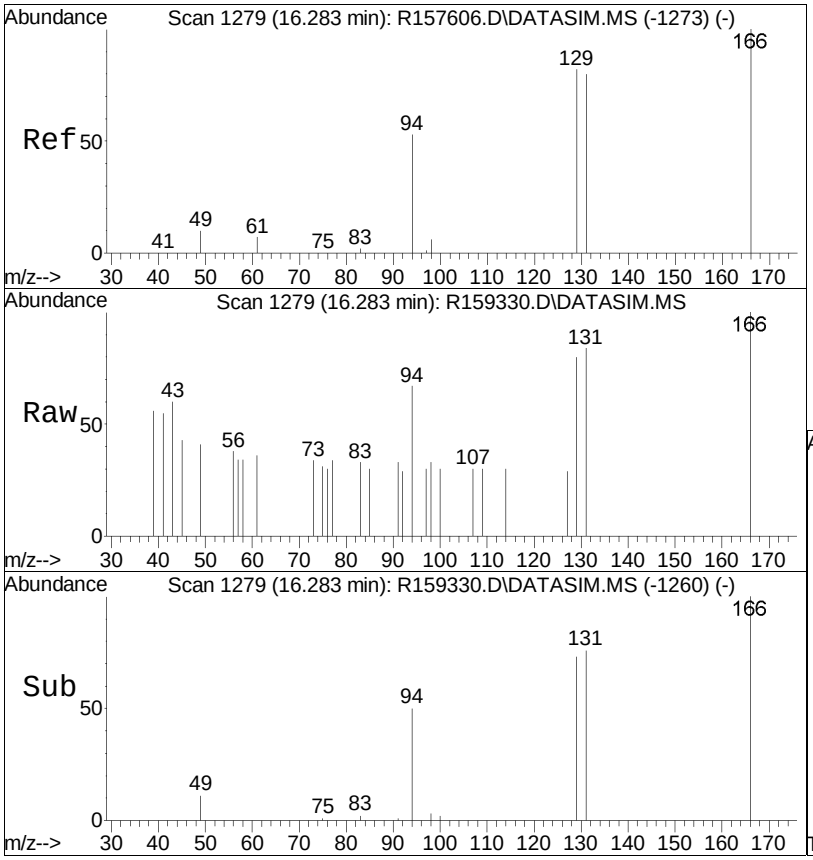
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : 9_Chlorinateds - .AIR1\2018\180511SIM\R159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159330.D
Acq On : 11 May 2018 6:13 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-11,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 1 Sample Multiplier: 1

Quant Time: May 12 08:01:23 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

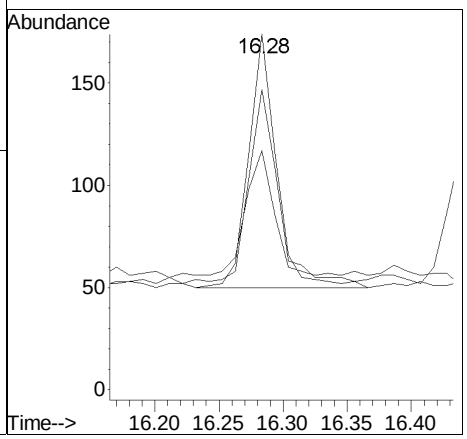




#57
tetrachloroethene
Concen: 0.02 ppbV
RT: 16.28 min Scan# 1279
Delta R.T. 0.000 min
Lab File: R159330.D
Acq: 11 May 2018 6:13 pm

Tgt Ion:166 Resp: 187

Ion	Ratio	Lower	Upper
166	100		
131	84.5	63.7	95.5
94	67.2	42.1	63.1#



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\AIR1\2018Q	Method	: TSIM180226.M
Data File	: R159330.D	Operator	: AIRPIANO1:GJ
Date Inj'd	: 5/11/2018 6:13 pm	Instrument	: Air Piano 1
Sample	: L1816546-11,3,250,250	Quant Date	: 5/12/2018 8:01 am

There are no manual integrations or false positives in this file.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159331.D
Acq On : 11 May 2018 6:46 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-01,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 12 09:49:36 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : 9_Chlorinateds - .

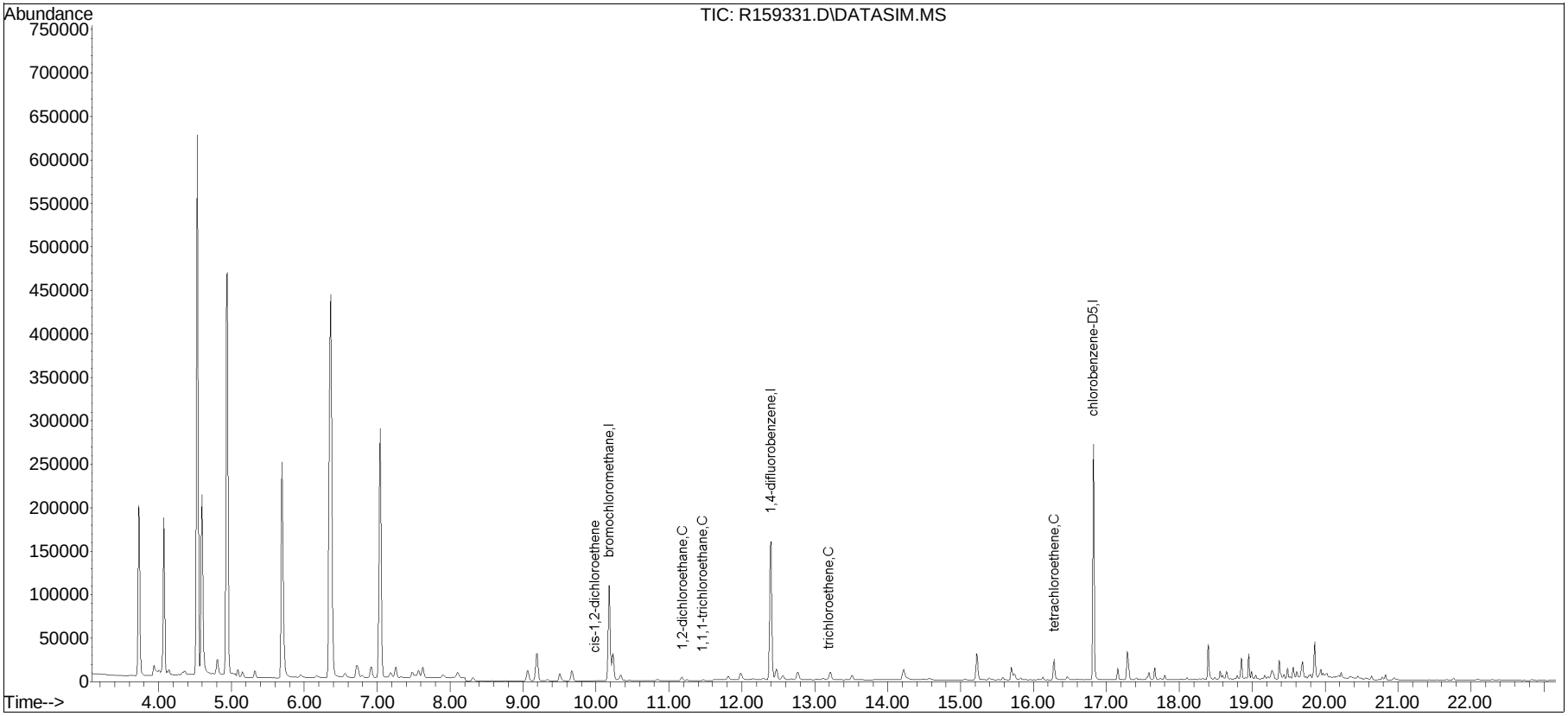
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	130087	10.000	ppbV	0.00
Standard Area = 148232			Recovery =		87.76%	
33) 1,4-difluorobenzene	12.40	114	175512	10.000	ppbV	0.00
Standard Area = 216506			Recovery =		81.07%	
51) chlorobenzene-D5	16.82	54	48630	10.000	ppbV	0.00
Standard Area = 55667			Recovery =		87.36%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.67		0	N.D.		
17) 1,1-dichloroethene	0.00		0	N.D.	d	
23) trans-1,2-dichloroethene	0.00		0	N.D.	d	
28) cis-1,2-dichloroethene	9.99	61	728	0.058	ppbV #	83
44) trichloroethene	13.19	130	256	0.036	ppbV	91
57) tetrachloroethene	16.28	166	10079	1.206	ppbV	91

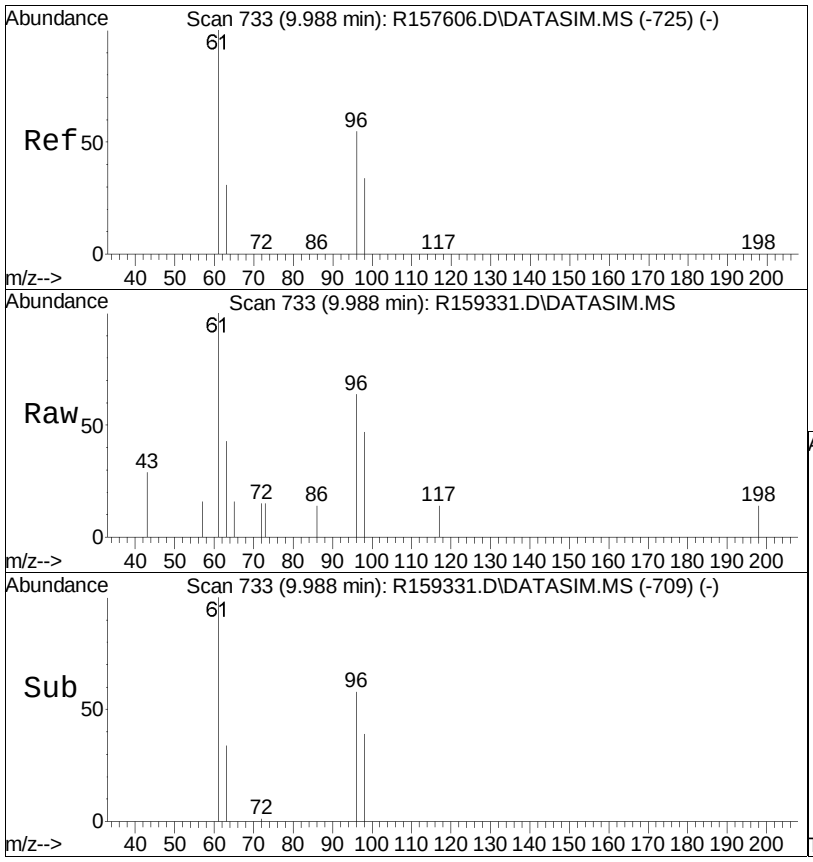
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : 9_Chlorinateds - .AIR1\2018\180511SIM\R159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159331.D
Acq On : 11 May 2018 6:46 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-01,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 12 09:49:36 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

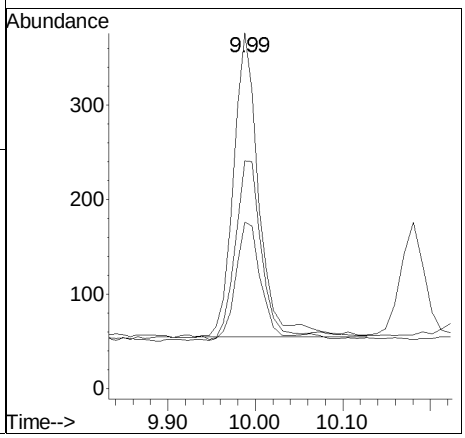


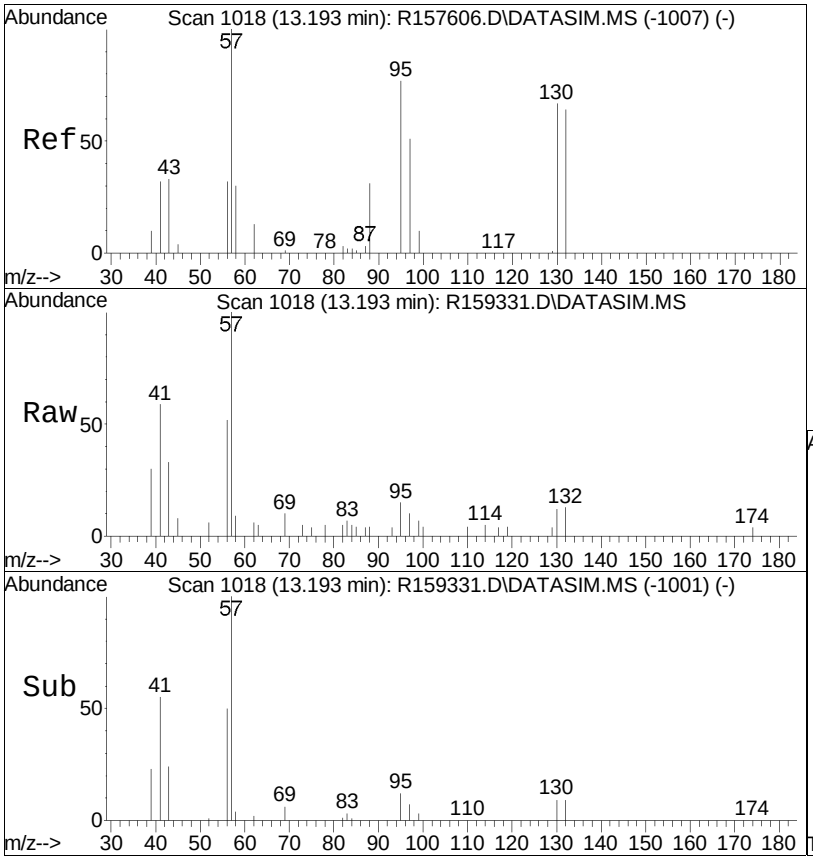


#28
cis-1,2-dichloroethene
Concen: 0.06 ppbV
RT: 9.99 min Scan# 733
Delta R.T. -0.000 min
Lab File: R159331.D
Acq: 11 May 2018 6:46 pm

Tgt Ion: 61 Resp: 728

Ion	Ratio	Lower	Upper
61	100		
96	64.1	43.8	65.6
98	46.8	27.0	40.4#

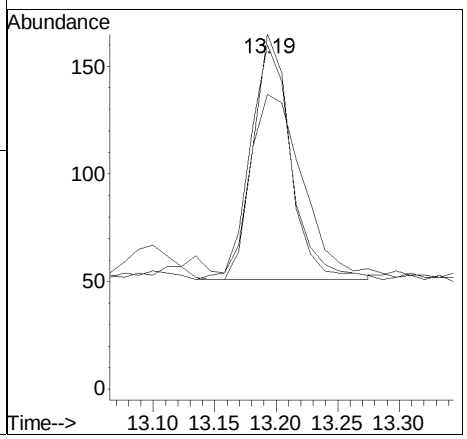


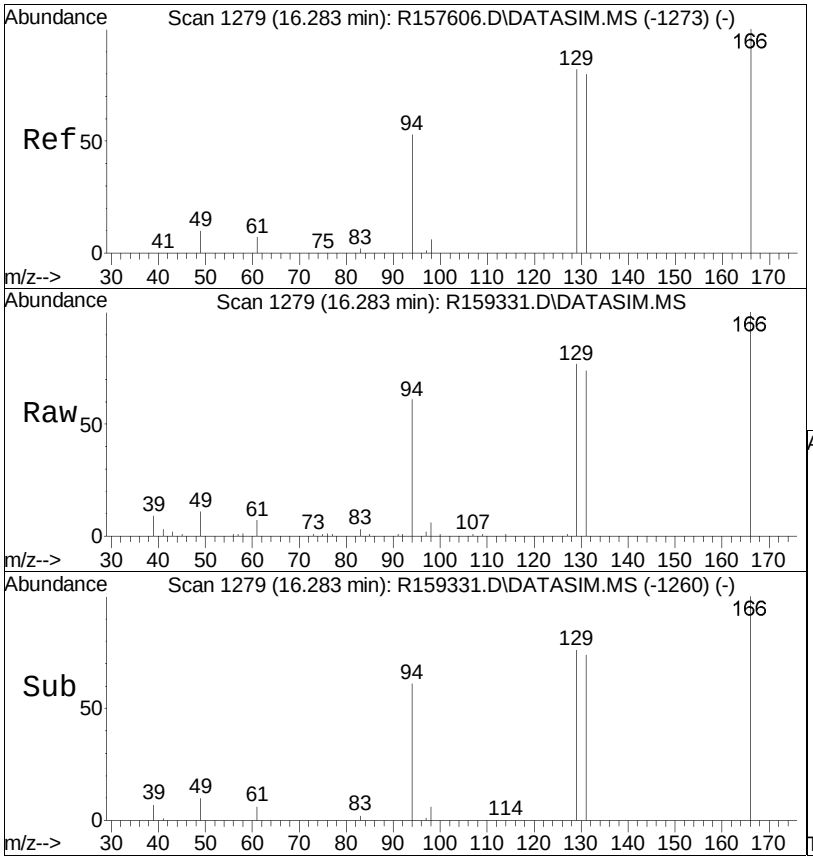


#44
trichloroethene
Concen: 0.04 ppbV
RT: 13.19 min Scan# 1018
Delta R.T. -0.000 min
Lab File: R159331.D
Acq: 11 May 2018 6:46 pm

Tgt Ion:130 Resp: 256

Ion	Ratio	Lower	Upper
130	100		
132	103.1	77.4	116.0
97	85.6	60.9	91.3

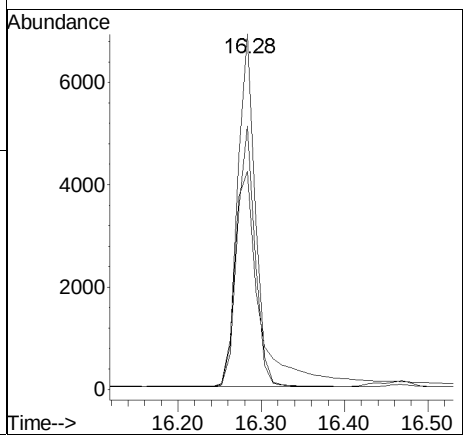




#57
tetrachloroethene
Concen: 1.21 ppbV
RT: 16.28 min Scan# 1279
Delta R.T. -0.000 min
Lab File: R159331.D
Acq: 11 May 2018 6:46 pm

Tgt Ion:166 Resp: 10079

Ion	Ratio	Lower	Upper
166	100		
131	74.1	63.7	95.5
94	61.4	42.1	63.1



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159332.D
Acq On : 11 May 2018 7:18 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-02,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 12 09:51:06 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : 9_Chlorinateds - .

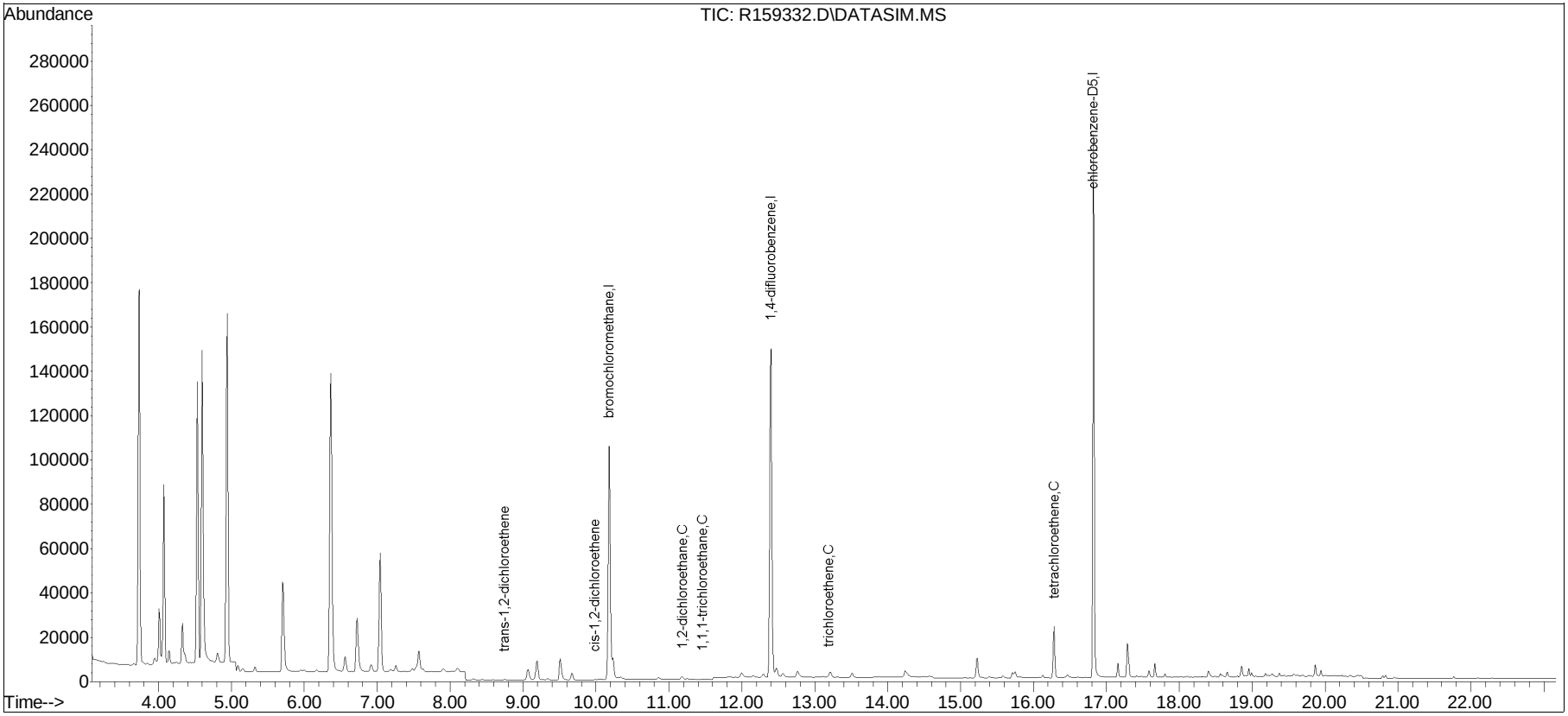
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	126266	10.000	ppbV	0.00
Standard Area = 148232			Recovery =		85.18%	
33) 1,4-difluorobenzene	12.40	114	162692	10.000	ppbV	0.00
Standard Area = 216506			Recovery =		75.14%	
51) chlorobenzene-D5	16.82	54	43081	10.000	ppbV	0.00
Standard Area = 55667			Recovery =		77.39%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.67		0	N.D.		
17) 1,1-dichloroethene	7.40		0	N.D.		
23) trans-1,2-dichloroethene	8.75	61	199	0.018	ppbV #	67
28) cis-1,2-dichloroethene	9.99	61	292M4	0.024	ppbV	
44) trichloroethene	13.19	130	272	0.041	ppbV	97
57) tetrachloroethene	16.28	166	10442	1.411	ppbV	95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

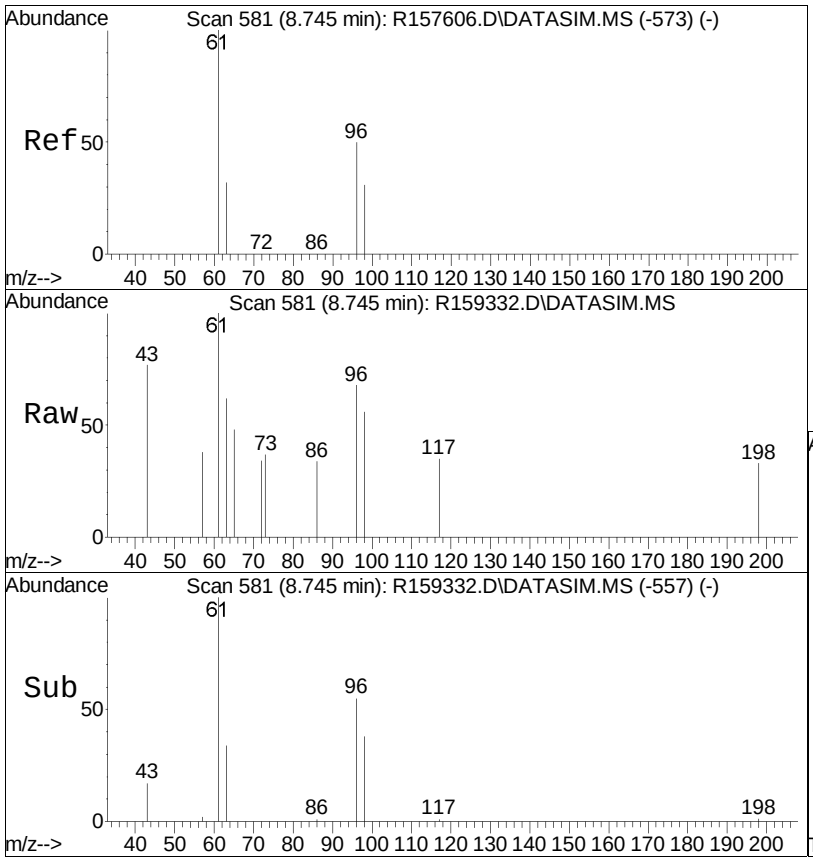
Sub List : 9_Chlorinateds - .AIR1\2018\180511SIM\R159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159332.D
Acq On : 11 May 2018 7:18 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-02,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 12 09:51:06 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration



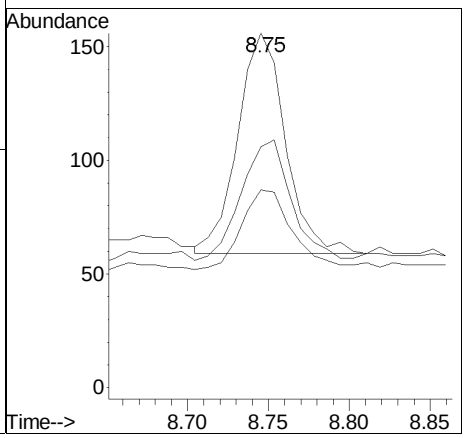
TSIM180226.M Sat May 12 09:51:35 2018 Page 2

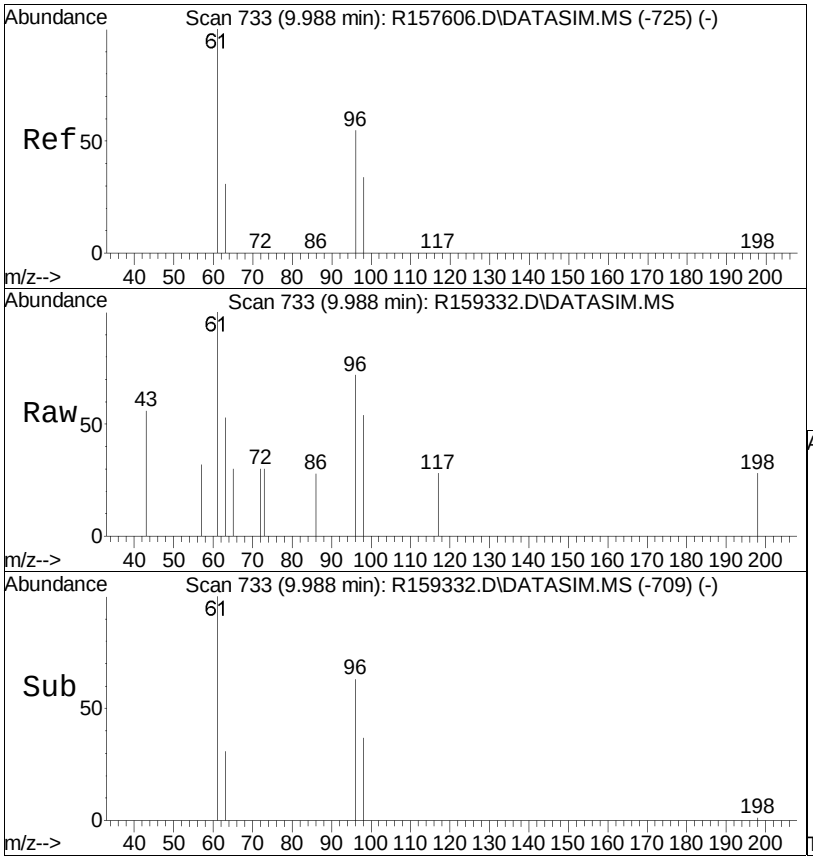


#23
trans-1,2-dichloroethene
Concen: 0.02 ppbV
RT: 8.75 min Scan# 581
Delta R.T. 0.000 min
Lab File: R159332.D
Acq: 11 May 2018 7:18 pm

Tgt Ion: 61 Resp: 199

Ion	Ratio	Lower	Upper
61	100		
96	67.9	40.4	60.6#
98	55.8	25.0	37.4#

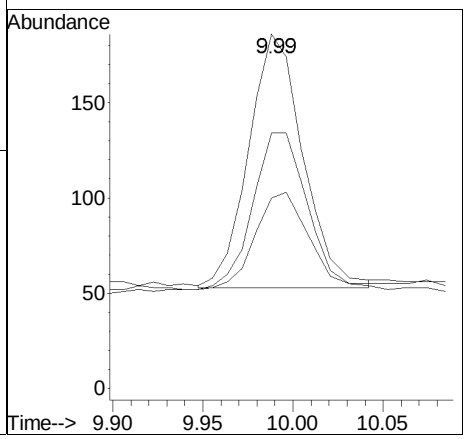


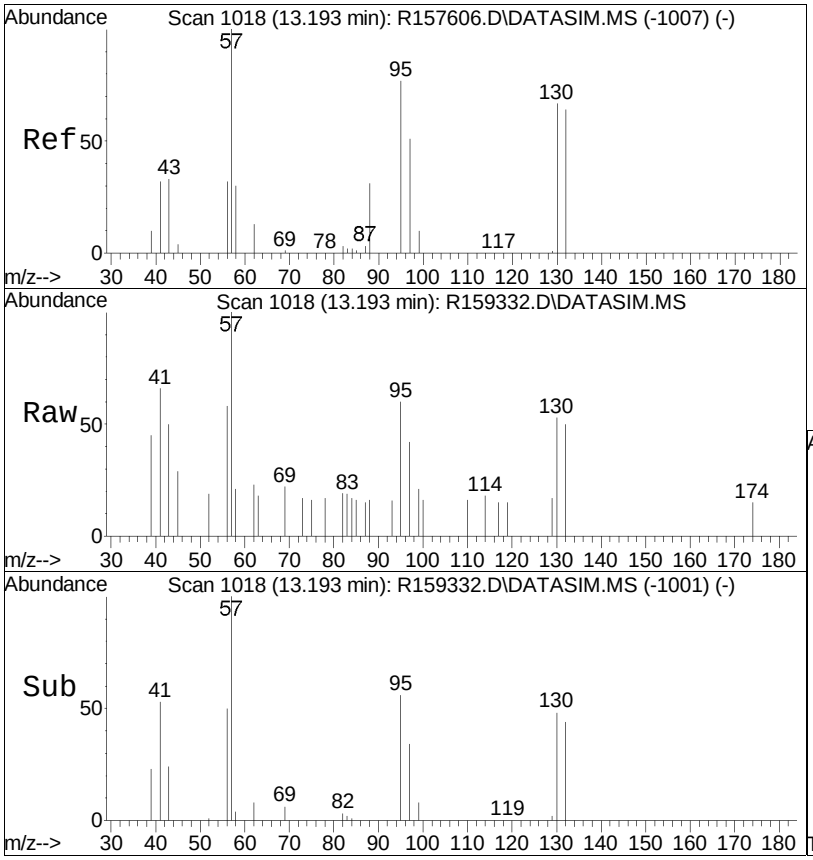


#28
cis-1,2-dichloroethene
Concen: 0.02 ppbV m
RT: 9.99 min Scan# 733
Delta R.T. 0.000 min
Lab File: R159332.D
Acq: 11 May 2018 7:18 pm

Tgt Ion: 61 Resp: 292

Ion	Ratio	Lower	Upper
61	100		
96	72.0	43.8	65.6#
98	53.8	27.0	40.4#

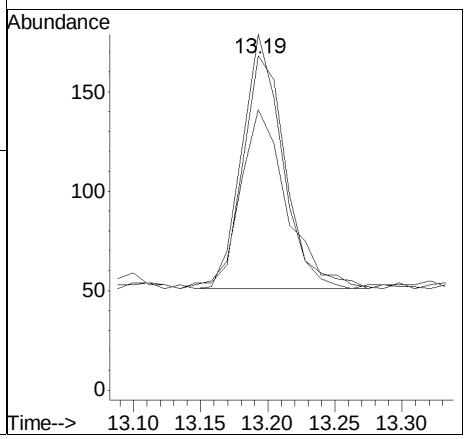


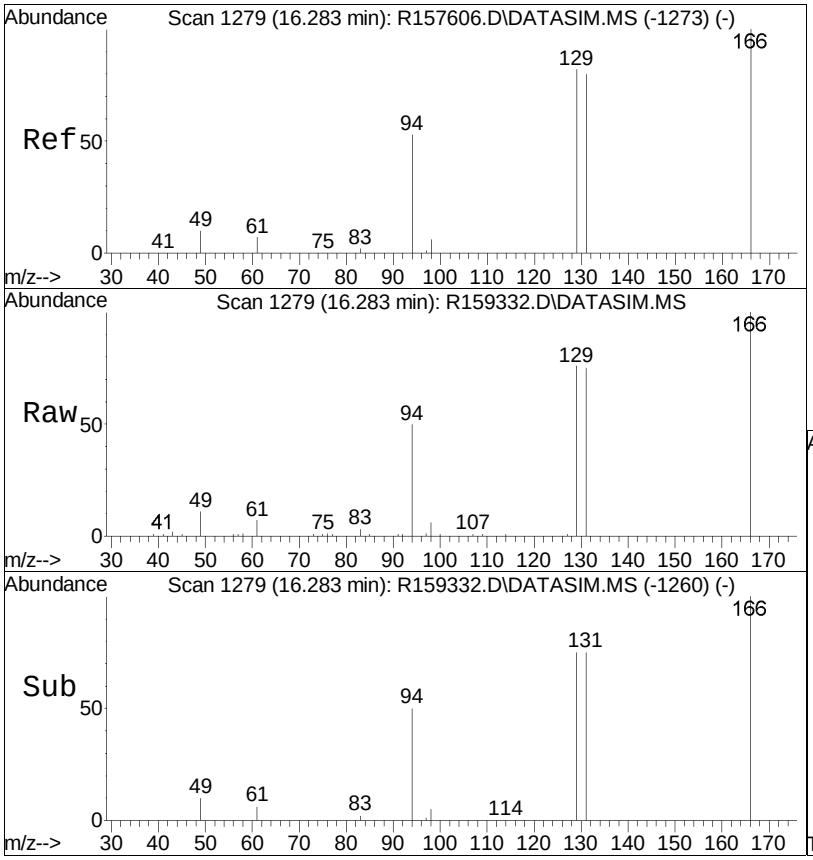


#44
trichloroethene
Concen: 0.04 ppbV
RT: 13.19 min Scan# 1018
Delta R.T. 0.000 min
Lab File: R159332.D
Acq: 11 May 2018 7:18 pm

Tgt Ion:130 Resp: 272

Ion	Ratio	Lower	Upper
130	100		
132	93.9	77.4	116.0
97	78.8	60.9	91.3

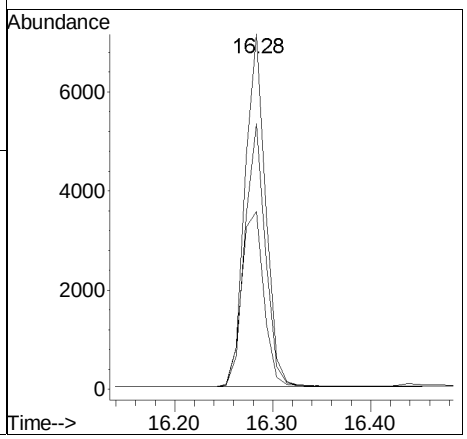




#57
tetrachloroethene
Concen: 1.41 ppbV
RT: 16.28 min Scan# 1279
Delta R.T. 0.000 min
Lab File: R159332.D
Acq: 11 May 2018 7:18 pm

Tgt Ion:166 Resp: 10442

Ion	Ratio	Lower	Upper
166	100		
131	74.7	63.7	95.5
94	50.1	42.1	63.1

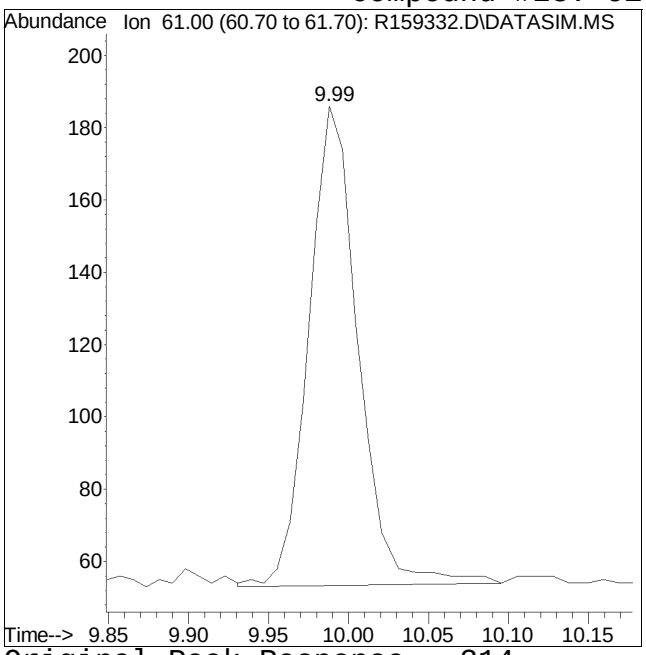


Manual Integration/Negative Proof Report

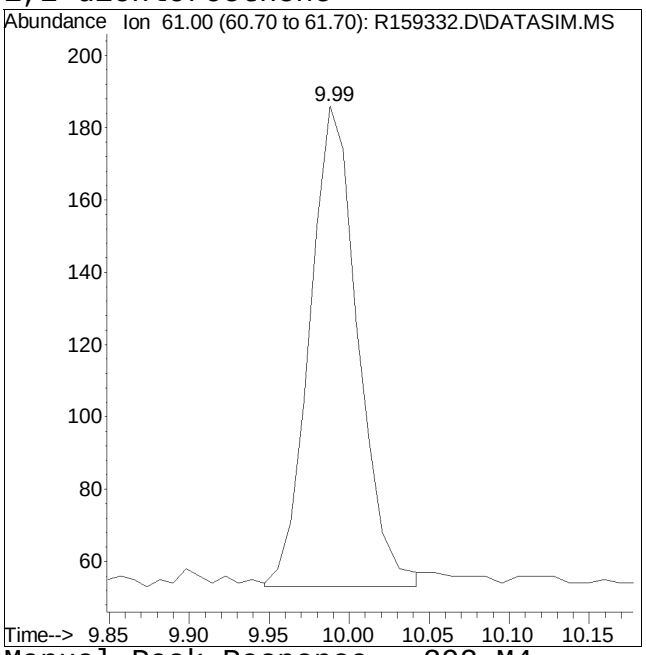
Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R159332.D
Date Inj'd : 5/11/2018 7:18 pm
Sample : L1816546-02,3,250,250

Method : TSIM180226.M
Operator : AIRPIANO1:GJ
Instrument : Air Piano 1
Quant Date : 5/12/2018 8:01 am

Compound #28: cis-1,2-dichloroethene



Original Peak Response = 314



Manual Peak Response = 292 M4

M4 = Poor automated baseline construction.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159333.D
Acq On : 11 May 2018 7:51 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-03,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 12 08:01:50 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : 9_Chlorinateds - .

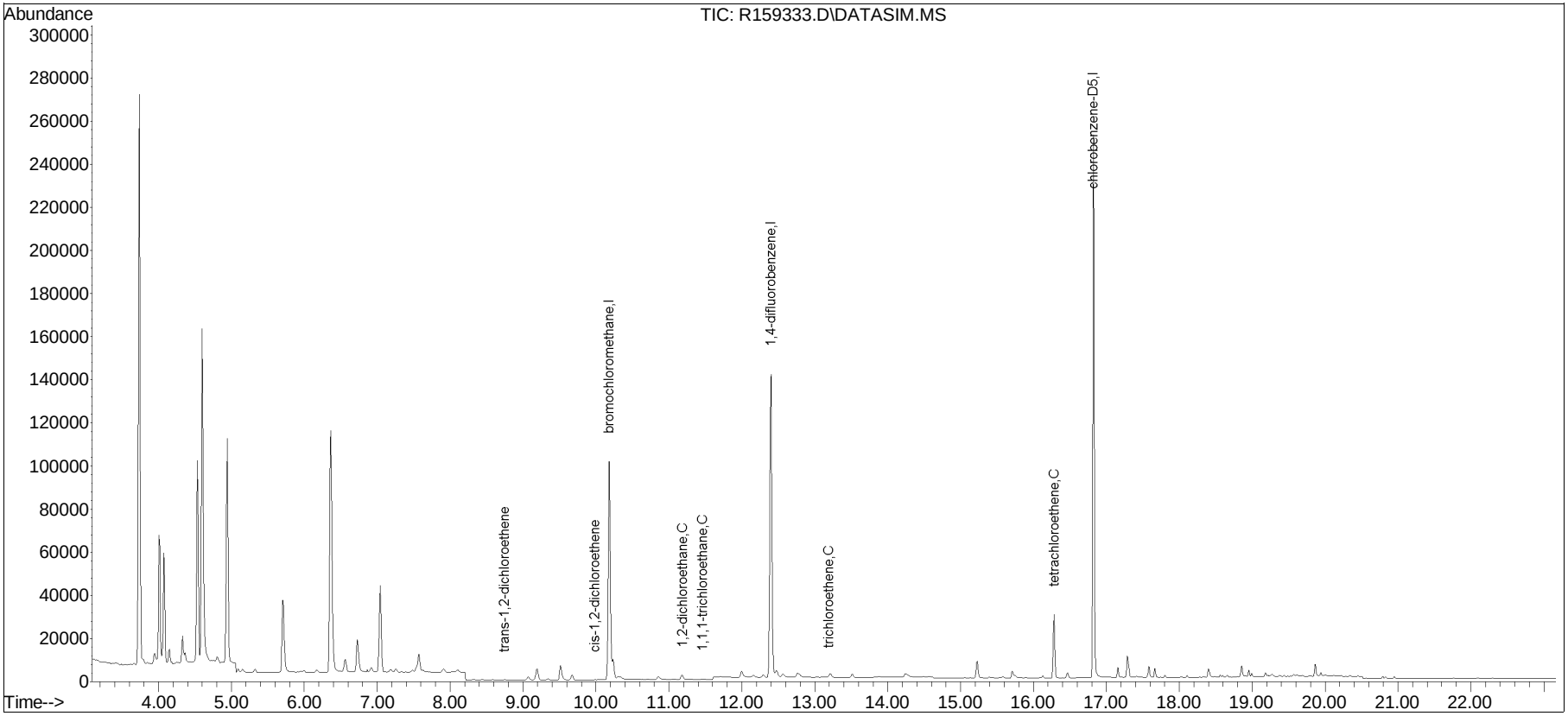
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	120368	10.000	ppbV	0.00
Standard Area = 148232			Recovery =		81.20%	
33) 1,4-difluorobenzene	12.40	114	148683	10.000	ppbV	0.00
Standard Area = 216506			Recovery =		68.67%	
51) chlorobenzene-D5	16.82	54	45075	10.000	ppbV	0.00
Standard Area = 55667			Recovery =		80.97%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.67		0	N.D.		
17) 1,1-dichloroethene	7.40		0	N.D.		
23) trans-1,2-dichloroethene	8.75	61	144	0.013	ppbV #	61
28) cis-1,2-dichloroethene	9.99	61	235	0.020	ppbV #	67
44) trichloroethene	13.19	130	274	0.045	ppbV	95
57) tetrachloroethene	16.28	166	13358	1.725	ppbV	96

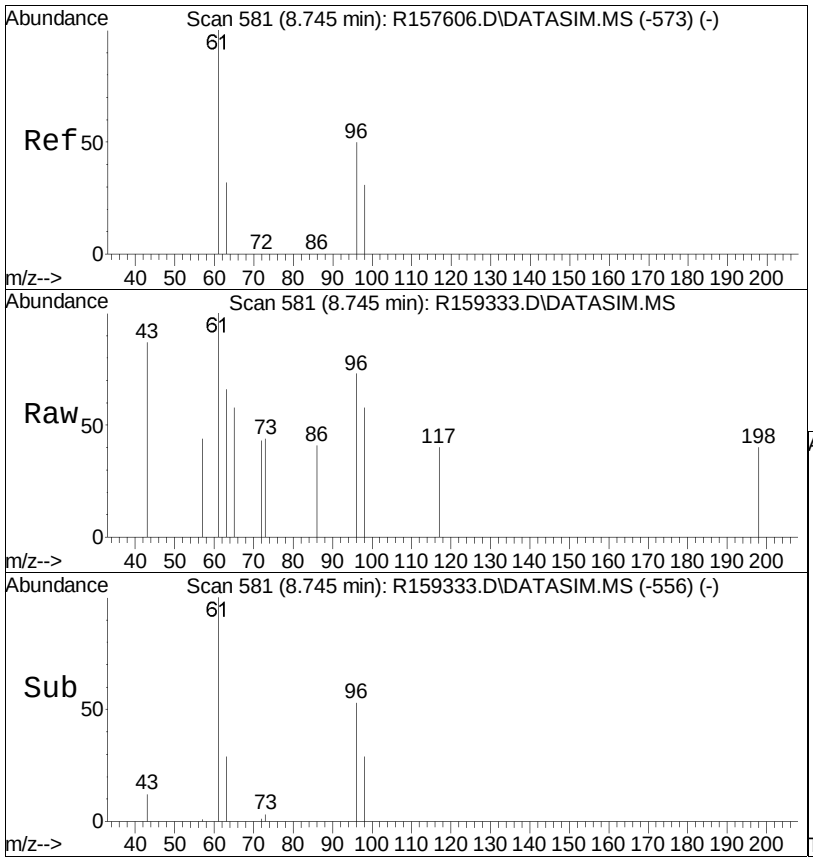
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : 9_Chlorinateds - .AIR1\2018\180511SIM\R159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159333.D
Acq On : 11 May 2018 7:51 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-03,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 12 08:01:50 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

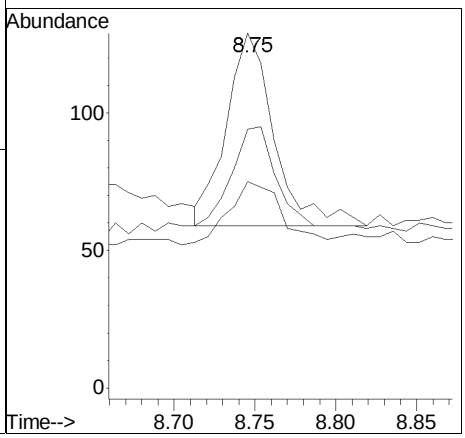


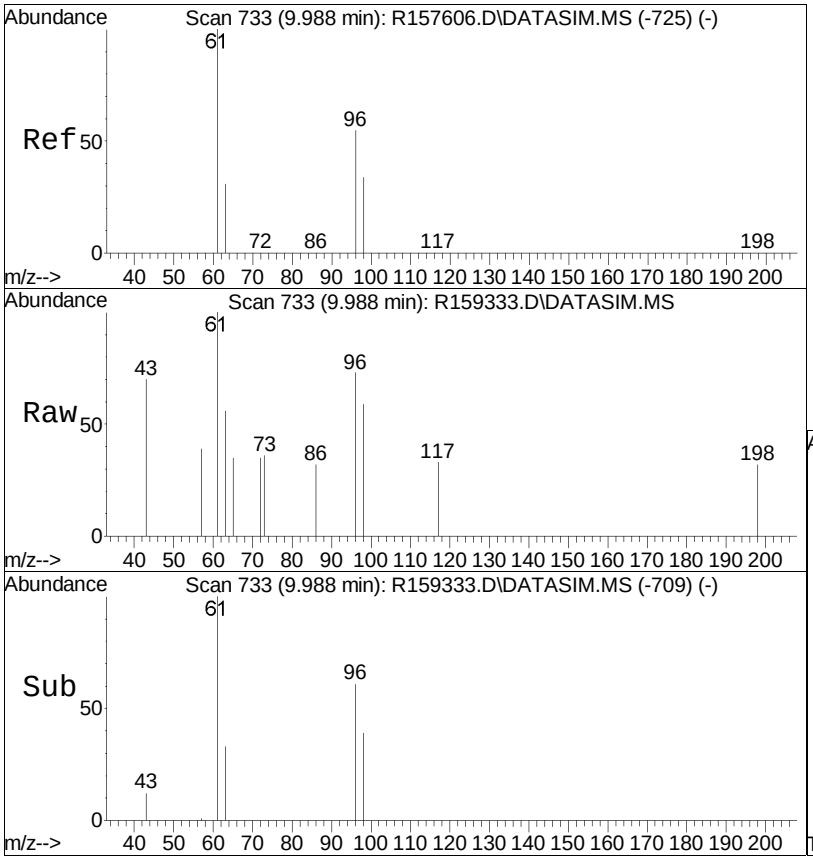


#23
trans-1,2-dichloroethene
Concen: 0.01 ppbV
RT: 8.75 min Scan# 581
Delta R.T. 0.000 min
Lab File: R159333.D
Acq: 11 May 2018 7:51 pm

Tgt Ion: 61 Resp: 144

Ion	Ratio	Lower	Upper
61	100		
96	72.9	40.4	60.6#
98	58.1	25.0	37.4#

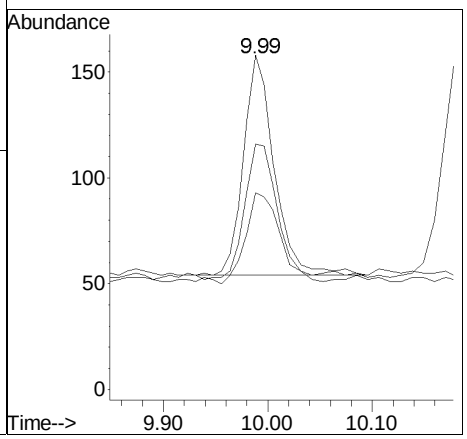


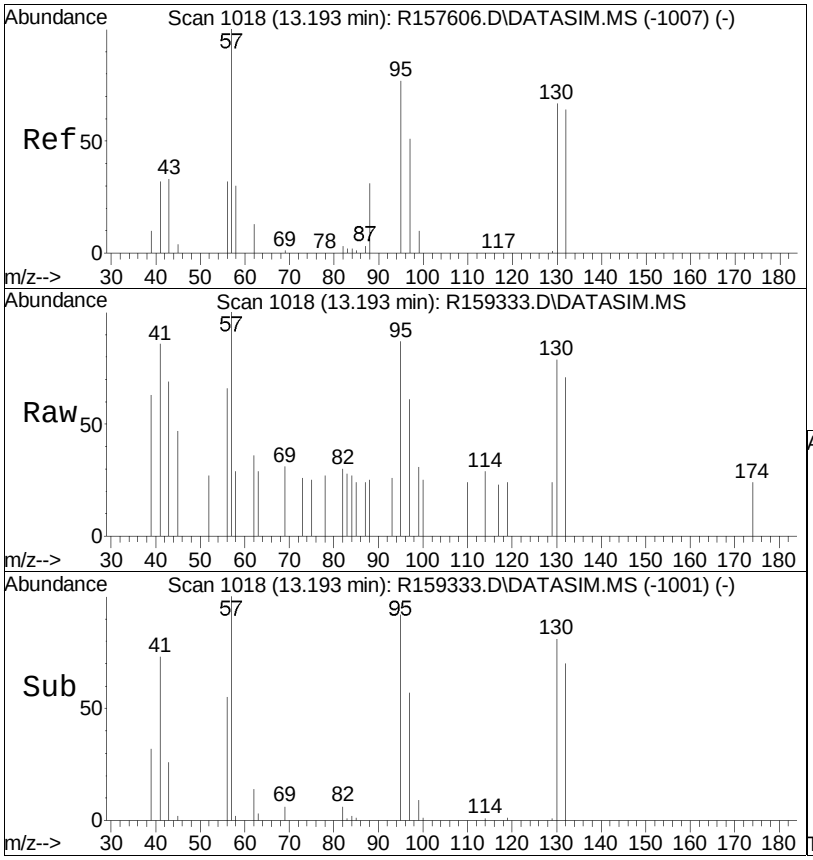


#28
cis-1,2-dichloroethene
Concen: 0.02 ppbV
RT: 9.99 min Scan# 733
Delta R.T. 0.000 min
Lab File: R159333.D
Acq: 11 May 2018 7:51 pm

Tgt Ion: 61 Resp: 235

Ion	Ratio	Lower	Upper
61	100		
96	73.4	43.8	65.6#
98	58.9	27.0	40.4#

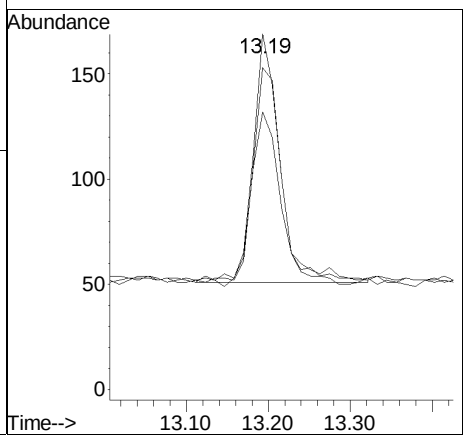


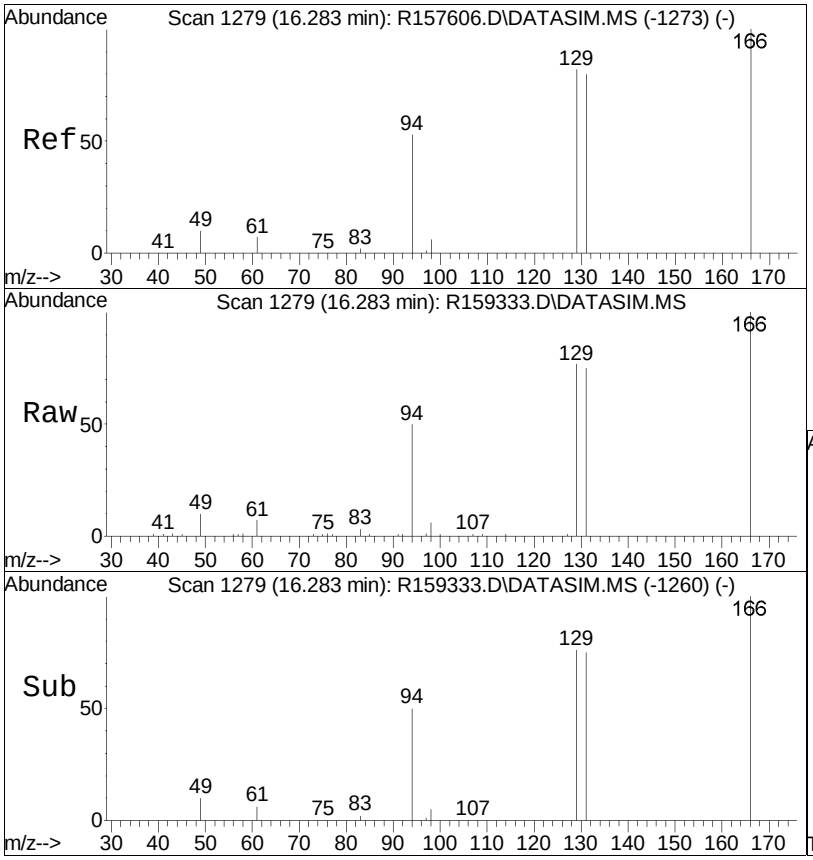


#44
trichloroethene
Concen: 0.04 ppbV
RT: 13.19 min Scan# 1018
Delta R.T. 0.000 min
Lab File: R159333.D
Acq: 11 May 2018 7:51 pm

Tgt Ion:130 Resp: 274

Ion	Ratio	Lower	Upper
130	100		
132	90.5	77.4	116.0
97	78.1	60.9	91.3

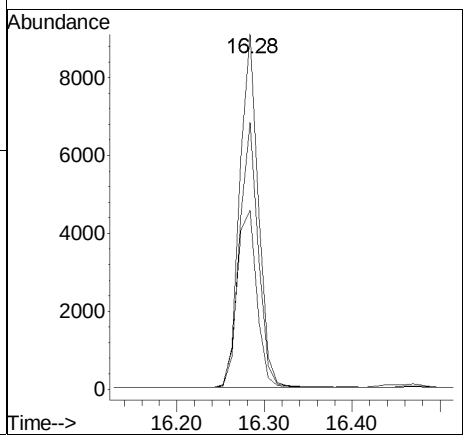




#57
tetrachloroethene
Concen: 1.72 ppbV
RT: 16.28 min Scan# 1279
Delta R.T. 0.000 min
Lab File: R159333.D
Acq: 11 May 2018 7:51 pm

Tgt Ion:166 Resp: 13358

Ion	Ratio	Lower	Upper
166	100		
131	75.1	63.7	95.5
94	50.4	42.1	63.1



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\AIR1\2018Q	Method	: TSIM180226.M
Data File	: R159333.D	Operator	: AIRPIANO1:GJ
Date Inj'd	: 5/11/2018 7:51 pm	Instrument	: Air Piano 1
Sample	: L1816546-03,3,250,250	Quant Date	: 5/12/2018 8:01 am

There are no manual integrations or false positives in this file.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159334.D
Acq On : 11 May 2018 8:23 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-04,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 12 09:52:44 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : 9_Chlorinateds - .

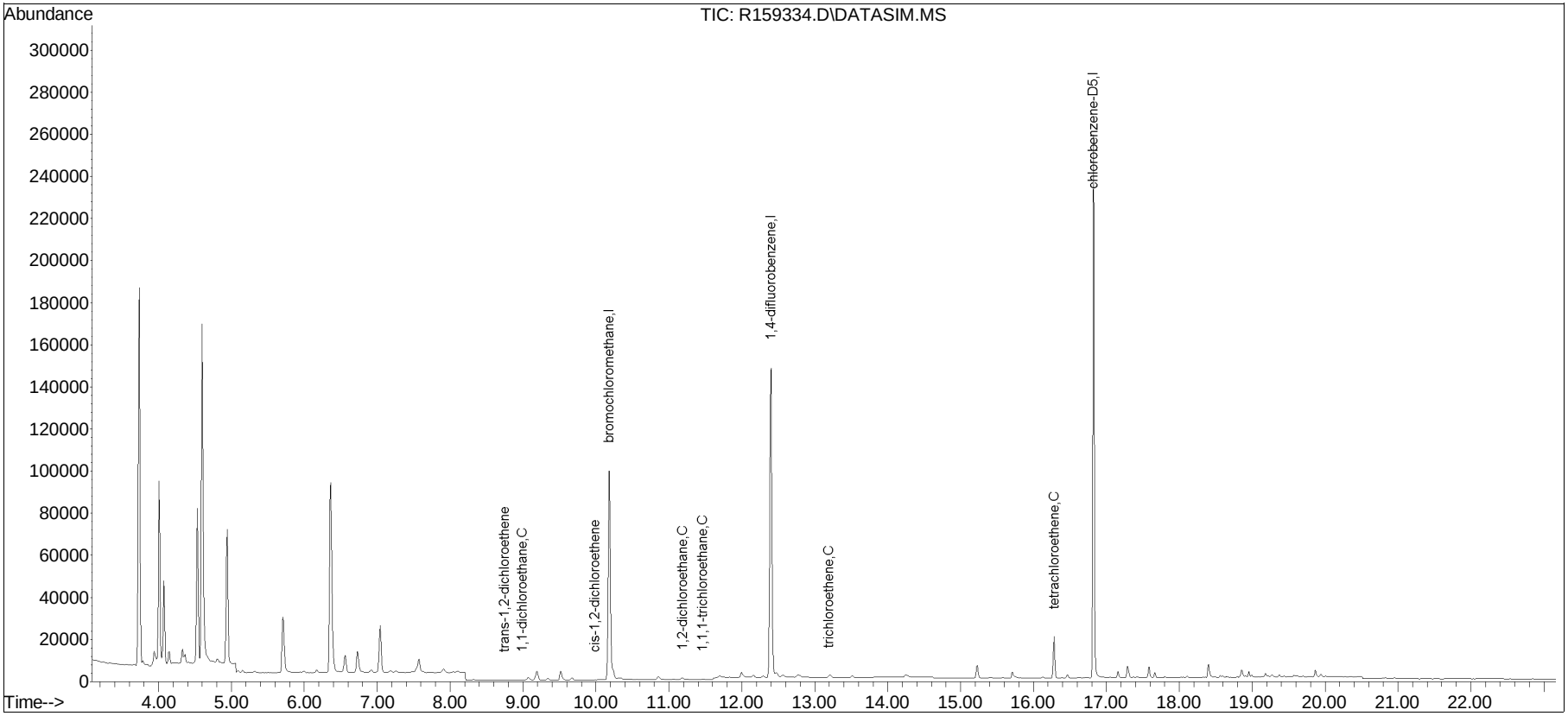
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	121944	10.000	ppbV	0.00
Standard Area = 148232			Recovery =		82.27%	
33) 1,4-difluorobenzene	12.40	114	157504	10.000	ppbV	0.00
Standard Area = 216506			Recovery =		72.75%	
51) chlorobenzene-D5	16.82	54	45784	10.000	ppbV	0.00
Standard Area = 55667			Recovery =		82.25%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.69		0	N.D.		
17) 1,1-dichloroethene	7.39		0	N.D.		
23) trans-1,2-dichloroethene	8.75	61	110M3	0.010	ppbV	
28) cis-1,2-dichloroethene	9.99	61	233	0.020	ppbV #	65
44) trichloroethene	13.19	130	297	0.046	ppbV	98
57) tetrachloroethene	16.28	166	8689	1.104	ppbV	94

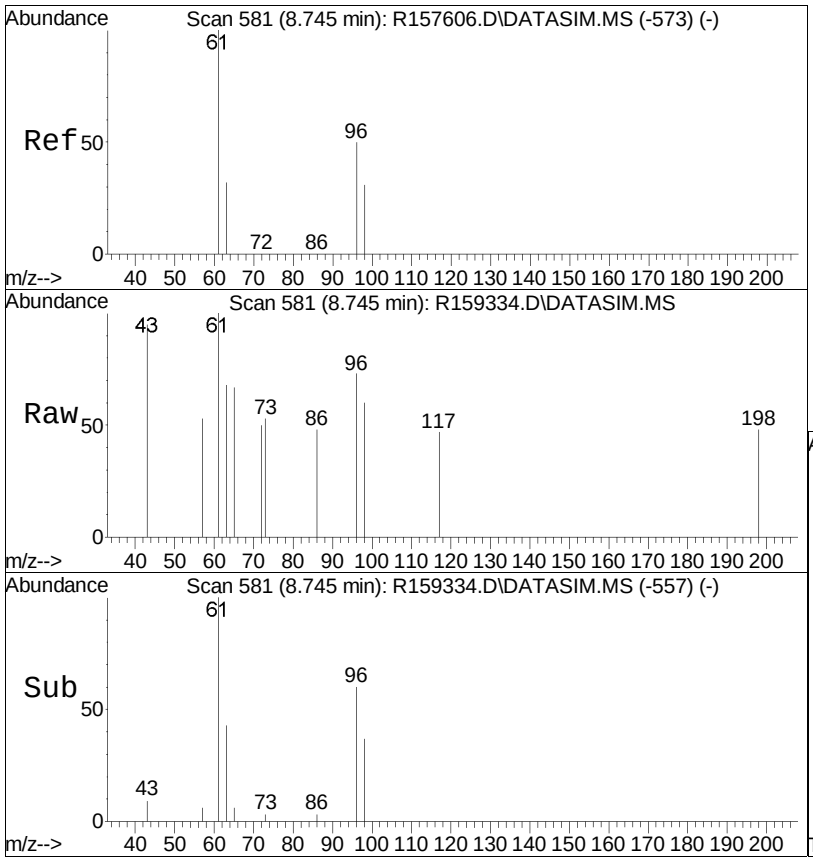
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : 9_Chlorinateds - .AIR1\2018\180511SIM\R159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159334.D
Acq On : 11 May 2018 8:23 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-04,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 12 09:52:44 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

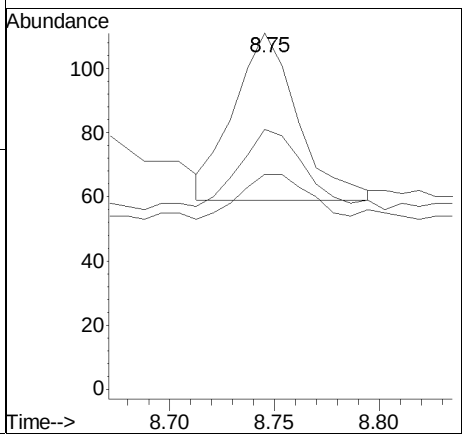


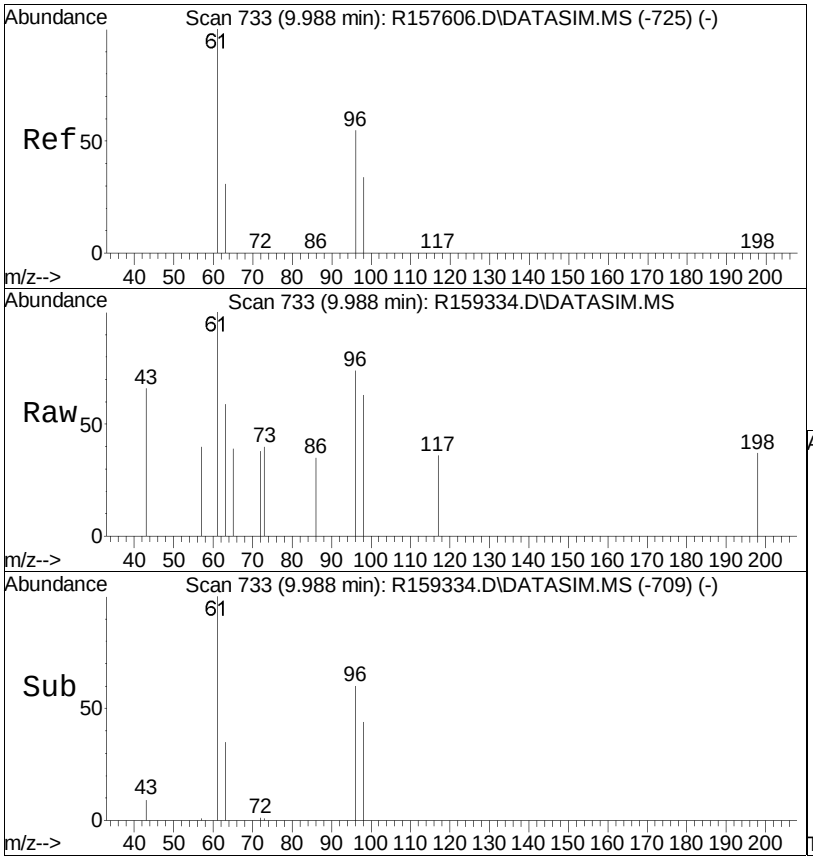


#23
trans-1,2-dichloroethene
Concen: 0.01 ppbV m
RT: 8.75 min Scan# 581
Delta R.T. 0.000 min
Lab File: R159334.D
Acq: 11 May 2018 8:23 pm

Tgt Ion: 61 Resp: 110

Ion	Ratio	Lower	Upper
61	100		
96	73.0	40.4	60.6#
98	60.4	25.0	37.4#

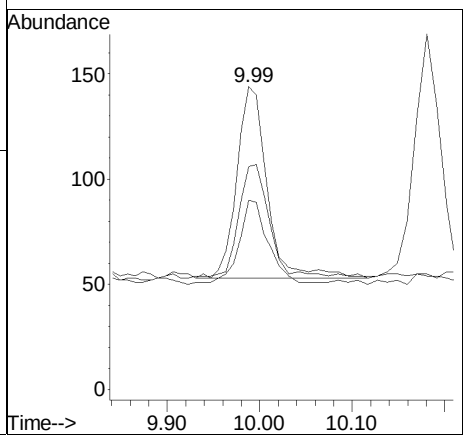


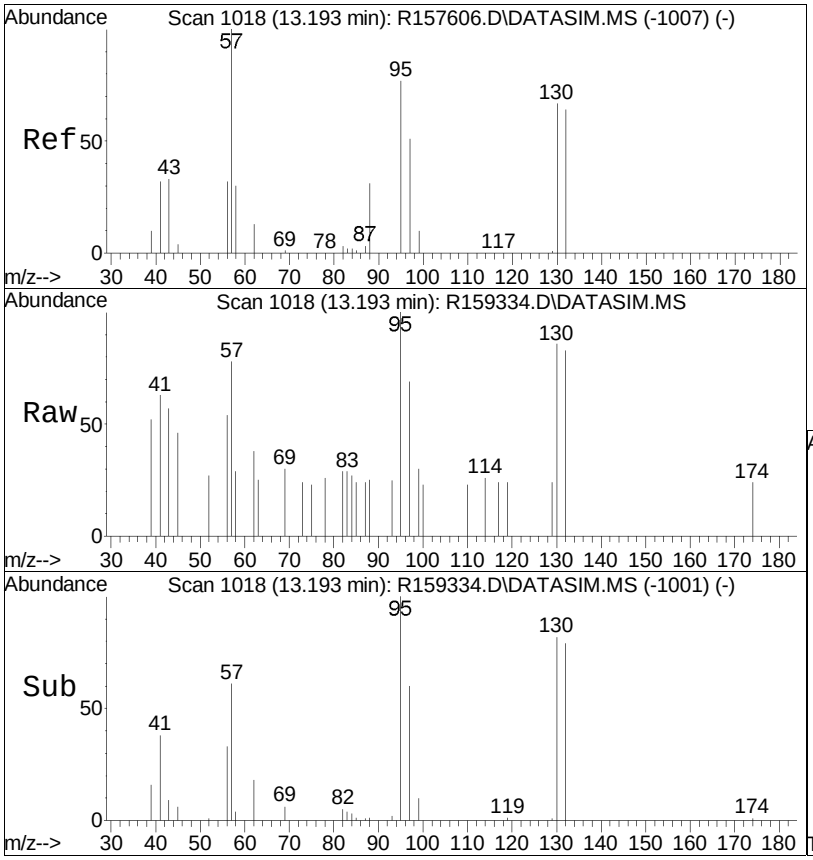


#28
cis-1,2-dichloroethene
Concen: 0.02 ppbV
RT: 9.99 min Scan# 733
Delta R.T. 0.000 min
Lab File: R159334.D
Acq: 11 May 2018 8:23 pm

Tgt Ion: 61 Resp: 233

Ion	Ratio	Lower	Upper
61	100		
96	73.6	43.8	65.6#
98	62.5	27.0	40.4#

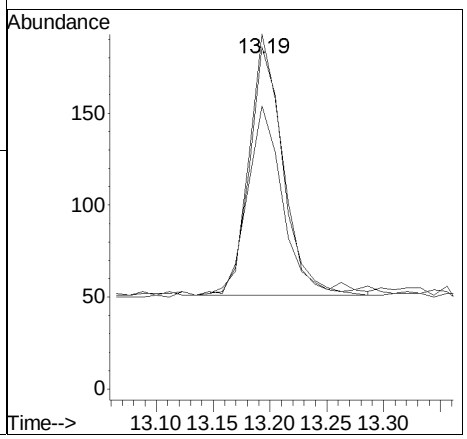


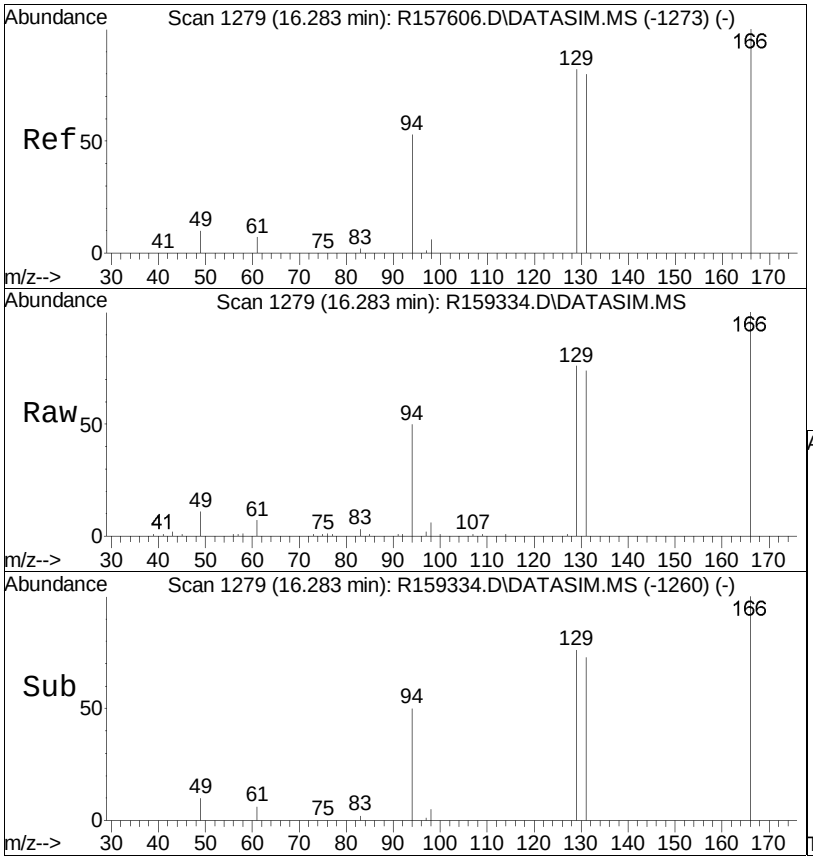


#44
trichloroethene
Concen: 0.05 ppbV
RT: 13.19 min Scan# 1018
Delta R.T. 0.000 min
Lab File: R159334.D
Acq: 11 May 2018 8:23 pm

Tgt Ion:130 Resp: 297

Ion	Ratio	Lower	Upper
130	100		
132	96.4	77.4	116.0
97	79.8	60.9	91.3

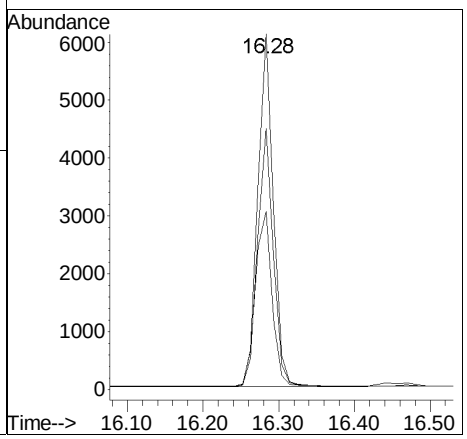




#57
tetrachloroethene
Concen: 1.10 ppbV
RT: 16.28 min Scan# 1279
Delta R.T. 0.000 min
Lab File: R159334.D
Acq: 11 May 2018 8:23 pm

Tgt Ion:166 Resp: 8689

Ion	Ratio	Lower	Upper
166	100		
131	73.5	63.7	95.5
94	50.1	42.1	63.1

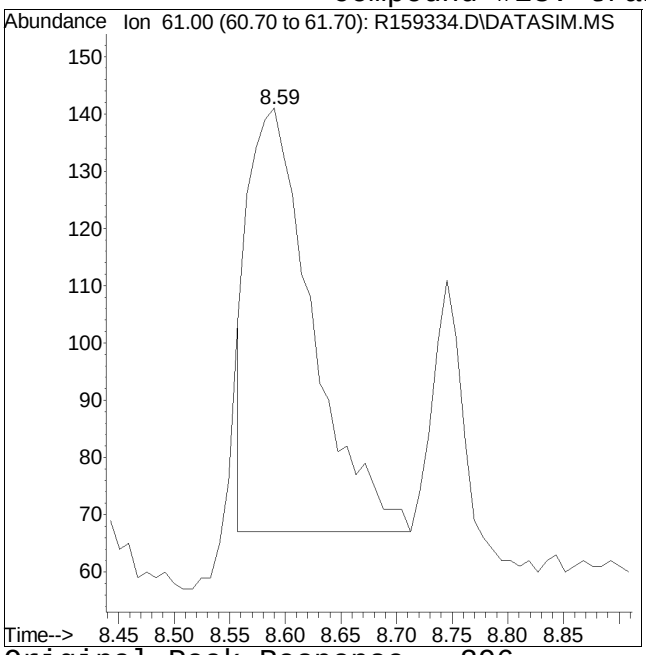


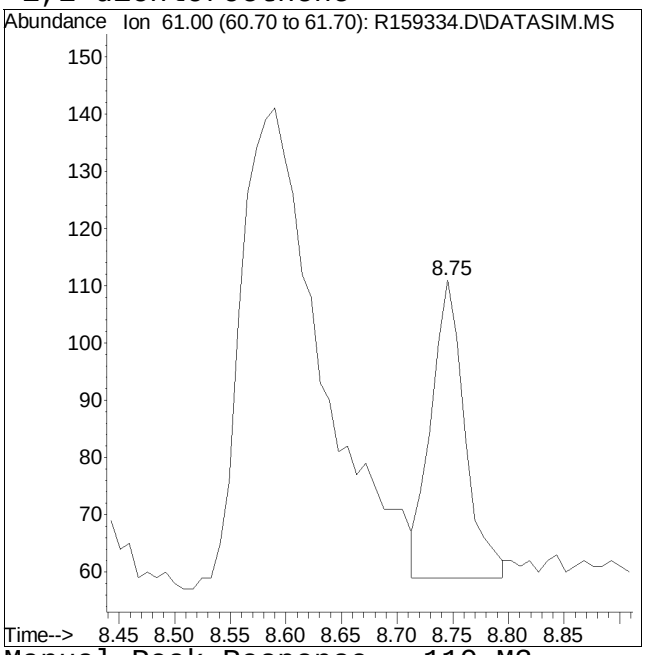
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR1\2018Q
Data File : R159334.D
Date Inj'd : 5/11/2018 8:23 pm
Sample : L1816546-04,3,250,250

Method : TSIM180226.M
Operator : AIRPIANO1:GJ
Instrument : Air Piano 1
Quant Date : 5/12/2018 8:01 am

Compound #23: trans-1,2-dichloroethene





Original Peak Response = 296 Manual Peak Response = 110 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159336.D
Acq On : 11 May 2018 9:28 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-05,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 12 08:02:52 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : 9_Chlorinateds - .

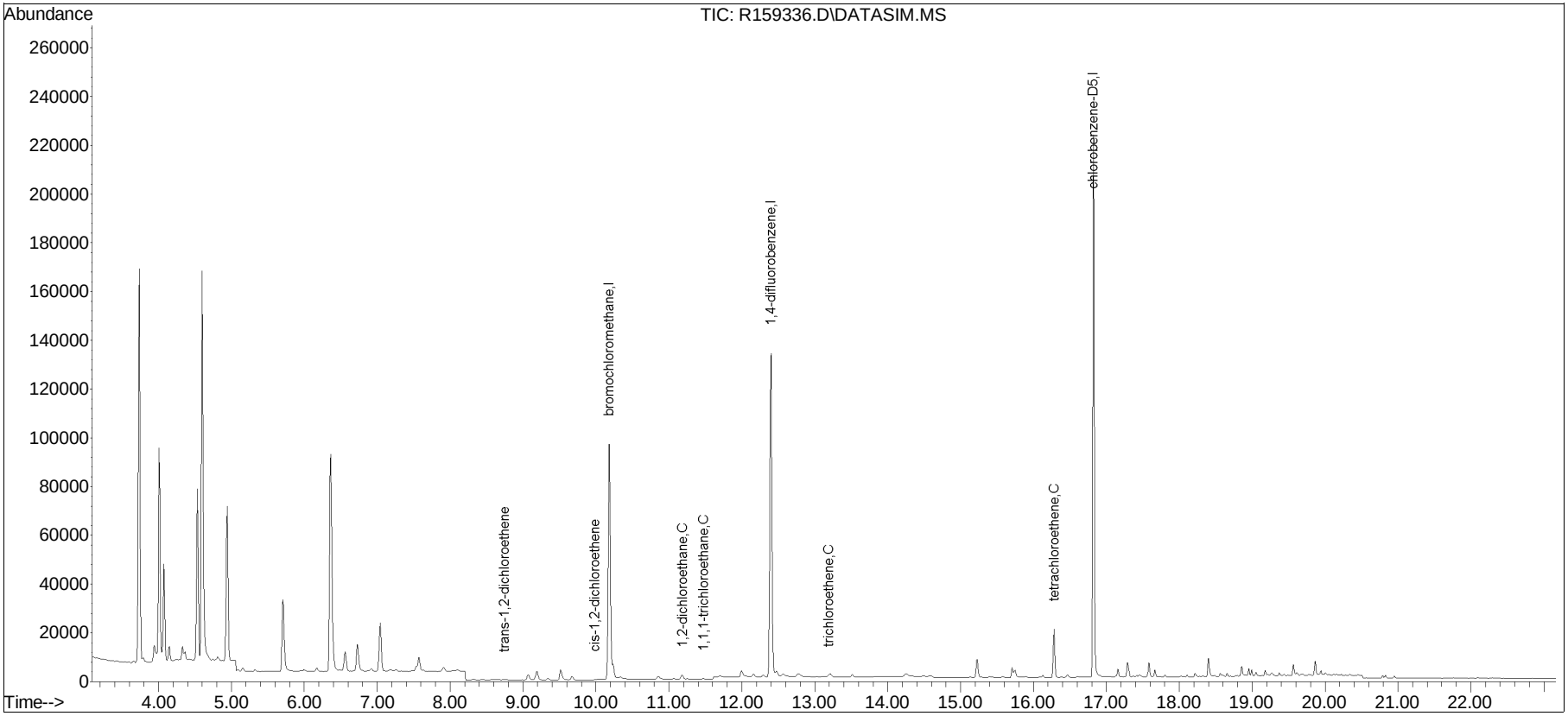
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	116673	10.000	ppbV	0.00
Standard Area = 148232			Recovery =		78.71%	
33) 1,4-difluorobenzene	12.40	114	140526	10.000	ppbV	0.00
Standard Area = 216506			Recovery =		64.91%	
51) chlorobenzene-D5	16.82	54	41368	10.000	ppbV	0.00
Standard Area = 55667			Recovery =		74.31%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.67		0	N.D.		
17) 1,1-dichloroethene	7.39		0	N.D.		
23) trans-1,2-dichloroethene	8.75	61	117	0.011	ppbV #	56
28) cis-1,2-dichloroethene	9.99	61	217	0.019	ppbV #	67
44) trichloroethene	13.19	130	314	0.054	ppbV	95
57) tetrachloroethene	16.28	166	8831	1.242	ppbV	95

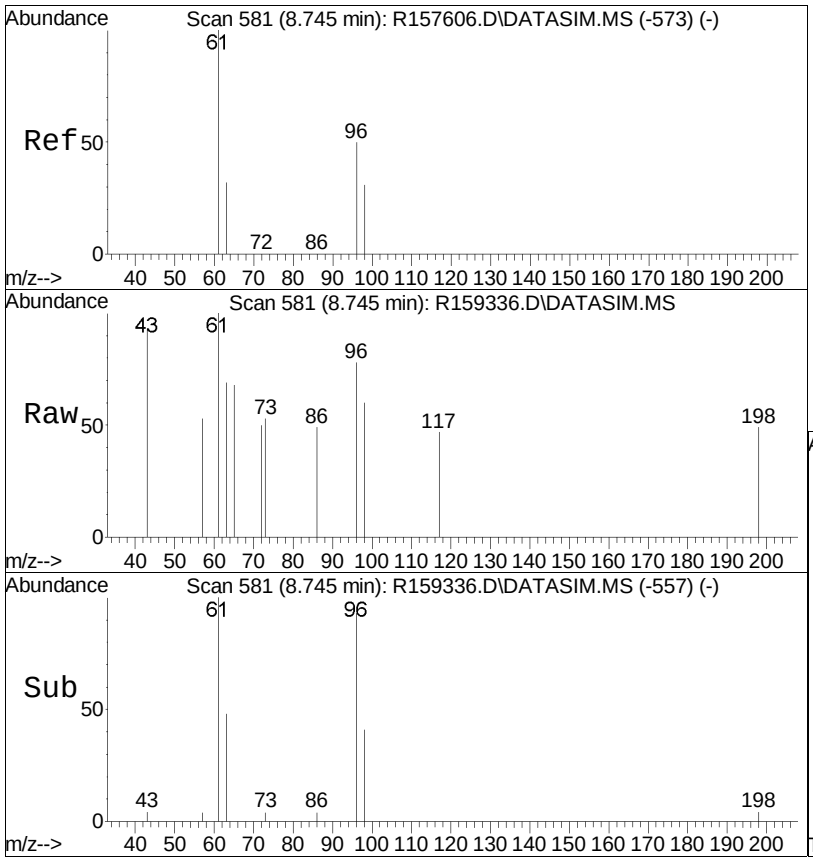
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : 9_Chlorinateds - .AIR1\2018\180511SIM\R159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159336.D
Acq On : 11 May 2018 9:28 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-05,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 12 08:02:52 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

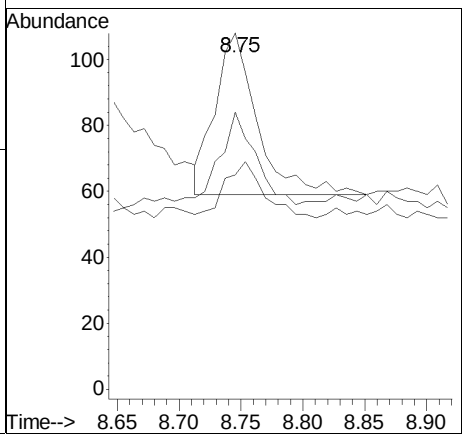


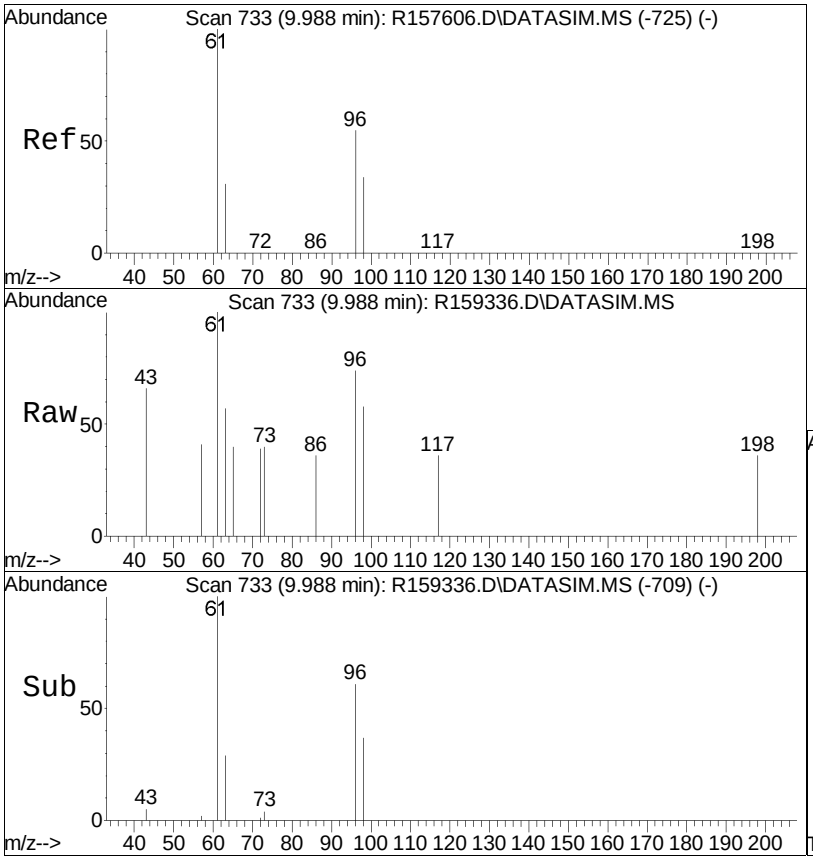


#23
trans-1,2-dichloroethene
Concen: 0.01 ppbV
RT: 8.75 min Scan# 581
Delta R.T. 0.000 min
Lab File: R159336.D
Acq: 11 May 2018 9:28 pm

Tgt Ion: 61 Resp: 117

Ion	Ratio	Lower	Upper
61	100		
96	77.8	40.4	60.6#
98	60.2	25.0	37.4#

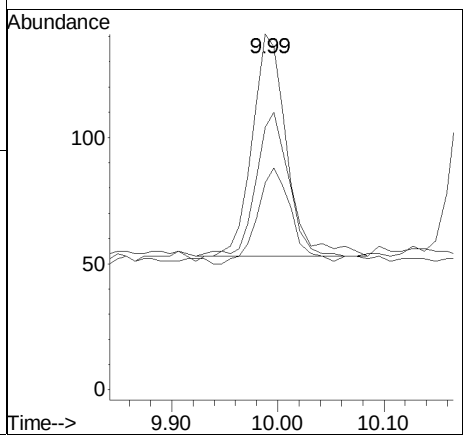


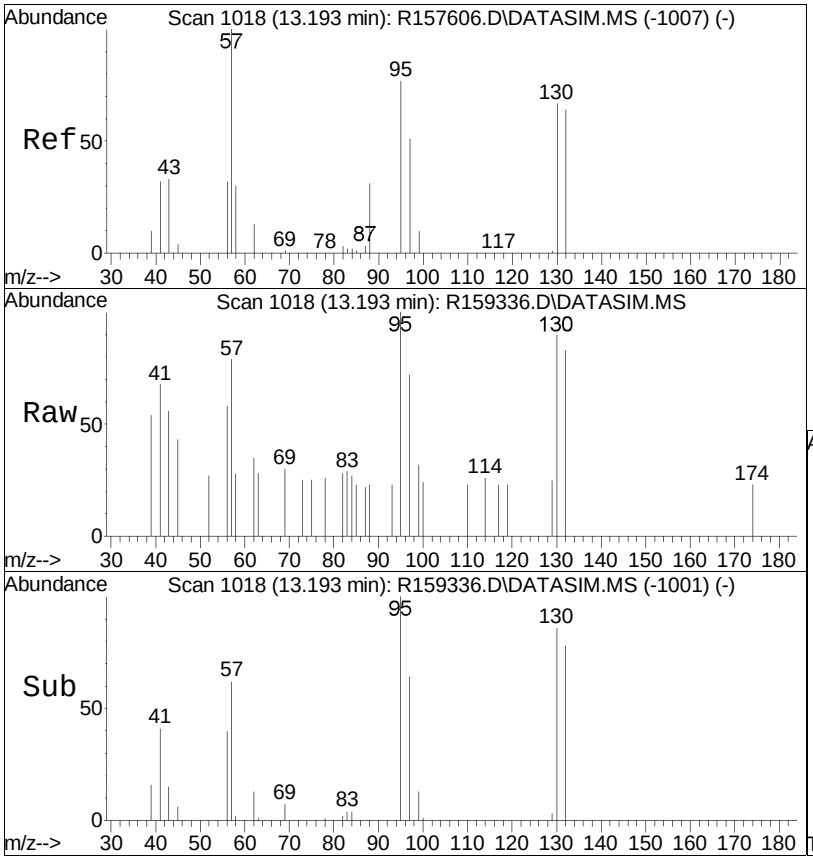


#28
cis-1,2-dichloroethene
Concen: 0.02 ppbV
RT: 9.99 min Scan# 733
Delta R.T. 0.000 min
Lab File: R159336.D
Acq: 11 May 2018 9:28 pm

Tgt Ion: 61 Resp: 217

Ion	Ratio	Lower	Upper
61	100		
96	73.8	43.8	65.6#
98	58.2	27.0	40.4#

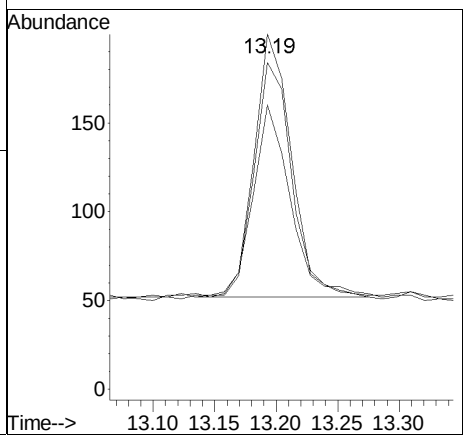


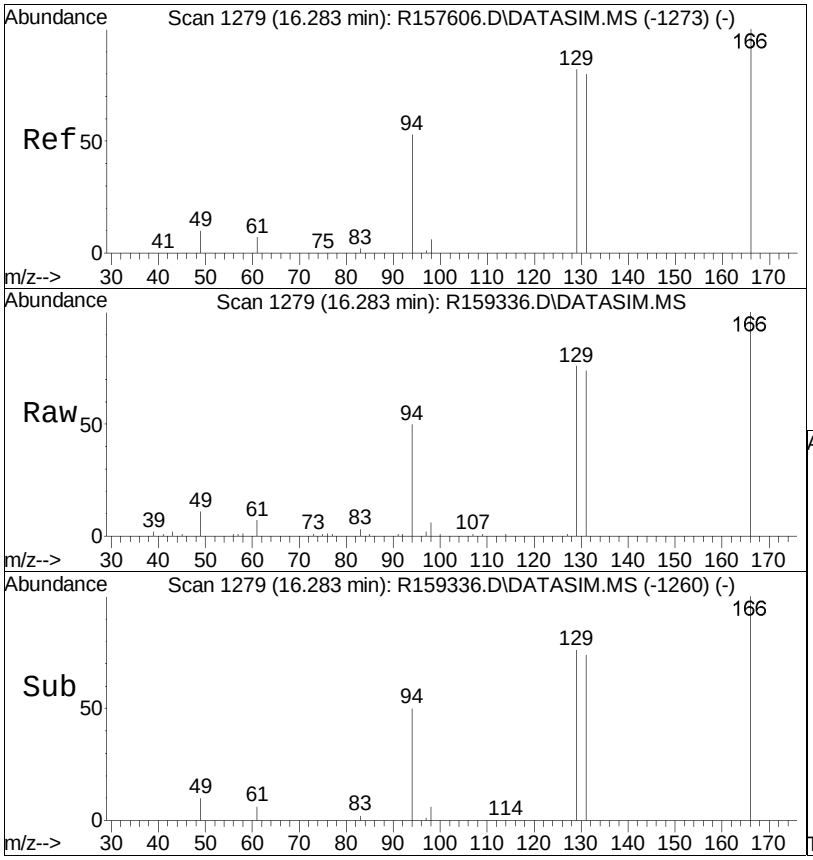


#44
trichloroethene
Concen: 0.05 ppbV
RT: 13.19 min Scan# 1018
Delta R.T. 0.000 min
Lab File: R159336.D
Acq: 11 May 2018 9:28 pm

Tgt Ion:130 Resp: 314

Ion	Ratio	Lower	Upper
130	100		
132	92.0	77.4	116.0
97	80.0	60.9	91.3

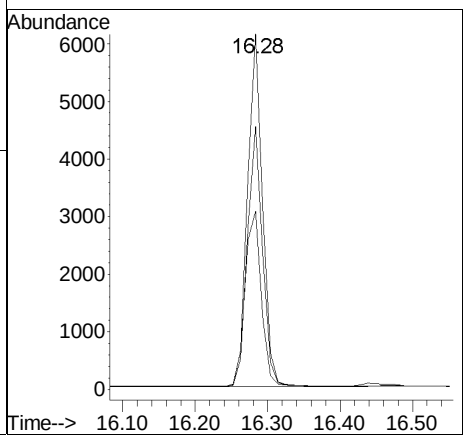




#57
tetrachloroethene
Concen: 1.24 ppbV
RT: 16.28 min Scan# 1279
Delta R.T. 0.000 min
Lab File: R159336.D
Acq: 11 May 2018 9:28 pm

Tgt Ion:166 Resp: 8831

Ion	Ratio	Lower	Upper
166	100		
131	74.1	63.7	95.5
94	50.2	42.1	63.1



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\AIR1\2018Q	Method	: TSIM180226.M
Data File	: R159336.D	Operator	: AIRPIANO1:GJ
Date Inj'd	: 5/11/2018 9:28 pm	Instrument	: Air Piano 1
Sample	: L1816546-05,3,250,250	Quant Date	: 5/12/2018 8:02 am

There are no manual integrations or false positives in this file.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159337.D
Acq On : 11 May 2018 10:01 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-06,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 12 08:03:01 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : 9_Chlorinateds - .

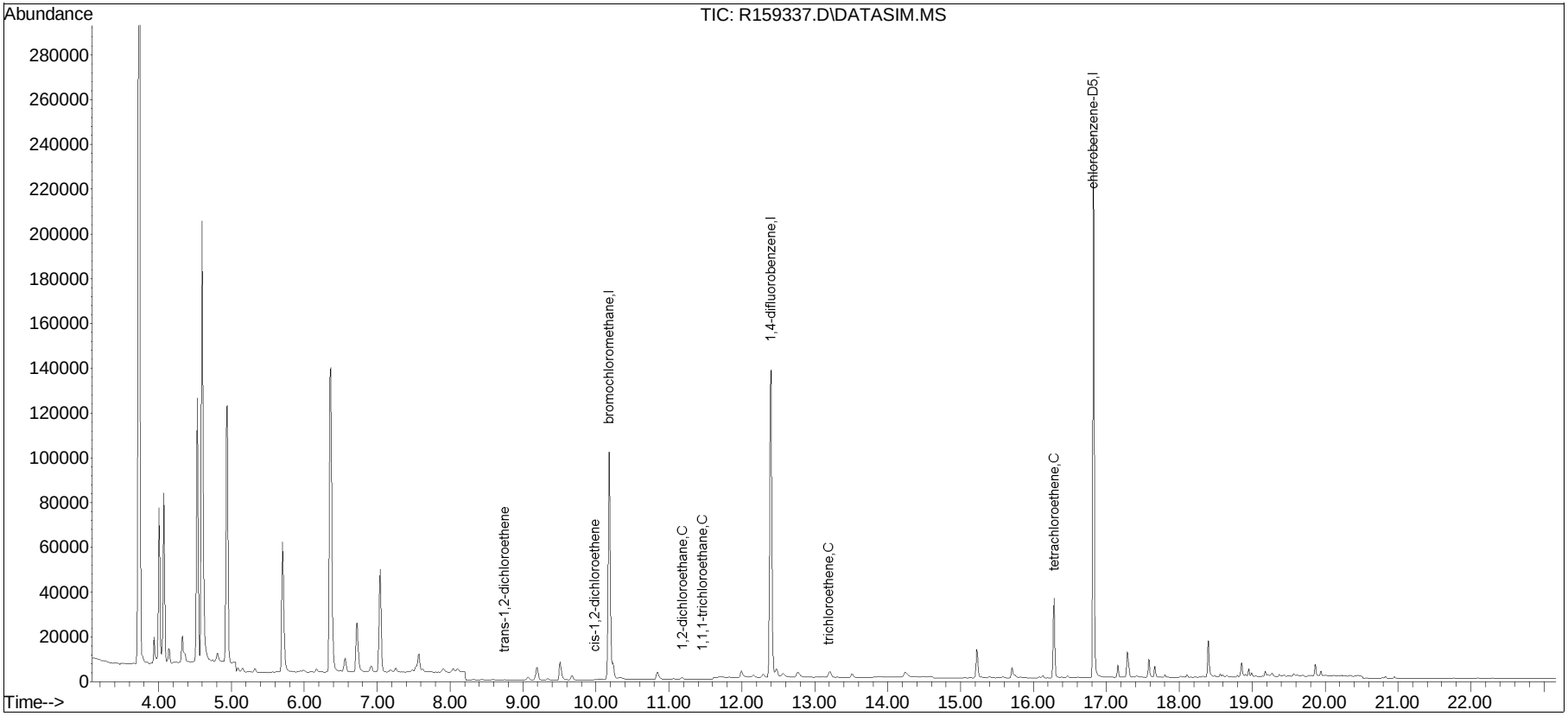
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	121873	10.000	ppbV	0.00
Standard Area = 148232			Recovery =		82.22%	
33) 1,4-difluorobenzene	12.40	114	151813	10.000	ppbV	0.00
Standard Area = 216506			Recovery =		70.12%	
51) chlorobenzene-D5	16.82	54	43218	10.000	ppbV	0.00
Standard Area = 55667			Recovery =		77.64%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.63		0	N.D.		
17) 1,1-dichloroethene	7.39		0	N.D.		
23) trans-1,2-dichloroethene	8.75	61	135	0.012	ppbV #	55
28) cis-1,2-dichloroethene	9.99	61	303	0.026	ppbV #	70
44) trichloroethene	13.19	130	665	0.107	ppbV	98
57) tetrachloroethene	16.28	166	16028	2.158	ppbV	94

(#) = qualifier out of range (m) = manual integration (+) = signals summed

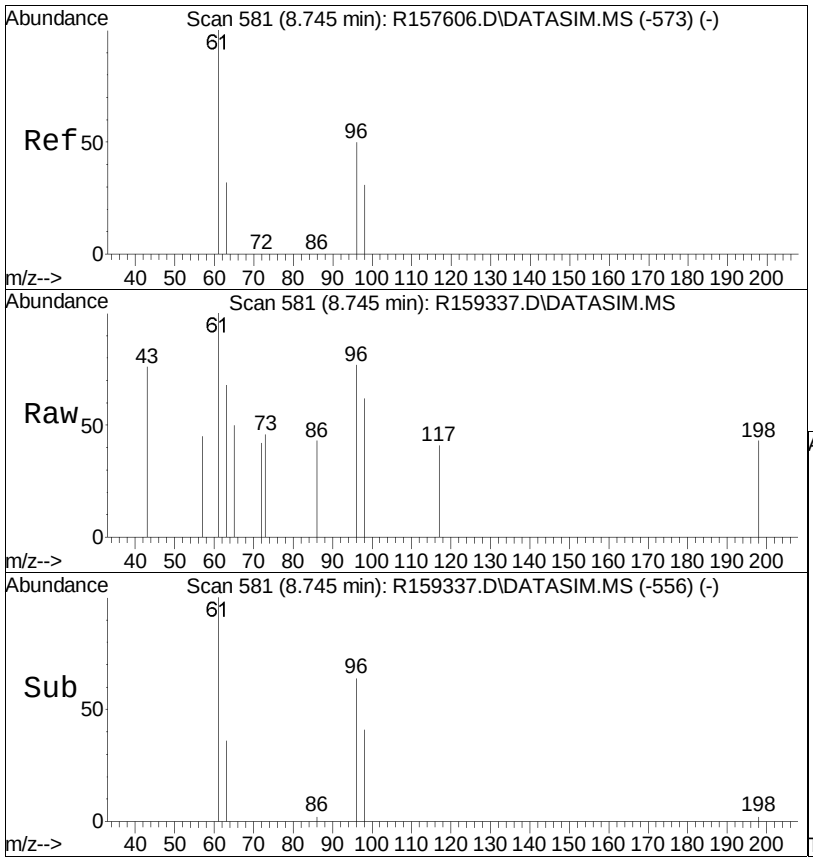
Sub List : 9_Chlorinateds - .AIR1\2018\180511SIM\R159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159337.D
Acq On : 11 May 2018 10:01 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-06,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 12 08:03:01 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration



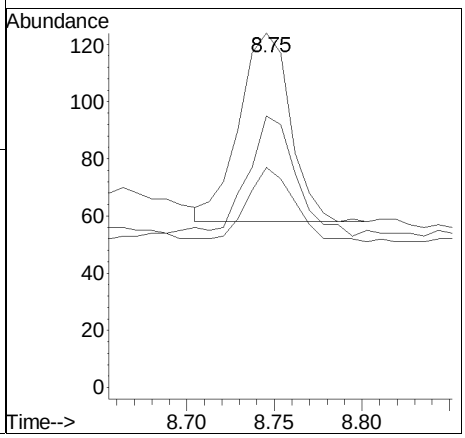
TSIM180226.M Sat May 12 09:54:55 2018 Page 2

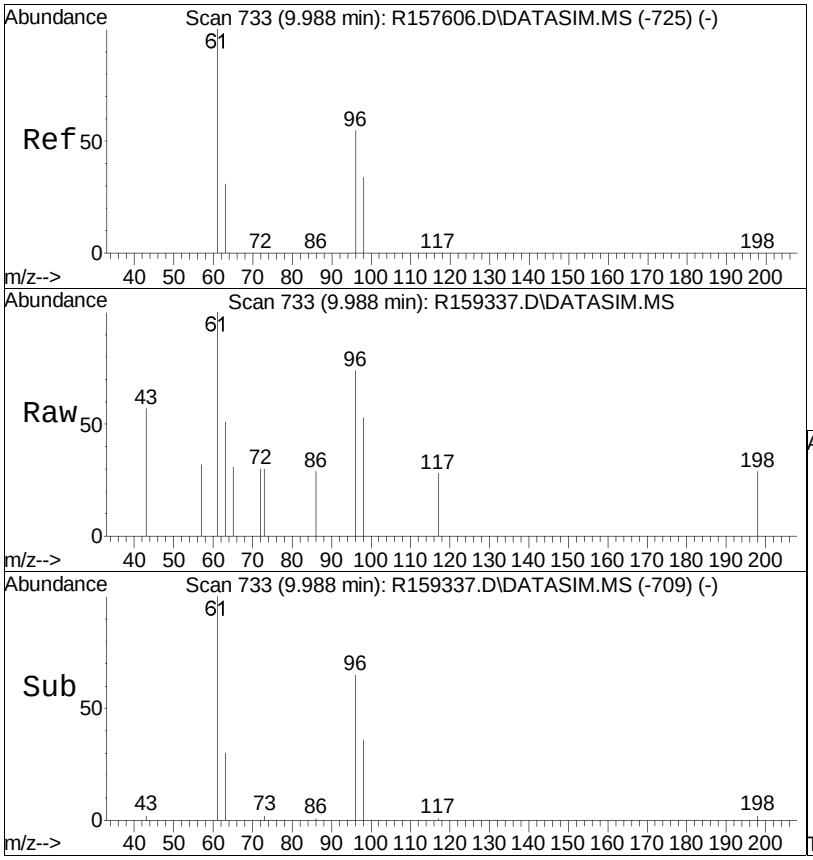


#23
trans-1,2-dichloroethene
Concen: 0.01 ppbV
RT: 8.75 min Scan# 581
Delta R.T. 0.000 min
Lab File: R159337.D
Acq: 11 May 2018 10:01 pm

Tgt Ion: 61 Resp: 135

Ion	Ratio	Lower	Upper
61	100		
96	76.6	40.4	60.6#
98	62.1	25.0	37.4#

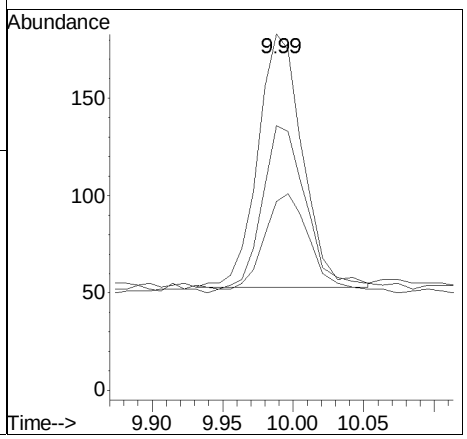


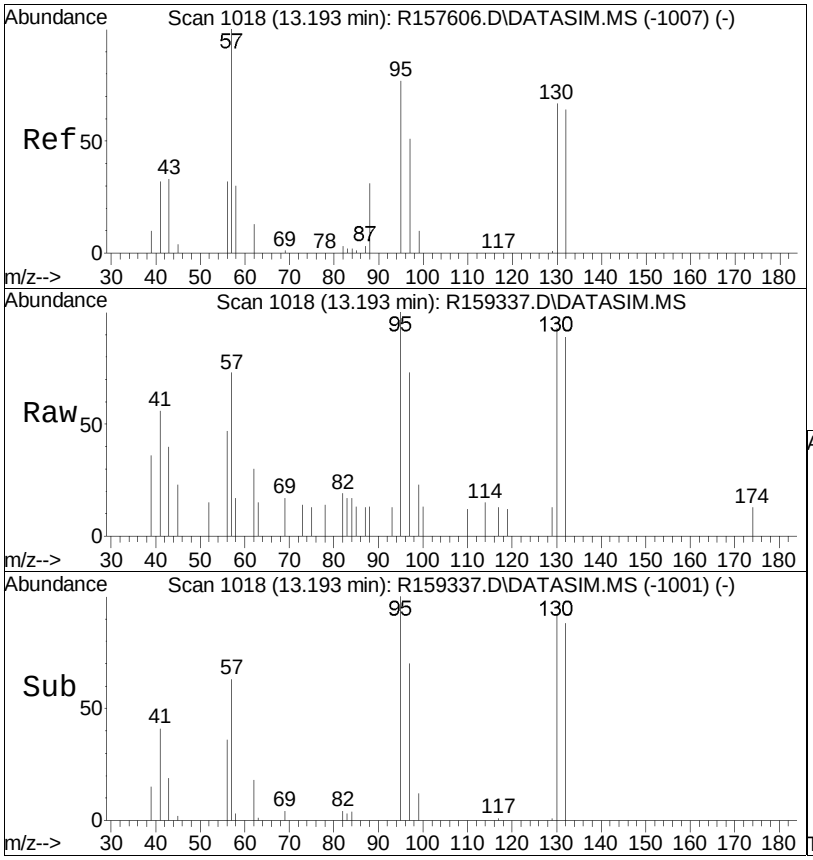


#28
cis-1,2-dichloroethene
Concen: 0.03 ppbV
RT: 9.99 min Scan# 733
Delta R.T. 0.000 min
Lab File: R159337.D
Acq: 11 May 2018 10:01 pm

Tgt Ion: 61 Resp: 303

Ion	Ratio	Lower	Upper
61	100		
96	74.3	43.8	65.6#
98	53.0	27.0	40.4#

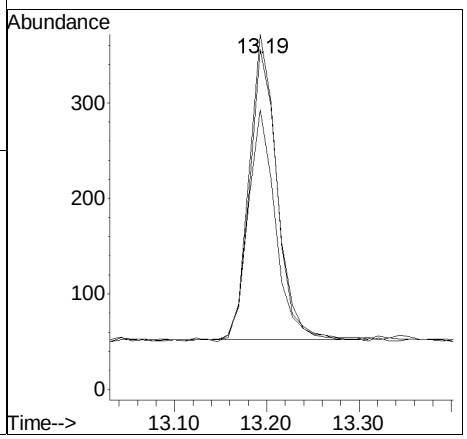


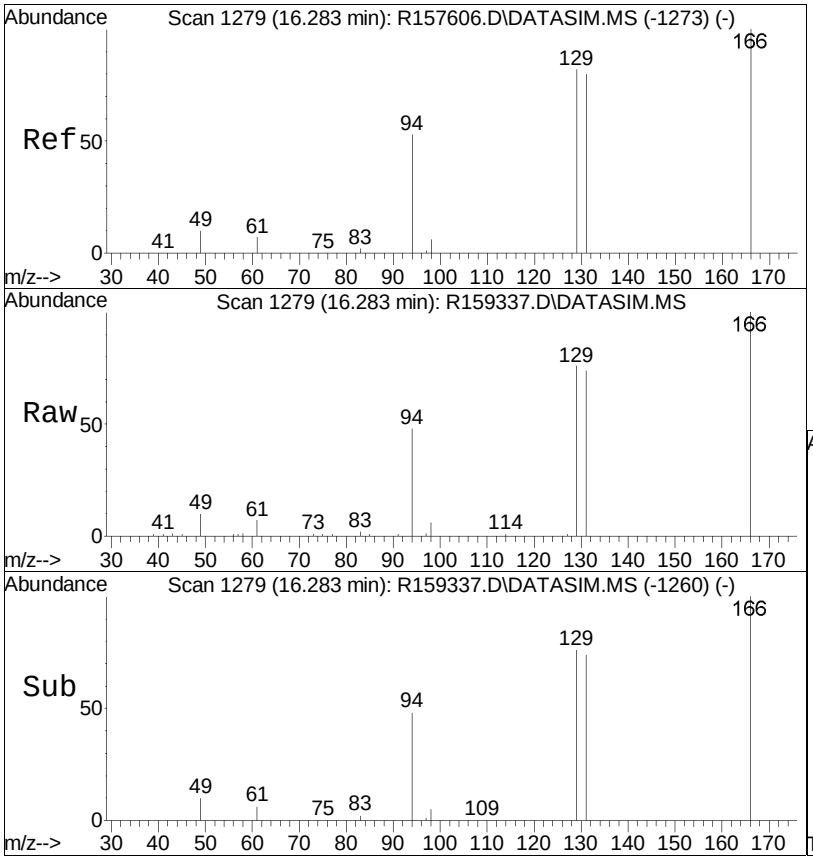


#44
trichloroethene
Concen: 0.11 ppbV
RT: 13.19 min Scan# 1018
Delta R.T. 0.000 min
Lab File: R159337.D
Acq: 11 May 2018 10:01 pm

Tgt Ion:130 Resp: 665

Ion	Ratio	Lower	Upper
130	100		
132	95.7	77.4	116.0
97	78.8	60.9	91.3

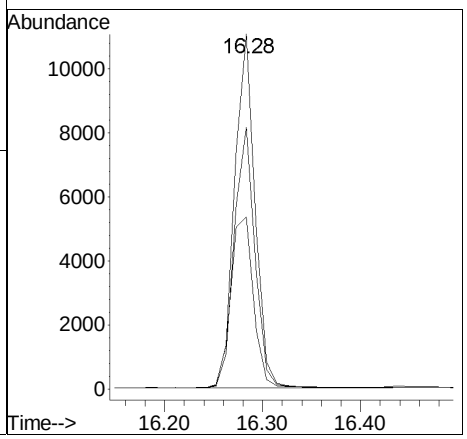




#57
tetrachloroethene
Concen: 2.16 ppbV
RT: 16.28 min Scan# 1279
Delta R.T. 0.000 min
Lab File: R159337.D
Acq: 11 May 2018 10:01 pm

Tgt Ion:166 Resp: 16028

Ion	Ratio	Lower	Upper
166	100		
131	73.8	63.7	95.5
94	48.5	42.1	63.1



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\AIR1\2018Q	Method	: TSIM180226.M
Data File	: R159337.D	Operator	: AIRPIANO1:GJ
Date Inj'd	: 5/11/2018 10:01 pm	Instrument	: Air Piano 1
Sample	: L1816546-06,3,250,250	Quant Date	: 5/12/2018 8:03 am

There are no manual integrations or false positives in this file.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159338.D
Acq On : 11 May 2018 10:33 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-07,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 8 Sample Multiplier: 1

Quant Time: May 12 08:03:09 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : 9_Chlorinateds - .

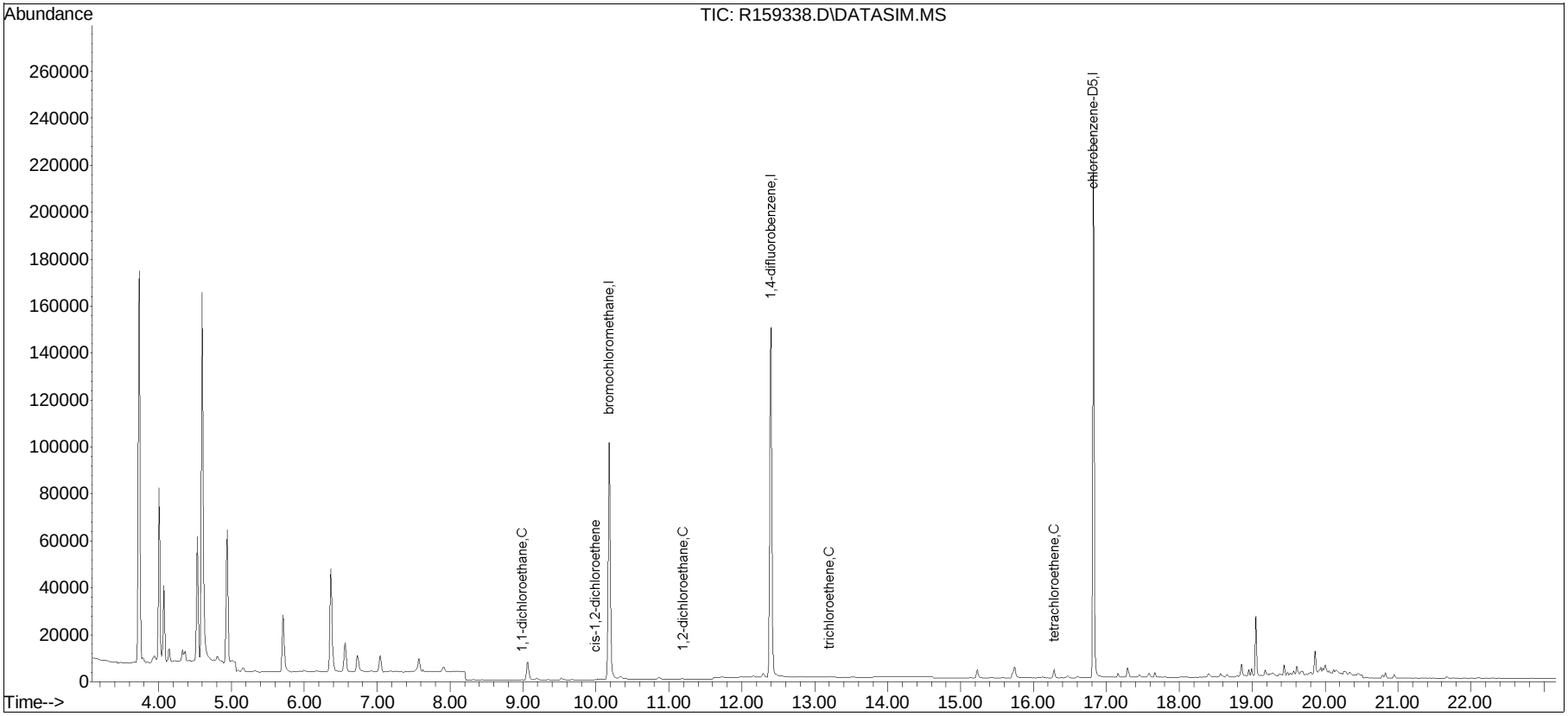
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	123373	10.000	ppbV	0.00
Standard Area = 148232			Recovery =		83.23%	
33) 1,4-difluorobenzene	12.40	114	162270	10.000	ppbV	0.00
Standard Area = 216506			Recovery =		74.95%	
51) chlorobenzene-D5	16.82	54	41130	10.000	ppbV	0.00
Standard Area = 55667			Recovery =		73.89%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.67		0	N.D.		
17) 1,1-dichloroethene	7.39		0	N.D.		
23) trans-1,2-dichloroethene	8.75		0	N.D.		
28) cis-1,2-dichloroethene	10.00	61	188	0.016	ppbV #	68
44) trichloroethene	13.20	130	78	0.012	ppbV	91
57) tetrachloroethene	16.28	166	1644	0.233	ppbV	96

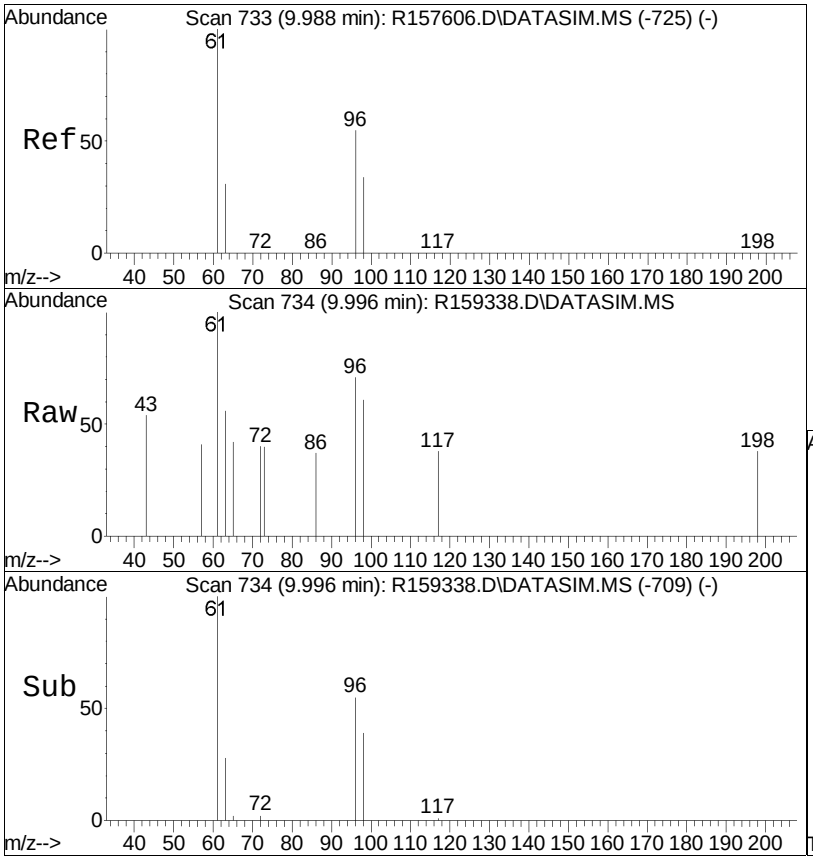
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : 9_Chlorinateds - .AIR1\2018\180511SIM\R159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159338.D
Acq On : 11 May 2018 10:33 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-07,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 8 Sample Multiplier: 1

Quant Time: May 12 08:03:09 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

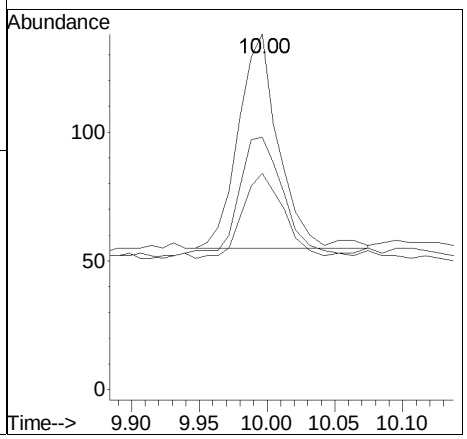


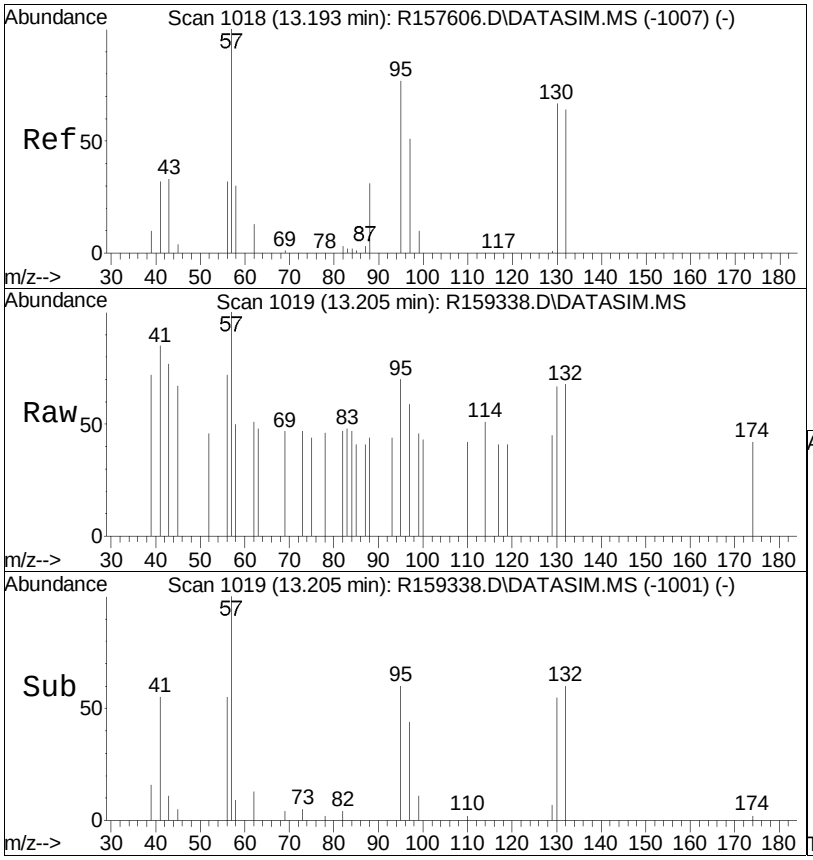


#28
cis-1,2-dichloroethene
Concen: 0.02 ppbV
RT: 10.00 min Scan# 734
Delta R.T. 0.008 min
Lab File: R159338.D
Acq: 11 May 2018 10:33 pm

Tgt Ion: 61 Resp: 188

Ion	Ratio	Lower	Upper
61	100		
96	71.0	43.8	65.6#
98	60.9	27.0	40.4#

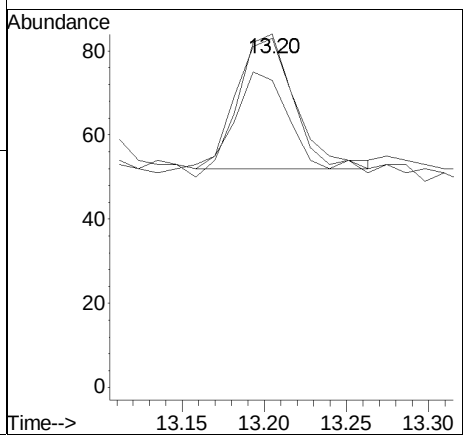


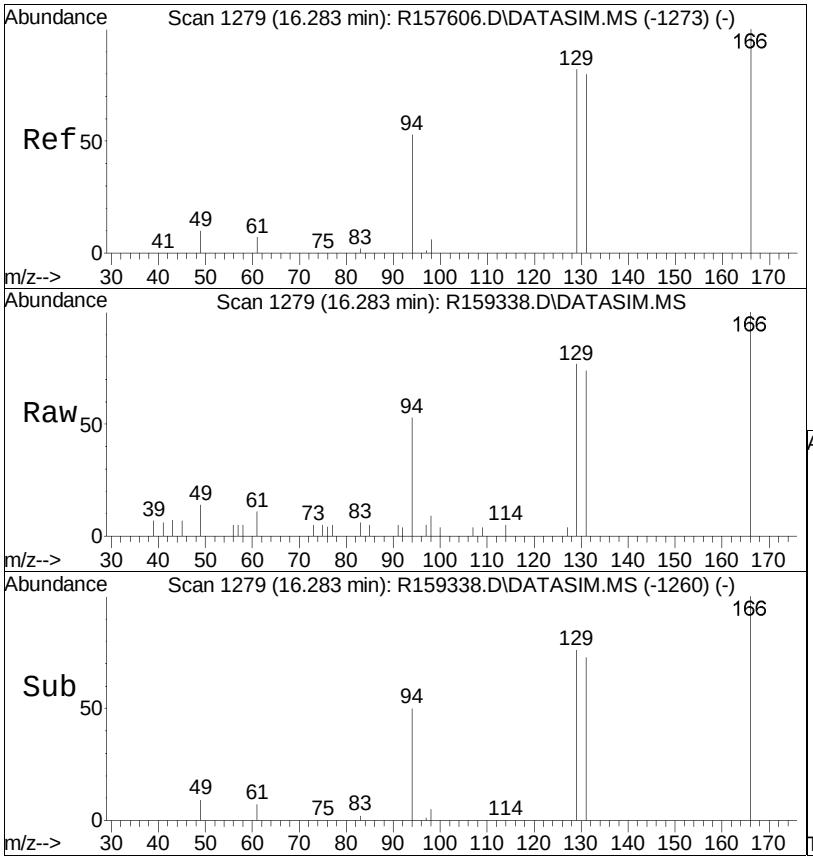


#44
trichloroethene
Concen: 0.01 ppbV
RT: 13.20 min Scan# 1019
Delta R.T. 0.012 min
Lab File: R159338.D
Acq: 11 May 2018 10:33 pm

Tgt Ion:130 Resp: 78

Ion	Ratio	Lower	Upper
130	100		
132	101.2	77.4	116.0
97	88.0	60.9	91.3

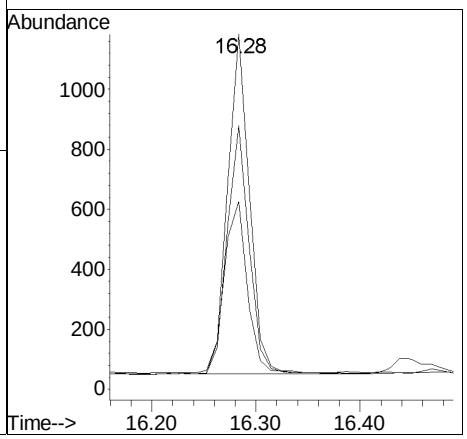




#57
tetrachloroethene
Concen: 0.23 ppbV
RT: 16.28 min Scan# 1279
Delta R.T. 0.000 min
Lab File: R159338.D
Acq: 11 May 2018 10:33 pm

Tgt Ion:166 Resp: 1644

Ion	Ratio	Lower	Upper
166	100		
131	74.2	63.7	95.5
94	52.9	42.1	63.1



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\AIR1\2018Q	Method	: TSIM180226.M
Data File	: R159338.D	Operator	: AIRPIANO1:GJ
Date Inj'd	: 5/11/2018 10:33 pm	Instrument	: Air Piano 1
Sample	: L1816546-07,3,250,250	Quant Date	: 5/12/2018 8:03 am

There are no manual integrations or false positives in this file.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159339.D
Acq On : 11 May 2018 11:06 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-08,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 9 Sample Multiplier: 1

Quant Time: May 12 08:03:16 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : 9_Chlorinateds - .

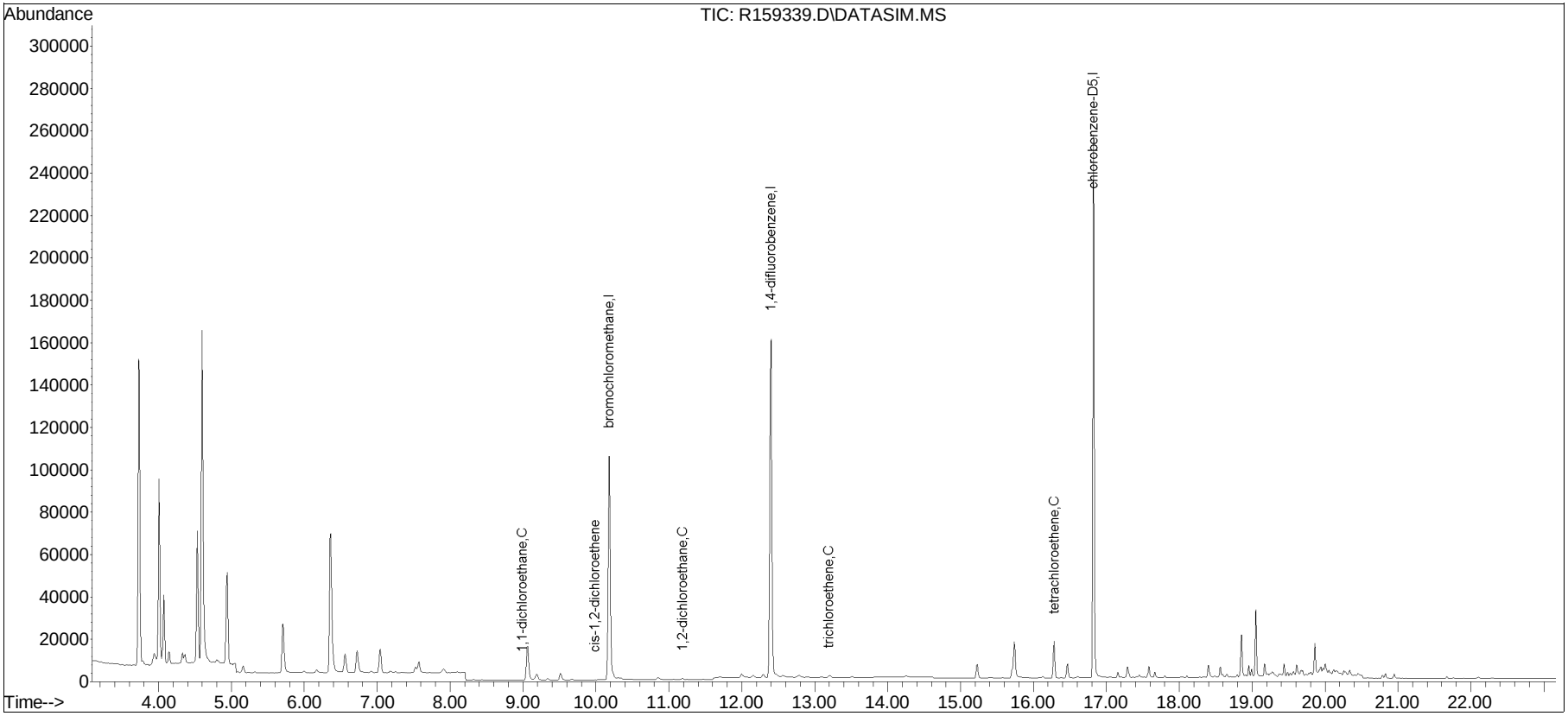
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	127273	10.000	ppbV	0.00
Standard Area = 148232			Recovery =		85.86%	
33) 1,4-difluorobenzene	12.40	114	168922	10.000	ppbV	0.00
Standard Area = 216506			Recovery =		78.02%	
51) chlorobenzene-D5	16.82	54	46006	10.000	ppbV	0.00
Standard Area = 55667			Recovery =		82.65%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.67		0	N.D.		
17) 1,1-dichloroethene	7.39		0	N.D.		
23) trans-1,2-dichloroethene	8.75		0	N.D.		
28) cis-1,2-dichloroethene	9.99	61	202	0.016	ppbV #	72
44) trichloroethene	13.19	130	284	0.041	ppbV	90
57) tetrachloroethene	16.28	166	7743	0.979	ppbV	96

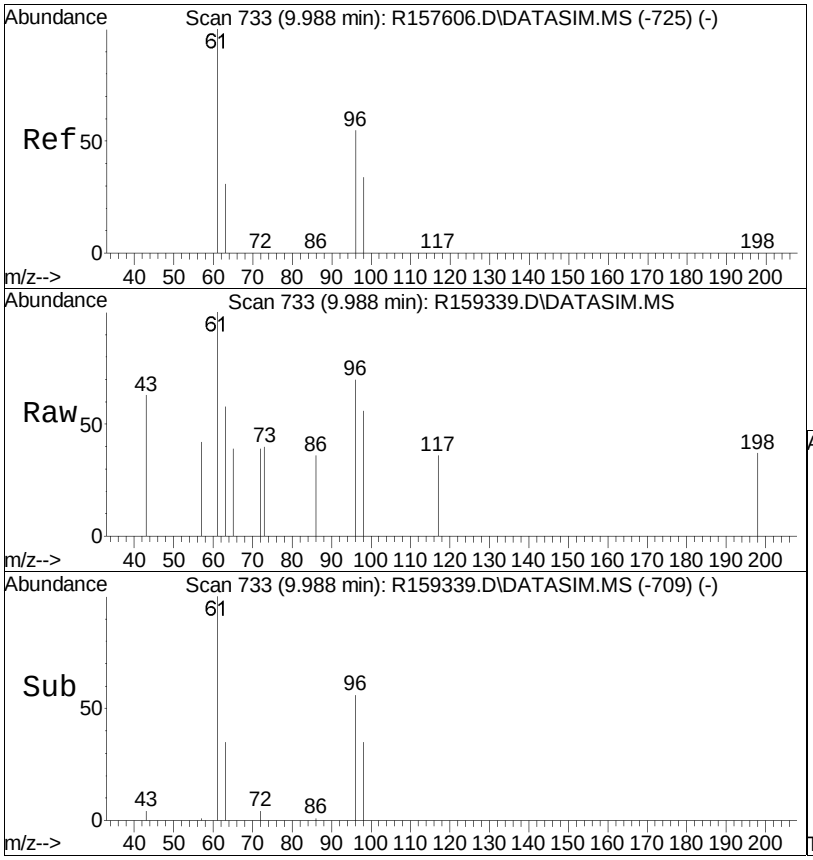
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : 9_Chlorinateds - .AIR1\2018\180511SIM\R159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159339.D
Acq On : 11 May 2018 11:06 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-08,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 9 Sample Multiplier: 1

Quant Time: May 12 08:03:16 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

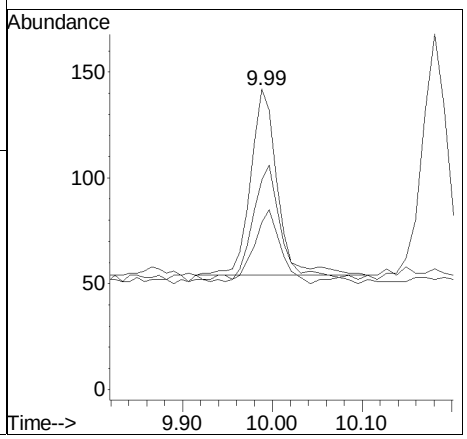


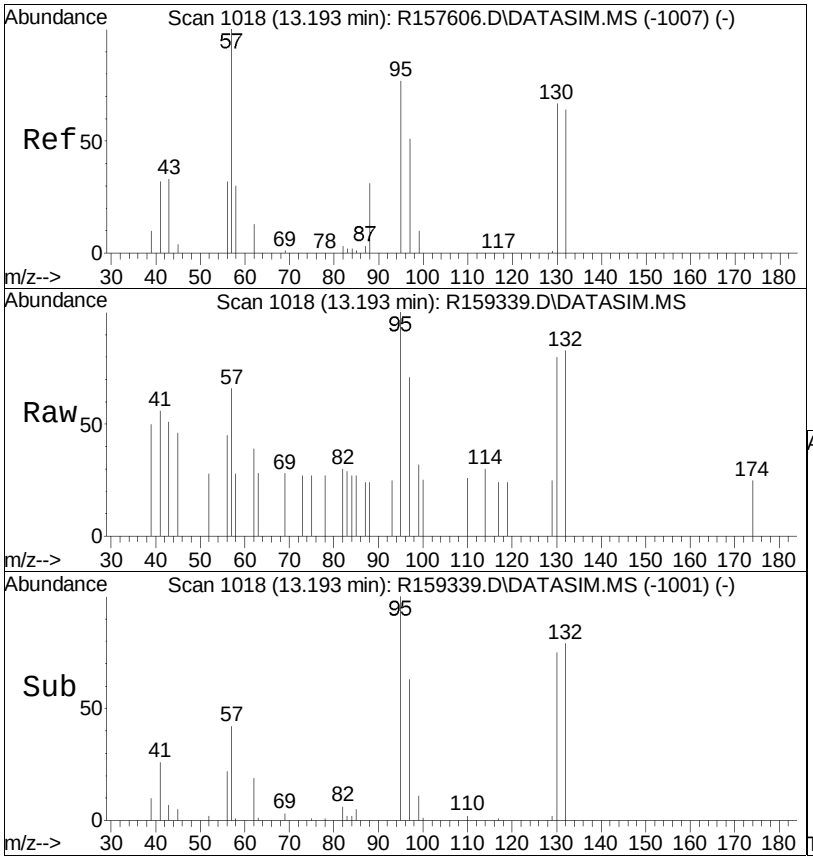


#28
cis-1,2-dichloroethene
Concen: 0.02 ppbV
RT: 9.99 min Scan# 733
Delta R.T. 0.000 min
Lab File: R159339.D
Acq: 11 May 2018 11:06 pm

Tgt Ion: 61 Resp: 202

Ion	Ratio	Lower	Upper
61	100		
96	69.7	43.8	65.6#
98	55.6	27.0	40.4#

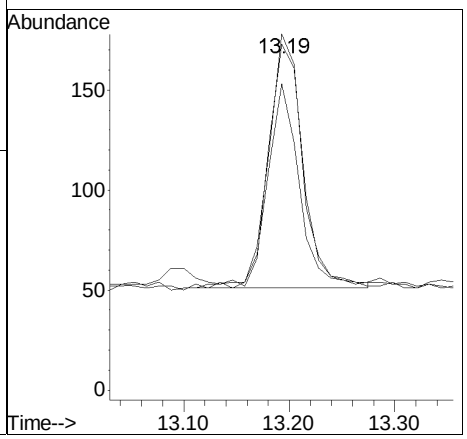


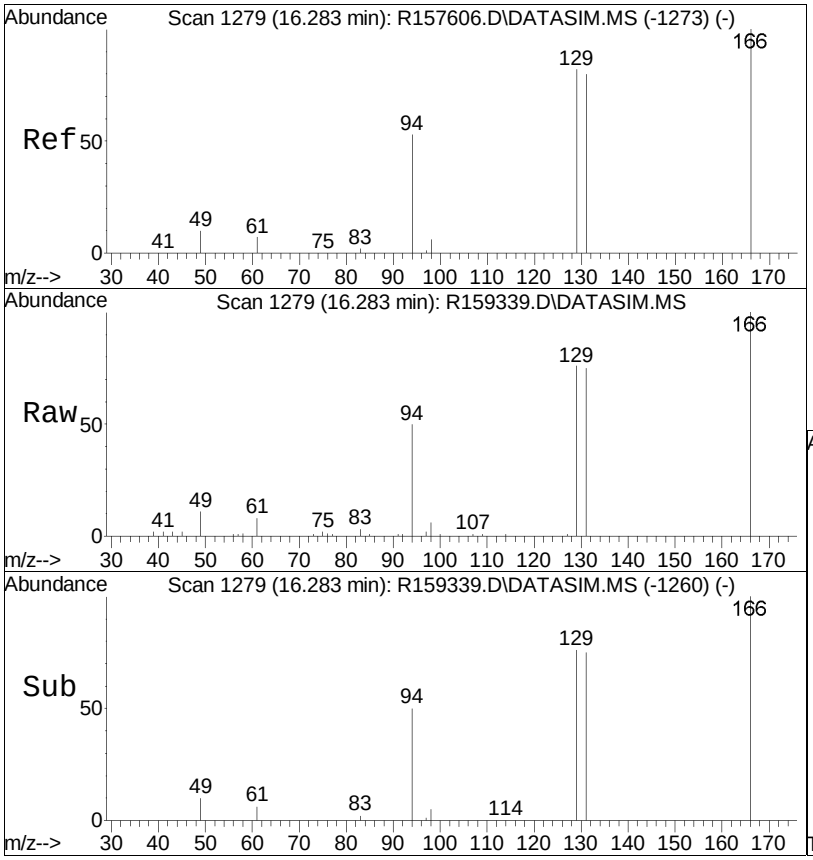


#44
trichloroethene
Concen: 0.04 ppbV
RT: 13.19 min Scan# 1018
Delta R.T. 0.000 min
Lab File: R159339.D
Acq: 11 May 2018 11:06 pm

Tgt Ion:130 Resp: 284

Ion	Ratio	Lower	Upper
130	100		
132	102.9	77.4	116.0
97	88.4	60.9	91.3

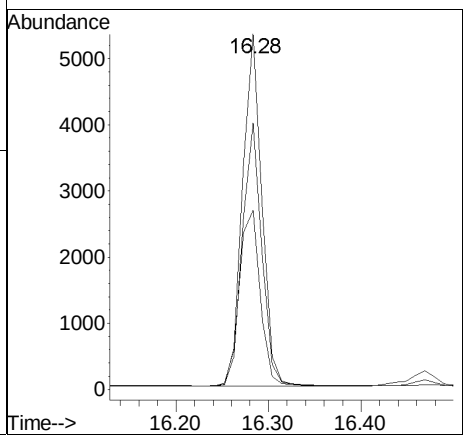




#57
tetrachloroethene
Concen: 0.98 ppbV
RT: 16.28 min Scan# 1279
Delta R.T. 0.000 min
Lab File: R159339.D
Acq: 11 May 2018 11:06 pm

Tgt Ion:166 Resp: 7743

Ion	Ratio	Lower	Upper
166	100		
131	74.9	63.7	95.5
94	50.5	42.1	63.1



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\AIR1\2018Q	Method	: TSIM180226.M
Data File	: R159339.D	Operator	: AIRPIANO1:GJ
Date Inj'd	: 5/11/2018 11:06 pm	Instrument	: Air Piano 1
Sample	: L1816546-08,3,250,250	Quant Date	: 5/12/2018 8:03 am

There are no manual integrations or false positives in this file.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159340.D
Acq On : 11 May 2018 11:38 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-09,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 12 08:03:25 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : 9_Chlorinateds - .

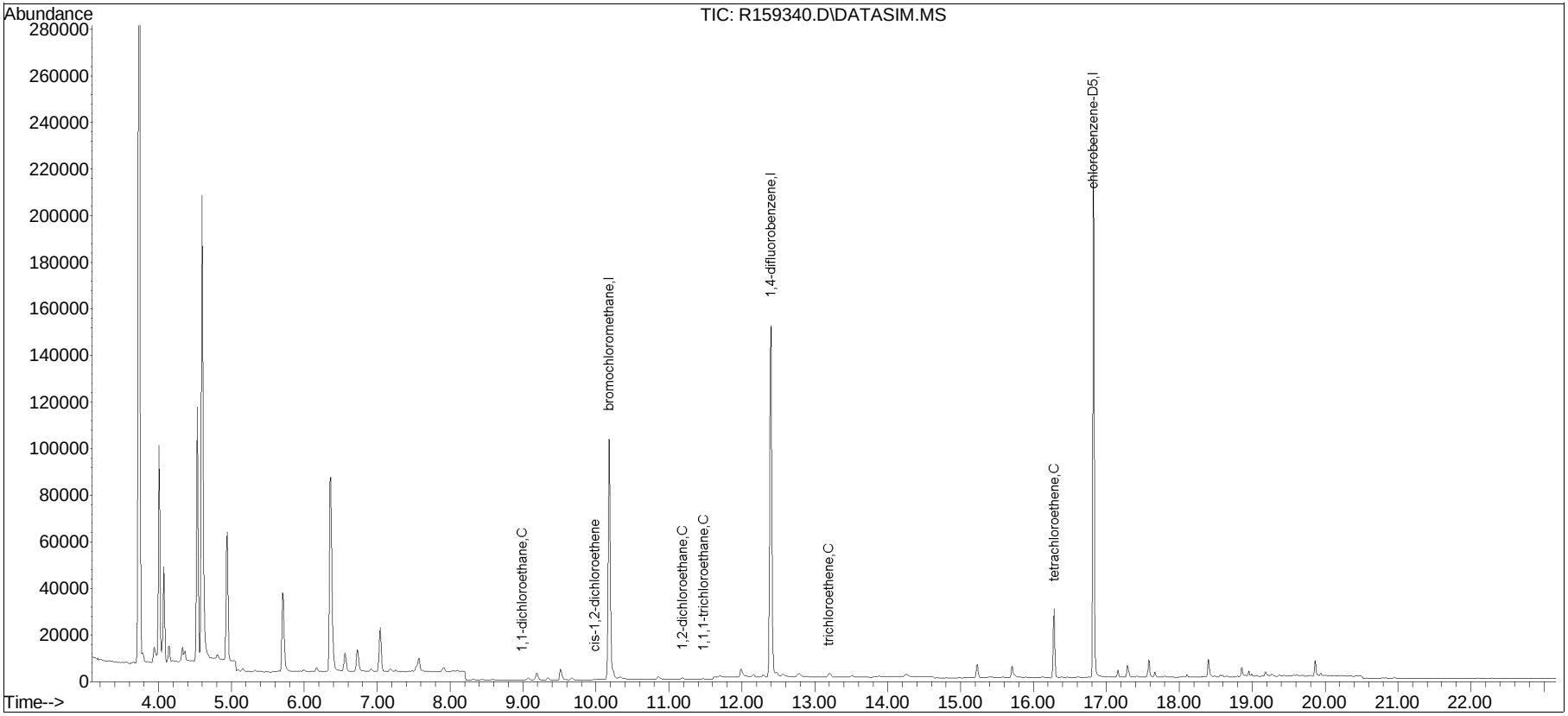
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	122815	10.000	ppbV	0.00
Standard Area = 148232			Recovery =		82.85%	
33) 1,4-difluorobenzene	12.40	114	163260	10.000	ppbV	0.00
Standard Area = 216506			Recovery =		75.41%	
51) chlorobenzene-D5	16.82	54	41256	10.000	ppbV	0.00
Standard Area = 55667			Recovery =		74.11%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.65		0	N.D.		
17) 1,1-dichloroethene	7.40		0	N.D.		
23) trans-1,2-dichloroethene	8.75		0	N.D.		
28) cis-1,2-dichloroethene	9.99	61	256	0.021	ppbV #	66
44) trichloroethene	13.19	130	511	0.076	ppbV	96
57) tetrachloroethene	16.28	166	13220	1.865	ppbV	95

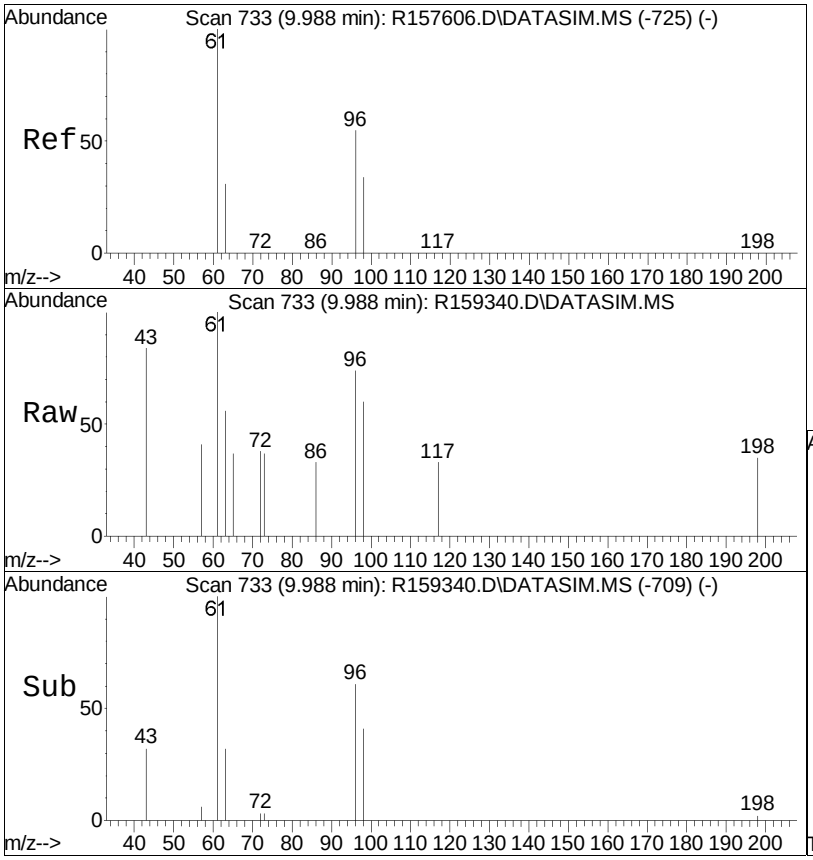
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : 9_Chlorinateds - .AIR1\2018\180511SIM\R159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159340.D
Acq On : 11 May 2018 11:38 pm
Operator : AIRPIANO1:GJ
Sample : L1816546-09,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 12 08:03:25 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

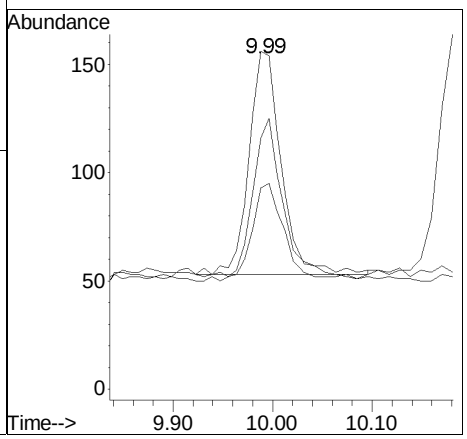


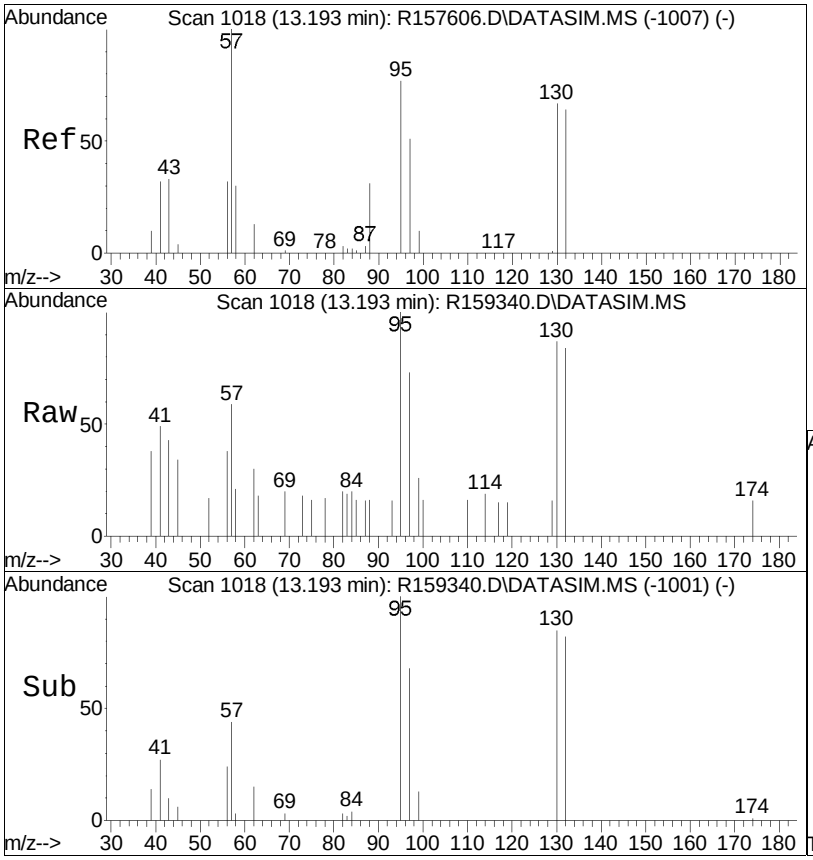


#28
cis-1,2-dichloroethene
Concen: 0.02 ppbV
RT: 9.99 min Scan# 733
Delta R.T. 0.000 min
Lab File: R159340.D
Acq: 11 May 2018 11:38 pm

Tgt Ion: 61 Resp: 256

Ion	Ratio	Lower	Upper
61	100		
96	74.4	43.8	65.6#
98	59.6	27.0	40.4#

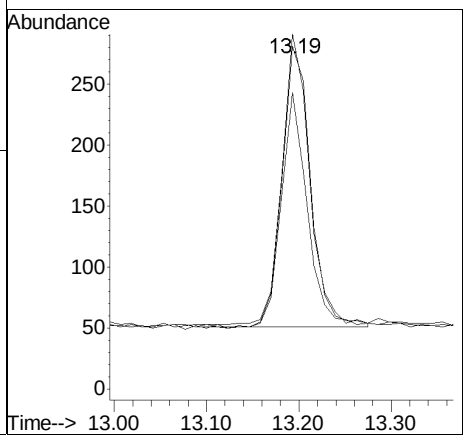


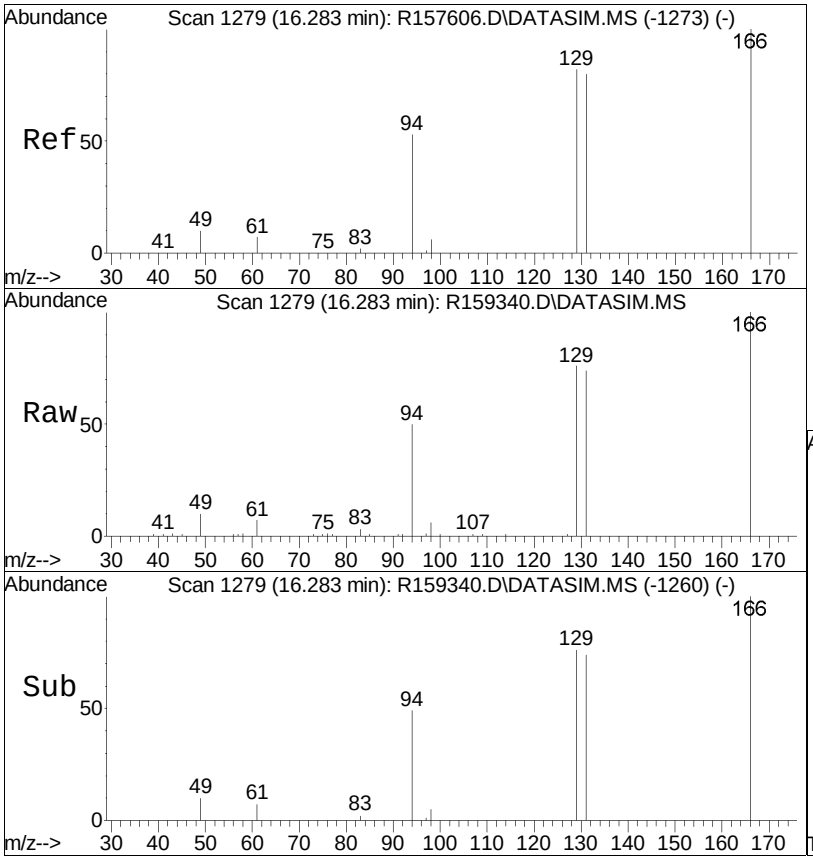


#44
trichloroethene
Concen: 0.08 ppbV
RT: 13.19 min Scan# 1018
Delta R.T. 0.000 min
Lab File: R159340.D
Acq: 11 May 2018 11:38 pm

Tgt Ion:130 Resp: 511

Ion	Ratio	Lower	Upper
130	100		
132	96.6	77.4	116.0
97	83.5	60.9	91.3

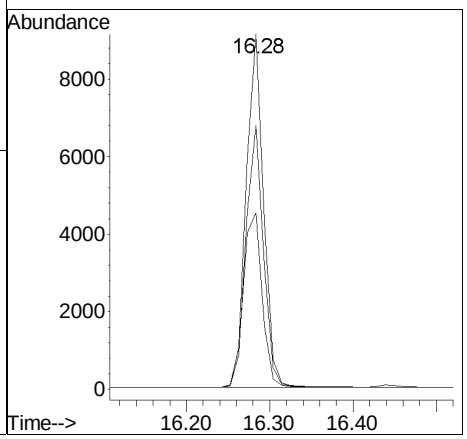




#57
tetrachloroethene
Concen: 1.86 ppbV
RT: 16.28 min Scan# 1279
Delta R.T. 0.000 min
Lab File: R159340.D
Acq: 11 May 2018 11:38 pm

Tgt Ion:166 Resp: 13220

Ion	Ratio	Lower	Upper
166	100		
131	74.3	63.7	95.5
94	49.8	42.1	63.1



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\AIR1\2018Q	Method	: TSIM180226.M
Data File	: R159340.D	Operator	: AIRPIANO1:GJ
Date Inj'd	: 5/11/2018 11:38 pm	Instrument	: Air Piano 1
Sample	: L1816546-09,3,250,250	Quant Date	: 5/12/2018 8:03 am

There are no manual integrations or false positives in this file.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159341.D
Acq On : 12 May 2018 12:11 am
Operator : AIRPIANO1:GJ
Sample : L1816546-10,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 12 08:03:33 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : 9_Chlorinateds - .

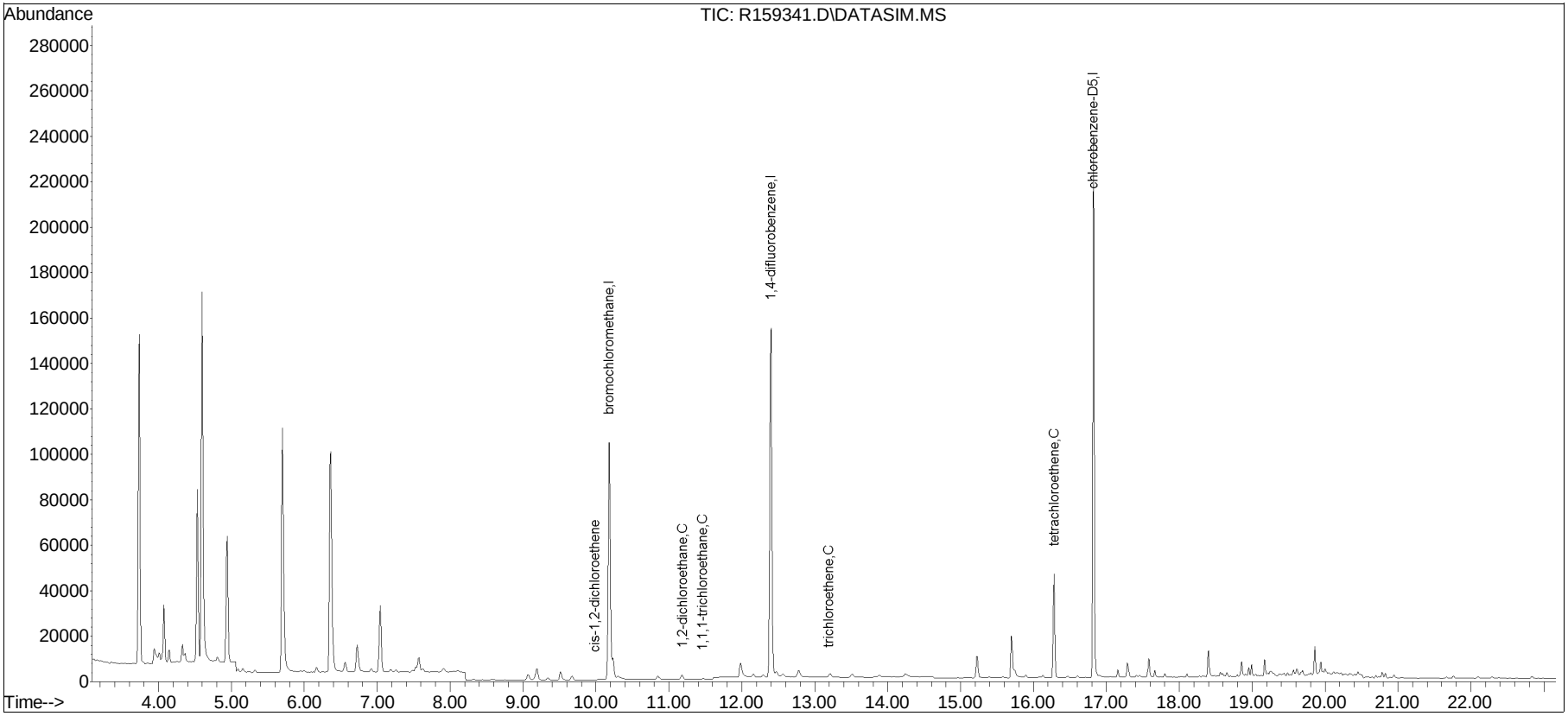
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	124590	10.000	ppbV	0.00
Standard Area = 148232			Recovery =		84.05%	
33) 1,4-difluorobenzene	12.40	114	165211	10.000	ppbV	0.00
Standard Area = 216506			Recovery =		76.31%	
51) chlorobenzene-D5	16.82	54	41943	10.000	ppbV	0.00
Standard Area = 55667			Recovery =		75.35%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.68		0	N.D.		
17) 1,1-dichloroethene	7.40		0	N.D.		
23) trans-1,2-dichloroethene	8.75		0	N.D.		
28) cis-1,2-dichloroethene	9.99	61	151	0.012	ppbV #	55
44) trichloroethene	13.19	130	224	0.033	ppbV	98
57) tetrachloroethene	16.28	166	20165	2.798	ppbV	94

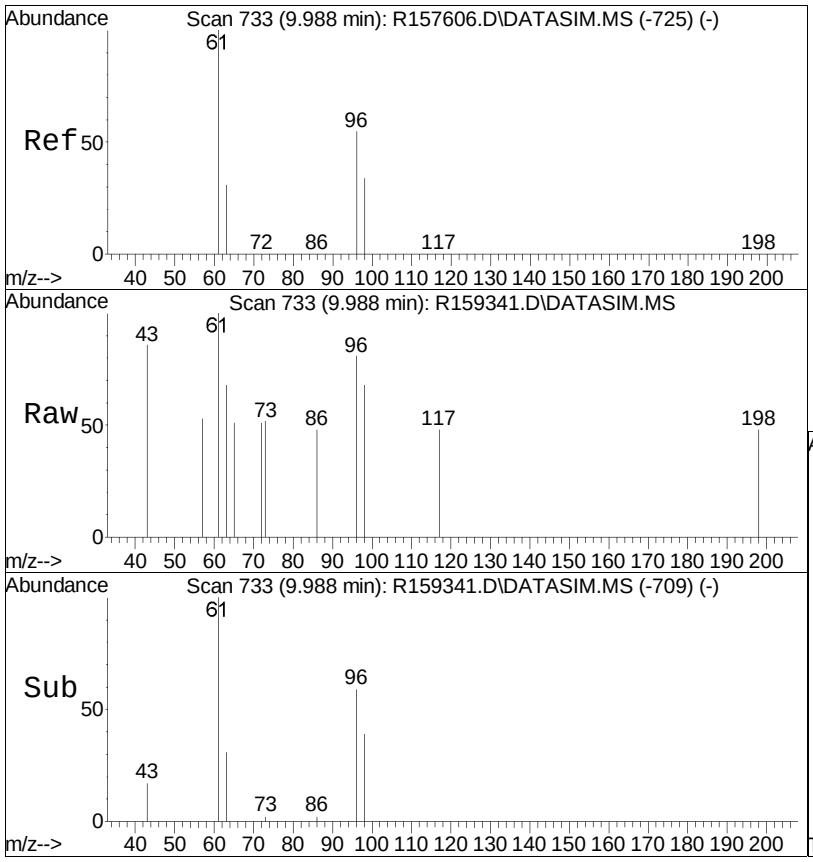
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : 9_Chlorinateds - .AIR1\2018\180511SIM\R159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159341.D
Acq On : 12 May 2018 12:11 am
Operator : AIRPIANO1:GJ
Sample : L1816546-10,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 12 08:03:33 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

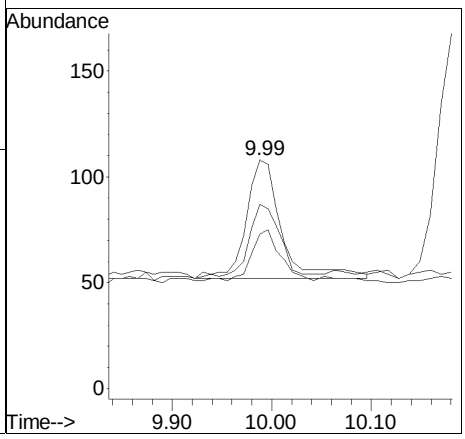


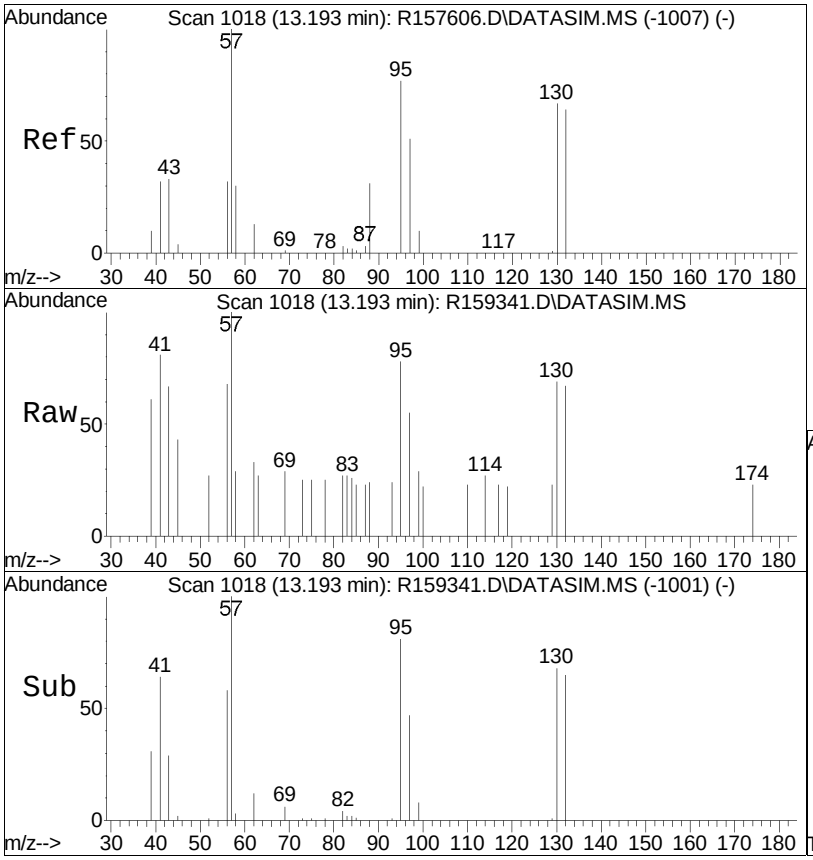


#28
cis-1,2-dichloroethene
Concen: 0.01 ppbV
RT: 9.99 min Scan# 733
Delta R.T. 0.000 min
Lab File: R159341.D
Acq: 12 May 2018 12:11 am

Tgt Ion: 61 Resp: 151

Ion	Ratio	Lower	Upper
61	100		
96	80.6	43.8	65.6#
98	67.6	27.0	40.4#

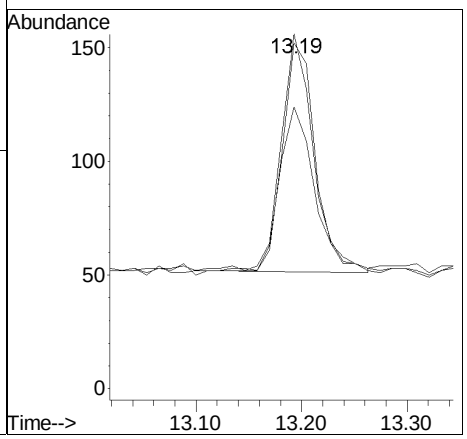


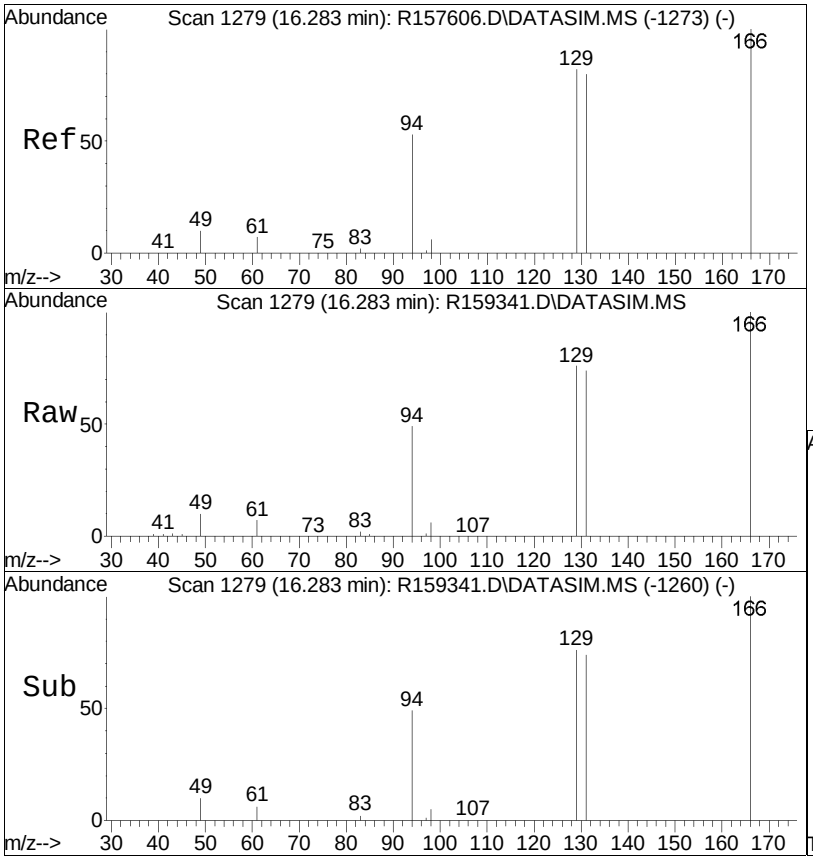


#44
trichloroethene
Concen: 0.03 ppbV
RT: 13.19 min Scan# 1018
Delta R.T. 0.000 min
Lab File: R159341.D
Acq: 12 May 2018 12:11 am

Tgt Ion:130 Resp: 224

Ion	Ratio	Lower	Upper
130	100		
132	97.4	77.4	116.0
97	79.5	60.9	91.3

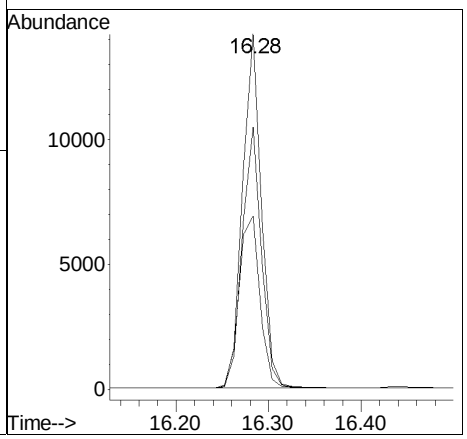




#57
tetrachloroethene
Concen: 2.80 ppbV
RT: 16.28 min Scan# 1279
Delta R.T. 0.000 min
Lab File: R159341.D
Acq: 12 May 2018 12:11 am

Tgt Ion:166 Resp: 20165

Ion	Ratio	Lower	Upper
166	100		
131	73.9	63.7	95.5
94	48.8	42.1	63.1



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\AIR1\2018Q	Method	: TSIM180226.M
Data File	: R159341.D	Operator	: AIRPIANO1:GJ
Date Inj'd	: 5/12/2018 12:11 am	Instrument	: Air Piano 1
Sample	: L1816546-10,3,250,250	Quant Date	: 5/12/2018 8:03 am

There are no manual integrations or false positives in this file.

Method Blank
Raw Data

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159325.D
Acq On : 11 May 2018 3:00 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-4,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 1 Sample Multiplier: 1

Quant Time: May 11 15:42:41 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : Default-LCS-AP2 - All compounds listed

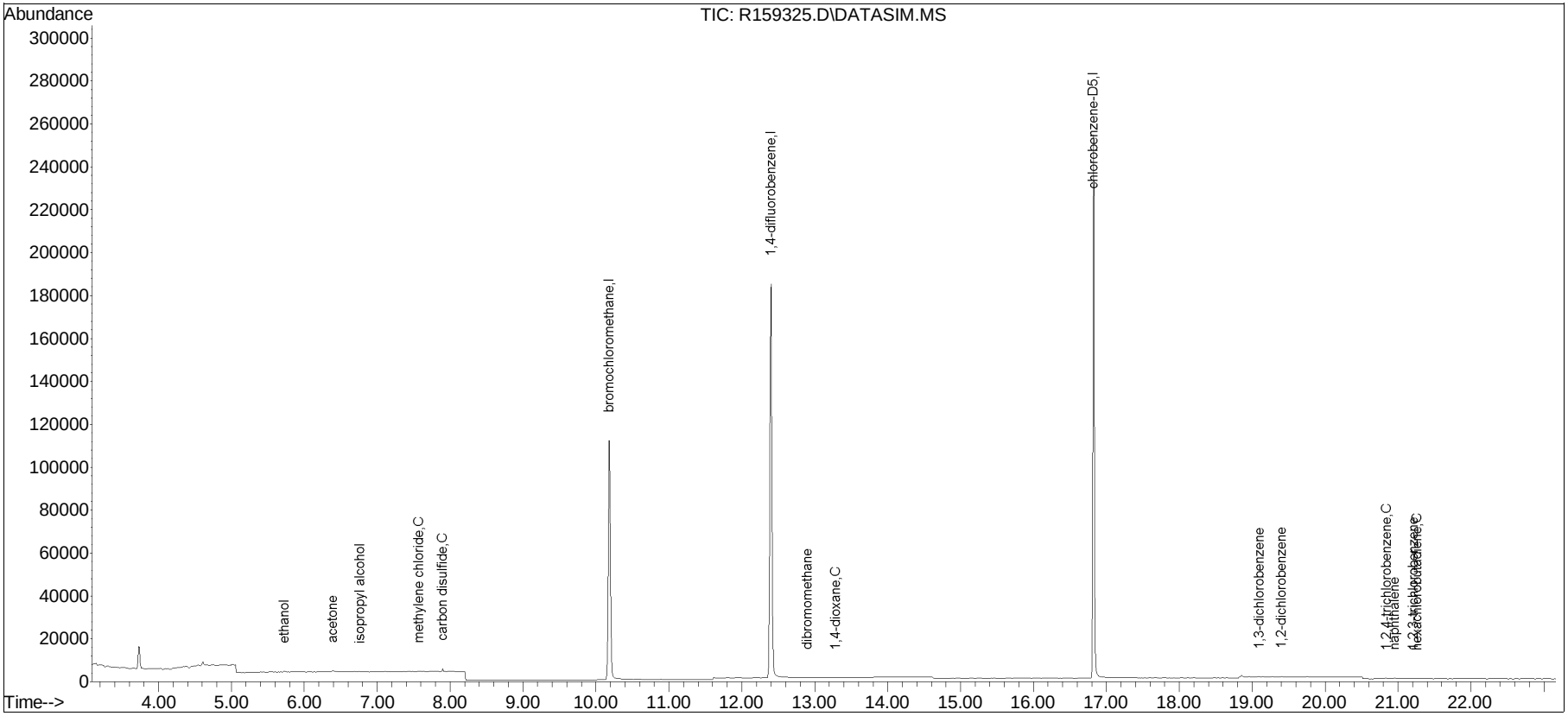
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	137275	10.000	ppbV	0.00
Standard Area = 148232			Recovery =		92.61%	
33) 1,4-difluorobenzene	12.40	114	188822	10.000	ppbV	0.00
Standard Area = 216506			Recovery =		87.21%	
51) chlorobenzene-D5	16.82	54	45804	10.000	ppbV	0.00
Standard Area = 55667			Recovery =		82.28%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.64		0	N.D.		
17) 1,1-dichloroethene	7.39		0	N.D.		
23) trans-1,2-dichloroethene	8.74		0	N.D.		
28) cis-1,2-dichloroethene	9.99		0	N.D.		
44) trichloroethene	13.19		0	N.D.		
57) tetrachloroethene	16.29		0	N.D.		

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default-LCS-AP2 - All compounds listedR159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159325.D
Acq On : 11 May 2018 3:00 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-4,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 1 Sample Multiplier: 1

Quant Time: May 11 15:42:41 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration



Batch Quality Control

LCS Raw Data

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159324.D
Acq On : 11 May 2018 2:02 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-3,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 11 14:31:27 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	bromochloromethane	10.000	10.000	0.0	68	0.00
2		propylene	5.000	3.036	39.3#	45	-0.01
3		dichlorodifluoromethane	5.000	6.196	-23.9	82	0.00
4	C	chloromethane	5.000	3.938	21.2	54	0.00
5		Freon-114	5.000	5.146	-2.9	68	-0.01
6	C	vinyl chloride	5.000	4.393	12.1	58	0.00
7	C	1,3-butadiene	5.000	4.564	8.7	61	0.00
8	C	bromomethane	5.000	5.487	-9.7	72	0.00
9	C	chloroethane	5.000	4.568	8.6	62	0.00
10		ethanol	25.000	21.328	14.7	62	0.00
11	C	vinyl bromide	5.000	5.695	-13.9	77	0.00
12	C	acrolein	5.000	3.977	20.5	58	0.00
13		acetone	25.000	31.125	-24.5	90	0.00
14		trichlorofluoromethane	5.000	6.150	-23.0	82	0.00
15		isopropyl alcohol	12.500	11.856	5.2	78	0.00
16	C	acrylonitrile	5.000	4.551	9.0	63	0.00
17	C	1,1-dichloroethene	5.000	5.146	-2.9	69	0.00
18		tertiary butyl alcohol	5.000	4.670	6.6	65	0.00
19	C	methylene chloride	5.000	5.326	-6.5	71	0.00
20	C	3-chloropropene	5.000	5.057	-1.1	69	0.00
21	C	carbon disulfide	5.000	5.096	-1.9	68	0.00
22		Freon 113	5.000	5.574	-11.5	74	0.00
23		trans-1,2-dichloroethene	5.000	4.425	11.5	60	0.00
24	C	1,1-dichloroethane	5.000	4.918	1.6	67	0.00
25	C	MTBE	5.000	4.431	11.4	61	0.00
26	C	vinyl acetate	5.000	4.347	13.1	62	0.00
27	C	2-butanone	5.000	4.484	10.3	62	0.00
28		cis-1,2-dichloroethene	5.000	4.281	14.4	58	0.00
29		Ethyl Acetate	5.000	5.289	-5.8	72	0.00
30	C	chloroform	5.000	5.623	-12.5	76	0.00
31		Tetrahydrofuran	5.000	4.009	19.8	55	-0.01
32	C	1,2-dichloroethane	5.000	5.123	-2.5	70	-0.01
33	I	1,4-difluorobenzene	10.000	10.000	0.0	69	-0.01
34	C	hexane	5.000	4.369	12.6	63	0.00
36	C	1,1,1-trichloroethane	5.000	5.309	-6.2	75	0.00
37	C	benzene	5.000	4.527	9.5	64	-0.01
38	C	carbon tetrachloride	5.000	5.797	-15.9	81	0.00
39		cyclohexane	5.000	4.170	16.6	58	0.00

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159324.D
Acq On : 11 May 2018 2:02 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-3,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 11 14:31:27 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
40		dibromomethane	5.000	4.465	10.7	68	0.00
41	C	1,2-dichloropropane	5.000	4.292	14.2	60	0.00
42		bromodichloromethane	5.000	5.627	-12.5	77	-0.01
43	C	1,4-dioxane	5.000	4.997	0.1	68	0.00
44	C	trichloroethene	5.000	5.154	-3.1	71	0.00
45	C	2,2,4-trimethylpentane	5.000	4.735	5.3	66	0.00
46		heptane	5.000	4.329	13.4	61	0.00
47	C	cis-1,3-dichloropropene	5.000	4.584	8.3	61	0.00
48	C	4-methyl-2-pentanone	5.000	5.183	-3.7	65	0.00
49		trans-1,3-dichloropropene	5.000	4.146	17.1	52	0.00
50	C	1,1,2-trichloroethane	5.000	5.385	-7.7	73	0.00
51	I	chlorobenzene-D5	10.000	10.000	0.0	65	0.00
52	C	toluene	5.000	4.967	0.7	63	0.00
54		2-hexanone	5.000	5.260	-5.2	61	0.00
55		dibromochloromethane	5.000	6.968	-39.4#	85	0.00
56	C	1,2-dibromoethane	5.000	5.765	-15.3	70	0.00
57	C	tetrachloroethene	5.000	6.073	-21.5	76	0.00
58		1,1,1,2-tetrachloroethane	5.000	6.040	-20.8	74	0.00
59	C	chlorobenzene	5.000	5.811	-16.2	72	0.00
60	C	ethylbenzene	5.000	5.022	-0.4	62	0.00
61	C	m+p-xylene	10.000	10.521	-5.2	64	-0.01
62	C	bromoform	5.000	7.235	-44.7#	89	0.00
63	C	styrene	5.000	5.252	-5.0	61	0.00
64	C	1,1,2,2-tetrachloroethane	5.000	6.026	-20.5	73	0.00
65	C	o-xylene	5.000	5.457	-9.1	67	0.00
66		1,2,3-trichloropropane	5.000	5.465	-9.3	67	0.00
68	C	isopropylbenzene	5.000	5.486	-9.7	70	0.00
69		bromobenzene	5.000	5.129	-2.6	64	0.00
70		4-ethyl toluene	5.000	6.443	-28.9	75	0.00
71		1,3,5-trimethylbenzene	5.000	5.848	-17.0	70	0.00
72		tert-butylbenzene	5.000	5.956	-19.1	70	0.00
73		1,2,4-trimethylbenzene	5.000	6.257	-25.1	71	0.00
74	C	Benzyl Chloride	5.000	6.408	-28.2	77	0.00
75		1,3-dichlorobenzene	5.000	7.044	-40.9#	81	0.00
76	C	1,4-dichlorobenzene	5.000	6.865	-37.3#	80	0.00
77		sec-butylbenzene	5.000	6.066	-21.3	70	0.00
78		p-isopropyltoluene	5.000	5.656	-13.1	66	0.00
79		1,2-dichlorobenzene	5.000	7.018	-40.4#	82	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159324.D
Acq On : 11 May 2018 2:02 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-3,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 11 14:31:27 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
80		n-butylbenzene	5.000	6.047	-20.9	66	0.00
81	C	1,2,4-trichlorobenzene	5.000	8.740	-74.8#	87	0.00
82		naphthalene	5.000	6.749	-35.0#	70	0.01
83		1,2,3-trichlorobenzene	5.000	8.604	-72.1#	82	0.00
84	C	hexachlorobutadiene	5.000	9.112	-82.2#	96	0.00

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 4

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159324.D
Acq On : 11 May 2018 2:02 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-3,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 11 14:31:27 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : Default-LCS-AP2 - All compounds listed

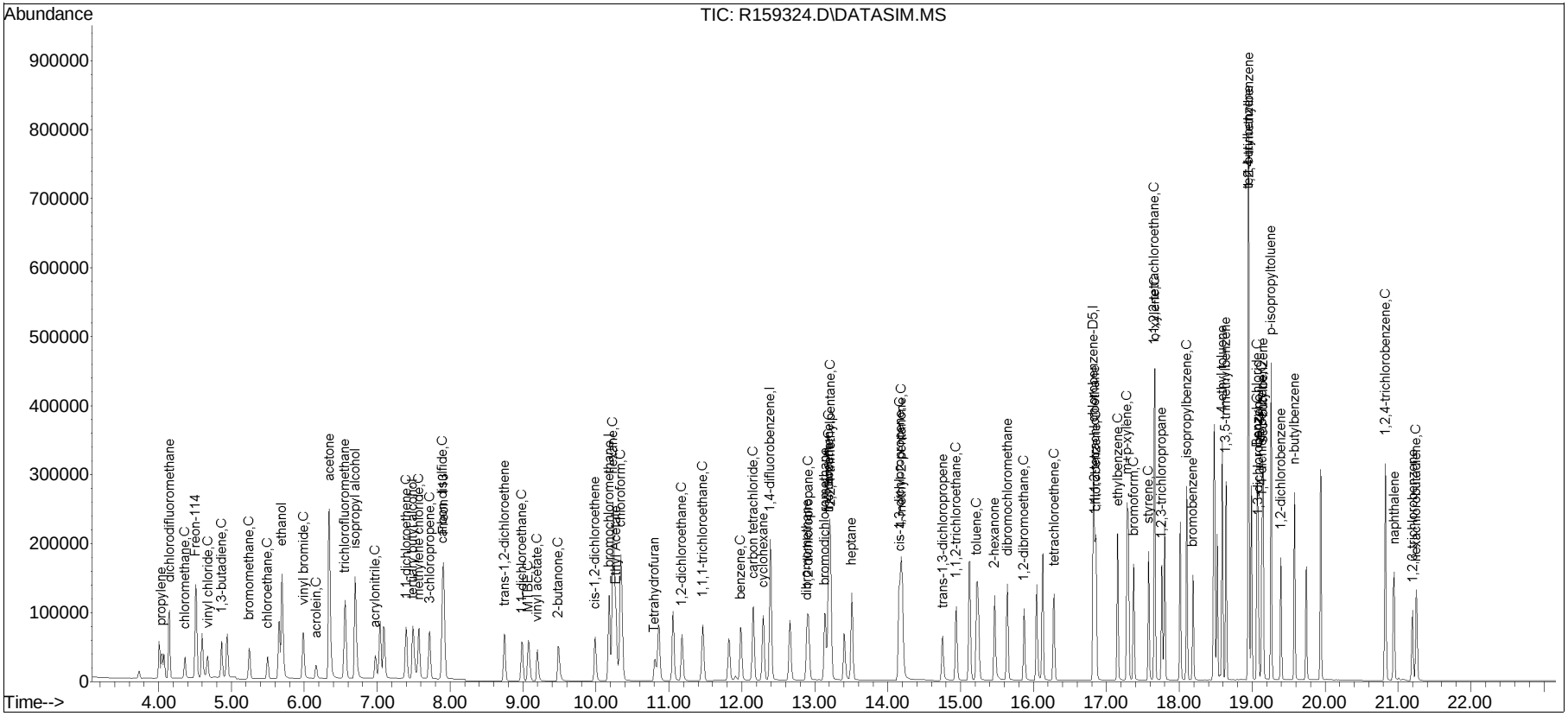
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	148232	10.000	ppbV	0.00
Standard Area = 148232			Recovery = 100.00%			
33) 1,4-difluorobenzene	12.39	114	216506	10.000	ppbV	-0.01
Standard Area = 216506			Recovery = 100.00%			
51) chlorobenzene-D5	16.82	54	55667	10.000	ppbV	0.00
Standard Area = 55667			Recovery = 100.00%			
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.68	62	38590	4.393	ppbV	98
17) 1,1-dichloroethene	7.39	61	73926	5.146	ppbV	97
23) trans-1,2-dichloroethene	8.75	61	58733	4.425	ppbV	90
28) cis-1,2-dichloroethene	9.99	61	61677	4.281	ppbV	89
44) trichloroethene	13.19	130	45803	5.154	ppbV	97
57) tetrachloroethene	16.28	166	58093	6.073	ppbV	95

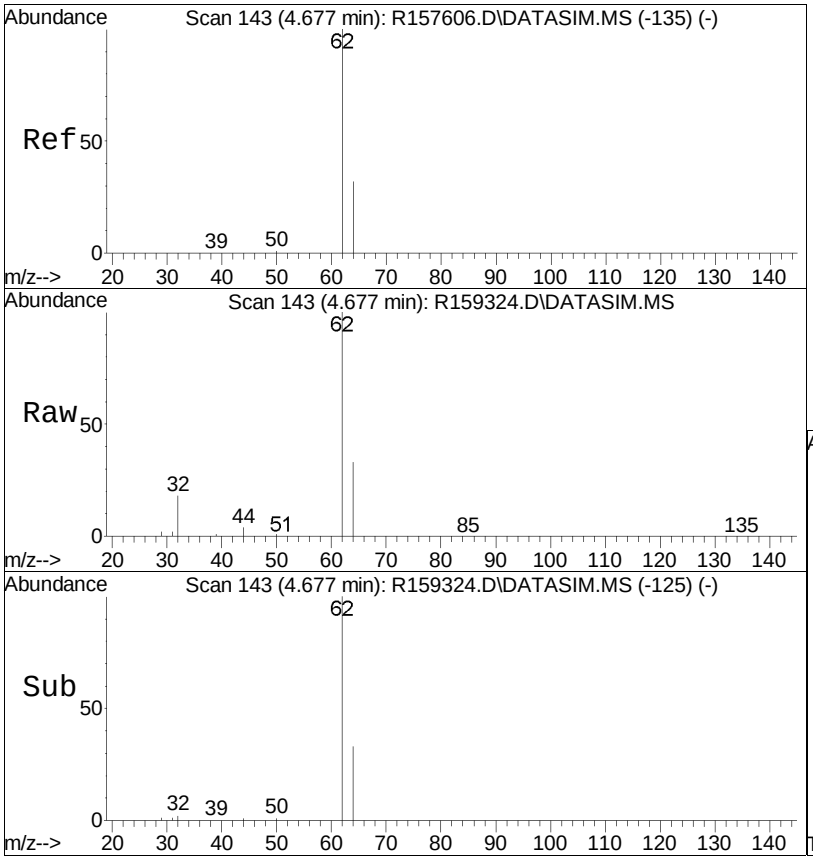
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : Default-LCS-AP2 - All compounds listedR159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159324.D
Acq On : 11 May 2018 2:02 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-3,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 11 14:31:27 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

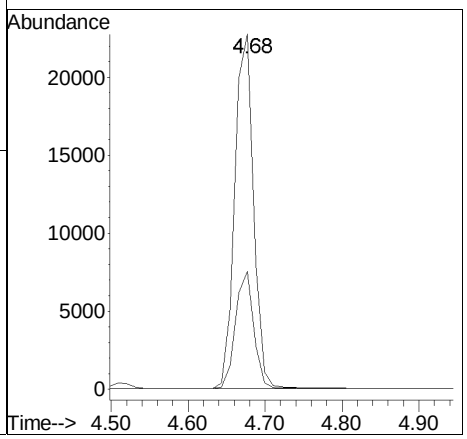


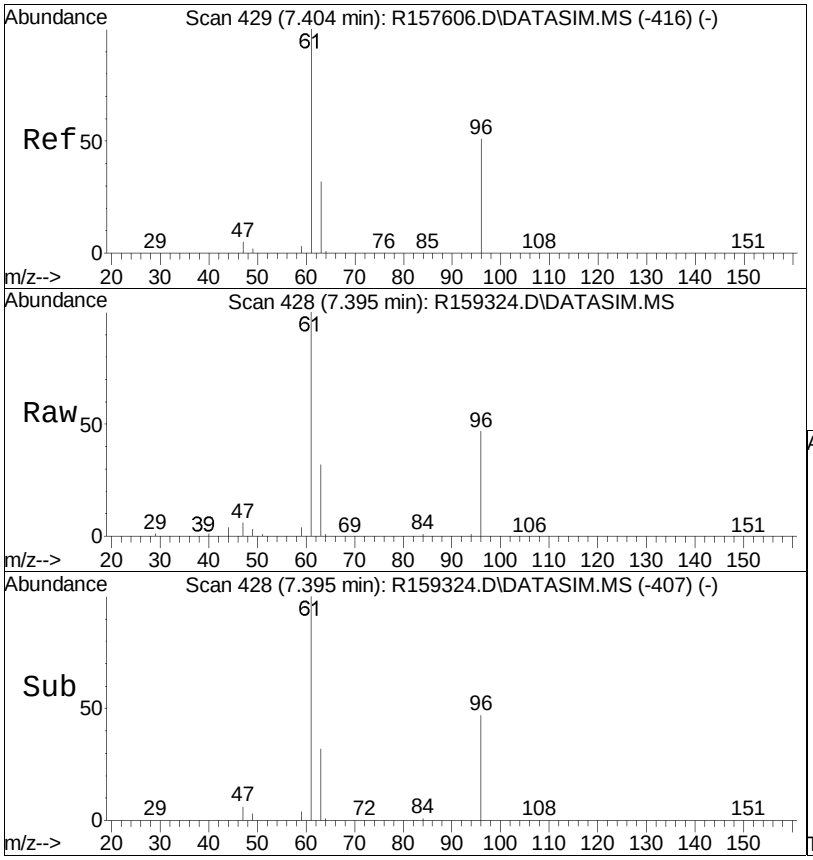


#6
vinyl chloride
Concen: 4.39 ppbV
RT: 4.68 min Scan# 143
Delta R.T. 0.000 min
Lab File: R159324.D
Acq: 11 May 2018 2:02 pm

Tgt Ion: 62 Resp: 38590

Ion	Ratio	Lower	Upper
62	100		
64	33.2	25.5	38.3

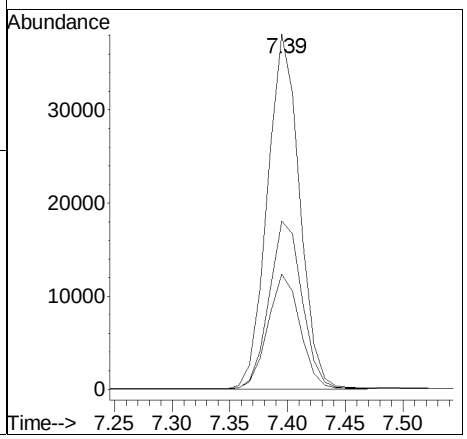


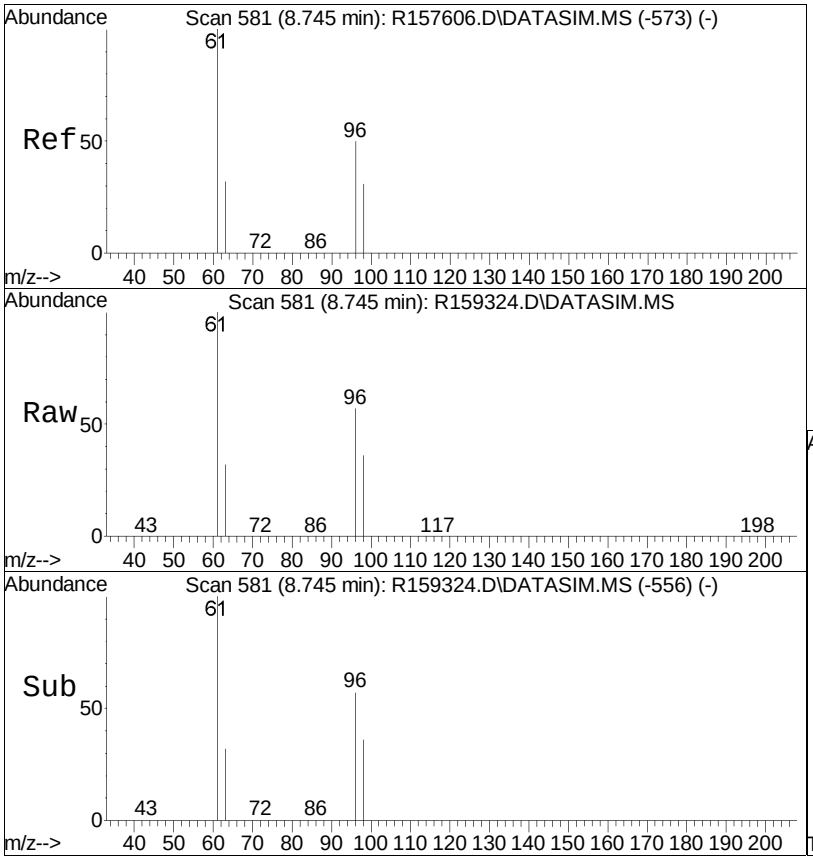


#17
1,1-dichloroethene
Concen: 5.15 ppbV
RT: 7.39 min Scan# 428
Delta R.T. -0.009 min
Lab File: R159324.D
Acq: 11 May 2018 2:02 pm

Tgt Ion: 61 Resp: 73926

Ion	Ratio	Lower	Upper
61	100		
96	47.4	40.5	60.7
63	32.4	26.0	39.0

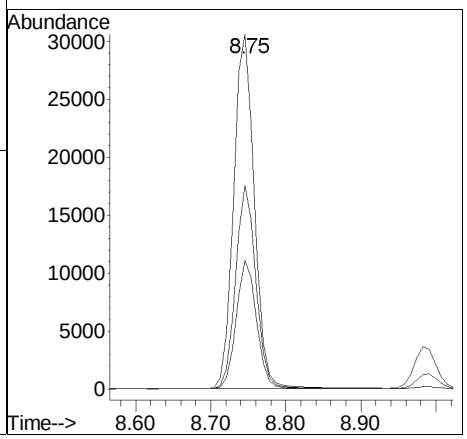


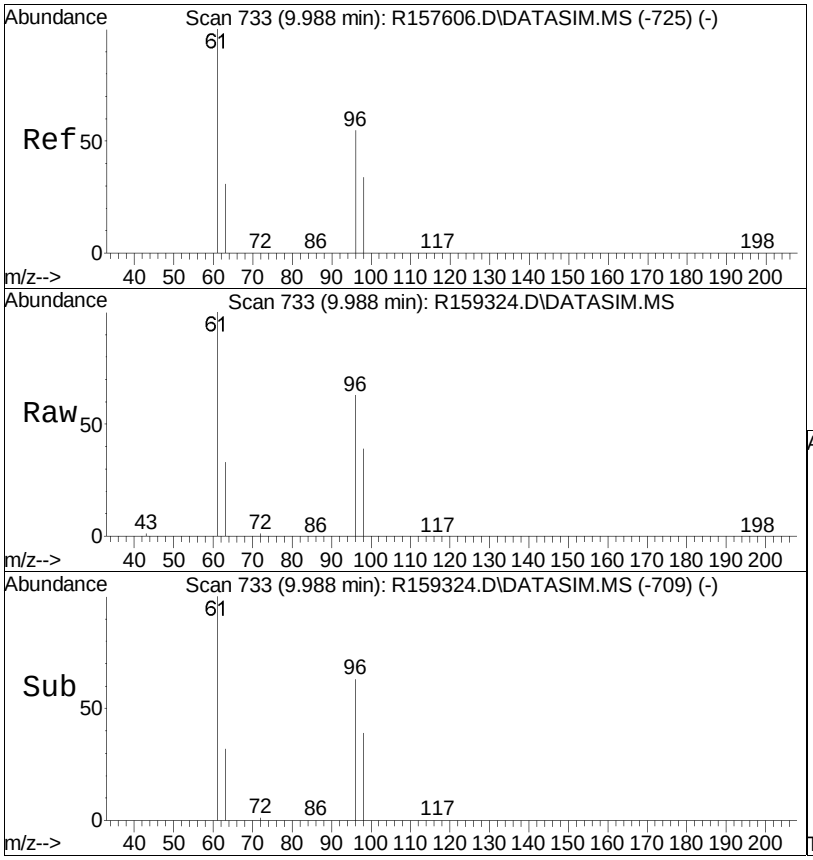


#23
trans-1,2-dichloroethene
Concen: 4.42 ppbV
RT: 8.75 min Scan# 581
Delta R.T. 0.000 min
Lab File: R159324.D
Acq: 11 May 2018 2:02 pm

Tgt Ion: 61 Resp: 58733

Ion	Ratio	Lower	Upper
61	100		
96	57.4	40.4	60.6
98	36.3	25.0	37.4

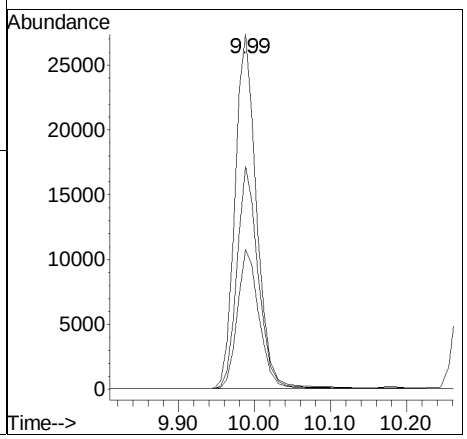


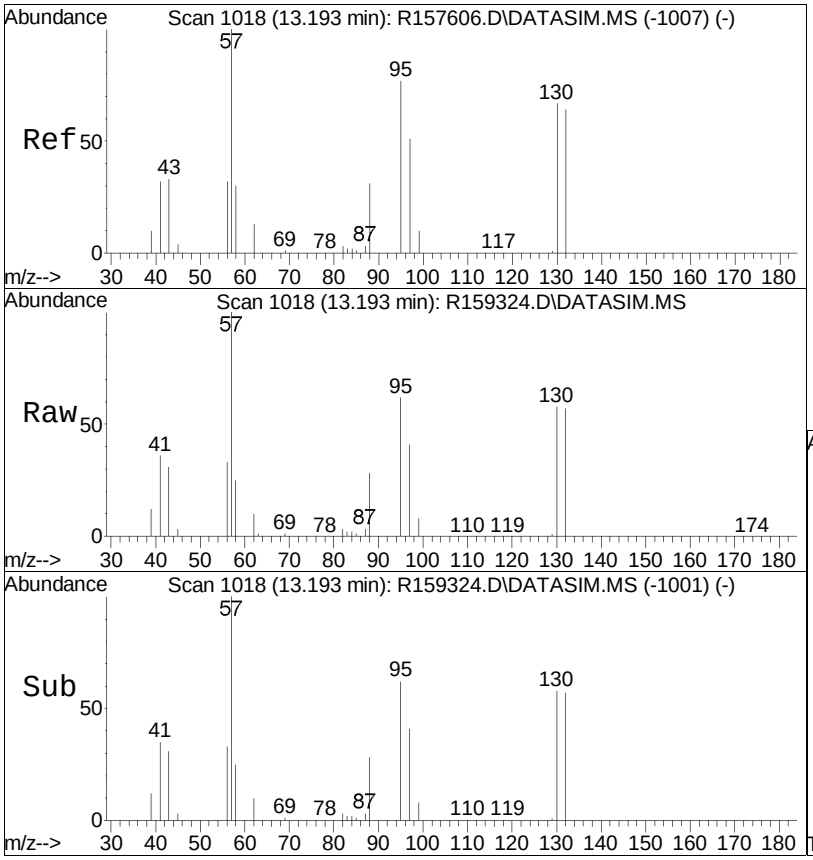


#28
cis-1,2-dichloroethene
Concen: 4.28 ppbV
RT: 9.99 min Scan# 733
Delta R.T. 0.000 min
Lab File: R159324.D
Acq: 11 May 2018 2:02 pm

Tgt Ion: 61 Resp: 61677

Ion	Ratio	Lower	Upper
61	100		
96	62.7	43.8	65.6
98	39.4	27.0	40.4

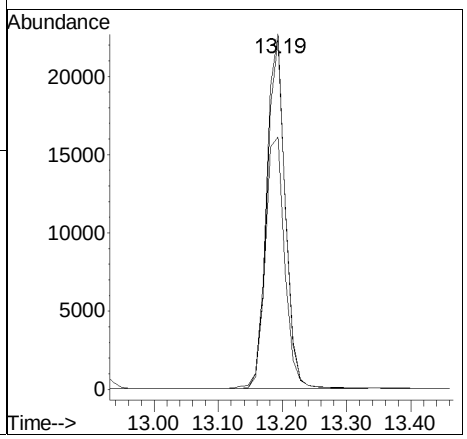


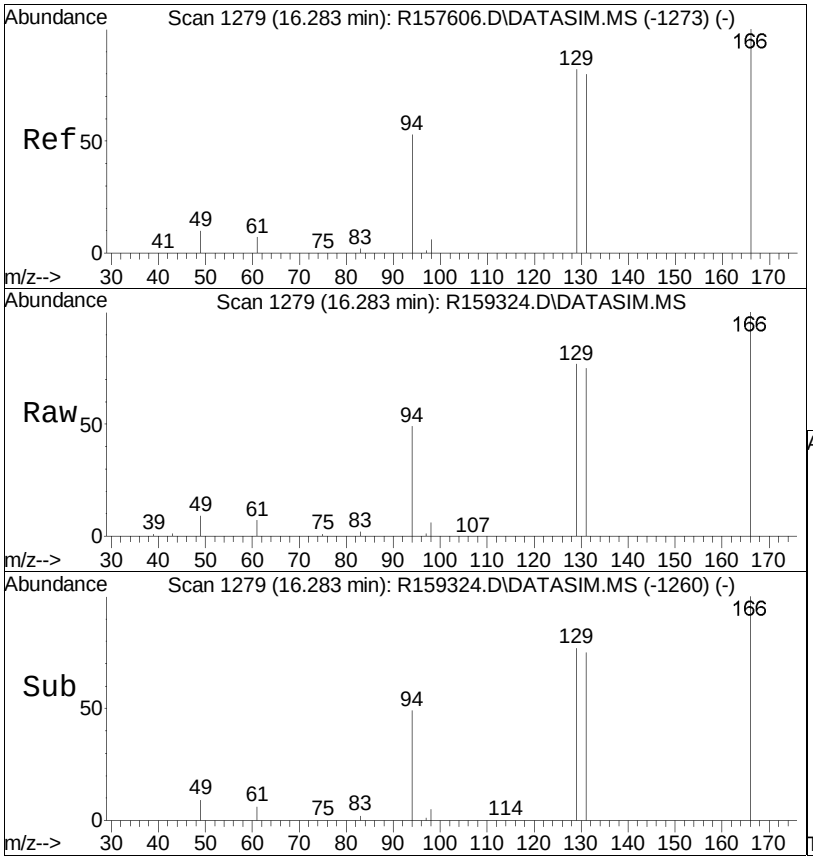


#44
trichloroethene
Concen: 5.15 ppbV
RT: 13.19 min Scan# 1018
Delta R.T. 0.000 min
Lab File: R159324.D
Acq: 11 May 2018 2:02 pm

Tgt Ion:130 Resp: 45803

Ion	Ratio	Lower	Upper
130	100		
132	98.2	77.4	116.0
97	71.0	60.9	91.3

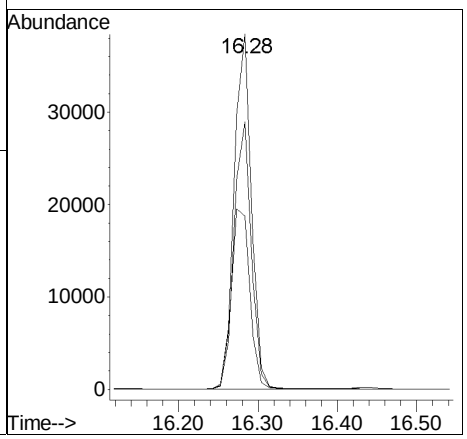




#57
tetrachloroethene
Concen: 6.07 ppbV
RT: 16.28 min Scan# 1279
Delta R.T. 0.000 min
Lab File: R159324.D
Acq: 11 May 2018 2:02 pm

Tgt Ion:166 Resp: 58093

Ion	Ratio	Lower	Upper
166	100		
131	75.3	63.7	95.5
94	48.8	42.1	63.1



Sample Utilized
For QC

Duplicate Raw Data

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159335.D
Acq On : 11 May 2018 8:56 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-5,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 12 08:02:08 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2018\180511SIM\R159324.D
Sub List : 9_Chlorinateds - .

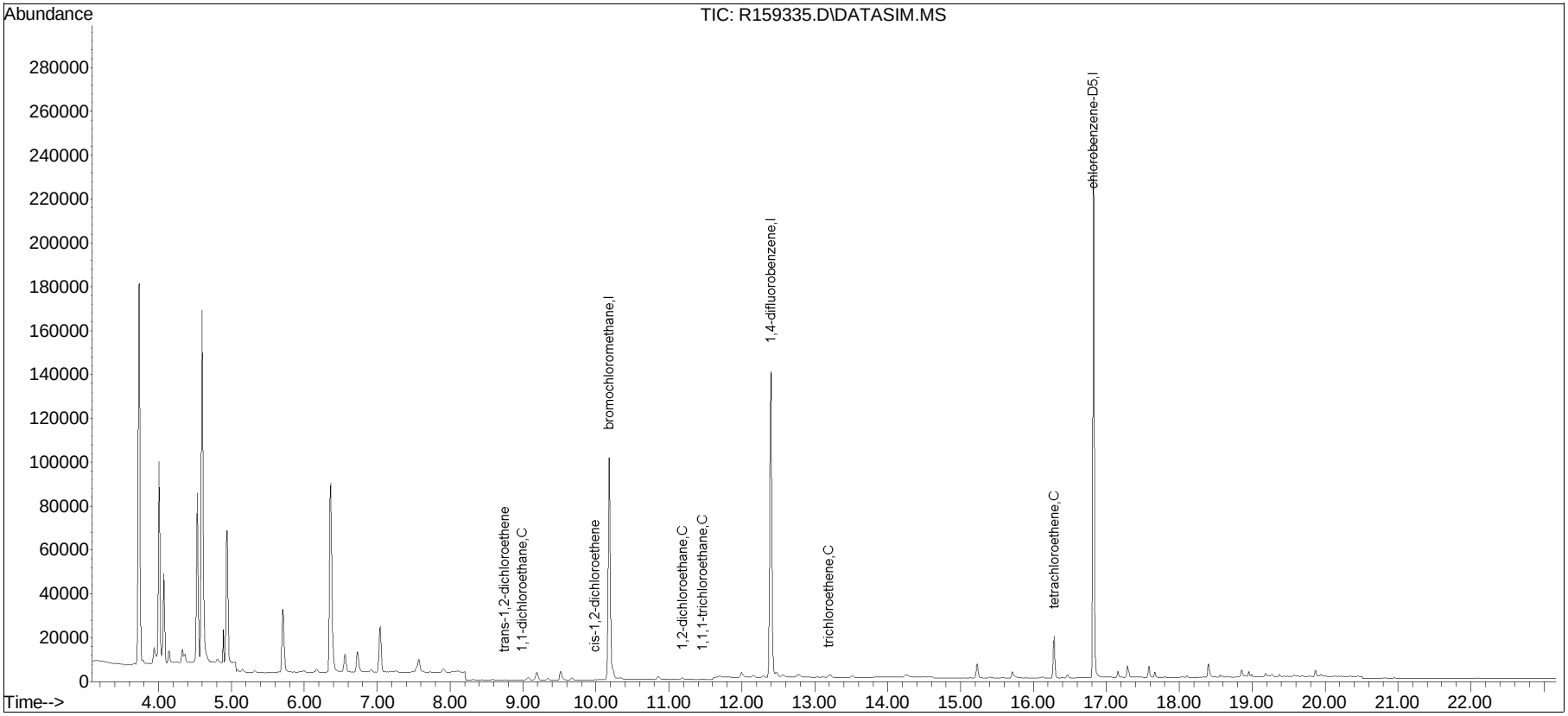
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.18	49	120742	10.000	ppbV	0.00
Standard Area = 148232			Recovery =		81.45%	
33) 1,4-difluorobenzene	12.40	114	147440	10.000	ppbV	0.00
Standard Area = 216506			Recovery =		68.10%	
51) chlorobenzene-D5	16.82	54	44742	10.000	ppbV	0.00
Standard Area = 55667			Recovery =		80.37%	
System Monitoring Compounds						
Target Compounds						Qvalue
6) vinyl chloride	4.67		0	N.D.		
17) 1,1-dichloroethene	7.39		0	N.D.		
23) trans-1,2-dichloroethene	8.75	61	109	0.010	ppbV #	54
28) cis-1,2-dichloroethene	9.99	61	213	0.018	ppbV #	72
44) trichloroethene	13.19	130	305	0.050	ppbV	94
57) tetrachloroethene	16.28	166	8617	1.121	ppbV	95

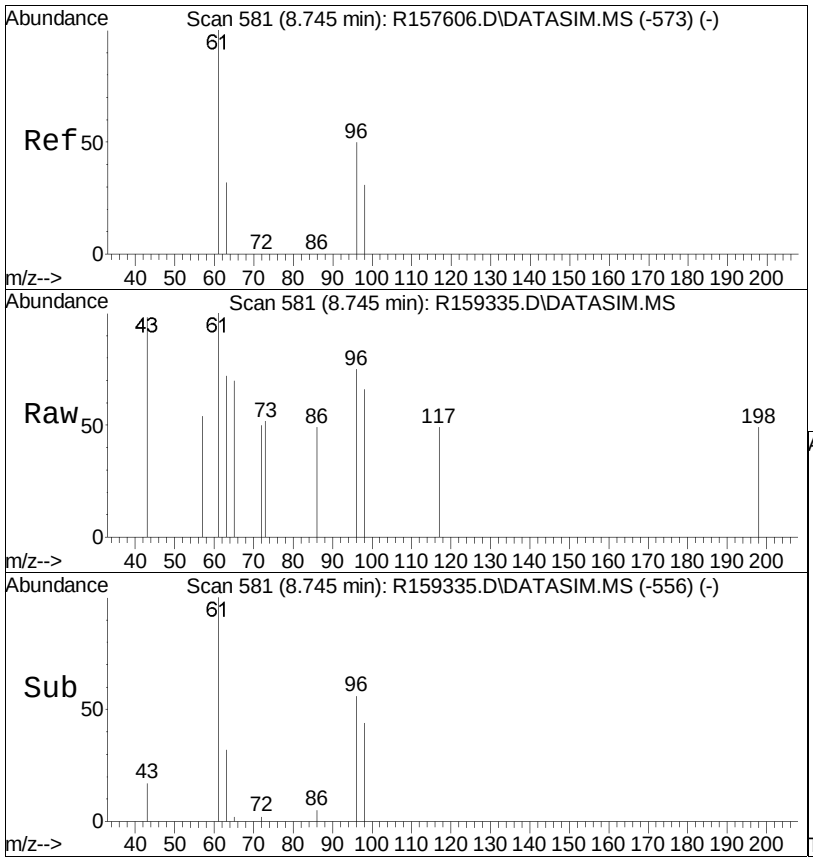
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : 9_Chlorinateds - .AIR1\2018\180511SIM\R159324.D

Data Path : O:\Forensics\Data\AIR1\2018\180511SIM\
Data File : R159335.D
Acq On : 11 May 2018 8:56 pm
Operator : AIRPIANO1:GJ
Sample : WG1115048-5,3,250,250
Misc : WG1115048,ICAL14483
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 12 08:02:08 2018
Quant Method : O:\Forensics\Data\AIR1\2018\180511SIM\TSIM180226.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Tue Feb 27 12:44:53 2018
Response via : Initial Calibration

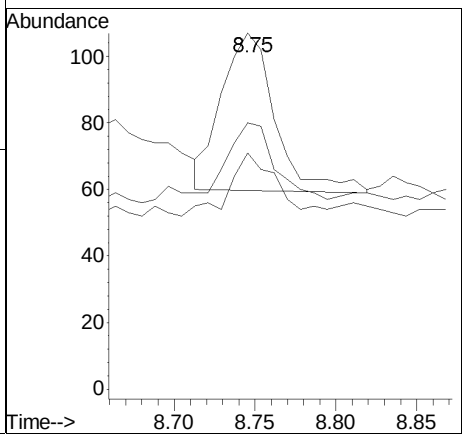


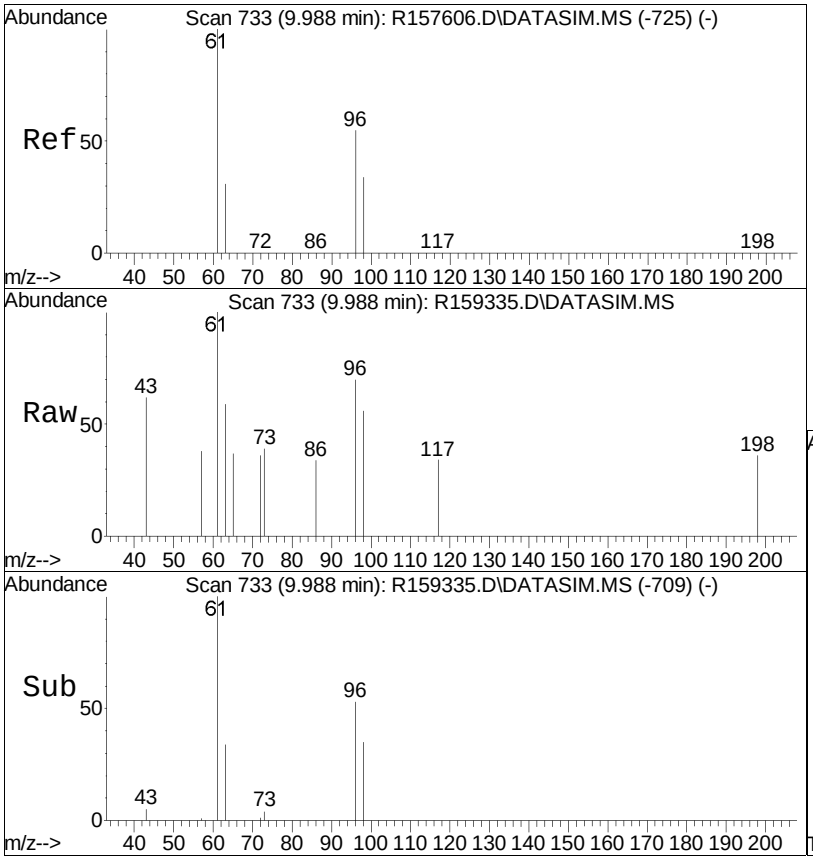


#23
trans-1,2-dichloroethene
Concen: 0.01 ppbV
RT: 8.75 min Scan# 581
Delta R.T. 0.000 min
Lab File: R159335.D
Acq: 11 May 2018 8:56 pm

Tgt Ion: 61 Resp: 109

Ion	Ratio	Lower	Upper
61	100		
96	74.8	40.4	60.6#
98	66.4	25.0	37.4#

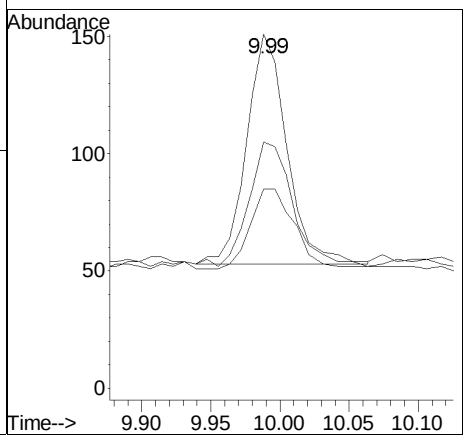


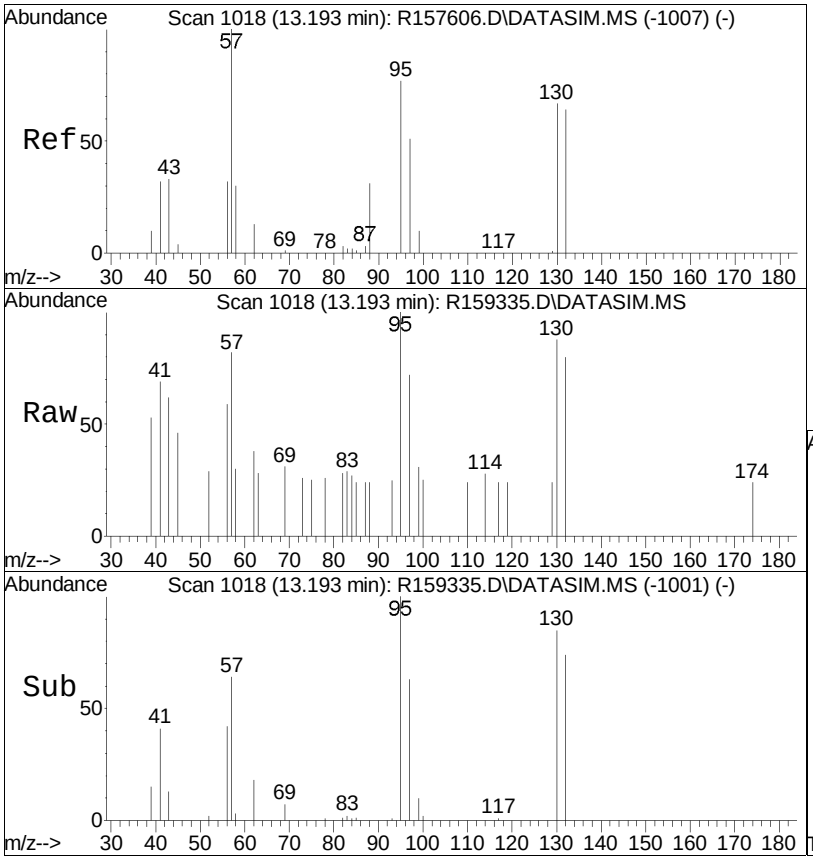


#28
cis-1,2-dichloroethene
Concen: 0.02 ppbV
RT: 9.99 min Scan# 733
Delta R.T. 0.000 min
Lab File: R159335.D
Acq: 11 May 2018 8:56 pm

Tgt Ion: 61 Resp: 213

Ion	Ratio	Lower	Upper
61	100		
96	69.5	43.8	65.6#
98	56.3	27.0	40.4#

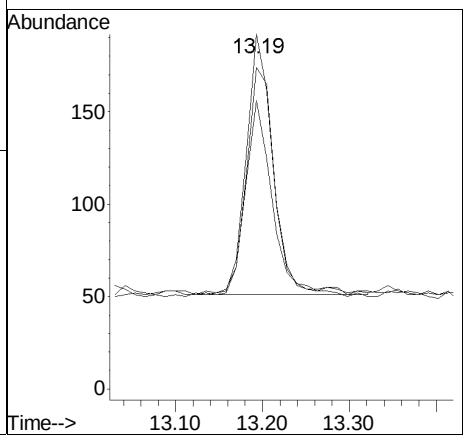


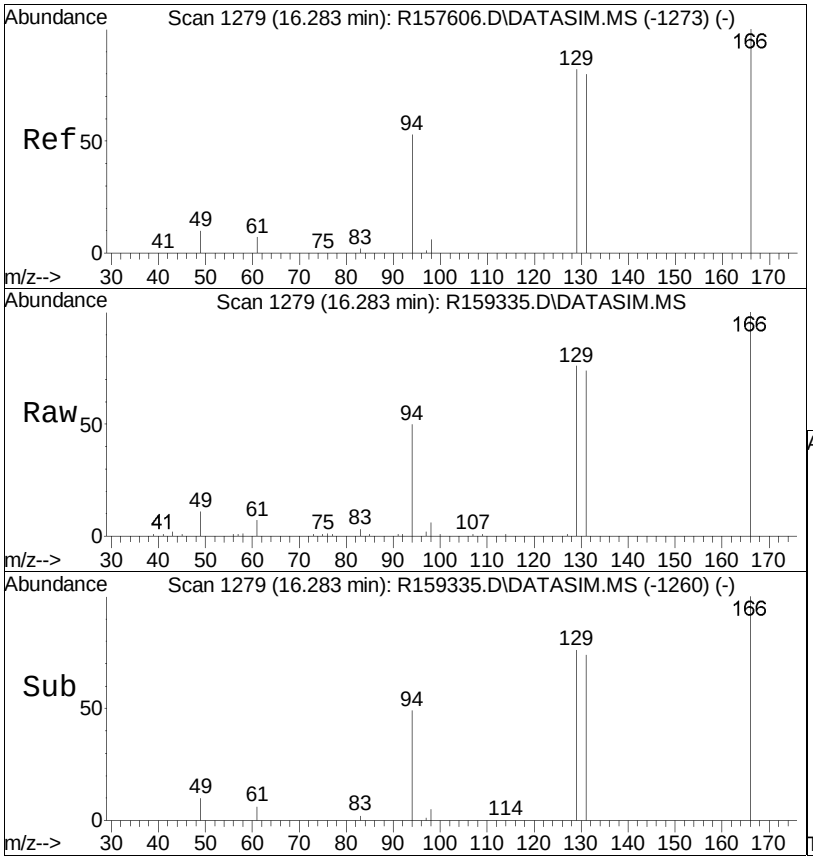


#44
trichloroethene
Concen: 0.05 ppbV
RT: 13.19 min Scan# 1018
Delta R.T. 0.000 min
Lab File: R159335.D
Acq: 11 May 2018 8:56 pm

Tgt Ion:130 Resp: 305

Ion	Ratio	Lower	Upper
130	100		
132	90.6	77.4	116.0
97	81.3	60.9	91.3

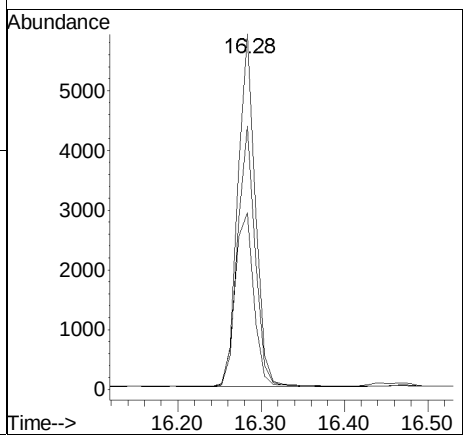




#57
tetrachloroethene
Concen: 1.12 ppbV
RT: 16.28 min Scan# 1279
Delta R.T. 0.000 min
Lab File: R159335.D
Acq: 11 May 2018 8:56 pm

Tgt Ion:166 Resp: 8617

Ion	Ratio	Lower	Upper
166	100		
131	74.1	63.7	95.5
94	49.7	42.1	63.1



Manual Integration/Negative Proof Report

Data Path	: O:\Forensics\Data\AIR1\2018Q	Method	: TSIM180226.M
Data File	: R159335.D	Operator	: AIRPIANO1:GJ
Date Inj'd	: 5/11/2018 8:56 pm	Instrument	: Air Piano 1
Sample	: WG1115048-5,3,250,250	Quant Date	: 5/12/2018 8:02 am

There are no manual integrations or false positives in this file.

Alpha Report

ANALYTICAL REPORT

Lab Number:	L1816546
Client:	CH2MHILL 1880 Way Cross Road Cincinatti, OH 45420
ATTN:	Marie Chiller
Phone:	(513) 673-2201
Project Name:	DOW HANGING ROCK
Project Number:	693874.01.RR
Report Date:	05/14/18

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1816546-01	S01-B505-IA14-050418	AIR	IRONTON, OH	05/04/18 16:13	05/08/18
L1816546-02	S01-B505-IA11-050418	AIR	IRONTON, OH	05/04/18 16:31	05/08/18
L1816546-03	S01-B505-IA06-050418	AIR	IRONTON, OH	05/04/18 16:19	05/08/18
L1816546-04	S01-B505-IA09-050418	AIR	IRONTON, OH	05/04/18 16:23	05/08/18
L1816546-05	S01-B505-FD01-050418	AIR	IRONTON, OH	05/04/18 16:23	05/08/18
L1816546-06	S01-B505-IA10-050418	AIR	IRONTON, OH	05/04/18 16:21	05/08/18
L1816546-07	S01-B505-IA12-050418	AIR	IRONTON, OH	05/04/18 16:33	05/08/18
L1816546-08	S01-B505-IA08-050418	AIR	IRONTON, OH	05/04/18 16:37	05/08/18
L1816546-09	S01-B505-IA07-050418	AIR	IRONTON, OH	05/04/18 16:35	05/08/18
L1816546-10	S01-B505-IA13-050418	AIR	IRONTON, OH	05/04/18 16:45	05/08/18
L1816546-11	S01-HER-OA-050418	AIR	IRONTON, OH	05/04/18 16:04	05/08/18
L1816546-12	UNUSED CAN #1655	AIR	IRONTON, OH		05/08/18
L1816546-13	UNUSED CAN# 1598	AIR	IRONTON, OH		05/08/18

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1816546
Project Number:	693874.01.RR	**Report Date:**	05/14/18

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on April 27, 2018. The canister certification results are provided as an addendum.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 05/14/18

AIR

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

SAMPLE RESULTS

Lab ID: L1816546-01
Client ID: S01-B505-IA14-050418
Sample Location: IRONTON, OH

Date Collected: 05/04/18 16:13
Date Received: 05/08/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/11/18 18:46
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.058	0.020	--	0.230	0.079	--		1
Trichloroethene	0.036	0.020	--	0.193	0.107	--		1
Tetrachloroethene	1.21	0.020	--	8.21	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	81		60-140
bromochloromethane	88		60-140
chlorobenzene-d5	87		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

SAMPLE RESULTS

Lab ID: L1816546-02
Client ID: S01-B505-IA11-050418
Sample Location: IRONTON, OH

Date Collected: 05/04/18 16:31
Date Received: 05/08/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/11/18 19:18
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.024	0.020	--	0.095	0.079	--		1
Trichloroethene	0.041	0.020	--	0.220	0.107	--		1
Tetrachloroethene	1.41	0.020	--	9.56	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	75		60-140
bromochloromethane	85		60-140
chlorobenzene-d5	77		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

SAMPLE RESULTS

Lab ID: L1816546-03
Client ID: S01-B505-IA06-050418
Sample Location: IRONTON, OH

Date Collected: 05/04/18 16:19
Date Received: 05/08/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/11/18 19:51
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.020	0.020	--	0.079	0.079	--		1
Trichloroethene	0.045	0.020	--	0.242	0.107	--		1
Tetrachloroethene	1.72	0.020	--	11.7	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	69		60-140
bromochloromethane	81		60-140
chlorobenzene-d5	81		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

SAMPLE RESULTS

Lab ID: L1816546-04
Client ID: S01-B505-IA09-050418
Sample Location: IRONTON, OH

Date Collected: 05/04/18 16:23
Date Received: 05/08/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/11/18 20:23
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.020	0.020	--	0.079	0.079	--		1
Trichloroethene	0.046	0.020	--	0.247	0.107	--		1
Tetrachloroethene	1.10	0.020	--	7.46	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	73		60-140
bromochloromethane	82		60-140
chlorobenzene-d5	82		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

SAMPLE RESULTS

Lab ID: L1816546-05
Client ID: S01-B505-FD01-050418
Sample Location: IRONTON, OH

Date Collected: 05/04/18 16:23
Date Received: 05/08/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/11/18 21:28
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.054	0.020	--	0.290	0.107	--		1
Tetrachloroethene	1.24	0.020	--	8.41	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	65		60-140
bromochloromethane	79		60-140
chlorobenzene-d5	74		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

SAMPLE RESULTS

Lab ID: L1816546-06
Client ID: S01-B505-IA10-050418
Sample Location: IRONTON, OH

Date Collected: 05/04/18 16:21
Date Received: 05/08/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/11/18 22:01
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.026	0.020	--	0.103	0.079	--		1
Trichloroethene	0.107	0.020	--	0.575	0.107	--		1
Tetrachloroethene	2.16	0.020	--	14.6	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	70		60-140
bromochloromethane	82		60-140
chlorobenzene-d5	78		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

SAMPLE RESULTS

Lab ID: L1816546-07
Client ID: S01-B505-IA12-050418
Sample Location: IRONTON, OH

Date Collected: 05/04/18 16:33
Date Received: 05/08/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/11/18 22:33
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	0.233	0.020	--	1.58	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	75		60-140
bromochloromethane	83		60-140
chlorobenzene-d5	74		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

SAMPLE RESULTS

Lab ID: L1816546-08
Client ID: S01-B505-IA08-050418
Sample Location: IRONTON, OH

Date Collected: 05/04/18 16:37
Date Received: 05/08/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/11/18 23:06
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.041	0.020	--	0.220	0.107	--		1
Tetrachloroethene	0.979	0.020	--	6.64	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	78		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	83		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

SAMPLE RESULTS

Lab ID: L1816546-09
Client ID: S01-B505-IA07-050418
Sample Location: IRONTON, OH

Date Collected: 05/04/18 16:35
Date Received: 05/08/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/11/18 23:38
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.021	0.020	--	0.083	0.079	--		1
Trichloroethene	0.076	0.020	--	0.408	0.107	--		1
Tetrachloroethene	1.86	0.020	--	12.6	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	75		60-140
bromochloromethane	83		60-140
chlorobenzene-d5	74		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

SAMPLE RESULTS

Lab ID: L1816546-10
Client ID: S01-B505-IA13-050418
Sample Location: IRONTON, OH

Date Collected: 05/04/18 16:45
Date Received: 05/08/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/12/18 00:11
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.033	0.020	--	0.177	0.107	--		1
Tetrachloroethene	2.80	0.020	--	19.0	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	76		60-140
bromochloromethane	84		60-140
chlorobenzene-d5	75		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

SAMPLE RESULTS

Lab ID: L1816546-11
Client ID: S01-HER-OA-050418
Sample Location: IRONTON, OH

Date Collected: 05/04/18 16:04
Date Received: 05/08/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/11/18 18:13
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	0.023	0.020	--	0.156	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	77		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	85		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR
Lab Number: L1816546
Report Date: 05/14/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 05/11/18 15:00

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-11 Batch: WG1115048-4								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: 693874.01.RR

Lab Number: L1816546

Report Date: 05/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 Batch: WG1115048-3								
Dichlorodifluoromethane	124		-		70-130	-		25
Chloromethane	79		-		70-130	-		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	103		-		70-130	-		25
Vinyl chloride	88		-		70-130	-		25
1,3-Butadiene	91		-		70-130	-		25
Bromomethane	110		-		70-130	-		25
Chloroethane	91		-		70-130	-		25
Ethyl Alcohol	85		-		70-130	-		25
Vinyl bromide	114		-		70-130	-		25
Acetone	124		-		70-130	-		25
Trichlorofluoromethane	123		-		70-130	-		25
iso-Propyl Alcohol	94		-		70-130	-		25
Acrylonitrile	91		-		70-130	-		25
1,1-Dichloroethene	103		-		70-130	-		25
tert-Butyl Alcohol[1]	93		-		70-130	-		25
Methylene chloride	107		-		70-130	-		25
3-Chloropropene	101		-		70-130	-		25
Carbon disulfide	102		-		70-130	-		25
1,1,2-Trichloro-1,2,2-Trifluoroethane	111		-		70-130	-		25
trans-1,2-Dichloroethene	88		-		70-130	-		25
1,1-Dichloroethane	98		-		70-130	-		25
Methyl tert butyl ether	89		-		70-130	-		25
Vinyl acetate	87		-		70-130	-		25

Lab Control Sample Analysis
Batch Quality Control

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 Batch: WG1115048-3								
2-Butanone	90		-		70-130	-		25
cis-1,2-Dichloroethene	86		-		70-130	-		25
Ethyl Acetate	106		-		70-130	-		25
Chloroform	112		-		70-130	-		25
Tetrahydrofuran	80		-		70-130	-		25
1,2-Dichloroethane	102		-		70-130	-		25
n-Hexane	87		-		70-130	-		25
1,1,1-Trichloroethane	106		-		70-130	-		25
Benzene	91		-		70-130	-		25
Carbon tetrachloride	116		-		70-130	-		25
Cyclohexane	83		-		70-130	-		25
Dibromomethane[1]	89		-		70-130	-		25
1,2-Dichloropropane	86		-		70-130	-		25
Bromodichloromethane	113		-		70-130	-		25
1,4-Dioxane	100		-		70-130	-		25
Trichloroethene	103		-		70-130	-		25
2,2,4-Trimethylpentane	95		-		70-130	-		25
cis-1,3-Dichloropropene	92		-		70-130	-		25
4-Methyl-2-pentanone	104		-		70-130	-		25
trans-1,3-Dichloropropene	83		-		70-130	-		25
1,1,2-Trichloroethane	108		-		70-130	-		25
Toluene	99		-		70-130	-		25
2-Hexanone	105		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: 693874.01.RR

Lab Number: L1816546

Report Date: 05/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 Batch: WG1115048-3								
Dibromochloromethane	**139**	Q	-		70-130	-		25
1,2-Dibromoethane	115		-		70-130	-		25
Tetrachloroethene	121		-		70-130	-		25
1,1,1,2-Tetrachloroethane	121		-		70-130	-		25
Chlorobenzene	116		-		70-130	-		25
Ethylbenzene	100		-		70-130	-		25
p/m-Xylene	105		-		70-130	-		25
Bromoform	**145**	Q	-		70-130	-		25
Styrene	105		-		70-130	-		25
1,1,2,2-Tetrachloroethane	121		-		70-130	-		25
o-Xylene	109		-		70-130	-		25
1,2,3-Trichloropropane[1]	109		-		70-130	-		25
Isopropylbenzene	110		-		70-130	-		25
Bromobenzene[1]	103		-		70-130	-		25
4-Ethyltoluene	129		-		70-130	-		25
1,3,5-Trimethylbenzene	117		-		70-130	-		25
1,2,4-Trimethylbenzene	125		-		70-130	-		25
Benzyl chloride	128		-		70-130	-		25
1,3-Dichlorobenzene	**141**	Q	-		70-130	-		25
1,4-Dichlorobenzene	**137**	Q	-		70-130	-		25
sec-Butylbenzene	121		-		70-130	-		25
p-Isopropyltoluene	113		-		70-130	-		25
1,2-Dichlorobenzene	**140**	Q	-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: 693874.01.RR

Lab Number: L1816546

Report Date: 05/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 Batch: WG1115048-3								
n-Butylbenzene	121		-		70-130	-		25
1,2,4-Trichlorobenzene	**175**	Q	-		70-130	-		25
Naphthalene	**135**	Q	-		70-130	-		25
1,2,3-Trichlorobenzene	**172**	Q	-		70-130	-		25
Hexachlorobutadiene	**182**	Q	-		70-130	-		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1115048-5 QC Sample: L1816546-04 Client ID: S01-B505-IA09-050418						
Vinyl chloride	ND	ND	ppbV	NC		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
cis-1,2-Dichloroethene	0.020	ND	ppbV	NC		25
Trichloroethene	0.046	0.050	ppbV	8		25
Tetrachloroethene	1.10	1.12	ppbV	2		25

Project Name: DOW HANGING ROCK

Lab Number: L1816546

Project Number: 693874.01.RR

Report Date: 05/14/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1816546-01	S01-B505-IA14-050418	0967	Flow 5	04/27/18	264026		-	-	-	Pass	10.0	10.2	2
L1816546-01	S01-B505-IA14-050418	766	6.0L Can	04/27/18	264026	L1814483-13	Pass	-29.5	-6.5	-	-	-	-
L1816546-02	S01-B505-IA11-050418	0845	Flow 5	04/27/18	264026		-	-	-	Pass	10.0	8.8	13
L1816546-02	S01-B505-IA11-050418	1514	6.0L Can	04/27/18	264026	L1814483-06	Pass	-29.5	-7.2	-	-	-	-
L1816546-03	S01-B505-IA06-050418	0058	Flow 5	04/27/18	264026		-	-	-	Pass	10.0	9.8	2
L1816546-03	S01-B505-IA06-050418	1663	6.0L Can	04/27/18	264026	L1814483-07	Pass	-29.5	-7.2	-	-	-	-
L1816546-04	S01-B505-IA09-050418	0246	Flow 5	04/27/18	264026		-	-	-	Pass	10.0	9.9	1
L1816546-04	S01-B505-IA09-050418	1702	6.0L Can	04/27/18	264026	L1814483-08	Pass	-29.5	-7.1	-	-	-	-
L1816546-05	S01-B505-FD01-050418	0963	Flow 5	04/27/18	264026		-	-	-	Pass	10.0	9.8	2
L1816546-05	S01-B505-FD01-050418	1053	6.0L Can	04/27/18	264026	L1814483-09	Pass	-29.5	-7.2	-	-	-	-
L1816546-06	S01-B505-IA10-050418	0364	Flow 5	04/27/18	264026		-	-	-	Pass	10.0	10.1	1
L1816546-06	S01-B505-IA10-050418	635	6.0L Can	04/27/18	264026	L1814483-01	Pass	-29.5	-7.4	-	-	-	-
L1816546-07	S01-B505-IA12-050418	0293	Flow 3	04/27/18	264026		-	-	-	Pass	10.0	9.7	3
L1816546-07	S01-B505-IA12-050418	2119	6.0L Can	04/27/18	264026	L1814483-11	Pass	-29.5	-7.4	-	-	-	-
L1816546-08	S01-B505-IA08-050418	0635	Flow 5	04/27/18	264026		-	-	-	Pass	10.0	9.6	4

Project Name: DOW HANGING ROCK

Lab Number: L1816546

Project Number: 693874.01.RR

Report Date: 05/14/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1816546-08	S01-B505-IA08-050418	2256	6.0L Can	04/27/18	264026	L1814483-05	Pass	-29.5	-7.1	-	-	-	-
L1816546-09	S01-B505-IA07-050418	0208	Flow 5	04/27/18	264026		-	-	-	Pass	10.0	10.2	2
L1816546-09	S01-B505-IA07-050418	2563	6.0L Can	04/27/18	264026	L1814483-10	Pass	-29.5	-7.0	-	-	-	-
L1816546-10	S01-B505-IA13-050418	0643	Flow 5	04/27/18	264026		-	-	-	Pass	10.0	9.7	3
L1816546-10	S01-B505-IA13-050418	601	6.0L Can	04/27/18	264026	L1814483-12	Pass	-29.5	-7.7	-	-	-	-
L1816546-11	S01-HER-OA-050418	0089	Flow 5	04/27/18	264026		-	-	-	Pass	10.0	10.0	0
L1816546-11	S01-HER-OA-050418	1676	6.0L Can	04/27/18	264026	L1814483-03	Pass	-29.5	-3.5	-	-	-	-
L1816546-12	UNUSED CAN #1655	0301	Flow 2	04/27/18	264026		-	-	-	Pass	10.0	10.0	0
L1816546-12	UNUSED CAN #1655	1655	6.0L Can	04/27/18	264026	L1814483-04	Pass	-29.5	-29.5	-	-	-	-
L1816546-13	UNUSED CAN# 1598	0875	Flow 5	04/27/18	264026		-	-	-	Pass	10.0	10.0	0
L1816546-13	UNUSED CAN# 1598	1598	6.0L Can	04/27/18	264026	L1814483-02	Pass	-29.5	-29.5	-	-	-	-

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1814483
Report Date: 05/14/18

Air Canister Certification Results

Lab ID: L1814483-01
Client ID: CAN 635 FC 0208
Sample Location:

Date Collected: 04/24/18 16:00
Date Received: 04/25/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/25/18 18:27
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	80		60-140
bromochloromethane	87		60-140
chlorobenzene-d5	77		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1814483
Report Date: 05/14/18

Air Canister Certification Results

Lab ID: L1814483-02
Client ID: CAN 1598 FC 0089
Sample Location:

Date Collected: 04/24/18 16:00
Date Received: 04/25/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/25/18 19:02
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	75		60-140
bromochloromethane	81		60-140
chlorobenzene-d5	70		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1814483
Report Date: 05/14/18

Air Canister Certification Results

Lab ID: L1814483-03
Client ID: CAN 1676 FC 0301
Sample Location:

Date Collected: 04/24/18 16:00
Date Received: 04/25/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/25/18 19:36
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	74		60-140
bromochloromethane	80		60-140
chlorobenzene-d5	69		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1814483
Report Date: 05/14/18

Air Canister Certification Results

Lab ID: L1814483-04
Client ID: CAN 1655 FC 0643
Sample Location:

Date Collected: 04/24/18 16:00
Date Received: 04/25/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/25/18 20:11
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	75		60-140
bromochloromethane	80		60-140
chlorobenzene-d5	71		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1814483
Report Date: 05/14/18

Air Canister Certification Results

Lab ID: L1814483-05
Client ID: CAN 2256 FC 0293
Sample Location:

Date Collected: 04/24/18 16:00
Date Received: 04/25/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/25/18 20:47
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	73		60-140
bromochloromethane	79		60-140
chlorobenzene-d5	69		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1814483
Report Date: 05/14/18

Air Canister Certification Results

Lab ID: L1814483-06
Client ID: CAN 1514 FC 0967
Sample Location:

Date Collected: 04/24/18 16:00
Date Received: 04/25/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/25/18 21:22
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	73		60-140
bromochloromethane	78		60-140
chlorobenzene-d5	68		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1814483
Report Date: 05/14/18

Air Canister Certification Results

Lab ID: L1814483-07
Client ID: CAN 1663 FC0246
Sample Location:

Date Collected: 04/24/18 16:00
Date Received: 04/25/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/25/18 21:57
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	75		60-140
bromochloromethane	78		60-140
chlorobenzene-d5	67		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1814483
Report Date: 05/14/18

Air Canister Certification Results

Lab ID: L1814483-08
Client ID: CAN 1702 FC 0845
Sample Location:

Date Collected: 04/24/18 16:00
Date Received: 04/25/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/25/18 22:32
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	71		60-140
bromochloromethane	77		60-140
chlorobenzene-d5	66		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1814483
Report Date: 05/14/18

Air Canister Certification Results

Lab ID: L1814483-09
Client ID: CAN 1053 FC 0058
Sample Location:

Date Collected: 04/24/18 16:00
Date Received: 04/25/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/26/18 10:00
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	80		60-140
bromochloromethane	88		60-140
chlorobenzene-d5	78		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1814483
Report Date: 05/14/18

Air Canister Certification Results

Lab ID: L1814483-10
Client ID: CAN 2563 FC 0364
Sample Location:

Date Collected: 04/24/18 16:00
Date Received: 04/25/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/25/18 23:42
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	71		60-140
bromochloromethane	76		60-140
chlorobenzene-d5	66		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1814483
Report Date: 05/14/18

Air Canister Certification Results

Lab ID: L1814483-11
Client ID: CAN 2119 FC 0635
Sample Location:

Date Collected: 04/24/18 16:00
Date Received: 04/25/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/26/18 00:17
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	71		60-140
bromochloromethane	76		60-140
chlorobenzene-d5	64		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1814483
Report Date: 05/14/18

Air Canister Certification Results

Lab ID: L1814483-12
Client ID: CAN 601 FC 0875
Sample Location:

Date Collected: 04/24/18 16:00
Date Received: 04/25/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/26/18 00:52
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	71		60-140
bromochloromethane	76		60-140
chlorobenzene-d5	66		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1814483
Report Date: 05/14/18

Air Canister Certification Results

Lab ID: L1814483-13
Client ID: CAN 766 FC 0963
Sample Location:

Date Collected: 04/24/18 16:00
Date Received: 04/25/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/25/18 23:07
Analyst: RY

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	69		60-140
bromochloromethane	75		60-140
chlorobenzene-d5	64		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.RR

Lab Number: L1816546
Report Date: 05/14/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
N/A	Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1816546-01A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1816546-02A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1816546-03A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1816546-04A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1816546-05A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1816546-06A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1816546-07A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1816546-08A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1816546-09A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1816546-10A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1816546-11A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1816546-12A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		CLEAN-FEE()
L1816546-13A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		CLEAN-FEE()

*Values in parentheses indicate holding time in days

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1816546
Project Number:	693874.01.RR	**Report Date:**	05/14/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1816546
Project Number:	693874.01.RR	**Report Date:**	05/14/18

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 2

Date Rec'd in Lab: 5/8/18

ALPHA Job #: L1816546

CHAIN OF CUSTODY

ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Jacobs/ Dow
Address: 1880 Waycross Rd
Cincinatti, OH 45420
Phone: 513-673-2201
Fax:
Email: Marie.Chiller@Jacobs.Com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Dow Hanging Rock
Project Location: Ironton, OH
Project #: 693874.01.RR
Project Manager: Marie Chiller
ALPHA Quote #:

Turn-Around Time

☐ Standard ☒ RUSH (only confirmed if pre-approved!) 7 day

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☒ Per SOW

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-15	TO-15 SIM	APH Subtract Non-petroleum HCs ☐	Fixed Gases	Sulfides & Mercaptans by TO-15			Sample Comments (i.e. PID)
816546-01	SØ1-B505-IA14-050418	5/4/18	08:19	16:13	-29.46	-5.73	AA	JS	6L	766	0967		X						
-02	SØ1-B505-IA11-050418	5/4/18	08:22	16:31	-29.75	-6.71	AA	JS	6L	1514	0845		X						
-03	SØ1-B505-IA06-050418	5/4/18	08:23	16:19	-30.00	-6.47	AA	JS	6L	1663	0058		X						
-04	SØ1-B505-IA09-050418	5/4/18	08:24	16:23	-29.61	-6.36	AA	JS	6L	1702	0246		X						
-05	SØ1-B505-FDØ1-050418	5/4/18	08:24	16:23	-29.53	-6.53	AA	JS	6L	1053	0963		X						
-06	SØ1-B505-IA10-050418	5/4/18	08:30	16:21	-29.56	-6.53	AA	JS	6L	635	0364		X						
-07	SØ1-B505-IA12-050418	5/4/18	08:33	16:33	-29.36	-6.33	AA	JS	6L	2119	0293		X						
-08	SØ1-B505-IA08-050418	5/4/18	08:34	16:37	-29.51	-6.29	AA	JS	6L	2256	0635		X						
-09	SØ1-B505-IA07-050418	5/4/18	08:36	16:35	-29.52	-6.22	AA	JS	6L	2563	0208		X						
-10	SØ1-B505-IA13-050418	5/4/18	08:49	16:45	-29.42	-6.60	AA	JS	6L	601	0643		X						

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
Jenn Simms Jen Simms Fed Ex	05/06/18 13:30	Fed Ex [signature] -AAL	5/8/18 09:50

Form No. 101-80 Rev. 12 (Sep-15)

AIR ANALYSIS

PAGE 2 OF 2

Date Rec'd in Lab: 5/8/18

ALPHA Job #: L1816546

CHAIN OF CUSTODY

ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Jacobs / Dow
Address: 1880 Waycross Rd
Cincinatti, OH 45420
Phone: 513-673-2201
Fax:
Email: Marie.Chiller@Jacobs.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Dow Hanging Rock
Project Location: Ironton, OH
Project #: 693874.01.RR
Project Manager: Marie Chiller
ALPHA Quote #:

Turn-Around Time

☐ Standard ☒ RUSH (only confirmed if pre-approved!) 7-day
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☒ Per SOW

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-15	TO-15 SIM	APH Subtract Non-petroleum HCs ☐	Fixed Gases	Sulfides & Mercaptans by TO-15			Sample Comments (i.e. PID)
-11	S01-HGR-OA03-050418	5/4/18	08:51	16:04	-29.85	-2.53	AA	JS	6L	1676	0089		X						

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
Jenn Simms [signature] FedEx	05/06/18 13:30	FedEx [signature] AAC	5/8/18 09:50

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Alpha
Summary Forms

Organic Summary Forms

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1816546-01	Date Collected	: 05/04/18 16:13
Client ID	: S01-B505-IA14-050418	Date Received	: 05/08/18
Sample Location	: IRONTON, OH	Date Analyzed	: 05/11/18 18:46
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: GJ
Lab File ID	: R159331	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	0.058	0.020	--	0.230	0.079	--	
79-01-6	Trichloroethene	0.036	0.020	--	0.193	0.107	--	
127-18-4	Tetrachloroethene	1.21	0.020	--	8.21	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1816546-02	Date Collected	: 05/04/18 16:31
Client ID	: S01-B505-IA11-050418	Date Received	: 05/08/18
Sample Location	: IRONTON, OH	Date Analyzed	: 05/11/18 19:18
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: GJ
Lab File ID	: R159332	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	0.024	0.020	--	0.095	0.079	--	
79-01-6	Trichloroethene	0.041	0.020	--	0.220	0.107	--	
127-18-4	Tetrachloroethene	1.41	0.020	--	9.56	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1816546-03	Date Collected	: 05/04/18 16:19
Client ID	: S01-B505-IA06-050418	Date Received	: 05/08/18
Sample Location	: IRONTON, OH	Date Analyzed	: 05/11/18 19:51
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: GJ
Lab File ID	: R159333	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	0.020	0.020	--	0.079	0.079	--	
79-01-6	Trichloroethene	0.045	0.020	--	0.242	0.107	--	
127-18-4	Tetrachloroethene	1.72	0.020	--	11.7	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1816546-04	Date Collected	: 05/04/18 16:23
Client ID	: S01-B505-IA09-050418	Date Received	: 05/08/18
Sample Location	: IRONTON, OH	Date Analyzed	: 05/11/18 20:23
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: GJ
Lab File ID	: R159334	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	0.020	0.020	--	0.079	0.079	--	
79-01-6	Trichloroethene	0.046	0.020	--	0.247	0.107	--	
127-18-4	Tetrachloroethene	1.10	0.020	--	7.46	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1816546-05	Date Collected	: 05/04/18 16:23
Client ID	: S01-B505-FD01-050418	Date Received	: 05/08/18
Sample Location	: IRONTON, OH	Date Analyzed	: 05/11/18 21:28
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: GJ
Lab File ID	: R159336	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
79-01-6	Trichloroethene	0.054	0.020	--	0.290	0.107	--	
127-18-4	Tetrachloroethene	1.24	0.020	--	8.41	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1816546-06	Date Collected	: 05/04/18 16:21
Client ID	: S01-B505-IA10-050418	Date Received	: 05/08/18
Sample Location	: IRONTON, OH	Date Analyzed	: 05/11/18 22:01
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: GJ
Lab File ID	: R159337	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	0.026	0.020	--	0.103	0.079	--	
79-01-6	Trichloroethene	0.107	0.020	--	0.575	0.107	--	
127-18-4	Tetrachloroethene	2.16	0.020	--	14.6	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1816546-07	Date Collected	: 05/04/18 16:33
Client ID	: S01-B505-IA12-050418	Date Received	: 05/08/18
Sample Location	: IRONTON, OH	Date Analyzed	: 05/11/18 22:33
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: GJ
Lab File ID	: R159338	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
79-01-6	Trichloroethene	ND	0.020	--	ND	0.107	--	U
127-18-4	Tetrachloroethene	0.233	0.020	--	1.58	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1816546-08	Date Collected	: 05/04/18 16:37
Client ID	: S01-B505-IA08-050418	Date Received	: 05/08/18
Sample Location	: IRONTON, OH	Date Analyzed	: 05/11/18 23:06
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: GJ
Lab File ID	: R159339	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
79-01-6	Trichloroethene	0.041	0.020	--	0.220	0.107	--	
127-18-4	Tetrachloroethene	0.979	0.020	--	6.64	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1816546-09	Date Collected	: 05/04/18 16:35
Client ID	: S01-B505-IA07-050418	Date Received	: 05/08/18
Sample Location	: IRONTON, OH	Date Analyzed	: 05/11/18 23:38
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: GJ
Lab File ID	: R159340	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	0.021	0.020	--	0.083	0.079	--	
79-01-6	Trichloroethene	0.076	0.020	--	0.408	0.107	--	
127-18-4	Tetrachloroethene	1.86	0.020	--	12.6	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1816546-10	Date Collected	: 05/04/18 16:45
Client ID	: S01-B505-IA13-050418	Date Received	: 05/08/18
Sample Location	: IRONTON, OH	Date Analyzed	: 05/12/18 00:11
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: GJ
Lab File ID	: R159341	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
79-01-6	Trichloroethene	0.033	0.020	--	0.177	0.107	--	
127-18-4	Tetrachloroethene	2.80	0.020	--	19.0	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: L1816546-11	Date Collected	: 05/04/18 16:04
Client ID	: S01-HER-OA-050418	Date Received	: 05/08/18
Sample Location	: IRONTON, OH	Date Analyzed	: 05/11/18 18:13
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: GJ
Lab File ID	: R159330	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
79-01-6	Trichloroethene	ND	0.020	--	ND	0.107	--	U
127-18-4	Tetrachloroethene	0.023	0.020	--	0.156	0.136	--	

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: WG1115048-4	Date Collected	: NA
Client ID	: WG1115048-4BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 05/11/18 15:00
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: GJ
Lab File ID	: R159325	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
79-01-6	Trichloroethene	ND	0.020	--	ND	0.107	--	U
127-18-4	Tetrachloroethene	ND	0.020	--	ND	0.136	--	U

Form 1
Volatile Organics

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Lab ID	: WG1115048-5	Date Collected	: 05/04/18 16:23
Client ID	: S01-B505-IA09-050418DUP	Date Received	: 05/08/18
Sample Location	:	Date Analyzed	: 05/11/18 20:56
Sample Matrix	: AIR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: GJ
Lab File ID	: R159335	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-01-4	Vinyl chloride	ND	0.020	--	ND	0.051	--	U
75-35-4	1,1-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--	U
79-01-6	Trichloroethene	0.050	0.020	--	0.269	0.107	--	
127-18-4	Tetrachloroethene	1.12	0.020	--	7.59	0.136	--	

Form 2
Surrogate Recovery
AIRVOA

Client: CH2MHILL
Project Name: DOW HANGING ROCK

Lab Number: L1816546
Project Number: 693874.01.RR
Matrix:

CLIENT ID (LAB SAMPLE NO.)	SMC1	SMC2	SMC3	SMC4	TOT OUT

QC LIMITS
(-) S1 =

*** Values outside of QC limits**

FORM II TO15-SIM

Lab Duplicates
Form 3

Client	: CH2MHILL	Lab Number	: L1816546
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR
Client Sample ID	: S01-B505-IA09-050418	Matrix	: AIR
Lab Sample ID	: L1816546-04	Analysis Date	: 05/11/18 20:23
Lab File ID	: R159334	DUP File ID	: R159335
Dup Sample ID	: WG1115048-5	DUP Analysis Date	: 05/11/18 20:56

Parameter	Sample Concentration (ppbV)	Duplicate Concentration (ppbV)	RPD	RPD Limit
Vinyl chloride	ND	ND	NC	25
1,1-Dichloroethene	ND	ND	NC	25
trans-1,2-Dichloroethene	ND	ND	NC	25
cis-1,2-Dichloroethene	0.020	ND	NC	25
Trichloroethene	0.046	0.050	8	25
Tetrachloroethene	1.10	1.12	2	25

Laboratory Control Sample
Form 3

Client	: CH2MHILL	**Lab Number**	: L1816546
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Matrix	: AIR		
LCS Sample ID	: WG1115048-3	**Analysis Date** : 05/11/18 14:02	**File ID** : R159324
LCSD Sample ID	:	**Analysis Date** :	**File ID** :

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ppbV)	Found (ppbV)	%R	True (ppbV)	Found (ppbV)	%R	RPD	Recovery Limits	RPD Limit
Dichlorodifluoromethane	5	6.20	124				-	70-130	25
Chloromethane	5	3.94	79				-	70-130	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	5	5.15	103				-	70-130	25
Vinyl chloride	5	4.39	88				-	70-130	25
1,3-Butadiene	5	4.56	91				-	70-130	25
Bromomethane	5	5.49	110				-	70-130	25
Chloroethane	5	4.57	91				-	70-130	25
Ethyl Alcohol	25	21.3	85				-	70-130	25
Vinyl bromide	5	5.70	114				-	70-130	25
Acetone	25	31.1	124				-	70-130	25
Trichlorofluoromethane	5	6.15	123				-	70-130	25
iso-Propyl Alcohol	12.5	11.8	94				-	70-130	25
Acrylonitrile	5	4.55	91				-	70-130	25
1,1-Dichloroethene	5	5.15	103				-	70-130	25
tert-Butyl Alcohol	5	4.67	93				-	70-130	25
Methylene chloride	5	5.33	107				-	70-130	25
3-Chloropropene	5	5.06	101				-	70-130	25
Carbon disulfide	5	5.10	102				-	70-130	25
1,1,2-Trichloro-1,2,2-Trifluoroethane	5	5.57	111				-	70-130	25
trans-1,2-Dichloroethene	5	4.42	88				-	70-130	25
1,1-Dichloroethane	5	4.92	98				-	70-130	25
Methyl tert butyl ether	5	4.43	89				-	70-130	25
Vinyl acetate	5	4.35	87				-	70-130	25
2-Butanone	5	4.48	90				-	70-130	25

Laboratory Control Sample
Form 3

Client	: CH2MHILL	**Lab Number**	: L1816546
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Matrix	: AIR		
LCS Sample ID	: WG1115048-3	**Analysis Date** : 05/11/18 14:02	**File ID** : R159324
LCSD Sample ID	:	**Analysis Date** :	**File ID** :

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ppbV)	Found (ppbV)	%R	True (ppbV)	Found (ppbV)	%R	RPD	Recovery Limits	RPD Limit
cis-1,2-Dichloroethene	5	4.28	86				-	70-130	25
Ethyl Acetate	5	5.29	106				-	70-130	25
Chloroform	5	5.62	112				-	70-130	25
Tetrahydrofuran	5	4.01	80				-	70-130	25
1,2-Dichloroethane	5	5.12	102				-	70-130	25
n-Hexane	5	4.37	87				-	70-130	25
1,1,1-Trichloroethane	5	5.31	106				-	70-130	25
Benzene	5	4.53	91				-	70-130	25
Carbon tetrachloride	5	5.80	116				-	70-130	25
Cyclohexane	5	4.17	83				-	70-130	25
Dibromomethane	5	4.46	89				-	70-130	25
1,2-Dichloropropane	5	4.29	86				-	70-130	25
Bromodichloromethane	5	5.63	113				-	70-130	25
1,4-Dioxane	5	5.00	100				-	70-130	25
Trichloroethene	5	5.15	103				-	70-130	25
2,2,4-Trimethylpentane	5	4.74	95				-	70-130	25
cis-1,3-Dichloropropene	5	4.58	92				-	70-130	25
4-Methyl-2-pentanone	5	5.18	104				-	70-130	25
trans-1,3-Dichloropropene	5	4.15	83				-	70-130	25
1,1,2-Trichloroethane	5	5.38	108				-	70-130	25
Toluene	5	4.97	99				-	70-130	25
2-Hexanone	5	5.26	105				-	70-130	25
Dibromochloromethane	5	6.97	139 Q				-	70-130	25
1,2-Dibromoethane	5	5.76	115				-	70-130	25
Tetrachloroethene	5	6.07	121				-	70-130	25
1,1,1,2-Tetrachloroethane	5	6.04	121				-	70-130	25
Chlorobenzene	5	5.81	116				-	70-130	25
Ethylbenzene	5	5.02	100				-	70-130	25

Laboratory Control Sample
Form 3

Client	: CH2MHILL	**Lab Number**	: L1816546
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Matrix	: AIR		
LCS Sample ID	: WG1115048-3	**Analysis Date** : 05/11/18 14:02	**File ID** : R159324
LCSD Sample ID	:	**Analysis Date** :	**File ID** :

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ppbV)	Found (ppbV)	%R	True (ppbV)	Found (ppbV)	%R	RPD	Recovery Limits	RPD Limit
p/m-Xylene	10	10.5	105				-	70-130	25
Bromoform	5	7.24	145 Q				-	70-130	25
Styrene	5	5.25	105				-	70-130	25
1,1,2,2-Tetrachloroethane	5	6.03	121				-	70-130	25
o-Xylene	5	5.46	109				-	70-130	25
1,2,3-Trichloropropane	5	5.46	109				-	70-130	25
Isopropylbenzene	5	5.49	110				-	70-130	25
Bromobenzene	5	5.13	103				-	70-130	25
4-Ethyltoluene	5	6.44	129				-	70-130	25
1,3,5-Trimethylbenzene	5	5.85	117				-	70-130	25
1,2,4-Trimethylbenzene	5	6.26	125				-	70-130	25
Benzyl chloride	5	6.41	128				-	70-130	25
1,3-Dichlorobenzene	5	7.04	141 Q				-	70-130	25
1,4-Dichlorobenzene	5	6.86	137 Q				-	70-130	25
sec-Butylbenzene	5	6.07	121				-	70-130	25
p-Isopropyltoluene	5	5.66	113				-	70-130	25
1,2-Dichlorobenzene	5	7.02	140 Q				-	70-130	25
n-Butylbenzene	5	6.05	121				-	70-130	25
1,2,4-Trichlorobenzene	5	8.74	175 Q				-	70-130	25
Naphthalene	5	6.75	135 Q				-	70-130	25
1,2,3-Trichlorobenzene	5	8.60	172 Q				-	70-130	25
Hexachlorobutadiene	5	9.11	182 Q				-	70-130	25

Method Blank Summary
Form 4
AIRVOA

Client	: CH2MHILL	**Lab Number**	: L1816546
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Lab Sample ID	: WG1115048-4	**Lab File ID**	: R159325
Instrument ID	: AIRPIANO1		
Matrix	: AIR	**Analysis Date**	: 05/11/18 15:00

Client Sample No.	Lab Sample ID	Analysis Date
WG1115048-3LCS	WG1115048-3	05/11/18 14:02
S01-HER-OA-050418	L1816546-11	05/11/18 18:13
S01-B505-IA14-050418	L1816546-01	05/11/18 18:46
S01-B505-IA11-050418	L1816546-02	05/11/18 19:18
S01-B505-IA06-050418	L1816546-03	05/11/18 19:51
S01-B505-IA09-050418	L1816546-04	05/11/18 20:23
S01-B505-IA09-050418DUP	WG1115048-5	05/11/18 20:56
S01-B505-FD01-050418	L1816546-05	05/11/18 21:28
S01-B505-IA10-050418	L1816546-06	05/11/18 22:01
S01-B505-IA12-050418	L1816546-07	05/11/18 22:33
S01-B505-IA08-050418	L1816546-08	05/11/18 23:06
S01-B505-IA07-050418	L1816546-09	05/11/18 23:38
S01-B505-IA13-050418	L1816546-10	05/12/18 00:11

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1816546
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Instrument ID	: AIRPIANO1	**Analysis Date**	: 02/26/18 21:29
Tune Standard	: WG1092763-1	**Tune File ID**	: R157599_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	8.0 - 40.0% of mass 95	26
75	30.0 - 66.0% of mass 95	53.4
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0 (0)1
174	50.0 - 120.0% of mass 95	65.8
175	4.0 - 9.0% of mass 174	5.1 (7.8)1
176	93.0 - 101% of mass 174	63.2 (96.2)1
177	5.0 - 9.0% of mass 176	4.3 (6.8)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
STD0.02	R1050680-1	R157600	02/26/18 22:00
STD0.04	R1050680-2	R157601	02/26/18 22:31
STD0.1	R1050680-3	R157602	02/26/18 23:05
STD0.2	R1050680-4	R157603	02/26/18 23:36
STD0.5	R1050680-5	R157604	02/27/18 00:07
STD1.0	R1050680-6	R157605	02/27/18 00:41
STD5.0	R1050680-7	R157606	02/27/18 01:13
STD10.0	R1050680-8	R157607	02/27/18 01:47
STD20.0	R1050680-9	R157608	02/27/18 02:18
STD50.0	R1050680-10	R157609	02/27/18 02:50
ICV Quant	R1050680-11	R157614	02/27/18 09:40

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1816546
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Instrument ID	: AIRPIANO1	**Analysis Date**	: 05/11/18 12:25
Tune Standard	: WG1115048-1	**Tune File ID**	: R159321_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	8.0 - 40.0% of mass 95	24.7
75	30.0 - 66.0% of mass 95	52.9
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0 (0)1
174	50.0 - 120.0% of mass 95	81.9
175	4.0 - 9.0% of mass 174	6.6 (8.1)1
176	93.0 - 101% of mass 174	76.8 (93.8)1
177	5.0 - 9.0% of mass 176	5.3 (7)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
WG1115048-2CCAL	WG1115048-2	R159324	05/11/18 14:02
WG1115048-3LCS	WG1115048-3	R159324	05/11/18 14:02
WG1115048-4BLANK	WG1115048-4	R159325	05/11/18 15:00
S01-HER-OA-050418	L1816546-11	R159330	05/11/18 18:13
S01-B505-IA14-050418	L1816546-01	R159331	05/11/18 18:46
S01-B505-IA11-050418	L1816546-02	R159332	05/11/18 19:18
S01-B505-IA06-050418	L1816546-03	R159333	05/11/18 19:51
S01-B505-IA09-050418	L1816546-04	R159334	05/11/18 20:23
WG1115048-5DUP	WG1115048-5	R159335	05/11/18 20:56
S01-B505-FD01-050418	L1816546-05	R159336	05/11/18 21:28
S01-B505-IA10-050418	L1816546-06	R159337	05/11/18 22:01
S01-B505-IA12-050418	L1816546-07	R159338	05/11/18 22:33
S01-B505-IA08-050418	L1816546-08	R159339	05/11/18 23:06
S01-B505-IA07-050418	L1816546-09	R159340	05/11/18 23:38
S01-B505-IA13-050418	L1816546-10	R159341	05/12/18 00:11

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1816546**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**: 693874.01.RR**
Instrument ID	**: AIRPIANO1**	**Ical Ref**	**: ICAL14483**
Calibration dates	**: 02/26/18 22:00 02/27/18 02:50**		

Calibration Files
0.02=R157600.D 0.04=R157601.D 0.1 =R157602.D 0.2 =R157603.D 0.5 =R157604.D 1.0 =R157605.D
5.0 =R157606.D 10.0=R157607.D 20.0=R157608.D 50.0=R157609.D

		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
1)	I	bromochloromethane	----------ISTD----------											
2)		propylene				0.646	0.581	0.558	0.482	0.500	0.462	0.438	0.5239	14.15
3)		dichlorodifluoromethane	1.141	1.128	0.982	1.268	1.229	1.037	1.154	1.071	1.275	0.939	1.1223	10.31
4)	C	chloromethane		0.609	0.600	0.639	0.608	0.602	0.575	0.566	0.531	0.467	0.5775	8.95
5)		Freon-114	1.461	1.420	1.394	1.555	1.550	1.521	1.465	1.398	1.377	1.201	1.4343	7.28
6)	C	vinyl chloride	0.603	0.586	0.583	0.649	0.632	0.624	0.604	0.579	0.565	0.500	0.5926	7.05
7)	C	1,3-butadiene	0.431	0.414	0.390	0.435	0.424	0.420	0.409	0.401	0.383	0.342	0.4049	6.86
8)	C	bromomethane	0.561	0.496	0.486	0.536	0.531	0.498	0.516	0.472	0.481	0.414	0.4989	8.17
9)	C	chloroethane	0.351	0.277	0.266	0.300	0.289	0.284	0.279	0.257	0.259	0.228	0.2790	11.61
10)		ethanol				0.660	0.504	0.452	0.429	0.444	0.399	0.337	0.4608	22.08
11)	C	vinyl bromide	0.490	0.441	0.424	0.465	0.477	0.467	0.452	0.434	0.450	0.387	0.4487	6.55
12)	C	acrolein	0.356	0.289	0.262	0.250	0.237	0.233	0.232	0.228	0.230	0.194	0.2510	17.65
13)		acetone				0.946	0.819	0.796	0.703	0.711	0.715	0.591	0.7546	14.85
14)		trichlorofluoromethane	1.315	1.225	1.243	1.339	1.333	1.307	1.277	1.225	1.259	1.086	1.2608	5.91
15)		isopropyl alcohol				1.685	1.203	1.043	0.850	0.840	0.856	0.726	1.0289	32.01#
16)	C	acrylonitrile	0.476	0.446	0.368	0.475	0.462	0.452	0.416	0.416	0.415	0.359	0.4285	9.66
17)	C	1,1-dichloroethene	1.004	0.964	0.938	1.033	1.030	1.002	0.980	0.962	0.949	0.830	0.9692	6.07
18)		tertiary butyl alcohol			1.313	1.194	1.150	1.149	1.107	1.104	1.072	0.952	1.1301	9.14
19)	C	methylene chloride					0.827	0.830	0.792	0.786	0.759	0.663	0.7761	7.92
20)	C	3-chloropropene				0.883	0.821	0.811	0.801	0.822	0.781	0.696	0.8021	7.01
21)	C	carbon disulfide			1.607	1.686	1.647	1.595	1.596	1.532	1.579	1.323	1.5705	6.99
22)		Freon 113	1.030	0.956	0.940	1.043	1.057	1.022	1.007	0.953	1.005	0.851	0.9864	6.29
23)		trans-1,2-dichloroethene	0.900	0.871	0.864	0.967	0.935	0.926	0.890	0.884	0.897	0.821	0.8954	4.55
24)	C	1,1-dichloroethane	1.143	1.094	1.082	1.203	1.173	1.169	1.116	1.094	1.111	1.004	1.1190	5.08
25)	C	MTBE	1.405	1.273	1.277	1.382	1.393	1.395	1.303	1.303	1.310	1.203	1.3244	5.05
26)	C	vinyl acetate					1.255	1.174	1.221	1.327	1.367	1.328	1.2787	5.79
27)	C	2-butanone				1.439	1.369	1.359	1.312	1.388	1.349	1.229	1.3493	4.87
28)		cis-1,2-dichloroethene	0.987	0.930	0.957	1.043	1.024	1.001	0.978	0.956	0.960	0.881	0.9718	4.79
29)		Ethyl Acetate			0.218	0.193	0.222	0.230	0.221	0.232	0.241	0.220	0.2221	6.38
30)	C	chloroform	1.416	1.336	1.330	1.445	1.423	1.396	1.368	1.348	1.384	1.256	1.3703	4.05
31)		Tetrahydrofuran			0.824	0.762	0.682	0.718	0.739	0.787	0.748	0.707	0.7457	6.12
32)	C	1,2-dichloroethane	0.877	0.864	0.838	0.897	0.863	0.840	0.834	0.833	0.825	0.760	0.8432	4.38
33)	I	1,4-difluorobenzene	----------ISTD----------											
34)	C	hexane	0.828	0.788	0.778	0.841	0.822	0.754	0.755	0.793	0.782	0.729	0.7870	4.54
35)	s	1,2-dichloroethane-D4	0.390	0.385	0.406	0.403	0.396	0.380	0.367	0.396	0.380	0.374	0.3878	3.24
36)	C	1,1,1-trichloroethane	0.773	0.735	0.738	0.794	0.785	0.735	0.729	0.755	0.740	0.713	0.7496	3.51
37)	C	benzene		1.181	1.140	1.227	1.167	1.130	1.101	1.151	1.125	1.042	1.1403	4.54
38)	C	carbon tetrachloride	0.702	0.711	0.690	0.754	0.716	0.696	0.703	0.732	0.736	0.691	0.7130	2.99

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1816546**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**: 693874.01.RR**
Instrument ID	**: AIRPIANO1**	**Ical Ref**	**: ICAL14483**
Calibration dates	**: 02/26/18 22:00 02/27/18 02:50**		

Calibration Files
0.02=R157600.D 0.04=R157601.D 0.1 =R157602.D 0.2 =R157603.D 0.5 =R157604.D 1.0 =R157605.D
5.0 =R157606.D 10.0=R157607.D 20.0=R157608.D 50.0=R157609.D

		Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
39)		cyclohexane	0.639	0.616	0.631	0.687	0.664	0.614	0.625	0.661	0.639	0.596	0.6373	4.25
40)		dibromomethane	0.714	0.568	0.493	0.505	0.463	0.456	0.450	0.462	0.462	0.435	0.5008	16.77
41)	C	1,2-dichloropropane	0.508	0.524	0.498	0.556	0.521	0.508	0.505	0.518	0.512	0.482	0.5132	3.74
42)		bromodichloromethane	0.884	0.849	0.818	0.913	0.883	0.865	0.874	0.907	0.898	0.853	0.8744	3.34
43)	C	1,4-dioxane		0.206	0.203	0.215	0.224	0.213	0.223	0.232	0.241	0.230	0.2207	5.69
44)	C	trichloroethene	0.428	0.413	0.363	0.436	0.409	0.409	0.408	0.416	0.422	0.401	0.4104	4.76
45)	C	2,2,4-trimethylpentane	2.056	1.979	2.002	2.255	2.151	2.049	2.020	2.123	2.044	1.925	2.0602	4.59
46)		heptane	0.857	0.855	0.861	0.938	0.903	0.851	0.845	0.919	0.851	0.808	0.8688	4.48
47)	C	cis-1,3-dichloropropene	2.349	2.228	2.294	2.553	2.505	2.438	2.580	2.753	2.696	2.606	2.5002	6.87
48)	C	4-methyl-2-pentanone	0.759	0.853	0.991	1.124	1.109	1.082	1.160	1.278	1.169	1.132	1.0659	14.66
49)		trans-1,3-dichloropropene	0.520	0.488	0.530	0.594	0.596	0.585	0.649	0.648	0.675	0.659	0.5944	10.87
50)	C	1,1,2-trichloroethane	0.422	0.410	0.413	0.465	0.447	0.447	0.447	0.454	0.456	0.424	0.4385	4.46
51)	I	chlorobenzene-D5	----------ISTD----------											
52)	C	toluene		4.478	4.308	4.562	4.372	4.557	4.607	4.438	4.614	4.240	4.4640	3.02
53)	s	toluene-D8	3.243	3.087	3.175	3.065	3.043	3.299	3.301	3.143	3.331	3.212	3.1898	3.27
54)		2-hexanone			2.643	2.928	3.485	3.650	4.101	4.189	4.255	3.829	3.6350	16.29
55)		dibromochloromethane	2.424	2.243	2.246	2.457	2.414	2.558	2.702	2.623	2.863	2.712	2.5240	8.09
56)	C	1,2-dibromoethane	2.357	2.279	2.214	2.451	2.398	2.498	2.645	2.540	2.710	2.546	2.4637	6.34
57)	C	tetrachloroethene	1.676	1.650	1.556	1.720	1.638	1.738	1.789	1.690	1.902	1.824	1.7184	5.82
58)		1,1,1,2-tetrachloroethane	1.652	1.650	1.473	1.681	1.604	1.706	1.787	1.710	1.859	1.757	1.6879	6.26
59)	C	chlorobenzene	3.165	3.161	3.053	3.412	3.263	3.417	3.516	3.368	3.610	3.409	3.3373	5.21
60)	C	ethylbenzene	5.946	5.470	5.162	5.850	5.497	5.808	6.035	5.893	6.168	5.715	5.7546	5.24
61)	C	m+p-xylene	4.501	4.131	3.932	4.501	4.306	4.506	4.751	4.673	4.860	4.410	4.4569	6.29
62)	C	bromoform	2.509	2.079	1.910	2.132	2.068	2.195	2.421	2.413	2.646	2.590	2.2964	10.95
63)	C	styrene	2.527	2.562	2.471	2.908	2.859	3.058	3.332	3.300	3.511	3.293	2.9822	12.60
64)	C	1,1,2,2-tetrachloroethane	3.936	3.664	3.626	4.070	3.896	4.122	4.343	4.251	4.519	3.974	4.0401	7.01
65)	C	o-xylene	4.798	4.433	4.281	4.714	4.456	4.676	4.952	4.840	5.088	4.575	4.6814	5.34
66)		1,2,3-trichloropropane	3.007	2.723	2.781	3.163	3.033	3.091	3.257	3.213	3.302	3.055	3.0626	6.23
67)	s	bromofluorobenzene	1.779	1.736	1.765	1.745	1.697	1.812	1.843	1.795	1.913	1.860	1.7947	3.59
68)	C	isopropylbenzene	5.515	4.945	4.939	5.467	5.265	5.397	5.534	5.638	5.960	5.417	5.4078	5.66
69)		bromobenzene	3.280	3.125	3.153	3.560	3.362	3.498	3.644	3.636	3.880	3.568	3.4705	6.87
70)		4-ethyl toluene	4.847	4.710	4.818	5.526	5.460	5.677	6.212	6.162	6.263	5.890	5.5564	10.73
71)		1,3,5-trimethylbenzene	4.707	4.186	4.264	4.807	4.660	4.840	5.235	5.195	5.288	5.007	4.8190	7.94
72)		tert-butylbenzene	4.361	4.114	3.969	4.589	4.433	4.608	5.076	5.066	5.032	4.414	4.5662	8.55
73)		1,2,4-trimethylbenzene	4.094	4.064	4.051	4.639	4.548	4.836	5.376	5.413	5.372	4.724	4.7117	11.53
74)	C	Benzyl Chloride				3.420	3.493	3.744	4.733	4.955	5.139	5.036	4.3603	17.70
75)		1,3-dichlorobenzene	2.745	2.550	2.650	3.049	2.974	3.173	3.528	3.501	3.532	3.530	3.1232	12.47
76)	C	1,4-dichlorobenzene	2.794	2.794	2.737	3.123	3.113	3.254	3.583	3.577	3.552	3.614	3.2141	11.08

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1816546**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**: 693874.01.RR**
Instrument ID	**: AIRPIANO1**	**Ical Ref**	**: ICAL14483**
Calibration dates	**: 02/26/18 22:00 02/27/18 02:50**		

Calibration Files
0.02=R157600.D 0.04=R157601.D 0.1 =R157602.D 0.2 =R157603.D 0.5 =R157604.D 1.0 =R157605.D
5.0 =R157606.D 10.0=R157607.D 20.0=R157608.D 50.0=R157609.D

	Compound	0.02	0.04	0.1	0.2	0.5	1.0	5.0	10.0	20.0	50.0	Avg	%RSD
77)	sec-butylbenzene	6.013	5.946	5.952	6.775	6.637	6.958	7.578	7.553	7.369	6.701	6.7482	9.37
78)	p-isopropyltoluene	5.047	4.805	4.647	5.333	5.219	5.572	6.045	6.128	5.768	5.354	5.3920	9.16
79)	1,2-dichlorobenzene	2.594	2.485	2.548	2.894	2.868	3.058	3.295	3.328	3.173	3.362	2.9605	11.30
80)	n-butylbenzene	4.428	4.501	5.026	5.772	5.978	6.350	6.953	7.074	6.240	6.323	5.8645	15.96
81) C	1,2,4-trichlorobenzene		1.445	1.593	1.678	2.044	2.296	2.809	3.055	1.940	2.547	2.1562	26.01
82)	naphthalene		4.761	4.481	5.952	5.386	5.570	7.006	7.195	4.288	5.577	5.5796	18.33
83)	1,2,3-trichlorobenzene		1.290	1.527	1.496	1.885	2.144	2.714	2.933	1.649	2.240	1.9865	28.57
84) C	hexachlorobutadiene		1.475	1.587	1.550	1.800	1.943	2.314	2.507	1.478	2.095	1.8610	20.42

Continuing Calibration
Form 7

Client	: CH2MHILL	Lab Number	: L1816546		
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR		
Instrument ID	: AIRPIANO1	Calibration Date	: 05/11/18 14:02		
Lab File ID	: R159324	Init. Calib. Date(s)	: 02/26/18	02/27/18	
Sample No	: WG1115048-2	Init. Calib. Times	: 22:00	02:50	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
bromochloromethane	1	1	-	0	30	68	0
propylene	0.524	0.318	-	39.3*	30	45	-.01
dichlorodifluoromethane	1.122	1.391	-	-24	30	82	0
chloromethane	0.577	0.455	-	21.1	30	54	0
Freon-114	1.434	1.476	-	-2.9	30	68	-.01
vinyl chloride	0.593	0.521	-	12.1	30	58	0
1,3-butadiene	0.405	0.37	-	8.6	30	61	0
bromomethane	0.499	0.548	-	-9.8	30	72	0
chloroethane	0.279	0.255	-	8.6	30	62	0
ethanol	0.461	0.393	-	14.8	30	62	0
vinyl bromide	0.449	0.511	-	-13.8	30	77	0
acrolein	0.251	0.2	-	20.3	30	58	0
acetone	0.755	0.939	-	-24.4	30	90	0
trichlorofluoromethane	1.261	1.551	-	-23	30	82	0
isopropyl alcohol	1.029	0.976	-	5.2	30	78	0
acrylonitrile	0.428	0.39	-	8.9	30	63	0
1,1-dichloroethene	0.969	0.997	-	-2.9	30	69	0
tertiary butyl alcohol	1.13	1.056	-	6.5	30	65	0
methylene chloride	0.776	0.827	-	-6.6	30	71	0
3-chloropropene	0.802	0.811	-	-1.1	30	69	0
carbon disulfide	1.57	1.601	-	-2	30	68	0
Freon 113	0.986	1.1	-	-11.6	30	74	0
trans-1,2-dichloroethene	0.895	0.792	-	11.5	30	60	0
1,1-dichloroethane	1.119	1.101	-	1.6	30	67	0
MTBE	1.324	1.174	-	11.3	30	61	0
vinyl acetate	1.279	1.112	-	13.1	30	62	0
2-butanone	1.349	1.21	-	10.3	30	62	0
cis-1,2-dichloroethene	0.972	0.832	-	14.4	30	58	0
Ethyl Acetate	0.222	0.235	-	-5.9	30	72	0
chloroform	1.37	1.541	-	-12.5	30	76	0
Tetrahydrofuran	0.746	0.598	-	19.8	30	55	-.01
1,2-dichloroethane	0.843	0.864	-	-2.5	30	70	-.01
1,4-difluorobenzene	1	1	-	0	30	69	-.01
hexane	0.787	0.688	-	12.6	30	63	0
1,1,1-trichloroethane	0.75	0.796	-	-6.1	30	75	0
benzene	1.14	1.032	-	9.5	30	64	-.01
carbon tetrachloride	0.713	0.827	-	-16	30	81	0
cyclohexane	0.637	0.531	-	16.6	30	58	0
dibromomethane	0.501	0.447	-	10.8	30	68	0
1,2-dichloropropane	0.513	0.441	-	14	30	60	0
bromodichloromethane	0.874	0.984	-	-12.6	30	77	-.01
1,4-dioxane	0.221	0.221	-	0	30	68	0
trichloroethene	0.41	0.423	-	-3.2	30	71	0
2,2,4-trimethylpentane	2.06	1.951	-	5.3	30	66	0
heptane	0.869	0.752	-	13.5	30	61	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: CH2MHILL	Lab Number	: L1816546		
Project Name	: DOW HANGING ROCK	Project Number	: 693874.01.RR		
Instrument ID	: AIRPIANO1	Calibration Date	: 05/11/18 14:02		
Lab File ID	: R159324	Init. Calib. Date(s)	: 02/26/18	02/27/18	
Sample No	: WG1115048-2	Init. Calib. Times	: 22:00	02:50	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
cis-1,3-dichloropropene	2.5	2.292	-	8.3	30	61	0
4-methyl-2-pentanone	1.066	1.105	-	-3.7	30	65	0
trans-1,3-dichloropropene	0.594	0.493	-	17	30	52	0
1,1,2-trichloroethane	0.438	0.472	-	-7.8	30	73	0
chlorobenzene-D5	1	1	-	0	30	65	0
toluene	4.464	4.435	-	0.6	30	63	0
2-hexanone	3.635	3.824	-	-5.2	30	61	0
dibromochloromethane	2.524	3.518	-	-39.4*	30	85	0
1,2-dibromoethane	2.464	2.841	-	-15.3	30	70	0
tetrachloroethene	1.718	2.087	-	-21.5	30	76	0
1,1,1,2-tetrachloroethane	1.688	2.039	-	-20.8	30	74	0
chlorobenzene	3.337	3.879	-	-16.2	30	72	0
ethylbenzene	5.755	5.78	-	-0.4	30	62	0
m+p-xylene	4.457	4.689	-	-5.2	30	64	-.01
bromoform	2.296	3.323	-	-44.7*	30	89	0
styrene	2.982	3.133	-	-5.1	30	61	0
1,1,2,2-tetrachloroethane	4.04	4.869	-	-20.5	30	73	0
o-xylene	4.681	5.109	-	-9.1	30	67	0
1,2,3-trichloropropane	3.063	3.347	-	-9.3	30	67	0
isopropylbenzene	5.408	5.934	-	-9.7	30	70	0
bromobenzene	3.471	3.56	-	-2.6	30	64	0
4-ethyl toluene	5.556	7.16	-	-28.9	30	75	0
1,3,5-trimethylbenzene	4.819	5.636	-	-17	30	70	0
tert-butylbenzene	4.566	5.439	-	-19.1	30	70	0
1,2,4-trimethylbenzene	4.712	5.896	-	-25.1	30	71	0
Benzyl Chloride	4.36	5.588	-	-28.2	30	77	0
1,3-dichlorobenzene	3.123	4.4	-	-40.9*	30	81	0
1,4-dichlorobenzene	3.214	4.413	-	-37.3*	30	80	0
sec-butylbenzene	6.748	8.187	-	-21.3	30	70	0
p-isopropyltoluene	5.392	6.099	-	-13.1	30	66	0
1,2-dichlorobenzene	2.96	4.155	-	-40.4*	30	82	0
n-butylbenzene	5.865	7.093	-	-20.9	30	66	0
1,2,4-trichlorobenzene	2.156	3.769	-	-74.8*	30	87	0
naphthalene	5.58	7.531	-	-35*	30	70	.01
1,2,3-trichlorobenzene	1.986	3.418	-	-72.1*	30	82	0
hexachlorobutadiene	1.861	3.392	-	-82.3*	30	96	0

* Value outside of QC limits.

Internal Standard Area and RT Summary
Form 8

Client	: CH2MHILL	**Lab Number**	: L1816546
Project Name	: DOW HANGING ROCK	**Project Number**	: 693874.01.RR
Instrument ID	: AIRPIANO1	**Analysis Date**	: 05/11/18 14:02
Sample No	: WG1115048-2	**Lab File ID**	: R159324

	Bromochloromethane		1,4-Difluorobenzene		Chlorobenzene-d5	
	Area	RT	Area	RT	Area	RT
WG1115048-2	148232	10.18	216506	12.39	55667	16.82
Upper Limit	207525	10.51	303108	12.72	77934	17.15
Lower Limit	88939	9.85	129904	12.06	33400	16.49
Sample ID						
WG1115048-3 LCS	148232	10.18	216506	12.39	55667	16.82
WG1115048-4 BLANK	137275	10.18	188822	12.40	45804	16.82
S01-HER-OA-050418	127671	10.18	166633	12.40	47378	16.82
S01-B505-IA14-050418	130087	10.18	175512	12.40	48630	16.82
S01-B505-IA11-050418	126266	10.18	162692	12.40	43081	16.82
S01-B505-IA06-050418	120368	10.18	148683	12.40	45075	16.82
S01-B505-IA09-050418	121944	10.18	157504	12.40	45784	16.82
S01-B505-IA09-050418 DUP	120742	10.18	147440	12.40	44742	16.82
S01-B505-FD01-050418	116673	10.18	140526	12.40	41368	16.82
S01-B505-IA10-050418	121873	10.18	151813	12.40	43218	16.82
S01-B505-IA12-050418	123373	10.18	162270	12.40	41130	16.82
S01-B505-IA08-050418	127273	10.18	168922	12.40	46006	16.82
S01-B505-IA07-050418	122815	10.18	163260	12.40	41256	16.82
S01-B505-IA13-050418	124590	10.18	165211	12.40	41943	16.82

Area Upper Limit = +40% of internal standard area
Area Lower Limit = - 40% of internal standard area

RT Upper Limit = +0.33 minutes of internal standard RT
RT Lower Limit = -0.33 minutes of internal standard RT

* Values outside of QC limits

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Mr. Gregory Rudloff
United States Environmental Protection Agency (USEPA)
Region 5
77 W. Jackson Blvd. LU-9J
Chicago, IL 60604

June 19, 2018

Subject: Two-Month Post Interim Measures Indoor Air Analytical Data Submittal for the Former Dow Hanging Rock Site, Ironton, OH EPA ID# OHR 000 157 727 and OHD 039 128 913

Dear Mr. Rudloff,

On behalf of The Dow Chemical Company, CH2M HILL Inc., is submitting the 2-month post short-term interim measures completed indoor air sampling analytical results at Building 505, former Dow Hanging Rock site near Ironton, Ohio.

The detections from the 2-month post indoor air samples were less than the Ohio Environmental Protection Agency response guidance accelerated response and chronic response action levels and below the USEPA indoor air regional screening levels.

The indoor air sampling was conducted on June 4, 2018, within two months of the interim measures being completed on April 5, 2018. Nine indoor air samples, one duplicate, and one outside/ambient air sample were collected. The canisters were shipped to Alpha Analytical located in Mansfield, Massachusetts, and analyzed for PCE, TCE, 1,1-DCE, trans-1,2-DCE, cis-1,2-DCE, and vinyl chloride by USEPA Method TO-15 SIM. The 4-month post-sampling event will be conducted within 20 weeks of completing the interim measures, on or before August 23, 2018.

Attached are the laboratory analytical data package, the unvalidated data tabulated with previous results (Table 1), and a figure showing the data and sample locations within the building (Figure 1).

Please contact me at (513) 673-2201 or Mr. Timothy King at (304) 747-3763 should you have any questions or comments.

Sincerely,

Marie W. Chiller, CH2M HILL Inc.
Site Manager

Attachments

cc: Timothy King/The Dow Chemical Company

Table 1. Building 505 September 2017, April 2018, May 2018, and June 2018 Outdoor and Indoor Air Analytical Results[a]

Vapor Intrusion Investigation Summary, Dow Hanging Rock, Ironton, Ohio

		Analyte	TETRACHLOROETHYLENE (PCE)	TRICHLOROETHYLENE (TCE)	CIS-1,2-DICHLOROETHYLENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
		USEPA Indoor Air RSL[b]	175	9	NA	NA	876	28
		Ohio EPA Response Action Level[c]	180	8.8	NA	NA	NA	28
		Unit	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3
Sample Location	**Sample ID**	**Date**	**Building 505**					
Outdoor Air								
S01-HGR-OA01	S01-HGR-OA01-090817	9/8/17	**0.068 J**	0.107 U	0.079 U	0.079 U	0.079 U	0.018U
S01-HGR-OA02	S01-HGR-OA02-041218	4/12/18	0.136 U	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
S01-HGR-OA03	S01-HER-OA-050418	5/4/18	**0.156**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
S01-HGR-OA03	S01-HER-OA03-060418	6/4/18	0.136 U	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
Indoor Air								
IA06	S01-B505-IA06-090817	9/8/17	**326**	**1.04**	**0.079**	**0.024 J**	0.079 U	0.018U
	S01-B505-IA06-041218	4/12/18	**30.2**	**0.559**	**0.17**	0.079 U	0.079 U	0.051 U
	S01-B505-IA06-050418	5/4/18	**11.7**	**0.242**	**0.079**	0.079 U	0.079 U	0.051 U
	S01-B505-IA06-060418	6/4/18	**5.51**	**0.183**	**0.099**	0.079 U	0.079 U	0.051 U
IA07	S01-B505-IA07-090817	9/8/17	**220**	**0.451**	**0.06 J**	**0.024 J**	0.079 U	0.018U
	S01-B505-IA07-041218	4/12/18	**15.9**	**0.597**	**0.111**	0.079 U	0.079 U	0.051 U
	S01-B505-IA07-050418	5/4/18	**12.6**	**0.408**	**0.083**	0.079 U	0.079 U	0.051 U
	S01-B505-IA07-060418	6/4/18	**1.85**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
IA08	S01-B505-IA08-090817	9/8/17	**197**	**0.403**	**0.052 J**	0.079 U	0.079 U	0.018U
	S01-B505-IA08-050418	5/4/18	**6.64**	**0.220**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA08-060418	6/4/18	**1.72**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
IA09	S01-B505-IA09-090817	9/8/17	**268**	**0.543**	**0.067 J**	**0.028 J**	0.079 U	0.018U
	S01-HGR-090817-FD02	9/8/17	**262**	**0.527**	**0.071 J**	0.079 U	0.079 U	0.018U
	S01-B505-IA09-041218	4/12/18	**17.4**	**0.532**	**0.159**	0.079 U	0.079 U	0.051 U
	S01-B505-IA09-050418	5/4/18	**7.46**	**0.247**	**0.079**	0.079 U	0.079 U	0.051 U
	S01-B505-FD01-050418	5/4/18	**8.41**	**0.290**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA09-060418	6/4/18	**1.97**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IAFD01-050420	6/4/18	**3.39**	**0.140**	0.079 U	0.079 U	0.079 U	0.051 U
IA10	S01-B505-IA10-090817	9/8/17	**324**	**1.00**	**0.099**	**0.024 J**	0.079 U	0.018U
	S01-B505-IA10-041218	4/12/18	**45.5**	**0.736**	**0.297**	0.079 U	0.079 U	0.051 U
	S01-B505-IA10-050418	5/4/18	**14.6**	**0.575**	**0.103**	0.079 U	0.079 U	0.051 U
	S01-B505-IA10-060418	6/4/18	**3.42**	**0.145**	0.079 U	0.079 U	0.079 U	0.051 U
IA11	S01-B505-IA11-041218	4/12/18	**30.6**	**0.376**	**0.297**	0.079 U	0.079 U	0.051 U
	S01-B505-IA11-050418	5/4/18	**9.56**	**0.220**	**0.095**	0.079 U	0.079 U	0.051 U
	S01-B505-IA11-060418	6/4/18	**3.40**	**0.118**	**0.083**	0.079 U	0.079 U	0.051 U
IA12	S01-B505-IA12-041218	4/12/18	**3.27**	**0.161**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-041218-FD01	4/12/18	**3.36**	**0.167**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-050418	5/4/18	**1.58**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-060418	6/4/18	**1.11**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
IA13	S01-B505-IA13-050418	5/4/18	**19.0**	**0.177**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA13-060418	6/4/18	**15.2**	**0.333**	**0.309**	0.079 U	0.079 U	0.051 U
IA14	S01-B505-IA14-050418	5/4/18	**8.21**	**0.193**	**0.230**	0.079 U	0.079 U	0.051 U
	S01-B505-IA14-060418	6/4/18	**20.8**	**0.548**	**1.05**	0.079 U	0.079 U	0.051 U

Notes:

[a]: The May 2018 data are preliminary. This data has not yet been validated.

[b]: RSL is a risk-based screening level derived from the lowest of the cancer-based (TCR = 1 x 10^{-5}) or the noncancer-based (THQ = 1) industrial indoor air Regional Screening Levels (RSLs) [EPA, 2018], which ever is

[c]: Ohio EPA response guidance provides an Accelerated Response Action Level for trichloroethylene (TCE) based on a THQ=1 and Chronic Response Action Levels for tetrachloroethylene (PCE)and vinyl chloride (based on a THQ=1 or TCR=1 x 10^{-5}). Source - Ohio EPA Guidance Document Recommendations Reguarding Response Action Levels and Timeframes for Common Contaminants of Concern at Vapor Intrusion Sites in Ohio (Ohio EPA, August 2016).

Bold text indicates a detection

Shading indicates a VISL exceedance

= - detected result

µg/m^3 - micrograms per cubic meter

J - estimated result

N/A - not applicable

TCR - target risk for carcinogens

THQ - target hazard quotient for non-carcinogens

U - not detected, reporting limit shown

VISL = vapor intrusion screening level

EPA, 2017. Regoional Screening Levels (RSLs). November. https://www.epa.gov/risk/regional-screening-levels-rsls

N

0 8 16 24

SCALE IN FEET
(APPROXIMATE)

Location	Date	PCE ug/m^3	TCE ug/m^3
IA08	9/8/17	197	0.403
	5/4/18	6.64	0.220
	6/4/18	1.72	0.107 U

Location	Date	PCE ug/m^3	TCE ug/m^3
IA09	9/8/17	268	0.543
	4/12/18	17.4	0.532
	5/4/18	8.41	0.290
	6/4/18	3.39	0.140

Location	Date	PCE ug/m^3	TCE ug/m^3
IA10	9/8/17	324	1.000
	4/12/18	45.5	0.736
	5/4/18	14.6	0.575
	6/4/18	3.42	0.145

Location	Date	PCE ug/m^3	TCE ug/m^3
IA11	4/12/18	30.6	0.376
	5/4/18	9.56	0.220
	6/4/18	3.40	0.118

OFF L8
OFF L9 (KITCHENETTE/ COFFEE ROOM)
OFF L10 (PROJECT FILE STORAGE AND LARGE COPIER)
OFF I14 (PLANT DRAWINGS STORAGE)
OFF L14
OFF L7
OFF L15 (CONFERENCE ROOM)
KITCHEN/ BREAKROOM
MEN'S ROOM
OFF L6
LADIES' ROOM
IA-09
IA-08
OFF L5
OFF L11
OFF L12
OFF L13
SEALED CRACK IN FLOOR
JANITOR
APU
IA-12
OFF L4 (STORAGE ROOM)
OFF L3
OFF L2
OFF L1
IA-07
CONFERENCE ROOM 16
OFF R10 (ELECTRICAL ROOM)
OFF R1
OFF R2
OFF R3
OFF R4
AEROSOL CAN USE AND STORAGE AREA
OFF R4A
IA-10
OFF R9
OFF R8
IA-11
SEALED CRACK IN FLOOR
OFF R6 (ELECTRONIC STORAGE/ MAINTENANCE SHOP)
APU
OFF R5 (PROCESS CONTROL PARTS STORAGE)
OFF R7 (COPY ROOM)
STORE ROOM (WAREHOUSE SHELFING, SMALL PARTS, AEROSOL CANS, ETC.)
OFF R20
STORE ROOM (EQUIPMENT, TOTES, PALLETS, SHELFING, ETC.)
OFF R19
OFF R18 (CLEANING SUPPLIES STORAGE)
IA-14
OFF R17 (BREAK ROOM AND RESTROOM)
OFF R11
OFF R12
OFF R13
IA-06
OFF R14
OFF R16
IA-13
OFF R15
SEALED GAP BETWEEN FLOOR AND FIRE WATER LINE RISER

Location	Date	PCE ug/m^3	TCE ug/m^3
IA12	4/12/18	3.27	0.161
	5/4/18	1.58	0.107 U
	6/4/18	1.11	0.107 U

Location	Date	PCE ug/m^3	TCE ug/m^3
IA07	9/8/17	220	0.451
	4/12/18	15.9	0.597
	5/4/18	12.6	0.408
	6/4/18	1.85	0.107 U

Location	Date	PCE ug/m^3	TCE ug/m^3
IA06	9/8/17	326	1.04
	4/12/18	30.2	0.559
	5/4/18	11.7	0.242
	6/4/18	5.51	0.183

Location	Date	PCE ug/m^3	TCE ug/m^3
IA14	5/4/18	8.21	0.193
	6/4/18	20.8	0.548

Location	Date	PCE ug/m^3	TCE ug/m^3
IA13	5/4/18	19.0	0.177
	6/4/18	15.2	0.333

Legend

APU AIR PURIFYING UNIT

INDOOR AIR SAMPLE

GARAGE DOOR

Notes:

µg/m^3 = MICROGRAMS PER CUBIC METER
SHADED DATA EXCEEDS THE SCREENING LEVEL
U = NOT DETECTED

Location	Date	PCE ug/m^3	TCE ug/m^3
Outdoor Air	9/8/17	**0.068 J**	0.107 U
	4/12/18	0.136 U	0.107 U
	5/4/18	**0.156**	0.107 U
	6/4/18	0.136 U	0.107 U

Analyte	Unit	Ohio EPA Response Action Level	USEPA Regional Screening Level
Tetrachloroethylene (PCE)	µg/m^3	180	175
Trichloroethylene (TCE)	µg/m^3	8.8	9

Figure 1
Building 505 Layout and PCE and TCE Indoor Sampling Air Results
Hanging Rock Facility
Ironton, OH

JACOBS

PW | DEN001 | DOCUMENTS - DEN1 WBG IMPERIAL SF | DESIGNS - SMALL PROJECTS | 693874 - DOW HANGING ROCK | DLV | F03_693874.dgn

ANALYTICAL REPORT

Lab Number:	L1821128
Client:	CH2MHILL 1880 Way Cross Road Cincinatti, OH 45420
ATTN:	Marie Chiller
Phone:	(513) 673-2201
Project Name:	DOW HANGING ROCK
Project Number:	693874.01.FD
Report Date:	06/14/18

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1821128-01	S01-B505-IA06-060418	AIR	IRONTON, OH	06/04/18 21:04	06/07/18
L1821128-02	S01-B505-IA07-060418	AIR	IRONTON, OH	06/04/18 21:14	06/07/18
L1821128-03	S01-B505-IA08-060418	AIR	IRONTON, OH	06/04/18 19:05	06/07/18
L1821128-04	S01-B505-IA09-060418	AIR	IRONTON, OH	06/04/18 20:40	06/07/18
L1821128-05	S01-B505-IA10-060418	AIR	IRONTON, OH	06/04/18 20:25	06/07/18
L1821128-06	S01-B505-IA11-060418	AIR	IRONTON, OH	06/04/18 19:24	06/07/18
L1821128-07	S01-B505-IA12-060418	AIR	IRONTON, OH	06/04/18 21:27	06/07/18
L1821128-08	S01-B505-IA13-060418	AIR	IRONTON, OH	06/04/18 19:55	06/07/18
L1821128-09	S01-B505-IA14-060418	AIR	IRONTON, OH	06/04/18 20:05	06/07/18
L1821128-10	S01-B505-IAFD01-060418	AIR	IRONTON, OH	06/04/18 20:25	06/07/18
L1821128-11	S01-HGR-OA03-060418	AIR	IRONTON, OH	06/04/18 19:10	06/07/18
L1821128-12	UNUSED CAN #2260	AIR	IRONTON, OH		06/07/18
L1821128-13	UNUSED CAN #1565	AIR	IRONTON, OH		06/07/18
L1821128-14	UNUSED CAN #1633	AIR	IRONTON, OH		06/07/18
L1821128-15	UNUSED CAN #2113	AIR	IRONTON, OH		06/07/18
L1821128-16	UNUSED CAN #1661	AIR	IRONTON, OH		06/07/18

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1821128
Project Number:	693874.01.FD	**Report Date:**	06/14/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1821128
Project Number:	693874.01.FD	**Report Date:**	06/14/18

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on June 1, 2018. The canister certification results are provided as an addendum.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 06/14/18

AIR

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1821128-01
Client ID: S01-B505-IA06-060418
Sample Location: IRONTON, OH

Date Collected: 06/04/18 21:04
Date Received: 06/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 06/13/18 18:11
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.025	0.020	--	0.099	0.079	--		1
Trichloroethene	0.034	0.020	--	0.183	0.107	--		1
Tetrachloroethene	0.812	0.020	--	5.51	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	93		60-140
bromochloromethane	95		60-140
chlorobenzene-d5	94		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1821128-02
Client ID: S01-B505-IA07-060418
Sample Location: IRONTON, OH

Date Collected: 06/04/18 21:14
Date Received: 06/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 06/13/18 18:49
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	0.273	0.020	--	1.85	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	94		60-140
bromochloromethane	96		60-140
chlorobenzene-d5	95		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1821128-03
Client ID: S01-B505-IA08-060418
Sample Location: IRONTON, OH

Date Collected: 06/04/18 19:05
Date Received: 06/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 06/13/18 19:28
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	0.254	0.020	--	1.72	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	91		60-140
bromochloromethane	93		60-140
chlorobenzene-d5	91		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1821128-04
Client ID: S01-B505-IA09-060418
Sample Location: IRONTON, OH

Date Collected: 06/04/18 20:40
Date Received: 06/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 06/13/18 20:45
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	0.291	0.020	--	1.97	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	90		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	91		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1821128-05
Client ID: S01-B505-IA10-060418
Sample Location: IRONTON, OH

Date Collected: 06/04/18 20:25
Date Received: 06/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 06/13/18 21:23
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.027	0.020	--	0.145	0.107	--		1
Tetrachloroethene	0.505	0.020	--	3.42	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	91		60-140
bromochloromethane	95		60-140
chlorobenzene-d5	93		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1821128-06
Client ID: S01-B505-IA11-060418
Sample Location: IRONTON, OH

Date Collected: 06/04/18 19:24
Date Received: 06/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 06/13/18 22:02
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.021	0.020	--	0.083	0.079	--		1
Trichloroethene	0.022	0.020	--	0.118	0.107	--		1
Tetrachloroethene	0.502	0.020	--	3.40	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	91		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	93		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1821128-07
Client ID: S01-B505-IA12-060418
Sample Location: IRONTON, OH

Date Collected: 06/04/18 21:27
Date Received: 06/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 06/13/18 22:50
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	0.163	0.020	--	1.11	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	86		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	86		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1821128-08
Client ID: S01-B505-IA13-060418
Sample Location: IRONTON, OH

Date Collected: 06/04/18 19:55
Date Received: 06/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 06/13/18 23:30
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.078	0.020	--	0.309	0.079	--		1
Trichloroethene	0.062	0.020	--	0.333	0.107	--		1
Tetrachloroethene	2.24	0.020	--	15.2	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	92		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	92		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1821128-09
Client ID: S01-B505-IA14-060418
Sample Location: IRONTON, OH

Date Collected: 06/04/18 20:05
Date Received: 06/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 06/14/18 00:09
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.264	0.020	--	1.05	0.079	--		1
Trichloroethene	0.102	0.020	--	0.548	0.107	--		1
Tetrachloroethene	3.07	0.020	--	20.8	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	92		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	94		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1821128-10
Client ID: S01-B505-IAFD01-060418
Sample Location: IRONTON, OH

Date Collected: 06/04/18 20:25
Date Received: 06/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 06/14/18 00:47
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.026	0.020	--	0.140	0.107	--		1
Tetrachloroethene	0.500	0.020	--	3.39	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	90		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	91		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1821128-11
Client ID: S01-HGR-OA03-060418
Sample Location: IRONTON, OH

Date Collected: 06/04/18 19:10
Date Received: 06/07/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 06/13/18 17:32
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	90		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	90		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD
Lab Number: L1821128
Report Date: 06/14/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 06/13/18 16:12

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-11 Batch: WG1125610-4								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: 693874.01.FD

Lab Number: L1821128

Report Date: 06/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 Batch: WG1125610-3								
Vinyl chloride	85		-		70-130	-		25
1,1-Dichloroethene	88		-		70-130	-		25
trans-1,2-Dichloroethene	91		-		70-130	-		25
cis-1,2-Dichloroethene	89		-		70-130	-		25
Trichloroethene	85		-		70-130	-		25
Tetrachloroethene	88		-		70-130	-		25
Hexachlorobutadiene	105		-		70-130	-		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1125610-5 QC Sample: L1821128-03 Client ID: S01-B505-IA08-060418						
Vinyl chloride	ND	ND	ppbV	NC		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC		25
Trichloroethene	ND	ND	ppbV	NC		25
Tetrachloroethene	0.254	0.263	ppbV	3		25

Project Name: DOW HANGING ROCK

Lab Number: L1821128

Project Number: 693874.01.FD

Report Date: 06/14/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1821128-01	S01-B505-IA06-060418	0585	Flow 5	06/01/18	266485		-	-	-	Pass	10.0	9.1	9
L1821128-01	S01-B505-IA06-060418	2351	6.0L Can	06/01/18	266485	L1819564-01	Pass	-29.7	-3.7	-	-	-	-
L1821128-02	S01-B505-IA07-060418	01030	Flow 4	06/01/18	266485		-	-	-	Pass	10.0	10.0	0
L1821128-02	S01-B505-IA07-060418	1566	6.0L Can	06/01/18	266485	L1819564-03	Pass	-29.7	-2.8	-	-	-	-
L1821128-03	S01-B505-IA08-060418	0759	Flow 5	06/01/18	266485		-	-	-	Pass	10.0	9.7	3
L1821128-03	S01-B505-IA08-060418	1998	6.0L Can	06/01/18	266485	L1819564-05	Pass	-29.7	-6.7	-	-	-	-
L1821128-04	S01-B505-IA09-060418	0364	Flow 5	06/01/18	266485		-	-	-	Pass	10.0	9.8	2
L1821128-04	S01-B505-IA09-060418	2114	6.0L Can	06/01/18	266485	L1819564-07	Pass	-29.7	-3.4	-	-	-	-
L1821128-05	S01-B505-IA10-060418	0547	Flow 5	06/01/18	266485		-	-	-	Pass	10.0	9.0	11
L1821128-05	S01-B505-IA10-060418	974	6.0L Can	06/01/18	266485	L1819564-10	Pass	-29.7	-4.2	-	-	-	-
L1821128-06	S01-B505-IA11-060418	0241	Flow 5	06/01/18	266485		-	-	-	Pass	10.0	9.3	7
L1821128-06	S01-B505-IA11-060418	949	6.0L Can	06/01/18	266485	L1819564-08	Pass	-29.7	-6.4	-	-	-	-
L1821128-07	S01-B505-IA12-060418	0064	Flow 5	06/01/18	266485		-	-	-	Pass	9.7	9.4	3
L1821128-07	S01-B505-IA12-060418	1615	6.0L Can	06/01/18	266485	L1819564-02	Pass	-29.7	-15.5	-	-	-	-
L1821128-08	S01-B505-IA13-060418	0044	Flow 1	06/01/18	266485		-	-	-	Pass	10.0	10.0	0

Project Name: DOW HANGING ROCK

Lab Number: L1821128

Project Number: 693874.01.FD

Report Date: 06/14/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1821128-08	S01-B505-IA13-060418	787	6.0L Can	06/01/18	266485	L1819564-11	Pass	-29.7	-5.0	-	-	-	-
L1821128-09	S01-B505-IA14-060418	0946	Flow 4	06/01/18	266485		-	-	-	Pass	9.9	9.8	1
L1821128-09	S01-B505-IA14-060418	1538	6.0L Can	06/01/18	266485	L1819564-04	Pass	-29.7	-4.1	-	-	-	-
L1821128-10	S01-B505-IAFD01-060418	0270	Flow 5	06/01/18	266485		-	-	-	Pass	10.0	9.2	8
L1821128-10	S01-B505-IAFD01-060418	1964	6.0L Can	06/01/18	266485	L1819564-06	Pass	-29.7	-4.3	-	-	-	-
L1821128-11	S01-HGR-OA03-060418	0021	Flow 5	06/01/18	266485		-	-	-	Pass	10.0	9.7	3
L1821128-11	S01-HGR-OA03-060418	986	6.0L Can	06/01/18	266485	L1819564-14	Pass	-29.7	-7.8	-	-	-	-
L1821128-12	UNUSED CAN #2260	2260	6.0L Can	06/01/18	266485	L1819564-15	Pass	-29.8	-29.7	-	-	-	-
L1821128-13	UNUSED CAN #1565	1565	6.0L Can	06/01/18	266485	L1819564-16	Pass	-29.7	-29.8	-	-	-	-
L1821128-14	UNUSED CAN #1633	0294	Flow 5	06/01/18	266485		-	-	-	Pass	3.2	3.2	0
L1821128-14	UNUSED CAN #1633	1633	6.0L Can	06/01/18	266485	L1819566-01	Pass	-29.5	-29.5	-	-	-	-
L1821128-15	UNUSED CAN #2113	0811	Flow 3	06/01/18	266485		-	-	-	Pass	3.3	3.3	0
L1821128-15	UNUSED CAN #2113	2113	6.0L Can	06/01/18	266485	L1819880-02	Pass	-29.5	-29.5	-	-	-	-
L1821128-16	UNUSED CAN #1661	0034	Flow 5	06/01/18	266485		-	-	-	Pass	3.3	3.3	0
L1821128-16	UNUSED CAN #1661	1661	6.0L Can	06/01/18	266485	L1819695-02	Pass	-29.5	-29.5	-	-	-	-

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1819564
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819564-01
Client ID: CAN 2351 FC 0585
Sample Location:

Date Collected: 05/26/18 09:00
Date Received: 05/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/29/18 15:04
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	96		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	96		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1819564
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819564-02
Client ID: CAN 1615 FC 0064
Sample Location:

Date Collected: 05/26/18 09:00
Date Received: 05/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/29/18 15:43
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	96		60-140
bromochloromethane	96		60-140
chlorobenzene-d5	98		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1819564
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819564-03
Client ID: CAN 1566 FC 01030
Sample Location:

Date Collected: 05/26/18 09:00
Date Received: 05/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/29/18 16:21
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	100		60-140
bromochloromethane	101		60-140
chlorobenzene-d5	102		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1819564
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819564-04
Client ID: CAN 1538 FC 0946
Sample Location:

Date Collected: 05/26/18 09:00
Date Received: 05/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/29/18 16:59
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	95		60-140
bromochloromethane	95		60-140
chlorobenzene-d5	97		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1819564
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819564-05
Client ID: CAN 1998 FC 0759
Sample Location:

Date Collected: 05/26/18 09:00
Date Received: 05/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/29/18 17:37
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	95		60-140
bromochloromethane	95		60-140
chlorobenzene-d5	97		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1819564
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819564-06
Client ID: CAN 1964 FC 0270
Sample Location:

Date Collected: 05/26/18 09:00
Date Received: 05/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/29/18 18:15
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	95		60-140
bromochloromethane	96		60-140
chlorobenzene-d5	95		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1819564
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819564-07
Client ID: CAN 2114 FC 0364
Sample Location:

Date Collected: 05/26/18 09:00
Date Received: 05/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/29/18 18:54
Analyst: MB

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	100		60-140
bromochloromethane	100		60-140
chlorobenzene-d5	100		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1819564
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819564-08
Client ID: CAN 949 FC 0241
Sample Location:

Date Collected: 05/26/18 09:00
Date Received: 05/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/29/18 19:32
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	97		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	96		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1819564
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819564-10
Client ID: CAN 974 FC 0547
Sample Location:

Date Collected: 05/26/18 09:00
Date Received: 05/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/29/18 20:50
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	101		60-140
bromochloromethane	102		60-140
chlorobenzene-d5	102		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1819564
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819564-11
Client ID: CAN 787 FC 0044
Sample Location:

Date Collected: 05/26/18 09:00
Date Received: 05/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/29/18 21:29
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	98		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	96		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1819564
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819564-14
Client ID: CAN 986
Sample Location:

Date Collected: 05/26/18 09:00
Date Received: 05/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/29/18 23:24
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	103		60-140
bromochloromethane	102		60-140
chlorobenzene-d5	101		60-140

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1819564

Project Number: CANISTER QC INDIV **Report Date:** 06/14/18

Air Canister Certification Results

Lab ID: L1819564-15
Client ID: CAN 2260
Sample Location:

Date Collected: 05/26/18 09:00
Date Received: 05/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/30/18 00:03
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	105		60-140
bromochloromethane	106		60-140
chlorobenzene-d5	105		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1819564
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819564-16
Client ID: CAN 1565
Sample Location:

Date Collected: 05/26/18 09:00
Date Received: 05/27/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/30/18 00:42
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	98		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	94		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1819566
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819566-01
Client ID: CAN 1633 SHELF 51
Sample Location:

Date Collected: 05/27/18 10:30
Date Received: 05/29/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 05/29/18 14:39
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1819566
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819566-01
Client ID: CAN 1633 SHELF 51
Sample Location:

Date Collected: 05/27/18 10:30
Date Received: 05/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1819566
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819566-01
Client ID: CAN 1633 SHELF 51
Sample Location:

Date Collected: 05/27/18 10:30
Date Received: 05/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1819566
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819566-01
Client ID: CAN 1633 SHELF 51
Sample Location:

Date Collected: 05/27/18 10:30
Date Received: 05/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1819566
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819566-01
Client ID: CAN 1633 SHELF 51
Sample Location:

Date Collected: 05/27/18 10:30
Date Received: 05/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	101		60-140
Bromochloromethane	98		60-140
chlorobenzene-d5	93		60-140

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1819566

Project Number: CANISTER QC BAT **Report Date:** 06/14/18

Air Canister Certification Results

Lab ID: L1819566-01
Client ID: CAN 1633 SHELF 51
Sample Location:

Date Collected: 05/27/18 10:30
Date Received: 05/29/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/29/18 14:39
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1819566
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819566-01
Client ID: CAN 1633 SHELF 51
Sample Location:

Date Collected: 05/27/18 10:30
Date Received: 05/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1819566
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819566-01
Client ID: CAN 1633 SHELF 51
Sample Location:

Date Collected: 05/27/18 10:30
Date Received: 05/29/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	101		60-140
bromochloromethane	100		60-140
chlorobenzene-d5	95		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1819695
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819695-02
Client ID: CAN 1661 SHELF 57
Sample Location:

Date Collected: 05/29/18 16:00
Date Received: 05/30/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 05/30/18 08:42
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1819695
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819695-02
Client ID: CAN 1661 SHELF 57
Sample Location:

Date Collected: 05/29/18 16:00
Date Received: 05/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1819695
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819695-02
Client ID: CAN 1661 SHELF 57
Sample Location:

Date Collected: 05/29/18 16:00
Date Received: 05/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1819695
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819695-02
Client ID: CAN 1661 SHELF 57
Sample Location:

Date Collected: 05/29/18 16:00
Date Received: 05/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1819695
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819695-02
Client ID: CAN 1661 SHELF 57
Sample Location:

Date Collected: 05/29/18 16:00
Date Received: 05/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	94		60-140
Bromochloromethane	93		60-140
chlorobenzene-d5	89		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1819695
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819695-02
Client ID: CAN 1661 SHELF 57
Sample Location:

Date Collected: 05/29/18 16:00
Date Received: 05/30/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/30/18 08:42
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1819695

Project Number: CANISTER QC BAT **Report Date:** 06/14/18

Air Canister Certification Results

Lab ID: L1819695-02
Client ID: CAN 1661 SHELF 57
Sample Location:

Date Collected: 05/29/18 16:00
Date Received: 05/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1819695
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819695-02
Client ID: CAN 1661 SHELF 57
Sample Location:

Date Collected: 05/29/18 16:00
Date Received: 05/30/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	95		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	93		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1819880
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819880-02
Client ID: CAN 2113 SHELF 52
Sample Location:

Date Collected: 05/30/18 16:00
Date Received: 05/31/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 05/31/18 09:19
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1819880
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819880-02
Client ID: CAN 2113 SHELF 52
Sample Location:

Date Collected: 05/30/18 16:00
Date Received: 05/31/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1819880
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819880-02
Client ID: CAN 2113 SHELF 52
Sample Location:

Date Collected: 05/30/18 16:00
Date Received: 05/31/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1819880
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819880-02
Client ID: CAN 2113 SHELF 52
Sample Location:

Date Collected: 05/30/18 16:00
Date Received: 05/31/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1819880
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819880-02
Client ID: CAN 2113 SHELF 52
Sample Location:

Date Collected: 05/30/18 16:00
Date Received: 05/31/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	84		60-140
Bromochloromethane	86		60-140
chlorobenzene-d5	86		60-140

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1819880

Project Number: CANISTER QC BAT **Report Date:** 06/14/18

Air Canister Certification Results

Lab ID: L1819880-02
Client ID: CAN 2113 SHELF 52
Sample Location:

Date Collected: 05/30/18 16:00
Date Received: 05/31/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/31/18 09:19
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1819880
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819880-02
Client ID: CAN 2113 SHELF 52
Sample Location:

Date Collected: 05/30/18 16:00
Date Received: 05/31/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1819880
Report Date: 06/14/18

Air Canister Certification Results

Lab ID: L1819880-02
Client ID: CAN 2113 SHELF 52
Sample Location:

Date Collected: 05/30/18 16:00
Date Received: 05/31/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	85		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	83		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.01.FD

Lab Number: L1821128
Report Date: 06/14/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
N/A	Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1821128-01A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1821128-02A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1821128-03A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1821128-04A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1821128-05A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1821128-06A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1821128-07A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1821128-08A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1821128-09A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1821128-10A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1821128-11A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1821128-12A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		CLEAN-FEE()
L1821128-13A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		CLEAN-FEE()
L1821128-14A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		CLEAN-FEE()
L1821128-15A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		CLEAN-FEE()
L1821128-16A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		CLEAN-FEE()

*Values in parentheses indicate holding time in days

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1821128
Project Number:	693874.01.FD	**Report Date:**	06/14/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1821128
Project Number:	693874.01.FD	**Report Date:**	06/14/18

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 2

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 6-7-18

ALPHA Job #: L1821128

Client Information

Client: Jacobs
Address: 1 Neumann Way
Cincinnati, OH 45215
Phone: 513-673-2201
Fax: -
Email: marie.chiller@jacobs.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: DOW Hanging Rock
Project Location: Ironton, OH
Project #: 693874.01.FD
Project Manager: Marie Chiller
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☑ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☐

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS TO-15	TO-15 SIM	APH Subset Non-petroleum HCs	Fixed Gases	Sulfides & Mercaptans by TO-15	☐	Sample Comments (i.e. PID)
21128-01	SO1-B505-IA06-060418	06/04/18	10:35	21:04	-29.69	-2.98 "Hg	AA	B.I	6L	2351	0585	X						
02	SO1-B505-IA07-060418	06/04/18	10:16	21:14	-29.28	-2.07	AA	B.I	6L	1566	1030	X						
03	SO1-B505-IA08-060418	06/04/18	10:32	19:05	-29.44	-5.65	AA	B.I	6L	1998	0769	X						
04	SO1-B505-IA09-060418	06/04/18	10:42	20:40	-29.65	-2.76	AA	B.I	6L	2114	0364	X						
05	SO1-B505-IA10-060418	06/04/18	10:39	20:25	-29.42	-3.54	AA	B.I	6L	974	0547	X						
06	SO1-B505-IA11-060418	06/04/18	10:40	19:24	-29.43	-5.84	AA	B.I	6L	949	0241	X						
07	SO1-B505-IA12-060418	06/04/18	10:26	21:27	-29.25	-14.93	AA	B.I	6L	1615	0064	X						
08	SO1-B505-IA13-060418	06/04/18	10:43	19:55	-29.84	-4.18	AA	B.I	6L	787	0044	X						
09	SO1-B505-IA14-060418	06/04/18	10:45	20:05	-29.38	-3.28	AA	B.I	6L	1538	0946	X						
10	SO1-B505-IAFD01-060418	06/04/18	10:39	20:25	-29.56	-3.84	AA	B.I	6L	1964	0270	X						

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
Elsy A. Escobar/Jacobs Fexex	6/5/18 0900	Fedex	
			6-7-18 1226

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

AIR ANALYSIS

PAGE 2 OF 2

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 6-7-18

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Client Information

Client: Jacobs
Address: 1 Neumann Way
Cincinnati, OH 45215
Phone: 513-673-2201
Fax: —
Email: marie.chiller@jacobs.com
☐ These samples have been previously analyzed by Alpha

Project Information

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Project #: 693874.01.FD
Project Manager: Marie Chiller
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☑ EMAIL (standard pdf report)
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Project-Specific Target Compound List: ☐

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS TO-15	TO-15 SIM	APH Subtract Non-petroleum HCs ☐	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
21128-11	SOI-HGR-0A03-060418	06/04/18	11:20	19:10	-29.67	-6.40	AA	B.I	6L	936	0021	X					

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
Elsy A. Escobar / Jacobs	6/5/18 0900	Fedex	
Fedex		[signature] AAL	6-7-18 1226

ORIGIN ID:HTSA (717) 799-4987
IAN BINGEMAN

10945 RT 60
RM # 105
ASHLAND, KY 41102
UNITED STATES US

SHIP DATE: 05JUN18
ACTWGT: 42.80 LB
CAD: 006994268/SSFE1804
DIMS: 29x21x15 IN

BILL THIRD PARTY

TO ATTN CHRIS ANDERSON
ALPHA ANALYTICAL
320 FORBES BLVD
PROJECT # 693874.01.FD
MANSFIELD MA 02048
(717) 822-9300

INV:
PO:
REF:
DEPT:

FedEx Express

3 of 4
MPS# 0263 7812 8708 3327
Mstr# 7812 8708 3305
0201

FRI - 08 JUN 4:30P
EXPRESS SAVER

SE PYMA

02048
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513-530-5520
www.jacobs.com

Mr. Gregory Rudloff
United States Environmental Protection Agency (USEPA)
Region 5
77 W. Jackson Blvd. LU-9J
Chicago, IL 60604

August 31, 2018

Subject: Four-Month Post Interim Measures Indoor Air Analytical Data Submittal for the Former Dow Hanging Rock Site, Ironton, OH EPA ID# OHR 000 157 727 and OHD 039 128 913

Dear Mr. Rudloff,

On behalf of The Dow Chemical Company, Jacobs, is submitting the 4-month post short-term interim measures completed indoor air sampling analytical results at Building 505, former Dow Hanging Rock site near Ironton, Ohio.

The detections from the 4-month post indoor air samples were less than the Ohio Environmental Protection Agency response guidance accelerated response and chronic response action levels and below the USEPA indoor air regional screening levels.

The indoor air sampling was conducted on August 15, 2018, within four months of the interim measures being completed on April 5, 2018. Nine indoor air samples, one duplicate, and one outside/ambient air sample were collected. The canisters were shipped to Alpha Analytical located in Mansfield, Massachusetts, and analyzed for PCE, TCE, 1,1-DCE, trans-1,2-DCE, cis-1,2-DCE, and vinyl chloride by USEPA Method TO-15 SIM. The 8-month post-sampling event will be conducted within 36 weeks of completing the interim measures, on or before December 13, 2018.

Attached are the laboratory analytical data package, the unvalidated data tabulated with previous results (Table 1), and a figure showing the data and sample locations within the building (Figure 1).

Please contact me at (513) 673-2201 or Mr. Timothy King at (304) 747-3763 should you have any questions or comments.

Sincerely,

Marie W. Chiller, Jacobs
Site Manager

Attachments

cc: Timothy King/The Dow Chemical Company

Table 1. Building 505 September 2017, April 2018, May 2018, June 2018, and August 2018 Outdoor and Indoor Air Analytical Results[a] *Vapor Intrusion Investigation Summary,Hanging Rock Site, Ironton, Ohio*

			Analyte	TETRACHLOROETHYLENE (PCE)	TRICHLOROETHYLENE (TCE)	CIS-1,2-DICHLOROETHYLENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
			USEPA Indoor Air RSL[b]	175	9	NA	NA	876	28
			Ohio EPA Response Action Level[c]	180	8.8	NA	NA	NA	28
			Unit	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3
Sample Location	**Sample ID**	**Date**		**Building 505**					
			Outdoor Air						
S01-HGR-OA01	S01-HGR-OA01-090817	9/8/17		**0.068 J**	0.107 U	0.079 U	0.079 U	0.079 U	0.018U
S01-HGR-OA02	S01-HGR-OA02-041218	4/12/18		0.136 U	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
S01-HGR-OA03	S01-HER-OA-050418	5/4/18		**0.156**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
S01-HGR-OA03	S01-HER-OA03-060418	6/4/18		0.136 U	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
S01-HGR-OA03	S01-HER-OA03-081518	8/15/18		0.136 U	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
			Indoor Air						
IA06	S01-B505-IA06-090817	9/8/17		**326**	**1.04**	**0.079**	**0.024 J**	0.079 U	0.018U
	S01-B505-IA06-041218	4/12/18		**30.2**	**0.559**	**0.17**	0.079 U	0.079 U	0.051 U
	S01-B505-IA06-050418	5/4/18		**11.7**	**0.242**	**0.079**	0.079 U	0.079 U	0.051 U
	S01-B505-IA06-060418	6/4/18		**5.51**	**0.183**	**0.099**	0.079 U	0.079 U	0.051 U
	S01-B505-IA06-081518	8/15/18		**1.99**	**0.124**	0.079 U	0.079 U	0.079 U	0.051 U
IA07	S01-B505-IA07-090817	9/8/17		**220**	**0.451**	**0.06 J**	**0.024 J**	0.079 U	0.018U
	S01-B505-IA07-041218	4/12/18		**15.9**	**0.597**	**0.111**	0.079 U	0.079 U	0.051 U
	S01-B505-IA07-050418	5/4/18		**12.6**	**0.408**	**0.083**	0.079 U	0.079 U	0.051 U
	S01-B505-IA07-060418	6/4/18		**1.85**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA07-081518	8/15/18		**1.55**	**0.150**	0.079 U	0.079 U	0.079 U	0.051 U
IA08	S01-B505-IA08-090817	9/8/17		**197**	**0.403**	**0.052 J**	0.079 U	0.079 U	0.018U
	S01-B505-IA08-050418	5/4/18		**6.64**	**0.220**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA08-060418	6/4/18		**1.72**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA08-081518	8/15/18		**2.21**	**0.204**	0.079 U	0.079 U	0.079 U	0.051 U
IA09	S01-B505-IA09-090817	9/8/17		**268**	**0.543**	**0.067 J**	**0.028 J**	0.079 U	0.018U
	S01-HGR-090817-FD02	9/8/17		**262**	**0.527**	**0.071 J**	0.079 U	0.079 U	0.018U
	S01-B505-IA09-041218	4/12/18		**17.4**	**0.532**	**0.159**	0.079 U	0.079 U	0.051 U
	S01-B505-IA09-050418	5/4/18		**7.46**	**0.247**	**0.079**	0.079 U	0.079 U	0.051 U
	S01-B505-FD01-050418	5/4/18		**8.41**	**0.290**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA09-060418	6/4/18		**1.97**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IAFD01-050420	6/4/18		**3.39**	**0.140**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA09-081518	8/15/18		**1.67**	**0.129**	0.079 U	0.079 U	0.079 U	0.051 U
IA10	S01-B505-IA10-090817	9/8/17		**324**	**1.00**	**0.099**	**0.024 J**	0.079 U	0.018U
	S01-B505-IA10-041218	4/12/18		**45.5**	**0.736**	**0.297**	0.079 U	0.079 U	0.051 U
	S01-B505-IA10-050418	5/4/18		**14.6**	**0.575**	**0.103**	0.079 U	0.079 U	0.051 U
	S01-B505-IA10-060418	6/4/18		**3.42**	**0.145**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA10-081518	8/15/18		**1.79**	**0.145**	0.079 U	0.079 U	0.079 U	0.051 U
IA11	S01-B505-IA11-041218	4/12/18		**30.6**	**0.376**	**0.297**	0.079 U	0.079 U	0.051 U
	S01-B505-IA11-050418	5/4/18		**9.56**	**0.220**	**0.095**	0.079 U	0.079 U	0.051 U
	S01-B505-IA11-060418	6/4/18		**3.40**	**0.118**	**0.083**	0.079 U	0.079 U	0.051 U
	S01-B505-IA11-081518	8/15/18		**1.59**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-FD01-081518	8/15/18		**1.64**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
IA12	S01-B505-IA12-041218	4/12/18		**3.27**	**0.161**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-041218-FD01	4/12/18		**3.36**	**0.167**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-050418	5/4/18		**1.58**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-060418	6/4/18		**1.11**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-081518	8/15/18		**1.08**	**0.193**	0.079 U	0.079 U	0.079 U	0.051 U
IA13	S01-B505-IA13-050418	5/4/18		**19.0**	**0.177**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA13-060418	6/4/18		**15.2**	**0.333**	**0.309**	0.079 U	0.079 U	0.051 U
	S01-B505-IA13-081518	8/15/18		**12**	**0.242**	**0.091**	**0.131**	0.079 U	0.051 U
IA14	S01-B505-IA14-050418	5/4/18		**8.21**	**0.193**	**0.230**	0.079 U	0.079 U	0.051 U
	S01-B505-IA14-060418	6/4/18		**20.8**	**0.548**	**1.05**	0.079 U	0.079 U	0.051 U
	S01-B505-IA14-081518	8/15/18		**7.66**	**0.263**	**0.333**	0.079 U	0.079 U	0.051 U

Notes:

[a]: The August 2018 data are preliminary. This data has not yet been validated.

[b]: RSL is a risk-based screening level derived from the lowest of the cancer-based (TCR = 1 x 10^{-5}) or the noncancer-based (THQ = 1) industrial indoor air Regional Screening Levels (RSLs) [EPA, 2018], which ever is

[c]: Ohio EPA response guidance provides an Accelerated Response Action Level for trichloroethylene (TCE) based on a THQ=1 and Chronic Response Action Levels for tetrachloroethylene (PCE)and vinyl chloride (based on a THQ=1 or TCR=1 x 10^{-5}). Source - Ohio EPA Guidance Document Recommendations Reguarding Response Action Levels and Timeframes for Common Contaminants of Concern at Vapor Intrusion Sites in Ohio (Ohio EPA, August 2016).

Bold text indicates a detection

Shading indicates a VISL exceedance

= - detected result

µg/m^3 - micrograms per cubic meter

J - estimated result

N/A - not applicable

TCR - target risk for carcinogens

THQ - target hazard quotient for non-carcinogens

U - not detected, reporting limit shown

VISL = vapor intrusion screening level

EPA, 2017. Regoional Screening Levels (RSLs). November. https://www.epa.gov/risk/regional-screening-levels-rsls

N

0 8 16 24

SCALE IN FEET
(APPROXIMATE)

Location	Date	PCE ug/m³	TCE ug/m³
IA08	9/8/17	197	0.403
	5/4/18	6.64	0.220
	6/4/18	1.72	0.107 U
	8/15/18	2.21	0.204

Location	Date	PCE ug/m³	TCE ug/m³
IA09	9/8/17	268	0.543
	4/12/18	17.4	0.532
	5/4/18	8.41	0.290
	6/4/18	3.39	0.140
	8/15/18	1.67	0.129

Location	Date	PCE ug/m³	TCE ug/m³
IA10	9/8/17	324	1.000
	4/12/18	45.5	0.736
	5/4/18	14.6	0.575
	6/4/18	3.42	0.145
	8/15/18	1.79	0.145

Location	Date	PCE ug/m³	TCE ug/m³
IA11	4/12/18	30.6	0.376
	5/4/18	9.56	0.220
	6/4/18	3.40	0.118
	8/15/18	1.59	0.107 U

OFF L8
OFF L9 (KITCHENETTE/ COFFEE ROOM)
OFF L10 (PROJECT FILE STORAGE AND LARGE COPIER)
OFF I14 (PLANT DRAWINGS STORAGE)
OFF L14
OFF L7
OFF L15 (CONFERENCE ROOM)
KITCHEN/ BREAKROOM
MEN'S ROOM
LADIES' ROOM
OFF L6
IA-09
IA-08
OFF L5
OFF L11
OFF L12
OFF L13
JANITOR
APU
SEALED CRACK IN FLOOR
IA-12
OFF L4 (STORAGE ROOM)
OFF L3
OFF L2
OFF L1
IA-07
CONFERENCE ROOM 16
OFF R10 (ELECTRICAL ROOM)
OFF R1
OFF R2
OFF R3
OFF R4
AEROSOL CAN USE AND STORAGE AREA
OFF R4A
IA-10
OFF R9
OFF R8
IA-11
SEALED CRACK IN FLOOR
OFF R6 (ELECTRONIC STORAGE/ MAINTENANCE SHOP)
APU
OFF R5 (PROCESS CONTROL PARTS STORAGE)
OFF R7 (COPY ROOM)
STORE ROOM (WAREHOUSE SHELFING, SMALL PARTS, AEROSOL CANS, ETC.)
OFF R20
STORE ROOM (EQUIPMENT, TOTES, PALLETS, SHELFING, ETC.)
OFF R19
OFF R18 (CLEANING SUPPLIES STORAGE)
IA-14
OFF R17 (BREAK ROOM AND RESTROOM)
OFF R11
OFF R12
OFF R13
IA-06
OFF R14
OFF R16
IA-13
OFF R15
SEALED GAP BETWEEN FLOOR AND FIRE WATER LINE RISER

Location	Date	PCE ug/m³	TCE ug/m³
IA12	4/12/18	3.27	0.161
	5/4/18	1.58	0.107 U
	6/4/18	1.11	0.107 U
	8/15/18	1.08	0.193

Location	Date	PCE ug/m³	TCE ug/m³
IA07	9/8/17	220	0.451
	4/12/18	15.9	0.597
	5/4/18	12.6	0.408
	6/4/18	1.85	0.107 U
	8/15/18	1.55	0.150

Location	Date	PCE ug/m³	TCE ug/m³
IA06	9/8/17	326	1.04
	4/12/18	30.2	0.559
	5/4/18	11.7	0.242
	6/4/18	5.51	0.183
	8/15/18	1.99	0.124

Location	Date	PCE ug/m³	TCE ug/m³
IA14	5/4/18	8.21	0.193
	6/4/18	20.8	0.548
	8/15/18	7.66	0.263

Location	Date	PCE ug/m³	TCE ug/m³
IA13	5/4/18	19.0	0.177
	6/4/18	15.2	0.333
	8/15/18	12	0.242

Legend

APU AIR PURIFYING UNIT

INDOOR AIR SAMPLE

GARAGE DOOR

Notes:

µg/m³ = MICROGRAMS PER CUBIC METER
SHADED DATA EXCEEDS THE SCREENING LEVEL
U = NOT DETECTED

Location	Date	PCE ug/m³	TCE ug/m³
Outdoor Air	9/8/17	0.068 J	0.107 U
	4/12/18	0.136 U	0.107 U
	5/4/18	0.156	0.107 U
	6/4/18	0.136 U	0.107 U
	8/15/18	0.136 U	0.107 U

Analyte	Unit	Ohio EPA Response Action Level	USEPA Regional Screening Level
Tetrachloroethylene (PCE)	µg/m³	180	175
Trichloroethylene (TCE)	µg/m³	8.8	9

Figure 1
Building 505 Layout and PCE and TCE Indoor Sampling Air Results
Hanging Rock Facility
Ironton, OH

JACOBS

ANALYTICAL REPORT

Lab Number:	L1832614
Client:	CH2MHILL 1880 Way Cross Road Cincinatti, OH 45420
ATTN:	Marie Chiller
Phone:	(513) 673-2201
Project Name:	DOW HANGING ROCK
Project Number:	693874.CI.FD
Report Date:	08/28/18

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1832614
Report Date: 08/28/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1832614-01	S01-B505-IA07-081518	AIR	IRONTON, OH	08/15/18 21:05	08/20/18
L1832614-02	S01-B505-IA12-081518	AIR	IRONTON, OH	08/15/18 21:06	08/20/18
L1832614-03	S01-B505-IA08-081518	AIR	IRONTON, OH	08/15/18 21:07	08/20/18
L1832614-04	S01-B505-IA09-081518	AIR	IRONTON, OH	08/15/18 21:13	08/20/18
L1832614-05	S01-B505-IA10-081518	AIR	IRONTON, OH	08/15/18 21:14	08/20/18
L1832614-06	S01-B505-IA11-081518	AIR	IRONTON, OH	08/15/18 21:16	08/20/18
L1832614-07	S01-B505-FD01-081518	AIR	IRONTON, OH	08/15/18 21:16	08/20/18
L1832614-08	S01-B505-IA06-081518	AIR	IRONTON, OH	08/15/18 21:18	08/20/18
L1832614-09	S01-B505-IA13-081518	AIR	IRONTON, OH	08/15/18 21:25	08/20/18
L1832614-10	S01-B505-IA14-081518	AIR	IRONTON, OH	08/15/18 21:26	08/20/18
L1832614-11	S01-HGR-OA03-081518	AIR	IRONTON, OH	08/15/18 21:31	08/20/18
L1832614-12	UNUSED CAN #2636	AIR	IRONTON, OH		08/20/18

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1832614
Project Number:	693874.CI.FD	**Report Date:**	08/28/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1832614
Project Number:	693874.CI.FD	**Report Date:**	08/28/18

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on August 13, 2018. The canister certification results are provided as an addendum.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 08/28/18

AIR

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD
Lab Number: L1832614
Report Date: 08/28/18

SAMPLE RESULTS

Lab ID: L1832614-01
Client ID: S01-B505-IA07-081518
Sample Location: IRONTON, OH

Date Collected: 08/15/18 21:05
Date Received: 08/20/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/24/18 18:57
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.028	0.020	--	0.150	0.107	--		1
Tetrachloroethene	0.228	0.020	--	1.55	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	95		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	99		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1832614
Report Date: 08/28/18

SAMPLE RESULTS

Lab ID: L1832614-02
Client ID: S01-B505-IA12-081518
Sample Location: IRONTON, OH

Date Collected: 08/15/18 21:06
Date Received: 08/20/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/24/18 19:35
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.036	0.020	--	0.193	0.107	--		1
Tetrachloroethene	0.159	0.020	--	1.08	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	96		60-140
bromochloromethane	98		60-140
chlorobenzene-d5	99		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1832614
Report Date: 08/28/18

SAMPLE RESULTS

Lab ID: L1832614-03
Client ID: S01-B505-IA08-081518
Sample Location: IRONTON, OH

Date Collected: 08/15/18 21:07
Date Received: 08/20/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/24/18 20:14
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.038	0.020	--	0.204	0.107	--		1
Tetrachloroethene	0.326	0.020	--	2.21	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	89		60-140
bromochloromethane	89		60-140
chlorobenzene-d5	90		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1832614
Report Date: 08/28/18

SAMPLE RESULTS

Lab ID: L1832614-04
Client ID: S01-B505-IA09-081518
Sample Location: IRONTON, OH

Date Collected: 08/15/18 21:13
Date Received: 08/20/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/24/18 21:31
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.024	0.020	--	0.129	0.107	--		1
Tetrachloroethene	0.246	0.020	--	1.67	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	88		60-140
bromochloromethane	90		60-140
chlorobenzene-d5	81		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1832614
Report Date: 08/28/18

SAMPLE RESULTS

Lab ID: L1832614-05
Client ID: S01-B505-IA10-081518
Sample Location: IRONTON, OH

Date Collected: 08/15/18 21:14
Date Received: 08/20/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/24/18 22:10
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.027	0.020	--	0.145	0.107	--		1
Tetrachloroethene	0.264	0.020	--	1.79	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	83		60-140
bromochloromethane	84		60-140
chlorobenzene-d5	79		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD
Lab Number: L1832614
Report Date: 08/28/18

SAMPLE RESULTS

Lab ID: L1832614-06
Client ID: S01-B505-IA11-081518
Sample Location: IRONTON, OH

Date Collected: 08/15/18 21:16
Date Received: 08/20/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/24/18 22:48
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	0.234	0.020	--	1.59	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	88		60-140
bromochloromethane	90		60-140
chlorobenzene-d5	89		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1832614
Report Date: 08/28/18

SAMPLE RESULTS

Lab ID: L1832614-07
Client ID: S01-B505-FD01-081518
Sample Location: IRONTON, OH

Date Collected: 08/15/18 21:16
Date Received: 08/20/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/24/18 23:27
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	0.242	0.020	--	1.64	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	86		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	86		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1832614
Report Date: 08/28/18

SAMPLE RESULTS

Lab ID: L1832614-08
Client ID: S01-B505-IA06-081518
Sample Location: IRONTON, OH

Date Collected: 08/15/18 21:18
Date Received: 08/20/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/25/18 00:05
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.023	0.020	--	0.124	0.107	--		1
Tetrachloroethene	0.293	0.020	--	1.99	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	90		60-140
bromochloromethane	91		60-140
chlorobenzene-d5	92		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1832614
Report Date: 08/28/18

SAMPLE RESULTS

Lab ID: L1832614-09
Client ID: S01-B505-IA13-081518
Sample Location: IRONTON, OH

Date Collected: 08/15/18 21:25
Date Received: 08/20/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/25/18 00:44
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	0.033	0.020	--	0.131	0.079	--		1
cis-1,2-Dichloroethene	0.023	0.020	--	0.091	0.079	--		1
Trichloroethene	0.045	0.020	--	0.242	0.107	--		1
Tetrachloroethene	1.77	0.020	--	12.0	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	92		60-140
bromochloromethane	93		60-140
chlorobenzene-d5	91		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD
Lab Number: L1832614
Report Date: 08/28/18

SAMPLE RESULTS

Lab ID: L1832614-10
Client ID: S01-B505-IA14-081518
Sample Location: IRONTON, OH

Date Collected: 08/15/18 21:26
Date Received: 08/20/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/25/18 01:22
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	0.084	0.020	--	0.333	0.079	--		1
Trichloroethene	0.049	0.020	--	0.263	0.107	--		1
Tetrachloroethene	1.13	0.020	--	7.66	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	93		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	95		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD
Lab Number: L1832614
Report Date: 08/28/18

SAMPLE RESULTS

Lab ID: L1832614-11
Client ID: S01-HGR-OA03-081518
Sample Location: IRONTON, OH

Date Collected: 08/15/18 21:31
Date Received: 08/20/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/24/18 18:18
Analyst: GJ

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	91		60-140
bromochloromethane	95		60-140
chlorobenzene-d5	85		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD
Lab Number: L1832614
Report Date: 08/28/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 08/24/18 16:17

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-11 Batch: WG1150378-4								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: 693874.CI.FD

Lab Number: L1832614

Report Date: 08/28/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 Batch: WG1150378-3								
Vinyl chloride	71		-		70-130	-		25
1,1-Dichloroethene	88		-		70-130	-		25
trans-1,2-Dichloroethene	91		-		70-130	-		25
1,1-Dichloroethane	92		-		70-130	-		25
cis-1,2-Dichloroethene	94		-		70-130	-		25
1,2-Dichloroethane	119		-		70-130	-		25
1,1,1-Trichloroethane	96		-		70-130	-		25
Benzene	72		-		70-130	-		25
Trichloroethene	84		-		70-130	-		25
Tetrachloroethene	90		-		70-130	-		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1832614
Report Date: 08/28/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1150378-5 QC Sample: L1832614-03 Client ID: S01-B505-IA08-081518						
Vinyl chloride	ND	ND	ppbV	NC		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC		25
Trichloroethene	0.038	0.043	ppbV	12		25
Tetrachloroethene	0.326	0.343	ppbV	5		25

Project Name: DOW HANGING ROCK

Lab Number: L1832614

Project Number: 693874.CI.FD

Report Date: 08/28/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1832614-01	S01-B505-IA07-081518	0920	Flow 5	08/13/18	271875		-	-	-	Pass	10.0	9.5	5
L1832614-01	S01-B505-IA07-081518	2626	6.0L Can	08/13/18	271875	L1830985-05	Pass	-29.2	-9.5	-	-	-	-
L1832614-02	S01-B505-IA12-081518	0964	Flow 5	08/13/18	271875		-	-	-	Pass	10.0	10.2	2
L1832614-02	S01-B505-IA12-081518	2624	6.0L Can	08/13/18	271875	L1830985-03	Pass	-29.8	-8.4	-	-	-	-
L1832614-03	S01-B505-IA08-081518	0733	Flow 4	08/13/18	271875		-	-	-	Pass	10.0	11.1	10
L1832614-03	S01-B505-IA08-081518	2641	6.0L Can	08/13/18	271875	L1830985-09	Pass	-29.4	-7.6	-	-	-	-
L1832614-04	S01-B505-IA09-081518	01033	Flow 4	08/13/18	271875		-	-	-	Pass	10.0	10.4	4
L1832614-04	S01-B505-IA09-081518	2634	6.0L Can	08/13/18	271875	L1830985-10	Pass	-29.4	-10.6	-	-	-	-
L1832614-05	S01-B505-IA10-081518	0975	Flow 3	08/13/18	271875		-	-	-	Pass	10.0	9.5	5
L1832614-05	S01-B505-IA10-081518	2633	6.0L Can	08/13/18	271875	L1830985-13	Pass	-29.5	-10.2	-	-	-	-
L1832614-06	S01-B505-IA11-081518	0779	Flow 4	08/13/18	271875		-	-	-	Pass	10.0	9.4	6
L1832614-06	S01-B505-IA11-081518	2640	6.0L Can	08/13/18	271875	L1830985-02	Pass	-29.6	-9.9	-	-	-	-
L1832614-07	S01-B505-FD01-081518	0168	Flow 5	08/13/18	271875		-	-	-	Pass	10.0	9.1	9
L1832614-07	S01-B505-FD01-081518	2638	6.0L Can	08/13/18	271875	L1830985-04	Pass	-29.3	-8.6	-	-	-	-
L1832614-08	S01-B505-IA06-081518	0702	Flow 5	08/13/18	271875		-	-	-	Pass	10.0	9.9	1

Project Name: DOW HANGING ROCK

Lab Number: L1832614

Project Number: 693874.CI.FD

Report Date: 08/28/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1832614-08	S01-B505-IA06-081518	2635	6.0L Can	08/13/18	271875	L1830985-11	Pass	-29.4	-10.1	-	-	-	-
L1832614-09	S01-B505-IA13-081518	0841	Flow 5	08/13/18	271875		-	-	-	Pass	10.0	9.3	7
L1832614-09	S01-B505-IA13-081518	2604	6.0L Can	08/13/18	271875	L1830985-15	Pass	-29.1	-7.9	-	-	-	-
L1832614-10	S01-B505-IA14-081518	0367	Flow 5	08/13/18	271875		-	-	-	Pass	10.0	9.4	6
L1832614-10	S01-B505-IA14-081518	2628	6.0L Can	08/13/18	271875	L1830985-06	Pass	-29.5	-9.5	-	-	-	-
L1832614-11	S01-HGR-OA03-081518	0543	Flow 5	08/13/18	271875		-	-	-	Pass	10.0	4.3	80
L1832614-11	S01-HGR-OA03-081518	2637	6.0L Can	08/13/18	271875	L1830985-07	Pass	-29.3	-10.9	-	-	-	-
L1832614-12	UNUSED CAN #2636	01034	Flow 4	08/13/18	271875		-	-	-	Pass	10.0	10.0	0
L1832614-12	UNUSED CAN #2636	2636	6.0L Can	08/13/18	271875	L1830985-12	Pass	-29.4	-29.5	-	-	-	-

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-02
Client ID: CAN 2640 FC 0779
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/09/18 17:15
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-02
Client ID: CAN 2640 FC 0779
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-02
Client ID: CAN 2640 FC 0779
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-02
Client ID: CAN 2640 FC 0779
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-02
Client ID: CAN 2640 FC 0779
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	109		60-140
Bromochloromethane	110		60-140
chlorobenzene-d5	109		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-02
Client ID: CAN 2640 FC 0779
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/09/18 17:15
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-02
Client ID: CAN 2640 FC 0779
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-02
Client ID: CAN 2640 FC 0779
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	102		60-140
bromochloromethane	103		60-140
chlorobenzene-d5	104		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-03
Client ID: CAN 2624 FC 0964
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/09/18 17:54
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-03
Client ID: CAN 2624 FC 0964
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1830985

Project Number: CANISTER QC INDIV **Report Date:** 08/28/18

Air Canister Certification Results

Lab ID: L1830985-03
Client ID: CAN 2624 FC 0964
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-03
Client ID: CAN 2624 FC 0964
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

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Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-03
Client ID: CAN 2624 FC 0964
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					
Silanol, Trimethyl-	1.3	NJ	ppbV		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	113		60-140
Bromochloromethane	114		60-140
chlorobenzene-d5	110		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-03
Client ID: CAN 2624 FC 0964
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/09/18 17:54
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-03
Client ID: CAN 2624 FC 0964
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-03
Client ID: CAN 2624 FC 0964
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	104		60-140
bromochloromethane	106		60-140
chlorobenzene-d5	106		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-04
Client ID: CAN 2638 FC 0168
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/09/18 18:32
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-04
Client ID: CAN 2638 FC 0168
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-04
Client ID: CAN 2638 FC 0168
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-04
Client ID: CAN 2638 FC 0168
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-04
Client ID: CAN 2638 FC 0168
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	111		60-140
Bromochloromethane	114		60-140
chlorobenzene-d5	110		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-04
Client ID: CAN 2638 FC 0168
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/09/18 18:32
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	0.120	0.100	--	0.383	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1830985

Project Number: CANISTER QC INDIV **Report Date:** 08/28/18

Air Canister Certification Results

Lab ID: L1830985-04
Client ID: CAN 2638 FC 0168
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-04
Client ID: CAN 2638 FC 0168
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	104		60-140
bromochloromethane	106		60-140
chlorobenzene-d5	106		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-05
Client ID: CAN 2626 FC 0920
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/09/18 19:10
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-05
Client ID: CAN 2626 FC 0920
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-05
Client ID: CAN 2626 FC 0920
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-05
Client ID: CAN 2626 FC 0920
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-05
Client ID: CAN 2626 FC 0920
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	114		60-140
Bromochloromethane	116		60-140
chlorobenzene-d5	114		60-140

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1830985

Project Number: CANISTER QC INDIV **Report Date:** 08/28/18

Air Canister Certification Results

Lab ID: L1830985-05
Client ID: CAN 2626 FC 0920
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/09/18 19:10
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-05
Client ID: CAN 2626 FC 0920
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-05
Client ID: CAN 2626 FC 0920
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	106		60-140
bromochloromethane	108		60-140
chlorobenzene-d5	109		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-06
Client ID: CAN 2628 FC 0367
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/09/18 19:48
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-06
Client ID: CAN 2628 FC 0367
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1830985

Project Number: CANISTER QC INDIV **Report Date:** 08/28/18

Air Canister Certification Results

Lab ID: L1830985-06
Client ID: CAN 2628 FC 0367
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-06
Client ID: CAN 2628 FC 0367
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-06
Client ID: CAN 2628 FC 0367
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	112		60-140
Bromochloromethane	113		60-140
chlorobenzene-d5	111		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-06
Client ID: CAN 2628 FC 0367
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/09/18 19:48
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1830985

Project Number: CANISTER QC INDIV **Report Date:** 08/28/18

Air Canister Certification Results

Lab ID: L1830985-06
Client ID: CAN 2628 FC 0367
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-06
Client ID: CAN 2628 FC 0367
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	104		60-140
bromochloromethane	106		60-140
chlorobenzene-d5	106		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-07
Client ID: CAN 2637 FC 0543
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/09/18 20:27
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-07
Client ID: CAN 2637 FC 0543
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-07
Client ID: CAN 2637 FC 0543
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-07
Client ID: CAN 2637 FC 0543
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-07
Client ID: CAN 2637 FC 0543
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	113		60-140
Bromochloromethane	115		60-140
chlorobenzene-d5	113		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-07
Client ID: CAN 2637 FC 0543
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/09/18 20:27
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-07
Client ID: CAN 2637 FC 0543
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-07
Client ID: CAN 2637 FC 0543
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	105		60-140
bromochloromethane	107		60-140
chlorobenzene-d5	108		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-09
Client ID: CAN 2641 FC 0733
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/09/18 21:43
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-09
Client ID: CAN 2641 FC 0733
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-09
Client ID: CAN 2641 FC 0733
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-09
Client ID: CAN 2641 FC 0733
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-09
Client ID: CAN 2641 FC 0733
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	115		60-140
Bromochloromethane	117		60-140
chlorobenzene-d5	113		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-09
Client ID: CAN 2641 FC 0733
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/09/18 21:43
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1830985

Project Number: CANISTER QC INDIV **Report Date:** 08/28/18

Air Canister Certification Results

Lab ID: L1830985-09
Client ID: CAN 2641 FC 0733
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1830985

Project Number: CANISTER QC INDIV **Report Date:** 08/28/18

Air Canister Certification Results

Lab ID: L1830985-09
Client ID: CAN 2641 FC 0733
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	107		60-140
bromochloromethane	109		60-140
chlorobenzene-d5	108		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-10
Client ID: CAN 2634 FC 01033
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/09/18 22:21
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-10
Client ID: CAN 2634 FC 01033
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-10
Client ID: CAN 2634 FC 01033
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-10
Client ID: CAN 2634 FC 01033
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-10
Client ID: CAN 2634 FC 01033
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	115		60-140
Bromochloromethane	115		60-140
chlorobenzene-d5	113		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-10
Client ID: CAN 2634 FC 01033
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/09/18 22:21
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	0.102	0.100	--	0.326	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1830985

Project Number: CANISTER QC INDIV **Report Date:** 08/28/18

Air Canister Certification Results

Lab ID: L1830985-10
Client ID: CAN 2634 FC 01033
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1830985

Project Number: CANISTER QC INDIV **Report Date:** 08/28/18

Air Canister Certification Results

Lab ID: L1830985-10
Client ID: CAN 2634 FC 01033
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	107		60-140
bromochloromethane	108		60-140
chlorobenzene-d5	108		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-11
Client ID: CAN 2635 FC 0702
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/09/18 23:00
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1830985

Project Number: CANISTER QC INDIV **Report Date:** 08/28/18

Air Canister Certification Results

Lab ID: L1830985-11
Client ID: CAN 2635 FC 0702
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-11
Client ID: CAN 2635 FC 0702
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-11
Client ID: CAN 2635 FC 0702
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-11
Client ID: CAN 2635 FC 0702
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	116		60-140
Bromochloromethane	116		60-140
chlorobenzene-d5	113		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-11
Client ID: CAN 2635 FC 0702
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/09/18 23:00
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-11
Client ID: CAN 2635 FC 0702
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-11
Client ID: CAN 2635 FC 0702
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	106		60-140
bromochloromethane	109		60-140
chlorobenzene-d5	108		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-12
Client ID: CAN 2636 FC 01034
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/09/18 23:38
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-12
Client ID: CAN 2636 FC 01034
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-12
Client ID: CAN 2636 FC 01034
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-12
Client ID: CAN 2636 FC 01034
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-12
Client ID: CAN 2636 FC 01034
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	92		60-140
Bromochloromethane	93		60-140
chlorobenzene-d5	95		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-12
Client ID: CAN 2636 FC 01034
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/09/18 23:38
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-12
Client ID: CAN 2636 FC 01034
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-12
Client ID: CAN 2636 FC 01034
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	84		60-140
bromochloromethane	84		60-140
chlorobenzene-d5	87		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-13
Client ID: CAN 2633 FC 0975
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/10/18 00:16
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-13
Client ID: CAN 2633 FC 0975
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-13
Client ID: CAN 2633 FC 0975
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-13
Client ID: CAN 2633 FC 0975
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-13
Client ID: CAN 2633 FC 0975
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	107		60-140
Bromochloromethane	108		60-140
chlorobenzene-d5	106		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-13
Client ID: CAN 2633 FC 0975
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/10/18 00:16
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-13
Client ID: CAN 2633 FC 0975
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-13
Client ID: CAN 2633 FC 0975
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	98		60-140
bromochloromethane	99		60-140
chlorobenzene-d5	99		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-15
Client ID: CAN 2604 FC 0841
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/10/18 01:32
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-15
Client ID: CAN 2604 FC 0841
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-15
Client ID: CAN 2604 FC 0841
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-15
Client ID: CAN 2604 FC 0841
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-15
Client ID: CAN 2604 FC 0841
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	115		60-140
Bromochloromethane	116		60-140
chlorobenzene-d5	114		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-15
Client ID: CAN 2604 FC 0841
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/10/18 01:32
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.500	--	ND	0.500	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.100	--	ND	0.264	--		1
Acetone	ND	2.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1830985
Report Date: 08/28/18

Air Canister Certification Results

Lab ID: L1830985-15
Client ID: CAN 2604 FC 0841
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.500	--	ND	0.983	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.500	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.500	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: INDIV. CANISTER CERTIFICATION **Lab Number:** L1830985

Project Number: CANISTER QC INDIV **Report Date:** 08/28/18

Air Canister Certification Results

Lab ID: L1830985-15
Client ID: CAN 2604 FC 0841
Sample Location:

Date Collected: 08/08/18 08:00
Date Received: 08/09/18
Field Prep: Not Specified

Sample Depth:

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.500	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	106		60-140
bromochloromethane	108		60-140
chlorobenzene-d5	108		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1832614
Report Date: 08/28/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
N/A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1832614-01A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1832614-02A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1832614-03A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1832614-04A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1832614-05A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1832614-06A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1832614-07A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1832614-08A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1832614-09A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1832614-10A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1832614-11A	Canister - 6 Liter	N/A	NA			Y	Absent		TO15-SIM(30)
L1832614-12A	Canister - 6 Liter	N/A	NA			Y	Absent		CLEAN-FEE()

*Values in parentheses indicate holding time in days

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1832614
Project Number:	693874.CI.FD	**Report Date:**	08/28/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample¿s toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: Data Usability Report

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1832614
Project Number:	693874.CI.FD	**Report Date:**	08/28/18

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 2

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 8/20/18

ALPHA Job #: L1832614

Client Information

Client: CH2MHILL
Address:
Phone: 513 673-2201
Fax:
Email: marie.chiller@jacobs.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Hanging Rock
Project Location: Ironton, OH
Project #:
Project Manager: Marie Chiller
ALPHA Quote #: 271875

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☐ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☐

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS TO-15	TO-15 SIM	APH (subject non-petroleum HCs ☐)	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
32614.01	SG1-B505-IA07-081518	8/15/18	1356	2105	-29.53	-8.61	AA	BI	6L	2626	0920	X					
.02	SG1-B505-IA12-081518	8/15/18	1357	2106	-29.63	-7.69	AA	BI	6L	2624	0964	X					
.03	SG1-B505-IA08-081518	8/15/18	1358	2107	-29.57	-6.83	AA	BI	6L	2641	0733	X					
04	SG1-B505-IA09-081518	8/15/18	1359	2113	-29.30	-9.90	AA	BI	6L	2634	1033	X					
05	SG1-B505-IA10-081518	8/15/18	1402	2114	-29.33	-10.03	AA	BI	6L	2633	0975	X					
06	SG1-B505-IA11-081518	8/15/18	1403	2116	-29.64	-9.20	AA	BI	6L	2640	0779	X					
07	SG1-B505-FD01-081518	8/15/18	1403	2116	-29.39	-7.81	AA	BI	6L	2638	0168	X					
08	SG1-B505-IA06-081518	8/15/18	1405	2118	-30.07	-9.79	AA	BI	6L	2655	0702	X					
09	SG1-B505-IA13-081518	8/15/18	1407	2125	-29.13	-6.84	AA	BI	6L	2604	0841	X					
10	SG1-B505-IA14-081518	8/15/18	1408	2126	-30.49	-9.02	AA	BI	6L	2628	0367	X					

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
Fedex	8/17/18 11:00	Fedex	
	8-20-18 922am		8-20-18 922 AM

AIR ANALYSIS

PAGE 2 OF 2

Date Rec'd in Lab: 8/20/18

ALPHA Job #: L1832614

ALPHA ANALYTICAL **CHAIN OF CUSTODY**

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: CH2M HILL
Address: 1 Newmann Way
Cincinnati, OH 45215
Phone: 513-673-2201
Fax:
Email: marie.chiller@jacobs.com

❑ These samples have been previously analyzed by Alpha

Project Information

Project Name: Hanging Rock
Project Location: Ironton, OH
Project #:
Project Manager: Marie Chiller
ALPHA Quote #: 271875

Turn-Around Time

☒ Standard ❑ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

❑ FAX
❑ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
❑ EMAIL (standard pdf report)
❑ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

❑ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ❑

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS TO-15	TO-15 SIM	APH Subtract Non-petroleum HCs ❑	Fixed Gases	Sulfides & Mercaptans by TO-15			Sample Comments (i.e. PID)
32614.01	S01-HGR-0A03-081518	8/15/18	1416	2131	-29.32	-10.25	AA	BI	6L	2637	0543		X						

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
[signature]	8/17/18 11:00	FEDEX	
FEDEX	8-20-18 922	[signature] AAL	8-20-18 922 AM

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Form No. 101 (Rev. 12-Aug-15)

1880 Waycross Road
Cincinnati, OH 45240
513-530-5520
www.jacobs.com

Mr. Gregory Rudloff
United States Environmental Protection Agency (USEPA)
Region 5
77 W. Jackson Blvd. LU-9J
Chicago, IL 60604

January 2, 2019

Subject: Eighth-Month Post Interim Measures Indoor Air Analytical Data Submittal for the Former Dow Hanging Rock Site, Ironton, OH EPA ID# OHR 000 157 727 and OHD 039 128 913

Dear Mr. Rudloff,

On behalf of The Dow Chemical Company, Jacobs is submitting the 8-month post short-term interim measures indoor air sampling analytical results at Building 505, former Dow Hanging Rock site near Ironton, Ohio.

The detections from the 8-month post indoor air samples were less than the Ohio Environmental Protection Agency response guidance accelerated response and chronic response action levels and below the USEPA indoor air regional screening levels.

The indoor air sampling was conducted on December 7, 2018, within eight months of the interim measures that were completed on April 5, 2018. Nine indoor air samples, one duplicate, and one outside/ambient air sample were collected. The canisters were shipped to Alpha Analytical located in Mansfield, Massachusetts, and analyzed for PCE, TCE, 1,1-DCE, trans-1,2-DCE, cis-1,2-DCE, and vinyl chloride by USEPA Method TO-15 SIM.

Attached are the laboratory analytical data package, the unvalidated data tabulated with previous results (Table 1), and a figure showing the data and sample locations within the building (Figure 1).

The Interim Measures Action Plan (CH2M, 2018), specified five indoor air sampling events to be conducted over 8 months, ending in December 2018, to confirm that the interim measures are working. The monitoring schedule provided for two sampling events within the first 30 days of interim measures in place (April and May) and continued monitoring during the seasonal peaks of summer (June and August) and winter (December) to monitor the effects of HVAC use and seasonal operation changes.

As stated in the Interim Measures Action Plan (CH2M, March 2018), the interim measures will be considered effective if the concentrations are detected below these screening levels. Table 1 shows that indoor air concentrations have been consistently detected below the Ohio and USEPA action levels since the interim measures were put in place; therefore, the interim measures are effective.

Since indoor air concentrations have remained below action levels, Dow recommends continued use of the air purifying units (APU), annual APU maintenance, and an annual building use evaluation to confirm building use or conditions have not changed. Annual inspections and maintenance will occur in the second quarter of the year (April, May, June).

Dow plans to evaluate potential remedial alternatives and work with USEPA to protect human health and the environment from current and future unacceptable risks.

Please contact me at (513) 673-2201 or Mr. Timothy King at (304) 747-3763 should you have any questions or comments.

Sincerely,

Marie W. Chiller, Jacobs
Site Manager

Attachments

cc: Timothy King/The Dow Chemical Company

Table 1. Building 505 September 2017, April 2018, May 2018, June 2018, August 2018, and December 2018 Outdoor and Indoor Air Analytical Results[a]

Vapor Intrusion Investigation Summary, Dow Hanging Rock, Ironton, Ohio

		Analyte	TETRACHLOROETHYLENE (PCE)	TRICHLOROETHYLENE (TCE)	CIS-1,2-DICHLOROETHYLENE	TRANS-1,2-DICHLOROETHENE	1,1-DICHLOROETHENE	VINYL CHLORIDE
		USEPA Indoor Air RSL[b]	175	9	NA	NA	876	28
		Ohio EPA Response Action Level[c]	180	8.8	NA	NA	NA	28
		Unit	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3
Sample Location	**Sample ID**	**Date**	**Building 505**					
			Outdoor Air					
S01-HGR-OA01	S01-HGR-OA01-090817	9/8/17	**0.068 J**	0.107 U	0.079 U	0.079 U	0.079 U	0.018U
S01-HGR-OA02	S01-HGR-OA02-041218	4/12/18	0.136 U	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
S01-HGR-OA03	S01-HER-OA-050418	5/4/18	**0.156**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
S01-HGR-OA03	S01-HER-OA03-060418	6/4/18	0.136 U	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
S01-HGR-OA03	S01-HER-OA03-081518	8/15/18	0.136 U	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
S01-HGR-OA01	S01-HGR-OA01-120718	12/7/18	**3.38**	**0.118**	0.079 U	**0.151**	0.079 U	0.051 U
			Indoor Air					
IA06	S01-B505-IA06-090817	9/8/17	**326**	**1.04**	**0.079**	**0.024 J**	0.079 U	0.018U
	S01-B505-IA06-041218	4/12/18	**30.2**	**0.559**	**0.17**	0.079 U	0.079 U	0.051 U
	S01-B505-IA06-050418	5/4/18	**11.7**	**0.242**	**0.079**	0.079 U	0.079 U	0.051 U
	S01-B505-IA06-060418	6/4/18	**5.51**	**0.183**	**0.099**	0.079 U	0.079 U	0.051 U
	S01-B505-IA06-081518	8/15/18	**1.99**	**0.124**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA06-120718	12/7/18	**0.163**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
IA07	S01-B505-IA07-090817	9/8/17	**220**	**0.451**	**0.06 J**	**0.024 J**	0.079 U	0.018U
	S01-B505-IA07-041218	4/12/18	**15.9**	**0.597**	**0.111**	0.079 U	0.079 U	0.051 U
	S01-B505-IA07-050418	5/4/18	**12.6**	**0.408**	**0.083**	0.079 U	0.079 U	0.051 U
	S01-B505-IA07-060418	6/4/18	**1.85**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA07-081518	8/15/18	**1.55**	**0.150**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA07-120718	12/7/18	**5.35**	**0.145**	**0.143**	**0.135**	0.079 U	0.051 U
IA08	S01-B505-IA08-090817	9/8/17	**197**	**0.403**	**0.052 J**	0.079 U	0.079 U	0.018U
	S01-B505-IA08-050418	5/4/18	**6.64**	**0.220**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA08-060418	6/4/18	**1.72**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA08-081518	8/15/18	**2.21**	**0.204**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA08-120718	12/7/18	**2.86**	**0.145**	0.079 U	**0.186**	0.079 U	0.051 U
IA09	S01-B505-IA09-090817	9/8/17	**268**	**0.543**	**0.067 J**	**0.028 J**	0.079 U	0.018U
	S01-HGR-090817-FD02	9/8/17	**262**	**0.527**	**0.071 J**	0.079 U	0.079 U	0.018U
	S01-B505-IA09-041218	4/12/18	**17.4**	**0.532**	**0.159**	0.079 U	0.079 U	0.051 U
	S01-B505-IA09-050418	5/4/18	**7.46**	**0.247**	**0.079**	0.079 U	0.079 U	0.051 U
	S01-B505-FD01-050418	5/4/18	**8.41**	**0.290**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA09-060418	6/4/18	**1.97**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IAFD01-050420	6/4/18	**3.39**	**0.140**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA09-081518	8/15/18	**1.67**	**0.129**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA09-120718	12/7/18	**2.93**	**0.129**	0.079 U	**0.186**	0.079 U	0.051 U
	S01-B505-FD01-120718	12/7/18	**3.33**	**0.113**	0.079 U	**0.163**	0.079 U	0.051 U
IA10	S01-B505-IA10-090817	9/8/17	**324**	**1.00**	**0.099**	**0.024 J**	0.079 U	0.018U
	S01-B505-IA10-041218	4/12/18	**45.5**	**0.736**	**0.297**	0.079 U	0.079 U	0.051 U
	S01-B505-IA10-050418	5/4/18	**14.6**	**0.575**	**0.103**	0.079 U	0.079 U	0.051 U
	S01-B505-IA10-060418	6/4/18	**3.42**	**0.145**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA10-081518	8/15/18	**1.79**	**0.145**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA10-120718	12/7/18	**5.61**	**0.204**	**0.194**	**0.099**	0.079 U	0.051 U
IA11	S01-B505-IA11-041218	4/12/18	**30.6**	**0.376**	**0.297**	0.079 U	0.079 U	0.051 U
	S01-B505-IA11-050418	5/4/18	**9.56**	**0.220**	**0.095**	0.079 U	0.079 U	0.051 U
	S01-B505-IA11-060418	6/4/18	**3.40**	**0.118**	**0.083**	0.079 U	0.079 U	0.051 U
	S01-B505-IA11-081518	8/15/18	**1.59**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-FD01-081518	8/15/18	**1.64**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA11-120718	12/7/18	**6.32**	**0.156**	**0.095**	**0.131**	0.079 U	0.051 U
IA12	S01-B505-IA12-041218	4/12/18	**3.27**	**0.161**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-041218-FD01	4/12/18	**3.36**	**0.167**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-050418	5/4/18	**1.58**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-060418	6/4/18	**1.11**	0.107 U	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-081518	8/15/18	**1.08**	**0.193**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA12-120718	12/7/18	**3.01**	**0.150**	0.079 U	**0.155**	0.079 U	0.051 U
IA13	S01-B505-IA13-050418	5/4/18	**19.0**	**0.177**	0.079 U	0.079 U	0.079 U	0.051 U
	S01-B505-IA13-060418	6/4/18	**15.2**	**0.333**	**0.309**	0.079 U	0.079 U	0.051 U
	S01-B505-IA13-081518	8/15/18	**12**	**0.242**	**0.091**	**0.131**	0.079 U	0.051 U
	S01-B505-IA13-120718	12/7/18	**19.7**	**0.430**	**0.436**	**0.274**	0.079 U	0.051 U
IA14	S01-B505-IA14-050418	5/4/18	**8.21**	**0.193**	**0.230**	0.079 U	0.079 U	0.051 U
	S01-B505-IA14-060418	6/4/18	**20.8**	**0.548**	**1.05**	0.079 U	0.079 U	0.051 U
	S01-B505-IA14-081518	8/15/18	**7.66**	**0.263**	**0.333**	0.079 U	0.079 U	0.051 U
	S01-B505-IA14-120718	12/7/18	**4.35**	**0.118**	**0.083**	**0.151**	0.079 U	0.051 U

Notes:

[a]: The December 2018 data are preliminary. This data has not yet been validated.

[b]: RSL is a risk-based screening level derived from the lowest of the cancer-based (TCR = 1 x 10^{-5}) or the noncancer-based (THQ = 1) industrial indoor air Regional Screening Levels (RSLs) [EPA, 2018], which ever is

[c]: Ohio EPA response guidance provides an Accelerated Response Action Level for trichloroethylene (TCE) based on a THQ=1 and Chronic Response Action Levels for tetrachloroethylene (PCE)and vinyl chloride (based on a THQ=1 or TCR=1 x 10^{-5}). Source - Ohio EPA Guidance Document Recommendations Reguarding Response Action Levels and Timeframes for Common Contaminants of Concern at Vapor Intrusion Sites in Ohio (Ohio EPA, August 2016).

Bold text indicates a detection

Shading indicates a VISL exceedance

= - detected result

µg/m^3 - micrograms per cubic meter

J - estimated result

N/A - not applicable

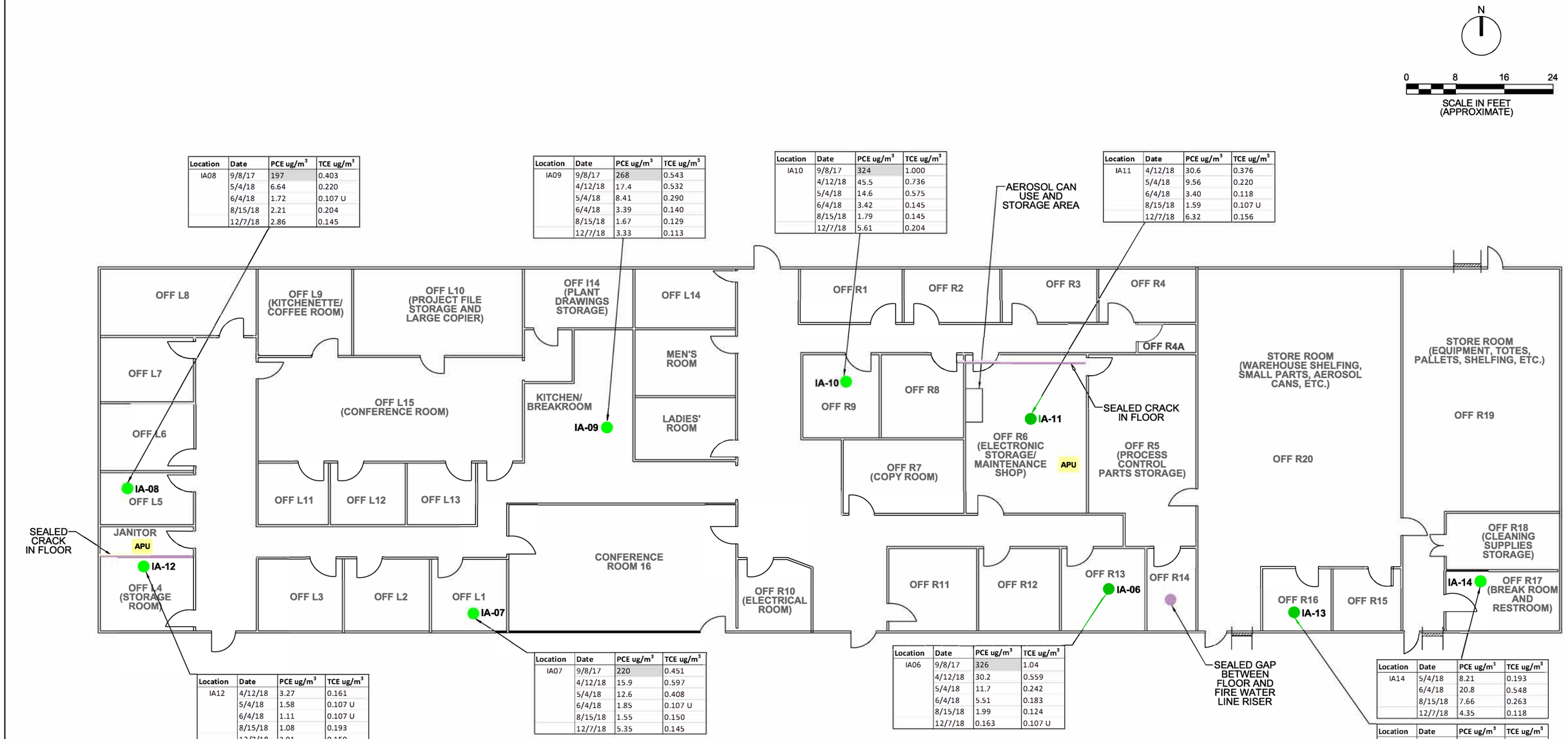
TCR - target risk for carcinogens

THQ - target hazard quotient for non-carcinogens

U - not detected, reporting limit shown

VISL = vapor intrusion screening level

EPA, 2017. Regoional Screening Levels (RSLs). November. https://www.epa.gov/risk/regional-screening-levels-rsls



Location	Date	PCE ug/m^3	TCE ug/m^3
IA08	9/8/17	197	0.403
	5/4/18	6.64	0.220
	6/4/18	1.72	0.107 U
	8/15/18	2.21	0.204
	12/7/18	2.86	0.145

Location	Date	PCE ug/m^3	TCE ug/m^3
IA09	9/8/17	268	0.543
	4/12/18	17.4	0.532
	5/4/18	8.41	0.290
	6/4/18	3.39	0.140
	8/15/18	1.67	0.129
	12/7/18	3.33	0.113

Location	Date	PCE ug/m^3	TCE ug/m^3
IA10	9/8/17	324	1.000
	4/12/18	45.5	0.736
	5/4/18	14.6	0.575
	6/4/18	3.42	0.145
	8/15/18	1.79	0.145
	12/7/18	5.61	0.204

Location	Date	PCE ug/m^3	TCE ug/m^3
IA11	4/12/18	30.6	0.376
	5/4/18	9.56	0.220
	6/4/18	3.40	0.118
	8/15/18	1.59	0.107 U
	12/7/18	6.32	0.156

Location	Date	PCE ug/m^3	TCE ug/m^3
IA12	4/12/18	3.27	0.161
	5/4/18	1.58	0.107 U
	6/4/18	1.11	0.107 U
	8/15/18	1.08	0.193
	12/7/18	3.01	0.150

Location	Date	PCE ug/m^3	TCE ug/m^3
IA07	9/8/17	220	0.451
	4/12/18	15.9	0.597
	5/4/18	12.6	0.408
	6/4/18	1.85	0.107 U
	8/15/18	1.55	0.150
	12/7/18	5.35	0.145

Location	Date	PCE ug/m^3	TCE ug/m^3
IA06	9/8/17	326	1.04
	4/12/18	30.2	0.559
	5/4/18	11.7	0.242
	6/4/18	5.51	0.183
	8/15/18	1.99	0.124
	12/7/18	0.163	0.107 U

Location	Date	PCE ug/m^3	TCE ug/m^3
IA14	5/4/18	8.21	0.193
	6/4/18	20.8	0.548
	8/15/18	7.66	0.263
	12/7/18	4.35	0.118

Location	Date	PCE ug/m^3	TCE ug/m^3
IA13	5/4/18	19.0	0.177
	6/4/18	15.2	0.333
	8/15/18	12	0.242
	12/7/18	19.7	0.430

Legend

- APU — AIR PURIFYING UNIT
- INDOOR AIR SAMPLE
- GARAGE DOOR

Notes:

µg/m^3 = MICROGRAMS PER CUBIC METER
SHADED DATA EXCEEDS THE SCREENING LEVEL
U = NOT DETECTED

Location	Date	PCE ug/m^3	TCE ug/m^3
Outdoor Air	9/8/17	0.068 J	0.107 U
	4/12/18	0.136 U	0.107 U
	5/4/18	0.156	0.107 U
	6/4/18	0.136 U	0.107 U
	8/15/18	0.136 U	0.107 U
	12/7/18	3.38	0.118

Analyte	Unit	Ohio EPA Response Action Level	USEPA Regional Screening Level
Tetrachloroethylene (PCE)	µg/m^3	180	175
Trichloroethylene (TCE)	µg/m^3	8.8	9

Figure 1
Building 505 Layout and PCE and TCE Indoor Sampling Air Results
Hanging Rock Facility
Ironton, OH

JACOBS

ANALYTICAL REPORT

Lab Number:	L1851508
Client:	Jacobs 1880 Way Cross Road Cincinatti, OH 45420
ATTN:	Marie Chiller
Phone:	(513) 673-2201
Project Name:	DOW HANGING ROCK
Project Number:	693874.CI.FD
Report Date:	12/20/18

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Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1851508-01	S01-B505-IA13-120718	AIR	IRONTON, OH	12/07/18 17:39	12/13/18
L1851508-02	S01-B505-IA11-120718	AIR	IRONTON, OH	12/07/18 17:43	12/13/18
L1851508-03	S01-B505-IA12-120718	AIR	IRONTON, OH	12/07/18 17:51	12/13/18
L1851508-04	S01-B505-IA08-120718	AIR	IRONTON, OH	12/07/18 17:53	12/13/18
L1851508-05	S01-B505-IA09-120718	AIR	IRONTON, OH	12/07/18 17:56	12/13/18
L1851508-06	S01-B505-FD01-120718	AIR	IRONTON, OH	12/07/18 18:11	12/13/18
L1851508-07	S01-B505-OA01-120718	AIR	IRONTON, OH	12/07/18 18:00	12/13/18
L1851508-08	S01-B505-IA06-120718	AIR	IRONTON, OH	12/07/18 18:23	12/13/18
L1851508-09	S01-B505-IA14-120718	AIR	IRONTON, OH	12/07/18 18:39	12/13/18
L1851508-10	S01-B505-IA10-120718	AIR	IRONTON, OH	12/07/18 17:45	12/13/18
L1851508-11	S01-B505-IA7-120718	AIR	IRONTON, OH	12/07/18 17:49	12/13/18
L1851508-12	UNUSED 2521	AIR	IRONTON, OH		12/13/18

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1851508
Project Number:	693874.CI.FD	**Report Date:**	12/20/18

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on December 5, 2018. The canister certification results are provided as an addendum.

Sample Receipt

The flow controller used for the sample designated S01-B505-IA12-120718 (L1851508-03) was not returned with the samples.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Andy Rezendes

Title: Technical Director/Representative Date: 12/20/18

AIR

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851508-01
Client ID: S01-B505-IA13-120718
Sample Location: IRONTON, OH

Date Collected: 12/07/18 17:39
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/19/18 17:07
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	0.069	0.020	--	0.274	0.079	--		1
cis-1,2-Dichloroethene	0.110	0.020	--	0.436	0.079	--		1
Trichloroethene	0.080	0.020	--	0.430	0.107	--		1
Tetrachloroethene	2.90	0.020	--	19.7	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	80		60-140
bromochloromethane	79		60-140
chlorobenzene-d5	80		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851508-02
Client ID: S01-B505-IA11-120718
Sample Location: IRONTON, OH

Date Collected: 12/07/18 17:43
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/19/18 18:26
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	0.033	0.020	--	0.131	0.079	--		1
cis-1,2-Dichloroethene	0.024	0.020	--	0.095	0.079	--		1
Trichloroethene	0.029	0.020	--	0.156	0.107	--		1
Tetrachloroethene	0.932	0.020	--	6.32	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	92		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	91		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851508-03
Client ID: S01-B505-IA12-120718
Sample Location: IRONTON, OH

Date Collected: 12/07/18 17:51
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/19/18 19:06
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	0.039	0.020	--	0.155	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.028	0.020	--	0.150	0.107	--		1
Tetrachloroethene	0.444	0.020	--	3.01	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	77		60-140
bromochloromethane	77		60-140
chlorobenzene-d5	77		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851508-04
Client ID: S01-B505-IA08-120718
Sample Location: IRONTON, OH

Date Collected: 12/07/18 17:53
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/19/18 19:46
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	0.047	0.020	--	0.186	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.027	0.020	--	0.145	0.107	--		1
Tetrachloroethene	0.422	0.020	--	2.86	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	85		60-140
bromochloromethane	85		60-140
chlorobenzene-d5	85		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851508-05
Client ID: S01-B505-IA09-120718
Sample Location: IRONTON, OH

Date Collected: 12/07/18 17:56
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/19/18 20:25
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	0.047	0.020	--	0.186	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.024	0.020	--	0.129	0.107	--		1
Tetrachloroethene	0.432	0.020	--	2.93	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	87		60-140
bromochloromethane	88		60-140
chlorobenzene-d5	88		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851508-06
Client ID: S01-B505-FD01-120718
Sample Location: IRONTON, OH

Date Collected: 12/07/18 18:11
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/19/18 21:05
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	0.041	0.020	--	0.163	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.021	0.020	--	0.113	0.107	--		1
Tetrachloroethene	0.491	0.020	--	3.33	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	91		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	90		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851508-07
Client ID: S01-B505-OA01-120718
Sample Location: IRONTON, OH

Date Collected: 12/07/18 18:00
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/19/18 16:28
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	0.038	0.020	--	0.151	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	0.022	0.020	--	0.118	0.107	--		1
Tetrachloroethene	0.499	0.020	--	3.38	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	96		60-140
bromochloromethane	98		60-140
chlorobenzene-d5	96		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851508-08
Client ID: S01-B505-IA06-120718
Sample Location: IRONTON, OH

Date Collected: 12/07/18 18:23
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/19/18 21:44
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	0.024	0.020	--	0.163	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	91		60-140
bromochloromethane	93		60-140
chlorobenzene-d5	91		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851508-09
Client ID: S01-B505-IA14-120718
Sample Location: IRONTON, OH

Date Collected: 12/07/18 18:39
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/19/18 22:24
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	0.038	0.020	--	0.151	0.079	--		1
cis-1,2-Dichloroethene	0.021	0.020	--	0.083	0.079	--		1
Trichloroethene	0.022	0.020	--	0.118	0.107	--		1
Tetrachloroethene	0.642	0.020	--	4.35	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	90		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	92		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851508-10
Client ID: S01-B505-IA10-120718
Sample Location: IRONTON, OH

Date Collected: 12/07/18 17:45
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/19/18 23:05
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	0.025	0.020	--	0.099	0.079	--		1
cis-1,2-Dichloroethene	0.049	0.020	--	0.194	0.079	--		1
Trichloroethene	0.038	0.020	--	0.204	0.107	--		1
Tetrachloroethene	0.828	0.020	--	5.61	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	90		60-140
bromochloromethane	91		60-140
chlorobenzene-d5	91		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

SAMPLE RESULTS

Lab ID: L1851508-11
Client ID: S01-B505-IA7-120718
Sample Location: IRONTON, OH

Date Collected: 12/07/18 17:49
Date Received: 12/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/19/18 23:44
Analyst: EW

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	0.034	0.020	--	0.135	0.079	--		1
cis-1,2-Dichloroethene	0.036	0.020	--	0.143	0.079	--		1
Trichloroethene	0.027	0.020	--	0.145	0.107	--		1
Tetrachloroethene	0.789	0.020	--	5.35	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	93		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	93		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD
Lab Number: L1851508
Report Date: 12/20/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 12/19/18 15:10

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-11 Batch: WG1191212-4								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: 693874.CI.FD

Lab Number: L1851508

Report Date: 12/20/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 Batch: WG1191212-3								
Vinyl chloride	**135**	Q	-		70-130	-		25
1,1-Dichloroethene	130		-		70-130	-		25
trans-1,2-Dichloroethene	128		-		70-130	-		25
cis-1,2-Dichloroethene	127		-		70-130	-		25
Trichloroethene	102		-		70-130	-		25
Tetrachloroethene	88		-		70-130	-		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1191212-5 QC Sample: L1851508-01 Client ID: S01-B505-IA13-120718						
Vinyl chloride	ND	ND	ppbV	NC		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	0.069	0.069	ppbV	0		25
cis-1,2-Dichloroethene	0.110	0.101	ppbV	9		25
Trichloroethene	0.080	0.078	ppbV	3		25
Tetrachloroethene	2.90	2.88	ppbV	1		25

Project Name: DOW HANGING ROCK

Lab Number: L1851508

Project Number: 693874.CI.FD

Report Date: 12/20/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1851508-01	S01-B505-IA13-120718	0973	Flow 4	12/05/18	279924		-	-	-	Pass	10.0	14.9	39
L1851508-01	S01-B505-IA13-120718	982	6.0L Can	12/05/18	279924	L1849184-13	Pass	-29.4	-0.0	-	-	-	-
L1851508-02	S01-B505-IA11-120718	01033	Flow 4	12/05/18	279924		-	-	-	Pass	10.0	9.7	3
L1851508-02	S01-B505-IA11-120718	1825	6.0L Can	12/05/18	279924	L1849184-11	Pass	-29.4	-5.3	-	-	-	-
L1851508-03	S01-B505-IA12-120718	1706	6.0L Can	12/05/18	279924	L1849184-07	Pass	-29.4	-4.6	-	-	-	-
L1851508-04	S01-B505-IA08-120718	0169	Flow 4	12/05/18	279924		-	-	-	Pass	10.0	9.3	7
L1851508-04	S01-B505-IA08-120718	2053	6.0L Can	12/05/18	279924	L1849184-09	Pass	-29.4	-5.6	-	-	-	-
L1851508-05	S01-B505-IA09-120718	0625	Flow 3	12/05/18	279924		-	-	-	Pass	10.0	9.7	3
L1851508-05	S01-B505-IA09-120718	1980	6.0L Can	12/05/18	279924	L1849184-06	Pass	-29.4	-7.8	-	-	-	-
L1851508-06	S01-B505-FD01-120718	0624	Flow 4	12/05/18	279924		-	-	-	Pass	10.0	10.8	8
L1851508-06	S01-B505-FD01-120718	2120	6.0L Can	12/05/18	279924	L1849184-10	Pass	-29.4	-3.9	-	-	-	-
L1851508-07	S01-B505-OA01-120718	0386	Flow 3	12/05/18	279924		-	-	-	Pass	10.0	9.4	6
L1851508-07	S01-B505-OA01-120718	1515	6.0L Can	12/05/18	279924	L1849184-01	Pass	-29.6	-5.6	-	-	-	-
L1851508-08	S01-B505-IA06-120718	0235	Flow 5	12/05/18	279924		-	-	-	Pass	10.0	9.3	7
L1851508-08	S01-B505-IA06-120718	2569	6.0L Can	12/05/18	279924	L1849184-12	Pass	-29.4	-2.6	-	-	-	-

Project Name: DOW HANGING ROCK

Lab Number: L1851508

Project Number: 693874.CI.FD

Report Date: 12/20/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1851508-09	S01-B505-IA14-120718	0454	Flow 3	12/05/18	279924		-	-	-	Pass	10.0	9.9	1
L1851508-09	S01-B505-IA14-120718	1551	6.0L Can	12/05/18	279924	L1849184-05	Pass	-29.6	-8.2	-	-	-	-
L1851508-10	S01-B505-IA10-120718	01168	Flow 3	12/05/18	279924		-	-	-	Pass	10.0	9.8	2
L1851508-10	S01-B505-IA10-120718	899	6.0L Can	12/05/18	279924	L1849184-02	Pass	-29.6	-9.3	-	-	-	-
L1851508-11	S01-B505-IA7-120718	0593	Flow 3	12/05/18	279924		-	-	-	Pass	10.0	10.1	1
L1851508-11	S01-B505-IA7-120718	2126	6.0L Can	12/05/18	279924	L1849184-08	Pass	-29.5	-6.3	-	-	-	-
L1851508-12	UNUSED 2521	0971	Flow 3	12/05/18	279924		-	-	-	Pass	10.0	10.0	0
L1851508-12	UNUSED 2521	1527	6.0L Can	12/05/18	279924	L1849184-03	Pass	-29.4	-29.4	-	-	-	-

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1849184
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849184-01
Client ID: CAN 1515 FC 0386
Sample Location:

Date Collected: 11/30/18 16:00
Date Received: 12/03/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/03/18 15:01
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	86		60-140
bromochloromethane	90		60-140
chlorobenzene-d5	86		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1849184
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849184-02
Client ID: CAN 899 FC 01168
Sample Location:

Date Collected: 11/30/18 16:00
Date Received: 12/03/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/03/18 15:34
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	83		60-140
bromochloromethane	87		60-140
chlorobenzene-d5	84		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1849184
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849184-03
Client ID: CAN 1527 FC 0137
Sample Location:

Date Collected: 11/30/18 16:00
Date Received: 12/03/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/03/18 16:05
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	81		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	82		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1849184
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849184-05
Client ID: CAN 1551 FC 0454
Sample Location:

Date Collected: 11/30/18 16:00
Date Received: 12/03/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/03/18 17:09
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	78		60-140
bromochloromethane	85		60-140
chlorobenzene-d5	80		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1849184
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849184-06
Client ID: CAN 1980 FC 0625
Sample Location:

Date Collected: 11/30/18 16:00
Date Received: 12/03/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/03/18 17:41
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	77		60-140
bromochloromethane	83		60-140
chlorobenzene-d5	78		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1849184
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849184-07
Client ID: CAN 1706 FC 0971
Sample Location:

Date Collected: 11/30/18 16:00
Date Received: 12/03/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/03/18 18:13
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	77		60-140
bromochloromethane	83		60-140
chlorobenzene-d5	79		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV

Lab Number: L1849184
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849184-08
Client ID: CAN 2126 FC 0593
Sample Location:

Date Collected: 11/30/18 16:00
Date Received: 12/03/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/03/18 18:45
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	76		60-140
bromochloromethane	82		60-140
chlorobenzene-d5	78		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1849184
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849184-09
Client ID: CAN 2053 FC 0169
Sample Location:

Date Collected: 11/30/18 16:00
Date Received: 12/03/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/03/18 19:17
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	74		60-140
bromochloromethane	81		60-140
chlorobenzene-d5	77		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1849184
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849184-10
Client ID: CAN 2120 FC 0624
Sample Location:

Date Collected: 11/30/18 16:00
Date Received: 12/03/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/03/18 19:49
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	73		60-140
bromochloromethane	80		60-140
chlorobenzene-d5	75		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1849184
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849184-11
Client ID: CAN 1825 FC 01033
Sample Location:

Date Collected: 11/30/18 16:00
Date Received: 12/03/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/03/18 20:20
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	74		60-140
bromochloromethane	81		60-140
chlorobenzene-d5	77		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1849184
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849184-12
Client ID: CAN 2569 FC 0235
Sample Location:

Date Collected: 11/30/18 16:00
Date Received: 12/03/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/03/18 20:52
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	74		60-140
bromochloromethane	81		60-140
chlorobenzene-d5	76		60-140

Project Name: INDIV. CANISTER CERTIFICATION
Project Number: CANISTER QC INDIV
Lab Number: L1849184
Report Date: 12/20/18

Air Canister Certification Results

Lab ID: L1849184-13
Client ID: CAN 982 FC 0973
Sample Location:

Date Collected: 11/30/18 16:00
Date Received: 12/03/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 12/03/18 21:24
Analyst: MB

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	73		60-140
bromochloromethane	81		60-140
chlorobenzene-d5	76		60-140

Project Name: DOW HANGING ROCK
Project Number: 693874.CI.FD

Lab Number: L1851508
Report Date: 12/20/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
N/A	Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1851508-01A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1851508-02A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1851508-03A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1851508-04A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1851508-05A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1851508-06A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1851508-07A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1851508-08A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1851508-09A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1851508-10A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1851508-11A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		TO15-SIM(30)
L1851508-12A	Canister - 6 Liter	N/A	NA			Y	Present/Intact		CLEAN-FEE()

*Values in parentheses indicate holding time in days

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1851508
Project Number:	693874.CI.FD	**Report Date:**	12/20/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample¿s toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: Data Usability Report

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1851508
Project Number:	693874.CI.FD	**Report Date:**	12/20/18

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 2

Date Rec'd in Lab: 12/13/18

ALPHA Job #: L1851508

ALPHA ANALYTICAL

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Jacobs / CH2M

Address:

Phone:

Fax:

Email: Marie.Chiller@Jacobs.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: DOW - Hanging Rock

Project Location: Ironton, OH

Project #: 693874CH.01.RR

Project Manager: Marie Chiller

ALPHA Quote #: 279924

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☒ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☐ EMAIL (standard pdf report)
☐ Additional Deliverables:

Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☐

All Columns Below Must Be Filled Out

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-15	TO-15 SIM	APH Subtract Non-petroleum HCs ☐	Fixed Gases	Sulfides & Mercaptans by TO-15			Sample Comments (i.e. PID)
1508-01	S01-B505-~~1A13~~ 1A13-120718	12-7-18	9:33	1739	-30.12	-1.2	AA	BI	6	982	973		X						
-02	S01-B505-1A11-120718	12-7-18	9:27	1743	-30.01	-6.16	AA	BI	6	1825	1033		X						
-03	~~S01-B505-1A10-120718~~	~~12-7-18~~	~~9:25~~	~~1749~~	~~-30.12~~	~~-5.66~~	~~AA~~	~~BI~~	~~6~~	~~1706~~	~~971~~		X						
-04	S01-B505-1A12-120718	12-7-18	9:21	1751	-30.01	-6.69	AA	BI	6	2053	169		X						
-05	S01-B505-1A08-120718	12-7-18	9:22	1753	-29.48	-8.82	AA	BI	6	1980	625		X						
-06	S01-B505-1A09-120718	12-7-18	9:24	1756	-29.82	-4.86	AA	BI	6	2120	624		X						
-07	S01-B505-FD01-120718	12-7-18	9:38	1811	-30.05	-6.59	AA	BI	6	1515	386		X						
-08	S01-B505-OA01-120718	12-7-18	9:37	1800	-30.01	-5.56	AA	BI	6	2569	235		X						
-09	S01-B505-1A06-120718	12-7-18	9:29	1823	-29.87	-9.11	AA	BI	6	1551	454		X						
-10	S01-B505-1A14-120718	12-7-8	9:35	1839	~~-29.~~ -30.18	-9.21	AA	BI	6	899	1168		X						

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type	62	X

Relinquished By:	Date/Time	Received By:	Date/Time:
[signature] Fedex	12-12-18	[signature]	12/13/18 11:43

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Form No. 101-02 Rev: (25-Sep-15)

AIR ANALYSIS

PAGE 2 OF 2

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 12/13/18

ALPHA Job #: L1851508

Client Information

Client: Jacobs / CH2M
Address:
Phone:
Fax:
Email: Marie.Chiller@Jacobs.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: BOW - Hanging Rock
Project Location: Ironton, OH
Project #: 6938774CH.01.RA
Project Manager: Marie Chiller
ALPHA Quote #: 279924

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☐ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☐

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS TO-15	TO-15 SIM	APH (Subset Non-petroleum HCs ☐)	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
-11	S01-B505-IA10-120718	12-7-18	0925	1745	-29.77	-7.37	AA	BI	6	2126	593	X					
-12	S01-B505-IA07-120718	12-7-18	0920	1749	-30.02	-5.66	AA	BI	6	1706	971	X					

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type: 6L — X

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
Fedex	12-12-18	BORAA	12/13/18 11:43

Form No: 101-02 Rev: (25-Sep-15)

Appendix C
Field Documentation

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS17	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- — START : 6/5/18 13:30 — END : 6/5/18 14:15 — LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	**Gravel** 0.0-0.8'			
				Silt (ML) 0.8-4.5' - brown, dry, trace sand, some clay		0.3 1.5 0	Sample collected SO1-SS17-0102-060518 at 1345
5	5.0			**Sand (SM-SC)** 4.5-5.8' - brown, moist, fine grained, well sorted		0	
		3.8 / 5.0	DP	**Silt (ML)** 5.8-7.2' - brown, saturated at 6.9 ft, sandy, fine grained		0.2 0.5	
				Sand (SM-SC) 7.2-8.2' - brown, moist, saturated at 7.2-8.2', fine grained			Sample collected SO1-SS17-0809-060518 at 1405
				Sandy Gravel (GW) 8.2-8.8' - brown, multi-colored, loose, well rounded gravel with some coarse sand		0.7	
10	10.0			8.8-10.0' - no recovery			
		4.1 / 5.0	DP	**Sandy Gravel (GW)** 10.0-14.1' - brown, multi-colored, moist, loose, well rounded gravel with some coarse sand		0	
				14.1-15.0' - no recovery			
15	15.0						
		3.6 / 5.0	DP	**Sandy Gravel (GW)** 15.0-18.6' - brown, multi-colored, moist, loose, well rounded gravel with some coarse sand		0	
				18.6-20.0' - no recovery			
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS17	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- — START : 6/5/18 13:30 — END : 6/5/18 14:15 — LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0	3.8/5.0	DP	**Sandy Gravel (GW)** 20.0-23.8' - brown, multi-colored, moist, loose, well rounded gravel with some coarse sand		0.2	
				23.8-25.0' - no recovery			
25	25.0	2.8/5.0	DP	**Sandy Gravel (GW)** 25.0-27.8' - brown, multi-colored, moist, loose, well rounded gravel with some coarse sand		0.1	Sample collected SO1-SS17-2526-060518 at 1455
				27.8-30.0' - no recovery			
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS18/GW02	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/12/18 15:05 END : 6/12/18 16:10 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	**Asphalt** 0.0-0.2' **Silty Clay (CL)** 0.2-3.5' - gray and brown mottled, moist, firm, clay with silt, some iron staining		0.1	Sample collected SO1-SS18-0102-061218 at 1506
5	5.0			**Silty Sand (SM)** 3.5-8.8' - brown, moist to wet, very fine grained sands with some silt, perched water at 7.8' bgs			
		3.9 / 5.0	DPT-1			0.2	Sample collected SO1-SS18-0708-061218 at 1618
10	10.0			**Sandy Gravel (GW)** 8.8-30.0' - brown and multi-colored, moist to wet, loose, well rounded fine gravel with some fine to coarse grained sands, traces of black staining, no odor, increased grain size with depth, wet at 29' bgs			
		3.5 / 5.0	DPT-2			0.2	
15	15.0						
		3.7 / 5.0	DPT-3			0.3	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS18/GW02	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/12/18 15:05 — END : 6/12/18 16:10 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0						
		2.9/5.0	DPT-4			0.2	
25	25.0						Sample collected SO1-SS18-2526-061218 at 1605
		3.2/5.0	DPT-5			0.4	
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS19/GW03	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/14/18 14:35 — END : 6/14/18 15:25 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
				Concrete with base course 0.0-0.5'			
				Silty Clay (CL) 0.5-1.9' - brown, moist, stiff, clay with silt			Sample collected SO1-SS19-0102-061418 at 1449
		2.9 / 5.0	DPT-1	**Silty Sand (SM)** 1.9-10.1' - brown, moist to wet, medium stiff, loose, very fine sands with silt, traces of dark staining, no odor, wet at 7.7' bgs (perched)		0.2	
5	5.0						
		3.9 / 5.0	DPT-2			0.2	Sample collected SO1-SS19-0607-061418 at 1455
10	10.0						
		3.6 / 5.0	DPT-3	**Sandy Gravel (GW)** 10.1-30.0' - brown, multi-colored, moist to wet, loose, well rounded, fine gravel with medium to coarse sands, traces of black staining through 10.1-30' bgs, no odor, wet at 28.5' bgs		0.6	
15	15.0						
		3.4 / 5.0	DPT-4			1.5	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS19/GW03	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/14/18 14:35 END : 6/14/18 15:25 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0	3.6 / 5.0	DPT-5			1.2	Sample collected SO1-SS19-2324-061418 at 1516
25	25.0	3.3 / 5.0	DPT-6				
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS20/GW04	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/12/18 11:30 — END : 6/12/18 12:30 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0		**Concrete** 0.0-0.5'			
				Silty Clay (CL) 0.5-2.1' - gray and brown mottled, moist, stiff, clay with silt			Sample collected SO1-SS20-0102-061218 at 1134
				Silty Sand (SM) 2.1-8.2' - brown, moist to wet, loose, very fine sand with some silt, wet at 7.7' bgs (perched)		2.3	
5	5.0						
		4.3 / 5.0				0.6	Sample collected SO1-SS20-0607-061218 at 1147
				Silty Clay (CL) 8.2-8.3' - gray and brown mottled, moist, stiff, clay with some silt, trace very fine sands			
10	10.0			**Sandy Gravel (GW)** 8.3-30.0' - brown and multi-colored, moist to wet, loose, well rounded gravel with some fine to coarse grained sands, some black staining through 8.3-30' bgs, wet at 29' bgs			
		3.4 / 5.0				1.2	
15	15.0						
		3.5 / 5.0				1.3	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS20/GW04	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/12/18 11:30 END : 6/12/18 12:30 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0						
		3.3 / 5.0				1.2	
25	25.0						Sample collected SO1-SS20-2526-061218 at 1224
		3.7 / 5.0				1.2	
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS21	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- — START : 6/7/18 15:00 — END : 6/7/18 16:20 — LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	**Concrete** 0.0-0.7'			
				Silt (ML) 0.7-3.5' - tan with brown, dry to moist		2	Sample collected SO1-SS21-0102-060718 and MS/MSD at 1545
						1.5	
				Clay (CL) 3.5-5.0' - brown, moist, silty		1	
5	5.0						
	6.0	1.0 / 1.0	DP	**Clay (CL)** 5.0-5.5' - brown, moist, silty		0.5	
		2.0 / 2.0	DP	**Silt (ML)** 5.5-8.0' - brown, very moist to saturated at 7.0', sandy, some clay		0.2	Sample collected SO1-SS21-0607-060718 at 1555 SO1-SS21-SSFD01-060718 at 1600
	8.0						
		2.0		**Silt (ML)** 8.0-9.4' - brown, saturated, sandy, some clay, trace gravel			
10	10.0			**Sandy Gravel (GW)** 9.4-12.0' - brown, multi-colored, loose, well rounded gravel with some coarse sand 9.8-10.0 - silt lens 10.1-10.2 - very gravelly			
	12.0	2.0 / 2.0	DP			0.3	
		1.4 / 2.0	DP	**Sandy Gravel (GW)** 12.0-13.4' - brown, multi-colored, loose, well rounded gravel with some coarse sand		1.7	
	14.0			13.4-14.0' - no recovery		0.4	
15		2.0 / 2.0	DP	**Sandy Gravel (GW)** 14.0-16.0' - brown, multi-colored, loose, well rounded gravel with some coarse sand 14.5-15.0 - fine sand lens		1.1	Sample collected SO1-SS21-1415-060718 at 1620
	16.0			Bottom of Boring at 16.0 ft below ground surface			
20							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS22	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/11/18 13:20 END : 6/11/18 14:20 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
				0.0-0.5'			
				Silty Clay (CL) 0.5-2.0' - gray with brown mottling, moist, stiff, clay with some silt			Sample collected SO1-SS22-0102-061118 at 1340
		5.0 / 5.0	HA	**Silty Sandy Clay (CL)** 2.0-5.2' - brown with gray mottling, moist, stiff, clay with some silt and traces of fine to very fine sands		5.8	
5	5.0						
				Silty Sand (SM) 5.2-9.8' - brown, moist to wet, very fine grained sands, traces of clay			Sample collected SO1-SS22-0607-061118 at 1358
		4.4 / 5.0	DPT-1			6.7	wet at 7.9' bgs (perched zone)
10	10.0						
				Sandy Gravel (GW) 9.8-30.0' - brown, multi-colored, moist, loose, well rounded (<0.05' diam) gravel with some medium to coarse grained sand			
		3.2 / 5.0	DPT-2			2.3	
15	15.0						
		3.6 / 5.0	DPT-3			2.2	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS22	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/11/18 13:20 END : 6/11/18 14:20 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0						
		3.0 / 5.0	DPT-4			1.8	Sample collected SO1-SS22-2223-061118 at 1412
25	25.0						
		3.0 / 5.0	DPT-5			1.9	
							NO groundwater sample collected
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS23	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- — START : 6/7/18 08:55 — END : 6/7/18 10:15 — LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
				Concrete 0.0-0.5'			
				Silt (ML) 0.5-1.5' - gray, moist, clayey, old petroleum odor		1.5	Sample collected SO1-SS23-0102-060718 at 0915
		5.0 / 5.0	HA	**Silt (ML)** 1.5-5.0' - brown, moist, clayey, some sand		4.5 12.8 16.3 19.1	Sample collected SO1-SS23-0405-060718 at 0945
5	5.0						
	6.0	1.0 / 1.0	DP	**Silt (ML)** 5.0-6.0' - brown, saturated, clayey, some sand		19.2	
	8.0	2.0 / 2.0	DP	**Silty Clayey Sand (SM-SC)** 6.0-9.8' - brown, saturated, fine grained		1.7 1.8	
		2.0 / 2.0	DP			6.5 5.5	Sample collected SO1-SS23-0910-060718 at 0955
10	10.0						
	12.0	1.4 / 2.0	DP	**Sandy Gravel (GW)** 9.8-17.0' - brown, multi-colored, well rounded gravel with some coarse sand			
	14.0	1.5 / 2.0	DP			6.3	
15	16.0	2.0 / 2.0	DP			3.6	Sample collected SO1-SS23-1516-060718 at 1015
	18.0	2.0 / 2.0	DP			16.2	Refusal at 17', not able to retrieve _____ if go deeper
				Bottom of Boring at 17.0 ft below ground surface		3.4	
20							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS24	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- — START : 6/7/18 13:45 — END : 6/7/18 14:30 — LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	**Concrete** 0.0-0.9'			
				Silt (ML) 0.9-3.0' - tan with flecks of brown, moist, trace clay		4	Sample collected SO1-SS24-0102-060718 at 1355
				Silt (ML) 3.0-5.0' - brown, moist, sandy, some sand and clay			
5	5.0						
	6.0	1.0 / 1.0	DP	**Silt (ML)** 5.0-8.0' - brown, moist to saturated at 7.0', sandy		3.5	
		2.0 / 2.0	DP			1.5	Sample collected SO1-SS24-0607-060718 at 1410
	8.0					1.3	
		2.0 / 2.0	DP	**Silt (ML)** 8.0-8.9' - brown, saturated, very sandy (fine)			
				Sandy Gravel (GW) 8.9-14.0' - brown, multi-colored, moist to very moist, well rounded, loose gravel with coarse sand 8.9-9.3' - silt lens 12.5-12.7' - gravel lens		1.2	
10	10.0						
	12.0	2.0 / 2.0	DP			1	
	14.0	1.4 / 2.0	DP			0.6	
				Sandy Gravel (GW) 14.0-16.0' - brown, multi-colored, moist to very moist, well rounded, loose gravel with coarse sand sandy and gravelly zones		0.6	
15		2.0 / 2.0	DP				
	16.0					2.3	Sample collected SO1-SS24-1516-060718
				Bottom of Boring at 16.0 ft below ground surface			
20							

PROJECT NUMBER:	BORING NUMBER:	
693874	SS25	SHEET 1 OF 2

JACOBS

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- START : 6/8/18 04:45 END : 6/8/18 10:35 LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	**Concrete** 0.0-0.6'			
				Sand (SP) 0.6-0.9' - brown, dry, fine grained			Sample collected SO1-SS25-0001-060818 at 0955
				Clay (CL) 0.9-3.5' - tan, variegated 4 browns, dry		2.7	
				Silt (ML) 3.5-5.0' - brown, dry, some clay			
5	5.0	1.0 / 1.0	DP	**Sand (SM-SC)** 5.0-5.8' - brown, dry, some clay		0.7	
	6.0	2.0 / 2.0	DP	**Sand (SM-SC)** 5.8-7.9' - brown, moist, silty, very fine grained		0.9	
						1.1	
	8.0	2.0 / 2.0	DP	**Silt (ML)** 7.9-9.2' - brown, moist to saturated at 8.6', sandy, very fine grained			Sample collected SO1-SS25-0809-060818 at 1015
						1.9	
10	10.0	1.0 / 2.0	DP	**Sandy Gravel (GW)** 9.2-11.0' - brown, multi-colored, moist, loose, well rounded gravel with some coarse sand			
	12.0			11.0-12.0' - no recovery		0.6	
		2.0 / 2.0	DP	**Sandy Gravel (GW)** 12.0-14.0' - brown, multi-colored, moist, loose, well rounded gravel with some coarse sand		1.6	Sample collected SO1-SS25-1314-060818 at 1035
	14.0						
15		2.0 / 2.0	DP	**Sandy Gravel (GW)** 14.0-16.0' - brown, multi-colored, moist, loose, well rounded gravel with some coarse sand		0.5	
	16.0			Bottom of Boring at 16.0 ft below ground surface			
20							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS25	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- START : 6/8/18 04:45 END : 6/8/18 10:35 LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft) / RECOVERY (ft) / SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
25					Sample collected SO1-GW06-2630-060818 at 1115
30					
35					
40					

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS26/GW07	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/12/18 09:00 — END : 6/12/18 09:45 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
				Asphalt 0.0-0.2'			
				Silty Clay (CL) 0.2-2.1' - gray and brown mottled, moist, stiff, clay with silt			Sample collected SO1-SS26-0102-061218 at 0922
		5.0 / 5.0	HA	**Silty Sand (SM)** 2.1-5.9' - brown, moist to wet, loose, very fine sand with silt		1.8	
5	5.0						
				Sandy Gravel (GW) 5.9-30.0' - brown and multi-colored, moist, loose, well rounded (<0.05') gravel with some fine to medium grained sand, few silt lenses, trace black staining through 5.9-30' bgs			Sample collected SO1-SS26-0607-061218 at 0928
		4.5 / 5.0	DPT-1			3.8	wet at 7.3' bgs (perched zone)
10	10.0						
		3.8 / 5.0	DPT-2	decreased silt to none		3.4	
15	15.0						
		3.5 / 5.0	DPT-3			3.2	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS26/GW07	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/12/18 09:00 END : 6/12/18 09:45 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0						
		3.6 / 5.0	DPT-4			8.9	Sample collected SO1-SS26-2223-061218 at 0945 wet at 29.3' bgs
25	25.0						
		3.3 / 5.0	DPT-5			8.7	
				wet, decreased sands and increased gravel,			
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

PROJECT NUMBER:	BORING NUMBER:	
693874	SS27	SHEET 1 OF 2

JACOBS

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- — START : 6/5/18 15:35 — END : 6/5/18 16:30 — LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		3.5 / 5.0	HA	**Asphalt/Gravel** 0.0-0.6' **Silt (ML)** 0.6-0.9' - gray, dry, sandy, trace clay **Silt (ML)** 0.9-3.5' - brown, dry, clayey		1.7	Sample collected SO1-SS27-0102-060518 at 1550
5	5.0			**Clay (CL)** 3.5-5.0' - brown, moist, silty			Refusal on pipe at 3.5', offset 1 ft to west
		4.3 / 5.0	DP	**Clay (CL)** 5.0-6.1' - brown, moist, silty **Silt (ML)** 6.1-8.3' - brown, moist to saturated at 8.0', clayey 8.3-10.0' - no recovery		0	Sample collected SO1-SS27-0708-060518 at 1620 SO1-SS27-SSFD01-060518 at 1625
10	10.0						
		3.2 / 5.0	DP	**Sandy Gravel (GW)** 10.0-13.2' - brown, multi-colored, moist, rounded loose gravel with coarse sand 13.2-15.0' - no recovery		1	
15	15.0						
		3.7 / 5.0	DP	**Sandy Gravel (GW)** 15.0-18.7' - brown, multi-colored, moist, rounded loose gravel with coarse sand 18.7-20.0' - no recovery		0.9	Sample collected SO1-GW08-1825-060518 at 1720 SO1-GWFD01-060518 at 1725
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS27	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- START : 6/5/18 15:35 END : 6/5/18 16:30 LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0	3.9 / 5.0	DP	**Sandy Gravel (GW)** 20.0-23.9' - brown, multi-colored, moist to very moist at 22', rounded loose gravel with coarse sand			Sample collected SO1-SS27-2122-060518 at 1645
				23.9-25.0' - no recovery		3.9	
25	25.0	3.5 / 5.0	DP	**Sandy Gravel (GW)** 25.0-28.5' - brown, multi-colored, very moist to saturated, rounded loose gravel with coarse sand			
				28.5-30.0' - no recovery			
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS28	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- — START : 6/5/18 09:30 — END : 6/5/18 11:00 — LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	**Asphalt/Gravel** 0.0-0.6' **Silt (ML)** 0.6-0.9' - gray, moist, firm, trace to some clay **Silt (ML)** 0.9-5.0' - brown, trace sand, sweet odor		3.6 7.5 3.2	Sample collected SO1-SS28-0102-060518 at 1015
5	5.0						
		4.4 / 5.0	DP	**Silt (ML)** 5.0-9.1' - brown, saturated at 7.5', trace sand, sweet odor		3.2	Sample collected SO1-SS28-0607-060518 at 1030
10	10.0			**Sandy Gravel (GW)** 9.1-9.4' - multi-colored, moist, loose, trace silt, well rounded gravel and coarse sand 9.4-10.0' - no recovery			
		4.5 / 5.0	DP	**Sandy Gravel (GW)** 10.0-14.5' - multi-colored, moist, loose, trace silt, well rounded gravel and coarse sand		1.1	
15	15.0			14.5-15.0' - no recovery			
		3.4 / 5.0	DP	**Sandy Gravel (GW)** 15.0-18.5' - multi-colored, moist, loose, trace silt, well rounded gravel and coarse sand 18.5-20.0' - no recovery		1.7	Sample collected SO1-GW09-1828-060518 at 1150
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS28	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- — START : 6/5/18 09:30 — END : 6/5/18 11:00 — LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0	3.8 / 5.0	DP	**Sandy Gravel (GW)** 20.0-23.8' - multi-colored, moist to 23.5', then very moist to saturated from 23.5-23.8', loose, trace silt, well rounded gravel and coarse sand			Sample collected SO1-SS28-2223-060518 at 1055
				23.8-25.0' - no recovery		14	
25	25.0	3.2 / 5.0	DP	**Sandy Gravel (GW)** 25.0-28.3' - multi-colored, saturated, loose, trace silt, well rounded gravel and coarse sand		2.2	
				28.3-30.0' - no recovery			
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

PROJECT NUMBER:	BORING NUMBER:	
693874	SS29/GW10	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/12/18 10:15 END : 6/12/18 11:55 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
				Asphalt 0.0-0.2'			
				Silty Clay (CL) 0.2-2.3' - gray and brown mottled, moist, stiff, clay with some silt			Sample collected SO1-SS29-0102-061218 at 1020
		5.0 / 5.0	HA	**Silty Sand (SM)** 2.3-10.3' - brown, moist to wet, loose, very fine to fine sands with some silt, wet at 8.1', sheen on water		1.8	
5	5.0						
		3.7 / 5.0	DPT-1			90.5	Sample collected SO1-SS29-0708-061218 at 1035
10	10.0						
				Silty Sandy Gravel (GW) 10.3-10.5' - brown, multi-colored, moist, loose, well rounded fine gravel with some fine to very fine sands and silt			
		3.5 / 5.0	DPT-2	**Sandy Gravel (GW)** 10.5-30.0' - brown and multi-colored, moist to wet, loose, well rounded gravel with some fine sands fine decreases with depth wet at 29' bgs		24	
15	15.0						
		3.9 / 5.0	DPT-3			13.2	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS29/GW10	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/12/18 10:15 END : 6/12/18 11:55 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0	3.7 / 5.0	DPT-4			22.5	
25	25.0						Sample collected SO1-SS29-2425-061218 at 1050
		3.8 / 5.0	DPT-5			20.9	
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS30	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/11/18 16:40 — END : 6/11/18 17:29 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	0.0-0.1' **Silty Clay (CL)** 0.1-3.5' - brown and gray mottled, moist, stiff, clay with some silt		7.8	Sample collected SO1-SS30-0102-061118 at 1651
5	5.0			**Silty Sand (SM)** 3.5-5.2' - brown, moist to wet, loose, fine to very fine grained sand			
		3.3 / 5.0	DPT-1	**Sandy Gravel (GW)** 5.2-30.0' - brown, multi-colored, moist to wet, loose, fine to medium gravel with some very fine and medium grained sand, some black staining throughout, gray/black staining at 28.5' (soil water interface), wet at 28.5' bgs		12.2	Sample collected SO1-SS30-0607-061118 at 1658
10	10.0						
		3.7 / 5.0	DPT-2			3.9	
15	15.0						
		3.5 / 5.0	DPT-3			4	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS30	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/11/18 16:40 END : 6/11/18 17:29 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0						
		3.3 / 5.0	DPT-4			6.4	Sample collected SO1-SS30-2324-061118 at 1712
25	25.0						
		3.5 / 5.0	DPT-5			8.7	
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS31/GW11	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/13/18 17:20 END : 6/13/18 17:54 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		2.3/5.0	DPT-1	**Concrete** 0.0-0.3' **Silty Clay (CL)** 0.3-4.3' - brown, moist, stiff, clay with silt		4.5	Sample collected SO1-SS31-0102-061318 at 1728
5	5.0			**Silty Sand (SM)** 4.3-11.2' - brown, moist to wet, medium dense to loose, very fine sands with silt			
		3.9/5.0	DPT-2			5.1	Sample collected SO1-SS31-0607-061318 at 1732 wet at 7.7' bgs (perched zone) to 11.1' bgs
10	10.0						
		3.5/5.0	DPT-3	**Sandy Gravel (GW)** 11.2-30.0' - brown and multi-colored, moist to wet, loose, well rounded, fine gravel with medium to coarse grained sands increased grain size of gravel with depth		5.4	
15	15.0						
		3.6/5.0	DPT-4			3.4	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS31/GW11	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/13/18 17:20 — END : 6/13/18 17:54 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0						
		4.1 / 5.0	DPT-5			15.8	
25	25.0						Sample collected SO1-SS31-2526-061318 at 1747
		3.5 / 5.0	DPT-6			10.5	wet at 28.4' bgs
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS32/GW12	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/13/18 15:49 — END : 6/13/18 16:30 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		4.2 / 5.0	DPT-1	**Gravel (GW)** 0.0-0.2' **Silty Clay (CL)** 0.2-3.2' - brown, moist, stiff, clay with some silt		3.4	Sample collected SO1-SS32-0102-061318 at 1555
5	5.0			**Silty Sand (SM)** 3.2-9.2' - brown, moist to wet, medium dense to loose, very fine sands with some silt, decreasing silt with depth, increased sand grain size with depth			
		4.3 / 5.0	DPT-2			4.4	Sample collected SO1-SS32-0607-061318 at 1600 wet at 8.4' (perched zone)
10	10.0			**Sandy Gravel (GW)** 9.2-28.4' - brown and multi-colored, moist to wet, loose, well rounded, fine to medium gravel with some fine to coarse grained sands, traces of black staining through 9.2-30', no odor, wet at 28.4' bgs			
		3.2 / 5.0	DPT-3			4.6	
15	15.0						
		3.3 / 5.0	DPT-4			3.3	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS32/GW12	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/13/18 15:49 END : 6/13/18 16:30 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0	4.0 / 5.0	DPT-5			5.2	Sample collected SO1-SS32-2324-061318 at 1615
25	25.0	3.3 / 5.0	DPT-6				
				Sandy Gravel (GW) 28.4-30.0' - brown and multi-colored, wet, loose, well rounded, fine gravel with coarse grained sands, traces of black staining through 9.2-30', no odor			
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS33	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/11/18 15:12 — END : 6/13/18 16:05 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	0.0-0.1' **Silty Clay (CL)** 0.1-3.1' - gray and brown mottled, moist, stiff, clay with silt, low plasticity		5.8	Sample collected SO1-SS33-0102-061118 at 1524
5	5.0			**Silty Sand (SM)** 3.1-10.2' - brown, moist to wet, loose, silt with fine to very fine grained sands, traces of clay lenses, wet at 7.9' bgs, sheen on water			
		4.3 / 5.0	DPT-1			28.5	Sample collected SO1-SS33-0708-061118 at 1534 wet at 7.9' bgs sheen, strong odor
10	10.0						
		2.3 / 5.0	DPT-2	**Sandy Gravel (GW)** 10.2-30.0' - brown to multi-colored, moist to wet, loose, well rounded fine gravel, black staining through, sheen at 29.7' bgs, fine to medium grained gravel		9.9	
15	15.0						
		3.8 / 5.0	DPT-3			5.5	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS33	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/11/18 15:12 END : 6/13/18 16:05 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0	3.6 / 5.0	DPT-4			3.9	Sample collected SO1-SS33-2324-061118 at 1551
25	25.0	3.9 / 5.0	DPT-5			5.3	
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

PROJECT NUMBER:	BORING NUMBER:	
693874	SS34	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/12/18 14:10 END : 6/12/18 14:51 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	**Gravel Lot (GW)** 0.0-0.2'			
				Silty Clay (CL) 0.2-1.2' - brown and gray mottled, moist, stiff, clay with silt			Sample collected SO1-SS34-0708-061218 at 1442
				Silty Sand (SM) 1.2-7.8' - brown, moist to wet, loose, very fine sand with silt		0.2	
5	5.0						
		3.9 / 5.0	DPT-1			0.5	NO groundwater sample collected
				Sandy Gravel (GW) 7.8-10.0' - brown and multi-colored, moist to wet, loose, well rounded, gravel with some fine to medium grained sands, traces of silt			
10	10.0						
				Bottom of Boring at 10.0 ft below ground surface			
15							
20							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS35/GW13	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/13/18 08:47 — END : 6/13/18 09:53 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	**Gravel (GW)** 0.0-0.2'			
				Silty Clay (CL) 0.2-1.3' - gray and brown mottled, moist, stiff, clay with some silt			Sample collected SO1-SS35-0102-061318 at 0857
				Silty Sand (SM) 1.3-4.0' - brown, moist, medium dense to loose, very fine sands with some silt		0.4	
5	5.0			**Silty Sand (SM)** 4.0-8.5' - color change to dark gray with some dark greenish gray to black staining, moist to wet, medium dense to loose, very fine sands with some silt, wet at 8.1' bgs, slight odor			Sample collected SO1-SS35-0506-061318 at 0910
		4.0 / 5.0	DPT-1			1.3	
						1.7	
				Silty Sand (SM) 8.5-9.6' - brown, moist, medium dense to loose, very fine sands with some silt, silt decreasing with depth, fine grained sands increasing with depth			
10	10.0			**Sandy Gravel (GW)** 9.6-30.0' - brown and multi-colored, moist to wet, loose, well rounded, fine gravel with some fine to coarse grained sands			
		3.6 / 5.0	DPT-2			1.3	
15	15.0						
		2.0 / 5.0	DPT-3			0.2	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS35/GW13	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/13/18 08:47 END : 6/13/18 09:53 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0						
		3.1 / 5.0	DPT-4			1.2	Sample collected SO1-SS35-2324-061318 at 0948
25	25.0						
		3.3 / 5.0	DPT-5			1	
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS36	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- — START : 6/8/18 13:30 — END : 6/8/18 14:25 — LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	**Concrete** 0.0-0.5'		3.5	Sample collected SO1-SS36-0001-060818 at 1345
				Sand (SP) 0.5-0.7' - brown, dry, fine grained		1.2	
				Silt (ML) 0.7-5.0' - brown, dry, some clay, slightly variegated gray		1.8	
						2.3	
5	5.0						
	6.0	1.0 / 1.0	DP	**Silt (ML)** 5.0-6.0' - brown, moist, some clay, slightly variegated gray		3.8	
		2.0 / 2.0	DP	**Sand (SM/SC)** 6.0-6.3' - brown, moist, fine grained, silty		2.3	
				Silt (ML) 6.3-9.3' - brown, moist to saturated at 8.4' bgs, fine sand		1.7	Sample collected SO1-SS36-0708-060818 at 1400 SO1-SSFD01-060818 at 1405
	8.0						
		1.6 / 2.0	DP			1.5	
10	10.0			**Sandy Gravel (GW)** 9.3-9.6' - brown, multi-colored, rounded, loose gravel with coarse sand			
		1.8 / 2.0	DP	9.6-10.0' - no recovery **Sandy Gravel (GW)** 10.0-11.8' - brown, multi-colored, rounded, loose gravel with coarse sand, silt lens at 10.2-10.3'		2.1	
	12.0			11.8-12.0' - no recovery			
		1.8 / 2.0	DP	**Sandy Gravel (GW)** 12.0-13.8' - brown, multi-colored, rounded, loose gravel with coarse sand		2.6	
	14.0			13.8-14.0' - no recovery			
15		2.0 / 2.0	DP	**Sandy Gravel (GW)** 14.0-16.0' - brown, multi-colored, rounded, loose gravel with coarse sand		6.4	Sample collected SO1-SS36-1516-060818 at 1425
	16.0			Bottom of Boring at 16.0 ft below ground surface			
20							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS37/GW15	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/14/18 12:30 — END : 6/14/18 13:27 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	**Concrete** 0.0-0.5' **Concrete with base course** 0.5-0.8' **Silty Clay (CL)** 0.8-6.3' - brown, moist, stiff to hard, clay with silt		1.5	Sample collected SO1-SS37-0102-061418 at 1248
5	5.0						
		3.7 / 5.0	DPT-1	**Silty Sand (SM)** 6.3-10.1' - brown, moist to wet, medium dense to loose, fine grained sands with silt, wet at 7.2' bgs		1.6	Sample collected SO1-SS37-0607-061418 at 1258
10	10.0						
		3.7 / 5.0	DPT-2	**Sandy Gravel (GW)** 10.1-30.0' - brown, multi-colored, moist to wet, loose, fine, well rounded gravel with medium to coarse sands, traces of black staining, no odor at 24.5-27.2' interval, wet at 28.5' bgs, increased grain size of sand with depth		1.6	
15	15.0						
		3.6 / 5.0	DPT-3			1.2	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS37/GW15	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/14/18 12:30 END : 6/14/18 13:27 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0	3.6 / 5.0	DPT-4			4.8	
25	25.0	3.7 / 5.0	DPT-5			2.8	Sample collected SO1-SS37-2526-061418 at 1314
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS38	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- — START : 6/8/18 16:55 — END : 6/8/18 17:20 — LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	**Concrete/Gravel** 0.0-0.8'			
				Silt (ML) 0.8-2.0' - gray/tan, dry, firm			Sample collected SO1-SS38-0102-060818 at 1620
				Silt (ML) 2.0-5.0' - brown, dry to moist, sand with depth		2.5-3.5	
						1.9-2	
5	5.0						
		4.6 / 5.0	DP	**Silt (ML)** 5.0-9.5' - brown, sand with depth, moist 5.0-6.7', very moist 6.7-8.0', saturated 8.1-9.5'			Sample collected SO1-SS38-0607-060818 at 1630
						1.1-1.9	
10	10.0			**Sandy Gravel (GW)** 9.5-9.6' - brown, multi-colored, rounded, loose gravel with coarse sand			
				9.6-10.0' - no recovery			
		3.9 / 5.0	DP	**Sandy Gravel (GW)** 10.0-13.9' - brown, multi-colored, moist, rounded, loose gravel with coarse sand		0.9-1.8	
				13.9-15.0' - no recovery			
15	15.0						
		0.0 / 5.0	DP	15.0-20.0' - no recovery			
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS38	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : Geoprobe

WATER LEVELS : --- — START : 6/8/18 16:55 — END : 6/8/18 17:20 — LOGGER : J. Mallison

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0	3.4 / 5.0	DP	**Sandy Gravel (GW)** 20.0-23.4' - brown, multi-colored, moist, rounded, loose gravel with coarse sand		0.5	
				23.4-25.0' - no recovery		0.2	
25	25.0	3.4 / 5.0	DP	**Sandy Gravel (GW)** 25.0-28.4' - brown, multi-colored, very moist to wet, rounded, loose gravel with coarse sand		1.8	
				28.4-30.0' - no recovery		2.6	
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS39/GW16	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/13/18 10:35 — END : 6/13/18 11:18 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		4.3/5.0	DPT-1	**Asphalt Surface** 0.0-0.5'			
				Silty Clay (CL) 0.5-4.8' - brown and gray mottled, moist, stiff, clay with some silt, low plasticity		3.8	Sample collected SO1-SS39-0102-061318 at 1044
5	5.0						
		3.9/5.0	DPT-2	**Silty Sand (SM)** 4.8-9.1' - brown, moist to wet, medium dense to loose, very fine to fine sands with some silt, decreasing silt with depth		4.4	Sample collected SO1-SS39-0506-061318 at 1050
							wet at 7.9' bgs (perched zone)
10	10.0			**Sandy Gravel (GW)** 9.1-30.0' - brown and multi-colored, moist to wet, loose, fine to medium gravel with some fine to coarse grained sands (well rounded gravel), traces of black staining through 9.1-30.0', increasing sand grain size to coarse, wet at 28.7' bgs			
		3.3/5.0	DPT-3			2.7	
15	15.0						
		3.5/5.0	DPT-4			4.5	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS39/GW16	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/13/18 10:35 END : 6/13/18 11:18 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0	3.4 / 5.0	DPT-5			2.3	Sample collected SO1-SS39-2425-061318 at 1106
25	25.0	3.3 / 5.0	DPT-6			1.7	
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS40/GW17	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/13/18 11:38 — END : 6/13/18 12:11 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		3.3 / 5.0	DPT-1	**Asphalt Surface** 0.0-0.5' **Silty Clay (CL)** 0.5-4.1' - brown, moist, stiff, clay with some silt		4.8	Sample collected SO1-SS40-0102-061318 at 1141
5	5.0						
		4.1 / 5.0	DPT-2	**Silty Sand (SM)** 4.1-9.2' - brown, moist to wet, loose to medium dense, very fine sands with silt, wet at 7.4' bgs		4.4	Sample collected SO1-SS40-0607-061318 at 1149
10	10.0						
		3.5 / 5.0	DPT-3	**Sandy Gravel (GW)** 9.2-30.0' - brown and multi-colored, moist to wet, loose, well rounded, fine to medium grained gravel with some fine to coarse grained sands, traces of black staining through 9.2-30.0' interval, grain size increases with depth (sands), wet at 28.5' bgs		5.6	
15	15.0						
		3.4 / 5.0	DPT-4			5.5	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS40/GW17	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/13/18 11:38 END : 6/13/18 12:11 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0	3.4 / 5.0	DPT-5			9.8	
25	25.0						Sample collected SO1-SS40-2425-061318 at 1204
		3.3 / 5.0	DPT-6			9.7	
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS41/GW18	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/13/18 14:12 — END : 6/13/18 16:24 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		3.7 / 5.0	DPT-1	**Asphalt** 0.0-0.5' **Silty Clay (CL)** 0.5-4.3' - brown, moist, stiff, clay with silt		6.8	Sample collected SO1-SS41-0102-061318 at 1419
5	5.0			**Silty Sand (SM)** 4.3-9.9' - brown, moist to wet, medium dense to loose, very fine sand with some silt, wet at 8.9' bgs			
		4.1 / 5.0	DPT-2			5.2	Sample collected SO1-SS41-0607-061318 at 1426
10	10.0			**Sandy Gravel (GW)** 9.9-27.3' - brown and multi-colored, moist to wet, loose, well rounded, fine to medium gravel with fine to coarse sands, traces of black staining, no odor			
		3.2 / 5.0	DPT-3			4.9	
15	15.0						
		3.6 / 5.0	DPT-4			6.2	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS41/GW18	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/13/18 14:12 END : 6/13/18 16:24 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0	5.0	DPT-5			5.4	
25	25.0						Sample collected SO1-SS41-2526-061318 at 1419
		5.0	DPT-6	**Silty Sand (SM)** 27.3-27.9' - brown, wet, loose, very fine sand with silt, perched water		5.5	
				Sandy Gravel (GW) 27.9-30.0' - brown and multi-colored, moist to wet, loose, well rounded fine to medium gravel with medium to coarse sands			wet at 28.9' bgs
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS42	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/11/18 10:22 — END : 6/11/18 12:00 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		5.0 / 5.0	HA	**Concrete** 0.0-0.5'			
				Silty Clay (CL) 0.5-4.5' - gray and brown mottled, moist, stiff, clay with some silt, low plasticity		10.2	Sample collected SO1-SS42-0102-061118 at 1045
						12.8	
5	5.0			**Silty Clay (CL)** 4.5-5.8' - brown and gray mottled, moist, soft, clay with some silt, trace very fine grained sands			
		4.3 / 5.0	DPT-1	**Silty Sand (SM)** 5.8-10.0' - brown, moist to wet, very fine grained sand with traces of clay (lenses), increased gravel (fine to medium grained) at 9.9-10.0'		6.4	Sample collected SO1-SS42-0608-061118 at 1111
						8.5	
						9.2	
10	10.0			**Sandy Gravel (SW)** 10.0-30.0' - brown, multi-colored, moist, loose, well rounded (<0.05' dia.) gravel with some coarse grained sands, trace of black staining, (0.25" diam) throughout		8.8	
		3.4 / 5.0	DPT-2			8.7	
						9.6	
15	15.0						
		3.8 / 5.0	DPT-3			9.2	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS42	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/11/18 10:22 END : 6/11/18 12:00 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0	3.7/5.0	DPT-4			8.9	Sample collected SO1-SS42-2324-061118 at 1150
25	25.0	2.6/5.0	DPT-5			9.5	
							wet at 29.2' bgs
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS43/GW19	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling — LOCATION : Ironton, OH

ELEVATION : — DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- — START : 6/14/18 09:31 — END : 6/14/18 11:50 — LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
		3.2 / 5.0	DPT-1	**Gravel geo fabric with sand (GW)** 0.0-0.3' **Silty Clay (CL)** 0.3-3.1' - brown, moist, stiff to hard, clay with silt		0.2	Sample collected SO1-SS43-0102-061418 at 0935
5	5.0			**Silty Sand (SM)** 3.1-11.3' - brown, moist to wet, medium dense to loose, very fine sands with silt, perched water at 6.8-11.3' bgs			
		4.3 / 5.0	DPT-2			0.3	Sample collected SO1-SS43-0506-061418 at 0941
10	10.0						
		3.4 / 5.0	DPT-3	**Sandy Gravel (GW)** 11.3-30.0' - brown and multi-colored, moist to wet, loose, well rounded, fine gravel with medium to coarse grained sands, wet at 28.6' bgs, increased grain size with depth sand and gravel (medium)		0.6	
15	15.0						
		3.2 / 5.0	DPT-4			0.5	
20	20.0						

JACOBS

PROJECT NUMBER:	BORING NUMBER:	
693874	SS43/GW19	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase III Additional Sampling LOCATION : Ironton, OH

ELEVATION : DRILLING CONTRACTOR : Kemron

DRILLING METHOD AND EQUIPMENT : AMS Power Probe 9500 VTR

WATER LEVELS : --- START : 6/14/18 09:31 END : 6/14/18 11:50 LOGGER : B. Irish

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	COMMENTS
	20.0						
		3.2 / 5.0	DPT-5			0.6	
25	25.0						Sample collected SO1-SS43-2425-061418 at 1000
		3.3 / 5.0	DPT-6			0.8	Sample collected SO1-GW11-2630-061418 at 1141
30	30.0			Bottom of Boring at 30.0 ft below ground surface			
35							
40							

PROJECT NUMBER:	BORING NUMBER:
420671	S01-SS01 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase I RFI Investigation, Ironton, Ohio LOCATION : Ironton, Ohio

ELEVATION : DRILLING CONTRACTOR : Subsurface Inc.

DRILLING EQUIPMENT AND METHOD : DPT Power Probe, 9500 VTR

WATER LEVELS : --- START : 12/9/11 10:50 END : 12/9/11 11:35 LOGGER : O. Ogbebor

DEPTH BELOW EXISTING GRADE ()	INTERVAL ()	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0				0-0.5' - Asphalt		Initial PID (ppm)=0.0 Headspace PID (ppm)=0.1
		5	MC-1		0.5-6.5' - Silt with some clay (ML), strong brown 7.5YR 5/8, dry, non plastic, firm, slight moth ball like odor		S01-SS01-0002-120911-Collected from 0.5-2 ft Initial PID (ppm)=10.4 Headspace PID (ppm)=2.8
5	5.0						S01-SS01-0002-120911-Collected from 3-5 ft Initial PID (ppm)=18.6 Headspace PID (ppm)=5.0
		5	MC-2		6.5-11.5' - Silt with fine sand (ML), strong brown 7.5YR 5/8, moist, non plastic, firm strong moth ball like odor		Initial PID (ppm)=3.8 Headspace PID (ppm)=6.8
10	10.0						S01-SS01-0002-120911-Collected from 8-10 ft Initial PID (ppm)=16.5 Headspace PID (ppm)=19.8
		5	MC-3		11.5-23.5' - Gravelly sand (SW), brown 7.5YR 4/3, dry, loose, strong moth ball like odor		Initial PID (ppm)=12.0 Headspace PID (ppm)=6.9
15	15.0						Initial PID (ppm)=8.6 Headspace PID (ppm)=1.0
		5	MC-4				Initial PID (ppm)=8.4 Headspace PID (ppm)=14.1
20	20.0						Initial PID (ppm)=9.6 Headspace PID (ppm)=1.3
		5	MC-5				Initial PID (ppm)=10.4 Headspace PID (ppm)=14.2 Initial PID (ppm)=3.8 Headspace PID (ppm)=1.2
25	25.0				23.5-25' - Gravelly sand (SW), brown 7.5YR 4/3, wet, loose, strong moth ball like odor		
					Bottom of Boring at 25.0 ft bgs on 12/9/11 10:50		

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:	
420671	S01-SS02	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase I RFI Investigation, Ironton, Ohio LOCATION : Ironton, Ohio

ELEVATION : DRILLING CONTRACTOR : Subsurface Inc.

DRILLING EQUIPMENT AND METHOD : DPT Power Probe, 9500 VTR

WATER LEVELS : ▼ --- START : 12/9/11 11:40 END : 12/9/11 13:15 LOGGER : O. Ogbebor

DEPTH BELOW EXISTING GRADE ()	INTERVAL ()	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
0	0.0				0-0.5' - Asphalt		
		5	MC-1		0.5-7' - Silt with clay (ML), strong brown 7.5YR 5/8, dry, non plastic, firm, moth ball like odor from about 3 ft bgs		Initial PID (ppm)=0.0 Headspace PID (ppm)=0.6 S01-SS02-0002-120911-Collected from 0.5-2 ft Initial PID (ppm)=620 Headspace PID (ppm)=857
5	5.0						S01-SS02-0308-120911-Collected from 3-5 ft Initial PID (ppm)=896 Headspace PID (ppm)=1408
		5	MC-2		7-11' - Silty fine sand (SM), strong brown 7.5YR 5/8, moist, non plastic, firm, strong moth ball like odor		Initial PID (ppm)=680 Headspace PID (ppm)=1091 Initial PID (ppm)=394 Headspace PID (ppm)=180 S01-SS02-0810-12911-Collected from 8-10 ft
10	10.0						Initial PID (ppm)=98 Headspace PID (ppm)=130
		5	MC-3		11-24' - Gravelly sand (SW), brown 7.5YR 4/4, moist, loose, slight moth ball like odor		Initial PID (ppm)=20 Headspace PID (ppm)=68
15	15.0						Initial PID (ppm)=26 Headspace PID (ppm)=29.1
		5	MC-4				Initial PID (ppm)=23 Headspace PID (ppm)=29.8
20	20.0						Initial PID (ppm)=2.8 Headspace PID (ppm)=24.9 S01-SS02-2123-120911-Collected from 21-23 ft
		5	MC-5				Initial PID (ppm)=20.9 Headspace PID (ppm)=38.1
25	25.0				24-25' - Gravelly sand (SW), brown 7.5YR 4/4, wet, loose, slight moth ball like odor		Initial PID (ppm)=20.1 Headspace PID (ppm)=44
					Bottom of Boring at 25.0 ft bgs on 12/9/11 11:40		

PROJECT NUMBER:	BORING NUMBER:
420671	S01-SS03 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase I RFI Investigation, Ironton, Ohio LOCATION : Ironton, Ohio

ELEVATION : DRILLING CONTRACTOR : Subsurface Inc.

DRILLING EQUIPMENT AND METHOD : DPT Power Probe, 9500 VTR

WATER LEVELS : --- START : 12/12/11 09:46 END : 12/12/2011 LOGGER : O. Ogbebor

DEPTH BELOW EXISTING GRADE ()	INTERVAL ()	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0				0-0.5' - Asphalt		
		5	MC-1		0.5-7.25' - Silt with some clay, little fine sand (ML), strong brown 7.5YR 5/8, dry, non plastic, firm		Initial PID (ppm)=0.1 Headspace PID (ppm)=0.1 S01-SS03-0002-121211- collected from 0.5-2 ft S01-SS03-0002-121211-MS- collected from 0.5-2 ft S01-SS03-0002-121211-MSD- collected from 0.5-2 ft Initial PID (ppm)=2.2 Headspace PID (ppm)=4.0 S01-SS03-0305-121211-Collected from 3-5 ft
5	5.0						Initial PID (ppm)=5.8 Headspace PID (ppm)=8.6
		5	MC-2		7.25-10' - Silty fine sand (SM), strong brown 7.5YR 5/8, dry, non plastic, firm		Initial PID (ppm)=2.1 Headspace PID (ppm)=5.4 SS01-SS03-0810-121211-Collected from 8-10 ft
10	10.0						
		5	MC-3		10-15' - Gravelly sand (SW), brown 7.5YR 4/3, dry, loose		Initial PID (ppm)=2.6 Headspace PID (ppm)=3.9 Initial PID (ppm)=0.8 Headspace PID (ppm)=2.1 SS01-SS03-1315-121211-Collected from 13 to 15 ft Initial PID (ppm)=0.1 Headspace PID (ppm)=2.0
15	15.0						
					Bottom of Boring at 15.0 ft bgs on 12/12/11 09:46		

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
420671	S01-SS04 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase I RFI Investigation, Ironton, Ohio LOCATION : Ironton, Ohio

ELEVATION : DRILLING CONTRACTOR : Subsurface Inc.

DRILLING EQUIPMENT AND METHOD : DPT Power Probe, 9500 VTR

WATER LEVELS : --- START : 12/12/11 10:56 END : 12/12/11 11:30 LOGGER : O. Ogbebor

DEPTH BELOW EXISTING GRADE ()	INTERVAL ()	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0				0-0.5' - Asphalt		
		5	MC-1		0.5-7.5' - Silty clay (CL), strong brown 7.5YR 5/8, dry, non plastic, stiff, clay with some silt		Initial PID (ppm)=0.1 Headspace PID (ppm)=0.3 S01-SS04-0002-121211-Collected from 0-2 ft Initial PID (ppm)=6.1 Headspace PID (ppm)=6.5
							Initial PID (ppm)=6.1 Headspace PID (ppm)=6.5 S01-SS04-0305-121211-Collected from 3-5 ft Initial PID (ppm)=6.1 Headspace PID (ppm)=0.9
5	5.0						Initial PID (ppm)=6.1 Headspace PID (ppm)=1.2
		5	MC-2				Initial PID (ppm)=0.1 Headspace PID (ppm)=1.2 Initial PID (ppm)=0.1 Headspace PID (ppm)=1.3
					7.5-10' - Sandy silt (ML), strong brown 7.5YR 5/8, non plastic, medium stiff, silt with some sand		Initial PID (ppm)=0.1 Headspace PID (ppm)=1.3 S01-SS04-0810-121211-Collected from 8-10 ft Initial PID (ppm)=0.2 Headspace PID (ppm)=1.5
10	10.0						Initial PID (ppm)=0.2 Headspace PID (ppm)=1.5
					Bottom of Boring at 10.0 ft bgs on 12/12/11 10:56		

PROJECT NUMBER:	BORING NUMBER:
420671	S01-SS05 SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase I RFI Investigation, Ironton, Ohio LOCATION : Ironton, Ohio

ELEVATION : DRILLING CONTRACTOR : Subsurface Inc.

DRILLING EQUIPMENT AND METHOD : DPT Power Probe, 9500 VTR

WATER LEVELS : --- START : 12/12/11 12:00 END : 12/12/11 13:45 LOGGER : O. Ogbebor

DEPTH BELOW EXISTING GRADE ()	INTERVAL ()	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0				0-0.5' - Asphalt		
		5	MC-1		0.5-8' - Silty clay (CL), strong brown 7.5YR 5/8, dry, non plastic, stiff, clay with some silt		Initial PID (ppm)=0.3 Headspace PID (ppm)=1.6 S01-SS05-0002-121211-Collected from 0-2 ft Initial PID (ppm)=0.5 Headspace PID (ppm)=1.3
							Initial PID (ppm)=3.7 Headspace PID (ppm)=1.1 S01-SS05-0305-121211-Collected from 3-5 ft Initial PID (ppm)=1.9 Headspace PID (ppm)=3.5
5	5.0						
		5	MC-2				Initial PID (ppm)=1.8 Headspace PID (ppm)=7.8 Initial PID (ppm)=5.4 Headspace PID (ppm)=5.6 Initial PID (ppm)=1.4 Headspace PID (ppm)=7.6
					8-11' - Sandy silt (ML), strong brown 7.5YR 5/8, dry, non plastic, medium stiff, silt with some sand		Initial PID (ppm)=8.5 Headspace PID (ppm)=8.6 S01-SS05-0810-121211-Collected from 8-10 ft Initial PID (ppm)=16.2 Headspace PID (ppm)=19.5
10	10.0						
		5	MC-3		11-20' - Sandy gravel (GP), poorly graded, coarse grained, strong brown 7.5YR 5/8, moist, gravel and sand		Initial PID (ppm)=0.7 Headspace PID (ppm)=22.5 Initial PID (ppm)=0.5 Headspace PID (ppm)=1.9 Initial PID (ppm)=1.0 Headspace PID (ppm)=7.3 Initial PID (ppm)=0.6 Headspace PID (ppm)=8.8 Initial PID (ppm)=0.3 Headspace PID (ppm)=7.1
15							

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:	
420671	S01-SS05	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase I RFI Investigation, Ironton, Ohio LOCATION : Ironton, Ohio

ELEVATION : DRILLING CONTRACTOR : Subsurface Inc.

DRILLING EQUIPMENT AND METHOD : DPT Power Probe, 9500 VTR

WATER LEVELS : --- START : 12/12/11 12:00 END : 12/12/11 13:45 LOGGER : O. Ogbebor

DEPTH BELOW EXISTING GRADE ()	INTERVAL ()	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	15.0						Initial PID (ppm)=0.3 Headspace PID (ppm)=19.3
							Initial PID (ppm)=1.3 Headspace PID (ppm)=14.5
		5	MC-4				Initial PID (ppm)=4.2 Headspace PID (ppm)=15.7
							Initial PID (ppm)=0.6 Headspace PID (ppm)=1.5
							Initial PID (ppm)=2.8 Headspace PID (ppm)=5.4
20	20.0						
					20-22' - Clayey sandy gravel (GP), poorly graded, coarse grained, moist, gravel and stand with trace clay		Initial PID (ppm)=2.2 Headspace PID (ppm)=20.7
							Initial PID (ppm)=0.1 Headspace PID (ppm)=1.4
		5	MC-5		22-24' - Sandy gravel (GP), poorly graded, coarse grained, moist, gravel and sand		Initial PID (ppm)=1.3 Headspace PID (ppm)=1.4 S01-SS05-2123-121211-Collected from 21-23 ft Initial PID (ppm)=0.1 Headspace PID (ppm)=0.5
					24-25' - Sandy gravel (GP), poorly graded, coarse grained, wet, gravel and sand		Initial PID (ppm)=0.6 Headspace PID (ppm)=2.0 Initial PID (ppm)=6.5 Headspace PID (ppm)=5.2
25	25.0						
					Bottom of Boring at 25.0 ft bgs on 12/12/11 12:00		
30							

PROJECT NUMBER:	BORING NUMBER:
420671	S01-SS06 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase I RFI Investigation, Ironton, Ohio LOCATION : Ironton, Ohio

ELEVATION : DRILLING CONTRACTOR : Subsurface Inc.

DRILLING EQUIPMENT AND METHOD : DPT Power Probe, 9500 VTR

WATER LEVELS : --- START : 12/12/11 14:00 END : 12/12/11 15:30 LOGGER : O. Ogbebor

DEPTH BELOW EXISTING GRADE ()	INTERVAL ()	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0				0-0.5' - Asphalt		
		5	MC-1		0.5-7' - Silt with clay and fine sand (ML), strong brown 7.5YR 5/8, moist, non plastic, firm		Initial PID (ppm)=0.0 Headspace PID (ppm)=0.0 S01-SS06-0002-121211-Collected from 0.5-2 ft Initial PID (ppm)=1.2 Headspace PID (ppm)=2.6 S01-SS06-0305-121211-Collected from 3-5 ft
5	5.0						Initial PID (ppm)=8.9 Headspace PID (ppm)=20.9
		5	MC-2		7-10' - Silty fine sand (SM), strong brown 7.5YR 5/8, moist, non plastic, firm		Initial PID (ppm)=4.1 Headspace PID (ppm)=10.1 S01-SS06-0810-121211-Collected from 8-10 ft Initial PID (ppm)=4.6 Headspace PID (ppm)=6.4
10	10.0						
			MC-3		10-15' - Gravelly sand (SW), brown 7.5YR 4/3, moist, loose		Initial PID (ppm)=5.3 Headspace PID (ppm)=8.9 Initial PID (ppm)=0.8 Headspace PID (ppm)=2.6 S01-SS06-1315-121211-Collected from 13-15 ft Initial PID (ppm)=0.6 Headspace PID (ppm)=1.4
15	15.0						
					Bottom of Boring at 15.0 ft bgs on 12/12/11 14:00		

PROJECT NUMBER:	BORING NUMBER:
420671	S01-SS07 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase I RFI Investigation, Ironton, Ohio LOCATION : Ironton, Ohio

ELEVATION : DRILLING CONTRACTOR : Subsurface Inc.

DRILLING EQUIPMENT AND METHOD : DPT Power Probe, 9500 VTR

WATER LEVELS : --- START : 12/12/11 17:05 END : 12/12/11 17:20 LOGGER : O. Ogbebor

DEPTH BELOW EXISTING GRADE ()	INTERVAL ()	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0				0-0.5' - Asphalt		
					0.5-1' - Crushed gray shale		
		5	MC-1		1-7' - Silt (ML), some fine sand, clay, strong brown 7.5YR 5/8, moist, non plastic, firm		Initial PID (ppm)=0.0 Headspace PID (ppm)=0.1 S01-SS07-0002-121211-Collected from 0.5-2 ft
							Initial PID (ppm)=0.1 Headspace PID (ppm)=0.3 S01-SS07-0305-121211-Collected from 3-5 ft
5	5.0						Initial PID (ppm)=0.1 Headspace PID (ppm)=0.9
		5	MC-2		7-10' - Silty fine sand (SM), strong brown 7.5YR 5/8, moist, non plastic, firm		Initial PID (ppm)=0.1 Headspace PID (ppm)=0.6
							Initial PID (ppm)=0.1 S01-SS06-0810-121211-Collected from 8-10 ft
							Headspace PID (ppm)=0.7
10	10.0						Initial PID (ppm)=0.1 Headspace PID (ppm)=0.8
					Bottom of Boring at 10.0 ft bgs on 12/12/11 17:05		

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
420671	S01-SS08 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase I RFI Investigation, Ironton, Ohio LOCATION : Ironton, Ohio

ELEVATION : DRILLING CONTRACTOR : Subsurface Inc.

DRILLING EQUIPMENT AND METHOD : DPT Power Probe, 9500 VTR

WATER LEVELS : --- START : 12/12/11 16:05 END : 12/12/11 16:50 LOGGER : O. Ogbebor

DEPTH BELOW EXISTING GRADE ()	INTERVAL ()	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
0	0.0				0-0.5' - Asphalt		
					0.5-1.5' - Crushed grayish gravel		Initial PID (ppm)=0.0 Headspace PID (ppm)=0.1 S01-SS08-0002-121211-Collected from 0.5-2 ft
		5	MC-1		1.5-6.5' - Silt, with some fine sand and clay (ML), strong brown 7.5YR 5/8, light gray 7.5YR 5/1, mottling, moist, non plastic, firm		Initial PID (ppm)=2.6 Headspace PID (ppm)=10.2 S01-SS08-0303-121211-Collected from 3-5 ft
5	5.0						Initial PID (ppm)=18.9 Headspace PID (ppm)=30.1
		5	MC-2		6.5-11' - Silty fine sand (SM), strong brown 7.5YR 5/8, moist, firm, slight moth ball like odor		Initial PID (ppm)=10.8 Headspace PID (ppm)=14.2 S01-SS08-0810-121211-Collected from 8-10 ft
10	10.0						Initial PID (ppm)=12.6 Headspace PID (ppm)=18.0
		5	MC-3		11-24' - Gravelly sand (SW), brown 7.5YR 4/3, moist, fine to coarse, loose, moth ball like odor		
15	15.0						Initial PID (ppm)=8.6 Headspace PID (ppm)=10.9
		5	MC-4				Initial PID (ppm)=8.4 Headspace PID (ppm)=10.6
20	20.0						Initial PID (ppm)=8.3 Headspace PID (ppm)=9.5 S01-SS08-2123-121211-Collected from 21-23 ft
		5	MC-5				Headspace PID (ppm)=10.9
25	25.0				24-25' - Gravelly sand (SW), brown 7.5YR 4/3, wet, fine to coarse, loose, moth ball like odor		
					Bottom of Boring at 25.0 ft bgs on 12/12/11 16:05		

CH2MHILL

PROJECT NUMBER:	BORING NUMBER:
420671	S01-SS09 SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Dow Hanging Rock Phase I RFI Investigation, Ironton, Ohio LOCATION : Ironton, Ohio

ELEVATION : DRILLING CONTRACTOR : Subsurface Inc.

DRILLING EQUIPMENT AND METHOD : DPT Power Probe, 9500 VTR

WATER LEVELS : --- START : 12/12/11 15:40 END : 12/12/11 16:05 LOGGER : O. Ogbebor

DEPTH BELOW EXISTING GRADE ()	INTERVAL ()	RECOVERY (ft)	#TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	0.0				0-0.5' - Asphalt		
					0.5-1.5' - Crushed grayish gravel		Initial PID (ppm)=0.1 Headspace PID (ppm)=1.0 S01-SS09-0002-121211-Collected from 0.5-2 ft
		5	MC-1		1.5-7' - Silt, some fine sand and clay (ML), strong brown 7.5YR 5/7, moist, firm, non plastic		Initial PID (ppm)=0.6 Headspace PID (ppm)=1.0 S01-SS09-0305-121211-Collected from 3-5 ft
5	5.0						Initial PID (ppm)=0.4 Headspace PID (ppm)=1.9
		5	MC-2		7-10' - Silty fine sand (SM), strong brown 7.5YR 5/8, moist, non plastic, firm		Initial PID (ppm)=0.4 Headspace PID (ppm)=1.1 S01-SS09-0810-121211-Collected from 8-10 ft
10	10.0						Initial PID (ppm)=0.3 Headspace PID (ppm)=1.6
					Bottom of Boring at 10.0 ft bgs on 12/12/11 15:40		

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS10	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/6/15 15:05 — END : 10/6/15 15:50 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
				Asphalt and Gravel 0.0-0.8' - dry, loose		0	0	Collect S01-SS10-0002-100615 from 0.0-2.0' bgs at 1510
				Silty Clay (CL) 0.8-6.0' - brown and gray mottled, moist to dry, stiff to very stiff, clay with some silt		0	0	
		5.0 5.0	MC1			0.1	0	Breathing Zone = 0ppm
						0.1	0	Collect S01-SS10-0305-100615 from 3.0-5.0' bgs at 1515
5	5.0					0	0	
						0	0	
				Silty Clay (CL) 6.0-8.0' - brown, moist, soft, clay with little silt		0	0	
		4.0 5.0	MC2			0	0	Breathing Zone = 0ppm
				Silty Sand (SM) 8.0-9.0' - brown, moist to wet, dense, very fine grained sand with silt		0	0	Collect S01-SS10-0809-100615 from 8.0-9.0' bgs at 1520
				9.0-10.0' - no recovery				
10	10.0							
				Gravelly Sand (SW) 10.0-14.0' - tan, moist, dense, coarse grained sand with well rounded gravel		0	0	
						0	0	
		4.0 5.0	MC3			0	0	Breathing Zone = 0ppm
						0	0	
				14.0-15.0' - no recovery				
15	15.0							
				Gravelly Sand (SW) 15.0-19.0' - tan, moist, dense, coarse grained sand with well rounded gravel		0	0	
						0	0	
		4.0 5.0	MC4			0	0	Breathing Zone = 0ppm
						0	0	
				19.0-20.0' - no recovery				
20	20.0							

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS10	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/6/15 15:05 — END : 10/6/15 15:50 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
	20.0			**Gravelly Sand (SW)** 20.0-24.0' - tan, moist, dense, coarse grained sand with well rounded gravel		0 0 0 0	0 0 0 0	
		4.0 5.0	MC5					Breathing Zone = 0ppm
				24.0-25.0' - no recovery				
25	25.0							
				Gravelly Sand (SW) 25.0-28.0' - tan, moist, dense, coarse grained sand with well rounded gravel		0 0 0	0 0 0	
		4.0 5.0	MC6					Collect S01-SS10-2728-100615 from 27.0-28.0' bgs at 1545 Breathing Zone = 0ppm
				Gravelly Sand (SW) 28.0-29.0' - tan, wet, dense, coarse grained sand with well rounded gravel		0	0	
				29.0-30.0' - no recovery				
30	30.0							
				Bottom of Boring at 30.0 ft below ground surface				
35								
40								

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS11	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/6/15 14:00 — END : 10/6/15 14:40 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
				Asphalt and Gravel 0.0-2.0' - dry, dense		0	0	Collect S01-SS11-0002-100615 from 0.0-2.0' bgs at 1405
						0	0	
		5.0	MC1	**Silty Clay (CL)** 2.0-4.5' - brown and gray mottled, moist, stiff, clay with little silt		0	0	Breathing Zone = 0ppm
						0	0	Collect S01-SS11-0304-100615 from 3.0-4.0' bgs at 1410
5	5.0			4.5-5.0' - no recovery		0.1	0	
		5.0	MC2	**Silty Clay (CL)** 5.0-9.5' - brown, moist (wet from 6.5-8.5'), soft, clay with some silt		0	0	
						0	0	
						0	0	Breathing Zone = 0ppm
						0	0	Collect S01-SS11-0810-100615 from 8.0-10.0' bgs at 1415
10	10.0			9.5-10.0' - no recovery		0	0	
		5.0	MC3	**Silty Clay (CL)** 10.0-11.7' - brown, moist, soft, clay with some silt		0	0	
						0	0	
				Gravelly Sand (SW) 11.7-13.5' - tan, moist, medium dense, coarse grained sand with well rounded gravel		0	0	Breathing Zone = 0ppm
				13.5-15.0' - no recovery		0	0	
15	15.0							
		5.0	MC4	**Gravelly Sand (SW)** 15.0-18.0' - tan, moist, medium dense, coarse grained sand with well rounded gravel		0	0	
						0	0	
						0	0	Breathing Zone = 0ppm
				18.0-20.0' - no recovery				
20	20.0							

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS11	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/6/15 14:00 — END : 10/6/15 14:40 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
	20.0			**Gravelly Sand (SW)** 20.0-29.0' - tan, moist, medium dense, coarse grained sand with well rounded gravel		0	0	
						0.1	0	
		5.0	MC5			0	0	Breathing Zone = 0ppm
						0	0	
25	25.0					0	0	
						0	0	
						0	0	
		5.0	MC6			0	0	Breathing Zone = 0ppm Collect S01-SS11-2829-100615 from 28.0-29.0' bgs at 1435
						0	0	
30	30.0			**Gravelly Sand (SW)** 29.0-29.5' - tan, wet, medium dense, coarse grained sand with well rounded gravel 29.5-30.0' - no recovery Bottom of Boring at 30.0 ft below ground surface				
35								
40								

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS12	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/6/15 09:40 — END : 10/6/15 10:40 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
				Asphalt and Gravel 0.0-0.8' - black, dry		1.6	0.4	Collect S01-SS12-0002-100615 from 0.0-2.0' bgs at 0945
				Silty Clay (CL) 0.8-4.0' - brown, moist, medium stiff to stiff, clay with little silt		5.3	4	
		4.0 / 5.0	MC1			16.1	18	Breathing Zone = 0ppm
						22.1	62.2	Collect S01-SS12-0305-100615 from 3.0-5.0' bgs at 0950
				4.0-5.0' - no recovery				
5	5.0							
				Silty Clay (CL) 5.0-6.2' - brown, moist, soft, clay with some silt		48.4	23.9	Collect S01-SS12-0506-100615 from 5.0-8.0' bgs at 0955
				Sandy Silt (SM-ML) 6.2-8.3' - brown, moist, loose, silt with very fine grained sand		17.1	11.3	
		3.5 / 5.0	MC2			12.2	5.6	Breathing Zone = 0ppm
				Sandy Gravel (GW) 8.3-8.5' - tan, moist, loose, gravel with some coarse grained sand		9	4	Collect S01-SS12-0810-100615 from 8.0-10.0' bgs at 1005
				8.5-10.0' - no recovery				
10	10.0							
				Sandy Gravel (GW) 10.0-13.0' - tan, moist, loose, gravel with some coarse grained sand		2.9	2.7	
						3.4	2.7	
		3.0 / 5.0	MC3			3.5	2	Breathing Zone = 0ppm
				13.0-15.0' - no recovery				
15	15.0							
				Gravelly Sand (SW) 15.0-19.0' - tan, moist, loose, coarse grained sand with well rounded gravel		9.1	8.9	
						3.8	5.1	
		4.0 / 5.0	MC4			6.7	11.9	Breathing Zone = 0ppm
						13.1	9.3	
				19.0-20.0' - no recovery				
20	20.0							

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS12	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/6/15 09:40 — END : 10/6/15 10:40 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
	20.0			**Gravelly Sand (SW)** 20.0-29.0' - tan, moist, loose, coarse grained sand with well rounded gravel		104.5	61.6	
						139.7	53.6	
		5.0 5.0	MC5			168.8	22.2	Breathing Zone = 0ppm Collect S01-SS12-2324-100615 from 23.0-24.0' bgs at 1020
						200.5	39.6	
25	25.0					165.5	35.4	
						282.3	15.3	
						253.6	7.4	
		5.0 5.0	MC6			222	16.1	Collect S01-SS12-2729-100615 from 27.0-28.0' bgs at 1035 Collect HGR-100615-FD01 from 27.0-29.0' bgs at 1030 Breathing Zone = 0ppm
						169.3	32.5	
				Gravelly Sand (SW) 29.0-30.0' - tan, wet, loose, coarse grained sand with well rounded gravel				
30	30.0					155.4	53.4	
				Bottom of Boring at 30.0 ft below ground surface				
35								
40								

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS13	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/6/15 11:10 — END : 10/6/15 12:07 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
				Asphalt and Gravel 0.0-1.4' - dry, loose		36.1	9.9	Collect S01-SS13-0002-100615 from 0.0-2.0' bgs at 1115
				Silty Clay (CL) 1.4-3.0' - brown, moist, medium stiff, clay with some silt		55	1	
		3.0 / 5.0	MC1			71.3	33.4	Breathing Zone = 0ppm
				3.0-5.0' - no recovery				
5	5.0							
				Silty Clay (CL) 5.0-7.0' - brown, moist, medium stiff, clay with some silt		82	1.5	Collect S01-SS13-0506-100615 from 5.0-6.0' bgs at 1110
						81.4	1.2	
		4.0 / 5.0	MC2	**Silty Sand (SM)** 7.0-8.3' - brown, wet, medium dense, very fine grained sand with some silt		67.4	0.7	Breathing Zone = 0ppm
				Gravelly Sand (SW) 8.3-9.0' - brown, wet, medium dense, coarse grained sand with some well rounded gravel		99	0	Collect S01-SS13-0810-100615 from 8.0-10.0' bgs at 1130
				9.0-10.0' - no recovery				
10	10.0							
				Gravelly Sand (SW) 10.0-13.5' - tan, moist, medium dense, coarse grained sand with well rounded gravel		1.8	0.6	
						1.3	0.8	
		3.5 / 5.0	MC3			1	0	Breathing Zone = 0ppm
						0.2	0	
				13.5-15.0' - no recovery				
15	15.0							
				Gravelly Sand (SW) 15.0-19.0' - tan, moist, medium dense, coarse grained sand with well rounded gravel		0	0	
						0	0	
		4.0 / 5.0	MC4			0	0	Breathing Zone = 0ppm
						0	0	
				19.0-20.0' - no recovery				
20	20.0							

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS13	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/6/15 11:10 — END : 10/6/15 12:07 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
	20.0			**Gravelly Sand (SW)** 20.0-24.5' - tan, moist, medium dense, coarse grained sand with well rounded gravel		0	0	
						0	0	
		4.5 5.0	MC5			0	0	Breathing Zone = 0ppm
						0	0	
						0	0	
25	25.0			24.5-25.0'				
				Gravelly Sand (SW) 25.0-28.5' - tan, moist, medium dense, coarse grained sand with well rounded gravel		0	0	
						0	0	Collect S01-SS13-2628-100615 from 26.0-28.0' bgs at 1155 Collect S01-SS13-2628-100615 from 26.0-28.0' bgs at 1155 MS
		5.0 5.0	MC6			0	0	Collect S01-SS13-2628-100615 from 26.0-28.0' bgs at 1155 MSD Breathing Zone = 0ppm
				Gravelly Sand (SW) 28.5-30.0' - tan, wet, medium dense, coarse grained sand with well rounded gravel		0	0	
30	30.0					0	0	
				Bottom of Boring at 30.0 ft below ground surface				
35								
40								

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS14	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/7/15 10:45 — END : 10/7/15 11:25 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
				Asphalt and Gravel 0.0-1.0' - dry, loose		0.1	0	Collect S01-SS14-0002-100715 from 0.0-2.0' bgs at 1050
				Silty Clay (CL) 1.0-4.0' - tan and gray mottled, moist, medium stiff, clay with some silt		0.1	0	
		4.0 / 5.0	MC1			0.2	0	Breathing Zone = 0ppm
						0.2	0	Collect S01-SS14-0304-100715 from 3.0-4.0' bgs at 1055
				4.0-5.0' - no recovery				
5	5.0							
				Silty Clay (CL) 5.0-6.5' - tan and gray mottled, moist, medium stiff, clay with some silt		0.1	0	
				Sandy Clay (CL) 6.5-9.0' - brown, moist, soft to medium stiff, clay with very fine grained sand		0	0	
		4.0 / 5.0	MC2			0.2	0	Breathing Zone = 0ppm
						0.2	0	Collect S01-SS14-0809-100715 from 8.0-9.0' bgs at 1100
				9.0-10.0' - no recovery				
10	10.0							
				Sandy Clay (CL) 10.0-11.0' - brown, moist, soft to medium stiff, clay with very fine grained sand		0	0	
				Gravelly Sand (SW) 11.0-13.0' - tan, moist, loose, coarse grained sand with well rounded gravel		1.5	0.3	
		3.0 / 5.0	MC3			1.7	0.4	Breathing Zone = 0ppm
				13.0-15.0' - no recovery				
15	15.0							
				Gravelly Sand (SW) 15.0-18.5' - tan, moist, loose, coarse grained sand with well rounded gravel		1	0.2	
						1.8	0.7	
		3.5 / 5.0	MC4			2.9	0.6	Breathing Zone = 0ppm
						3.1	0.7	
				18.5-20.0' - no recovery				
20	20.0							

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS14	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/7/15 10:45 — END : 10/7/15 11:25 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
	20.0			**Gravelly Sand (SW)** 20.0-24.5' - tan, moist, loose, coarse grained sand with well rounded gravel		1.2	0.6	
						4.3	0.6	
		4.5 / 5.0	MC5			4	0.6	Breathing Zone = 0ppm
						4.1	0.6	
						4.2	1.5	
25	25.0			24.5-25.0' - no recovery				
				Gravelly Sand (SW) 25.0-28.5' - tan, moist, loose, coarse grained sand with well rounded gravel		0.6	1	
						1.7	0.6	
		4.5 / 5.0	MC6			2.6	1.4	Collect S01-SS14-2728-100715 from 27.0-28.0' bgs at 1120 Collect HGR-100715-FD01 from 27.0-28.0' bgs at 1130
				Gravelly Sand (SW) 28.5-29.5' - tan, wet, loose, coarse grained sand with well rounded gravel		3.2	0.6	Breathing Zone = 0ppm
30	30.0			29.5-30.0' - no recovery		3	1.6	
				Bottom of Boring at 30.0 ft below ground surface				
35								
40								

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS15	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/7/15 13:20 — END : 10/7/15 14:10 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
				Asphalt 0.0-1.0' - black, dry, loose		0	0	
				Silty Clay (CL) 1.0-6.0' - brown, moist, stiff, clay with some silt		0	0	Collect S01-SS15-0102-100715 from 1.0-2.0' bgs at 1330
		5.0/5.0	MC1			0	0	Breathing Zone = 0ppm
						0	0	
5	5.0					0	0	Collect S01-SS15-0405-100715 from 4.0-5.0' bgs at 1335
						0	0	
				Sandy Clay (CL) 6.0-9.5' - brown, moist, soft to medium stiff, clay with some very fine grained sand		0	0	
		4.5/5.0	MC2			0	0	Breathing Zone = 0ppm
						0	0	Collect S01-SS15-0809-100715 from 8.0-9.0' bgs at 1340
				9.5-10.0'		0	0	
10	10.0							
				Sandy Clay (CL) 10.0-11.5' - brown, wet, soft to medium stiff, clay with some very fine grained sand		0	0	
				Gravelly Sand (SW) 11.5-13.5' - tan, moist, loose, coarse grained sand with well rounded gravel		0	0	
		3.5/5.0	MC3			0	0	Breathing Zone = 0ppm
				13.5-15.0' - no recovery		0	0	
15	15.0							
				Gravelly Sand (SW) 15.0-19.0' - tan, moist, loose, coarse grained sand with well rounded gravel		0	0.3	
						0.8	0.1	
		4.0/5.0	MC4			1	1.1	Breathing Zone = 0ppm
						0	0.4	
				19.0-20.0' - no recovery				
20	20.0							

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS15	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/7/15 13:20 — END : 10/7/15 14:10 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
	20.0			**Gravelly Sand (SW)** 20.0-24.5' - tan, moist, loose, coarse grained sand with well rounded gravel		4.3	1.1	
						2.6	0.8	
		4.5 5.0	MC5			0.8	0.6	Breathing Zone = 0ppm
						2.4	2.6	
25	25.0			24.5-25.0' - no recovery				
				Gravelly Sand (SW) 25.0-28.5' - tan, moist, loose, coarse grained sand with well rounded gravel		0	0	
						0.6	0.1	
		5.0 5.0	MC6			1.7	0	Collect S01-SS15-2728-100715 from 27.0-28.0' bgs at 1405 Collect S01-SS15-2728-100715 from 27.0-28.0' bgs at 1405 MS Collect S01-SS15-2728-100715 from 27.0-28.0' bgs at 1405 MSD Breathing Zone = 0ppm
				Gravelly Sand (SW) 28.5-30.0' - tan, wet, loose, coarse grained sand with well rounded gravel		0	0	
30	30.0					0	0	
				Bottom of Boring at 30.0 ft below ground surface				
35								
40								

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS16	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/7/15 15:05 — END : 10/7/15 16:00 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
				Asphalt 0.0-0.5' - black, dry, loose		0	0	
				Silty Clay (CL) 0.5-4.5' - brown and gray mottled, moist, stiff, clay with some silt		0	0	Collect S01-SS16-0102-100715 from 1.0-2.0' bgs at 1510
		4.5/5.0	MC1			0	0	Breathing Zone = 0ppm
						0	0	Collect S01-SS16-0304-100715 from 3.0-4.0' bgs at 1515
5	5.0			4.5-5.0' - no recovery				
				Silty Clay (CL) 5.0-6.0' - brown and gray mottled, moist, stiff, clay with some silt		0	0	
				Sandy Clay (CL) 6.0-9.0' - brown, moist to wet, soft, clay with very fine grained sand		0	0	
		4.0/5.0	MC2			0	0	Breathing Zone = 0ppm
						0	0	Collect S01-SS16-0809-100715 from 8.0-9.0' bgs at 1520
10	10.0			9.0-10.0' - no recovery				
				Sandy Clay (CL) 10.0-11.0' - brown, moist to wet, soft, clay with very fine grained sand		0	0	
				Gravelly Sand (SW) 11.0-13.6' - tan, moist, loose, coarse grained sand with well rounded gravel		0	0	
		3.6/5.0	MC3			0	0	Breathing Zone = 0ppm
						0	0	
				13.6-15.0' - no recovery				
15	15.0							
				Gravelly Sand (SW) 15.0-18.5' - tan, moist, loose, coarse grained sand with well rounded gravel		0	0	
						0	0	
		3.5/5.0	MC4			0	0	Breathing Zone = 0ppm
						0	0	
				18.5-20.0' - no recovery				
20	20.0							

PROJECT NUMBER:	BORING NUMBER:	
652109.01.FI	SS16	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Phase II RCRA Investigation — LOCATION : Hanging Rock Facility, Ironton OH

ELEVATION : — DRILLING CONTRACTOR : Subsurface

DRILLING METHOD AND EQUIPMENT : DPT/Powerprobe 9500 VTR

WATER LEVELS : --- — START : 10/7/15 15:05 — END : 10/7/15 16:00 — LOGGER : D. Roberts

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)	RECOVERY (ft)	SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID Initial (ppm)	PID Headspace (ppm)	COMMENTS
	20.0			**Gravelly Sand (SW)** 20.0-23.6' - tan, moist, loose, coarse grained sand with well rounded gravel		0 0 0 0	0 0 0 0	
		3.6 5.0	MC5					Breathing Zone = 0ppm
				23.6-25.0' - no recovery				
25	25.0							
		5.0 5.0	MC6	**Gravelly Sand (SW)** 25.0-30.0' - tan, moist to wet - starting at 28.5', loose, coarse grained sand with well rounded gravel		0 0 0 0	0 0 0 0	Collect S01-SS16-2728-100715 from 27.0-28.0' bgs at 1535 Breathing Zone = 0ppm
30	30.0							
				Bottom of Boring at 30.0 ft below ground surface				
35								
40								

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW-22
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14-18

Total Well Depth (ft.): 30'	**Purge Method:** Peri Pump / DPT screen
Depth to Water (ft.): ~28' bgs	**Placement of Pump (ft.):** 30'
Top of screen (ft.): ~~20~~ 26' bgs	**Pumping Rate (Hz):** ~400
Well Diameter (in.): 1"	**Climatic Conditions:** clear skies, 85°F
Length of Saturated Zone (ft.): -	**Product Level (ft.):** NA
PID Measurement (ppm) : [illegible] 0.0	**Pore Volume (Gallons)**

Field Parameters

Time	Depth to Water (ft.)	Purge Rate ~~(gpm)~~ mL/min	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
1625	start pump										DPT temp screen
1630	~28'	~400		6.18	22.07	0.920	94.6	MAX		6.22	
1635	~28'	~400		6.07	21.93	0.917	95.8	62.4	—	7.44	
1638	~28'	~400		-	—	—	—	31.1	—	—	

Sample Information

Color	clear
Odor	none
Turbidity	heavy to start
Laboratory Analysis	VOC
Sample ID	~~SCI-GW22-1630-061418~~ SCI-GW22-1630-061418
Total No. of Bottles	6
Notes	[illegible]
Analytical Laboratory	Envirotrac
Transported via	FedEx
Sample Date/Time	6-14-18 1640
Signature/Sampler:	B.Irish

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW 02
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14-18
Total Well Depth (ft.): 30'		**Purge Method:** Peri Pump	
Depth to Water (ft.): 27.3		**Placement of Pump (ft.):**	
Top of screen (ft.): 20'		**Pumping Rate (Hz):**	
Well Diameter (in.): 1"		**Climatic Conditions:** clear skies	
Length of Saturated Zone (ft.):		**Product Level (ft.):** NA	
PID Measurement (ppm)		**Pore Volume (Gallons)**	

Field Parameters

Time	Depth to Water (ft.)	Purge Rate ~~(gpm)~~ ml/min	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
1533 ~~1434~~											
1538 ~~1444~~	27.3	~400		–	–	–	–	595	–	–	
1543 ~~1543~~	27.3	~400		4.20	21.05	0.560	94.0	55.6	NA	7.40	

Sample Information

Color	clear
Odor	none
Turbidity	heavy sediment to start then ~~less~~ dispersed to clear
Laboratory Analysis	VOC
Sample ID	SD1-GW02-2030-061418
Total No. of Bottles	3
Notes	

Analytical Laboratory	Freedom	**Transported via**	FedEX
Sample Date/Time	6-14-18 1544		
Signature/Sampler:	B.Irish		

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW03
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14-18
Total Well Depth (ft.): 30'		**Purge Method:** Peri Pump	
Depth to Water (ft.): 27.67		**Placement of Pump (ft.):** 30'	
Top of screen (ft.): 20'		**Pumping Rate (Hz):**	
Well Diameter (in.): 1"		**Climatic Conditions:** Clear	
Length of Saturated Zone (ft.):		**Product Level (ft.):** NA	
PID Measurement (ppm) 0.0		**Pore Volume (Gallons)**	

Field Parameters

Time	Depth to Water (ft.)	Purge Rate ~~(gpm)~~ mL/min	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
1558											
1603	27.67	~400	—	6.17	23.16	0.469	97.0	~~HIGH~~	—	7.70	
1608	27.67	~400	—	6.03	20.39	0.357	95.1	141	—	7.78	
1613	27.67	~400		5.54	19.50	0.312	117.8	92		8.50	

Sample Information

Color	
Odor	None
Turbidity	heavy sediment @ start of purge, dispelled quickly (5 min)
Laboratory Analysis	VOC
Sample ID	SO1-GW03-2630-061418
Total No. of Bottles	3
Notes	
Analytical Laboratory	Envirotech
Transported via	Fed Ex
Sample Date/Time	6-14-18 @ 1614
Signature/Sampler:	B.Irish

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW04
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14-18

Total Well Depth (ft.): 30'	**Purge Method:** Peri Pump
Depth to Water (ft.): 27.28	**Placement of Pump (ft.):** 30'
Top of screen (ft.): 20'	**Pumping Rate (Hz):** ~40
Well Diameter (in.): 1"	**Climatic Conditions:** clear 80's f
Length of Saturated Zone (ft.):	**Product Level (ft.):** NA
PID Measurement (ppm)	**Pore Volume (Gallons)**

Field Parameters

Time	Depth to Water (ft.)	Purge Rate ~~(ppm)~~ ml/min	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
1952	27.28										
1957	27.28	2400		—	—	—	—	max	—	—	
2002	27.28	2400		5.94	22.85	0.944	122.9	73.2	—	7.98	
2007	27.28	~400		5.94	22.48	0.938	128.4	17.2	—	8.15	

Sample Information

Color	clear
Odor	none
Turbidity	yes → no
Laboratory Analysis	VOCs
Sample ID	~~SDI-GW04-061418~~ SDI-GW04-2630-061418
Total No. of Bottles	3
Notes	
Analytical Laboratory	Envirosing
Transported via	FedEx
Sample Date/Time	6-14-18 2010
Signature/Sampler:	B.Irish

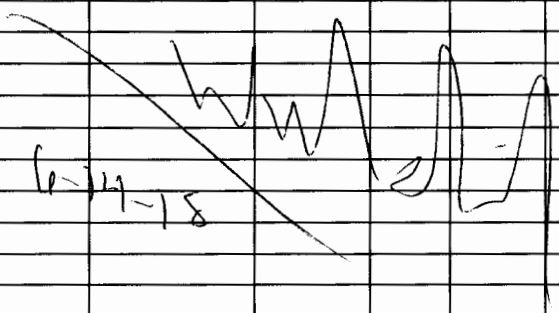
Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW07
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14-18
Total Well Depth (ft.): 30'		**Purge Method:** Peri Pump	
Depth to Water (ft.): 27.591		**Placement of Pump (ft.):** 30'	
Top of screen (ft.): 20'		**Pumping Rate (Hz):** ~400	
Well Diameter (in.): 1"		**Climatic Conditions:**	
Length of Saturated Zone (ft.):		**Product Level (ft.):** NA	
PID Measurement (ppm)		**Pore Volume (Gallons)**	

Field Parameters

Time	Depth to Water (ft.)	Purge Rate ~~(gpm)~~ mL/min	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
1927	27.39										
1932	27.39			5.85	18.45	0.880	115.4	974	~	9.65	
1937	27.39			5.82	17.83	0.810	115.4	64.2	~	8.63	
1942	27.39			5.72	18.26	0.807	119.3	27.2	~	7.29	



Sample Information

Color	clear
Odor	none
Turbidity	yes → NO
Laboratory Analysis	VOCs
Sample ID	~~SDI-GW07-061418~~ SDI-GW07-1630-061418
Total No. of Bottles	3
Notes	
Analytical Laboratory	Envirosing
Transported via	FedEx
Sample Date/Time	6-14-18 @1943
Signature/Sampler:	B.Irish

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW 10
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14-18
Total Well Depth (ft.): 30'		**Purge Method:** Peri Pump	
Depth to Water (ft.): 27.48		**Placement of Pump (ft.):** 30'	
Top of screen (ft.): 20'		**Pumping Rate (Hz):** ~400	
Well Diameter (in.): 1"		**Climatic Conditions:** Clear ~80°F	
Length of Saturated Zone (ft.):		**Product Level (ft.):** NA	
PID Measurement (ppm) 0.0		**Pore Volume (Gallons)**	

Field Parameters

Time	Depth to Water (ft.)	Purge Rate (gpm) mL/min	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
1858	27.48										
1903	27.48	~400		5.96	18.88	0.779	114.5	Max	—	5.40	
1908	27.48	~400		5.88	18.67	0.758	112.6	441	—	5.54	
1913	27.48	~400		5.70	17.72	0.745	120.7	33.2	—	7.53	

Sample Information

Color	Clear
Odor	none
Turbidity	yes → no
Laboratory Analysis	VOCs
Sample ID	~~EW~~ SO1-GW10-061418 SO1-GW10-2630-061418
Total No. of Bottles	6
Notes	SO1-FD02-061418 @ 1917
Analytical Laboratory	**Transported via** Fedex
Sample Date/Time	6-14-18 @ 1914
Signature/Sampler:	B.Irish

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW-11
Field Crew:	B.Irish, D.Roberts	**Date:**	06-14-18

Total Well Depth (ft.): 30'	**Purge Method:** Peri Pump
Depth to Water (ft.): ~28' bgs	**Placement of Pump (ft.):** 28'-30' bgs
Top of screen (ft.) ~~20'~~ 27	**Pumping Rate (Hz):**
Well Diameter (in.): 1"	**Climatic Conditions:** ~70°F clear skies.
Length of Saturated Zone (ft.):	**Product Level (ft.):** NA
PID Measurement (ppm) 0.0	**Pore Volume (Gallons)**

Field Parameters

Time	Depth to Water (ft.)	Purge Rate ~~(gpm)~~ (ml/min)	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
11:10	~28'										
11:15	~28'	~400		-	-	-	-	Max	-	-	DPT screen used to collect GW/ grab. Water level water to large to fit inside ~~rods~~.
11:20	~28	~400		-	-	-	-	Max	-	-	
11:25	~28	~400		5.68	23.72	0.630	145	606	-	6.80	
11:30	~28	~400		5.66	24.82	0.657	130	526	-	6.30	
11:35	~28	~400		5.73	23.81	0.626	122	184	-	5.65	
11:40	~28	~400		-	-	-	-	56	-	-	

Sample Information

Color	clear
Odor	None
Turbidity	heavy at start then cleared up @ 15 min of purging
Laboratory Analysis	VOCs 2030-
Sample ID	SO1-GW11-~~061418~~ 061418
Total No. of Bottles	3
Notes	

Analytical Laboratory	eurofins	**Transported via**	FedEx
Sample Date/Time	06-14-18 @ 1141		
Signature/Sampler:	B.Irish		

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW 12
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14-18

Total Well Depth (ft.): 30'	**Purge Method:** Peri Pump
Depth to Water (ft.): 27.42	**Placement of Pump (ft.):**
Top of screen (ft.): 20'	**Pumping Rate (Hz):**
Well Diameter (in.): 1"	**Climatic Conditions:**
Length of Saturated Zone (ft.):	**Product Level (ft.):** NA
PID Measurement (ppm)	**Pore Volume (Gallons)**

Field Parameters

Time	Depth to Water (ft.)	Purge Rate ~~(gpm)~~ mL/min	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
2050											
2055	27.42	<400		6.01	17.93	0.311	124.8	max	–	10.43	
2100	27.42	<400		5.68	17.29	0.301	128.9	227	–	11.04	
2105	27.42	<400		5.60	16.72	0.296	142.0	43.3	–	11.40	

Sample Information

Color	clear
Odor	none
Turbidity	yes → no
Laboratory Analysis	VOC
Sample ID	S01-GW12-061418
Total No. of Bottles	3
Notes	

Analytical Laboratory	Eurofins	Transported via	Fedex
Sample Date/Time	6-14-18 2106		
Signature/Sampler:	[signature] B.Irish		

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW13
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14-18
Total Well Depth (ft.):	30'	**Purge Method:**	Peri Pump
Depth to Water (ft.):		**Placement of Pump (ft.):**	
Top of screen (ft.):	20'	**Pumping Rate (Hz):**	
Well Diameter (in.):	1"	**Climatic Conditions:**	
Length of Saturated Zone (ft.):		**Product Level (ft.):**	NA
PID Measurement (ppm)		**Pore Volume (Gallons)**	

Field Parameters

Time	Depth to Water (ft.)	Purge Rate ~~(gpm)~~ mL/m	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
1740											
1745		~400		6.51	19.05	0.869	-32.4	866	—	4.53	
1750		~400		6.48	18.54	0.859	-35.0	32.0	—	5.68	
1755		~400		6.27	19.23	0.853	-17.7	11.6		4.34	

Sample Information

Color	clear		
Odor	none		
Turbidity	900 → 700		
Laboratory Analysis	VOCs		
Sample ID	SO1-GW13-2630-061418		
Total No. of Bottles	3		
Notes			
Analytical Laboratory	Eurofins	**Transported via**	FedEx
Sample Date/Time	B.Irish 1755		
Signature/Sampler:	B.Irish		

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW15
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14-18

Total Well Depth (ft.): 30'	**Purge Method:** Peri Pump
Depth to Water (ft.): 27.48	**Placement of Pump (ft.):** 30
Top of screen (ft.): 20'	**Pumping Rate (Hz):** ~40
Well Diameter (in.): 1"	**Climatic Conditions:**
Length of Saturated Zone (ft.):	**Product Level (ft.):** NA
PID Measurement (ft.):	**Pore Volume (Gallons)**

Field Parameters

Time	Depth to Water (ft.)	Purge Rate ~~(gpm)~~ mL/min	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
0823	27.48										
0828	27.48	2400		6.14	20.17	0.497	119.5	Max	—	8.61	
0833	27.48	2400		6.10	20.16	0.474	119.0	275	—	10.38	
0838	27.48	2400		5.89	19.97	0.470	125.4	~~28.8~~ 4.11 (WHT)	—	8.44	

Sample Information

Color	clear
Odor	none
Turbidity	yes → no
Laboratory Analysis	VOCs
Sample ID	~~SOI-GW15-061418~~ SOI-GW15-2630-061418
Total No. of Bottles	3
Notes	

Analytical Laboratory	Eurofins	**Transported via**	Fed Ex
Sample Date/Time	6-14-18 @ 0839		
Signature/Sampler:	B.Irish		

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW16
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14-18

Total Well Depth (ft.): 30'	**Purge Method:** Peri Pump
Depth to Water (ft.): ~~29.8~~	**Placement of Pump (ft.):**
Top of screen (ft.): 20'	**Pumping Rate (Hz):** ~40V
Well Diameter (in.): 1"	**Climatic Conditions:** clear skies, ~68-70°F
Length of Saturated Zone (ft.):	**Product Level (ft.):** NA
PID Measurement (ppm): 0.2 ppm	**Pore Volume (Gallons)**

Field Parameters

Time	Depth to Water (ft.)	Purge Rate ~~(gpm)~~ mL/min	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
0745	27.8	~400									
0750	~~As~~	-	-	-	-	-	-	-	-	-	
0755		~400		6.57	17.75	0.819	169	Max	NA	7.20	
0800		~400		6.48	17.59	0.807	163	755	NA	7.66	
0805		~400		6.46	17.87	0.803	157	207	NA	7.71	
0810		~400	~1.0	5.53	18.03	0.811	138	39.0	NA	7.83	

Sample Information

Color	clear, ~~cloudy~~
Odor	None
Turbidity	brown
Laboratory Analysis	VOCs
Sample ID	SOI - GW16-061418
Total No. of Bottles	9
Notes	MS/MSD
Analytical Laboratory	Eurofins
Transported via	FedEx
Sample Date/Time	0812
Signature/Sampler:	B.Irish

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW17
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14-18
Total Well Depth (ft.):	30'	**Purge Method:**	Peri Pump
Depth to Water (ft.):	27.83	**Placement of Pump (ft.):**	30'
Top of screen (ft.):	20'	**Pumping Rate (Hz):**	2400
Well Diameter (in.):	1"	**Climatic Conditions:**	clear 80°f
Length of Saturated Zone (ft.):		**Product Level (ft.):**	NA
PID Measurement (ppm)	0.0	**Pore Volume (Gallons)**	

Field Parameters

Time	Depth to Water (ft.)	Purge Rate (~~ppm~~ mL/min)	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
1813	27.83										
1818	27.83	2400	-	6.26	19.23	0.653	4.9	525	-	7.26	
1823	27.83	2400	-	5.99	18.70	0.631	39.2	43.9	-	7.18	
1828	27.83	2400	-	5.88	18.44	0.625	53.5	23.7		7.07	

Sample Information

Color	Clear
Odor	none
Turbidity	yes → no
Laboratory Analysis	VOCs
Sample ID	~~SO1-GW17-061418~~ SO1-GW17-2630-061418
Total No. of Bottles	3
Notes	
Analytical Laboratory	Envirofins
Transported via	fed Ex
Sample Date/Time	6-14-18 @ 1829
Signature/Sampler:	B.Irish

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW18
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14-18

Total Well Depth (ft.): 30'	**Purge Method:** Peri Pump
Depth to Water (ft.): 27.62	**Placement of Pump (ft.):** 30
Top of screen (ft.): 20'	**Pumping Rate (Hz):** ~40
Well Diameter (in.): 1"	**Climatic Conditions:** clear ~80°F
Length of Saturated Zone (ft.):	**Product Level (ft.):** NA
PID Measurement (ppm)	**Pore Volume (Gallons)**

Field Parameters

Time	Depth to Water (ft.)	Purge Rate (~~gpm~~ mL/min)	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
1830	27.62										
1835	27.62	~400		5.78	18.86	0.518	80.4	Max	-	7.74	
1840	27.62	~400		5.59	18.46	0.515	91.6	166	-	8.09	
1845	27.62	~400		5.33	18.50	0.524	118.9	23.0	-	7.80	

6-14-18

Sample Information

Color	Clear
Odor	None
Turbidity	Yes → NO
Laboratory Analysis	VOCs
Sample ID	~~SO1-GW18-061418~~ SO1-GW18-1830-061418
Total No. of Bottles	3
Notes	

Analytical Laboratory	Eurofins	**Transported via**	Fedex
Sample Date/Time	6-14-18 @ 1846		
Signature/Sampler:	B.Irish		

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW20
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14-18

Total Well Depth (ft.): 30'	**Purge Method:** Peri Pump
Depth to Water (ft.): 27.37	**Placement of Pump (ft.):** 30'
Top of screen (ft.): 20'	**Pumping Rate (Hz):** ~40
Well Diameter (in.): 1"	**Climatic Conditions:** clear 80°F
Length of Saturated Zone (ft.):	**Product Level (ft.):** NA
PID Measurement (ppm) 0.0	**Pore Volume (Gallons)**

Field Parameters

Time	Depth to Water (ft.)	Purge Rate ~~(gpm)~~ mL/min	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
1718											
1723	27.37	~400		6.30	20.65	1.062	13.2	119		5.08	
1728	27.37	~400		6.36	19.54	1.029	10.5	90.8		6.45	

Sample Information

Color	clear
Odor	none
Turbidity	yes → no
Laboratory Analysis	VOCs
Sample ID	~~S01-GW20-061418~~ S01-GW20-2630-061418
Total No. of Bottles	3
Notes	

Analytical Laboratory	Eurofins	**Transported via**	FedEx
Sample Date/Time	6-14-18 1729		
Signature/Sampler:	B.Irish		

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Monitoring Well Development Log

Project or Client:	Dow Hanging Rock	**Location:**	Ironton, Ohio
Project No.:	693874.01.FD	**Well ID:**	GW21
Field Crew:	B.Irish, D.Roberts	**Date:**	6-14
Total Well Depth (ft.):	30'	**Purge Method:**	Peri Pump
Depth to Water (ft.):	27.30	**Placement of Pump (ft.):**	~~~~ 30
Top of screen (ft.):	20'	**Pumping Rate (Hz):**	~400
Well Diameter (in.):	1"	**Climatic Conditions:**	
Length of Saturated Zone (ft.):		**Product Level (ft.):**	NA
PID Measurement (ppm)		**Pore Volume (Gallons)**	

Field Parameters

Time	Depth to Water (ft.)	Purge Rate (~~gpm~~ mL/min)	Gallons Removed	pH	Temp (C)	Cond. (mS/cm)	ORP (mV)	Turbidity (N.T.U.)	Salinity (%)	D.O. (mg/L)	Comments
1656	27.30					0.965					
1701	27.30	~400		6.03	20.69	~~~~	84.5	382	—	7.26	
1706	27.30	~400		5.88	19.23	~~~~	90.9	80.7	—	6.08	

Sample Information

Color	clear
Odor	none
Turbidity	yes
Laboratory Analysis	VOC
Sample ID	~~S01-GW21-061418~~ S01-GW21-2630-061418
Total No. of Bottles	6
Notes	S01-GWFD01-061418 @ 1711
Analytical Laboratory	Eurofins
Transported via	FedEx
Sample Date/Time	6-14-18 @ 1706 FD @ 1711
Signature/Sampler:	B. Irish

Capacity of Casing (gal/linear feet): 1"-0.041; 2"-0.16; 4"-0.65; 6"-1.47; 8"-2.61; 10"-4.08

Low Flow Ground Water Sampling Form

Project Name: Dow Hanging Rock Project Number:
Sample Source (Well No./Location) MW-08 Date: 6 / 9 / 18
Weather Conditions Sunny 80
PID _____ (ppm) Well Condition Good J Plug locked able to pull off
Sample Team J Mallison

Well Stabilization Data

Well Depth 36.5 34.78 (FT.) Datum Water level meter Time Purging ends (T_1) 1045 Depth of Intake 30.
Static Water Level 26.94 (FT.) Diameter : 2" PVC Water Level at time T_0 26.94
Water Column _____ (FT.) Time Purging begins (T_0): 1010 Water Level at time T_1 26.94
Well Volume _____ Purge Method:

Time	Volume Removed	Purge rate (Lpm) <0.5LPM	Water level (Ft) < 0.3 ft	pH + / - 0.1	SPCOND.(mS /cm) + / - 3%	TEMP.(C) +/- 3%	Redox (mV) +/- 10 mV	D.O. (mg/L) + / - 10%	Turbidity (NTU) <10 or 10%	Appearance
1015	0.1	0.2	26.94	5.56	0.523	19.86	177.0	2.01	1.37	Clear
1020	0.2	0.2	26.94	5.63	0.522	20.10	174.0	1.89	1.92	
1025	0.3	0.25	26.94	5.58	0.518	18.90	176.9	1.94	1.71	
1030	0.4	0.25	26.95	5.65	0.520	19.21	172.0	1.87	1.23	
1035	0.5	0.25	26.94	5.80	0.522	19.16	166.9	1.80	1.17	
1040	0.7	0.25	26.94	5.82	0.524	19.11	164.9	1.72	0.97	
1045	0.8	0.25	26.94	5.82	0.521	19.24	164.3	1.81	1.07	

Parameters Stable
JM

Sample Information

Sample ID: 501-MW08-26036-060918 MSMSD
Analysis: VOC
Date: 6 / 9 / 18
Time: 1105
Field Filtering No
Laboratory E Longwith Method of Shipment FedEx
Remarks :

lowflowtemplate_edstemplate 2

Appendix D
Laboratory Reports

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Type I (No Raw Data) Data Package

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Project: Dow Hanging Rock, OH
Groundwater, Soil and Water Samples
Collected on 06/07/18

SDG# DHR36

GROUP	SAMPLE NUMBERS
1952890	9649546-9649561

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date:** **06/27/2018**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Natalie Luciano at (717) 556-7258.

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Sample Reference List for SDG Number DHR36 with a Data Package Type of I-NODATA

11372 - CH2M Hill, Inc.

Project: Dow Hanging Rock, OH

Lab Sample Number	Client Sample ID	Collection Date	Date Received
9649546	S01-SS23-0102-060718	06/07/2018 09:15	06/08/2018 10:30
9649547	S01-SS23-0405-060718	06/07/2018 09:45	06/08/2018 10:30
9649548	S01-SS23-0910-060718	06/07/2018 09:55	06/08/2018 10:30
9649549	S01-SS23-1516-060718	06/07/2018 10:15	06/08/2018 10:30
9649550	S01-GW05-2830-060718	06/07/2018 11:45	06/08/2018 10:30
9649551	060718TB	06/07/2018 12:05	06/08/2018 10:30
9649552	S01-SS24-102-060718	06/07/2018 13:55	06/08/2018 10:30
9649553	S01-SS24-0607-060718	06/07/2018 14:10	06/08/2018 10:30
9649554	S01-SS24-1516-060718	06/07/2018 14:30	06/08/2018 10:30
9649555	S01-SS21-0102-060718	06/07/2018 15:45	06/08/2018 10:30
9649556	S01-SS21-0102-060718 MS	06/07/2018 15:45	06/08/2018 10:30
9649557	S01-SS21-0102-060718 MSD	06/07/2018 15:45	06/08/2018 10:30
9649558	S01-SS21-0607-060718	06/07/2018 15:55	06/08/2018 10:30
9649559	S01-SSFD-060718	06/07/2018 16:00	06/08/2018 10:30
9649560	S01-SS21-1415-060718	06/07/2018 16:20	06/08/2018 10:30
9649561	S01-SS33-0203-060718	06/07/2018 17:15	06/08/2018 10:30

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Sample pH Log

SDG: DHR36

LLI Sample Number	Bottle Code	Actual pH	Exp. pH	*pH Check Code	Adj. pH	Adjusted Date	Adjusted Time	Preservative Added	Preservative Lot #	LLI Supplied Bottle?	Sulfide Present?	Corrective Substance	CS Lot #	**Chlorine Present?	Corrective Substance	CS Lot #	Record Date	Employee
9649550	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/20/2018 12:43:16PM	2648
9649550	038B	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/22/2018 10:17:30AM	1731
9649551	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/20/2018 12:43:12PM	2648

*pH Check Code Key
PK = Original container checked - pH is within the correct range. (No preservative was added)
PA = Original container checked - pH adjusted to correct range. (Preservative was added)
PV = Volatile container checked
PC = pH checked (unpreserved container)
SPK = Subsampled from an original container. Original container checked - pH is within correct range
SPA = Subsampled from an original container. Subsample container checked - pH adjusted to correct range.
SPC = Subsampled from an original container. pH checked (unpreserved container).
SUP = Subsampled from original container. Unable to be preserved due to the matrix of the sample.
UP = Unable to preserve due to matrix of the sample.
NA = Not applicable

**Chlorine Present Code Key
NA = Chlorine Not Checked
Y = Chlorine Present
N = Chlorine Not Present

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01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030B, December 1996.

10335 VOCs- 5ml Water by 8260B

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996

10237 VOCs- Solid by 8260B

The soil sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996

07320 GC/MS - LL DIH2O Encore Prep

Two EnCore samples are collected per sample. The vials used for preparation are pre-preserved and pre-weighed. Two aliquots are extruded into DI water. The vials are re-weighed and the weight of the sample should be 5-g +/- .5 g. The prepared samples are then delivered to the lab for analysis. DI vials are frozen after they are weighed to complete preservation step.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

07578 GC/MS-HL Encore Prep-NC

The sample is collected in an EnCore sampler and is submitted to the laboratory. A vial containing 5-ml methanol is prepared for each sample and weighed prior to adding the sample. After the sample is added to the vial, the vial is reweighed and the weight of sample is determined by difference. The weight of the sample should be 5-g +/- .5 g. The sample vial is then delivered to the lab for analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

00118 Moisture
00111 Moisture
00121 Moisture Duplicate

A well-mixed sample is heated by reflected infrared in an aluminum pan and dried to a constant weight. The decrease in weight in weight after drying is calculated as the moisture content.

Reference: SM 2540 G-1997 %Moisture Calculation for Dry Weight Determination

Analysis Reports / Field Chain of Custody

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ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Report Date: June 26, 2018 09:39

Project: Dow Hanging Rock, OH

Account #: 11372
Group Number: 1952890
SDG: DHR36
PO Number: 131005094
Release Number: DHR36
State of Sample Origin: OH

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Electronic Copy To	CH2M Hill, Inc.	Attn: Marie Chiller
Electronic Copy To	CH2M Hill, Inc.	Attn: Shane Lowe

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

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SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
S01-SS23-0102-060718 Grab Soil	06/07/2018 09:15	9649546
S01-SS23-0405-060718 Grab Soil	06/07/2018 09:45	9649547
S01-SS23-0910-060718 Grab Soil	06/07/2018 09:55	9649548
S01-SS23-1516-060718 Grab Soil	06/07/2018 10:15	9649549
S01-GW05-2830-060718 Groundwater	06/07/2018 11:45	9649550
060718TB Water	06/07/2018 12:05	9649551
S01-SS24-102-060718 Grab Soil	06/07/2018 13:55	9649552
S01-SS24-0607-060718 Grab Soil	06/07/2018 14:10	9649553
S01-SS24-1516-060718 Grab Soil	06/07/2018 14:30	9649554
S01-SS21-0102-060718 Grab Soil	06/07/2018 15:45	9649555
S01-SS21-0102-060718 MS Grab Soil	06/07/2018 15:45	9649556
S01-SS21-0102-060718 MSD Grab Soil	06/07/2018 15:45	9649557
S01-SS21-0607-060718 Grab Soil	06/07/2018 15:55	9649558
S01-SSFD-060718 Grab Soil	06/07/2018 16:00	9649559
S01-SS21-1415-060718 Grab Soil	06/07/2018 16:20	9649560
S01-SS33-0203-060718 Grab Soil	06/07/2018 17:15	9649561

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: **S01-SS23-0102-060718 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 09:15
SDG#: DHR36-01

CH2M Hill, Inc.
ELLE Sample #: SW 9649546
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	0.9	0.78
10237	cis-1,2-Dichloroethene	156-59-2	33		5	0.9	0.78
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	0.9	0.78
10237	Tetrachloroethene	127-18-4	2	J	5	0.9	0.78
10237	Trichloroethene	79-01-6	5	U	5	0.9	0.78
10237	Vinyl Chloride	75-01-4	1	J	5	0.9	0.78
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	16.5		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/13/2018 23:49	Patrick T Herres	0.78
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 17:51	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:54	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:54	Lois E Hiltz	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS23-0405-060718 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 09:45
SDG#: DHR36-02

CH2M Hill, Inc.
ELLE Sample #: SW 9649547
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	6	U	6	1	0.99
10237	cis-1,2-Dichloroethene	156-59-2	6		6	1	0.99
10237	trans-1,2-Dichloroethene	156-60-5	6	U	6	1	0.99
10237	Tetrachloroethene	127-18-4	65		6	1	0.99
10237	Trichloroethene	79-01-6	6	J	6	1	0.99
10237	Vinyl Chloride	75-01-4	6	U	6	1	0.99
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	17.4		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 00:12	Patrick T Herres	0.99
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 17:54	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:54	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:54	Lois E Hiltz	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS23-0910-060718 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 09:55
SDG#: DHR36-03

CH2M Hill, Inc.
ELLE Sample #: SW 9649548
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	8 U	8	2	1.18
10237	cis-1,2-Dichloroethene	156-59-2	18	8	2	1.18
10237	trans-1,2-Dichloroethene	156-60-5	8 U	8	2	1.18
10237	Tetrachloroethene	127-18-4	210	8	2	1.18
10237	Trichloroethene	79-01-6	22	8	2	1.18
10237	Vinyl Chloride	75-01-4	8 U	8	2	1.18
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	22.5	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 00:34	Patrick T Herres	1.18
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 17:58	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:54	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:55	Lois E Hiltz	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS23-1516-060718 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 10:15
SDG#: DHR36-04

CH2M Hill, Inc.
ELLE Sample #: SW 9649549
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	4 U	4	0.9	0.83
10237	cis-1,2-Dichloroethene	156-59-2	0.9 J	4	0.9	0.83
10237	trans-1,2-Dichloroethene	156-60-5	4 U	4	0.9	0.83
10237	Tetrachloroethene	127-18-4	45	4	0.9	0.83
10237	Trichloroethene	79-01-6	2 J	4	0.9	0.83
10237	Vinyl Chloride	75-01-4	4 U	4	0.9	0.83
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	6.5	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 00:57	Patrick T Herres	0.83
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 18:01	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:55	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:55	Lois E Hiltz	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW05-2830-060718 Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 11:45
SDG#: DHR36-05

CH2M Hill, Inc.
ELLE Sample #: WW 9649550
ELLE Group #: 1952890
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethene	75-35-4	1	U	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	25		1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	1	U	1	0.5	1
10335	Tetrachloroethene	127-18-4	79		1	0.5	1
10335	Trichloroethene	79-01-6	21		1	0.5	1
10335	Vinyl Chloride	75-01-4	1	U	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	W181722AA	06/21/2018 22:08	Patrick T Herres	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	W181722AA	06/21/2018 22:08	Patrick T Herres	1

*=This limit was used in the evaluation of the final result

Sample Description: **060718TB Water**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 12:05
SDG#: DHR36-06TB

CH2M Hill, Inc.
ELLE Sample #: WW 9649551
ELLE Group #: 1952890
Matrix: Water

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethene	75-35-4	1	U	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	1	U	1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	1	U	1	0.5	1
10335	Tetrachloroethene	127-18-4	1	U	1	0.5	1
10335	Trichloroethene	79-01-6	1	U	1	0.5	1
10335	Vinyl Chloride	75-01-4	1	U	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	P181701AA	06/19/2018 20:08	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	P181701AA	06/19/2018 20:08	Daniel H Heller	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS24-102-060718 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 13:55
SDG#: DHR36-07

CH2M Hill, Inc.
ELLE Sample #: SW 9649552
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.88
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.88
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.88
10237	Tetrachloroethene	127-18-4	50		5	1	0.88
10237	Trichloroethene	79-01-6	1	J	5	1	0.88
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.88
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	17.1		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 01:19	Patrick T Herres	0.88
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 18:05	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:55	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:55	Lois E Hiltz	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS24-0607-060718 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 14:10
SDG#: DHR36-08

CH2M Hill, Inc.
ELLE Sample #: SW 9649553
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.88
10237	cis-1,2-Dichloroethene	156-59-2	2	J	5	1	0.88
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.88
10237	Tetrachloroethene	127-18-4	93		5	1	0.88
10237	Trichloroethene	79-01-6	5	J	5	1	0.88
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.88
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	17.4		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 01:42	Patrick T Herres	0.88
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 18:08	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:55	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:55	Lois E Hiltz	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS24-1516-060718 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 14:30
SDG#: DHR36-09

CH2M Hill, Inc.
ELLE Sample #: SW 9649554
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	1.03
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	1.03
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	1.03
10237	Tetrachloroethene	127-18-4	39		5	1	1.03
10237	Trichloroethene	79-01-6	2	J	5	1	1.03
10237	Vinyl Chloride	75-01-4	5	U	5	1	1.03
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	4.8		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 02:04	Patrick T Herres	1.03
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 18:11	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:55	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:55	Lois E Hiltz	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS21-0102-060718 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 15:45
SDG#: DHR36-10BKG

CH2M Hill, Inc.
ELLE Sample #: SW 9649555
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.95
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.95
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.95
10237	Tetrachloroethene	127-18-4	12		5	1	0.95
10237	Trichloroethene	79-01-6	5	U	5	1	0.95
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.95
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	12.7		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/13/2018 22:39	Patrick T Herres	0.95
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 18:14	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:55	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:55	Lois E Hiltz	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS21-0102-060718 MS Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 15:45
SDG#: DHR36-10MS

CH2M Hill, Inc.
ELLE Sample #: SW 9649556
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	23	5	1	0.89
10237	cis-1,2-Dichloroethene	156-59-2	23	5	1	0.89
10237	trans-1,2-Dichloroethene	156-60-5	22	5	1	0.89
10237	Tetrachloroethene	127-18-4	46	5	1	0.89
10237	Trichloroethene	79-01-6	23	5	1	0.89
10237	Vinyl Chloride	75-01-4	17	5	1	0.89
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00118	Moisture	n.a.	12.7	0.50	0.50	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/13/2018 23:02	Patrick T Herres	0.89
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 18:17	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:55	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:56	Lois E Hiltz	n.a.
00118	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS21-0102-060718 MSD Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 15:45
SDG#: DHR36-10MSD

CH2M Hill, Inc.
ELLE Sample #: SW 9649557
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	21	5	1	0.88
10237	cis-1,2-Dichloroethene	156-59-2	21	5	1	0.88
10237	trans-1,2-Dichloroethene	156-60-5	21	5	1	0.88
10237	Tetrachloroethene	127-18-4	35	5	1	0.88
10237	Trichloroethene	79-01-6	21	5	1	0.88
10237	Vinyl Chloride	75-01-4	17	5	1	0.88
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00118	Moisture	n.a.	12.7	0.50	0.50	1
00121	Moisture Duplicate	n.a.	12.8	0.50	0.50	1

The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/13/2018 23:25	Patrick T Herres	0.88
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 18:22	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:56	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:56	Lois E Hiltz	n.a.
00118	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS21-0102-060718 MSD Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 15:45
SDG#: DHR36-10MSD

CH2M Hill, Inc.
ELLE Sample #: SW 9649557
ELLE Group #: 1952890
Matrix: Soil

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00121	Moisture Duplicate	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS21-0607-060718 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 15:55
SDG#: DHR36-11

CH2M Hill, Inc.
ELLE Sample #: SW 9649558
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.81
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.81
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.81
10237	Tetrachloroethene	127-18-4	25		5	1	0.81
10237	Trichloroethene	79-01-6	5	U	5	1	0.81
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.81
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	18.6		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 02:27	Patrick T Herres	0.81
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 18:26	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:56	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:56	Lois E Hiltz	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SSFD-060718 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 16:00
SDG#: DHR36-12

CH2M Hill, Inc.
ELLE Sample #: SW 9649559
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.89
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.89
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.89
10237	Tetrachloroethene	127-18-4	18		5	1	0.89
10237	Trichloroethene	79-01-6	5	U	5	1	0.89
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.89
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	18.4		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 02:49	Patrick T Herres	0.89
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 18:29	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:56	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:56	Lois E Hiltz	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS21-1415-060718 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 16:20
SDG#: DHR36-13

CH2M Hill, Inc.
ELLE Sample #: SW 9649560
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	0.9	0.81
10237	cis-1,2-Dichloroethene	156-59-2	1	J	5	0.9	0.81
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	0.9	0.81
10237	Tetrachloroethene	127-18-4	38		5	0.9	0.81
10237	Trichloroethene	79-01-6	1	J	5	0.9	0.81
10237	Vinyl Chloride	75-01-4	5	U	5	0.9	0.81
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	9.7		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 03:12	Patrick T Herres	0.81
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 18:32	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:56	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:56	Lois E Hiltz	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS33-0203-060718 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 17:15
SDG#: DHR36-14

CH2M Hill, Inc.
ELLE Sample #: **SW 9649561**
ELLE Group #: **1952890**
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	260	U	260	52	43.94
	The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride						
	Reporting limits were raised due to interference from the sample matrix.						
10237	cis-1,2-Dichloroethene	156-59-2	260	U	260	52	43.94
	The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride						
	Reporting limits were raised due to interference from the sample matrix.						
10237	trans-1,2-Dichloroethene	156-60-5	260	U	260	52	43.94
	The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride						
	Reporting limits were raised due to interference from the sample matrix.						
10237	Tetrachloroethene	127-18-4	1,100		260	52	43.94
	The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride						
	Reporting limits were raised due to interference from the sample matrix.						
10237	Trichloroethene	79-01-6	260	U	260	52	43.94
	The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride						
	Reporting limits were raised due to interference from the sample matrix.						
10237	Vinyl Chloride	75-01-4	260	U	260	52	43.94
	The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride						
	Reporting limits were raised due to interference from the sample matrix.						

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS33-0203-060718 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/08/2018 10:30
Collection Date/Time: 06/07/2018 17:15
SDG#: DHR36-14

CH2M Hill, Inc.
ELLE Sample #: SW 9649561
ELLE Group #: 1952890
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
	The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride					
	Reporting limits were raised due to interference from the sample matrix.					
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	15.6	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	Q181641AA	06/14/2018 04:05	Patrick T Herres	43.94
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201815950149	06/08/2018 18:35	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201815950149	06/08/2018 18:56	Lois E Hiltz	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201815950149	06/08/2018 18:56	Lois E Hiltz	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820002B	06/11/2018 09:40	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1952890
Reported: 06/26/2018 09:39

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result		LOQ**	MDL
	ug/kg		ug/kg	ug/kg
Batch number: B181641AA	Sample number(s): 9649546-9649549,9649552-9649560			
1,1-Dichloroethene	5	U	5	1
cis-1,2-Dichloroethene	5	U	5	1
trans-1,2-Dichloroethene	5	U	5	1
Tetrachloroethene	5	U	5	1
Trichloroethene	5	U	5	1
Vinyl Chloride	5	U	5	1
Batch number: Q181641AA	Sample number(s): 9649561			
1,1-Dichloroethene	250	U	250	50
cis-1,2-Dichloroethene	250	U	250	50
trans-1,2-Dichloroethene	250	U	250	50
Tetrachloroethene	250	U	250	50
Trichloroethene	250	U	250	50
Vinyl Chloride	250	U	250	50
	ug/l		ug/l	ug/l
Batch number: P181701AA	Sample number(s): 9649551			
1,1-Dichloroethene	1	U	1	0.5
cis-1,2-Dichloroethene	1	U	1	0.5
trans-1,2-Dichloroethene	1	U	1	0.5
Tetrachloroethene	1	U	1	0.5
Trichloroethene	1	U	1	0.5
Vinyl Chloride	1	U	1	0.5
Batch number: W181722AA	Sample number(s): 9649550			
1,1-Dichloroethene	1	U	1	0.5
cis-1,2-Dichloroethene	1	U	1	0.5
trans-1,2-Dichloroethene	1	U	1	0.5
Tetrachloroethene	1	U	1	0.5
Trichloroethene	1	U	1	0.5
Vinyl Chloride	1	U	1	0.5

LCS/LCSD

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/26/2018 09:39

Group Number: 1952890

LCS/LCSD

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: B181641AA	Sample number(s): 9649546-9649549,9649552-9649560								
1,1-Dichloroethene	20	20.66	20	17.45	103	87	73-129	17	30
cis-1,2-Dichloroethene	20	20.97	20	18.27	105	91	80-120	14	30
trans-1,2-Dichloroethene	20	20.82	20	16.79	104	84	80-125	21	30
Tetrachloroethene	20	20.36	20	16.99	102	85	73-120	18	30
Trichloroethene	20	19.82	20	17.17	99	86	80-120	14	30
Vinyl Chloride	20	15.41	20	12.81	77	64	59-120	18	30
Batch number: Q181641AA	Sample number(s): 9649561								
1,1-Dichloroethene	1000	956.29	1000	995.82	96	100	73-129	4	30
cis-1,2-Dichloroethene	1000	986.12	1000	997.96	99	100	80-120	1	30
trans-1,2-Dichloroethene	1000	968.76	1000	975.67	97	98	80-125	1	30
Tetrachloroethene	1000	963.34	1000	992.02	96	99	73-120	3	30
Trichloroethene	1000	940.02	1000	987.66	94	99	80-120	5	30
Vinyl Chloride	1000	592.84	1000	572.97	59	57*	59-120	3	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: P181701AA	Sample number(s): 9649551								
1,1-Dichloroethene	20	21.09			105		80-131		
cis-1,2-Dichloroethene	20	18.44			92		80-120		
trans-1,2-Dichloroethene	20	16.98			85		80-120		
Tetrachloroethene	20	22.99			115		80-120		
Trichloroethene	20	18.86			94		80-120		
Vinyl Chloride	20	18.55			93		68-120		
Batch number: W181722AA	Sample number(s): 9649550								
1,1-Dichloroethene	20	21.65			108		80-131		
cis-1,2-Dichloroethene	20	19.76			99		80-120		
trans-1,2-Dichloroethene	20	19.68			98		80-120		
Tetrachloroethene	20	19.9			99		80-120		
Trichloroethene	20	18.8			94		80-120		
Vinyl Chloride	20	16.4			82		68-120		
	%	%	%	%					
Batch number: 18162820002B	Sample number(s): 9649546-9649549,9649552-9649561								
Moisture	89.5	89.44			100		99-101		
Moisture	89.5	89.44			100		99-101		
Moisture Duplicate	89.5	89.44			100		99-101		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/26/2018 09:39

Group Number: 1952890

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/kg	MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: B181641AA	Sample number(s): 9649546-9649549,9649552-9649560 UNSPK: 9649555									
1,1-Dichloroethene	5 U	17.83	20.5	17.64	18.74	115	106	73-129	9	30
cis-1,2-Dichloroethene	5 U	17.83	20.46	17.64	18.47	115	105	80-120	10	30
trans-1,2-Dichloroethene	5 U	17.83	19.51	17.64	18.73	109	106	80-125	4	30
Tetrachloroethene	10.54	17.83	39.73	17.64	30.16	164*	111	73-120	27	30
Trichloroethene	5 U	17.83	20.09	17.64	18.01	113	102	80-120	11	30
Vinyl Chloride	5 U	17.83	14.9	17.64	14.42	84	82	59-120	3	30
	ug/l	ug/l	ug/l	ug/l	ug/l					
Batch number: P181701AA	Sample number(s): 9649551 UNSPK: P650545									
1,1-Dichloroethene	1 U	20	23.71	20	23.85	119	119	80-131	1	30
cis-1,2-Dichloroethene	1 U	20	21.89	20	21.37	109	107	80-120	2	30
trans-1,2-Dichloroethene	1 U	20	16.82	20	17.92	84	90	80-120	6	30
Tetrachloroethene	1 U	20	26.48	20	25.35	132*	127*	80-120	4	30
Trichloroethene	1 U	20	21.14	20	20.63	106	103	80-120	2	30
Vinyl Chloride	1 U	20	20.3	20	20.03	102	100	68-120	1	30
Batch number: W181722AA	Sample number(s): 9649550 UNSPK: P654473									
1,1-Dichloroethene	20 U	400	487.77	400	477.96	122	119	80-131	2	30
cis-1,2-Dichloroethene	20 U	400	435.75	400	424.61	109	106	80-120	3	30
trans-1,2-Dichloroethene	20 U	400	441.48	400	430.75	110	108	80-120	2	30
Tetrachloroethene	20 U	400	450.33	400	440.95	113	110	80-120	2	30
Trichloroethene	20 U	400	429.03	400	415.28	107	104	80-120	3	30
Vinyl Chloride	20 U	400	384.9	400	378.2	96	95	68-120	2	30

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc %	DUP Conc %	DUP RPD	DUP RPD Max
Batch number: 18162820002B	Sample number(s): 9649546-9649549,9649552-9649561 BKG: 9649555			
Moisture	12.73	12.82	1	5
Moisture	12.73	12.82	1	5
Moisture Duplicate	12.73	12.82	1	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/26/2018 09:39

Group Number: 1952890

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- Solid by 8260B
Batch number: B181641AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9649546	104	105	114	94
9649547	102	97	103	94
9649548	101	97	103	94
9649549	102	99	103	96
9649552	102	97	105	92
9649553	102	97	103	94
9649554	104	99	102	94
9649555	102	97	104	96
9649556	100	99	108	102
9649557	100	99	107	102
9649558	102	97	102	94
9649559	103	100	103	95
9649560	104	98	103	95
Blank	102	101	103	97
LCS	104	104	105	104
LCSD	103	106	105	106
MS	100	99	108	102
MSD	100	99	107	102
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- 5ml Water by 8260B
Batch number: P181701AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9649551	94	93	120	96
Blank	101	100	116	94
LCS	99	105	108	95
MS	101	99	106	88
MSD	97	96	118	99
Limits:	80-120	80-120	80-120	80-120

Analysis Name: VOCs- Solid by 8260B
Batch number: Q181641AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9649561	80	81	77	80
Blank	103	105	100	102
LCS	90	91	88	90
LCSD	91	93	90	93
Limits:	50-141	54-135	52-141	50-131

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/26/2018 09:39

Group Number: 1952890

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- 5ml Water by 8260B
Batch number: W181722AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9649550	101	102	98	96
Blank	98	102	98	96
LCS	99	101	100	100
MS	99	100	100	102
MSD	100	101	101	101
Limits:	80-120	80-120	80-120	80-120

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody

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Acct. # 113372 Group # AIS2890 Sample # 960498-46-61

COC # 563163

Client Information

Client: Dow c/o Jacobs	Acct. #:
Project Name/#: Dow Hanging Rock Ohio	PWSID #:
Project Manager: Chilton/Shane Lowe	P.O. #:
Sampler: Jim Mollison	Quote #:
State where samples were collected: Ohio	For Compliance: Yes ☐ No ☒

For Lab Use Only
FSC:
SCR#: 226009

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Sample Identification	Collected Date	Collected Time	Grab	Composite	Matrix: Soil/Sediment	Matrix: Tissue	Matrix: Water (Ground/Potable/Surface/NPDES)	Matrix: Other	Total # of Containers	Analysis Requested: VOCs Soil	VOCs % Moisture	VOCs Water	Remarks
S01-SS23-0102-060718	6/7/18	0915	X		X				4	X	X		
~~S01-SS23-0607-0~~ JH 6/7/18		~~0945~~											
S01-SS23-0405-060718	6/7/18	0945	X		X				4	X	X		
S01-SS23-0910-060718	6/7/18	0955	X		X				4	X	X		
S01-SS23-1516-060718	6/7/18	1015	X		X				4	X	X		
S01-GW05-2830-060718 JH 6/7/18	6/7/18	~~1205~~ 1145	X			X			3			X	Time 1145
060718TB	6/7/18	1205	X			X			2			X	
S01-SS24-0102-060718	6/7/18	1355	X		X				4	X	X		
S01-SS24-0607-060718	6/7/18	1410	X		X				4	X	X		

Turnaround Time (TAT) Requested (please circle)
Standard Rush
(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: _____

E-mail address: _____

Data Package Options (circle if required)
Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)
Type III (Reduced non-CLP) NJ DKQP TX TRRP-13
NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
JH Jim Mollison	1830				

EDD Required? Yes No
If yes, format: _____
Site-Specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:
UPS _____ FedEx X Other _____
Temperature upon receipt 4.0 °C

Environmental Analysis Request/Chain of Custody

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Acct. # 11372 Group # 1952890 Sample # 9649546-61

COC # 563164

Client Information

Client: Dow C/o Jacobs	Acct. #:
Project Name/#: Dow Hanging Rock OHIO	PWSID #:
Project Manager: Chiller / Shane Lowe	P.O. #:
Sampler: Jim Mallison	Quote #:
State where samples were collected: OHIO	For Compliance: Yes ☐ No ☒

Matrix: Soil ☒ Sediment ☐ Tissue ☐ Water: Potable ☐ Ground ☒ NPDES ☐ Surface ☐ Other: ____

Analysis Requested — Preservation and Filtration Codes

For Lab Use Only
FSC: ____
SCR#: ____

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Sample Identification	Collected Date	Collected Time	Grab	Composite	Soil ☒ Sediment	Water	Other:	Total # of Containers	VOC Soil	% Moisture	VOCs Water	Remarks
S01-SS24-1576-060718	6/7/18	1430	X		X			4	X	X		
S01-SS21-0102-060718	6/7/18	1545	X		X			10	X	X		MS/MSD
S01-SS21-0607-060718	6/7/18	1555	X		X			4	X	X		
S01-SSFD01-060718	6/7/18	1600	X		X			4	X	X		
S01-SS21-1415-060718	6/7/18	1620	X		X			4	X	X		
S01-SS33-0203-060718	6/7/18	1715	X		X			4	X	X		Possible High VOC conc.

Turnaround Time (TAT) Requested (please circle)
Standard Rush
(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: ____

E-mail address: ____

Relinquished by	Date	Time	Received by	Date	Time
Jim Mallison	6/7/18	1830			
			[signature]	6/8/18	1030

Data Package Options (circle if required)
Type I (EPA Level 3 Equivalent/non-CLP) As Per Contract
Type VI (Raw Data Only)
Type III (Reduced non-CLP) NJ DKQP TX TRRP-13
NYSDEC Category A or B MA MCP CT RCP

EDD Required? Yes No
If yes, format: ____
Site-Specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:
UPS ____ FedEx X Other ____
Temperature upon receipt 4.0 °C

Eurofins Lancaster Laboratories Environmental, LLC • 2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300
The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.
DHR36 Page 33 of 144
Page 27 of 30
7044 0717

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Sample Administration Receipt Documentation Log

Doc Log ID: 218623

Group Number(s): 1952890

Client: Dow c/o Jacobs

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	06/08/2018 10:30
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OH		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	No
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCl
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Raysa Perez (14020) at 13:06 on 06/08/2018

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	32170023	4.0	IR	Wet	N	Bagged	N

Sample ID Discrepancy Details

Sample ID on COC	Sample ID on Label	Comments
~~SS01-SS21-0607-060718~~ SS01-SS21-0607-060718 ④mrs 6/12/18	SS21-0607-060718	

2425 New Holland Pike
Lancaster, PA 17601-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mg**	milligram(s)
C	degrees Celsius	**mL**	milliliter(s)
cfu	colony forming units	**MPN**	Most Probable Number
CP Units	cobalt-chloroplatinate units	**N.D.**	non-detect
F	degrees Fahrenheit	**ng**	nanogram(s)
g	gram(s)	**NTU**	nephelometric turbidity units
IU	International Units	**pg/L**	picogram/liter
kg	kilogram(s)	**RL**	Reporting Limit
L	liter(s)	**TNTC**	Too Numerous To Count
lb.	pound(s)	**µg**	microgram(s)
m3	cubic meter(s)	**µL**	microliter(s)
meq	milliequivalents	**umhos/cm**	micromhos/cm
		MCL	Maximum Contamination Limit
<	less than		
>	greater than		

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

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Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Volatiles by GC/MS Data

Case Narrative/Conformance Summary

Volatiles by GC/MS

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR36

GC/MS Volatiles

Fraction: Volatiles by GC/MS

VOCs- 5ml Water by 8260B

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
9649546	S01-SS23-0102-060718		X	0.78	
9649547	S01-SS23-0405-060718		X	0.99	
9649548	S01-SS23-0910-060718		X	1.18	
9649549	S01-SS23-1516-060718		X	0.83	
9649550	S01-GW05-2830-060718	X		1	
9649551	060718TB	X		1	Trip Blank
9649552	S01-SS24-102-060718		X	0.88	
9649553	S01-SS24-0607-060718		X	0.88	
9649554	S01-SS24-1516-060718		X	1.03	
9649555	S01-SS21-0102-060718		X	0.95	Unspiked
9649556	S01-SS21-0102-060718 MS		X	0.89	Matrix Spike
9649557	S01-SS21-0102-060718 MSD		X	0.88	Matrix Spike Duplicate
9649558	S01-SS21-0607-060718		X	0.81	
9649559	S01-SSFD-060718		X	0.89	
9649560	S01-SS21-1415-060718		X	0.81	
9649561	S01-SS33-0203-060718		X	43.94	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

(Sample number(s): 9649546, 9649548-9649549, 9649552-9649553, 9649556-9649561: Analysis: 10237)
The VOA soil weight is outside the acceptable weight range.
See the VOA Prep Summary Sheet for the affected sample(s).

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR36

GC/MS Volatiles

Fraction: Volatiles by GC/MS

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

LCS/LCSD

Batch#: Q181641AA (Sample number(s): 9649561)
The recovery(ies) for the following analyte(s) in the LCSD were below the acceptance window: Vinyl Chloride

MS/MSD

Batch#: B181641AA (Sample number(s): 9649546-9649549, 9649552-9649560, UNSPK: 9649555)
The recovery(ies) for the following analyte(s) in the MS exceeded the acceptance window indicating a positive bias: Tetrachloroethene

SAMPLE ANALYSIS:

(Sample number(s): 9649561: Analysis: 10237)
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride
Reporting limits were raised due to interference from the sample matrix.

No additional problems were encountered with the analysis of the samples.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Volatiles by GC/MS

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Quality Control Reference List
GC/MS Volatiles

CLIENT: CH2M Hill, Inc.
SDG: DHR36

Fraction: Volatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
VOCs- 5ml Water by 8260B	P181701AA	VBLKP68	06/19/2018 11:33
		LCSP68	06/19/2018 10:41
		9649551	06/19/2018 20:08
VOCs- 5ml Water by 8260B	W181722AA	VBLKW90	06/21/2018 20:14
		LCSW90	06/21/2018 19:50
		9649550	06/21/2018 22:08
VOCs- Solid by 8260B	B181641AA	VBLKB08	06/13/2018 19:39
		LCSB08	06/13/2018 20:02
		LCDB08	06/13/2018 20:24
		9649546	06/13/2018 23:49
		9649547	06/14/2018 00:12
		9649548	06/14/2018 00:34
		9649549	06/14/2018 00:57
		9649552	06/14/2018 01:19
		9649553	06/14/2018 01:42
		9649554	06/14/2018 02:04
		9649555 UNSPK	06/13/2018 22:39
		9649556 MS	06/13/2018 23:02
		9649557 MSD	06/13/2018 23:25
		9649558	06/14/2018 02:27
		9649559	06/14/2018 02:49
		9649560	06/14/2018 03:12
VOCs- Solid by 8260B	Q181641AA	VBLKQ08	06/13/2018 22:59
		LCSQ08	06/13/2018 21:50
		LCDQ08	06/13/2018 22:14
		9649561	06/14/2018 04:05

Fraction: Volatiles by GC/MS

B181641AA / VBLKB08 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/13/18	N.D.	ug/kg	1	5
1,1-Dichloroethene	06/13/18	N.D.	ug/kg	1	5
cis-1,2-Dichloroethene	06/13/18	N.D.	ug/kg	1	5
trans-1,2-Dichloroethene	06/13/18	N.D.	ug/kg	1	5
Trichloroethene	06/13/18	N.D.	ug/kg	1	5
Tetrachloroethene	06/13/18	N.D.	ug/kg	1	5

Q181641AA / VBLKQ08 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/13/18	N.D.	ug/kg	50	250
1,1-Dichloroethene	06/13/18	N.D.	ug/kg	50	250
cis-1,2-Dichloroethene	06/13/18	N.D.	ug/kg	50	250
trans-1,2-Dichloroethene	06/13/18	N.D.	ug/kg	50	250
Trichloroethene	06/13/18	N.D.	ug/kg	50	250
Tetrachloroethene	06/13/18	N.D.	ug/kg	50	250

Quality Control Summary
Method Blank
GC/MS Volatiles
SDG: DHR36
Matrix: LIQUID

Fraction: Volatiles by GC/MS

P181701AA / VBLKP68 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/19/18	N.D.	ug/l	0.5	1
1,1-Dichloroethene	06/19/18	N.D.	ug/l	0.5	1
trans-1,2-Dichloroethene	06/19/18	N.D.	ug/l	0.5	1
cis-1,2-Dichloroethene	06/19/18	N.D.	ug/l	0.5	1
Trichloroethene	06/19/18	N.D.	ug/l	0.5	1
Tetrachloroethene	06/19/18	N.D.	ug/l	0.5	1

W181722AA / VBLKW90 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/21/18	N.D.	ug/l	0.5	1
1,1-Dichloroethene	06/21/18	N.D.	ug/l	0.5	1
trans-1,2-Dichloroethene	06/21/18	N.D.	ug/l	0.5	1
cis-1,2-Dichloroethene	06/21/18	N.D.	ug/l	0.5	1
Trichloroethene	06/21/18	N.D.	ug/l	0.5	1
Tetrachloroethene	06/21/18	N.D.	ug/l	0.5	1

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DHR36
Matrix: SOLID

Fraction: Volatiles by GC/MS

B181641AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKB08	101	54 - 135	97	50 - 131	102	50 - 141	103	52 - 141
LCSB08	104	54 - 135	104	50 - 131	104	50 - 141	105	52 - 141
LCDB08	106	54 - 135	106	50 - 131	103	50 - 141	105	52 - 141
9649546	105	54 - 135	94	50 - 131	104	50 - 141	114	52 - 141
9649547	97	54 - 135	94	50 - 131	102	50 - 141	103	52 - 141
9649548	97	54 - 135	94	50 - 131	101	50 - 141	103	52 - 141
9649549	99	54 - 135	96	50 - 131	102	50 - 141	103	52 - 141
9649552	97	54 - 135	92	50 - 131	102	50 - 141	105	52 - 141
9649553	97	54 - 135	94	50 - 131	102	50 - 141	103	52 - 141
9649554	99	54 - 135	94	50 - 131	104	50 - 141	102	52 - 141
9649555 UNSPK	97	54 - 135	96	50 - 131	102	50 - 141	104	52 - 141
9649556 MS	99	54 - 135	102	50 - 131	100	50 - 141	108	52 - 141
9649557 MSD	99	54 - 135	102	50 - 131	100	50 - 141	107	52 - 141
9649558	97	54 - 135	94	50 - 131	102	50 - 141	102	52 - 141
9649559	100	54 - 135	95	50 - 131	103	50 - 141	103	52 - 141
9649560	98	54 - 135	95	50 - 131	104	50 - 141	103	52 - 141

Q181641AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKQ08	105	54 - 135	102	50 - 131	103	50 - 141	100	52 - 141
LCSQ08	91	54 - 135	90	50 - 131	90	50 - 141	88	52 - 141
LCDQ08	93	54 - 135	93	50 - 131	91	50 - 141	90	52 - 141
9649561	81	54 - 135	80	50 - 131	80	50 - 141	77	52 - 141

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DHR36
Matrix: LIQUID

Fraction: Volatiles by GC/MS

P181701AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKP68	100	80 - 120	94	80 - 120	101	80 - 120	116	80 - 120
LCSP68	105	80 - 120	95	80 - 120	99	80 - 120	108	80 - 120
9649551	93	80 - 120	96	80 - 120	94	80 - 120	120	80 - 120

W181722AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKW90	102	80 - 120	96	80 - 120	98	80 - 120	98	80 - 120
LCSW90	101	80 - 120	100	80 - 120	99	80 - 120	100	80 - 120
9649550	102	80 - 120	96	80 - 120	101	80 - 120	98	80 - 120

GC/MS Volatiles

Fraction: Volatiles by GC/MS

UNSPK: 9649555 MS: 9649556 MSD: 9649557 **Analyte**	Batch: **B181641AA** (Sample number(s): 9649546-9649549, 9649552-9649560)								
	Spike Added ug/kg MS/MSD	**Unspiked Conc ug/kg**	**MS Conc ug/kg**	**MSD Conc ug/kg**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	17.83 / 17.64	N.D.	14.9	14.42	84	82	59-120	3	30
1,1-Dichloroethene	17.83 / 17.64	N.D.	20.5	18.74	115	106	73-129	9	30
cis-1,2-Dichloroethene	17.83 / 17.64	N.D.	20.46	18.47	115	105	80-120	10	30
trans-1,2-Dichloroethene	17.83 / 17.64	N.D.	19.51	18.73	109	106	80-125	4	30
Trichloroethene	17.83 / 17.64	N.D.	20.09	18.01	113	102	80-120	11	30
Tetrachloroethene	17.83 / 17.64	10.54	39.73	30.16	164 *	111	73-120	27	30

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSB08 LCSD: LCDB08 **Analyte**	Batch: **B181641AA** (Sample number(s): 9649546-9649549, 9649552-9649560)							
	Spike Added ug/kg	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	15.41	12.81	77	64	59-120	18	30
1,1-Dichloroethene	20	20.66	17.45	103	87	73-129	17	30
cis-1,2-Dichloroethene	20	20.97	18.27	105	91	80-120	14	30
trans-1,2-Dichloroethene	20	20.82	16.79	104	84	80-125	21	30
Trichloroethene	20	19.82	17.17	99	86	80-120	14	30
Tetrachloroethene	20	20.36	16.99	102	85	73-120	18	30

LCS: LCSQ08 LCSD: LCDQ08 **Analyte**	Batch: **Q181641AA** (Sample number(s): 9649561)							
	Spike Added ug/kg	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	1000	592.84	572.97	59	57 *	59-120	3	30
1,1-Dichloroethene	1000	956.29	995.82	96	100	73-129	4	30
cis-1,2-Dichloroethene	1000	986.12	997.96	99	100	80-120	1	30
trans-1,2-Dichloroethene	1000	968.76	975.67	97	98	80-125	1	30
Trichloroethene	1000	940.02	987.66	94	99	80-120	5	30
Tetrachloroethene	1000	963.34	992.02	96	99	73-120	3	30

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSP68	Batch: **P181701AA** (Sample number(s): 9649551)							
Analyte	**Spike Added ug/l**	**LCS Conc ug/l**	**LCSD Conc ug/l**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	18.55	NA	93	NA	68-120	NA	NA
1,1-Dichloroethene	20	21.09	NA	105	NA	80-131	NA	NA
trans-1,2-Dichloroethene	20	16.98	NA	85	NA	80-120	NA	NA
cis-1,2-Dichloroethene	20	18.44	NA	92	NA	80-120	NA	NA
Trichloroethene	20	18.86	NA	94	NA	80-120	NA	NA
Tetrachloroethene	20	22.99	NA	115	NA	80-120	NA	NA

LCS: LCSW90	Batch: **W181722AA** (Sample number(s): 9649550)							
Analyte	**Spike Added ug/l**	**LCS Conc ug/l**	**LCSD Conc ug/l**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	16.4	NA	82	NA	68-120	NA	NA
1,1-Dichloroethene	20	21.65	NA	108	NA	80-131	NA	NA
trans-1,2-Dichloroethene	20	19.68	NA	98	NA	80-120	NA	NA
cis-1,2-Dichloroethene	20	19.76	NA	99	NA	80-120	NA	NA
Trichloroethene	20	18.8	NA	94	NA	80-120	NA	NA
Tetrachloroethene	20	19.9	NA	99	NA	80-120	NA	NA

Fraction: Volatiles by GC/MS

10335: VOCs- 5ml Water by 8260B Analyte Name	Default MDL	Default LOQ	Units
Vinyl Chloride	0.5	1	ug/l
1,1-Dichloroethene	0.5	1	ug/l
trans-1,2-Dichloroethene	0.5	1	ug/l
cis-1,2-Dichloroethene	0.5	1	ug/l
Trichloroethene	0.5	1	ug/l
Tetrachloroethene	0.5	1	ug/l

10237: VOCs- Solid by 8260B Analyte Name	Default MDL	Default LOQ	Units
Vinyl Chloride	1	5	ug/kg
1,1-Dichloroethene	1	5	ug/kg
trans-1,2-Dichloroethene	1	5	ug/kg
cis-1,2-Dichloroethene	1	5	ug/kg
Trichloroethene	1	5	ug/kg
Tetrachloroethene	1	5	ug/kg

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: bf22t01.d BFB Injection Date: 02/22/18

Instrument ID: HP09953 BFB Injection Time: 10:34

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.36
75	30.0 - 60.0% of mass 95	49.53
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.95
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	81.80
175	5.0 - 9.0% of mass 174	6.09 (7.45)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.92 (96.48)1
177	5.0 - 9.0% of mass 176	5.35 (6.77)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	bf22i01.d	02/22/18	11:18
02	VSTD100	bf22i02.d	02/22/18	11:42
03	VSTD50	bf22i03.d	02/22/18	12:06
04	VSTD20	bf22i04.d	02/22/18	12:31
05	VSTD10	bf22i05.d	02/22/18	12:57
06	VSTD4	bf22i06.d	02/22/18	13:29
07	MDL001 - MDL001	bf22m01.d	02/22/18	13:51
08	LGBICV	bf22v01.d	02/22/18	14:16

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu13t01.d BFB Injection Date: 06/13/18

Instrument ID: HP09953 BFB Injection Time: 18:05

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.88
75	30.0 - 60.0% of mass 95	50.95
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.89
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	83.38
175	5.0 - 9.0% of mass 174	6.50 (7.80)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.41 (97.64)1
177	5.0 - 9.0% of mass 176	5.21 (6.39)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	bu13c01.d	06/13/18	18:49
02	VBLKB08	bu13b01.d	06/13/18	19:39
03	VBLKB09	bu13b05.d	06/13/18	19:39
04	LCSB08	bu13s01.d	06/13/18	20:02
05	LCSB09	bu13s31.d	06/13/18	20:02
06	LCDB08	bu13s02.d	06/13/18	20:24
07	LCDB09	bu13s32.d	06/13/18	20:24
08	9647138RE	bu13s33.d	06/13/18	21:53
09	SECC050	bu13c02.d	06/13/18	22:16
10	9649555	bu13s03.d	06/13/18	22:39
11	9649556MS	bu13s04.d	06/13/18	23:02
12	9649557MSD	bu13s05.d	06/13/18	23:25
13	9649546	bu13s06.d	06/13/18	23:49
14	9649547	bu13s07.d	06/14/18	00:12
15	9649548	bu13s08.d	06/14/18	00:34
16	9649549	bu13s09.d	06/14/18	00:57
17	9649552	bu13s10.d	06/14/18	01:19
18	9649553	bu13s11.d	06/14/18	01:42
19	9649554	bu13s12.d	06/14/18	02:04
20	9649558	bu13s13.d	06/14/18	02:27
21	9649559	bu13s14.d	06/14/18	02:49
22	9649560	bu13s15.d	06/14/18	03:12

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu13t01.d BFB Injection Date: 06/13/18

Instrument ID: HP09953 BFB Injection Time: 18:05

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.88
75	30.0 - 60.0% of mass 95	50.95
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.89
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	83.38
175	5.0 - 9.0% of mass 174	6.50 (7.80)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.41 (97.64)1
177	5.0 - 9.0% of mass 176	5.21 (6.39)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9651112	bu13s16.d	06/14/18	03:35
24	9651113	bu13s17.d	06/14/18	03:57
25	9651114	bu13s18.d	06/14/18	04:19
26	9651116	bu13s19.d	06/14/18	04:42
27	9653929	bu13s20.d	06/14/18	05:04
28	9653933RE	bu13s21.d	06/14/18	05:27

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: qy24t10.d BFB Injection Date: 05/24/18

Instrument ID: HP07536 BFB Injection Time: 10:35

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.07
75	30.0 - 60.0% of mass 95	48.00
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	7.09
173	Less than 2.0% of mass 174	0.20 (0.22)1
174	Greater than 50.0% of mass 95	90.11
175	5.0 - 9.0% of mass 174	6.22 (6.91)1
176	Greater than 95.0%, but less than 101.0% of mass 174	86.19 (95.64)1
177	5.0 - 9.0% of mass 176	6.11 (7.09)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD4	qy24i10.d	05/24/18	11:51
02	VSTD10	qy24i11.d	05/24/18	12:14
03	VSTD20	qy24i12.d	05/24/18	12:37
04	VSTD50	qy24i13.d	05/24/18	13:00
05	VSTD100	qy24i14.d	05/24/18	13:23
06	VSTD300	qy24i15.d	05/24/18	13:46
07	MDL - MDL	qy24m10.d	05/24/18	14:55
08	QBICV	qy24v10.d	05/24/18	15:18
09	VSTD4	qy24i20.d	05/24/18	16:03
10	VSTD10	qy24i21.d	05/24/18	16:26
11	VSTD20	qy24i22.d	05/24/18	16:49
12	VSTD50	qy24i23.d	05/24/18	17:13
13	VSTD100	qy24i24.d	05/24/18	17:36
14	VSTD300	qy24i25.d	05/24/18	17:58
15	SMDL - SMDL	qy24m20.d	05/24/18	18:45
16	BSMICV	qy24v20.d	05/24/18	19:07

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: qu13t10.d BFB Injection Date: 06/13/18

Instrument ID: HP07536 BFB Injection Time: 21:05

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.32
75	30.0 - 60.0% of mass 95	45.73
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.64
173	Less than 2.0% of mass 174	0.22 (0.24)1
174	Greater than 50.0% of mass 95	93.35
175	5.0 - 9.0% of mass 174	6.94 (7.44)1
176	Greater than 95.0%, but less than 101.0% of mass 174	92.06 (98.62)1
177	5.0 - 9.0% of mass 176	6.10 (6.63)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	qu13c05.d	06/13/18	21:27
02	LCSQ08	qu13s31.d	06/13/18	21:50
03	LCSQ09	qu13s61.d	06/13/18	21:50
04	LCDQ08	qu13s32.d	06/13/18	22:14
05	LCDQ09	qu13s62.d	06/13/18	22:14
06	VBLKQ08	qu13b05.d	06/13/18	22:59
07	VBLKQ09	qu13b10.d	06/13/18	22:59
08	9632087	qu13s03.d	06/13/18	23:52
09	9632096	qu13s04.d	06/14/18	00:16
10	9632097	qu13s05.d	06/14/18	00:39
11	9632099	qu13s06.d	06/14/18	01:01
12	9632103	qu13s07.d	06/14/18	01:25
13	9632104	qu13s08.d	06/14/18	01:47
14	9640112	qu13s09.d	06/14/18	02:10
15	9642335	qu13s10.d	06/14/18	02:33
16	9642335DL	qu13s11.d	06/14/18	02:57
17	9643859	qu13s12.d	06/14/18	03:19
18	9647346DL	qu13s13.d	06/14/18	03:42
19	9649561	qu13s20.d	06/14/18	04:05
20	9653930	qu13s21.d	06/14/18	04:28
21	9653933DL	qu13s22.d	06/14/18	04:51
22	9653934	qu13s23.d	06/14/18	05:14

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: qu13t10.d BFB Injection Date: 06/13/18

Instrument ID: HP07536 BFB Injection Time: 21:05

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.32
75	30.0 - 60.0% of mass 95	45.73
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.64
173	Less than 2.0% of mass 174	0.22 (0.24)1
174	Greater than 50.0% of mass 95	93.35
175	5.0 - 9.0% of mass 174	6.94 (7.44)1
176	Greater than 95.0%, but less than 101.0% of mass 174	92.06 (98.62)1
177	5.0 - 9.0% of mass 176	6.10 (6.63)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	SECC050	qu13c06.d	06/14/18	06:22

FORM V VOA

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: py14t10.d BFB Injection Date: 05/14/18

Instrument ID: HP07163 BFB Injection Time: 22:21

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	15.55
75	30.0 - 60.0% of mass 95	46.47
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.81
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	93.42
175	5.0 - 9.0% of mass 174	7.54 (8.07)1
176	Greater than 95.0%, but less than 101.0% of mass 174	90.26 (96.62)1
177	5.0 - 9.0% of mass 176	6.16 (6.82)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	py14i01.d	05/14/18	23:05
02	VSTD300	py14i02.d	05/14/18	23:19
03	VSTD100	py14i03.d	05/14/18	23:31
04	VSTD100	py14i04.d	05/14/18	23:44
05	VSTD50	py14i05.d	05/14/18	23:58
06	VSTD50	py14i06.d	05/15/18	00:10
07	VSTD20	py14i07.d	05/15/18	00:23
08	VSTD20	py14i08.d	05/15/18	00:36
09	VSTD10	py14i09.d	05/15/18	00:49
10	VSTD10	py14i10.d	05/15/18	01:02
11	VSTD4	py14i11.d	05/15/18	01:15
12	VSTD4	py14i12.d	05/15/18	01:28
13	VSTD1	py14i13.d	05/15/18	01:41
14	VSTD1	py14i14.d	05/15/18	01:54
15	MDL0.5 - MDL0.5	py14m01.d	05/15/18	02:07
16	MDL0.5 - MDL0.5	py14m02.d	05/15/18	02:20
17	ICVP01	py14v01.d	05/15/18	02:33
18	ICVP02	py14v02.d	05/15/18	02:46

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: pu19t01.d BFB Injection Date: 06/19/18

Instrument ID: HP07163 BFB Injection Time: 09:26

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.37
75	30.0 - 60.0% of mass 95	47.37
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.62
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	94.97
175	5.0 - 9.0% of mass 174	8.19 (8.63)1
176	Greater than 95.0%, but less than 101.0% of mass 174	91.79 (96.65)1
177	5.0 - 9.0% of mass 176	5.97 (6.50)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	pu19c01.d	06/19/18	10:15
02	VSTD50	pu19c02.d	06/19/18	10:28
03	LCSP68	pu19s01.d	06/19/18	10:41
04	LCSP69	pu19s02.d	06/19/18	10:54
05	VBLKP68	pu19b01.d	06/19/18	11:33
06	VBLKP69	pu19b02.d	06/19/18	11:46
07	9662542	pu19s03.d	06/19/18	12:21
08	9650545	pu19s05.d	06/19/18	12:47
09	9650546MS	pu19s07.d	06/19/18	13:13
10	9646903MS	pu19s08.d	06/19/18	13:26
11	9650547MSD	pu19s09.d	06/19/18	13:39
12	9646903MSD	pu19s10.d	06/19/18	13:52
13	9650548	pu19s11.d	06/19/18	14:05
14	9646901	pu19s12.d	06/19/18	14:17
15	9652924	pu19s13.d	06/19/18	14:31
16	9646901DL	pu19s14.d	06/19/18	14:44
17	9652925	pu19s15.d	06/19/18	14:56
18	9650501	pu19s16.d	06/19/18	15:09
19	9652926	pu19s17.d	06/19/18	15:22
20	9650502	pu19s18.d	06/19/18	15:35
21	9652927	pu19s19.d	06/19/18	15:48
22	9652928	pu19s21.d	06/19/18	16:14

FORM V VOA

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: pu19t01.d BFB Injection Date: 06/19/18

Instrument ID: HP07163 BFB Injection Time: 09:26

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.37
75	30.0 - 60.0% of mass 95	47.37
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.62
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	94.97
175	5.0 - 9.0% of mass 174	8.19 (8.63)1
176	Greater than 95.0%, but less than 101.0% of mass 174	91.79 (96.65)1
177	5.0 - 9.0% of mass 176	5.97 (6.50)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9650503	pu19s22.d	06/19/18	16:27
24	9650453	pu19s23.d	06/19/18	16:40
25	9650204	pu19s25.d	06/19/18	17:06
26	9650504	pu19s26.d	06/19/18	17:19
27	9660998	pu19s27.d	06/19/18	17:32
28	9650505	pu19s28.d	06/19/18	17:45
29	9650506	pu19s30.d	06/19/18	18:11
30	9660996	pu19s31.d	06/19/18	18:24
31	9650507	pu19s32.d	06/19/18	18:37
32	9660997	pu19s33.d	06/19/18	18:50
33	9650508	pu19s34.d	06/19/18	19:03
34	9660995	pu19s35.d	06/19/18	19:16
35	9650509	pu19s36.d	06/19/18	19:29
36	9650513	pu19s38.d	06/19/18	19:55
37	9649551	pu19s39.d	06/19/18	20:08
38	9650515	pu19s42.d	06/19/18	20:43

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: wy23t04.d BFB Injection Date: 05/23/18

Instrument ID: HP09137 BFB Injection Time: 13:51

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.07
75	30.0 - 60.0% of mass 95	47.30
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.73
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	76.76
175	5.0 - 9.0% of mass 174	5.72 (7.46)1
176	Greater than 95.0%, but less than 101.0% of mass 174	74.07 (96.49)1
177	5.0 - 9.0% of mass 176	5.04 (6.80)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	wy23i01.d	05/23/18	14:38
02	VSTD100	wy23i02.d	05/23/18	15:02
03	VSTD50	wy23i03.d	05/23/18	15:26
04	VSTD20	wy23i04.d	05/23/18	15:50
05	VSTD10	wy23i05.d	05/23/18	16:14
06	VSTD4	wy23i06.d	05/23/18	16:37
07	VSTD1	wy23i07.d	05/23/18	17:01
08	VSTD0.5	wy23m01.d	05/23/18	17:25
09	LCSWICV	wy23v01.d	05/23/18	17:49

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: wu21t10.d BFB Injection Date: 06/21/18

Instrument ID: HP09137 BFB Injection Time: 18:48

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.84
75	30.0 - 60.0% of mass 95	47.96
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.75
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	78.69
175	5.0 - 9.0% of mass 174	5.64 (7.17)1
176	Greater than 95.0%, but less than 101.0% of mass 174	76.65 (97.41)1
177	5.0 - 9.0% of mass 176	5.20 (6.78)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	wu21c05.d	06/21/18	19:26
02	LCSW90	wu21s31.d	06/21/18	19:50
03	VBLKW90	wu21b05.d	06/21/18	20:14
04	9652747	wu21s33.d	06/21/18	20:53
05	9657575	wu21s34.d	06/21/18	21:20
06	9667229	wu21s35.d	06/21/18	21:44
07	9649550	wu21s36.d	06/21/18	22:08
08	9657574	wu21s37.d	06/21/18	22:32
09	9657574DL	wu21s38.d	06/21/18	22:56
10	9667227	wu21s39.d	06/21/18	23:20
11	9667228	wu21s40.d	06/21/18	23:44
12	9668008	wu21s41.d	06/22/18	00:08
13	9668008DL	wu21s42.d	06/22/18	00:32
14	9668009	wu21s43.d	06/22/18	00:56
15	9654473	wu21s44.d	06/22/18	01:20
16	9654473MS	wu21s45.d	06/22/18	01:44
17	9654473MSD	wu21s46.d	06/22/18	02:08
18	9654475	wu21s47.d	06/22/18	02:32
19	9654477	wu21s48.d	06/22/18	02:55
20	9654479	wu21s49.d	06/22/18	03:19
21	9654886	wu21s50.d	06/22/18	03:43
22	9654886MS	wu21s51.d	06/22/18	04:07

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: wu21t10.d BFB Injection Date: 06/21/18

Instrument ID: HP09137 BFB Injection Time: 18:48

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.84
75	30.0 - 60.0% of mass 95	47.96
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.75
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	78.69
175	5.0 - 9.0% of mass 174	5.64 (7.17)1
176	Greater than 95.0%, but less than 101.0% of mass 174	76.65 (97.41)1
177	5.0 - 9.0% of mass 176	5.20 (6.78)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9654890	wu21s52.d	06/22/18	04:31
24	9654890MS	wu21s53.d	06/22/18	04:55
25	9658069	wu21s54.d	06/22/18	05:19

FORM V VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND		RRF	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane		0.4937	0.4887	0.4857	0.5026	0.5070	0.4719	0.4916	3	AVG	
Chloromethane	#	0.6250	0.6026	0.5854	0.5711	0.5965	0.5428	0.5872	5	AVG	#
Vinyl Chloride	*	0.4665	0.4310	0.4182	0.4099	0.4171	0.3607	0.4173	8	AVG	*
Bromomethane		0.3081	0.3006	0.2984	0.2909	0.2897	0.2518	0.2899	7	AVG	
Chloroethane		0.2404	0.2467	0.2409	0.2386	0.2372	0.1969	0.2334	8	AVG	
Dichlorofluoromethane		0.6106	0.5949	0.6079	0.5949	0.6009	0.5439	0.5922	4	AVG	
Trichlorofluoromethane		0.5424	0.5392	0.5339	0.5359	0.5516	0.5187	0.5369	2	AVG	
Ethanol		0.1197	0.1143	0.1250	0.1279	0.1217	0.1180	0.1211	4	AVG	
Freon 123a		0.3516	0.3561	0.3631	0.3465	0.3545	0.3389	0.3518	2	AVG	
Acrolein		2.4157	2.4240	2.5462	2.7115	2.3801	2.0909	2.4281	8	AVG	
1,1-Dichloroethene	*	0.2378	0.2477	0.2501	0.2415	0.2560	0.2425	0.2459	3	AVG	*
Acetone		0.0301	0.0281	0.0238	0.0230	0.0225	0.0213	0.0248	14	AVG	
Freon 113		0.2790	0.3085	0.2946	0.2882	0.3071	0.2988	0.2960	4	AVG	
2-Propanol		0.9378	1.0859	1.0919	1.3247	1.0802	1.1772	1.1163	11	AVG	
Methyl Iodide		0.5059	0.5333	0.5541	0.5338	0.5578	0.5474	0.5387	4	AVG	
Carbon Disulfide		0.7997	0.8330	0.8463	0.8407	0.8843	0.8505	0.8424	3	AVG	
Methyl Acetate		0.2282	0.2378	0.2011	0.1925	0.1997	0.1949	0.2090	9	AVG	
Allyl Chloride		0.5013	0.4898	0.4880	0.4877	0.5031	0.4654	0.4892	3	AVG	
Methylene Chloride		0.2909	0.2986	0.2904	0.2831	0.2903	0.2778	0.2885	2	AVG	
t-Butyl alcohol		1.3811	1.2450	1.2102	1.2677	1.2127	1.1339	1.2418	7	AVG	
Acrylonitrile		0.1032	0.1110	0.0959	0.0970	0.0961	0.0911	0.0991	7	AVG	
Methyl Tertiary Butyl Ether		0.7860	0.8352	0.7923	0.7915	0.7973	0.7826	0.7975	2	AVG	
trans-1,2-Dichloroethene		0.2776	0.2905	0.2964	0.2871	0.2971	0.2819	0.2884	3	AVG	
n-Hexane		0.4644	0.5057	0.5030	0.5210	0.5427	0.5389	0.5126	6	AVG	
1,1-Dichloroethane	#	0.5504	0.5699	0.5871	0.5681	0.5881	0.5753	0.5731	2	AVG	#
di-Isopropyl ether		1.1120	1.1762	1.1817	1.1544	1.1878	1.1492	1.1602	2	AVG	
2-Chloro-1,3-butadiene		0.4692	0.5100	0.5339	0.5218	0.5510	0.5383	0.5207	6	AVG	
Ethyl t-butyl ether		0.8945	0.9546	0.9853	0.9854	1.0111	1.0051	0.9727	4	AVG	
2-Butanone		7.1353	7.2724	7.4916	7.9621	7.1791	6.8822	7.3204	5	AVG	
cis-1,2-Dichloroethene		0.3111	0.3303	0.3397	0.3333	0.3451	0.3458	0.3342	4	AVG	
2,2-Dichloropropane		0.3625	0.4052	0.4224	0.4310	0.4616	0.4679	0.4251	9	AVG	
Propionitrile		1.8864	1.9537	2.0773	2.2150	2.0246	1.9793	2.0227	6	AVG	
Methacrylonitrile		0.1142	0.1249	0.1114	0.1153	0.1164	0.1201	0.1170	4	AVG	
Bromochloromethane		0.1557	0.1642	0.1602	0.1628	0.1669	0.1713	0.1635	3	AVG	
Tetrahydrofuran		1.3912	1.5533	1.5880	1.7875	1.6127	1.5810	1.5856	8	AVG	
Chloroform	*	0.5030	0.5322	0.5455	0.5356	0.5526	0.5494	0.5364	3	AVG	*
1,1,1-Trichloroethane		0.5352	0.5079	0.5223	0.4905	0.5246	0.5285	0.5181	3	AVG	
Cyclohexane		0.5629	0.6493	0.6177	0.6222	0.6647	0.6642	0.6302	6	AVG	
Cyclohexane(2)		0.5006	0.4943	0.4711	0.5565	0.5111	0.5144	0.5080	6	AVG	
Cyclohexane(3)		0.1594	0.1839	0.1769	0.1801	0.1918	0.1929	0.1808	7	AVG	
1,1-Dichloropropene		0.4023	0.4334	0.4383	0.4280	0.4510	0.4497	0.4338	4	AVG	
Carbon Tetrachloride		0.3244	0.3604	0.3721	0.3810	0.4190	0.4414	0.3830	11	AVG	
Isobutyl Alcohol		0.4628	0.4806	0.5053	0.5387	0.5193	0.5508	0.5096	7	AVG	
Benzene		1.2429	1.2621	1.2830	1.2419	1.2844	1.2513	1.2609	2	AVG	
1,2-Dichloroethane		0.4024	0.4213	0.4097	0.4022	0.4096	0.4129	0.4097	2	AVG	
1,2-Dichloroethane(2)		0.0303	0.0375	0.0352	0.0355	0.0359	0.0376	0.0353	8	AVG	
t-Amyl methyl ether		0.7479	0.8064	0.7995	0.8156	0.8448	0.8723	0.8144	5	AVG	
n-Heptane		0.5526	0.6424	0.5700	0.6187	0.6421	0.6485	0.6124	7	AVG	
n-Butanol		0.3098	0.3268	0.3694	0.4162	0.4027	0.4324	0.3762	13	AVG	
Trichloroethene		0.3036	0.3195	0.3239	0.3175	0.3348	0.3368	0.3227	4	AVG	
Methylcyclohexane		0.5819	0.5773	0.5413	0.6122	0.6392	0.6478	0.6000	7	AVG	
1,2-Dichloropropane	*	0.3067	0.3305	0.3383	0.3336	0.3432	0.3461	0.3331	4	AVG	*

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Methyl Methacrylate			0.1686	0.1881	0.1830	0.1917	0.1998	0.2129	0.1907	8	AVG	
1,4-Dioxane			0.1110	0.1248	0.1466	0.1630	0.1467	0.1540	0.1410	14	AVG	
Dibromomethane			0.1663	0.1816	0.1759	0.1784	0.1836	0.1913	0.1795	5	AVG	
Bromodichloromethane			0.3248	0.3638	0.3817	0.3882	0.4109	0.4303	0.3833	10	AVG	
2-Nitropropane			2.0194	2.2729	2.3607	2.9534	3.0464		2.5306	18	2NDDEG	
2-Chloroethyl Vinyl Ether			0.1410	0.1558	0.1576	0.1696	0.1760	0.1863	0.1644	10	AVG	
cis-1,3-Dichloropropene			0.3779	0.4439	0.4672	0.4804	0.5078	0.5238	0.4668	11	AVG	
4-Methyl-2-pentanone			0.2576	0.3163	0.2933	0.3176	0.3143	0.3227	0.3036	8	AVG	
Toluene	*		0.9247	1.0130	1.0229	0.9901	1.0314	1.0079	0.9983	4	AVG	*
trans-1,3-Dichloropropene			0.3948	0.4659	0.4870	0.5175	0.5510	0.5732	0.4982	13	AVG	
Ethyl Methacrylate			0.3520	0.4298	0.4331	0.4721	0.4944	0.5152	0.4494	13	AVG	
1,1,2-Trichloroethane			0.3012	0.3296	0.3197	0.3250	0.3269	0.3353	0.3230	4	AVG	
Tetrachloroethene			0.4093	0.4669	0.4566	0.4543	0.4871	0.5045	0.4631	7	AVG	
1,3-Dichloropropane			0.5166	0.5690	0.5523	0.5568	0.5651	0.5712	0.5552	4	AVG	
2-Hexanone			0.2486	0.2841	0.2494	0.2778	0.2765	0.2830	0.2699	6	AVG	
Dibromochloromethane			0.2803	0.3263	0.3380	0.3678	0.3910	0.4236	0.3545	14	AVG	
1,2-Dibromoethane			0.2950	0.3284	0.3231	0.3289	0.3375	0.3495	0.3271	6	AVG	
1-Chlorohexane			0.4346	0.5414	0.5133	0.5396	0.5742	0.5820	0.5308	10	AVG	
Chlorobenzene	#		1.0337	1.1318	1.1257	1.0987	1.1318	1.1318	1.1089	4	AVG	#
1,1,1,2-Tetrachloroethane			0.3009	0.3456	0.3573	0.3779	0.4025	0.4298	0.3690	12	AVG	
Ethylbenzene	*		1.6800	1.9699	1.9294	1.9287	2.0003	1.9159	1.9040	6	AVG	*
m+p-Xylene			0.6648	0.7740	0.7603	0.7637	0.8001	0.7814	0.7574	6	AVG	
o-Xylene			0.6360	0.7611	0.7500	0.7650	0.8018	0.8129	0.7545	8	AVG	
Styrene			0.9609	1.1776	1.1925	1.2237	1.2853	1.2873	1.1879	10	AVG	
Bromoform	#		0.1645	0.1961	0.1982	0.2297	0.2506	0.2941	0.2222	21	2NDDEG	#
Isopropylbenzene			1.5872	1.9815	1.9075	1.9702	2.0668	1.9360	1.9082	9	AVG	
Cyclohexanone			0.6812	0.7882	0.8988	1.0192	0.9573	1.0561	0.9002	16	2NDDEG	
1,1,2,2-Tetrachloroethane	#		0.7205	0.8162	0.7382	0.7748	0.7628	0.7200	0.7554	5	AVG	#
Bromobenzene			0.7947	0.8809	0.8693	0.8361	0.8490	0.8151	0.8408	4	AVG	
trans-1,4-Dichloro-2-butene			0.2019	0.2266	0.1995	0.2076	0.2082	0.1977	0.2069	5	AVG	
1,2,3-Trichloropropane			0.2024	0.2234	0.2094	0.2076	0.2048	0.1963	0.2073	4	AVG	
n-Propylbenzene			3.5008	4.3012	4.0233	3.9668	4.0077	3.0592	3.8098	12	AVG	
2-Chlorotoluene			0.7479	0.8267	0.8112	0.7922	0.8147	0.7707	0.7939	4	AVG	
1,3,5-Trimethylbenzene			2.4376	3.0319	2.9345	2.9334	3.0104	2.5475	2.8159	9	AVG	
4-Chlorotoluene			0.7443	0.8644	0.8462	0.8227	0.8504	0.8075	0.8226	5	AVG	
tert-Butylbenzene			0.5308	0.6792	0.6465	0.6746	0.7119	0.6923	0.6559	10	AVG	
Pentachloroethane			0.3802	0.4286	0.4543	0.4969	0.5395	0.5791	0.4798	15	AVG	
1,2,4-Trimethylbenzene			2.5041	3.0952	2.9646	2.9932	3.0647	2.5702	2.8653	9	AVG	
sec-Butylbenzene			3.0756	3.9796	3.7154	3.8596	3.9223	3.0048	3.5929	12	AVG	
1,3-Dichlorobenzene			1.5244	1.7585	1.6901	1.6588	1.6810	1.6010	1.6523	5	AVG	
p-Isopropyltoluene			2.7340	3.5537	3.2781	3.3991	3.5023	2.7884	3.2092	11	AVG	
1,4-Dichlorobenzene			1.6392	1.8361	1.7301	1.7209	1.7376	1.6492	1.7189	4	AVG	
1,2,3-Trimethylbenzene			2.8974	3.0421	2.9914	3.0694	3.0912	2.5581	2.9416	7	AVG	
Benzyl Chloride			0.1500	0.2040	0.2096	0.2587	0.2746	0.3058	0.2338	24	2NDDEG	
1,3-Diethylbenzene			1.7470	1.8875	1.8283	1.9926	2.0187	1.8348	1.8848	6	AVG	
1,4-Diethylbenzene			1.8994	2.0158	1.9508	2.0984	2.1666	1.9375	2.0114	5	AVG	
n-Butylbenzene			1.4152	1.8153	1.6487	1.7385	1.7677	1.5699	1.6592	9	AVG	
1,2-Dichlorobenzene			1.5146	1.7324	1.6363	1.6557	1.7074	1.5992	1.6409	5	AVG	
1,2-Diethylbenzene			1.5329	1.6048	1.5604	1.6668	1.7022	1.5802	1.6079	4	AVG	
1,2-Dibromo-3-chloropropane			0.1139	0.1399	0.1216	0.1398	0.1402	0.1438	0.1332	9	AVG	
1,3,5-Trichlorobenzene			1.1954	1.4441	1.3236	1.3989	1.4374	1.4641	1.3773	7	AVG	
1,2,4-Trichlorobenzene			1.1029	1.3438	1.2359	1.3065	1.3308	1.3382	1.2763	7	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

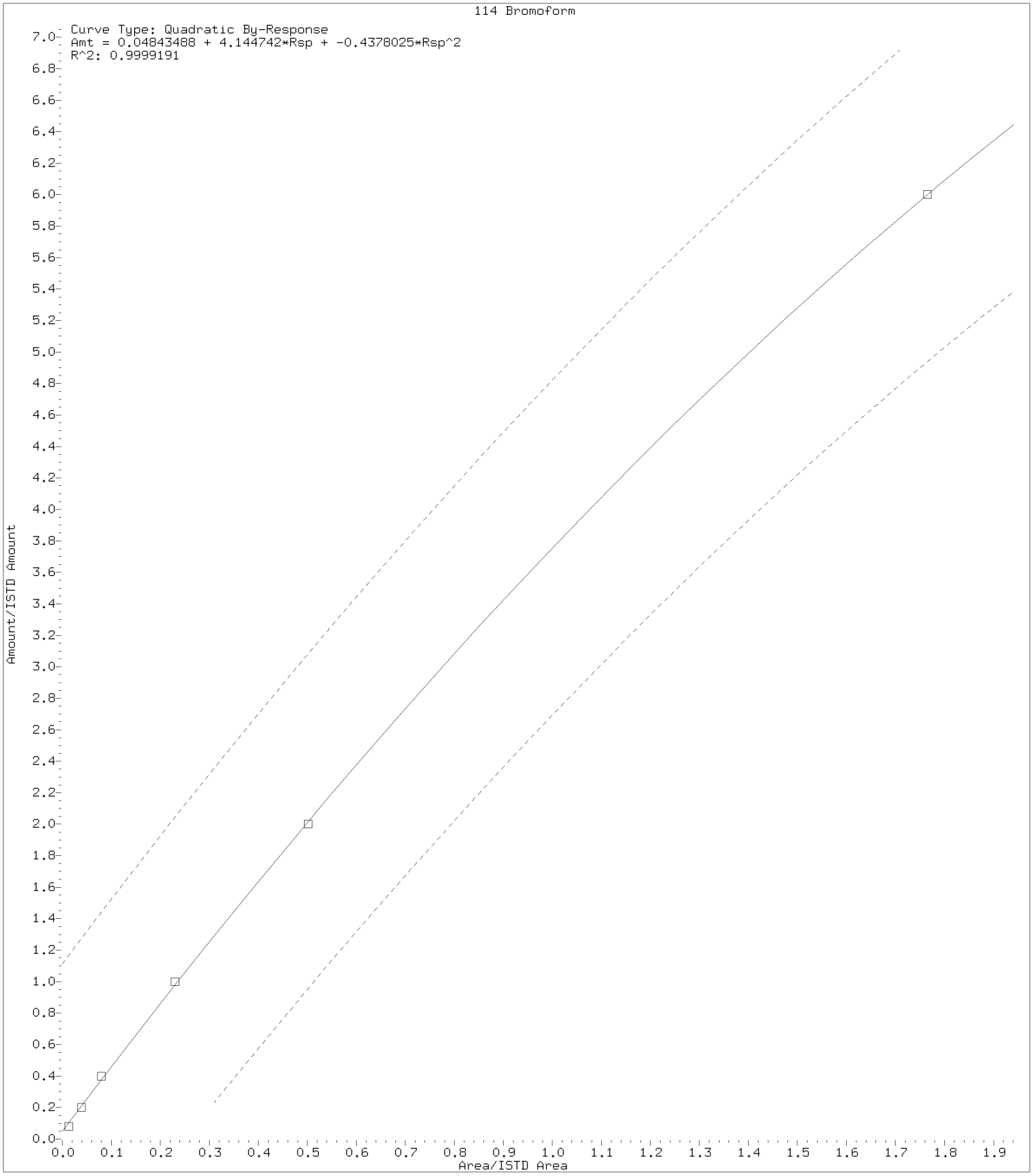
COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Hexachlorobutadiene		0.5066	0.6377	0.5818	0.6845	0.7278	0.8061	0.6574	16	2NDDEG
Naphthalene		2.4406	2.9700	2.6800	2.8364	2.7417	2.3077	2.6627	9	AVG
1,2,3-Trichlorobenzene		1.0742	1.2858	1.1530	1.2084	1.2213	1.1951	1.1896	6	AVG
2-Methylnaphthalene		1.3392	1.6688	1.6220	1.8294	1.8489	1.6210	1.6549	11	AVG
Dibromofluoromethane		0.2519	0.2489	0.2484	0.2517	0.2501	0.2499	0.2502	1	AVG
Dibromofluoromethane(2)		0.2544	0.2544	0.2542	0.2545	0.2579	0.2549	0.2550	1	AVG
1,2-Dichloroethane-d4		0.0560	0.0569	0.0536	0.0548	0.0539	0.0537	0.0548	2	AVG
1,2-Dichloroethane-d4(2)		0.2808	0.2847	0.2806	0.2924	0.2701	0.2713	0.2800	3	AVG
1,2-Dichloroethane-d4(3)		0.0351	0.0356	0.0338	0.0346	0.0342	0.0347	0.0347	2	AVG
Toluene-d8		1.2947	1.3100	1.3184	1.3142	1.3178	1.2772	1.3054	1	AVG
Toluene-d8(2)		0.8344	0.8400	0.8427	0.8577	0.8478	0.8390	0.8436	1	AVG
4-Bromofluorobenzene		0.4965	0.4992	0.4949	0.4976	0.4962	0.5077	0.4987	1	AVG
4-Bromofluorobenzene(2)		0.4326	0.4314	0.4350	0.4356	0.4288	0.4416	0.4342	1	AVG

Average %RSD 7

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



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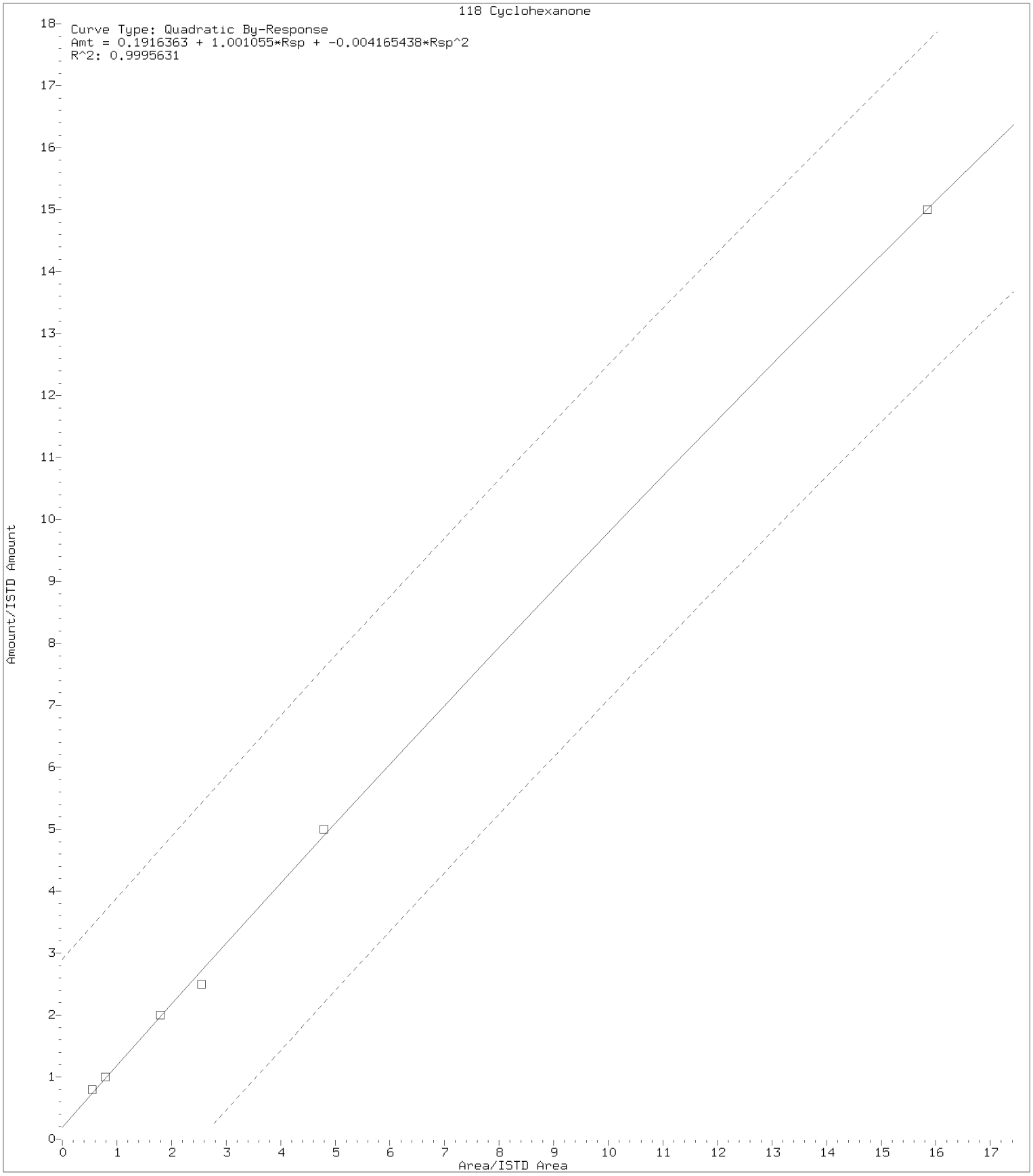
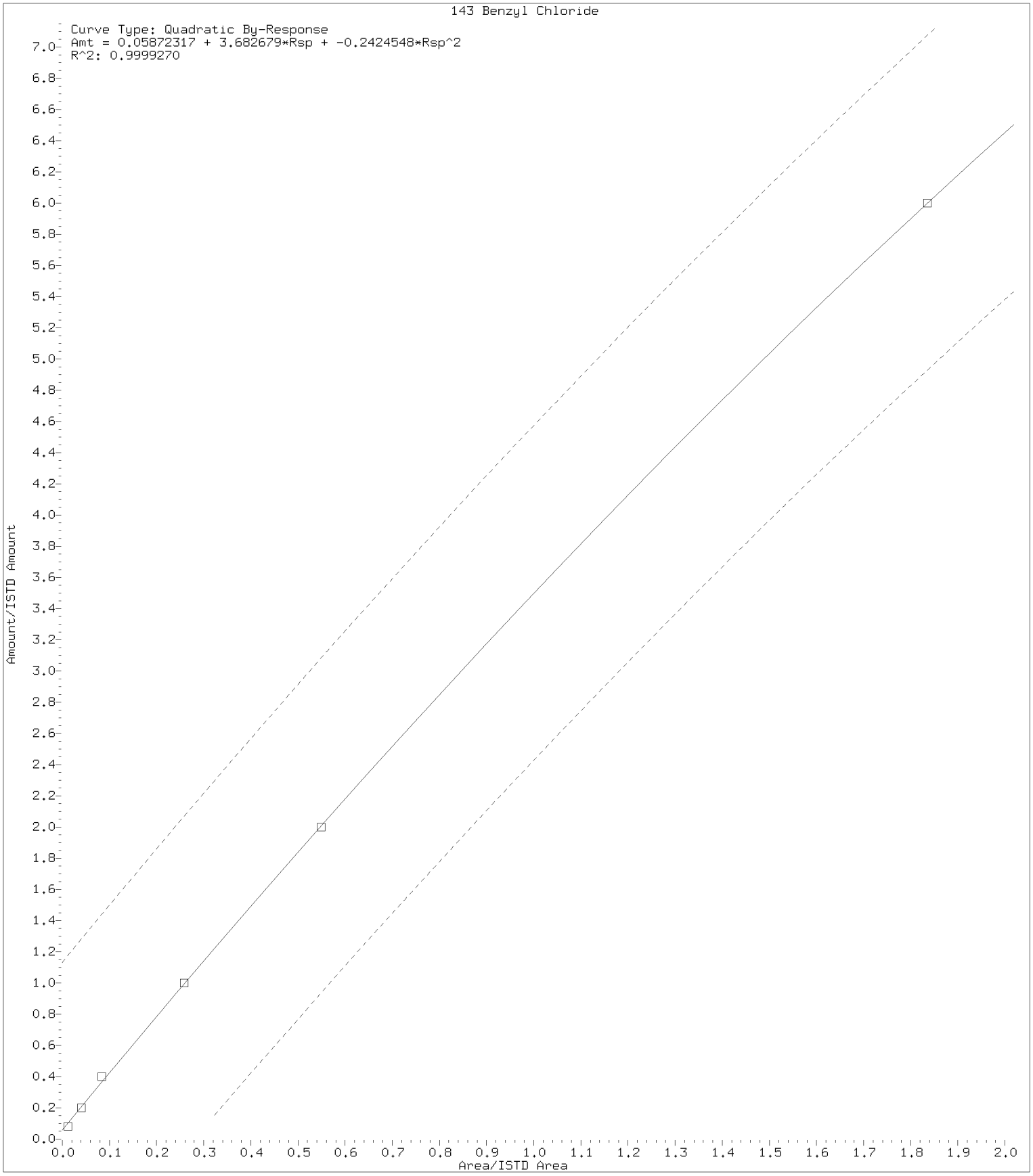
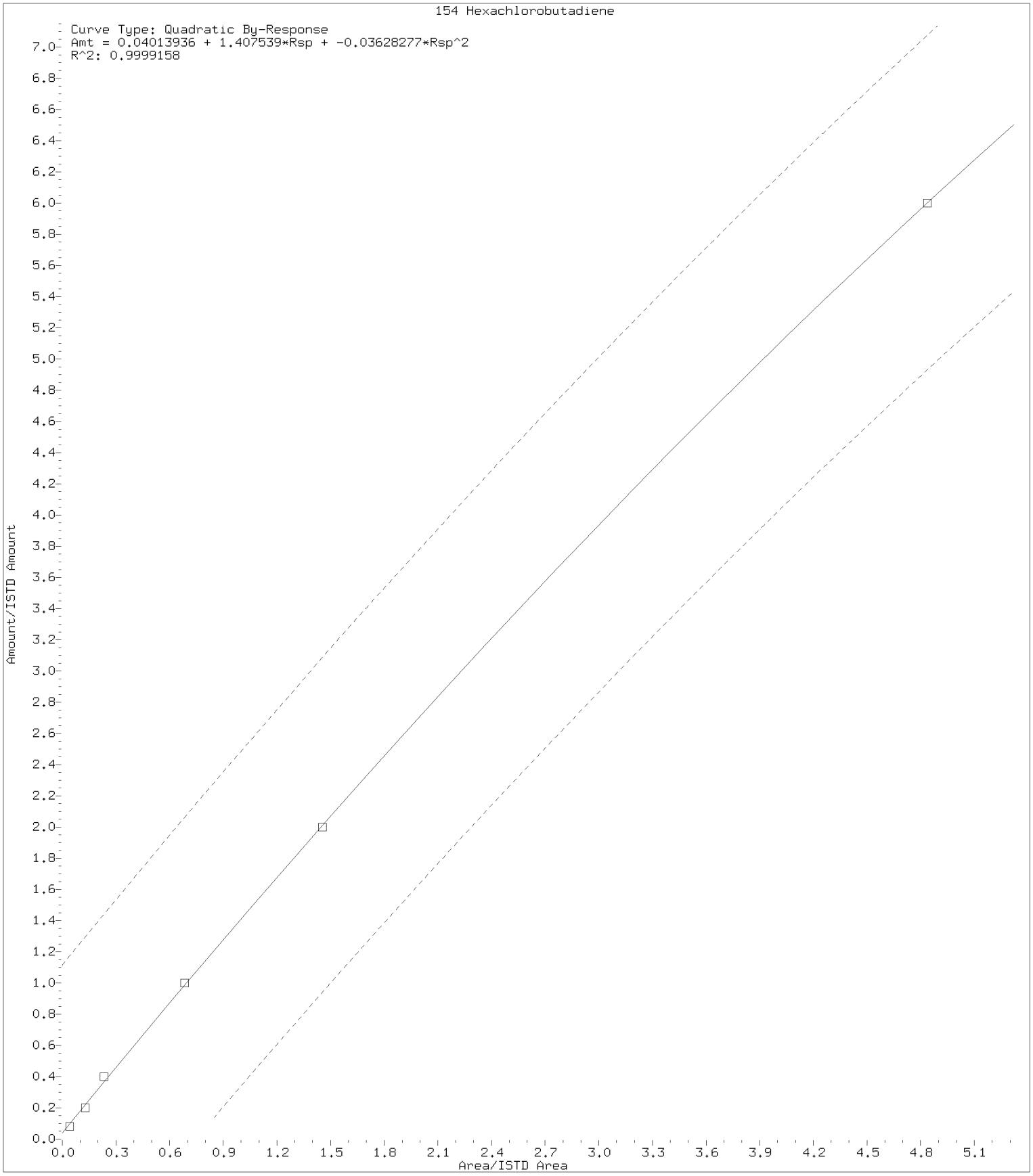
Target 3.5 esignature user ID: jkh09052



Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i01.d	VSTD300
/chem2/HP09953.i/18feb22i.b/bf22i02.d	VSTD100
/chem2/HP09953.i/18feb22i.b/bf22i03.d	VSTD050
/chem2/HP09953.i/18feb22i.b/bf22i04.d	VSTD020
/chem2/HP09953.i/18feb22i.b/bf22i05.d	VSTD010
/chem2/HP09953.i/18feb22i.b/bf22i06.d	VSTD004

Area Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	128217	123900	114201	115639	145100	130640	126283	9	Yes
Fluorobenzene	1184646	1204409	1207816	1194615	1209200	1184260	1197491	1	Yes
Chlorobenzene-d5	942767	935486	931957	925430	939957	919534	932522	1	Yes
1,4-Dichlorobenzene-d4	637692	560922	549119	528429	540311	528167	557440	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. RT
t-Butyl alcohol-d10	1.936	1.936	1.924	1.924	1.936	1.918	1.929
Fluorobenzene	3.956	3.962	3.956	3.950	3.962	3.950	3.956
Chlorobenzene-d5	7.156	7.156	7.156	7.156	7.156	7.156	7.156
1,4-Dichlorobenzene-d4	9.236	9.236	9.236	9.236	9.236	9.236	9.236

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 02/23/2018 at 11:24.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4728	19.24	20	-4	
#	Chloromethane	0.5872	0.6158	20.97	20	5	#
*	Vinyl Chloride	0.4173	0.4340	20.80	20	4	*
	Bromomethane	0.2899	0.3058	21.10	20	5	
	Chloroethane	0.2334	0.2382	20.41	20	2	
	Dichlorofluoromethane	0.5922	0.6121	20.67	20	3	
	Trichlorofluoromethane	0.5369	0.5575	20.77	20	4	
	Ethanol	0.1211	0.1297	1071.13	1000	7	
	Freon 123a	0.3518	0.3682	20.93	20	5	
	Acrolein	2.4281	2.1880	135.17	150	-10	
*	1,1-Dichloroethene	0.2459	0.2825	22.97	20	15	*
	Acetone	0.0248	0.0227	137.36	150	-8	
	Freon 113	0.2960	0.3175	21.45	20	7	
	2-Propanol	1.1163	1.3659	183.55	150	22	
	Methyl Iodide	0.5387	0.5563	20.65	20	3	
	Carbon Disulfide	0.8424	0.8761	20.80	20	4	
	Methyl Acetate	0.2090	0.2095	20.04	20	0	
	Allyl Chloride	0.4892	0.4957	20.27	20	1	
	Methylene Chloride	0.2885	0.3069	21.28	20	6	
	t-Butyl alcohol	1.2418	1.5044	242.30	200	21	
	Acrylonitrile	0.0991	0.0917	92.60	100	-7	
	Methyl Tertiary Butyl Ether	0.7975	0.7924	19.87	20	-1	
	trans-1,2-Dichloroethene	0.2884	0.3151	21.85	20	9	
	n-Hexane	0.5126	0.5289	20.63	20	3	
#	1,1-Dichloroethane	0.5731	0.5832	20.35	20	2	#
	di-Isopropyl ether	1.1602	1.2047	20.77	20	4	
	2-Chloro-1,3-butadiene	0.5207	0.5325	20.45	20	2	
	Ethyl t-butyl ether	0.9727	0.9547	19.63	20	-2	
	2-Butanone	7.3204	7.1037	145.56	150	-3	
	cis-1,2-Dichloroethene	0.3342	0.3513	21.02	20	5	
	2,2-Dichloropropane	0.4251	0.4226	19.88	20	-1	
	Propionitrile	2.0227	2.0620	152.91	150	2	
	Methacrylonitrile	0.1170	0.1114	142.70	150	-5	
	Bromochloromethane	0.1635	0.1615	19.75	20	-1	
	Tetrahydrofuran	1.5856	1.6585	104.60	100	5	
*	Chloroform	0.5364	0.5469	20.39	20	2	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1-Trichloroethane	0.5181	0.5094	19.66	20	-2	
	Cyclohexane	0.6302	0.6474	20.55	20	3	
	1,1-Dichloropropene	0.4338	0.4369	20.14	20	1	
	Carbon Tetrachloride	0.3830	0.3742	19.54	20	-2	
	Isobutyl Alcohol	0.5096	0.4746	465.70	500	-7	
	Benzene	1.2609	1.3047	20.69	20	3	
	1,2-Dichloroethane	0.4097	0.4020	19.62	20	-2	
	t-Amyl methyl ether	0.8144	0.7876	19.34	20	-3	
	n-Heptane	0.6124	0.6228	20.34	20	2	
	n-Butanol	0.3762	0.3592	954.90	1000	-5	
	Trichloroethene	0.3227	0.3246	20.12	20	1	
	Methylcyclohexane	0.6000	0.6140	20.47	20	2	
*	1,2-Dichloropropane	0.3331	0.3398	20.41	20	2	*
	Methyl Methacrylate	0.1907	0.1801	18.89	20	-6	
	1,4-Dioxane	0.1410	0.1584	561.79	500	12	
	Dibromomethane	0.1795	0.1764	19.65	20	-2	
	Bromodichloromethane	0.3833	0.3650	19.05	20	-5	
	2-Nitropropane	2.5306	2.1572	19.28	20	-4	
	2-Chloroethyl Vinyl Ether	0.1644	0.1537	18.70	20	-7	
	cis-1,3-Dichloropropene	0.4668	0.4466	19.13	20	-4	
	4-Methyl-2-pentanone	0.3036	0.2994	98.59	100	-1	
*	Toluene	0.9983	1.0240	20.52	20	3	*
	trans-1,3-Dichloropropene	0.4982	0.4608	18.50	20	-8	
	Ethyl Methacrylate	0.4494	0.4318	19.22	20	-4	
	1,1,2-Trichloroethane	0.3230	0.3247	20.11	20	1	
	Tetrachloroethene	0.4631	0.4617	19.94	20	0	
	1,3-Dichloropropane	0.5552	0.5421	19.53	20	-2	
	2-Hexanone	0.2699	0.2611	96.73	100	-3	
	Dibromochloromethane	0.3545	0.3274	18.47	20	-8	
	1,2-Dibromoethane	0.3271	0.3166	19.36	20	-3	
	1-Chlorohexane	0.5308	0.5369	20.23	20	1	
#	Chlorobenzene	1.1089	1.1099	20.02	20	0	#
	1,1,1,2-Tetrachloroethane	0.3690	0.3553	19.26	20	-4	
*	Ethylbenzene	1.9040	1.9461	20.44	20	2	*
	m+p-Xylene	0.7574	0.7692	40.62	40	2	
	o-Xylene	0.7545	0.7566	20.06	20	0	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Styrene	1.1879	1.1988	20.18	20	1	
#	Bromoform	0.2222	0.1877	17.86	20	-11	#
	Isopropylbenzene	1.9082	1.9760	20.71	20	4	
	Cyclohexanone	0.9002	0.8915	490.81	500	-2	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7363	19.49	20	-3	#
	Bromobenzene	0.8408	0.8515	20.25	20	1	
	trans-1,4-Dichloro-2-butene	0.2069	0.2084	100.71	100	1	
	1,2,3-Trichloropropane	0.2073	0.2109	20.35	20	2	
	n-Propylbenzene	3.8098	4.1293	21.68	20	8	
	2-Chlorotoluene	0.7939	0.8210	20.68	20	3	
	1,3,5-Trimethylbenzene	2.8159	2.9502	20.95	20	5	
	4-Chlorotoluene	0.8226	0.8362	20.33	20	2	
	tert-Butylbenzene	0.6559	0.6739	20.55	20	3	
	Pentachloroethane	0.4798	0.4633	19.31	20	-3	
	1,2,4-Trimethylbenzene	2.8653	3.0214	21.09	20	5	
	sec-Butylbenzene	3.5929	3.8830	21.61	20	8	
	1,3-Dichlorobenzene	1.6523	1.6406	19.86	20	-1	
	p-Isopropyltoluene	3.2092	3.4609	21.57	20	8	
	1,4-Dichlorobenzene	1.7189	1.7343	20.18	20	1	
	1,2,3-Trimethylbenzene	2.9416	3.1660	21.53	20	8	
	Benzyl Chloride	0.2338	0.2057	18.01	20	-10	
	1,3-Diethylbenzene	1.8848	1.9794	21.00	20	5	
	1,4-Diethylbenzene	2.0114	2.1215	21.09	20	5	
	n-Butylbenzene	1.6592	1.7527	21.13	20	6	
	1,2-Dichlorobenzene	1.6409	1.6525	20.14	20	1	
	1,2-Diethylbenzene	1.6079	1.6918	21.04	20	5	
	1,2-Dibromo-3-chloropropane	0.1332	0.1254	18.83	20	-6	
	1,3,5-Trichlorobenzene	1.3773	1.3816	20.06	20	0	
	1,2,4-Trichlorobenzene	1.2763	1.2697	19.90	20	-1	
	Hexachlorobutadiene	0.6574	0.6829	21.09	20	5	
	Naphthalene	2.6627	2.6918	20.22	20	1	
	1,2,3-Trichlorobenzene	1.1896	1.1979	20.14	20	1	
	2-Methylnaphthalene	1.6549	1.5945	19.27	20	-4	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date(s): 05/24/18 05/24/18

Heated Purge: (Y/N) N Calibration Times: 11:51 13:46

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

LAB FILE ID: RRF = RRF 4 = qy24i10.d RRF 10= qy24i11.d
RRF 20= qy24i12.d RRF 50= qy24i13.d RRF100= qy24i14.d RRF300= qy24i15.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane			0.3642	0.3414	0.3491	0.3408	0.3388	0.3228	0.3429	4	AVG	
Chloromethane	#		0.4301	0.4317	0.3950	0.3899	0.3900	0.3714	0.4013	6	AVG	#
Vinyl Chloride	*		0.4143	0.3980	0.3746	0.3627	0.3615	0.3388	0.3750	7	AVG	*
Bromomethane			7.0358	7.0101	6.6548	5.8940	5.5146	5.1495	6.2098	13	AVG	
Chloroethane			4.7411	4.7230	4.4418	4.0786	3.9050	3.6748	4.2607	10	AVG	
Dichlorofluoromethane			0.4699	0.4516	0.4077	0.3846	0.3933	0.3585	0.4109	10	AVG	
Trichlorofluoromethane			0.4196	0.4092	0.4069	0.3831	0.3889	0.3687	0.3961	5	AVG	
n-Pentane			0.3834	0.2873	0.3068	0.2986	0.2975	0.2662	0.3066	13	AVG	
Ethanol			0.1616	0.1498	0.1473	0.1448	0.1361	0.1305	0.1450	8	AVG	
Freon 123a			0.3584	0.3423	0.3499	0.3156	0.3241	0.3066	0.3328	6	AVG	
Acrolein			3.0112	3.2559	2.9809	2.7369	2.7132	2.6319	2.8883	8	AVG	
1,1-Dichloroethene	*		0.2713	0.2547	0.2601	0.2423	0.2499	0.2393	0.2529	5	AVG	*
1,1-Dichloroethene(2)	*		0.1295	0.1271	0.1338	0.1247	0.1286	0.1194	0.1272	4	AVG	*
Acetone			0.0294	0.0322	0.0294	0.0282	0.0289	0.0279	0.0293	5	AVG	
Freon 113			0.2356	0.2087	0.2221	0.2127	0.2208	0.2104	0.2184	5	AVG	
2-Propanol			0.8399	0.8888	0.9340	0.8852	0.8569	0.8283	0.8722	4	AVG	
Methyl Iodide			0.5462	0.5239	0.5361	0.5130	0.5259	0.5094	0.5258	3	AVG	
Carbon Disulfide			0.9561	0.9227	0.9441	0.9070	0.9469	0.9075	0.9307	2	AVG	
Methyl Acetate			0.2609	0.2533	0.2475	0.2428	0.2457	0.2316	0.2470	4	AVG	
Allyl Chloride			0.4976	0.4688	0.4834	0.4700	0.4849	0.4557	0.4767	3	AVG	
Methylene Chloride			0.3294	0.3163	0.3108	0.2999	0.3103	0.2981	0.3108	4	AVG	
t-Butyl alcohol			1.3048	1.3072	1.3298	1.2603	1.2697	1.2273	1.2832	3	AVG	
Acrylonitrile			0.1281	0.1369	0.1272	0.1230	0.1264	0.1225	0.1273	4	AVG	
Methyl Tertiary Butyl Ether			0.9085	0.8668	0.8644	0.8421	0.8605	0.8092	0.8586	4	AVG	
trans-1,2-Dichloroethene			0.2998	0.2962	0.2979	0.2882	0.2998	0.2865	0.2948	2	AVG	
n-Hexane			0.2505	0.2270	0.2431	0.2360	0.2506	0.2414	0.2414	4	AVG	
1,1-Dichloroethane	#		0.5409	0.5426	0.5364	0.5213	0.5352	0.5157	0.5320	2	AVG	#
di-Isopropyl ether			1.0437	1.0133	1.0152	0.9813	1.0020	0.9449	1.0000	3	AVG	
2-Chloro-1,3-butadiene			0.4487	0.4541	0.4523	0.4337	0.4489	0.4259	0.4439	3	AVG	
Ethyl t-butyl ether			0.9599	0.9595	0.9478	0.9157	0.9396	0.8683	0.9318	4	AVG	
2-Butanone			6.4579	7.0906	6.3581	5.8394	5.7682	5.5749	6.1815	9	AVG	
2-Butanone(2)			1.6338	1.7684	1.6384	1.5780	1.5665	1.5487	1.6223	5	AVG	
cis-1,2-Dichloroethene			0.3347	0.3306	0.3271	0.3203	0.3317	0.3165	0.3268	2	AVG	
2,2-Dichloropropane			0.4224	0.4265	0.4222	0.4093	0.4257	0.4057	0.4186	2	AVG	
Propionitrile			0.0453	0.0458	0.0465	0.0448	0.0466	0.0447	0.0456	2	AVG	
Methacrylonitrile			0.1363	0.1374	0.1364	0.1329	0.1388	0.1325	0.1357	2	AVG	
Bromochloromethane			0.1661	0.1686	0.1723	0.1700	0.1748	0.1683	0.1700	2	AVG	
Tetrahydrofuran			1.6325	1.7338	1.6418	1.5512	1.5323	1.5206	1.6020	5	AVG	
Chloroform	*		0.4967	0.5005	0.4997	0.4937	0.5036	0.4902	0.4974	1	AVG	*
1,1,1-Trichloroethane			0.4826	0.4489	0.4607	0.4285	0.4412	0.4395	0.4502	4	AVG	
Cyclohexane			0.3864	0.3628	0.3785	0.3629	0.3758	0.3629	0.3715	3	AVG	
Cyclohexane(2)			0.3273	0.3042	0.3102	0.2973	0.3112	0.3023	0.3087	3	AVG	
Cyclohexane(3)			0.1168	0.1101	0.1106	0.1099	0.1139	0.1098	0.1118	3	AVG	
1,1-Dichloropropene			0.4015	0.3915	0.3999	0.3794	0.3896	0.3820	0.3907	2	AVG	
Carbon Tetrachloride			0.3090	0.3117	0.3238	0.3208	0.3431	0.3490	0.3262	5	AVG	
Isobutyl Alcohol			0.4126	0.4340	0.4416	0.4342	0.4074	0.4062	0.4227	4	AVG	
Benzene			1.2084	1.1813	1.1855	1.1500	1.1611	1.1359	1.1704	2	AVG	
1,2-Dichloroethane			0.4007	0.4060	0.3964	0.3871	0.3835	0.3804	0.3923	3	AVG	
1,2-Dichloroethane(2)			0.0421	0.0403	0.0406	0.0398	0.0394	0.0395	0.0403	2	AVG	
t-Amyl methyl ether			0.8974	0.9028	0.8994	0.8869	0.8905	0.8372	0.8857	3	AVG	
n-Heptane			0.2292	0.2055	0.2122	0.2092	0.2141	0.2031	0.2122	4	AVG	
n-Butanol			0.3190	0.3427	0.3734	0.3670	0.3497	0.3503	0.3504	5	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date(s): 05/24/18 05/24/18

Heated Purge: (Y/N) N Calibration Times: 11:51 13:46

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

LAB FILE ID: RRF = RRF 4 = qy24i10.d RRF 10= qy24i11.d
RRF 20= qy24i12.d RRF 50= qy24i13.d RRF100= qy24i14.d RRF300= qy24i15.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Trichloroethene		0.3033	0.2951	0.3024	0.2905	0.2896	0.2826	0.2939		3	AVG	
Methylcyclohexane		0.2930	0.2634	0.2842	0.2851	0.2837	0.2708	0.2800		4	AVG	
1,2-Dichloropropane	*	0.3221	0.3157	0.3248	0.3140	0.3087	0.3005	0.3143		3	AVG	*
Methyl Methacrylate		0.2181	0.2209	0.2316	0.2306	0.2315	0.2293	0.2270		3	AVG	
1,4-Dioxane		0.1360	0.1427	0.1481	0.1526	0.1393	0.1372	0.1426		5	AVG	
Dibromomethane		0.1904	0.1874	0.1917	0.1911	0.1912	0.1896	0.1902		1	AVG	
Bromodichloromethane		0.3240	0.3308	0.3509	0.3647	0.3710	0.3731	0.3524		6	AVG	
2-Nitropropane		1.8685	2.0867	2.1844	2.3519	2.4762	2.8229	2.2984		14	AVG	
2-Chloroethyl Vinyl Ether		0.2067	0.2121	0.2217	0.2228	0.2255	0.2143	0.2172		3	AVG	
cis-1,3-Dichloropropene		0.4613	0.4784	0.4898	0.4959	0.5203	0.4897	0.4892		4	AVG	
4-Methyl-2-pentanone		0.2905	0.3206	0.3037	0.2950	0.3073	0.2810	0.2997		5	AVG	
Toluene	*	0.9929	1.0008	1.0083	0.9719	0.9450	0.9074	0.9710		4	AVG	*
trans-1,3-Dichloropropene		0.5465	0.5814	0.6023	0.6058	0.6121	0.6060	0.5923		4	AVG	
Ethyl Methacrylate		0.5560	0.5792	0.5955	0.5956	0.5870	0.5731	0.5811		3	AVG	
1,1,2-Trichloroethane		0.3804	0.3794	0.3842	0.3810	0.3676	0.3563	0.3748		3	AVG	
Tetrachloroethene		0.3930	0.3900	0.3937	0.3791	0.3700	0.3618	0.3812		3	AVG	
1,3-Dichloropropane		0.6685	0.6660	0.6612	0.6513	0.6338	0.6016	0.6471		4	AVG	
2-Hexanone		0.2589	0.3037	0.2955	0.2877	0.2851	0.2689	0.2833		6	AVG	
Dibromochloromethane		0.3033	0.3311	0.3625	0.3913	0.4098	0.4260	0.3707		13	AVG	
1,2-Dibromoethane		0.3836	0.3996	0.3980	0.3956	0.3912	0.3862	0.3924		2	AVG	
1-Chlorohexane		0.4162	0.3945	0.3977	0.3735	0.3699	0.3555	0.3845		6	AVG	
Chlorobenzene	#	1.0869	1.0676	1.0863	1.0524	1.0397	0.9900	1.0538		3	AVG	#
1,1,1,2-Tetrachloroethane		0.3316	0.3470	0.3587	0.3686	0.3749	0.3708	0.3586		5	AVG	
Ethylbenzene	*	1.6942	1.6937	1.7064	1.6593	1.6306	1.5311	1.6525		4	AVG	*
m+p-Xylene		0.6749	0.6678	0.6867	0.6560	0.6471	0.6022	0.6558		5	AVG	
o-Xylene		0.6660	0.6700	0.6861	0.6654	0.6487	0.6098	0.6576		4	AVG	
Styrene		1.0973	1.1346	1.1690	1.1482	1.1260	1.0612	1.1227		3	AVG	
Bromoform	#	0.1771	0.1964	0.2206	0.2535	0.2724	0.2973	0.2362		20	2NDDEG	#
Isopropylbenzene		1.4472	1.4441	1.4934	1.4202	1.3951	1.3126	1.4187		4	AVG	
Cyclohexanone		0.4648	0.5100	0.5373	0.5403	0.5157	0.4943	0.5104		6	AVG	
1,1,2,2-Tetrachloroethane	#	1.1395	1.1051	1.1559	1.0903	1.1132	1.0625	1.1111		3	AVG	#
Bromobenzene		1.0527	1.0556	1.0438	1.0070	1.0084	0.9805	1.0247		3	AVG	
trans-1,4-Dichloro-2-butene		0.2979	0.3169	0.3249	0.3133	0.3145	0.2905	0.3097		4	AVG	
1,2,3-Trichloropropane		0.3382	0.3451	0.3360	0.3278	0.3236	0.3131	0.3306		3	AVG	
n-Propylbenzene		3.7363	3.7399	3.6743	3.5045	3.4590	3.2077	3.5536		6	AVG	
2-Chlorotoluene		0.8300	0.8484	0.8237	0.7891	0.7913	0.7474	0.8050		5	AVG	
1,3,5-Trimethylbenzene		2.7683	2.7331	2.7131	2.6281	2.5909	2.4142	2.6413		5	AVG	
4-Chlorotoluene		0.8819	0.8952	0.9088	0.8484	0.8438	0.7862	0.8607		5	AVG	
tert-Butylbenzene		0.5407	0.5606	0.5673	0.5214	0.5144	0.4984	0.5338		5	AVG	
Pentachloroethane		0.4525	0.4908	0.5285	0.5681	0.5863	0.5913	0.5362		10	AVG	
1,2,4-Trimethylbenzene		2.8469	2.8740	2.8925	2.7762	2.7439	2.6028	2.7894		4	AVG	
sec-Butylbenzene		3.0096	3.0052	3.0495	2.8543	2.8015	2.5947	2.8858		6	AVG	
1,3-Dichlorobenzene		1.6672	1.6475	1.6485	1.6151	1.5823	1.5139	1.6124		4	AVG	
p-Isopropyltoluene		2.6542	2.6848	2.6983	2.5787	2.5674	2.3803	2.5940		5	AVG	
1,4-Dichlorobenzene		1.8108	1.7688	1.7621	1.6774	1.6644	1.5864	1.7117		5	AVG	
1,2,3-Trimethylbenzene		3.0362	2.9666	3.0303	2.9906	2.9190	2.7364	2.9465		4	AVG	
Benzyl Chloride		0.3573	0.4139	0.4626	0.4772	0.4925	0.4909	0.4491		12	AVG	
1,3-Diethylbenzene		1.5371	1.5460	1.6086	1.5786	1.5384	1.4411	1.5416		4	AVG	
1,4-Diethylbenzene		1.6234	1.6008	1.6366	1.5943	1.5511	1.4494	1.5759		4	AVG	
n-Butylbenzene		1.2088	1.2856	1.2234	1.1911	1.1580	1.0973	1.1940		5	AVG	
1,2-Dichlorobenzene		1.6691	1.6660	1.6242	1.5875	1.5663	1.5043	1.6029		4	AVG	
1,2-Diethylbenzene		1.4381	1.3979	1.4058	1.3519	1.3138	1.2277	1.3559		6	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date(s): 05/24/18 05/24/18

Heated Purge: (Y/N) N Calibration Times: 11:51 13:46

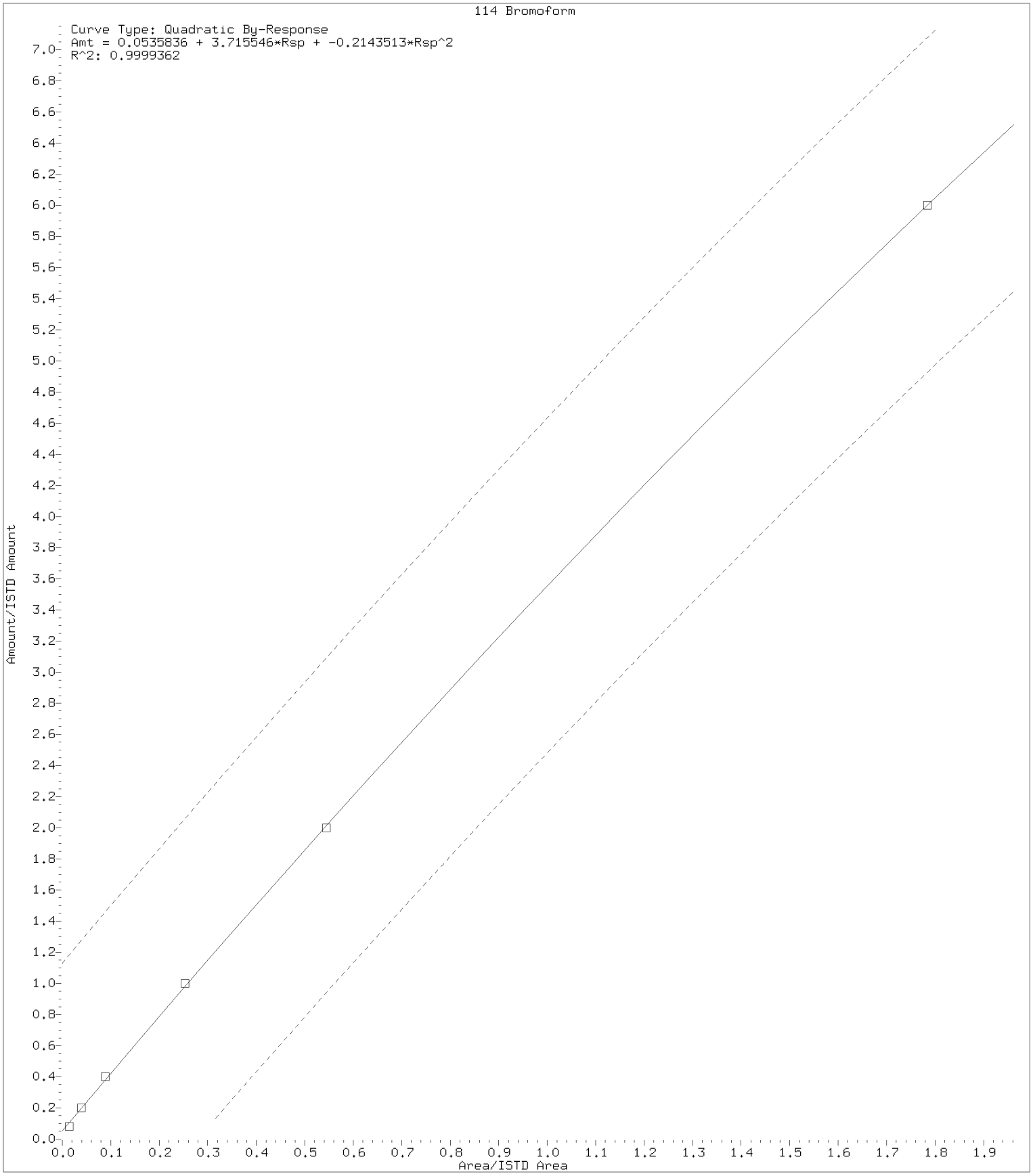
Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

LAB FILE ID: RRF = RRF 4 = qy24i10.d RRF 10= qy24i11.d
RRF 20= qy24i12.d RRF 50= qy24i13.d RRF100= qy24i14.d RRF300= qy24i15.d

COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,2-Dibromo-3-chloropropane		0.1744	0.1822	0.1923	0.1945	0.2019	0.2034	0.1915	6	AVG
1,3,5-Trichlorobenzene		1.0377	1.0730	1.0772	1.0233	1.0151	0.9852	1.0352	3	AVG
1,2,4-Trichlorobenzene		0.9687	1.0542	1.0617	1.0230	1.0140	0.9846	1.0177	4	AVG
Hexachlorobutadiene		0.4497	0.4525	0.4663	0.4357	0.4376	0.4144	0.4427	4	AVG
Naphthalene		2.9001	3.0321	3.1203	3.0145	3.0036	2.8365	2.9845	3	AVG
1,2,3-Trichlorobenzene		0.9499	0.9698	1.0042	0.9576	0.9437	0.9138	0.9565	3	AVG
2-Methylnaphthalene		1.4156	1.5542	1.7485	1.7170	1.6972	1.5788	1.6185	8	AVG
Dibromofluoromethane		0.2730	0.2806	0.2662	0.2653	0.2743	0.2731	0.2721	2	AVG
Dibromofluoromethane(2)		0.2647	0.2856	0.2720	0.2713	0.2796	0.2771	0.2751	3	AVG
1,2-Dichloroethane-d4		0.0765	0.0797	0.0723	0.0729	0.0730	0.0728	0.0745	4	AVG
1,2-Dichloroethane-d4(2)		0.3507	0.3505	0.3225	0.3165	0.3189	0.3105	0.3283	5	AVG
1,2-Dichloroethane-d4(3)		0.0430	0.0485	0.0472	0.0463	0.0466	0.0465	0.0463	4	AVG
Toluene-d8		1.4845	1.5380	1.4739	1.4294	1.3837	1.3036	1.4355	6	AVG
Toluene-d8(2)		0.9510	0.9993	0.9603	0.9335	0.9025	0.8530	0.9333	5	AVG
4-Bromofluorobenzene		0.4647	0.4906	0.4730	0.4641	0.4539	0.4499	0.4660	3	AVG
4-Bromofluorobenzene(2)		0.4211	0.4339	0.4225	0.4118	0.4045	0.4073	0.4169	3	AVG

Average %RSD 5

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%



Digitally signed by Patrick T. Herres on 05/24/2018 at 17:55.
Target 3.5 esignature user ID: pth10165

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP07536.i/18may24i.b/qy24i10.d	VSTD004
/chem/HP07536.i/18may24i.b/qy24i11.d	VSTD010
/chem/HP07536.i/18may24i.b/qy24i12.d	VSTD020
/chem/HP07536.i/18may24i.b/qy24i13.d	VSTD050
/chem/HP07536.i/18may24i.b/qy24i14.d	VSTD100
/chem/HP07536.i/18may24i.b/qy24i15.d	VSTD300

Area Summary

File ID:

Internal Standard Name	qy24i10.d	qy24i11.d	qy24i12.d	qy24i13.d	qy24i14.d	qy24i15.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	146288	140176	139062	141858	146551	147485	143570	3	Yes
Fluorobenzene	1167642	1175004	1167197	1158639	1142959	1173639	1164180	1	Yes
Chlorobenzene-d5	845846	845275	830601	836232	875273	877084	851718	2	Yes
1,4-Dichlorobenzene-d4	359564	363811	363351	373559	390181	399162	374938	4	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	qy24i10.d	qy24i11.d	qy24i12.d	qy24i13.d	qy24i14.d	qy24i15.d	Avg. RT
t-Butyl alcohol-d10	4.201	4.204	4.209	4.206	4.208	4.228	4.209
Fluorobenzene	7.686	7.689	7.687	7.688	7.686	7.690	7.688
Chlorobenzene-d5	11.158	11.157	11.156	11.157	11.158	11.159	11.157
1,4-Dichlorobenzene-d4	13.032	13.031	13.033	13.030	13.032	13.033	13.032

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 05/24/2018 at 17:54.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 ICV Date: 05/24/18 Time: 15:18

Lab File ID: qy24v10.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3429	0.3084	17.99	20	-10	
#	Chloromethane	0.4013	0.3859	19.23	20	-4	#
*	Vinyl Chloride	0.3750	0.3631	19.36	20	-3	*
	Bromomethane	6.2098	6.7954	21.89	20	9	
	Chloroethane	4.2607	4.5178	21.21	20	6	
	Dichlorofluoromethane	0.4109	0.4302	20.94	20	5	
	Trichlorofluoromethane	0.3961	0.3889	19.64	20	-2	
	n-Pentane	0.3066	0.2966	19.34	20	-3	
	Ethanol	0.1450	0.1460	1007.03	1000	1	
	Freon 123a	0.3328	0.3258	19.58	20	-2	
	Acrolein	2.8883	2.6005	135.05	150	-10	
*	1,1-Dichloroethene	0.2529	0.2691	21.28	20	6	*
	Acetone	0.0293	0.0284	145.12	150	-3	
	Freon 113	0.2184	0.2050	18.77	20	-6	
	2-Propanol	0.8722	0.8951	153.94	150	3	
	Methyl Iodide	0.5258	0.5161	19.63	20	-2	
	Carbon Disulfide	0.9307	0.9067	19.48	20	-3	
	Methyl Acetate	0.2470	0.2377	19.25	20	-4	
	Allyl Chloride	0.4767	0.4544	19.06	20	-5	
	Methylene Chloride	0.3108	0.3255	20.94	20	5	
	t-Butyl alcohol	1.2832	1.3091	204.04	200	2	
	Acrylonitrile	0.1273	0.1199	94.17	100	-6	
	Methyl Tertiary Butyl Ether	0.8586	0.8442	19.67	20	-2	
	trans-1,2-Dichloroethene	0.2948	0.3067	20.81	20	4	
	n-Hexane	0.2414	0.2297	19.03	20	-5	
#	1,1-Dichloroethane	0.5320	0.5404	20.31	20	2	#
	di-Isopropyl ether	1.0000	1.0036	20.07	20	0	
	2-Chloro-1,3-butadiene	0.4439	0.4327	19.50	20	-3	
	Ethyl t-butyl ether	0.9318	0.9241	19.84	20	-1	
	2-Butanone	6.1815	6.0936	147.87	150	-1	
	cis-1,2-Dichloroethene	0.3268	0.3448	21.10	20	6	
	2,2-Dichloropropane	0.4186	0.4238	20.25	20	1	
	Propionitrile	0.0456	0.0451	148.38	150	-1	
	Methacrylonitrile	0.1357	0.1354	149.67	150	0	
	Bromochloromethane	0.1700	0.1620	19.06	20	-5	
	Tetrahydrofuran	1.6020	1.6693	104.20	100	4	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 ICV Date: 05/24/18 Time: 15:18

Lab File ID: qy24v10.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.4974	0.5031	20.23	20	1	*
	1,1,1-Trichloroethane	0.4502	0.4558	20.25	20	1	
	Cyclohexane	0.3715	0.3538	19.04	20	-5	
	1,1-Dichloropropene	0.3907	0.3819	19.55	20	-2	
	Carbon Tetrachloride	0.3262	0.3211	19.68	20	-2	
	Isobutyl Alcohol	0.4227	0.4324	511.46	500	2	
	Benzene	1.1704	1.1901	20.34	20	2	
	1,2-Dichloroethane	0.3923	0.3985	20.31	20	2	
	t-Amyl methyl ether	0.8857	0.8924	20.15	20	1	
	n-Heptane	0.2122	0.2008	18.93	20	-5	
	n-Butanol	0.3504	0.3522	1005.32	1000	1	
	Trichloroethene	0.2939	0.2939	20.00	20	0	
	Methylcyclohexane	0.2800	0.2610	18.64	20	-7	
*	1,2-Dichloropropane	0.3143	0.3268	20.79	20	4	*
	Methyl Methacrylate	0.2270	0.2208	19.45	20	-3	
	1,4-Dioxane	0.1426	0.1412	494.73	500	-1	
	Dibromomethane	0.1902	0.1968	20.69	20	3	
	Bromodichloromethane	0.3524	0.3501	19.87	20	-1	
	2-Nitropropane	2.2984	2.2245	19.36	20	-3	
	2-Chloroethyl Vinyl Ether	0.2172	0.2090	19.25	20	-4	
	cis-1,3-Dichloropropene	0.4892	0.4787	19.57	20	-2	
	4-Methyl-2-pentanone	0.2997	0.2931	97.80	100	-2	
*	Toluene	0.9710	0.9941	20.48	20	2	*
	trans-1,3-Dichloropropene	0.5923	0.5885	19.87	20	-1	
	Ethyl Methacrylate	0.5811	0.5755	19.81	20	-1	
	1,1,2-Trichloroethane	0.3748	0.3841	20.49	20	2	
	Tetrachloroethene	0.3812	0.3828	20.08	20	0	
	1,3-Dichloropropane	0.6471	0.6583	20.35	20	2	
	2-Hexanone	0.2833	0.2840	100.24	100	0	
	Dibromochloromethane	0.3707	0.3771	20.35	20	2	
	1,2-Dibromoethane	0.3924	0.3999	20.38	20	2	
	1-Chlorohexane	0.3845	0.3832	19.93	20	0	
#	Chlorobenzene	1.0538	1.0836	20.57	20	3	#
	1,1,1,2-Tetrachloroethane	0.3586	0.3660	20.41	20	2	
*	Ethylbenzene	1.6525	1.6809	20.34	20	2	*
	m+p-Xylene	0.6558	0.6668	40.68	40	2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 ICV Date: 05/24/18 Time: 15:18

Lab File ID: qy24v10.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	o-Xylene	0.6576	0.6609	20.10	20	0	
	Styrene	1.1227	1.1596	20.66	20	3	
#	Bromoform	0.2362	0.2216	19.06	20	-5	#
	Isopropylbenzene	1.4187	1.4532	20.49	20	2	
	Cyclohexanone	0.5104	0.4328	423.99	500	-15	
#	1,1,2,2-Tetrachloroethane	1.1111	1.1256	20.26	20	1	#
	Bromobenzene	1.0247	1.0472	20.44	20	2	
	trans-1,4-Dichloro-2-butene	0.3097	0.3292	106.31	100	6	
	1,2,3-Trichloropropane	0.3306	0.3584	21.68	20	8	
	n-Propylbenzene	3.5536	3.6888	20.76	20	4	
	2-Chlorotoluene	0.8050	0.8300	20.62	20	3	
	1,3,5-Trimethylbenzene	2.6413	2.7123	20.54	20	3	
	4-Chlorotoluene	0.8607	0.8858	20.58	20	3	
	tert-Butylbenzene	0.5338	0.5452	20.43	20	2	
	Pentachloroethane	0.5362	0.5237	19.53	20	-2	
	1,2,4-Trimethylbenzene	2.7894	2.8356	20.33	20	2	
	sec-Butylbenzene	2.8858	3.0386	21.06	20	5	
	1,3-Dichlorobenzene	1.6124	1.6251	20.16	20	1	
	p-Isopropyltoluene	2.5940	2.7220	20.99	20	5	
	1,4-Dichlorobenzene	1.7117	1.7533	20.49	20	2	
	1,2,3-Trimethylbenzene	2.9465	3.0415	20.64	20	3	
	Benzyl Chloride	0.4491	0.4349	19.37	20	-3	
	1,3-Diethylbenzene	1.5416	1.5684	20.35	20	2	
	1,4-Diethylbenzene	1.5759	1.6153	20.50	20	2	
	n-Butylbenzene	1.1940	1.2406	20.78	20	4	
	1,2-Dichlorobenzene	1.6029	1.6232	20.25	20	1	
	1,2-Diethylbenzene	1.3559	1.3736	20.26	20	1	
	1,2-Dibromo-3-chloropropane	0.1915	0.1858	19.41	20	-3	
	1,3,5-Trichlorobenzene	1.0352	1.0709	20.69	20	3	
	1,2,4-Trichlorobenzene	1.0177	1.0820	21.26	20	6	
	Hexachlorobutadiene	0.4427	0.5331	24.09	20	20	
	Naphthalene	2.9845	3.0820	20.65	20	3	
	1,2,3-Trichlorobenzene	0.9565	1.0330	21.60	20	8	
	2-Methylnaphthalene	1.6185	1.6822	20.79	20	4	

Average %Drift 3

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07163 Calibration Date(s): 05/14/18 05/15/18

Heated Purge: (Y/N) Y Calibration Times: 23:05 01:41

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-VRX ID: .18

LAB FILE ID: RRF 1 = py14i13.d RRF 4 = py14i11.d RRF 10= py14i09.d
RRF 20= py14i07.d RRF 50= py14i05.d RRF100= py14i03.d RRF300= py14i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Vinyl Chloride	*0.2184	0.2879	0.2848	0.2544	0.2624	0.2810	0.2708	0.2657	9	AVG	*
1,1-Dichloroethene	*0.1332	0.1786	0.1714	0.1714	0.1808	0.1709	0.1787	0.1693	10	AVG	*
1,1-Dichloroethene(2)	*0.0196	0.0740	0.0833	0.0808	0.0866	0.0828	0.0859	0.0733	33	AVG	*<-
Methylene Chloride	0.1528	0.1920	0.1924	0.1951	0.2062	0.1949	0.2019	0.1908	9	AVG	
t-Butyl alcohol	0.8179	0.8214	0.8012	0.8220	0.8451	0.8808	0.8261	0.8306	3	AVG	
trans-1,2-Dichloroethene	0.1788	0.2323	0.2091	0.2140	0.2245	0.2164	0.2247	0.2143	8	AVG	
Methyl Tertiary Butyl Ether	0.5565	0.5592	0.5724	0.5899	0.5962	0.5840	0.5955	0.5791	3	AVG	
n-Hexane		0.2819	0.2854	0.2593	0.3138	0.2778	0.3120	0.2884	7	AVG	
1,1-Dichloroethane	#0.3148	0.3464	0.3372	0.3378	0.3516	0.3409	0.3505	0.3399	4	AVG	#
di-Isopropyl ether	0.4873	0.5167	0.5220	0.5355	0.5623	0.5484	0.5748	0.5353	6	AVG	
2-Chloro-1,3-butadiene	0.2747	0.3437	0.3219	0.3301	0.3523	0.3427	0.3613	0.3324	9	AVG	
Ethyl t-butyl ether	0.5148	0.5520	0.5623	0.5798	0.6033	0.5924	0.6098	0.5735	6	AVG	
cis-1,2-Dichloroethene	0.2011	0.2225	0.2193	0.2227	0.2320	0.2237	0.2317	0.2219	5	AVG	
2,2-Dichloropropane	0.2888	0.3216	0.3044	0.3047	0.3264	0.3162	0.3281	0.3129	5	AVG	
Chloroform	*0.3032	0.3444	0.3385	0.3444	0.3668	0.3517	0.3668	0.3451	6	AVG	*
1,1,1-Trichloroethane	0.3077	0.3653	0.3404	0.3391	0.3673	0.3498	0.3653	0.3478	6	AVG	
1,1-Dichloropropene	0.2586	0.3096	0.2855	0.2873	0.3110	0.2976	0.3165	0.2952	7	AVG	
Carbon Tetrachloride	0.2758	0.3147	0.2997	0.2993	0.3218	0.3109	0.3243	0.3067	5	AVG	
Benzene	0.8143	0.8584	0.8160	0.8287	0.8713	0.8464	0.8727	0.8440	3	AVG	
1,2-Dichloroethane	0.2961	0.2802	0.2726	0.2674	0.2753	0.2644	0.2696	0.2751	4	AVG	
1,2-Dichloroethane(2)	0.0064	0.0236	0.0234	0.0236	0.0244	0.0229	0.0235	0.0211	31	AVG	
t-Amyl methyl ether	1.1609	0.6958	0.6115	0.6029	0.5927	0.5766	0.5864	0.6895	31	AVG	
Trichloroethene	0.2571	0.2537	0.2421	0.2339	0.2515	0.2453	0.2602	0.2491	4	AVG	
1,2-Dichloropropane	*0.1598	0.1883	0.1861	0.1868	0.1961	0.1955	0.2072	0.1885	8	AVG	*
Dibromomethane	0.1207	0.1175	0.1153	0.1214	0.1210	0.1191	0.1229	0.1197	2	AVG	
Bromodichloromethane	0.2272	0.2419	0.2557	0.2660	0.2768	0.2710	0.2860	0.2607	8	AVG	
cis-1,3-Dichloropropene	0.2476	0.2928	0.2956	0.3120	0.3274	0.3226	0.3336	0.3045	10	AVG	
Toluene	*0.6380	0.6799	0.6438	0.6225	0.6023	0.5039	0.6455	0.6194	9	AVG	*
trans-1,3-Dichloropropene	0.2626	0.3046	0.3058	0.3176	0.2950	0.2547	0.3304	0.2958	9	AVG	
1,1,2-Trichloroethane	0.1919	0.2009	0.2011	0.2012	0.1851	0.1584	0.2028	0.1916	8	AVG	
Tetrachloroethene	0.2945	0.3572	0.3213	0.3182	0.3043	0.2553	0.3318	0.3118	10	AVG	
1,3-Dichloropropane	0.3504	0.3365	0.3352	0.3393	0.3110	0.2676	0.3435	0.3262	9	AVG	
Dibromochloromethane	0.2068	0.2228	0.2232	0.2325	0.2228	0.1940	0.2524	0.2220	8	AVG	
1,2-Dibromoethane	0.2113	0.2200	0.2215	0.2266	0.2096	0.1790	0.2307	0.2141	8	AVG	
Chlorobenzene	#0.7290	0.7495	0.7155	0.7083	0.6706	0.5671	0.7002	0.6915	9	AVG	#
1,1,1,2-Tetrachloroethane	0.2237	0.2438	0.2342	0.2390	0.2273	0.1960	0.2459	0.2300	7	AVG	
Ethylbenzene	*1.2490	1.2964	1.2223	1.2109	1.1542	0.9832	1.1193	1.1765	9	AVG	*
m+p-Xylene	0.5088	0.5422	0.5147	0.5062	0.4874	0.4000	0.5006	0.4943	9	AVG	
o-Xylene	0.5265	0.5211	0.5019	0.4958	0.4654	0.3850	0.5042	0.4857	10	AVG	
Styrene	0.6960	0.7752	0.7528	0.7573	0.6833	0.5913	0.7304	0.7123	9	AVG	
Bromoform	#0.1729	0.1688	0.1812	0.1872	0.1801	0.1619	0.2103	0.1804	9	AVG	#
Isopropylbenzene	1.2984	1.3936	1.2997	1.2663	1.2240	1.0091	1.1032	1.2277	11	AVG	
Bromobenzene	0.6081	0.6177	0.5845	0.6031	0.6408	0.6425	0.6139	0.6158	3	AVG	
1,1,2,2-Tetrachloroethane	#0.5568	0.6253	0.5892	0.6241	0.6710	0.6793	0.7030	0.6355	8	AVG	#
1,2,3-Trichloropropane	0.1889	0.2186	0.2115	0.2127	0.2281	0.2321	0.2202	0.2160	7	AVG	
trans-1,4-Dichloro-2-butene	0.0919	0.1123	0.1285	0.1444	0.1725	0.1983	0.2069	0.1507	29	AVG	
n-Propylbenzene	2.5127	2.7051	2.6328	2.6406	2.9367	2.8591	2.2510	2.6483	9	AVG	
2-Chlorotoluene	0.5680	0.5842	0.5546	0.5574	0.5984	0.5988	0.5830	0.5778	3	AVG	
4-Chlorotoluene	0.6177	0.6213	0.5822	0.6042	0.6443	0.6303	0.6219	0.6174	3	AVG	
1,3,5-Trimethylbenzene	2.0243	2.1665	2.0363	2.0286	2.2042	2.1324	1.9415	2.0763	5	AVG	
tert-Butylbenzene	0.4375	0.4853	0.4498	0.4520	0.5068	0.4819	0.4862	0.4714	5	AVG	
1,2,4-Trimethylbenzene	1.9415	2.0270	1.9347	1.9691	2.1480	2.0416	1.9451	2.0010	4	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07163 Calibration Date(s): 05/14/18 05/15/18

Heated Purge: (Y/N) Y Calibration Times: 23:05 01:41

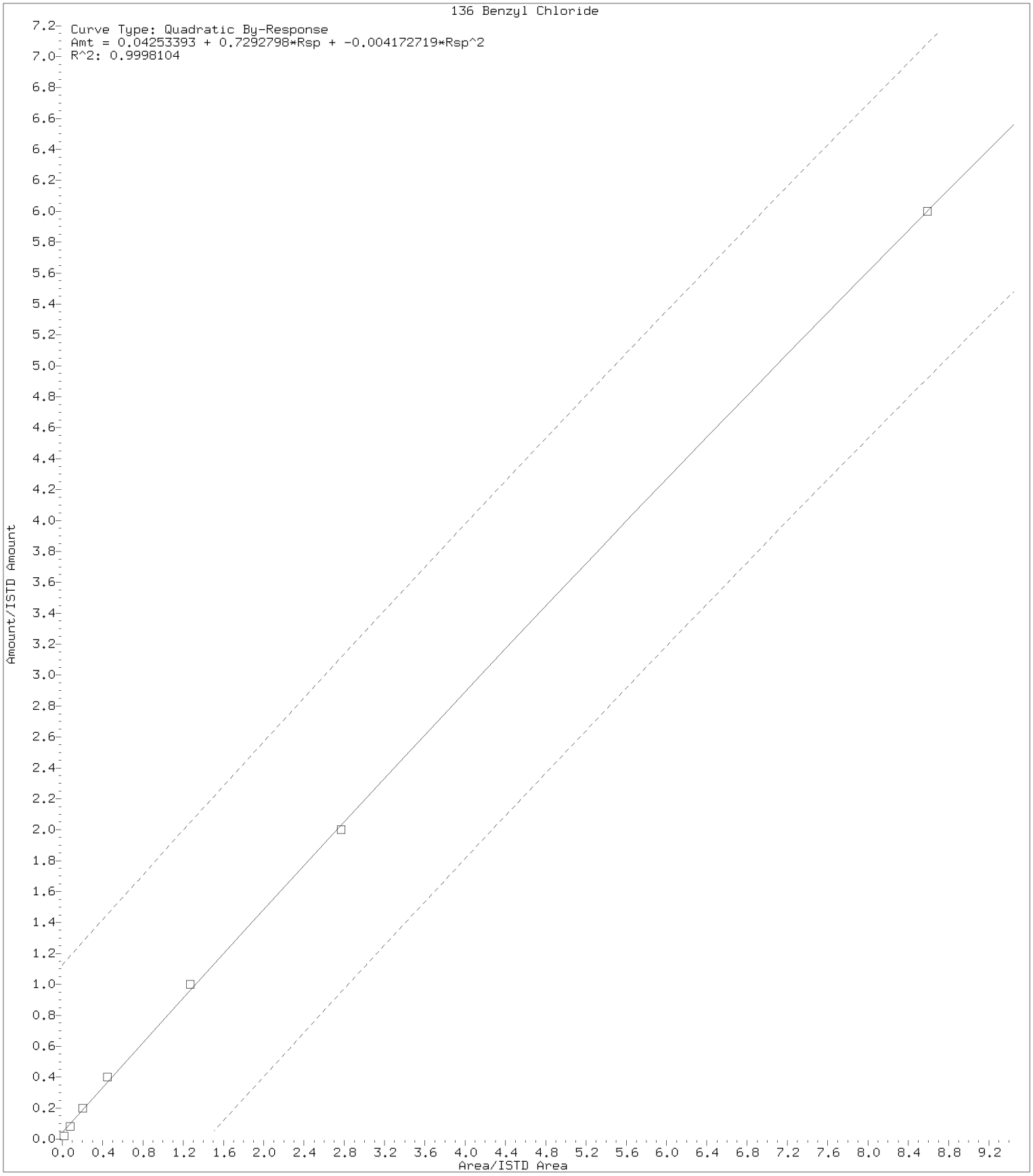
Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-VRX ID: .18

LAB FILE ID: RRF 1 = py14i13.d RRF 4 = py14i11.d RRF 10= py14i09.d
RRF 20= py14i07.d RRF 50= py14i05.d RRF100= py14i03.d RRF300= py14i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
sec-Butylbenzene	2.3098	2.6536	2.4938	2.5084	2.7485	2.5997	2.2358	2.5071	7	AVG
1,3-Dichlorobenzene	1.0395	1.1189	1.0659	1.0721	1.1294	1.1338	1.0982	1.0940	3	AVG
p-Isopropyltoluene	2.0467	2.2840	2.1341	2.1507	2.3242	2.2559	2.0233	2.1741	5	AVG
1,4-Dichlorobenzene	1.2057	1.1785	1.0834	1.1480	1.1615	1.1311	1.1386	1.1495	3	AVG
Benzyl Chloride	0.9432	0.9673	1.0013	1.1172	1.2688	1.3844	1.4313	1.1591	18	2NDDEG
1,2-Dichlorobenzene	1.0162	1.0497	0.9998	1.0317	1.0826	1.0348	1.0213	1.0337	3	AVG
n-Butylbenzene	0.7925	0.8988	0.8616	0.8914	1.0299	1.0076	1.0489	0.9330	10	AVG
1,2-Dibromo-3-chloropropane	0.1652	0.1544	0.1505	0.1555	0.1783	0.1880	0.1815	0.1676	9	AVG
1,3,5-Trichlorobenzene	0.7980	0.7439	0.7105	0.7533	0.8050	0.8198	0.7886	0.7741	5	AVG
1,2,4-Trichlorobenzene	0.6266	0.5988	0.5872	0.6150	0.6811	0.7092	0.6664	0.6406	7	AVG
Hexachlorobutadiene	0.3738	0.3766	0.3487	0.3537	0.3936	0.3908	0.3747	0.3731	5	AVG
Naphthalene	2.4601	1.8747	1.7157	1.8490	1.9785	2.0907	1.8624	1.9759	12	AVG
1,2,3-Trichlorobenzene	0.6209	0.5566	0.5303	0.5755	0.6066	0.6261	0.5933	0.5870	6	AVG
Dibromofluoromethane	0.2431	0.2373	0.2427	0.2457	0.2414	0.2416	0.2341	0.2408	2	AVG
Dibromofluoromethane(2)	0.2481	0.2439	0.2474	0.2502	0.2468	0.2490	0.2400	0.2465	1	AVG
1,2-Dichloroethane-d4	0.0589	0.0577	0.0590	0.0613	0.0599	0.0560	0.0532	0.0580	5	AVG
1,2-Dichloroethane-d4(2)	0.2732	0.2636	0.2759	0.2810	0.2756	0.2528	0.2456	0.2668	5	AVG
1,2-Dichloroethane-d4(3)	0.0378	0.0366	0.0377	0.0382	0.0356	0.0358	0.0350	0.0367	3	AVG
Toluene-d8	1.2227	1.2151	1.1900	1.1581	1.0426	0.9027	1.1244	1.1222	10	AVG
Toluene-d8(2)	0.7918	0.7890	0.7749	0.7524	0.6805	0.5912	0.7260	0.7294	10	AVG
4-Bromofluorobenzene	0.4845	0.4785	0.4806	0.4700	0.4193	0.3638	0.4649	0.4516	10	AVG
4-Bromofluorobenzene(2)	0.4595	0.4443	0.4455	0.4345	0.3830	0.3310	0.4101	0.4154	11	AVG

Average %RSD 8

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%



Digitally signed by Daniel H. Heller on 05/16/2018 at 12:20.
Target 3.5 esignature user ID: dhh02035

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP07163.i/18may14i.b/py14i01.d	VSTD300
/chem/HP07163.i/18may14i.b/py14i03.d	VSTD100
/chem/HP07163.i/18may14i.b/py14i05.d	VSTD050
/chem/HP07163.i/18may14i.b/py14i07.d	VSTD020
/chem/HP07163.i/18may14i.b/py14i09.d	VSTD010
/chem/HP07163.i/18may14i.b/py14i11.d	VSTD004
/chem/HP07163.i/18may14i.b/py14i13.d	VSTD001

Area Summary

File ID:

Internal Standard Name	py14i01.d	py14i03.d	py14i05.d	py14i07.d	py14i09.d	py14i11.d	py14i13.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	559868	572832	557594	519057	540140	552848	540809	549021	3	Yes
Fluorobenzene	1781935	1782457	1786025	1857264	1841949	1754895	1804217	1801249	2	Yes
Chlorobenzene-d5	1627553	2024537	1756658	1660210	1605447	1507737	1541746	1674841	10	Yes
1,4-Dichlorobenzene-d4	812519	796099	798917	854113	853944	801391	834427	821630	3	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	py14i01.d	py14i03.d	py14i05.d	py14i07.d	py14i09.d	py14i11.d	py14i13.d	Avg. RT
t-Butyl alcohol-d10	2.279	2.275	2.284	2.285	2.282	2.282	2.280	2.281
Fluorobenzene	4.122	4.118	4.121	4.122	4.119	4.119	4.123	4.121
Chlorobenzene-d5	5.953	5.955	5.952	5.953	5.956	5.956	5.955	5.954
1,4-Dichlorobenzene-d4	7.255	7.251	7.254	7.255	7.252	7.252	7.250	7.253

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 05/15/2018 at 16:29.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07163 ICV Date: 05/15/18 Time: 02:33

Lab File ID: py14v01.d Init. Calib. Date(s): 05/14/18 05/15/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-VRX ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Vinyl Chloride	0.2657	0.2629	19.79	20	-1	*
*	1,1-Dichloroethene	0.1693	0.1817	21.46	20	7	*
	Methylene Chloride	0.1908	0.2042	21.40	20	7	
	t-Butyl alcohol	0.8306	0.7813	188.13	200	-6	
	trans-1,2-Dichloroethene	0.2143	0.2202	20.56	20	3	
	Methyl Tertiary Butyl Ether	0.5791	0.5873	20.28	20	1	
	n-Hexane	0.2884	0.3388	23.50	20	17	
#	1,1-Dichloroethane	0.3399	0.3456	20.34	20	2	#
	di-Isopropyl ether	0.5353	0.5524	20.64	20	3	
	2-Chloro-1,3-butadiene	0.3324	0.3472	20.89	20	4	
	Ethyl t-butyl ether	0.5735	0.5888	20.54	20	3	
	cis-1,2-Dichloroethene	0.2219	0.2348	21.16	20	6	
	2,2-Dichloropropane	0.3129	0.3062	19.57	20	-2	
*	Chloroform	0.3451	0.3593	20.82	20	4	*
	1,1,1-Trichloroethane	0.3478	0.3447	19.82	20	-1	
	1,1-Dichloropropene	0.2952	0.2915	19.75	20	-1	
	Carbon Tetrachloride	0.3067	0.3033	19.78	20	-1	
	Benzene	0.8440	0.8564	20.29	20	1	
	1,2-Dichloroethane	0.2751	0.2682	19.50	20	-2	
	Trichloroethene	0.2491	0.2453	19.69	20	-2	
*	1,2-Dichloropropane	0.1885	0.1918	20.35	20	2	*
	Dibromomethane	0.1197	0.1230	20.55	20	3	
	Bromodichloromethane	0.2607	0.2664	20.44	20	2	
	cis-1,3-Dichloropropene	0.3045	0.3128	20.55	20	3	
*	Toluene	0.6194	0.6454	20.84	20	4	*
	trans-1,3-Dichloropropene	0.2958	0.3122	21.11	20	6	
	1,1,2-Trichloroethane	0.1916	0.2108	22.00	20	10	
	Tetrachloroethene	0.3118	0.3195	20.50	20	2	
	1,3-Dichloropropane	0.3262	0.3430	21.03	20	5	
	Dibromochloromethane	0.2220	0.2408	21.69	20	8	
	1,2-Dibromoethane	0.2141	0.2287	21.37	20	7	
#	Chlorobenzene	0.6915	0.7145	20.67	20	3	#
	1,1,1,2-Tetrachloroethane	0.2300	0.2373	20.64	20	3	
*	Ethylbenzene	1.1765	1.2144	20.64	20	3	*
	m+p-Xylene	0.4943	0.5058	40.94	40	2	
	o-Xylene	0.4857	0.4974	20.48	20	2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07163 ICV Date: 05/15/18 Time: 02:33

Lab File ID: py14v01.d Init. Calib. Date(s): 05/14/18 05/15/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-VRX ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Styrene	0.7123	0.7709	21.65	20	8	
#	Bromoform	0.1804	0.1806	20.03	20	0	#
	Isopropylbenzene	1.2277	1.2846	20.93	20	5	
	Bromobenzene	0.6158	0.6263	20.34	20	2	
#	1,1,2,2-Tetrachloroethane	0.6355	0.6145	19.34	20	-3	#
	1,2,3-Trichloropropane	0.2160	0.2261	20.93	20	5	
	n-Propylbenzene	2.6483	2.6674	20.14	20	1	
	2-Chlorotoluene	0.5778	0.5689	19.69	20	-2	
	4-Chlorotoluene	0.6174	0.5962	19.31	20	-3	
	1,3,5-Trimethylbenzene	2.0763	2.0392	19.64	20	-2	
	tert-Butylbenzene	0.4714	0.4558	19.34	20	-3	
	1,2,4-Trimethylbenzene	2.0010	1.9568	19.56	20	-2	
	sec-Butylbenzene	2.5071	2.5213	20.11	20	1	
	1,3-Dichlorobenzene	1.0940	1.0566	19.32	20	-3	
	p-Isopropyltoluene	2.1741	2.1399	19.68	20	-2	
	1,4-Dichlorobenzene	1.1495	1.1340	19.73	20	-1	
	Benzyl Chloride	1.1591	1.1160	18.36	20	-8	
	1,2-Dichlorobenzene	1.0337	1.0263	19.86	20	-1	
	n-Butylbenzene	0.9330	0.8800	18.86	20	-6	
	1,2-Dibromo-3-chloropropane	0.1676	0.1518	18.11	20	-9	
	1,3,5-Trichlorobenzene	0.7741	0.7378	19.06	20	-5	
	1,2,4-Trichlorobenzene	0.6406	0.6047	18.88	20	-6	
	Hexachlorobutadiene	0.3731	0.3164	16.96	20	-15	
	Naphthalene	1.9759	1.6403	16.60	20	-17	
	1,2,3-Trichlorobenzene	0.5870	0.5412	18.44	20	-8	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date(s): 05/23/18 05/23/18

Heated Purge: (Y/N) Y Calibration Times: 14:38 17:01

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 1 = wy23i07.d RRF 4 = wy23i06.d RRF 10= wy23i05.d
RRF 20= wy23i04.d RRF 50= wy23i03.d RRF100= wy23i02.d RRF300= wy23i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Dichlorodifluoromethane	0.2731	0.3551	0.3592	0.3423	0.3943	0.3665	0.3326	0.3462	11	AVG	
Chloromethane	#0.3601	0.3602	0.3951	0.3587	0.3972	0.3708	0.3324	0.3678	6	AVG	#
1,3-Butadiene	0.3623	0.3420	0.2497	0.2680	0.2747	0.2659	0.2479	0.2872	16	2NDDEG	
Vinyl Chloride	*0.3953	0.3994	0.3951	0.3678	0.4029	0.3793	0.3374	0.3825	6	AVG	*
Bromomethane	0.2454	0.2617	0.2756	0.2562	0.2762	0.2621	0.2427	0.2600	5	AVG	
Chloroethane	0.2058	0.2327	0.2387	0.2156	0.2347	0.2195	0.1980	0.2207	7	AVG	
Dichlorofluoromethane	0.4789	0.5186	1.0085	0.5008	0.5073	0.5236	0.4660	0.5720	34	AVG	
n-Pentane		0.4704	0.3811	0.3947	0.4140	0.4003	0.3810	0.4069	8	AVG	
Trichlorofluoromethane	0.3311	0.4199	0.4413	0.4159	0.4774	0.4538	0.4212	0.4229	11	AVG	
Ethanol	0.2431	0.1260	0.1303	0.0945	0.1191	0.0997	0.0879	0.1287	41	2NDDEG	
Freon 123a	0.2671	0.3079	0.2598	0.2776	0.2894	0.2856	0.2706	0.2797	6	AVG	
Acrolein	2.5238	2.5905	2.5937	2.5902	2.4935	2.6084	2.0619	2.4946	8	AVG	
1,1-Dichloroethene	*0.1894	0.2187	0.1950	0.2120	0.2267	0.2260	0.2240	0.2131	7	AVG	*
1,1-Dichloroethene(2)	*0.0963	0.1125	0.0939	0.1042	0.1121	0.1114	0.1077	0.1054	7	AVG	*
Acetone	1.1652	1.1639	1.1473	1.1429	1.1109	1.0582	0.9548	1.1062	7	AVG	
Freon 113	0.1869	0.2305	0.1928	0.2134	0.2304	0.2296	0.2207	0.2149	9	AVG	
2-Propanol		0.6559	0.6822	0.6385	0.6748	0.6140	0.4995	0.6275	11	AVG	
Methyl Iodide	0.3575	0.4135	0.3831	0.4100	0.4221	0.4167	0.4050	0.4011	6	AVG	
Carbon Disulfide	0.5945	0.7146	0.6452	0.7143	0.7628	0.7652	0.7416	0.7054	9	AVG	
Allyl Chloride	0.3154	0.3589	0.2872	0.3653	0.3574	0.3599	0.3423	0.3409	9	AVG	
Methyl Acetate	0.3821	0.3334	0.2752	0.3048	0.2951	0.2767	0.2619	0.3042	14	AVG	
Methylene Chloride	0.2564	0.2559	0.2509	0.2642	0.2607	0.2576	0.2515	0.2567	2	AVG	
t-Butyl alcohol	1.3485	1.1727	1.3305	1.2480	1.3069	1.2224	1.0390	1.2383	9	AVG	
Acrylonitrile	0.1252	0.1489	0.1514	0.1529	0.1542	0.1390	0.1531	0.1464	7	AVG	
trans-1,2-Dichloroethene	0.2149	0.2521	0.2329	0.2471	0.2547	0.2508	0.2449	0.2425	6	AVG	
Methyl Tertiary Butyl Ether	0.6870	0.7074	0.7133	0.7301	0.7200	0.7066	0.6613	0.7037	3	AVG	
n-Hexane	0.2925	0.2913	0.2509	0.2692	0.2888	0.2843	0.2788	0.2794	5	AVG	
1,1-Dichloroethane	#0.3971	0.4436	0.4170	0.4373	0.4426	0.4345	0.4156	0.4268	4	AVG	#
di-Isopropyl ether	0.7462	0.8363	0.8194	0.8454	0.8369	0.8321	0.7822	0.8141	4	AVG	
2-Chloro-1,3-butadiene	0.3033	0.3703	0.3381	0.3717	0.3883	0.3911	0.3753	0.3626	9	AVG	
Ethyl t-butyl ether	0.6440	0.6722	0.6811	0.6927	0.6846	0.6654	0.6080	0.6640	4	AVG	
cis-1,2-Dichloroethene	0.2453	0.2850	0.2688	0.2819	0.2861	0.2837	0.2776	0.2755	5	AVG	
2-Butanone	0.1968	0.2066	0.2228	0.2100	0.2137	0.1964	0.2133	0.2085	5	AVG	
2,2-Dichloropropane	0.1849	0.2219	0.1990	0.2239	0.2256	0.2209		0.2127	8	AVG	
Propionitrile	1.6204	1.7426	1.7639	1.7876	1.7596	1.7097	1.5568	1.7058	5	AVG	
Methacrylonitrile	0.1556	0.1657	0.1692	0.1768	0.1729	0.1703	0.1742	0.1692	4	AVG	
Bromochloromethane	0.1206	0.1418	0.1299	0.1486	0.1420	0.1428	0.1405	0.1380	7	AVG	
Tetrahydrofuran	1.8628	1.8462	1.8374	1.8302	1.7290	1.8207	1.4757	1.7717	8	AVG	
Chloroform	*0.3823	0.4407	0.4220	0.4413	0.4486	0.4430	0.4296	0.4296	5	AVG	*
1,1,1-Trichloroethane	0.3386	0.4123	0.3572	0.3765	0.3843	0.3806	0.3670	0.3738	6	AVG	
Cyclohexane	0.3338	0.3980	0.3303	0.3773	0.4102	0.4054	0.3951	0.3786	9	AVG	
Cyclohexane(2)	0.3113	0.3894	0.2912	0.3193	0.3516	0.3483	0.3373	0.3355	10	AVG	
Cyclohexane(3)	0.1073	0.1190	0.1034	0.1138	0.1270	0.1248	0.1213	0.1167	8	AVG	
1,1-Dichloropropene	0.2984	0.3508	0.3143	0.3430	0.3584	0.3552	0.3445	0.3378	7	AVG	
Carbon Tetrachloride	0.1996	0.2323	0.2211	0.2605	0.2826	0.2953	0.3005	0.2560	15	AVG	
Isobutyl Alcohol	0.4436	0.4276	0.4211	0.4278	0.4275	0.4230	0.3877	0.4226	4	AVG	
Benzene	0.9617	1.0813	1.0104	1.0541	1.0786	1.0622	1.0268	1.0393	4	AVG	
1,2-Dichloroethane	0.3798	0.3731	0.3587	0.3626	0.3606	0.3551	0.3484	0.3626	3	AVG	
1,2-Dichloroethane(2)	0.0346	0.0346	0.0335	0.0349	0.0366	0.0356	0.0355	0.0350	3	AVG	
t-Amyl methyl ether	0.6183	0.6884	0.6905	0.7144	0.7047	0.6914	0.6338	0.6774	5	AVG	
n-Heptane		0.2756	0.2261	0.2411	0.2406	0.2398	0.2396	0.2438	7	AVG	
n-Butanol	0.3992	0.3216	0.3560	0.3606	0.3660	0.3985	0.3399	0.3631	8	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date(s): 05/23/18 05/23/18

Heated Purge: (Y/N) Y Calibration Times: 14:38 17:01

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 1 = wy23i07.d RRF 4 = wy23i06.d RRF 10= wy23i05.d
RRF 20= wy23i04.d RRF 50= wy23i03.d RRF100= wy23i02.d RRF300= wy23i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Trichloroethene	0.2547	0.2779	0.2577	0.2779	0.2813	0.2748	0.2675	0.2703	4	AVG
Methylcyclohexane	0.3473	0.3265	0.2078	0.3256	0.3307	0.3322	0.3181	0.3126	15	AVG
Methylcyclohexane(2)	0.1666	0.1506	0.0967	0.1538	0.1546	0.1565	0.1492	0.1469	16	AVG
1,2-Dichloropropane	*0.2329	0.2678	0.2541	0.2742	0.2739	0.2752	0.2701	0.2640	6	AVG *
Dibromomethane	0.1544	0.1762	0.1805	0.1832	0.1822	0.1824	0.1819	0.1773	6	AVG
1,4-Dioxane	0.1437	0.0945	0.1230	0.1056	0.1132	0.1237	0.0996	0.1148	15	AVG
Methyl Methacrylate	0.2206	0.2572	0.2609	0.2804	0.2872	0.2841	0.2931	0.2691	9	AVG
Bromodichloromethane	0.2490	0.3006	0.2978	0.3242	0.3383	0.3408	0.3424	0.3133	11	AVG
2-Nitropropane	0.0536	0.0604	0.0618	0.0645	0.0738	0.0775	0.0913	0.0690	19	2NDDEG
2-Chloroethyl Vinyl Ether	0.1623	0.1793	0.1950	0.2069	0.2055	0.2099	0.2095	0.1955	9	AVG
cis-1,3-Dichloropropene	0.3180	0.3791	0.3875	0.4187	0.4385	0.4481	0.4460	0.4051	12	AVG
4-Methyl-2-pentanone	0.3542	0.3791	0.4278	0.4226	0.4290	0.4227	0.4353	0.4101	8	AVG
Toluene	*0.8671	0.9340	0.8612	0.9132	0.9277	0.9252	0.8823	0.9015	3	AVG *
trans-1,3-Dichloropropene	0.3628	0.4508	0.4553	0.5051	0.5223	0.5465	0.5379	0.4830	13	AVG
Ethyl Methacrylate	0.4465	0.5348	0.5748	0.6087	0.6373	0.6487	0.6346	0.5836	12	AVG
1,1,2-Trichloroethane	0.3183	0.3581	0.3541	0.3677	0.3640	0.3662	0.3556	0.3549	5	AVG
Tetrachloroethene	0.3305	0.3470	0.3155	0.3398	0.3516	0.3520	0.3405	0.3396	4	AVG
1,3-Dichloropropane	0.5586	0.6142	0.5974	0.6197	0.6079	0.6064	0.5843	0.5983	4	AVG
2-Hexanone	0.3601	0.3872	0.4328	0.4423	0.4444	0.4416	0.4367	0.4207	8	AVG
Dibromochloromethane	0.2742	0.2875	0.3104	0.3384	0.3662	0.3825	0.3886	0.3354	14	AVG
1,2-Dibromoethane	0.3349	0.3817	0.3783	0.3938	0.4011	0.4026	0.3928	0.3836	6	AVG
Chlorobenzene	#0.9485	1.0605	0.9764	1.0371	1.0454	1.0511	1.0187	1.0197	4	AVG #
1,1,1,2-Tetrachloroethane	0.2519	0.2896	0.2856	0.3178	0.3259	0.3387	0.3431	0.3075	11	AVG
Ethylbenzene	*1.4677	1.7340	1.5789	1.6779	1.7292	1.7276	1.6087	1.6463	6	AVG *
m+p-Xylene	0.5703	0.6654	0.6246	0.6709	0.7016	0.7099	0.6963	0.6627	8	AVG
o-Xylene	0.5917	0.6605	0.6281	0.6708	0.6992	0.7102	0.7181	0.6683	7	AVG
Styrene	0.8588	1.0124	1.0270	1.1459	1.1829	1.2204	1.2253	1.0961	12	AVG
Bromoform	#0.1663	0.1767	0.1984	0.2219	0.2498	0.2726	0.2964	0.2260	22	2NDDEG #
Isopropylbenzene	1.4454	1.5237	1.4205	1.5540	1.6201	1.6242	1.5234	1.5302	5	AVG
Cyclohexanone	0.4800	0.3670	0.4152	0.4064	0.4465	0.4615	0.3989	0.4251	9	AVG
Bromobenzene	0.7579	0.8005	0.7855	0.8024	0.8104	0.7963	0.7790	0.7903	2	AVG
1,1,2,2-Tetrachloroethane	#1.0813	1.1079	1.1025	1.1354	1.1426	1.1010	1.0696	1.1058	2	AVG #
1,2,3-Trichloropropane	0.3175	0.3427	0.3441	0.3576	0.3515	0.3394	0.3277	0.3401	4	AVG
trans-1,4-Dichloro-2-butene	0.2312	0.2714	0.2920	0.3189	0.3288	0.3336	0.3151	0.2987	12	AVG
n-Propylbenzene	3.4169	3.4336	1.1517	3.3248	3.4037	3.2441	2.7913	3.2523	7	AVG
2-Chlorotoluene	0.7308	0.7578	0.6855	0.7245	0.7421	0.7108	0.6754	0.7181	4	AVG
4-Chlorotoluene	0.7642	0.7775	0.7409	0.7921	0.7972	0.7891	0.7785	0.7770	2	AVG
1,3,5-Trimethylbenzene	2.4034	2.3854	2.2889	2.4457	2.5238	2.4597	2.2737	2.3972	4	AVG
tert-Butylbenzene	0.5708	0.5316	0.4749	0.5218	0.5314	0.5239	0.5149	0.5242	5	AVG
Pentachloroethane	0.3286	0.3551	0.3297	0.4111	0.4226	0.4346	0.4566	0.3912	13	AVG
1,2,4-Trimethylbenzene	2.4733	2.5084	2.4256	2.5575	2.6428	2.5619	2.3243	2.4991	4	AVG
sec-Butylbenzene	3.0707	2.6277	2.4665	2.6388	2.7059	2.6186	2.3243	2.6361	9	AVG
1,3-Dichlorobenzene	1.5830	1.4283	1.4061	1.4907	1.4982	1.4628	1.3905	1.4656	4	AVG
p-Isopropyltoluene	2.6508	2.3015	2.1623	2.3554	2.4399	2.3817	2.1518	2.3491	7	AVG
1,4-Dichlorobenzene	1.7180	1.5925	1.5222	1.5552	1.5651	1.5356	1.4607	1.5642	5	AVG
1,2,3-Trimethylbenzene	2.8224	2.6782	2.3687	2.7992	2.6928	2.6627	2.3464	2.6244	7	AVG
Benzyl Chloride	1.1467	1.3209	1.4765	1.7045	1.9184	2.0382	2.0335	1.6627	21	2NDDEG
1,3-Diethylbenzene	1.5769	1.3901	1.2011	1.4648	1.4483	1.4393	1.3033	1.4034	9	AVG
1,4-Diethylbenzene	1.6486	1.4166	1.2162	1.5024	1.4692	1.4680	1.3409	1.4374	9	AVG
1,2-Dichlorobenzene	1.6262	1.5284	1.4411	1.4985	1.5221	1.5251	1.4797	1.5173	4	AVG
n-Butylbenzene	1.4162	1.1122	1.0334	1.1039	1.1492	1.1376	1.0714	1.1463	11	AVG
1,2-Diethylbenzene	1.3918	1.1779	1.0668	1.2626	1.2365	1.2290	1.1030	1.2097	9	AVG

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date(s): 05/23/18 05/23/18

Heated Purge: (Y/N) Y Calibration Times: 14:38 17:01

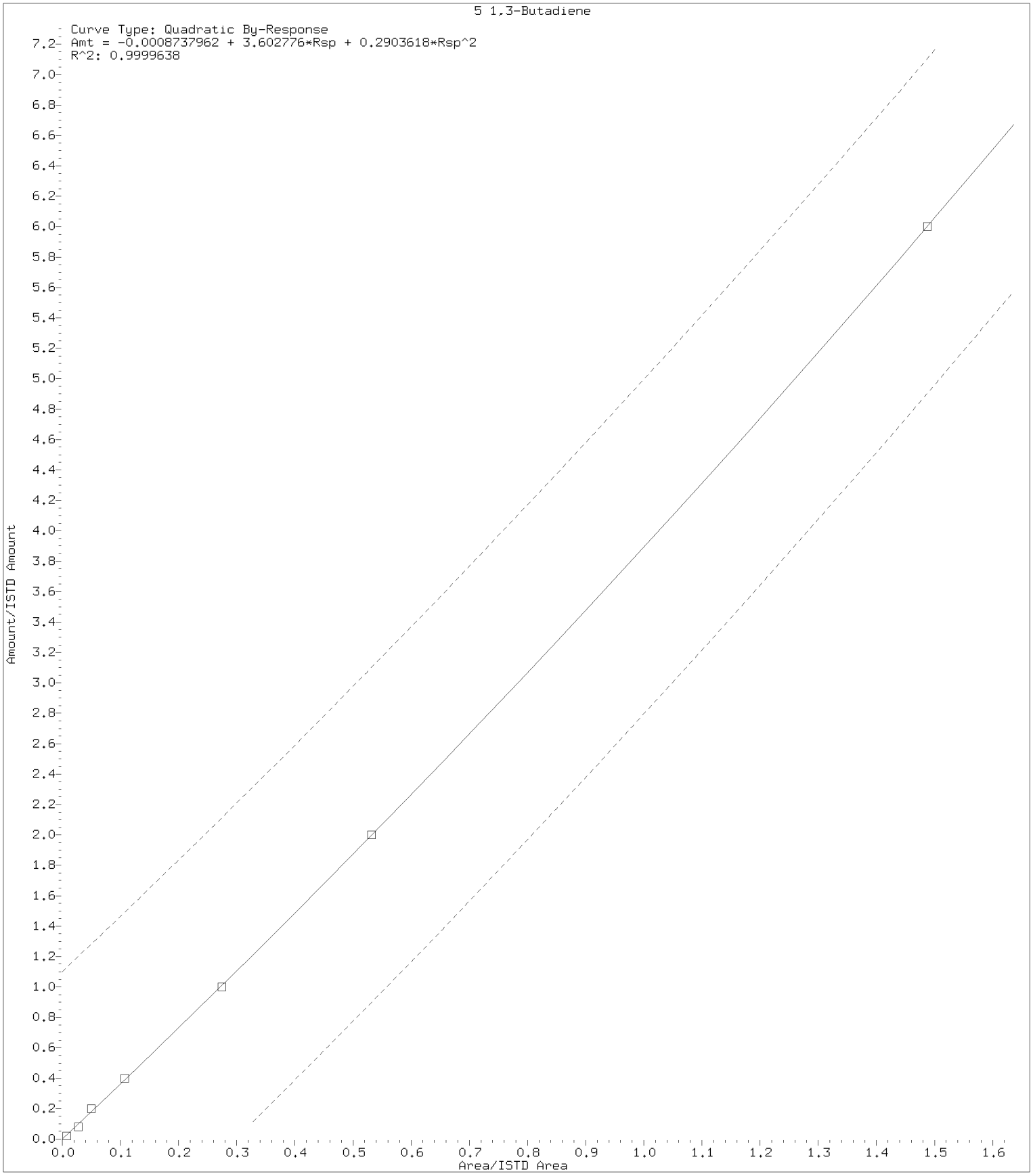
Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 1 = wy23i07.d RRF 4 = wy23i06.d RRF 10= wy23i05.d
RRF 20= wy23i04.d RRF 50= wy23i03.d RRF100= wy23i02.d RRF300= wy23i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,2-Dibromo-3-chloropropane		0.2209	0.2170	0.2342	0.2461	0.2465	0.2385	0.2339	5	AVG
1,3,5-Trichlorobenzene	1.1558	0.8197	0.7961	0.8411	0.8578	0.8443	0.7621	0.8681	15	AVG
1,2,4-Trichlorobenzene	1.2577	0.8667	0.8356	0.8478	0.8753	0.8640	0.7575	0.9007	18	2NDDEG
Hexachlorobutadiene		0.2801	0.2558	0.2792	0.2831	0.2816	0.2272	0.2678	8	AVG
Naphthalene	3.9443	3.2930	3.4728	3.5567	3.7234	3.6295	2.9138	3.5048	9	AVG
1,2,3-Trichlorobenzene	1.3071	0.8368	0.8024	0.8178	0.8588	0.8309	0.7177	0.8817	22	2NDDEG
2-Methylnaphthalene		1.5078	1.5667	1.8018	1.9181	1.8346	1.4643	1.6822	11	AVG
Dibromofluoromethane	0.2224	0.2250	0.2330	0.2296	0.2324	0.2298	0.2297	0.2288	2	AVG
Dibromofluoromethane(2)	0.2290	0.2304	0.2366	0.2348	0.2356	0.2337	0.2377	0.2340	1	AVG
1,2-Dichloroethane-d4	0.0633	0.0636	0.0649	0.0631	0.0624	0.0615	0.0595	0.0626	3	AVG
1,2-Dichloroethane-d4(2)	0.2810	0.2834	0.2889	0.2855	0.2767	0.2731	0.2721	0.2801	2	AVG
1,2-Dichloroethane-d4(3)	0.0393	0.0391	0.0407	0.0398	0.0405	0.0394	0.0402	0.0398	2	AVG
Toluene-d8	1.3203	1.3442	1.3248	1.3484	1.3229	1.3371	1.3054	1.3290	1	AVG
Toluene-d8(2)	0.8568	0.8645	0.8622	0.8652	0.8635	0.8671	0.8775	0.8653	1	AVG
4-Bromofluorobenzene	0.4723	0.4823	0.4804	0.4866	0.4901	0.4960	0.5025	0.4872	2	AVG
4-Bromofluorobenzene(2)	0.3729	0.3756	0.3795	0.3819	0.3824	0.3934	0.3957	0.3830	2	AVG

Average %RSD 8

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%



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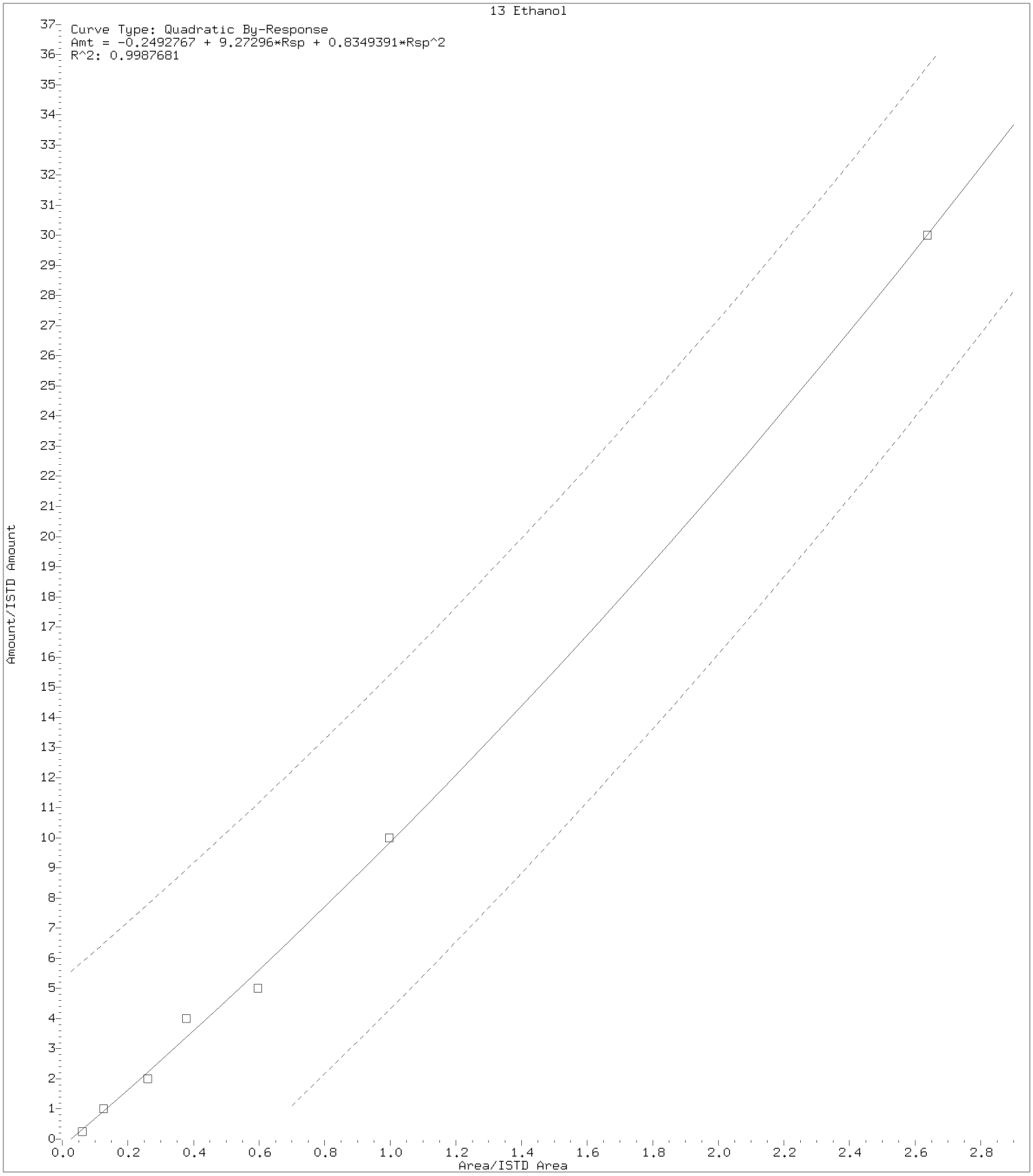

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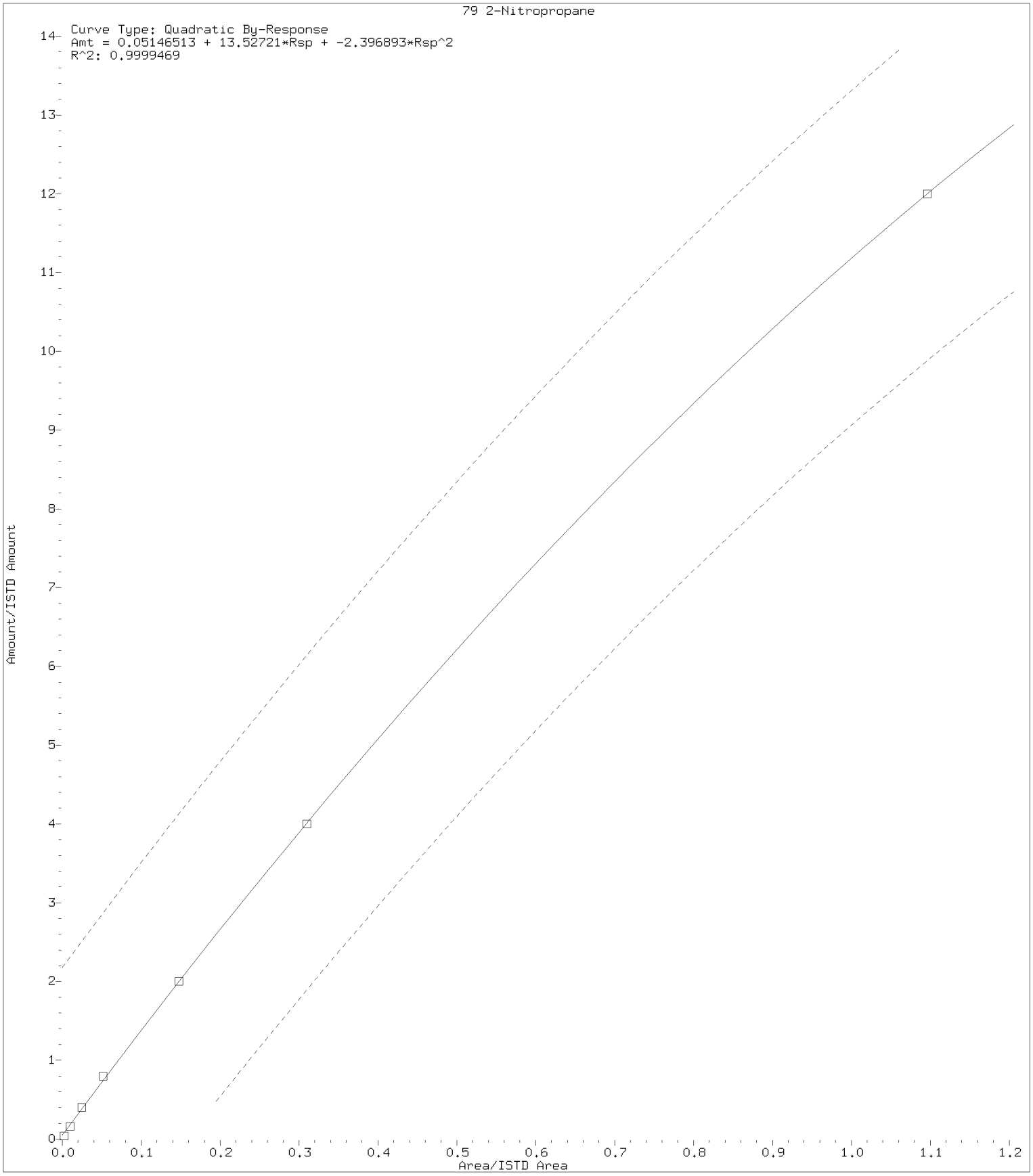

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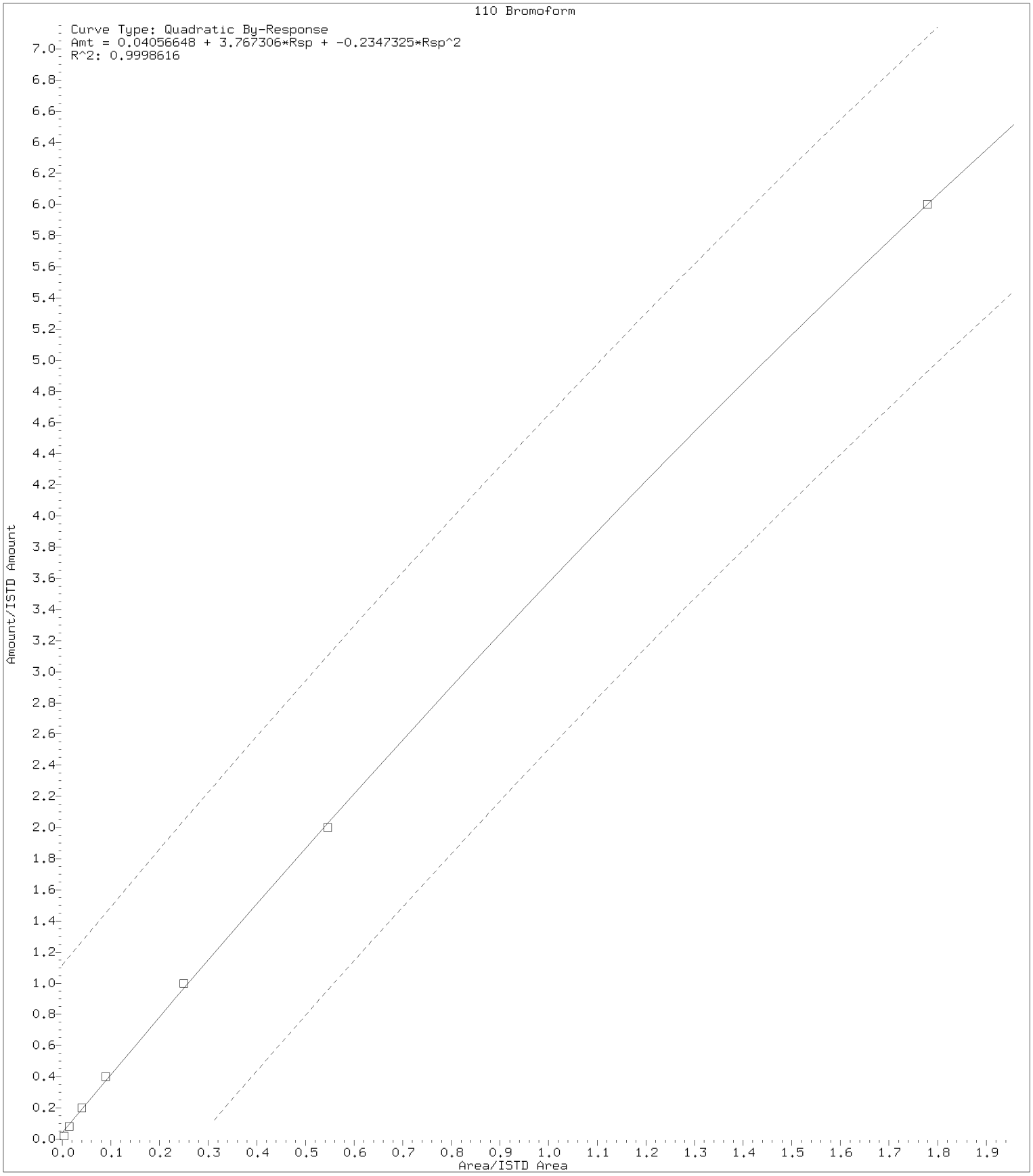

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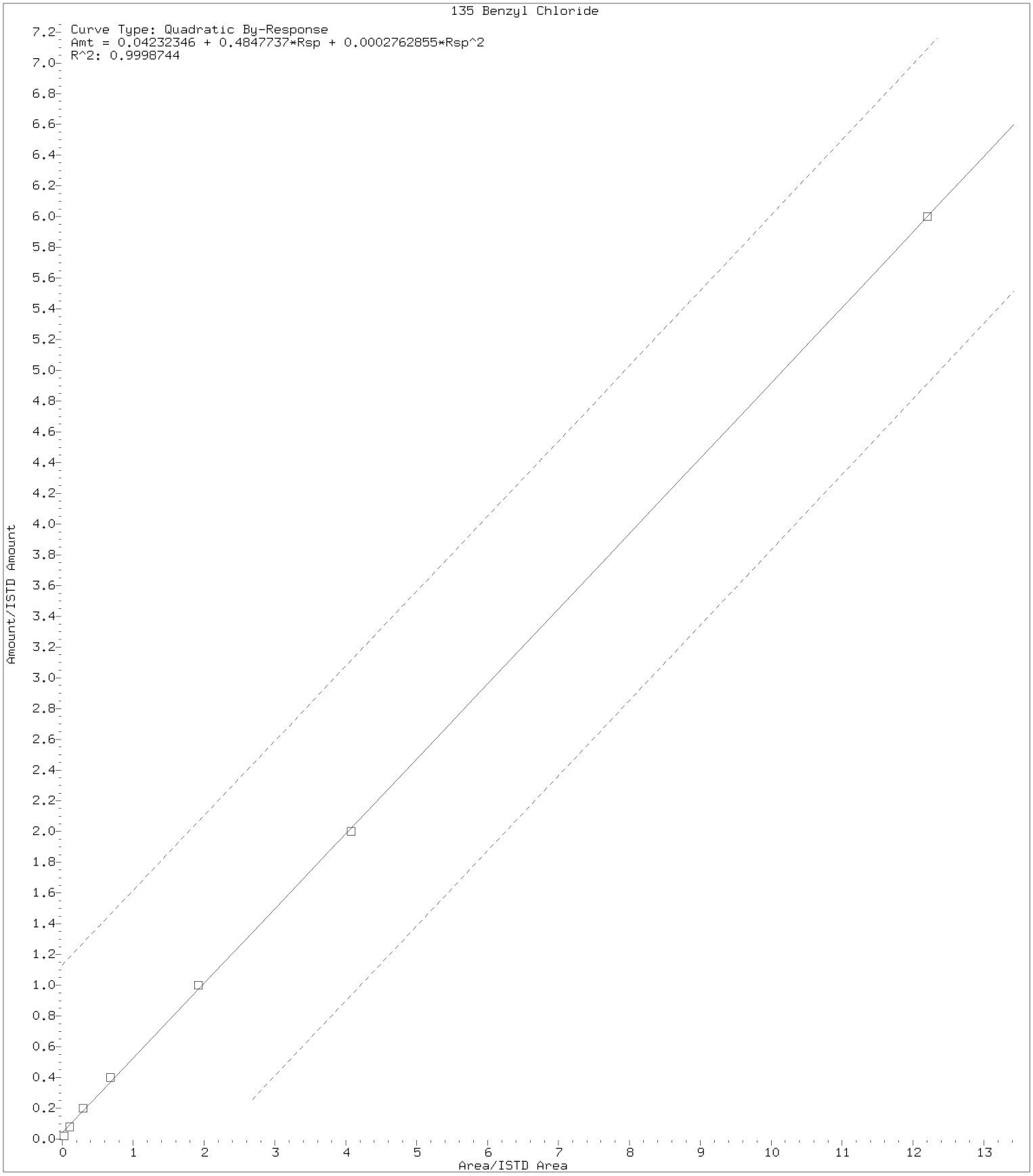

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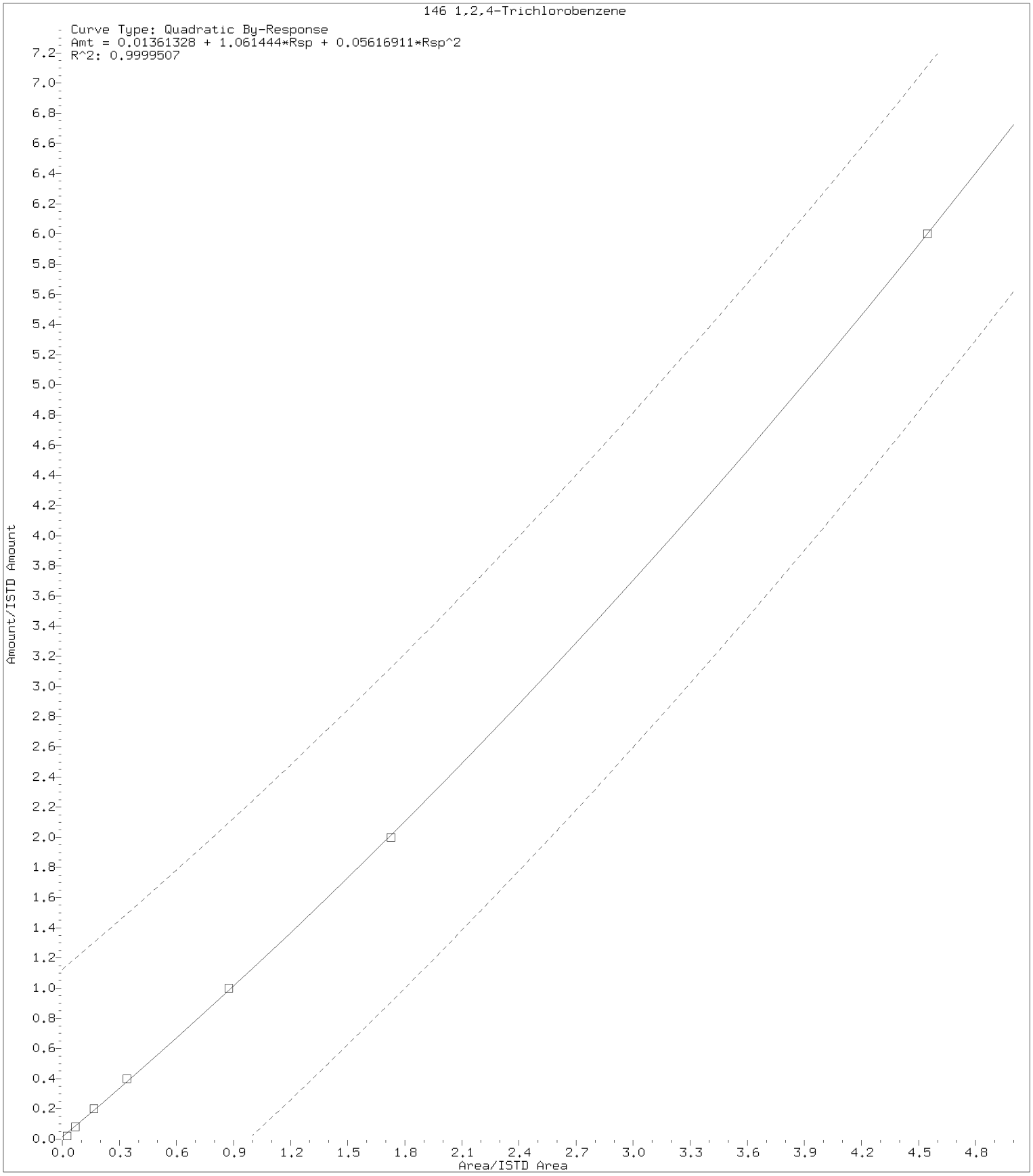
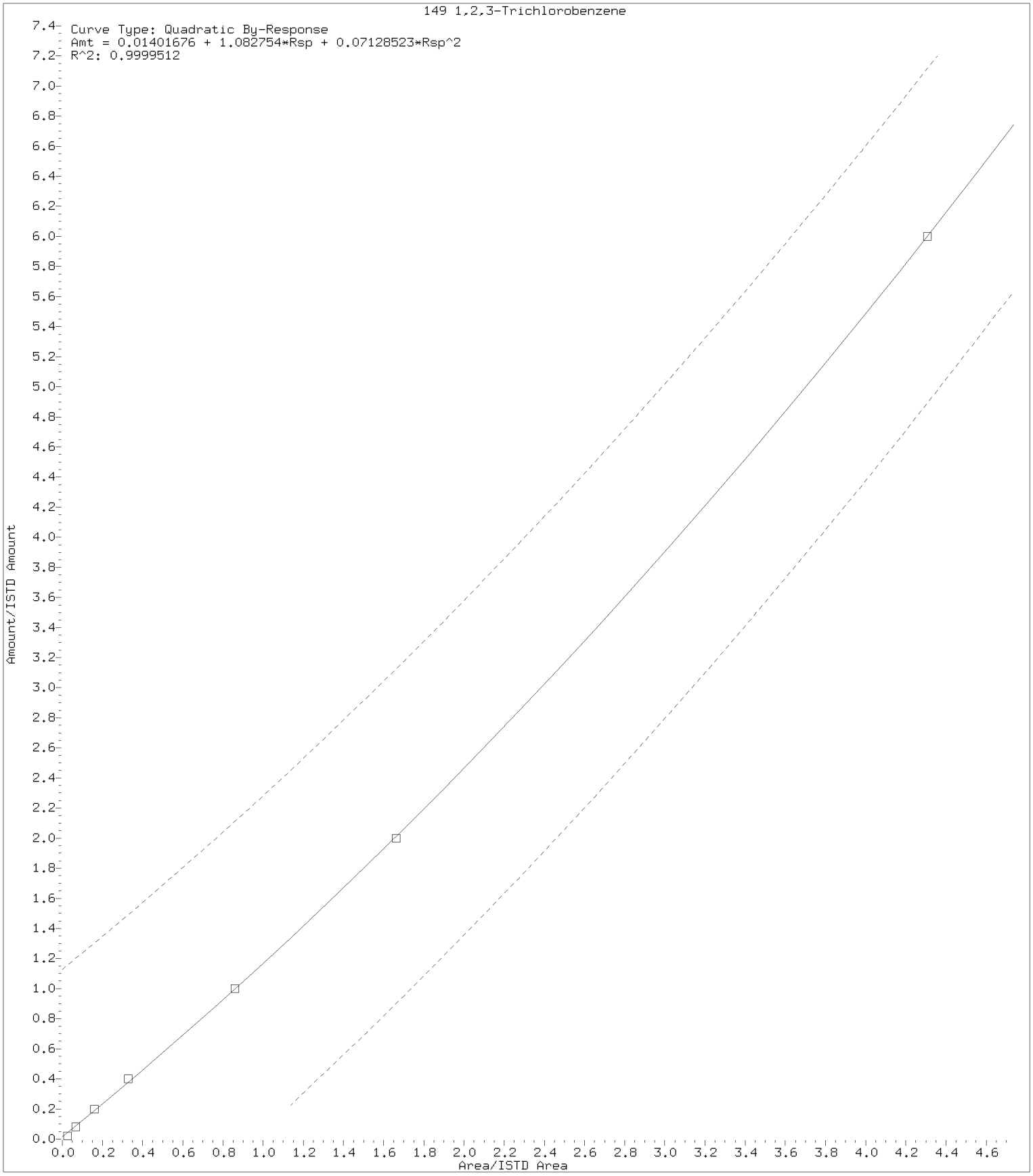
Target 3.5 esignature user ID: dvv10203



Digitally signed by Don V. Viray on 05/24/2018 at 21:35.
Target 3.5 esignature user ID: dvv10203



Digitally signed by Don V. Viray on 05/24/2018 at 21:35.
Target 3.5 esignature user ID: dvv10203

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem2/HP09137.i/18may23i.b/wy23i01.d	VSTD300
/chem2/HP09137.i/18may23i.b/wy23i02.d	VSTD100
/chem2/HP09137.i/18may23i.b/wy23i03.d	VSTD050
/chem2/HP09137.i/18may23i.b/wy23i04.d	VSTD020
/chem2/HP09137.i/18may23i.b/wy23i05.d	VSTD010
/chem2/HP09137.i/18may23i.b/wy23i06.d	VSTD004
/chem2/HP09137.i/18may23i.b/wy23i07.d	VSTD001

Area Summary

File ID:

Internal Standard Name	wy23i01.d	wy23i02.d	wy23i03.d	wy23i04.d	wy23i05.d	wy23i06.d	wy23i07.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	266341	201463	229067	213130	213201	205336	223994	221790	10	Yes
Fluorobenzene	1316934	1326674	1326838	1306371	1277734	1298035	1329676	1311752	1	Yes
Chlorobenzene-d5	1029344	1003924	1006908	987366	980049	974934	994664	996741	2	Yes
1,4-Dichlorobenzene-d4	622856	570496	545836	529032	515325	513537	517272	544908	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	wy23i01.d	wy23i02.d	wy23i03.d	wy23i04.d	wy23i05.d	wy23i06.d	wy23i07.d	Avg. RT
t-Butyl alcohol-d10	2.767	2.763	2.763	2.763	2.767	2.770	2.767	2.766
Fluorobenzene	5.071	5.071	5.067	5.067	5.071	5.070	5.067	5.069
Chlorobenzene-d5	8.196	8.196	8.196	8.196	8.196	8.193	8.193	8.195
1,4-Dichlorobenzene-d4	10.073	10.070	10.070	10.070	10.070	10.070	10.070	10.070

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 05/23/2018 at 22:41.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 ICV Date: 05/23/18 Time: 17:49

Lab File ID: wy23v01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3462	0.3324	19.20	20	-4	
#	Chloromethane	0.3678	0.3509	19.08	20	-5	#
	1,3-Butadiene	0.2872	0.2962	21.50	20	8	
*	Vinyl Chloride	0.3825	0.3686	19.28	20	-4	*
	Bromomethane	0.2600	0.2584	19.88	20	-1	
	Chloroethane	0.2207	0.2178	19.74	20	-1	
	Dichlorofluoromethane	0.5720	0.5294	18.51	20	-7	
	n-Pentane	0.4069	0.4248	20.88	20	4	
	Trichlorofluoromethane	0.4229	0.4386	20.74	20	4	
	Ethanol	0.1287	0.0970	395.09	500	-21	
	Freon 123a	0.2797	0.2954	21.12	20	6	
	Acrolein	2.4946	2.2103	132.90	150	-11	
*	1,1-Dichloroethene	0.2131	0.2388	22.41	20	12	*
	Acetone	1.1062	1.0909	147.93	150	-1	
	Freon 113	0.2149	0.2241	20.86	20	4	
	2-Propanol	0.6275	0.6292	150.42	150	0	
	Methyl Iodide	0.4011	0.4026	20.07	20	0	
	Carbon Disulfide	0.7054	0.7040	19.96	20	0	
	Allyl Chloride	0.3409	0.3626	21.27	20	6	
	Methyl Acetate	0.3042	0.2837	18.65	20	-7	
	Methylene Chloride	0.2567	0.2680	20.88	20	4	
	t-Butyl alcohol	1.2383	1.2478	201.54	200	1	
	Acrylonitrile	0.1464	0.1485	101.45	100	1	
	trans-1,2-Dichloroethene	0.2425	0.2638	21.76	20	9	
	Methyl Tertiary Butyl Ether	0.7037	0.6861	19.50	20	-3	
	n-Hexane	0.2794	0.2742	19.63	20	-2	
#	1,1-Dichloroethane	0.4268	0.4360	20.43	20	2	#
	di-Isopropyl ether	0.8141	0.8238	20.24	20	1	
	2-Chloro-1,3-butadiene	0.3626	0.3739	20.62	20	3	
	Ethyl t-butyl ether	0.6640	0.6572	19.80	20	-1	
	cis-1,2-Dichloroethene	0.2755	0.2962	21.50	20	8	
	2-Butanone	0.2085	0.2155	155.03	150	3	
	2,2-Dichloropropane	0.2127	0.2198	20.67	20	3	
	Propionitrile	1.7058	1.8122	159.35	150	6	
	Methacrylonitrile	0.1692	0.1733	153.58	150	2	
	Bromochloromethane	0.1380	0.1356	19.65	20	-2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 ICV Date: 05/23/18 Time: 17:49

Lab File ID: wy23v01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Tetrahydrofuran	1.7717	1.7652	99.63	100	0	
*	Chloroform	0.4296	0.4461	20.77	20	4	*
	1,1,1-Trichloroethane	0.3738	0.3787	20.27	20	1	
	Cyclohexane	0.3786	0.3963	20.94	20	5	
	1,1-Dichloropropene	0.3378	0.3487	20.65	20	3	
	Carbon Tetrachloride	0.2560	0.2541	19.85	20	-1	
	Isobutyl Alcohol	0.4226	0.4300	508.70	500	2	
	Benzene	1.0393	1.0683	20.56	20	3	
	1,2-Dichloroethane	0.3626	0.3596	19.84	20	-1	
	t-Amyl methyl ether	0.6774	0.6836	20.18	20	1	
	n-Heptane	0.2438	0.2415	19.81	20	-1	
	n-Butanol	0.3631	0.3138	864.09	1000	-14	
	Trichloroethene	0.2703	0.2744	20.31	20	2	
	Methylcyclohexane	0.3126	0.3217	20.58	20	3	
*	1,2-Dichloropropane	0.2640	0.2749	20.83	20	4	*
	Dibromomethane	0.1773	0.1793	20.23	20	1	
	1,4-Dioxane	0.1148	0.0807	351.52	500	-30	
	Methyl Methacrylate	0.2691	0.2643	19.65	20	-2	
	Bromodichloromethane	0.3133	0.3047	19.45	20	-3	
	2-Nitropropane	0.0690	0.0597	18.66	20	-7	
	2-Chloroethyl Vinyl Ether	0.1955	0.1880	19.24	20	-4	
	cis-1,3-Dichloropropene	0.4051	0.4054	20.01	20	0	
	4-Methyl-2-pentanone	0.4101	0.4332	105.64	100	6	
*	Toluene	0.9015	0.9332	20.70	20	4	*
	trans-1,3-Dichloropropene	0.4830	0.4849	20.08	20	0	
	Ethyl Methacrylate	0.5836	0.5797	19.86	20	-1	
	1,1,2-Trichloroethane	0.3549	0.3662	20.64	20	3	
	Tetrachloroethene	0.3396	0.3492	20.57	20	3	
	1,3-Dichloropropane	0.5983	0.6047	20.21	20	1	
	2-Hexanone	0.4207	0.4491	106.75	100	7	
	Dibromochloromethane	0.3354	0.3237	19.30	20	-3	
	1,2-Dibromoethane	0.3836	0.3917	20.42	20	2	
#	Chlorobenzene	1.0197	1.0316	20.23	20	1	#
	1,1,1,2-Tetrachloroethane	0.3075	0.3008	19.56	20	-2	
*	Ethylbenzene	1.6463	1.6877	20.50	20	3	*
	m+p-Xylene	0.6627	0.6818	41.16	40	3	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 ICV Date: 05/23/18 Time: 17:49

Lab File ID: wy23v01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	o-Xylene	0.6683	0.6657	19.92	20	0	
	Styrene	1.0961	1.1276	20.57	20	3	
#	Bromoform	0.2260	0.2070	17.54	20	-12	#
	Isopropylbenzene	1.5302	1.5942	20.84	20	4	
	Cyclohexanone	0.4251	0.3744	440.43	500	-12	
	Bromobenzene	0.7903	0.8027	20.31	20	2	
#	1,1,2,2-Tetrachloroethane	1.1058	1.1067	20.02	20	0	#
	1,2,3-Trichloropropane	0.3401	0.3662	21.53	20	8	
	trans-1,4-Dichloro-2-butene	0.2987	0.3288	110.06	100	10	
	n-Propylbenzene	3.2523	3.3932	20.87	20	4	
	2-Chlorotoluene	0.7181	0.7408	20.63	20	3	
	4-Chlorotoluene	0.7770	0.7709	19.84	20	-1	
	1,3,5-Trimethylbenzene	2.3972	2.4200	20.19	20	1	
	tert-Butylbenzene	0.5242	0.5098	19.45	20	-3	
	Pentachloroethane	0.3912	0.3684	18.84	20	-6	
	1,2,4-Trimethylbenzene	2.4991	2.5381	20.31	20	2	
	sec-Butylbenzene	2.6361	2.6463	20.08	20	0	
	1,3-Dichlorobenzene	1.4656	1.4243	19.44	20	-3	
	p-Isopropyltoluene	2.3491	2.3687	20.17	20	1	
	1,4-Dichlorobenzene	1.5642	1.5375	19.66	20	-2	
	1,2,3-Trimethylbenzene	2.6244	2.6469	20.17	20	1	
	Benzyl Chloride	1.6627	1.6108	17.74	20	-11	
	1,3-Diethylbenzene	1.4034	1.3603	19.39	20	-3	
	1,4-Diethylbenzene	1.4374	1.3750	19.13	20	-4	
	1,2-Dichlorobenzene	1.5173	1.4663	19.33	20	-3	
	n-Butylbenzene	1.1463	1.0837	18.91	20	-5	
	1,2-Diethylbenzene	1.2097	1.1640	19.24	20	-4	
	1,2-Dibromo-3-chloropropane	0.2339	0.2253	19.27	20	-4	
	1,3,5-Trichlorobenzene	0.8681	0.8053	18.55	20	-7	
	1,2,4-Trichlorobenzene	0.9007	0.7877	17.68	20	-12	
	Hexachlorobutadiene	0.2678	0.2479	18.51	20	-7	
	Naphthalene	3.5048	3.4054	19.43	20	-3	
	1,2,3-Trichlorobenzene	0.8817	0.7729	17.78	20	-11	
	2-Methylnaphthalene	1.6822	1.4622	17.38	20	-13	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories

Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i06.d
/chem2/HP09953.i/18feb22i.b/bf22i05.d
/chem2/HP09953.i/18feb22i.b/bf22i04.d
/chem2/HP09953.i/18feb22i.b/bf22i03.d
/chem2/HP09953.i/18feb22i.b/bf22i02.d
/chem2/HP09953.i/18feb22i.b/bf22i01.d

File /chem2/HP09953.i/18feb22i.b/bf22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09953.i/18jun13a.b/bu13c01.d

RT Summary

Internal Standard Name	File ID: bu13c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	1.924	1.924	Yes
Fluorobenzene	3.956	3.956	Yes
Chlorobenzene-d5	7.156	7.156	Yes
1,4-Dichlorobenzene-d4	9.236	9.236	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: bu13c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	97875	114201	57100	228402	Yes
Fluorobenzene	1059738	1207816	603908	2415632	Yes
Chlorobenzene-d5	758642	931957	465978	1863914	Yes
1,4-Dichlorobenzene-d4	426924	549119	274560	1098238	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/13/2018 at 19:15

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/13/18 Time: 18:49

Lab File ID: bu13c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.5631	57.27	50	15	
#	Chloromethane	0.5872	0.5908	50.30	50	1	#
*	Vinyl Chloride	0.4173	0.4294	51.45	50	3	*
	Bromomethane	0.2899	0.3362	57.99	50	16	
	Chloroethane	0.2334	0.2487	53.26	50	7	
	Trichlorofluoromethane	0.5369	0.6072	56.54	50	13	
	Ethanol	0.1211	0.1011	2086.74	2500	-17	
	Freon 123a	0.3518	0.3193	45.38	50	-9	
	Acrolein	2.4281	2.3250	478.78	500	-4	
*	1,1-Dichloroethene	0.2459	0.2224	45.22	50	-10	*
	Acetone	0.0248	0.0193	77.74	100	-22	
	Freon 113	0.2960	0.2803	47.35	50	-5	
	2-Propanol	1.1163	1.1021	246.82	250	-1	
	Methyl Iodide	0.5387	0.4745	44.04	50	-12	
	Carbon Disulfide	0.8424	0.7799	46.29	50	-7	
	Methyl Acetate	0.2090	0.1893	45.28	50	-9	
	Allyl Chloride	0.4892	0.4872	49.80	50	0	
	Methylene Chloride	0.2885	0.2583	44.76	50	-10	
	t-Butyl alcohol	1.2418	1.1954	240.67	250	-4	
	Acrylonitrile	0.0991	0.0825	41.63	50	-17	
	Methyl Tertiary Butyl Ether	0.7975	0.7552	47.35	50	-5	
	trans-1,2-Dichloroethene	0.2884	0.2592	44.94	50	-10	
	n-Hexane	0.5126	0.4974	48.51	50	-3	
#	1,1-Dichloroethane	0.5731	0.5861	51.13	50	2	#
	di-Isopropyl ether	1.1602	1.1582	49.91	50	0	
	2-Chloro-1,3-butadiene	0.5207	0.5672	54.47	50	9	
	Ethyl t-butyl ether	0.9727	0.9852	50.64	50	1	
	2-Butanone	7.3204	6.6413	90.72	100	-9	
	cis-1,2-Dichloroethene	0.3342	0.3171	47.44	50	-5	
	2,2-Dichloropropane	0.4251	0.4819	56.68	50	13	
	Propionitrile	2.0227	2.0153	249.09	250	0	
	Methacrylonitrile	0.1170	0.1023	109.20	125	-13	
	Bromochloromethane	0.1635	0.1471	44.98	50	-10	
	Tetrahydrofuran	1.5856	1.4706	92.75	100	-7	
*	Chloroform	0.5364	0.5561	51.84	50	4	*
	1,1,1-Trichloroethane	0.5181	0.5256	50.71	50	1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/13/18 Time: 18:49

Lab File ID: bu13c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Cyclohexane	0.6302	0.6128	48.62	50	-3	
	Cyclohexane(2)	0.5080	0.4586	45.14	50	-10	
	Cyclohexane(3)	0.1808	0.1760	48.66	50	-3	
	1,1-Dichloropropene	0.4338	0.4409	50.82	50	2	
	Carbon Tetrachloride	0.3830	0.4263	55.64	50	11	
	Isobutyl Alcohol	0.5096	0.5193	636.92	625	2	
	Benzene	1.2609	1.2000	47.58	50	-5	
	1,2-Dichloroethane	0.4097	0.4451	54.32	50	9	
	1,2-Dichloroethane(2)	0.0353	0.0324	45.91	50	-8	
	t-Amyl methyl ether	0.8144	0.7888	48.42	50	-3	
	n-Heptane	0.6124	0.5839	47.67	50	-5	
	n-Butanol	0.3762	0.3600	1196.30	1250	-4	
	Trichloroethene	0.3227	0.3075	47.64	50	-5	
	Methylcyclohexane	0.6000	0.5575	46.46	50	-7	
*	1,2-Dichloropropane	0.3331	0.3236	48.58	50	-3	*
	Methyl Methacrylate	0.1907	0.1723	45.19	50	-10	
	1,4-Dioxane	0.1410	0.1296	574.51	625	-8	
	Dibromomethane	0.1795	0.1683	46.87	50	-6	
	Bromodichloromethane	0.3833	0.4039	52.68	50	5	
	2-Nitropropane	2.5306	3.6283	123.19	100	23	
	2-Chloroethyl Vinyl Ether	0.1644	0.1419	43.18	50	-14	
	cis-1,3-Dichloropropene	0.4668	0.4783	51.23	50	2	
	4-Methyl-2-pentanone	0.3036	0.2621	86.33	100	-14	
*	Toluene	0.9983	1.0126	50.71	50	1	*
	trans-1,3-Dichloropropene	0.4982	0.5823	58.44	50	17	
	Ethyl Methacrylate	0.4494	0.4646	51.69	50	3	
	1,1,2-Trichloroethane	0.3230	0.3185	49.32	50	-1	
	Tetrachloroethene	0.4631	0.4406	47.57	50	-5	
	1,3-Dichloropropane	0.5552	0.5746	51.75	50	3	
	2-Hexanone	0.2699	0.2391	88.61	100	-11	
	Dibromochloromethane	0.3545	0.3856	54.39	50	9	
	1,2-Dibromoethane	0.3271	0.3239	49.52	50	-1	
	1-Chlorohexane	0.5308	0.5402	50.88	50	2	
#	Chlorobenzene	1.1089	1.0848	48.91	50	-2	#
	1,1,1,2-Tetrachloroethane	0.3690	0.4007	54.30	50	9	
*	Ethylbenzene	1.9040	1.9991	52.50	50	5	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/13/18 Time: 18:49

Lab File ID: bu13c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	m+p-Xylene	0.7574	0.7588	100.18	100	0	
	o-Xylene	0.7545	0.7515	49.81	50	0	
	Styrene	1.1879	1.2026	50.62	50	1	
#	Bromoform	0.2222	0.2351	49.93	50	0	#
	Isopropylbenzene	1.9082	2.0015	52.45	50	5	
	Cyclohexanone	0.9002	0.5563	393.92	625	-37	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7765	51.39	50	3	#
	Bromobenzene	0.8408	0.8496	50.52	50	1	
	trans-1,4-Dichloro-2-butene	0.2069	0.2635	159.20	125	27	
	1,2,3-Trichloropropane	0.2073	0.2158	52.04	50	4	
	n-Propylbenzene	3.8098	4.2533	55.82	50	12	
	2-Chlorotoluene	0.7939	0.8091	50.95	50	2	
	1,3,5-Trimethylbenzene	2.8159	3.1142	55.30	50	11	
	4-Chlorotoluene	0.8226	0.8415	51.15	50	2	
	tert-Butylbenzene	0.6559	0.6751	51.47	50	3	
	Pentachloroethane	0.4798	0.5594	58.30	50	17	
	1,2,4-Trimethylbenzene	2.8653	3.1758	55.42	50	11	
	sec-Butylbenzene	3.5929	3.9480	54.94	50	10	
	1,3-Dichlorobenzene	1.6523	1.6580	50.17	50	0	
	p-Isopropyltoluene	3.2092	3.4801	54.22	50	8	
	1,4-Dichlorobenzene	1.7189	1.7054	49.61	50	-1	
	1,2,3-Trimethylbenzene	2.9416	3.2319	54.93	50	10	
	Benzyl Chloride	0.2338	0.2831	54.10	50	8	
	1,3-Diethylbenzene	1.8848	2.0129	53.40	50	7	
	1,4-Diethylbenzene	2.0114	2.1054	52.34	50	5	
	n-Butylbenzene	1.6592	1.7978	54.18	50	8	
	1,2-Dichlorobenzene	1.6409	1.6183	49.31	50	-1	
	1,2-Diethylbenzene	1.6079	1.6875	52.48	50	5	
	1,2-Dibromo-3-chloropropane	0.1332	0.1501	56.33	50	13	
	1,3,5-Trichlorobenzene	1.3773	1.3800	50.10	50	0	
	1,2,4-Trichlorobenzene	1.2763	1.2650	49.56	50	-1	
	Hexachlorobutadiene	0.6574	0.7130	51.26	50	3	
	Naphthalene	2.6627	2.6278	49.34	50	-1	
	1,2,3-Trichlorobenzene	1.1896	1.1903	50.03	50	0	
	2-Methylnaphthalene	1.6549	1.7116	51.71	50	3	
	Dibromofluoromethane	0.2502	0.2545	50.88	50	2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/13/18 Time: 18:49

Lab File ID: bu13c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Dibromofluoromethane(2)	0.2550	0.2589	50.76	50	2
1,2-Dichloroethane-d4	0.0548	0.0569	51.91	50	4
1,2-Dichloroethane-d4(2)	0.2800	0.3376	60.29	50	21
1,2-Dichloroethane-d4(3)	0.0347	0.0336	48.46	50	-3
Toluene-d8	1.3054	1.3829	52.97	50	6
Toluene-d8(2)	0.8436	0.8867	52.55	50	5
4-Bromofluorobenzene	0.4987	0.5123	51.37	50	3
4-Bromofluorobenzene(2)	0.4342	0.4282	49.31	50	-1

Average %Drift 7

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem/HP07536.i/18may24i.b/qy24i10.d
/chem/HP07536.i/18may24i.b/qy24i11.d
/chem/HP07536.i/18may24i.b/qy24i12.d
/chem/HP07536.i/18may24i.b/qy24i13.d
/chem/HP07536.i/18may24i.b/qy24i14.d
/chem/HP07536.i/18may24i.b/qy24i15.d

File /chem/HP07536.i/18may24i.b/qy24i13.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem/HP07536.i/18jun13b.b/qu13c05.d

RT Summary

Internal Standard Name	File ID: qu13c05.d	ICAL RT	In Spec
t-Butyl alcohol-d10	4.206	4.206	Yes
Fluorobenzene	7.684	7.688	Yes
Chlorobenzene-d5	11.153	11.157	Yes
1,4-Dichlorobenzene-d4	13.023	13.030	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: qu13c05.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	136529	141858	70929	283716	Yes
Fluorobenzene	995880	1158639	579320	2317278	Yes
Chlorobenzene-d5	755409	836232	418116	1672464	Yes
1,4-Dichlorobenzene-d4	340164	373559	186780	747118	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/13/2018 at 22:05

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date: 06/13/18 Time: 21:27

Lab File ID: qu13c05.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3429	0.4347	63.39	50	27	
#	Chloromethane	0.4013	0.3511	43.74	50	-13	#
*	Vinyl Chloride	0.3750	0.3122	41.63	50	-17	*
	Bromomethane	6.2098	7.8393	63.12	50	26	
	Chloroethane	4.2607	4.3151	50.64	50	1	
	Trichlorofluoromethane	0.3961	0.4325	54.60	50	9	
	n-Pentane	0.3066	0.2346	38.26	50	-23	
	Ethanol	0.1450	0.1278	2202.55	2500	-12	
	Freon 123a	0.3328	0.2906	43.66	50	-13	
	Acrolein	2.8883	2.2904	396.48	500	-21	
*	1,1-Dichloroethene	0.2529	0.2224	43.97	50	-12	*
*	1,1-Dichloroethene(2)	0.1272	0.1131	44.45	50	-11	*
	Acetone	0.0293	0.0274	93.46	100	-7	
	Freon 113	0.2184	0.2178	49.87	50	0	
	2-Propanol	0.8722	0.8738	250.45	250	0	
	Methyl Iodide	0.5258	0.4634	44.07	50	-12	
	Carbon Disulfide	0.9307	0.8067	43.34	50	-13	
	Methyl Acetate	0.2470	0.2346	47.49	50	-5	
	Allyl Chloride	0.4767	0.4283	44.92	50	-10	
	Methylene Chloride	0.3108	0.2792	44.91	50	-10	
	t-Butyl alcohol	1.2832	1.1558	225.19	250	-10	
	Acrylonitrile	0.1273	0.1163	45.66	50	-9	
	Methyl Tertiary Butyl Ether	0.8586	0.7886	45.92	50	-8	
	trans-1,2-Dichloroethene	0.2948	0.2658	45.08	50	-10	
	n-Hexane	0.2414	0.2462	50.98	50	2	
#	1,1-Dichloroethane	0.5320	0.4704	44.20	50	-12	#
	di-Isopropyl ether	1.0000	0.9061	45.30	50	-9	
	2-Chloro-1,3-butadiene	0.4439	0.4009	45.15	50	-10	
	Ethyl t-butyl ether	0.9318	0.8614	46.22	50	-8	
	2-Butanone	6.1815	4.9405	79.92	100	-20	
	2-Butanone(2)	1.6223	1.3111	80.82	100	-19	
	cis-1,2-Dichloroethene	0.3268	0.2975	45.52	50	-9	
	2,2-Dichloropropane	0.4186	0.3744	44.71	50	-11	
	Propionitrile	0.0456	0.0451	247.22	250	-1	
	Methacrylonitrile	0.1357	0.1313	120.94	125	-3	
	Bromochloromethane	0.1700	0.1552	45.66	50	-9	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date: 06/13/18 Time: 21:27

Lab File ID: qu13c05.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Tetrahydrofuran	1.6020	1.3067	81.57	100	-18	
*	Chloroform	0.4974	0.4609	46.33	50	-7	*
	1,1,1-Trichloroethane	0.4502	0.3924	43.57	50	-13	
	Cyclohexane	0.3715	0.3620	48.72	50	-3	
	Cyclohexane(2)	0.3087	0.2875	46.56	50	-7	
	Cyclohexane(3)	0.1118	0.1080	48.28	50	-3	
	1,1-Dichloropropene	0.3907	0.3446	44.10	50	-12	
	Carbon Tetrachloride	0.3262	0.3092	47.39	50	-5	
	Isobutyl Alcohol	0.4227	0.3915	578.87	625	-7	
	Benzene	1.1704	1.0570	45.15	50	-10	
	1,2-Dichloroethane	0.3923	0.3690	47.02	50	-6	
	1,2-Dichloroethane(2)	0.0403	0.0359	44.61	50	-11	
	t-Amyl methyl ether	0.8857	0.8022	45.29	50	-9	
	n-Heptane	0.2122	0.2238	52.73	50	5	
	n-Butanol	0.3504	0.3446	1229.57	1250	-2	
	Trichloroethene	0.2939	0.2696	45.86	50	-8	
	Methylcyclohexane	0.2800	0.2742	48.95	50	-2	
*	1,2-Dichloropropane	0.3143	0.2791	44.40	50	-11	*
	Methyl Methacrylate	0.2270	0.2141	47.16	50	-6	
	1,4-Dioxane	0.1426	0.1421	622.52	625	0	
	Dibromomethane	0.1902	0.1794	47.14	50	-6	
	Bromodichloromethane	0.3524	0.3480	49.37	50	-1	
	2-Nitropropane	2.2984	2.5907	112.72	100	13	
	2-Chloroethyl Vinyl Ether	0.2172	0.2058	47.38	50	-5	
	cis-1,3-Dichloropropene	0.4892	0.4591	46.93	50	-6	
	4-Methyl-2-pentanone	0.2997	0.2684	89.55	100	-10	
*	Toluene	0.9710	0.8394	43.22	50	-14	*
	trans-1,3-Dichloropropene	0.5923	0.5608	47.34	50	-5	
	Ethyl Methacrylate	0.5811	0.5329	45.86	50	-8	
	1,1,2-Trichloroethane	0.3748	0.3363	44.86	50	-10	
	Tetrachloroethene	0.3812	0.3420	44.85	50	-10	
	1,3-Dichloropropane	0.6471	0.5706	44.09	50	-12	
	2-Hexanone	0.2833	0.2557	90.26	100	-10	
	Dibromochloromethane	0.3707	0.3745	50.52	50	1	
	1,2-Dibromoethane	0.3924	0.3598	45.85	50	-8	
	1-Chlorohexane	0.3845	0.3279	42.64	50	-15	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date: 06/13/18 Time: 21:27

Lab File ID: qu13c05.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

			ACTUAL	TRUE	%	
COMPOUND	RRF	RRF50	CONC.	CONC.	DRIFT	
# Chlorobenzene	1.0538	0.9113	43.24	50	-14	#
1,1,1,2-Tetrachloroethane	0.3586	0.3265	45.52	50	-9	
* Ethylbenzene	1.6525	1.4177	42.90	50	-14	*
m+p-Xylene	0.6558	0.5552	84.67	100	-15	
o-Xylene	0.6576	0.5536	42.09	50	-16	
Styrene	1.1227	0.9567	42.60	50	-15	
# Bromoform	0.2362	0.2735	52.68	50	5	#
Isopropylbenzene	1.4187	1.1979	42.22	50	-16	
Cyclohexanone	0.5104	0.4404	539.24	625	-14	
# 1,1,2,2-Tetrachloroethane	1.1111	0.9771	43.97	50	-12	#
Bromobenzene	1.0247	0.8767	42.78	50	-14	
trans-1,4-Dichloro-2-butene	0.3097	0.3050	123.10	125	-2	
1,2,3-Trichloropropane	0.3306	0.2995	45.29	50	-9	
n-Propylbenzene	3.5536	3.0151	42.42	50	-15	
2-Chlorotoluene	0.8050	0.6795	42.20	50	-16	
1,3,5-Trimethylbenzene	2.6413	2.2379	42.36	50	-15	
4-Chlorotoluene	0.8607	0.7211	41.89	50	-16	
tert-Butylbenzene	0.5338	0.4326	40.52	50	-19	
Pentachloroethane	0.5362	0.5173	48.24	50	-4	
1,2,4-Trimethylbenzene	2.7894	2.3190	41.57	50	-17	
sec-Butylbenzene	2.8858	2.4120	41.79	50	-16	
1,3-Dichlorobenzene	1.6124	1.3557	42.04	50	-16	
p-Isopropyltoluene	2.5940	2.1283	41.02	50	-18	
1,4-Dichlorobenzene	1.7117	1.4262	41.66	50	-17	
1,2,3-Trimethylbenzene	2.9465	2.4262	41.17	50	-18	
Benzyl Chloride	0.4491	0.4371	48.67	50	-3	
1,3-Diethylbenzene	1.5416	1.2667	41.08	50	-18	
1,4-Diethylbenzene	1.5759	1.2746	40.44	50	-19	
n-Butylbenzene	1.1940	0.9878	41.36	50	-17	
1,2-Dichlorobenzene	1.6029	1.3390	41.77	50	-16	
1,2-Diethylbenzene	1.3559	1.0733	39.58	50	-21	
1,2-Dibromo-3-chloropropane	0.1915	0.1792	46.79	50	-6	
1,3,5-Trichlorobenzene	1.0352	0.9368	45.24	50	-10	
1,2,4-Trichlorobenzene	1.0177	0.9286	45.62	50	-9	
Hexachlorobutadiene	0.4427	0.4203	47.48	50	-5	
Naphthalene	2.9845	2.6435	44.29	50	-11	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date: 06/13/18 Time: 21:27

Lab File ID: qu13c05.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,2,3-Trichlorobenzene	0.9565	0.8687	45.41	50	-9
2-Methylnaphthalene	1.6185	1.5101	46.65	50	-7
Dibromofluoromethane	0.2721	0.2260	41.53	50	-17
Dibromofluoromethane(2)	0.2751	0.2335	42.44	50	-15
1,2-Dichloroethane-d4	0.0745	0.0628	42.16	50	-16
1,2-Dichloroethane-d4(2)	0.3283	0.2802	42.68	50	-15
1,2-Dichloroethane-d4(3)	0.0463	0.0400	43.16	50	-14
Toluene-d8	1.4355	1.1416	39.76	50	-20
Toluene-d8(2)	0.9333	0.7418	39.74	50	-21
4-Bromofluorobenzene	0.4660	0.3824	41.03	50	-18
4-Bromofluorobenzene(2)	0.4169	0.3554	42.63	50	-15

Average %Drift 11

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories

Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem/HP07163.i/18may14i.b/py14i13.d
/chem/HP07163.i/18may14i.b/py14i11.d
/chem/HP07163.i/18may14i.b/py14i09.d
/chem/HP07163.i/18may14i.b/py14i07.d
/chem/HP07163.i/18may14i.b/py14i05.d
/chem/HP07163.i/18may14i.b/py14i03.d
/chem/HP07163.i/18may14i.b/py14i01.d

File /chem/HP07163.i/18may14i.b/py14i05.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem/HP07163.i/18jun19a.b/pu19c01.d

RT Summary

Internal Standard Name	File ID: pu19c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	2.281	2.284	Yes
Fluorobenzene	4.124	4.121	Yes
Chlorobenzene-d5	5.956	5.952	Yes
1,4-Dichlorobenzene-d4	7.257	7.254	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: pu19c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	450731	557594	278797	1115188	Yes
Fluorobenzene	1572344	1786025	893012	3572050	Yes
Chlorobenzene-d5	1520368	1756658	878329	3513316	Yes
1,4-Dichlorobenzene-d4	699392	798917	399458	1597834	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07163 Calibration Date: 06/19/18 Time: 10:15

Lab File ID: pu19c01.d Init. Calib. Date(s): 05/14/18 05/15/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-VRX ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Vinyl Chloride	0.2657	0.2533	47.66	50	-5	*
*	1,1-Dichloroethene	0.1693	0.1729	51.08	50	2	*
*	1,1-Dichloroethene(2)	0.0733	0.0836	57.00	50	14	*
	Methylene Chloride	0.1908	0.1831	47.99	50	-4	
	t-Butyl alcohol	0.8306	0.8935	268.90	250	8	
	trans-1,2-Dichloroethene	0.2143	0.1989	46.41	50	-7	
	Methyl Tertiary Butyl Ether	0.5791	0.5315	45.89	50	-8	
	n-Hexane	0.2884	0.3278	56.83	50	14	
#	1,1-Dichloroethane	0.3399	0.3236	47.61	50	-5	#
	di-Isopropyl ether	0.5353	0.5816	54.32	50	9	
	2-Chloro-1,3-butadiene	0.3324	0.3236	48.68	50	-3	
	Ethyl t-butyl ether	0.5735	0.5662	49.37	50	-1	
	cis-1,2-Dichloroethene	0.2219	0.2312	52.11	50	4	
	2,2-Dichloropropane	0.3129	0.2877	45.98	50	-8	
*	Chloroform	0.3451	0.3648	52.85	50	6	*
	1,1,1-Trichloroethane	0.3478	0.3723	53.52	50	7	
	1,1-Dichloropropene	0.2952	0.3133	53.08	50	6	
	Carbon Tetrachloride	0.3067	0.3469	56.56	50	13	
	Benzene	0.8440	0.8663	51.32	50	3	
	1,2-Dichloroethane	0.2751	0.2809	51.06	50	2	
	1,2-Dichloroethane(2)	0.0211	0.0252	59.61	50	19	
	t-Amyl methyl ether	0.6895	0.5590	40.53	50	-19	
	Trichloroethene	0.2491	0.2446	49.09	50	-2	
*	1,2-Dichloropropane	0.1885	0.1994	52.88	50	6	*
	Dibromomethane	0.1197	0.1199	50.09	50	0	
	Bromodichloromethane	0.2607	0.2807	53.84	50	8	
	cis-1,3-Dichloropropene	0.3045	0.3278	53.82	50	8	
*	Toluene	0.6194	0.6229	50.28	50	1	*
	trans-1,3-Dichloropropene	0.2958	0.2939	49.68	50	-1	
	1,1,2-Trichloroethane	0.1916	0.1931	50.39	50	1	
	Tetrachloroethene	0.3118	0.3483	55.86	50	12	
	1,3-Dichloropropane	0.3262	0.3341	51.20	50	2	
	Dibromochloromethane	0.2220	0.2555	57.54	50	15	
	1,2-Dibromoethane	0.2141	0.2215	51.73	50	3	
#	Chlorobenzene	0.6915	0.7191	52.00	50	4	#
	1,1,1,2-Tetrachloroethane	0.2300	0.2518	54.73	50	9	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07163 Calibration Date: 06/19/18 Time: 10:15

Lab File ID: pu19c01.d Init. Calib. Date(s): 05/14/18 05/15/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-VRX ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Ethylbenzene	1.1765	1.1874	50.47	50	1	*
	m+p-Xylene	0.4943	0.5113	103.44	100	3	
	o-Xylene	0.4857	0.5113	52.63	50	5	
	Styrene	0.7123	0.7427	52.13	50	4	
#	Bromoform	0.1804	0.2132	59.11	50	18	#
	Isopropylbenzene	1.2277	1.2842	52.30	50	5	
	Bromobenzene	0.6158	0.7111	57.74	50	15	
#	1,1,2,2-Tetrachloroethane	0.6355	0.6732	52.96	50	6	#
	1,2,3-Trichloropropane	0.2160	0.2377	55.02	50	10	
	trans-1,4-Dichloro-2-butene	0.1507	0.1085	90.01	125	-28	
	n-Propylbenzene	2.6483	2.9617	55.92	50	12	
	2-Chlorotoluene	0.5778	0.6644	57.49	50	15	
	4-Chlorotoluene	0.6174	0.6801	55.08	50	10	
	1,3,5-Trimethylbenzene	2.0763	2.2586	54.39	50	9	
	tert-Butylbenzene	0.4714	0.5303	56.25	50	13	
	1,2,4-Trimethylbenzene	2.0010	2.1370	53.40	50	7	
	sec-Butylbenzene	2.5071	2.7347	54.54	50	9	
	1,3-Dichlorobenzene	1.0940	1.2079	55.21	50	10	
	p-Isopropyltoluene	2.1741	2.3279	53.54	50	7	
	1,4-Dichlorobenzene	1.1495	1.2663	55.08	50	10	
	Benzyl Chloride	1.1591	1.0370	39.72	50	-21	
	1,2-Dichlorobenzene	1.0337	1.0978	53.10	50	6	
	n-Butylbenzene	0.9330	0.8480	45.45	50	-9	
	1,2-Dibromo-3-chloropropane	0.1676	0.1423	42.43	50	-15	
	1,3,5-Trichlorobenzene	0.7741	0.7047	45.52	50	-9	
	1,2,4-Trichlorobenzene	0.6406	0.4658	36.36	50	-27	
	Hexachlorobutadiene	0.3731	0.3636	48.73	50	-3	
	Naphthalene	1.9759	0.9920	25.10	50	-50	
	1,2,3-Trichlorobenzene	0.5870	0.3931	33.48	50	-33	
	Dibromofluoromethane	0.2408	0.2477	51.42	50	3	
	Dibromofluoromethane(2)	0.2465	0.2533	51.38	50	3	
	1,2-Dichloroethane-d4	0.0580	0.0635	54.71	50	9	
	1,2-Dichloroethane-d4(2)	0.2668	0.2823	52.90	50	6	
	1,2-Dichloroethane-d4(3)	0.0367	0.0382	52.11	50	4	
	Toluene-d8	1.1222	1.0825	48.23	50	-4	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07163 Calibration Date: 06/19/18 Time: 10:15

Lab File ID: pu19c01.d Init. Calib. Date(s): 05/14/18 05/15/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-VRX ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Toluene-d8(2)	0.7294	0.7090	48.60	50	-3
4-Bromofluorobenzene	0.4516	0.3755	41.57	50	-17
4-Bromofluorobenzene(2)	0.4154	0.3933	47.34	50	-5

Average %Drift 9

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories

Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09137.i/18may23i.b/wy23i07.d
/chem2/HP09137.i/18may23i.b/wy23i06.d
/chem2/HP09137.i/18may23i.b/wy23i05.d
/chem2/HP09137.i/18may23i.b/wy23i04.d
/chem2/HP09137.i/18may23i.b/wy23i03.d
/chem2/HP09137.i/18may23i.b/wy23i02.d
/chem2/HP09137.i/18may23i.b/wy23i01.d

File /chem2/HP09137.i/18may23i.b/wy23i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09137.i/18jun21b.b/wu21c05.d

RT Summary

Internal Standard Name	File ID: wu21c05.d	ICAL RT	In Spec
t-Butyl alcohol-d10	2.763	2.763	Yes
Fluorobenzene	5.067	5.067	Yes
Chlorobenzene-d5	8.196	8.196	Yes
1,4-Dichlorobenzene-d4	10.070	10.070	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: wu21c05.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	287608	229067	114534	458134	Yes
Fluorobenzene	1224415	1326838	663419	2653676	Yes
Chlorobenzene-d5	951287	1006908	503454	2013816	Yes
1,4-Dichlorobenzene-d4	526427	545836	272918	1091672	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/21/2018 at 19:48

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date: 06/21/18 Time: 19:26

Lab File ID: wu21c05.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3462	0.4419	63.82	50	28	
#	Chloromethane	0.3678	0.3637	49.45	50	-1	#
	1,3-Butadiene	0.2872	0.2320	42.53	50	-15	
*	Vinyl Chloride	0.3825	0.3489	45.61	50	-9	*
	Bromomethane	0.2600	0.2797	53.79	50	8	
	Chloroethane	0.2207	0.2080	47.13	50	-6	
	n-Pentane	0.4069	0.3528	43.35	50	-13	
	Trichlorofluoromethane	0.4229	0.4912	58.07	50	16	
	Freon 123a	0.2797	0.2572	45.98	50	-8	
	Acrolein	2.4946	1.5778	316.25	500	-37	
*	1,1-Dichloroethene	0.2131	0.2122	49.78	50	0	*
*	1,1-Dichloroethene(2)	0.1054	0.1101	52.19	50	4	*
	Acetone	1.1062	0.8308	75.11	100	-25	
	Freon 113	0.2149	0.2198	51.14	50	2	
	2-Propanol	0.6275	0.5600	223.10	250	-11	
	Methyl Iodide	0.4011	0.3884	48.41	50	-3	
	Carbon Disulfide	0.7054	0.6952	49.27	50	-1	
	Allyl Chloride	0.3409	0.3474	50.96	50	2	
	Methyl Acetate	0.3042	0.2823	46.41	50	-7	
	Methylene Chloride	0.2567	0.2543	49.53	50	-1	
	t-Butyl alcohol	1.2383	1.0034	202.57	250	-19	
	Acrylonitrile	0.1464	0.1519	51.88	50	4	
	trans-1,2-Dichloroethene	0.2425	0.2243	46.24	50	-8	
	Methyl Tertiary Butyl Ether	0.7037	0.6081	43.21	50	-14	
	n-Hexane	0.2794	0.3176	56.84	50	14	
#	1,1-Dichloroethane	0.4268	0.4090	47.92	50	-4	#
	di-Isopropyl ether	0.8141	0.7369	45.26	50	-9	
	2-Chloro-1,3-butadiene	0.3626	0.3539	48.80	50	-2	
	Ethyl t-butyl ether	0.6640	0.5964	44.91	50	-10	
	cis-1,2-Dichloroethene	0.2755	0.2561	46.47	50	-7	
	2-Butanone	0.2085	0.2071	99.30	100	-1	
	2,2-Dichloropropane	0.2127	0.1742	40.96	50	-18	
	Propionitrile	1.7058	1.3402	196.42	250	-21	
	Methacrylonitrile	0.1692	0.1565	115.57	125	-8	
	Bromochloromethane	0.1380	0.1293	46.82	50	-6	
	Tetrahydrofuran	1.7717	1.2069	68.12	100	-32	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date: 06/21/18 Time: 19:26

Lab File ID: wu21c05.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.4296	0.4038	47.00	50	-6	*
	1,1,1-Trichloroethane	0.3738	0.3440	46.01	50	-8	
	Cyclohexane	0.3786	0.3997	52.78	50	6	
	Cyclohexane(2)	0.3355	0.3425	51.04	50	2	
	Cyclohexane(3)	0.1167	0.1205	51.64	50	3	
	1,1-Dichloropropene	0.3378	0.3265	48.33	50	-3	
	Carbon Tetrachloride	0.2560	0.2889	56.42	50	13	
	Isobutyl Alcohol	0.4226	0.3729	551.45	625	-12	
	Benzene	1.0393	0.9743	46.87	50	-6	
	1,2-Dichloroethane	0.3626	0.3307	45.60	50	-9	
	1,2-Dichloroethane(2)	0.0350	0.0324	46.29	50	-7	
	t-Amyl methyl ether	0.6774	0.6334	46.75	50	-6	
	n-Heptane	0.2438	0.2690	55.18	50	10	
	n-Butanol	0.3631	0.3181	1094.92	1250	-12	
	Trichloroethene	0.2703	0.2478	45.85	50	-8	
	Methylcyclohexane	0.3126	0.3563	56.99	50	14	
	Methylcyclohexane(2)	0.1469	0.1647	56.07	50	12	
*	1,2-Dichloropropane	0.2640	0.2534	47.99	50	-4	*
	Dibromomethane	0.1773	0.1666	46.99	50	-6	
	1,4-Dioxane	0.1148	0.1083	589.77	625	-6	
	Methyl Methacrylate	0.2691	0.2549	47.37	50	-5	
	Bromodichloromethane	0.3133	0.3084	49.21	50	-2	
	2-Nitropropane	0.0690	0.0831	111.64	100	12	
	2-Chloroethyl Vinyl Ether	0.1955	0.1882	48.14	50	-4	
	cis-1,3-Dichloropropene	0.4051	0.4009	49.48	50	-1	
	4-Methyl-2-pentanone	0.4101	0.4121	100.48	100	0	
*	Toluene	0.9015	0.8018	44.47	50	-11	*
	trans-1,3-Dichloropropene	0.4830	0.4724	48.91	50	-2	
	Ethyl Methacrylate	0.5836	0.5505	47.16	50	-6	
	1,1,2-Trichloroethane	0.3549	0.3229	45.50	50	-9	
	Tetrachloroethene	0.3396	0.3253	47.90	50	-4	
	1,3-Dichloropropane	0.5983	0.5451	45.55	50	-9	
	2-Hexanone	0.4207	0.4029	95.76	100	-4	
	Dibromochloromethane	0.3354	0.3234	48.21	50	-4	
	1,2-Dibromoethane	0.3836	0.3466	45.17	50	-10	
#	Chlorobenzene	1.0197	0.9141	44.82	50	-10	#

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date: 06/21/18 Time: 19:26

Lab File ID: wu21c05.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1,2-Tetrachloroethane	0.3075	0.2940	47.80	50	-4	
*	Ethylbenzene	1.6463	1.5366	46.67	50	-7	*
	m+p-Xylene	0.6627	0.6097	92.00	100	-8	
	o-Xylene	0.6683	0.6088	45.55	50	-9	
	Styrene	1.0961	1.0187	46.47	50	-7	
#	Bromoform	0.2260	0.2264	44.07	50	-12	#
	Isopropylbenzene	1.5302	1.4369	46.95	50	-6	
	Cyclohexanone	0.4251	0.3811	560.30	625	-10	
	Bromobenzene	0.7903	0.7152	45.25	50	-10	
#	1,1,2,2-Tetrachloroethane	1.1058	0.9758	44.12	50	-12	#
	1,2,3-Trichloropropane	0.3401	0.3114	45.79	50	-8	
	trans-1,4-Dichloro-2-butene	0.2987	0.2835	118.63	125	-5	
	n-Propylbenzene	3.2523	3.0412	46.75	50	-6	
	2-Chlorotoluene	0.7181	0.6365	44.32	50	-11	
	4-Chlorotoluene	0.7770	0.6923	44.55	50	-11	
	1,3,5-Trimethylbenzene	2.3972	2.2234	46.37	50	-7	
	tert-Butylbenzene	0.5242	0.4750	45.31	50	-9	
	Pentachloroethane	0.3912	0.3849	49.20	50	-2	
	1,2,4-Trimethylbenzene	2.4991	2.3403	46.82	50	-6	
	sec-Butylbenzene	2.6361	2.4979	47.38	50	-5	
	1,3-Dichlorobenzene	1.4656	1.3213	45.08	50	-10	
	p-Isopropyltoluene	2.3491	2.2631	48.17	50	-4	
	1,4-Dichlorobenzene	1.5642	1.3809	44.14	50	-12	
	1,2,3-Trimethylbenzene	2.6244	2.4415	46.52	50	-7	
	Benzyl Chloride	1.6627	1.7983	45.75	50	-9	
	1,3-Diethylbenzene	1.4034	1.3312	47.43	50	-5	
	1,4-Diethylbenzene	1.4374	1.4110	49.08	50	-2	
	1,2-Dichlorobenzene	1.5173	1.3461	44.36	50	-11	
	n-Butylbenzene	1.1463	1.0694	46.65	50	-7	
	1,2-Diethylbenzene	1.2097	1.1422	47.21	50	-6	
	1,2-Dibromo-3-chloropropane	0.2339	0.2217	47.39	50	-5	
	1,3,5-Trichlorobenzene	0.8681	0.8426	48.53	50	-3	
	1,2,4-Trichlorobenzene	0.9007	0.8580	48.28	50	-3	
	Hexachlorobutadiene	0.2678	0.2823	52.69	50	5	
	Naphthalene	3.5048	3.3417	47.67	50	-5	
	1,2,3-Trichlorobenzene	0.8817	0.8251	47.80	50	-4	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date: 06/21/18 Time: 19:26

Lab File ID: wu21c05.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Methylnaphthalene	1.6822	1.5886	47.22	50	-6
Dibromofluoromethane	0.2288	0.2317	50.62	50	1
Dibromofluoromethane(2)	0.2340	0.2368	50.61	50	1
1,2-Dichloroethane-d4	0.0626	0.0621	49.60	50	-1
1,2-Dichloroethane-d4(2)	0.2801	0.2857	51.01	50	2
1,2-Dichloroethane-d4(3)	0.0398	0.0405	50.79	50	2
Toluene-d8	1.3290	1.3083	49.22	50	-2
Toluene-d8(2)	0.8653	0.8462	48.90	50	-2
4-Bromofluorobenzene	0.4872	0.4887	50.16	50	0
4-Bromofluorobenzene(2)	0.3830	0.4042	52.76	50	6

Average %Drift 8

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu13c01.d Date Analyzed: 06/13/18

Instrument ID: HP09953 Time Analyzed: 18:49

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(TBA) AREA	#	RT	#	IS2(FBZ) AREA	#	RT	#	IS3(CBZ) AREA	#	RT	#	IS4(DCB) AREA	#	RT	#
	12 HOUR STD	97875		1.924		1059738		3.956		758642		7.156		426924		9.236	
	UPPER LIMIT	195750		2.424		2119476		4.456		1517284		7.656		853848		9.736	
	LOWER LIMIT	48938		1.424		529869		3.456		379321		6.656		213462		8.736	
	LAB SAMPLE ID																
01	VBLKB08	104406		1.924		997733		3.956		712175		7.156		382916		9.236	
02	VBLKB09	104406		1.924		997733		3.956		712175		7.156		382916		9.236	
03	LCSB08	107377		1.924		1011281		3.950		728800		7.156		406007		9.236	
04	LCSB09	107377		1.924		1011281		3.950		728800		7.156		406007		9.236	
05	LCDB08	120901		1.930		1022754		3.956		745274		7.156		422121		9.236	
06	LCDB09	120901		1.930		1022754		3.956		745274		7.156		422121		9.236	
07	9647138RE	100663		1.942		911321		3.962		499811		7.156		169839	*	9.236	
08	SECC050	87761		1.924		1017983		3.956		734453		7.156		412834		9.236	
09	9649555	84691		1.918		973223		3.950		705619		7.156		361791		9.236	
10	9649556MS	81648		1.924		999300		3.950		702774		7.156		374186		9.236	
11	9649557MSD	88855		1.918		1013716		3.950		723437		7.156		386896		9.236	
12	9649546	92315		1.924		984814		3.956		624971		7.156		260368		9.236	
13	9649547	80067		1.924		982260		3.956		714573		7.156		372608		9.236	
14	9649548	77592		1.930		980743		3.956		723979		7.156		375962		9.236	
15	9649549	67550		1.924		967087		3.956		710689		7.156		374044		9.236	
16	9649552	60395		1.918		931411		3.950		667846		7.156		323792		9.236	
17	9649553	69399		1.918		927141		3.950		681880		7.156		344059		9.236	
18	9649554	69293		1.930		918000		3.956		685312		7.156		349382		9.236	
19	9649558	64467		1.906		923095		3.950		682616		7.156		354292		9.236	
20	9649559	70578		1.918		919724		3.950		663026		7.156		343554		9.236	
21	9649560	75570		1.936		919216		3.956		664226		7.156		337711		9.236	
22	9651112	66649		1.924		784489		3.956		577979		7.156		290652		9.236	

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu13c01.d Date Analyzed: 06/13/18

Instrument ID: HP09953 Time Analyzed: 18:49

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(TBA) AREA	#	RT	#	IS2(FBZ) AREA	#	RT	#	IS3(CBZ) AREA	#	RT	#	IS4(DCB) AREA	#	RT	#
	12 HOUR STD	97875		1.924		1059738		3.956		758642		7.156		426924		9.236	
	UPPER LIMIT	195750		2.424		2119476		4.456		1517284		7.656		853848		9.736	
	LOWER LIMIT	48938		1.424		529869		3.456		379321		6.656		213462		8.736	
	LAB SAMPLE ID																
23	9651113	70265		1.924		904101		3.956		665397		7.156		341844		9.236	
24	9651114	72201		1.918		901269		3.950		673230		7.156		355885		9.236	
25	9651116	84042		1.912		884326		3.950		651734		7.156		335479		9.236	
26	9653929	69560		1.918		897924		3.950		653906		7.156		349033		9.236	
27	9653933RE	73832		1.918		696753		3.950		224585	*	7.156		25422	*	9.242	

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): qu13c05.d Date Analyzed: 06/13/18

Instrument ID: HP07536 Time Analyzed: 21:27

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

		IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	136529	4.206	995880	7.684	755409	11.153	340164	13.023
	UPPER LIMIT	273058	4.706	1991760	8.184	1510818	11.653	680328	13.523
	LOWER LIMIT	68264	3.706	497940	7.184	377704	10.653	170082	12.523
	LAB SAMPLE ID								
01	LCSQ08	124247	4.209	951010	7.687	715786	11.153	300379	13.027
02	LCSQ09	124247	4.209	951010	7.687	715786	11.153	300379	13.027
03	LCDQ08	121911	4.204	933518	7.692	692826	11.154	299403	13.028
04	LCDQ09	121911	4.204	933518	7.692	692826	11.154	299403	13.028
05	VBLKQ08	102610	4.212	837986	7.688	634908	11.156	269345	13.027
06	VBLKQ09	102610	4.212	837986	7.688	634908	11.156	269345	13.027
07	9632087	113104	4.224	924401	7.690	692601	11.152	321080	13.029
08	9632096	111369	4.210	910863	7.689	674746	11.154	297634	13.028
09	9632097	109260	4.215	918280	7.690	682807	11.156	288991	13.030
10	9632099	110038	4.211	883198	7.690	662304	11.155	286308	13.029
11	9632103	112144	4.215	896266	7.687	676464	11.156	297691	13.027
12	9632104	98653	4.212	821964	7.690	605028	11.156	250301	13.030
13	9640112	114363	4.205	907001	7.690	678958	11.156	308331	13.029
14	9642335	112736	4.234	899672	7.693	641755	11.155	279422	13.029
15	9642335DL	110951	4.195	874774	7.690	649819	11.155	266802	13.029
16	9643859	110194	4.209	872990	7.687	654201	11.156	278463	13.030
17	9647346DL	101482	4.199	833596	7.690	626273	11.156	267368	13.030
18	9649561	111000	4.209	906891	7.691	684963	11.156	305130	13.030
19	9653930	106291	4.215	890814	7.690	680191	11.155	288781	13.029
20	9653933DL	109313	4.205	900673	7.690	673510	11.155	306679	13.029
21	9653934	99052	4.212	885794	7.693	658732	11.156	271603	13.026
22	SECC050	106597	4.202	895790	7.690	677150	11.155	293195	13.026

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): pu19c01.d Date Analyzed: 06/19/18

Instrument ID: HP07163 Time Analyzed: 10:15

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	450731	2.281	1572344	4.124	1520368	5.956	699392	7.257
	UPPER LIMIT	901462	2.781	3144688	4.624	3040736	6.456	1398784	7.757
	LOWER LIMIT	225366	1.781	786172	3.624	760184	5.456	349696	6.757
	LAB SAMPLE ID								
01	LCSP68	491840	2.281	1641775	4.124	1399887	5.956	667223	7.257
02	LCSP69	463963	2.271	1569330	4.114	1334911	5.951	737470	7.253
03	VBLKP68	438346	2.282	1516441	4.125	1222626	5.962	435279	7.258
04	VBLKP69	349200	2.264	1487012	4.113	1170275	5.957	646417	7.252
05	9662542	417076	2.280	1251640	4.123	1235546	5.960	521521	7.256
06	9650545	416336	2.282	1539754	4.125	1230321	5.956	591802	7.258
07	9650546MS	476069	2.282	1579720	4.126	1365914	5.957	612726	7.258
08	9646903MS	360116	2.264	1511091	4.113	1338035	5.956	725516	7.252
09	9650547MSD	482027	2.288	1642246	4.125	1271804	5.962	643587	7.258
10	9646903MSD	368019	2.270	1520899	4.113	1211943	5.956	718502	7.252
11	9650548	488131	2.281	1382298	4.125	1278479	5.962	519245	7.258
12	9646901	512388	2.269	1513654	4.119	1143997	5.956	707844	7.252
13	9652924	493495	2.288	1613856	4.125	1290607	5.962	530733	7.258
14	9646901DL	380807	2.270	1506626	4.113	1179001	5.956	610878	7.252
15	9652925	452291	2.288	1596821	4.125	1292429	5.962	488857	7.258
16	9650501	406105	2.269	1460045	4.118	1118339	5.956	637609	7.251
17	9652926	440312	2.282	1618623	4.126	1235672	5.963	496688	7.259
18	9650502	466512	2.270	1469856	4.113	1194868	5.956	687759	7.252
19	9652927	437721	2.287	1532585	4.125	1217103	5.962	484034	7.258
20	9652928	434253	2.283	1536652	4.126	1203397	5.957	469200	7.259
21	9650503	431029	2.264	1498341	4.113	1196360	5.956	713477	7.252
22	9650453	438098	2.295	1551677	4.126	1220177	5.957	493340	7.259

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): pu19c01.d Date Analyzed: 06/19/18

Instrument ID: HP07163 Time Analyzed: 10:15

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(TBA) AREA #	RT #	IS2(FBZ) AREA #	RT #	IS3(CBZ) AREA #	RT #	IS4(DCB) AREA #	RT #
	12 HOUR STD	450731	2.281	1572344	4.124	1520368	5.956	699392	7.257
	UPPER LIMIT	901462	2.781	3144688	4.624	3040736	6.456	1398784	7.757
	LOWER LIMIT	225366	1.781	786172	3.624	760184	5.456	349696	6.757
	LAB SAMPLE ID								
23	9650204	484747	2.288	1311295	4.125	1211546	5.962	489698	7.258
24	9650504	429745	2.264	1397216	4.113	1123122	5.956	662660	7.252
25	9660998	524887	2.276	1629713	4.126	1281563	5.957	638720	7.258
26	9650505	455513	2.269	1407831	4.118	1220774	5.956	709940	7.251
27	9650506	545870	2.265	1228484	4.114	1201336	5.958	618200	7.253
28	9660996	353052	2.284	1521713	4.122	1215960	5.959	512052	7.261
29	9650507	394167	2.270	1471702	4.113	1177409	5.957	618368	7.252
30	9660997	441658	2.281	1546031	4.124	1220051	5.962	545092	7.258
31	9650508	603990	2.270	1506847	4.113	1034990	5.956	551922	7.252
32	9660995	434729	2.282	1536656	4.125	1249067	5.963	499601	7.258
33	9650509	470573	2.270	1495496	4.119	1190760	5.956	521589	7.252
34	9650513	470575	2.269	1274294	4.119	1218910	5.956	720264	7.252
35	9649551	478027	2.282	1562721	4.125	1117786	5.962	474170	7.258
36	9650515	369628	2.261	1459060	4.110	1142481	5.954	581777	7.255

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): wu21c05.d Date Analyzed: 06/21/18

Instrument ID: HP09137 Time Analyzed: 19:26

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(TBA) AREA #	RT #	IS2(FBZ) AREA #	RT #	IS3(CBZ) AREA #	RT #	IS4(DCB) AREA #	RT #
	12 HOUR STD	287608	2.763	1224415	5.067	951287	8.196	526427	10.070
	UPPER LIMIT	575216	3.263	2448830	5.567	1902574	8.696	1052854	10.570
	LOWER LIMIT	143804	2.263	612208	4.567	475644	7.696	263214	9.570
	LAB SAMPLE ID								
01	LCSW90	272186	2.766	1251101	5.070	959549	8.193	517026	10.070
02	VBLKW90	285398	2.770	1209776	5.067	926993	8.193	490131	10.070
03	9652747	287549	2.770	1201631	5.074	923618	8.196	493006	10.070
04	9657575	269891	2.773	1206219	5.070	915962	8.196	483092	10.070
05	9667229	265565	2.773	1185097	5.071	913310	8.193	483178	10.070
06	9649550	280755	2.770	1166523	5.067	900386	8.193	480280	10.070
07	9657574	209504	2.763	1188099	5.067	905237	8.193	462673	10.070
08	9657574DL	247501	2.763	1161846	5.067	898258	8.193	463911	10.070
09	9667227	261138	2.766	1150829	5.070	884133	8.193	459369	10.070
10	9667228	254212	2.767	1142707	5.071	874463	8.193	457299	10.070
11	9668008	257318	2.766	1148214	5.070	883161	8.193	461187	10.070
12	9668008DL	249422	2.767	1133602	5.067	872465	8.193	453296	10.070
13	9668009	248174	2.767	1128352	5.067	870895	8.193	453627	10.070
14	9654473	244134	2.760	1122963	5.071	857688	8.193	447020	10.070
15	9654473MS	265948	2.766	1150347	5.067	882490	8.193	491983	10.070
16	9654473MSD	270867	2.766	1190576	5.067	903911	8.193	490005	10.070
17	9654475	267367	2.767	1168098	5.067	890581	8.193	468406	10.070
18	9654477	256917	2.766	1155292	5.071	873951	8.193	455364	10.070
19	9654479	253494	2.763	1137879	5.067	871302	8.193	452694	10.070
20	9654886	245694	2.763	1141557	5.067	870707	8.193	452797	10.070
21	9654886MS	267254	2.766	1154896	5.067	886052	8.193	488629	10.070
22	9654890	260042	2.767	1141057	5.067	869044	8.193	466375	10.070

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): wu21c05.d Date Analyzed: 06/21/18

Instrument ID: HP09137 Time Analyzed: 19:26

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(TBA) AREA	#	RT	#	IS2(FBZ) AREA	#	RT	#	IS3(CBZ) AREA	#	RT	#	IS4(DCB) AREA	#	RT	#
	12 HOUR STD	287608		2.763		1224415		5.067		951287		8.196		526427		10.070	
	UPPER LIMIT	575216		3.263		2448830		5.567		1902574		8.696		1052854		10.570	
	LOWER LIMIT	143804		2.263		612208		4.567		475644		7.696		263214		9.570	
	LAB SAMPLE ID																
23	9654890MS	260621		2.766		1180075		5.067		899198		8.193		492893		10.070	
24	9658069	265505		2.770		1180633		5.067		903657		8.193		474665		10.070	

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

Preparation and Run Logs

Volatiles by GC/MS

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18feb22I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jkh09052	BF22T01.D	50NGBFB	02/22/2018	10:34	B180151AA	
JKH09052	BF22X01.D	BLK	02/22/2018	10:55		
JKH09052	BF22I01.D	VSTD300	02/22/2018	11:18		
JKH09052	BF22I02.D	VSTD100	02/22/2018	11:42		
JKH09052	BF22I03.D	VSTD050	02/22/2018	12:06		
JKH09052	BF22I04.D	VSTD020	02/22/2018	12:31		
JKH09052	BF22I05.D	VSTD010	02/22/2018	12:57		
JKH09052	BF22I06.D	VSTD004	02/22/2018	13:29		
JKH09052	BF22M01.D	MDL001	02/22/2018	13:51		
JKH09052	BF22V01.D	LGBICV	02/22/2018	14:16		

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18JUN13a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
pth10165	BU13T01.D	50NGBFB	06/13/2018	18:05	B180151AA	
pth10165	BU13X05.D	VBLKB08	06/13/2018	18:24	B181641AA	
pth10165	BU13C01.D	VSTD050	06/13/2018	18:49	B181641AA	
pth10165	BU13X06.D	VBLKB08	06/13/2018	19:11	B181641AA	
pth10165	BU13B01.D	VBLKB08	06/13/2018	19:39	B181641AA	
pth10165	BU13S01.D	LCSB08	06/13/2018	20:02	B181641AA	
pth10165	BU13S02.D	LCDB08	06/13/2018	20:24	B181641AA	
pth10165	BU13S33.D	9647138RE	06/13/2018	21:53	B181642AA	
pth10165	BU13C02.D	SECC050	06/13/2018	22:16	B181642AA	
pth10165	BU13S03.D	9649555	06/13/2018	22:39	B181641AA	
pth10165	BU13S04.D	9649556MS	06/13/2018	23:02	B181641AA	
pth10165	BU13S05.D	9649557MSD	06/13/2018	23:25	B181641AA	
pth10165	BU13S06.D	9649546	06/13/2018	23:49	B181641AA	
pth10165	BU13S07.D	9649547	06/14/2018	00:12	B181641AA	
pth10165	BU13S08.D	9649548	06/14/2018	00:34	B181641AA	
pth10165	BU13S09.D	9649549	06/14/2018	00:57	B181641AA	
pth10165	BU13S10.D	9649552	06/14/2018	01:19	B181641AA	
pth10165	BU13S11.D	9649553	06/14/2018	01:42	B181641AA	
pth10165	BU13S12.D	9649554	06/14/2018	02:04	B181641AA	
pth10165	BU13S13.D	9649558	06/14/2018	02:27	B181641AA	
pth10165	BU13S14.D	9649559	06/14/2018	02:49	B181641AA	
pth10165	BU13S15.D	9649560	06/14/2018	03:12	B181641AA	
pth10165	BU13S16.D	9651112	06/14/2018	03:35	B181641AA	
pth10165	BU13S17.D	9651113	06/14/2018	03:57	B181641AA	
pth10165	BU13S18.D	9651114	06/14/2018	04:19	B181641AA	
pth10165	BU13S19.D	9651116	06/14/2018	04:42	B181641AA	
pth10165	BU13S20.D	9653929	06/14/2018	05:04	B181641AA	
pth10165	BU13S21.D	9653933RE	06/14/2018	05:27	B181641AA	

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07536 **HP #14**

Data Directory Path is - d:\data\18may24I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
scn10072	QY24T10.D	50NGBFB	05/24/2018	10:35		
scn10072	QY24X10.D	CBLK	05/24/2018	10:59		
scn10072	QY24X11.D	CBLK	05/24/2018	11:28		
scn10072	QY24I10.D	VSTD004	05/24/2018	11:51		
scn10072	QY24I11.D	VSTD010	05/24/2018	12:14		
scn10072	QY24I12.D	VSTD020	05/24/2018	12:37		
scn10072	QY24I13.D	VSTD050	05/24/2018	13:00		
scn10072	QY24I14.D	VSTD100	05/24/2018	13:23		
scn10072	QY24I15.D	VSTD300	05/24/2018	13:46		
scn10072	QY24X12.D	CBLK	05/24/2018	14:09		
scn10072	QY24X13.D	CBLK	05/24/2018	14:32		
scn10072	QY24M10.D	MDL	05/24/2018	14:55		
scn10072	QY24V10.D	QBICV	05/24/2018	15:18		
scn10072	QY24X14.D	CBLK	05/24/2018	15:41		
scn10072	QY24I20.D	VSTD004	05/24/2018	16:03		
scn10072	QY24I21.D	VSTD010	05/24/2018	16:26		
scn10072	QY24I22.D	VSTD020	05/24/2018	16:49		
scn10072	QY24I23.D	VSTD050	05/24/2018	17:13		
scn10072	QY24I24.D	VSTD100	05/24/2018	17:36		
scn10072	QY24I25.D	VSTD300	05/24/2018	17:58		
scn10072	QY24X15.D	CBLK	05/24/2018	18:22		
scn10072	QY24M20.D	SMDL	05/24/2018	18:45		
scn10072	QY24V20.D	BSMICV	05/24/2018	19:07		

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07536 **HP #14**

Data Directory Path is - d:\data\18JUN13B\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
PTH10165	QU13T10.D	50ng bfb	06/13/2018	21:05		
PTH10165	QU13C05.D	VSTD050	06/13/2018	21:27	Q181641AA	
PTH10165	QU13S31.D	LCSQ08	06/13/2018	21:50	Q181641AA	
PTH10165	QU13S32.D	LCDQ08	06/13/2018	22:14	Q181641AA	
PTH10165	QU13X15.D	VBLKQ08	06/13/2018	22:36	Q181641AA	
PTH10165	QU13B05.D	VBLKQ08	06/13/2018	22:59	Q181641AA	
PTH10165	QU13S03.D	9632087	06/13/2018	23:52	Q181641AA	50
PTH10165	QU13S04.D	9632096	06/14/2018	00:16	Q181641AA	50
PTH10165	QU13S05.D	9632097	06/14/2018	00:39	Q181641AA	50
PTH10165	QU13S06.D	9632099	06/14/2018	01:01	Q181641AA	50
PTH10165	QU13S07.D	9632103	06/14/2018	01:25	Q181641AA	50
PTH10165	QU13S08.D	9632104	06/14/2018	01:47	Q181641AA	50
PTH10165	QU13S09.D	9640112	06/14/2018	02:10	Q181641AA	50
PTH10165	QU13S10.D	9642335	06/14/2018	02:33	Q181641AA	50
PTH10165	QU13S11.D	9642335DL	06/14/2018	02:57	Q181641AA	500
PTH10165	QU13S12.D	9643859	06/14/2018	03:19	Q181641AA	200
PTH10165	QU13S13.D	9647346DL	06/14/2018	03:42	Q181641AA	5000
PTH10165	QU13S20.D	9649561	06/14/2018	04:05	Q181641AA	50
PTH10165	QU13S21.D	9653930	06/14/2018	04:28	Q181641AA	50
PTH10165	QU13S22.D	9653933DL	06/14/2018	04:51	Q181641AA	50
PTH10165	QU13S23.D	9653934	06/14/2018	05:14	Q181641AA	50
PTH10165	QU13X98.D	CLNBLANK	06/14/2018	05:37	Q181641AA	50
PTH10165	QU13S63.D	9647224	06/14/2018	06:00	Q181642AA	50
PTH10165	QU13C06.D	SECC050	06/14/2018	06:22	Q181642AA	

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07163 **HP #13**

Data Directory Path is - d:\data\18May14i\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
kk10002	PY14T10.D	50NGBFB	05/14/2018	22:21		
kk10002	PY14X01.D	BLANK	05/14/2018	22:39		
kk10002	PY14X02.D	BLANK	05/14/2018	22:52		
kk10002	PY14I01.D	VSTD300	05/14/2018	23:05		
kk10002	PY14I02.D	VSTD300	05/14/2018	23:19		
kk10002	PY14I03.D	VSTD100	05/14/2018	23:31		
kk10002	PY14I04.D	VSTD100	05/14/2018	23:44		
kk10002	PY14I05.D	VSTD050	05/14/2018	23:58		
kk10002	PY14I06.D	VSTD050	05/15/2018	00:10		
kk10002	PY14I07.D	VSTD020	05/15/2018	00:23		
kk10002	PY14I08.D	VSTD020	05/15/2018	00:36		
kk10002	PY14I09.D	VSTD010	05/15/2018	00:49		
kk10002	PY14I10.D	VSTD010	05/15/2018	01:02		
kk10002	PY14I11.D	VSTD004	05/15/2018	01:15		
kk10002	PY14I12.D	VSTD004	05/15/2018	01:28		
kk10002	PY14I13.D	VSTD001	05/15/2018	01:41		
kk10002	PY14I14.D	VSTD001	05/15/2018	01:54		
kk10002	PY14M01.D	MDL0.5	05/15/2018	02:07		
kk10002	PY14M02.D	MDL0.5	05/15/2018	02:20		
kk10002	PY14V01.D	ICVP01	05/15/2018	02:33		
kk10002	PY14V02.D	ICVP02	05/15/2018	02:46		

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07163 **HP #13**

Data Directory Path is - D:\DATA\18jun19a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
dhh02035	PU19T01.D	50NGBFB	06/19/2018	09:26	P181701AA	
dhh02035	PU19X01.D	VBLKP68	06/19/2018	09:49	P181701AA	
dhh02035	PU19X02.D	VBLKP69	06/19/2018	10:02	P181702AA	
dhh02035	PU19C01.D	VSTD050	06/19/2018	10:15	P181701AA	
dhh02035	PU19C02.D	VSTD050	06/19/2018	10:28	P181702AA	
dhh02035	PU19S01.D	LCSP68	06/19/2018	10:41	P181701AA	
dhh02035	PU19S02.D	LCSP69	06/19/2018	10:54	P181702AA	
dhh02035	PU19X03.D	VBLKP68	06/19/2018	11:07	P181701AA	
dhh02035	PU19X04.D	VBLKP69	06/19/2018	11:20	P181702AA	
dhh02035	PU19B01.D	VBLKP68	06/19/2018	11:33	P181701AA	
dhh02035	PU19B02.D	VBLKP69	06/19/2018	11:46	P181702AA	
dhh02035	PU19S03.D	9662542	06/19/2018	12:21	P181701AA	
dhh02035	PU19S04.D	9646902	06/19/2018	12:34	P181702AA	
dhh02035	PU19S05.D	9650545	06/19/2018	12:47	P181701AA	
dhh02035	PU19S06.D	9646903	06/19/2018	13:00	P181702AA	
dhh02035	PU19S07.D	9650546MS	06/19/2018	13:13	P181701AA	
dhh02035	PU19S08.D	9646903MS	06/19/2018	13:26	P181702AA	
dhh02035	PU19S09.D	9650547MSD	06/19/2018	13:39	P181701AA	
dhh02035	PU19S10.D	9646903MSD	06/19/2018	13:52	P181702AA	
dhh02035	PU19S11.D	9650548	06/19/2018	14:05	P181701AA	
dhh02035	PU19S12.D	9646901	06/19/2018	14:17	P181702AA	2
dhh02035	PU19S13.D	9652924	06/19/2018	14:31	P181701AA	
dhh02035	PU19S14.D	9646901DL	06/19/2018	14:44	P181702AA	20
dhh02035	PU19S15.D	9652925	06/19/2018	14:56	P181701AA	
dhh02035	PU19S16.D	9650501	06/19/2018	15:09	P181702AA	
dhh02035	PU19S17.D	9652926	06/19/2018	15:22	P181701AA	
dhh02035	PU19S18.D	9650502	06/19/2018	15:35	P181702AA	
dhh02035	PU19S19.D	9652927	06/19/2018	15:48	P181701AA	
dhh02035	PU19S20.D	9650502DL	06/19/2018	16:01	P181702AA	10
dhh02035	PU19S21.D	9652928	06/19/2018	16:14	P181701AA	
dhh02035	PU19S22.D	9650503	06/19/2018	16:27	P181702AA	
dhh02035	PU19S23.D	9650453	06/19/2018	16:40	P181701AA	
dhh02035	PU19S24.D	9650503DL	06/19/2018	16:53	P181702AA	10
dhh02035	PU19S25.D	9650204	06/19/2018	17:06	P181701AA	
dhh02035	PU19S26.D	9650504	06/19/2018	17:19	P181702AA	
dhh02035	PU19S27.D	9660998	06/19/2018	17:32	P181701AA	2
dhh02035	PU19S28.D	9650505	06/19/2018	17:45	P181702AA	
dhh02035	PU19S29.D	9660998DL	06/19/2018	17:58	P181701AA	20
dhh02035	PU19S30.D	9650506	06/19/2018	18:11	P181702AA	
dhh02035	PU19S31.D	9660996	06/19/2018	18:24	P181701AA	
dhh02035	PU19S32.D	9650507	06/19/2018	18:37	P181702AA	
dhh02035	PU19S33.D	9660997	06/19/2018	18:50	P181701AA	
dhh02035	PU19S34.D	9650508	06/19/2018	19:03	P181702AA	
dhh02035	PU19S35.D	9660995	06/19/2018	19:16	P181701AA	
dhh02035	PU19S36.D	9650509	06/19/2018	19:29	P181702AA	
dhh02035	PU19S37.D	9649550	06/19/2018	19:42	P181701AA	
dhh02035	PU19S38.D	9650513	06/19/2018	19:55	P181702AA	
dhh02035	PU19S39.D	9649551	06/19/2018	20:08	P181701AA	
dhh02035	PU19S40.D	9650513DL	06/19/2018	20:21	P181702AA	10
dhh02035	PU19S42.D	9650515	06/19/2018	20:43	P181702AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09137 **HP #18**

Data Directory Path is - D:\DATA\18MAY23I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
NSL01327	WY23T01.D	50NGBFB	05/23/2018	12:34		
NSL01327	WY23T02.D	50NGBFB	05/23/2018	12:54		
NSL01327	WY23T03.D	50NGBFB	05/23/2018	13:07		
NSL01327	WY23T04.D	50NGBFB	05/23/2018	13:51		
nsl01327	WY23X05.D	CLNBLK	05/23/2018	14:14		
nsl01327	WY23I01.D	VSTD300	05/23/2018	14:38		
nsl01327	WY23I02.D	VSTD100	05/23/2018	15:02		
nsl01327	WY23I03.D	VSTD050	05/23/2018	15:26		
nsl01327	WY23I04.D	VSTD020	05/23/2018	15:50		
nsl01327	WY23I05.D	VSTD010	05/23/2018	16:14		
nsl01327	WY23I06.D	VSTD004	05/23/2018	16:37		
nsl01327	WY23I07.D	VSTD001	05/23/2018	17:01		
nsl01327	WY23M01.D	VSTD0.5	05/23/2018	17:25		
nsl01327	WY23V01.D	LCSWICV	05/23/2018	17:49	W1814311AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09137 **HP #18**

Data Directory Path is - D:\DATA\18JUN21B\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
PTH10165	WU21T10.D	NG50-BFB	06/21/2018	18:48		
PTH10165	WU21X05.D	VBLKW90	06/21/2018	19:02	W181722AA	
PTH10165	WU21C05.D	VSTD050	06/21/2018	19:26	W181722AA	
PTH10165	WU21S31.D	LCSW90	06/21/2018	19:50	W181722AA	
PTH10165	WU21B05.D	VBLKW90	06/21/2018	20:14	W181722AA	
PTH10165	WU21S33.D	9652747	06/21/2018	20:53	W181722AA	
PTH10165	WU21S34.D	9657575	06/21/2018	21:20	W181722AA	
PTH10165	WU21S35.D	9667229	06/21/2018	21:44	W181722AA	
PTH10165	WU21S36.D	9649550RE	06/21/2018	22:08	W181722AA	
PTH10165	WU21S37.D	9657574	06/21/2018	22:32	W181722AA	
PTH10165	WU21S38.D	9657574DL	06/21/2018	22:56	W181722AA	20
PTH10165	WU21S39.D	9667227	06/21/2018	23:20	W181722AA	
PTH10165	WU21S40.D	9667228	06/21/2018	23:44	W181722AA	
PTH10165	WU21S41.D	9668008	06/22/2018	00:08	W181722AA	5
PTH10165	WU21S42.D	9668008DL	06/22/2018	00:32	W181722AA	50
PTH10165	WU21S43.D	9668009	06/22/2018	00:56	W181722AA	
PTH10165	WU21S44.D	9654473	06/22/2018	01:20	W181722AA	20
PTH10165	WU21S45.D	9654473MS	06/22/2018	01:44	W181722AA	20
PTH10165	WU21S46.D	9654473MSD	06/22/2018	02:08	W181722AA	20
PTH10165	WU21S47.D	9654475	06/22/2018	02:32	W181722AA	20
PTH10165	WU21S48.D	9654477	06/22/2018	02:55	W181722AA	20
PTH10165	WU21S49.D	9654479	06/22/2018	03:19	W181722AA	20
PTH10165	WU21S50.D	9654886	06/22/2018	03:43	W181722AA	20
PTH10165	WU21S51.D	9654886MS	06/22/2018	04:07	W181722AA	20
PTH10165	WU21S52.D	9654890	06/22/2018	04:31	W181722AA	20
PTH10165	WU21S53.D	9654890MS	06/22/2018	04:55	W181722AA	20
PTH10165	WU21S54.D	9658069	06/22/2018	05:19	W181722AA	20

Moisture Data

MOISTURE

SAMPLE NUMBERS:

Sample #	Sample Code
9649546	D3601
9649547	D3602
9649548	D3603
9649549	D3604
9649552	D3607
9649553	D3608
9649554	D3609
9649555	D3610BKG
9649556	D3610MS
9649557	D3610MSD
9649558	D3611
9649559	D3612
9649560	D3613
9649561	D3614

COMMENTS:

Method defined actions are taken for any failed matrix QC.

Laboratory Compliance Quality Control

Analysis Name	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 18162820002B	Sample number(s): 9649546-9649549, 9649552-9649561				
Moisture	100		99-101		
Moisture	100		99-101		
Moisture Duplicate	100		99-101		

Sample Matrix Quality Control

Analysis Name	BKG Conc	DUP Conc	RPD	RPD Max
Batch number: 18162820002B	Sample number(s): 9649546-9649549, 9649552-9649561			
Moisture	12.7	12.8	1	5
Moisture	12.7	12.8	1	5
Moisture Duplicate	12.7	12.8	1	5

* - Outside of specification

(1) - The result for one or both determinations was less than five times the LOQ.

Moisture Data Report

Batch #: 18162820002

Sample ID	Batch ID	Analysis#	Tare Wt	Sample Wt	Dry Wt	%Moisture	Analysis Date (Emp#)	Verified Date (Emp#)
9649546	B	00111	1.0482	5.7408	5.8411	16.51	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649547	B	00111	1.0666	5.1349	5.3102	17.36	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649548	B	00111	1.0610	5.8924	5.6256	22.53	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649549	B	00111	1.0744	5.5783	6.2908	6.49	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649552	B	00111	1.0812	5.4111	5.5668	17.10	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649553	B	00111	1.0803	5.4500	5.5804	17.43	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649554	B	00111	1.0497	5.9803	6.7440	4.78	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649555BKG	B	00111	1.0782	5.3983	5.7891	12.73	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649556MS	B	00118				12.73	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649557MSD	B	00118				12.73	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649557MSD	B	00121	1.0462	5.4314	5.7815	12.82	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649558	B	00111	1.0470	5.4239	5.4637	18.57	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649559	B	00111	1.0665	5.2288	5.3310	18.44	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649560	B	00111	1.0369	5.4247	5.9362	9.69	6/11/18 (835/LEB)	6/12/18 (236/CW)
9649561	B	00111	1.0440	5.4003	5.6017	15.60	6/11/18 (835/LEB)	6/12/18 (236/CW)
LCS 89.5% Std.		00111	1.0736	5.0769	1.6099	89.44	6/11/18 (835/LEB)	6/12/18 (236/CW)

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Type I (No Raw Data) Data Package

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Project: Dow Hanging Rock, OH
Groundwater, Soil and Water Samples
Collected on 06/08/18

SDG# DHR37

GROUP	SAMPLE NUMBERS
1953251	9651105-9651118

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date:** **06/26/2018**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Natalie Luciano at (717) 556-7258.

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Sample Reference List for SDG Number DHR37 with a Data Package Type of I-NODATA

11372 - CH2M Hill, Inc.

Project: Dow Hanging Rock, OH

Lab Sample Number	Client Sample ID	Collection Date	Date Received
9651105	S01-SS25-0001-060818	06/08/2018 09:55	06/09/2018 10:10
9651106	S01-SS25-0809-060818	06/08/2018 10:15	06/09/2018 10:10
9651107	S01-GW06-2630-060818	06/08/2018 11:15	06/09/2018 10:10
9651108	S01-SS25-1314-060818	06/08/2018 10:35	06/09/2018 10:10
9651109	060818TB	06/08/2018 11:35	06/09/2018 10:10
9651110	060818EB	06/08/2018 15:30	06/09/2018 10:10
9651111	S01-SS36-0001-060818	06/08/2018 13:45	06/09/2018 10:10
9651112	S01-SS36-0708-060818	06/08/2018 14:00	06/09/2018 10:10
9651113	S01-SSFD01-060818	06/08/2018 14:05	06/09/2018 10:10
9651114	S01-SS36-1516-060818	06/08/2018 14:25	06/09/2018 10:10
9651115	S01-GW14-2831-060818	06/08/2018 15:05	06/09/2018 10:10
9651116	S01-SS38-0102-060818	06/08/2018 16:20	06/09/2018 10:10
9651117	S01-SS38-0607-060818	06/08/2018 16:30	06/09/2018 10:10
9651118	S01-SS38-2324-060818	06/08/2018 17:20	06/09/2018 10:10

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Sample pH Log

SDG: DHR37

LLI Sample Number	Bottle Code	Actual pH	Exp. pH	*pH Check Code	Adj. pH	Adjusted Date	Adjusted Time	Preservative Added	Preservative Lot #	LLI Supplied Bottle?	Sulfide Present?	Corrective Substance	CS Lot #	**Chlorine Present?	Corrective Substance	CS Lot #	Record Date	Employee
9651107	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/20/2018 6:56:48PM	10203
9651107	038B	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/20/2018 6:56:38PM	10203
9651109	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/20/2018 6:56:38PM	10203
9651110	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/20/2018 6:56:38PM	10203
9651115	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/20/2018 6:56:38PM	10203

*pH Check Code Key
PK = Original container checked - pH is within the correct range. (No preservative was added)
PA = Original container checked - pH adjusted to correct range. (Preservative was added)
PV = Volatile container checked
PC = pH checked (unpreserved container)
SPK = Subsampled from an original container. Original container checked - pH is within correct range
SPA = Subsampled from an original container. Subsample container checked - pH adjusted to correct range.
SPC = Subsampled from an original container. pH checked (unpreserved container).
SUP = Subsampled from original container. Unable to be preserved due to the matrix of the sample.
UP = Unable to preserve due to matrix of the sample.
NA = Not applicable

**Chlorine Present Code Key
NA = Chlorine Not Checked
Y = Chlorine Present
N = Chlorine Not Present

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01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030B, December 1996.

10335 VOCs- 5ml Water by 8260B

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996

10237 VOCs- Solid by 8260B

The soil sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996

07320 GC/MS - LL DIH2O Encore Prep

Two EnCore samples are collected per sample. The vials used for preparation are pre-preserved and pre-weighed. Two aliquots are extruded into DI water. The vials are re-weighed and the weight of the sample should be 5-g +/- .5 g. The prepared samples are then delivered to the lab for analysis. DI vials are frozen after they are weighed to complete preservation step.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

07578 GC/MS-HL Encore Prep-NC

The sample is collected in an EnCore sampler and is submitted to the laboratory. A vial containing 5-ml methanol is prepared for each sample and weighed prior to adding the sample. After the sample is added to the vial, the vial is reweighed and the weight of sample is determined by difference. The weight of the sample should be 5-g +/- .5 g. The sample vial is then delivered to the lab for analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

00111 Moisture

A well-mixed sample is heated by reflected infrared in an aluminum pan and dried to a constant weight. The decrease in weight in weight after drying is calculated as the moisture content.

Reference: SM 2540 G-1997 %Moisture Calculation for Dry Weight Determination

Analysis Reports / Field Chain of Custody

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ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Report Date: June 22, 2018 08:19

Project: Dow Hanging Rock, OH

Account #: 11372
Group Number: 1953251
SDG: DHR37
PO Number: 131005094
Release Number: DHR37
State of Sample Origin: OH

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ . To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To	CH2M Hill, Inc.	Attn: Marie Chiller
Electronic Copy To	CH2M Hill, Inc.	Attn: Shane Lowe

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

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SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
S01-SS25-0001-060818 Grab Soil	06/08/2018 09:55	9651105
S01-SS25-0809-060818 Grab Soil	06/08/2018 10:15	9651106
S01-GW06-2630-060818 Grab Groundwater	06/08/2018 11:15	9651107
S01-SS25-1314-060818 Grab Soil	06/08/2018 10:35	9651108
060818TB Water	06/08/2018 11:35	9651109
060818EB Grab Water	06/08/2018 15:30	9651110
S01-SS36-0001-060818 Grab Soil	06/08/2018 13:45	9651111
S01-SS36-0708-060818 Grab Soil	06/08/2018 14:00	9651112
S01-SSFD01-060818 Grab Soil	06/08/2018 14:05	9651113
S01-SS36-1516-060818 Grab Soil	06/08/2018 14:25	9651114
S01-GW14-2831-060818 Grab Groundwater	06/08/2018 15:05	9651115
S01-SS38-0102-060818 Grab Soil	06/08/2018 16:20	9651116
S01-SS38-0607-060818 Grab Soil	06/08/2018 16:30	9651117
S01-SS38-2324-060818 Grab Soil	06/08/2018 17:20	9651118

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: **S01-SS25-0001-060818 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 09:55
SDG#: DHR37-01

CH2M Hill, Inc.
ELLE Sample #: SW 9651105
ELLE Group #: 1953251
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.91
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.91
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.91
10237	Tetrachloroethene	127-18-4	29	5	1	0.91
10237	Trichloroethene	79-01-6	5 U	5	1	0.91
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.91
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	13.1	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181633AA	06/13/2018 04:16	Kelly Devlin	0.91
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816050159	06/09/2018 16:32	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816050159	06/09/2018 17:10	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816050159	06/09/2018 17:10	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820001B	06/11/2018 09:01	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS25-0809-060818 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 10:15
SDG#: DHR37-02

CH2M Hill, Inc.
ELLE Sample #: SW 9651106
ELLE Group #: 1953251
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.85
10237	cis-1,2-Dichloroethene	156-59-2	1	J	5	1	0.85
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.85
10237	Tetrachloroethene	127-18-4	49		5	1	0.85
10237	Trichloroethene	79-01-6	2	J	5	1	0.85
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.85
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	16.3		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181633AA	06/13/2018 04:39	Kelly Devlin	0.85
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816050159	06/09/2018 16:36	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816050159	06/09/2018 17:10	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816050159	06/09/2018 17:10	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820001B	06/11/2018 09:01	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW06-2630-060818 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 11:15
SDG#: DHR37-03

CH2M Hill, Inc.
ELLE Sample #: WW 9651107
ELLE Group #: 1953251
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethene	75-35-4	1	U	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	3		1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	1	U	1	0.5	1
10335	Tetrachloroethene	127-18-4	38		1	0.5	1
10335	Trichloroethene	79-01-6	5		1	0.5	1
10335	Vinyl Chloride	75-01-4	1	U	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	W181711AA	06/20/2018 10:34	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	W181711AA	06/20/2018 10:34	Linda C Pape	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS25-1314-060818 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 10:35
SDG#: DHR37-04

CH2M Hill, Inc.
ELLE Sample #: SW 9651108
ELLE Group #: 1953251
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.95
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.95
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.95
10237	Tetrachloroethene	127-18-4	13		5	1	0.95
10237	Trichloroethene	79-01-6	5	U	5	1	0.95
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.95
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	5.4		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181633AA	06/13/2018 05:02	Kelly Devlin	0.95
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816050159	06/09/2018 16:39	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816050159	06/09/2018 17:10	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816050159	06/09/2018 17:10	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820001B	06/11/2018 09:01	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **060818TB Water**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 11:35
SDG#: DHR37-05TB

CH2M Hill, Inc.
ELLE Sample #: WW 9651109
ELLE Group #: 1953251
Matrix: Water

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethene	75-35-4	1	U	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	1	U	1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	1	U	1	0.5	1
10335	Tetrachloroethene	127-18-4	1	U	1	0.5	1
10335	Trichloroethene	79-01-6	1	U	1	0.5	1
10335	Vinyl Chloride	75-01-4	1	U	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	W181711AA	06/20/2018 11:46	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	W181711AA	06/20/2018 11:46	Linda C Pape	1

*=This limit was used in the evaluation of the final result

Sample Description: **060818EB Grab Water**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 15:30
SDG#: DHR37-06EB

CH2M Hill, Inc.
ELLE Sample #: WW 9651110
ELLE Group #: 1953251
Matrix: Water

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethene	75-35-4	1	U	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	1	U	1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	1	U	1	0.5	1
10335	Tetrachloroethene	127-18-4	1	U	1	0.5	1
10335	Trichloroethene	79-01-6	1	U	1	0.5	1
10335	Vinyl Chloride	75-01-4	1	U	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	W181711AA	06/20/2018 12:10	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	W181711AA	06/20/2018 12:10	Linda C Pape	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS36-0001-060818 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 13:45
SDG#: DHR37-07

CH2M Hill, Inc.
ELLE Sample #: SW 9651111
ELLE Group #: 1953251
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.89
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.89
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.89
10237	Tetrachloroethene	127-18-4	68	5	1	0.89
10237	Trichloroethene	79-01-6	5 U	5	1	0.89
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.89
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	15.7	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181633AA	06/13/2018 05:24	Kelly Devlin	0.89
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816050159	06/09/2018 16:43	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816050159	06/09/2018 17:10	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816050159	06/09/2018 17:10	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820001B	06/11/2018 09:01	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS36-0708-060818 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 14:00
SDG#: DHR37-08

CH2M Hill, Inc.
ELLE Sample #: SW 9651112
ELLE Group #: 1953251
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.83
10237	cis-1,2-Dichloroethene	156-59-2	1 J	5	1	0.83
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.83
10237	Tetrachloroethene	127-18-4	120	5	1	0.83
10237	Trichloroethene	79-01-6	3 J	5	1	0.83
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.83
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	18.0	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 03:35	Patrick T Herres	0.83
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816050159	06/09/2018 16:46	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816050159	06/09/2018 17:10	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816050159	06/09/2018 17:10	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820001B	06/11/2018 09:01	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SSFD01-060818 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 14:05
SDG#: DHR37-09FD

CH2M Hill, Inc.
ELLE Sample #: SW 9651113
ELLE Group #: 1953251
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.89
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.89
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.89
10237	Tetrachloroethene	127-18-4	35	5	1	0.89
10237	Trichloroethene	79-01-6	5 U	5	1	0.89
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.89
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	18.8	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 03:57	Patrick T Herres	0.89
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816050159	06/09/2018 16:50	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816050159	06/09/2018 17:11	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816050159	06/09/2018 17:11	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820001B	06/11/2018 09:01	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS36-1516-060818 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 14:25
SDG#: DHR37-10

CH2M Hill, Inc.
ELLE Sample #: SW 9651114
ELLE Group #: 1953251
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	1.02
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	1.02
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	1.02
10237	Tetrachloroethene	127-18-4	11		5	1	1.02
10237	Trichloroethene	79-01-6	5	U	5	1	1.02
10237	Vinyl Chloride	75-01-4	5	U	5	1	1.02
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	4.1		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 04:19	Patrick T Herres	1.02
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816050159	06/09/2018 16:53	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816050159	06/09/2018 17:11	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816050159	06/09/2018 17:11	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820001B	06/11/2018 09:01	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW14-2831-060818 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 15:05
SDG#: DHR37-11

CH2M Hill, Inc.
ELLE Sample #: WW 9651115
ELLE Group #: 1953251
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethene	75-35-4	1	U	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	1		1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	1	U	1	0.5	1
10335	Tetrachloroethene	127-18-4	44		1	0.5	1
10335	Trichloroethene	79-01-6	2		1	0.5	1
10335	Vinyl Chloride	75-01-4	1	U	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	W181711AA	06/20/2018 12:34	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	W181711AA	06/20/2018 12:34	Linda C Pape	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS38-0102-060818 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 16:20
SDG#: DHR37-12

CH2M Hill, Inc.
ELLE Sample #: SW 9651116
ELLE Group #: 1953251
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.81
10237	cis-1,2-Dichloroethene	156-59-2	2	J	5	1	0.81
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.81
10237	Tetrachloroethene	127-18-4	79		5	1	0.81
10237	Trichloroethene	79-01-6	53		5	1	0.81
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.81
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	15.4		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 04:42	Patrick T Herres	0.81
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816050159	06/09/2018 16:57	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816050159	06/09/2018 17:11	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816050159	06/09/2018 17:11	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820001B	06/11/2018 09:01	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS38-0607-060818 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 16:30
SDG#: DHR37-13

CH2M Hill, Inc.
ELLE Sample #: SW 9651117
ELLE Group #: 1953251
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.86
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.86
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.86
10237	Tetrachloroethene	127-18-4	58	5	1	0.86
10237	Trichloroethene	79-01-6	5 U	5	1	0.86
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.86
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	16.5	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181652AA	06/14/2018 20:36	Patrick T Herres	0.86
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816050159	06/09/2018 17:00	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816050159	06/09/2018 17:11	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816050159	06/09/2018 17:11	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820001B	06/11/2018 09:01	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS38-2324-060818 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/09/2018 10:10
Collection Date/Time: 06/08/2018 17:20
SDG#: DHR37-14

CH2M Hill, Inc.
ELLE Sample #: SW 9651118
ELLE Group #: 1953251
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.95
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.95
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.95
10237	Tetrachloroethene	127-18-4	120	5	1	0.95
10237	Trichloroethene	79-01-6	5 U	5	1	0.95
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.95
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	4.0	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181652AA	06/14/2018 21:21	Patrick T Herres	0.95
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816050159	06/09/2018 17:04	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816050159	06/09/2018 17:11	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816050159	06/09/2018 17:11	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18162820001B	06/11/2018 09:01	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1953251
Reported: 06/22/2018 08:19

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	LOQ**	MDL
	ug/kg	ug/kg	ug/kg
Batch number: B181633AA	Sample number(s): 9651105-9651106,9651108,9651111		
1,1-Dichloroethene	5 U	5	1
cis-1,2-Dichloroethene	5 U	5	1
trans-1,2-Dichloroethene	5 U	5	1
Tetrachloroethene	5 U	5	1
Trichloroethene	5 U	5	1
Vinyl Chloride	5 U	5	1
Batch number: B181641AA	Sample number(s): 9651112-9651114,9651116		
1,1-Dichloroethene	5 U	5	1
cis-1,2-Dichloroethene	5 U	5	1
trans-1,2-Dichloroethene	5 U	5	1
Tetrachloroethene	5 U	5	1
Trichloroethene	5 U	5	1
Vinyl Chloride	5 U	5	1
Batch number: B181652AA	Sample number(s): 9651117-9651118		
1,1-Dichloroethene	5 U	5	1
cis-1,2-Dichloroethene	5 U	5	1
trans-1,2-Dichloroethene	5 U	5	1
Tetrachloroethene	5 U	5	1
Trichloroethene	5 U	5	1
Vinyl Chloride	5 U	5	1
	ug/l	ug/l	ug/l
Batch number: W181711AA	Sample number(s): 9651107,9651109-9651110,9651115		
1,1-Dichloroethene	1 U	1	0.5
cis-1,2-Dichloroethene	1 U	1	0.5
trans-1,2-Dichloroethene	1 U	1	0.5
Tetrachloroethene	1 U	1	0.5
Trichloroethene	1 U	1	0.5
Vinyl Chloride	1 U	1	0.5

LCS/LCSD

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/22/2018 08:19

Group Number: 1953251

LCS/LCSD

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: B181633AA	Sample number(s): 9651105-9651106,9651108,9651111								
1,1-Dichloroethene	20	17.98	20	18.47	90	92	73-129	3	30
cis-1,2-Dichloroethene	20	18.54	20	19.42	93	97	80-120	5	30
trans-1,2-Dichloroethene	20	17.46	20	18.47	87	92	80-125	6	30
Tetrachloroethene	20	18.08	20	18.49	90	92	73-120	2	30
Trichloroethene	20	17.93	20	18.87	90	94	80-120	5	30
Vinyl Chloride	20	15.26	20	15.54	76	78	59-120	2	30
Batch number: B181641AA	Sample number(s): 9651112-9651114,9651116								
1,1-Dichloroethene	20	20.66	20	17.45	103	87	73-129	17	30
cis-1,2-Dichloroethene	20	20.97	20	18.27	105	91	80-120	14	30
trans-1,2-Dichloroethene	20	20.82	20	16.79	104	84	80-125	21	30
Tetrachloroethene	20	20.36	20	16.99	102	85	73-120	18	30
Trichloroethene	20	19.82	20	17.17	99	86	80-120	14	30
Vinyl Chloride	20	15.41	20	12.81	77	64	59-120	18	30
Batch number: B181652AA	Sample number(s): 9651117-9651118								
1,1-Dichloroethene	20	19.47	20	19.92	97	100	73-129	2	30
cis-1,2-Dichloroethene	20	19.64	20	20.17	98	101	80-120	3	30
trans-1,2-Dichloroethene	20	18.82	20	19.19	94	96	80-125	2	30
Tetrachloroethene	20	19.64	20	19.75	98	99	73-120	1	30
Trichloroethene	20	19.37	20	19.64	97	98	80-120	1	30
Vinyl Chloride	20	15.88	20	16.6	79	83	59-120	4	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: W181711AA	Sample number(s): 9651107,9651109-9651110,9651115								
1,1-Dichloroethene	20	24.49			122		80-131		
cis-1,2-Dichloroethene	20	21.25			106		80-120		
trans-1,2-Dichloroethene	20	21.76			109		80-120		
Tetrachloroethene	20	21.1			105		80-120		
Trichloroethene	20	20.35			102		80-120		
Vinyl Chloride	20	15.94			80		68-120		
	%	%	%	%					
Batch number: 18162820001B	Sample number(s): 9651105-9651106,9651108,9651111-9651114,9651116-9651118								
Moisture	89.5	89.42			100		99-101		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/22/2018 08:19

Group Number: 1953251

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/kg	MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: B181641AA	Sample number(s): 9651112-9651114,9651116 UNSPK: P649555									
1,1-Dichloroethene	5 U	17.83	20.5	17.64	18.74	115	106	73-129	9	30
cis-1,2-Dichloroethene	5 U	17.83	20.46	17.64	18.47	115	105	80-120	10	30
trans-1,2-Dichloroethene	5 U	17.83	19.51	17.64	18.73	109	106	80-125	4	30
Tetrachloroethene	10.54	17.83	39.73	17.64	30.16	164*	111	73-120	27	30
Trichloroethene	5 U	17.83	20.09	17.64	18.01	113	102	80-120	11	30
Vinyl Chloride	5 U	17.83	14.9	17.64	14.42	84	82	59-120	3	30
Batch number: B181652AA	Sample number(s): 9651117-9651118 UNSPK: 9651117									
1,1-Dichloroethene	4 U	16.86	18.93			112		73-129		
cis-1,2-Dichloroethene	4 U	16.86	19.12			113		80-120		
trans-1,2-Dichloroethene	4 U	16.86	18.3			108		80-125		
Tetrachloroethene	48.24	16.86	86.65			228*		73-120		
Trichloroethene	4 U	16.86	18.94			112		80-120		
Vinyl Chloride	4 U	16.86	15.38			91		59-120		
	ug/l	ug/l	ug/l	ug/l	ug/l					
Batch number: W181711AA	Sample number(s): 9651107,9651109-9651110,9651115 UNSPK: 9651107									
1,1-Dichloroethene	1 U	20	25.7	20	25.84	128	129	80-131	1	30
cis-1,2-Dichloroethene	3.35	20	25.45	20	25.88	110	113	80-120	2	30
trans-1,2-Dichloroethene	1 U	20	22.69	20	23.22	113	116	80-120	2	30
Tetrachloroethene	37.76	20	62.55	20	59.48	124*	109	80-120	5	30
Trichloroethene	4.60	20	26.19	20	26.13	108	108	80-120	0	30
Vinyl Chloride	1 U	20	18.45	20	17.62	92	88	68-120	5	30

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc %	DUP Conc %	DUP RPD	DUP RPD Max
Batch number: 18162820001B	Sample number(s): 9651105-9651106,9651108,9651111-9651114,9651116-9651118 BKG: P650899			
Moisture	17.85	17.78	0	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1953251
Reported: 06/22/2018 08:19

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- Solid by 8260B
Batch number: B181633AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9651105	102	98	104	94
9651106	102	98	104	95
9651108	101	99	102	95
9651111	102	99	105	90
Blank	102	101	101	97
LCS	101	103	105	104
LCSD	100	100	104	102
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- Solid by 8260B
Batch number: B181641AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9651112	103	99	102	93
9651113	104	99	102	93
9651114	104	100	102	95
9651116	105	102	101	95
Blank	102	101	103	97
LCS	104	104	105	104
LCSD	103	106	105	106
MS	100	99	108	102
MSD	100	99	107	102
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- Solid by 8260B
Batch number: B181652AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9651117	102	110	103	97
9651118	101	106	103	94
Blank	102	102	102	97
LCS	102	101	105	104
LCSD	102	103	105	105
MS	100	103	107	101
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- 5ml Water by 8260B
Batch number: W181711AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9651107	100	103	97	98
9651109	99	100	98	97

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/22/2018 08:19

Group Number: 1953251

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- 5ml Water by 8260B
Batch number: W181711AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9651110	98	101	98	98
9651115	99	102	97	98
Blank	99	101	98	98
LCS	100	103	98	100
MS	100	98	99	100
MSD	99	103	99	101
Limits:	80-120	80-120	80-120	80-120

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody

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For Eurofins Lancaster Laboratories Environmental use only
Acct. # 11372 Group # 195325 Sample # 960105-18

COC # 563166

Client Information

Client: DOW c/o Jacobs	Acct. #:
Project Name/#: Dow Hanging Rock RFI	PWSID #:
Project Manager: Chiller/Shane Lowe	P.O. #:
Sampler: Jim Mollison	Quote #:
State where samples were collected: OHIO	For Compliance: Yes ☐ No ☒

Matrix: Soil ☐ Sediment ☐ Tissue ☒ Water (Ground ☒ Potable ☐ Surface ☐ NPDES ☐) Other: ___

Analysis Requested — Preservation and Filtration Codes

For Lab Use Only
FSC: ___
SCR#: ___

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Sample Identification	Collected Date	Collected Time	Grab	Composite	Soil	Ground Water	Potable Water	Surface Water	NPDES	Other	Total # of Containers	VOC in Soil	% Moisture	VOC in Water	Remarks
SO1-SS25-0001-060818	6/8/18	0955	X		X						4	X	X		
SO1-SS25-0809-060818	6/8/18	1015	X		X						4	X	X		
SO1-~~SS15~~ GW06-2630-060818	6/8/18	1115	X			X					3			X	
~~SO1-1314-060818~~															
SO1-SS25-1314-060818	6/8/18	1035	X		X						4	X	X		
060818TB	6/8/18	1135	X			X					2			X	
060818EB	6/8/18	1530	X			X					3			X	
SO1-SS36-0001-060818	6/8/18	1345	X		X						4	X	X		
SO1-SS36-0705-060818	6/8/18	1400	X		X						4	X	X		
SO1-SSFD01-060816	6/8/18	1405	X		X						4	X	X		

Turnaround Time (TAT) Requested (please circle) 1405
Standard Rush
(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: ___

E-mail address: ___

Data Package Options (circle if required)
Type I (EPA Level 3 Equivalent/non-CLP) As Per Contract
Type VI (Raw Data Only)
Type III (Reduced non-CLP) NJ DKQP TX TRRP-13
NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
	6/8/18	1830			
				6/9/18	10:10

EDD Required? Yes No
If yes, format: ___

Site-Specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:
UPS ___ FedEx X Other ___

Temperature upon receipt 0.8 °C

Environmental Analysis Request/Chain of Custody

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For Eurofins Lancaster Laboratories Environmental use only

Acct. # 11372 Group # 453251 Sample # 905105-18

COC # 563167

Client Information

Client: Dow c/o Jacobs	Acct. #:
Project Name/#: Dow Hanging Rock RFI	PWSID #:
Project Manager: Chiller / Shane Lowe	P.O. #:
Sampler: Jim Mallon	Quote #:
State where samples were collected: OH10	For Compliance: Yes ☐ No ☒

Matrix

Soil ☒ Sediment ☐ Tissue ☐ Water ☐ Potable ☐ Ground ☒ NPDES ☐ Surface ☐ Other: ____

Analysis Requested

Preservation and Filtration Codes

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	VOCs (SW)	% Moisture	VOCs in Water	#
SO1-SS36-1516-060818	6/8/18	1425	X		4	X	X		
SO1-GW14-2831-060818	6/8/18	1505	X		3			X	
SO1-SS38-0102-060818	6/8/18	1620	X		4	X	X		
SO1-SS38-0607-060818	6/8/18	1630	X		4	X	X		
SO1-SS38-2324-060818	6/8/18	1720	X		4	X	X		

For Lab Use Only

FSC: ____

SCR#: ____

Preservation Codes

H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Remarks

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: ____

E-mail address: ____

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)

Type III (Reduced non-CLP) NJ DKQP TX TRRP-13

NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
James F. Mallon	6/8/18	1830			
				6/9/18	1010

EDD Required? Yes No

If yes, format: ____

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS ____ FedEx X Other ____

Temperature upon receipt 0.8 °C

Eurofins Lancaster Laboratories Environmental, LLC • 2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

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Sample Administration Receipt Documentation Log

Doc Log ID: 218721

Group Number(s): 195325

Client: DOW c/o JACOBS

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	06/09/2018 10:10
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OH		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	No
Custody Seal Present:	Yes	Sample Date/Times match COC:	No
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCL
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Suegeily Mendez (14058) at 10:35 on 06/09/2018

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT42-02	0.8	DT	Wet	Y	Bagged	N

Sample ID Discrepancy Details

Sample ID on COC	Sample ID on Label	Comments
S01-SSFD01-060816	S01-SSFD01-060818	

Sample Date/Time Discrepancy Details

Sample ID on COC	Date/Time on Label	Comments
S01-GW14-28 31-060818	6/08/2018 15:04	1 VIAL

2425 New Holland Pike
Lancaster, PA 17601-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.cor

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mg**	milligram(s)
C	degrees Celsius	**mL**	milliliter(s)
cfu	colony forming units	**MPN**	Most Probable Number
CP Units	cobalt-chloroplatinate units	**N.D.**	non-detect
F	degrees Fahrenheit	**ng**	nanogram(s)
g	gram(s)	**NTU**	nephelometric turbidity units
IU	International Units	**pg/L**	picogram/liter
kg	kilogram(s)	**RL**	Reporting Limit
L	liter(s)	**TNTC**	Too Numerous To Count
lb.	pound(s)	**µg**	microgram(s)
m3	cubic meter(s)	**µL**	microliter(s)
meq	milliequivalents	**umhos/cm**	micromhos/cm

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

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Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Volatiles by GC/MS Data

Case Narrative/Conformance Summary

Volatiles by GC/MS

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR37

GC/MS Volatiles

Fraction: Volatiles by GC/MS
VOCs- 5ml Water by 8260B

		Matrix			
Sample #	**Client ID**	**Liquid**	**Solid**	**DF**	**Comments**
9651105	S01-SS25-0001-060818		X	0.91	
9651106	S01-SS25-0809-060818		X	0.85	
9651107	S01-GW06-2630-060818	X		1	
9651108	S01-SS25-1314-060818		X	0.95	
9651109	060818TB	X		1	Trip Blank
9651110	060818EB	X		1	Equipment Blank
9651111	S01-SS36-0001-060818		X	0.89	
9651112	S01-SS36-0708-060818		X	0.83	
9651113	S01-SSFD01-060818		X	0.89	Field Duplicate Sample
9651114	S01-SS36-1516-060818		X	1.02	
9651115	S01-GW14-2831-060818	X		1	
9651116	S01-SS38-0102-060818		X	0.81	
9651117	S01-SS38-0607-060818		X	0.84; 0.86	
9651118	S01-SS38-2324-060818		X	0.95	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

(Sample number(s): 9651106, 9651112-9651113, 9651116-9651118: Analysis: 10237)
The VOA soil weight is outside the acceptable weight range.
See the VOA Prep Summary Sheet for the affected sample(s).

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR37

GC/MS Volatiles

Fraction: Volatiles by GC/MS

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

MS/MSD

Batch#: W181711AA (Sample number(s): 9651107, 9651109-9651110, 9651115, UNSPK: 9651107)
The recovery(ies) for the following analyte(s) in the MS exceeded the acceptance window indicating a positive bias: Tetrachloroethene

Batch#: B181652AA (Sample number(s): 9651117-9651118, UNSPK: 9651117)
The recovery(ies) for the following analyte(s) in the MS exceeded the acceptance window indicating a positive bias: Tetrachloroethene

SAMPLE ANALYSIS:

No problems were encountered with the analysis of the samples.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Volatiles by GC/MS

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Quality Control Reference List
GC/MS Volatiles

CLIENT: CH2M Hill, Inc.
SDG: DHR37

Fraction: Volatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
VOCs- 5ml Water by 8260B	W181711AA	VBLKW87	06/20/2018 08:33
		LCSW87	06/20/2018 08:56
		9651107 UNSPK	06/20/2018 10:34
		9651107 MS	06/20/2018 10:57
		9651107 MSD	06/20/2018 11:21
		9651109	06/20/2018 11:46
		9651110	06/20/2018 12:10
		9651115	06/20/2018 12:34
VOCs- Solid by 8260B	B181633AA	VBLKB07	06/12/2018 20:51
		LCSB07	06/12/2018 21:33
		LCDB07	06/12/2018 21:56
		9651105	06/13/2018 04:16
		9651106	06/13/2018 04:39
		9651108	06/13/2018 05:02
		9651111	06/13/2018 05:24
VOCs- Solid by 8260B	B181641AA	VBLKB08	06/13/2018 19:39
		LCSB08	06/13/2018 20:02
		LCDB08	06/13/2018 20:24
		9651112	06/14/2018 03:35
		9651113	06/14/2018 03:57
		9651114	06/14/2018 04:19
		9651116	06/14/2018 04:42
VOCs- Solid by 8260B	B181652AA	VBLKB11	06/14/2018 15:59
		LCSB11	06/14/2018 16:29
		LCDB11	06/14/2018 16:51
		9651117 UNSPK	06/14/2018 20:36
		9651117 MS	06/14/2018 20:59
		9651118	06/14/2018 21:21

Fraction: Volatiles by GC/MS

B181633AA / VBLKB07 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/12/18	N.D.	ug/kg	1	5
1,1-Dichloroethene	06/12/18	N.D.	ug/kg	1	5
cis-1,2-Dichloroethene	06/12/18	N.D.	ug/kg	1	5
trans-1,2-Dichloroethene	06/12/18	N.D.	ug/kg	1	5
Trichloroethene	06/12/18	N.D.	ug/kg	1	5
Tetrachloroethene	06/12/18	N.D.	ug/kg	1	5

B181641AA / VBLKB08 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/13/18	N.D.	ug/kg	1	5
1,1-Dichloroethene	06/13/18	N.D.	ug/kg	1	5
cis-1,2-Dichloroethene	06/13/18	N.D.	ug/kg	1	5
trans-1,2-Dichloroethene	06/13/18	N.D.	ug/kg	1	5
Trichloroethene	06/13/18	N.D.	ug/kg	1	5
Tetrachloroethene	06/13/18	N.D.	ug/kg	1	5

B181652AA / VBLKB11 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/14/18	N.D.	ug/kg	1	5
1,1-Dichloroethene	06/14/18	N.D.	ug/kg	1	5
cis-1,2-Dichloroethene	06/14/18	N.D.	ug/kg	1	5
trans-1,2-Dichloroethene	06/14/18	N.D.	ug/kg	1	5
Trichloroethene	06/14/18	N.D.	ug/kg	1	5
Tetrachloroethene	06/14/18	N.D.	ug/kg	1	5

Quality Control Summary
Method Blank
GC/MS Volatiles
SDG: DHR37
Matrix: LIQUID

Fraction: Volatiles by GC/MS

W181711AA / VBLKW87 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/20/18	N.D.	ug/l	0.5	1
1,1-Dichloroethene	06/20/18	N.D.	ug/l	0.5	1
trans-1,2-Dichloroethene	06/20/18	N.D.	ug/l	0.5	1
cis-1,2-Dichloroethene	06/20/18	N.D.	ug/l	0.5	1
Trichloroethene	06/20/18	N.D.	ug/l	0.5	1
Tetrachloroethene	06/20/18	N.D.	ug/l	0.5	1

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DHR37
Matrix: SOLID

Fraction: Volatiles by GC/MS

B181633AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKB07	101	54 - 135	97	50 - 131	102	50 - 141	101	52 - 141
LCSB07	103	54 - 135	104	50 - 131	101	50 - 141	105	52 - 141
LCDB07	100	54 - 135	102	50 - 131	100	50 - 141	104	52 - 141
9651105	98	54 - 135	94	50 - 131	102	50 - 141	104	52 - 141
9651106	98	54 - 135	95	50 - 131	102	50 - 141	104	52 - 141
9651108	99	54 - 135	95	50 - 131	101	50 - 141	102	52 - 141
9651111	99	54 - 135	90	50 - 131	102	50 - 141	105	52 - 141

B181641AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKB08	101	54 - 135	97	50 - 131	102	50 - 141	103	52 - 141
LCSB08	104	54 - 135	104	50 - 131	104	50 - 141	105	52 - 141
LCDB08	106	54 - 135	106	50 - 131	103	50 - 141	105	52 - 141
9651112	99	54 - 135	93	50 - 131	103	50 - 141	102	52 - 141
9651113	99	54 - 135	93	50 - 131	104	50 - 141	102	52 - 141
9651114	100	54 - 135	95	50 - 131	104	50 - 141	102	52 - 141
9651116	102	54 - 135	95	50 - 131	105	50 - 141	101	52 - 141

B181652AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKB11	102	54 - 135	97	50 - 131	102	50 - 141	102	52 - 141
LCSB11	101	54 - 135	104	50 - 131	102	50 - 141	105	52 - 141
LCDB11	103	54 - 135	105	50 - 131	102	50 - 141	105	52 - 141
9651117 UNSPK	110	54 - 135	97	50 - 131	102	50 - 141	103	52 - 141
9651117 MS	103	54 - 135	101	50 - 131	100	50 - 141	107	52 - 141
9651118	106	54 - 135	94	50 - 131	101	50 - 141	103	52 - 141

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DHR37
Matrix: LIQUID

Fraction: Volatiles by GC/MS

W181711AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKW87	101	80 - 120	98	80 - 120	99	80 - 120	98	80 - 120
LCSW87	103	80 - 120	100	80 - 120	100	80 - 120	98	80 - 120
9651107 UNSPK	103	80 - 120	98	80 - 120	100	80 - 120	97	80 - 120
9651107 MS	98	80 - 120	100	80 - 120	100	80 - 120	99	80 - 120
9651107 MSD	103	80 - 120	101	80 - 120	99	80 - 120	99	80 - 120
9651109	100	80 - 120	97	80 - 120	99	80 - 120	98	80 - 120
9651110	101	80 - 120	98	80 - 120	98	80 - 120	98	80 - 120
9651115	102	80 - 120	98	80 - 120	99	80 - 120	97	80 - 120

GC/MS Volatiles

Fraction: Volatiles by GC/MS

UNSPK: 9651117 MS: 9651117 **Analyte**	Batch: **B181652AA** (Sample number(s): 9651117-9651118)								
	Spike Added ug/kg	**Unspiked Conc ug/kg**	**MS Conc ug/kg**	**MSD Conc ug/kg**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	16.86	N.D.	15.38	NA	91	NA	59-120	NA	NA
1,1-Dichloroethene	16.86	N.D.	18.93	NA	112	NA	73-129	NA	NA
cis-1,2-Dichloroethene	16.86	N.D.	19.12	NA	113	NA	80-120	NA	NA
trans-1,2-Dichloroethene	16.86	N.D.	18.3	NA	108	NA	80-125	NA	NA
Trichloroethene	16.86	N.D.	18.94	NA	112	NA	80-120	NA	NA
Tetrachloroethene	16.86	48.24	86.65	NA	228 *	NA	73-120	NA	NA

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

GC/MS Volatiles

Fraction: Volatiles by GC/MS

UNSPK: 9651107 MS: 9651107 MSD: 9651107 **Analyte**	Batch: **W181711AA** (Sample number(s): 9651107, 9651109-9651110, 9651115)								
	Spike Added ug/l	**Unspiked Conc ug/l**	**MS Conc ug/l**	**MSD Conc ug/l**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	N.D.	18.45	17.62	92	88	68-120	5	30
1,1-Dichloroethene	20	N.D.	25.7	25.84	128	129	80-131	1	30
trans-1,2-Dichloroethene	20	N.D.	22.69	23.22	113	116	80-120	2	30
cis-1,2-Dichloroethene	20	3.35	25.45	25.88	110	113	80-120	2	30
Trichloroethene	20	4.60	26.19	26.13	108	108	80-120	0	30
Tetrachloroethene	20	37.76	62.55	59.48	124 *	109	80-120	5	30

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSB07 LCSD: LCDB07	Batch: **B181633AA** (Sample number(s): 9651105-9651106, 9651108, 9651111)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	15.26	15.54	76	78	59-120	2	30
1,1-Dichloroethene	20	17.98	18.47	90	92	73-129	3	30
cis-1,2-Dichloroethene	20	18.54	19.42	93	97	80-120	5	30
trans-1,2-Dichloroethene	20	17.46	18.47	87	92	80-125	6	30
Trichloroethene	20	17.93	18.87	90	94	80-120	5	30
Tetrachloroethene	20	18.08	18.49	90	92	73-120	2	30

LCS: LCSB08 LCSD: LCDB08	Batch: **B181641AA** (Sample number(s): 9651112-9651114, 9651116)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	15.41	12.81	77	64	59-120	18	30
1,1-Dichloroethene	20	20.66	17.45	103	87	73-129	17	30
cis-1,2-Dichloroethene	20	20.97	18.27	105	91	80-120	14	30
trans-1,2-Dichloroethene	20	20.82	16.79	104	84	80-125	21	30
Trichloroethene	20	19.82	17.17	99	86	80-120	14	30
Tetrachloroethene	20	20.36	16.99	102	85	73-120	18	30

LCS: LCSB11 LCSD: LCDB11	Batch: **B181652AA** (Sample number(s): 9651117-9651118)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	15.88	16.6	79	83	59-120	4	30
1,1-Dichloroethene	20	19.47	19.92	97	100	73-129	2	30
cis-1,2-Dichloroethene	20	19.64	20.17	98	101	80-120	3	30
trans-1,2-Dichloroethene	20	18.82	19.19	94	96	80-125	2	30
Trichloroethene	20	19.37	19.64	97	98	80-120	1	30
Tetrachloroethene	20	19.64	19.75	98	99	73-120	1	30

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DHR37
Matrix: LIQUID

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSW87	Batch: **W181711AA** (Sample number(s): 9651107, 9651109-9651110, 9651115)							
Analyte	**Spike Added ug/l**	**LCS Conc ug/l**	**LCSD Conc ug/l**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	15.94	NA	80	NA	68-120	NA	NA
1,1-Dichloroethene	20	24.49	NA	122	NA	80-131	NA	NA
trans-1,2-Dichloroethene	20	21.76	NA	109	NA	80-120	NA	NA
cis-1,2-Dichloroethene	20	21.25	NA	106	NA	80-120	NA	NA
Trichloroethene	20	20.35	NA	102	NA	80-120	NA	NA
Tetrachloroethene	20	21.1	NA	105	NA	80-120	NA	NA

Fraction: Volatiles by GC/MS

10335: VOCs- 5ml Water by 8260B Analyte Name	Default MDL	Default LOQ	Units
Vinyl Chloride	0.5	1	ug/l
1,1-Dichloroethene	0.5	1	ug/l
trans-1,2-Dichloroethene	0.5	1	ug/l
cis-1,2-Dichloroethene	0.5	1	ug/l
Trichloroethene	0.5	1	ug/l
Tetrachloroethene	0.5	1	ug/l

10237: VOCs- Solid by 8260B Analyte Name	Default MDL	Default LOQ	Units
Vinyl Chloride	1	5	ug/kg
1,1-Dichloroethene	1	5	ug/kg
trans-1,2-Dichloroethene	1	5	ug/kg
cis-1,2-Dichloroethene	1	5	ug/kg
Trichloroethene	1	5	ug/kg
Tetrachloroethene	1	5	ug/kg

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: bf22t01.d BFB Injection Date: 02/22/18

Instrument ID: HP09953 BFB Injection Time: 10:34

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.36
75	30.0 - 60.0% of mass 95	49.53
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.95
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	81.80
175	5.0 - 9.0% of mass 174	6.09 (7.45)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.92 (96.48)1
177	5.0 - 9.0% of mass 176	5.35 (6.77)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	bf22i01.d	02/22/18	11:18
02	VSTD100	bf22i02.d	02/22/18	11:42
03	VSTD50	bf22i03.d	02/22/18	12:06
04	VSTD20	bf22i04.d	02/22/18	12:31
05	VSTD10	bf22i05.d	02/22/18	12:57
06	VSTD4	bf22i06.d	02/22/18	13:29
07	MDL001 - MDL001	bf22m01.d	02/22/18	13:51
08	LGBICV	bf22v01.d	02/22/18	14:16

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu12t10.d BFB Injection Date: 06/12/18

Instrument ID: HP09953 BFB Injection Time: 19:08

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.69
75	30.0 - 60.0% of mass 95	51.74
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.87
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	80.01
175	5.0 - 9.0% of mass 174	6.14 (7.67)1
176	Greater than 95.0%, but less than 101.0% of mass 174	77.22 (96.51)1
177	5.0 - 9.0% of mass 176	5.21 (6.75)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	bu12c01.d	06/12/18	20:05
02	VBLKB07	bu12b10.d	06/12/18	20:51
03	LCSB07	bu12s61.d	06/12/18	21:33
04	LCDB07	bu12s62.d	06/12/18	21:56
05	9632085	bu12s64.d	06/12/18	23:47
06	9632091	bu12s65.d	06/13/18	00:09
07	9632093	bu12s66.d	06/13/18	00:31
08	9632095	bu12s67.d	06/13/18	00:54
09	9640166	bu12s68.d	06/13/18	01:17
10	9640167	bu12s69.d	06/13/18	01:39
11	9649656	bu12s70.d	06/13/18	02:02
12	9653928	bu12s71.d	06/13/18	02:24
13	9653931	bu12s72.d	06/13/18	02:46
14	9653932	bu12s73.d	06/13/18	03:09
15	9653941	bu12s74.d	06/13/18	03:31
16	9653942	bu12s75.d	06/13/18	03:54
17	9651105	bu12s76.d	06/13/18	04:16
18	9651106	bu12s77.d	06/13/18	04:39
19	9651108	bu12s78.d	06/13/18	05:02
20	9651111	bu12s79.d	06/13/18	05:24
21	9650447	bu12s80.d	06/13/18	05:47
22	9653933	bu12s81.d	06/13/18	06:10

FORM V VOA

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu12t10.d BFB Injection Date: 06/12/18

Instrument ID: HP09953 BFB Injection Time: 19:08

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.69
75	30.0 - 60.0% of mass 95	51.74
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.87
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	80.01
175	5.0 - 9.0% of mass 174	6.14 (7.67)1
176	Greater than 95.0%, but less than 101.0% of mass 174	77.22 (96.51)1
177	5.0 - 9.0% of mass 176	5.21 (6.75)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9653935	bu12s82.d	06/13/18	06:32

FORM V VOA

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu13t01.d BFB Injection Date: 06/13/18

Instrument ID: HP09953 BFB Injection Time: 18:05

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.88
75	30.0 - 60.0% of mass 95	50.95
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.89
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	83.38
175	5.0 - 9.0% of mass 174	6.50 (7.80)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.41 (97.64)1
177	5.0 - 9.0% of mass 176	5.21 (6.39)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	bu13c01.d	06/13/18	18:49
02	VBLKB08	bu13b01.d	06/13/18	19:39
03	VBLKB09	bu13b05.d	06/13/18	19:39
04	LCSB08	bu13s01.d	06/13/18	20:02
05	LCSB09	bu13s31.d	06/13/18	20:02
06	LCDB08	bu13s02.d	06/13/18	20:24
07	LCDB09	bu13s32.d	06/13/18	20:24
08	9647138RE	bu13s33.d	06/13/18	21:53
09	SECC050	bu13c02.d	06/13/18	22:16
10	9649555	bu13s03.d	06/13/18	22:39
11	9649556MS	bu13s04.d	06/13/18	23:02
12	9649557MSD	bu13s05.d	06/13/18	23:25
13	9649546	bu13s06.d	06/13/18	23:49
14	9649547	bu13s07.d	06/14/18	00:12
15	9649548	bu13s08.d	06/14/18	00:34
16	9649549	bu13s09.d	06/14/18	00:57
17	9649552	bu13s10.d	06/14/18	01:19
18	9649553	bu13s11.d	06/14/18	01:42
19	9649554	bu13s12.d	06/14/18	02:04
20	9649558	bu13s13.d	06/14/18	02:27
21	9649559	bu13s14.d	06/14/18	02:49
22	9649560	bu13s15.d	06/14/18	03:12

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu13t01.d BFB Injection Date: 06/13/18

Instrument ID: HP09953 BFB Injection Time: 18:05

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.88
75	30.0 - 60.0% of mass 95	50.95
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.89
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	83.38
175	5.0 - 9.0% of mass 174	6.50 (7.80)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.41 (97.64)1
177	5.0 - 9.0% of mass 176	5.21 (6.39)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9651112	bu13s16.d	06/14/18	03:35
24	9651113	bu13s17.d	06/14/18	03:57
25	9651114	bu13s18.d	06/14/18	04:19
26	9651116	bu13s19.d	06/14/18	04:42
27	9653929	bu13s20.d	06/14/18	05:04
28	9653933RE	bu13s21.d	06/14/18	05:27

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu14t01.d BFB Injection Date: 06/14/18

Instrument ID: HP09953 BFB Injection Time: 13:55

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.48
75	30.0 - 60.0% of mass 95	52.06
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.73
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	84.73
175	5.0 - 9.0% of mass 174	6.49 (7.65)1
176	Greater than 95.0%, but less than 101.0% of mass 174	83.30 (98.31)1
177	5.0 - 9.0% of mass 176	5.61 (6.74)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	bu14c01.d	06/14/18	14:41
02	VBLKB10	bu14b05.d	06/14/18	15:59
03	VBLKB11	bu14b10.d	06/14/18	15:59
04	LCSB10	bu14s01.d	06/14/18	16:29
05	LCSB11	bu14s31.d	06/14/18	16:29
06	LCDB10	bu14s02.d	06/14/18	16:51
07	LCDB11	bu14s32.d	06/14/18	16:51
08	9644038	bu14s03.d	06/14/18	19:00
09	9650982	bu14s04.d	06/14/18	19:22
10	9657452	bu14s05.d	06/14/18	19:45
11	9650985	bu14s06.d	06/14/18	20:08
12	9651117	bu14s33.d	06/14/18	20:36
13	9651117MS	bu14s34.d	06/14/18	20:59
14	9651118	bu14s35.d	06/14/18	21:21
15	9655317	bu14s36.d	06/14/18	21:44
16	9655318	bu14s37.d	06/14/18	22:07
17	9656566	bu14s38.d	06/14/18	22:29
18	9656567	bu14s39.d	06/14/18	22:52
19	9656569	bu14s40.d	06/14/18	23:15
20	9656570	bu14s41.d	06/14/18	23:37
21	9656571	bu14s42.d	06/14/18	23:59
22	9656572	bu14s43.d	06/15/18	00:22

FORM V VOA

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu14t01.d BFB Injection Date: 06/14/18

Instrument ID: HP09953 BFB Injection Time: 13:55

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.48
75	30.0 - 60.0% of mass 95	52.06
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.73
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	84.73
175	5.0 - 9.0% of mass 174	6.49 (7.65)1
176	Greater than 95.0%, but less than 101.0% of mass 174	83.30 (98.31)1
177	5.0 - 9.0% of mass 176	5.61 (6.74)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9656573	bu14s44.d	06/15/18	00:44
24	9656574	bu14s45.d	06/15/18	01:07
25	9656575	bu14s46.d	06/15/18	01:29

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: wy23t04.d BFB Injection Date: 05/23/18

Instrument ID: HP09137 BFB Injection Time: 13:51

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.07
75	30.0 - 60.0% of mass 95	47.30
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.73
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	76.76
175	5.0 - 9.0% of mass 174	5.72 (7.46)1
176	Greater than 95.0%, but less than 101.0% of mass 174	74.07 (96.49)1
177	5.0 - 9.0% of mass 176	5.04 (6.80)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	wy23i01.d	05/23/18	14:38
02	VSTD100	wy23i02.d	05/23/18	15:02
03	VSTD50	wy23i03.d	05/23/18	15:26
04	VSTD20	wy23i04.d	05/23/18	15:50
05	VSTD10	wy23i05.d	05/23/18	16:14
06	VSTD4	wy23i06.d	05/23/18	16:37
07	VSTD1	wy23i07.d	05/23/18	17:01
08	VSTD0.5	wy23m01.d	05/23/18	17:25
09	LCSWICV	wy23v01.d	05/23/18	17:49

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: wu20t01.d BFB Injection Date: 06/20/18

Instrument ID: HP09137 BFB Injection Time: 06:47

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.44
75	30.0 - 60.0% of mass 95	46.93
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.68
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	80.58
175	5.0 - 9.0% of mass 174	5.82 (7.22)1
176	Greater than 95.0%, but less than 101.0% of mass 174	79.25 (98.34)1
177	5.0 - 9.0% of mass 176	5.52 (6.96)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD150	wu20c01.d	06/20/18	07:45
02	VBLKW87	wu20b01.d	06/20/18	08:33
03	LCSW87	wu20s01.d	06/20/18	08:56
04	9651613	wu20s02.d	06/20/18	09:46
05	9651613DL	wu20s03.d	06/20/18	10:10
06	9651107	wu20s04.d	06/20/18	10:34
07	9651107MS	wu20s05.d	06/20/18	10:57
08	9651107MSD	wu20s06.d	06/20/18	11:21
09	9651109	wu20s07.d	06/20/18	11:46
10	9651110	wu20s08.d	06/20/18	12:10
11	9651115	wu20s09.d	06/20/18	12:34
12	9651177	wu20s10.d	06/20/18	12:57
13	9651178	wu20s11.d	06/20/18	13:21
14	9651179	wu20s12.d	06/20/18	13:45
15	9651180	wu20s14.d	06/20/18	14:33
16	9651305	wu20s15.d	06/20/18	14:57
17	9651306	wu20s16.d	06/20/18	15:21
18	9651308	wu20s17.d	06/20/18	15:45
19	9651343	wu20s18.d	06/20/18	16:08
20	9651347	wu20s19.d	06/20/18	16:33
21	9661293	wu20s20.d	06/20/18	16:57
22	9658286	wu20s22.d	06/20/18	17:20

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: wu20t01.d BFB Injection Date: 06/20/18

Instrument ID: HP09137 BFB Injection Time: 06:47

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.44
75	30.0 - 60.0% of mass 95	46.93
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.68
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	80.58
175	5.0 - 9.0% of mass 174	5.82 (7.22)1
176	Greater than 95.0%, but less than 101.0% of mass 174	79.25 (98.34)1
177	5.0 - 9.0% of mass 176	5.52 (6.96)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9658286MS	wu20s23.d	06/20/18	17:44
24	9660225	wu20s24.d	06/20/18	18:08
25	9660226	wu20s25.d	06/20/18	18:32

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane			0.4937	0.4887	0.4857	0.5026	0.5070	0.4719	0.4916	3	AVG	
Chloromethane	#		0.6250	0.6026	0.5854	0.5711	0.5965	0.5428	0.5872	5	AVG	#
Vinyl Chloride	*		0.4665	0.4310	0.4182	0.4099	0.4171	0.3607	0.4173	8	AVG	*
Bromomethane			0.3081	0.3006	0.2984	0.2909	0.2897	0.2518	0.2899	7	AVG	
Chloroethane			0.2404	0.2467	0.2409	0.2386	0.2372	0.1969	0.2334	8	AVG	
Dichlorofluoromethane			0.6106	0.5949	0.6079	0.5949	0.6009	0.5439	0.5922	4	AVG	
Trichlorofluoromethane			0.5424	0.5392	0.5339	0.5359	0.5516	0.5187	0.5369	2	AVG	
Ethanol			0.1197	0.1143	0.1250	0.1279	0.1217	0.1180	0.1211	4	AVG	
Freon 123a			0.3516	0.3561	0.3631	0.3465	0.3545	0.3389	0.3518	2	AVG	
Acrolein			2.4157	2.4240	2.5462	2.7115	2.3801	2.0909	2.4281	8	AVG	
1,1-Dichloroethene	*		0.2378	0.2477	0.2501	0.2415	0.2560	0.2425	0.2459	3	AVG	*
Acetone			0.0301	0.0281	0.0238	0.0230	0.0225	0.0213	0.0248	14	AVG	
Freon 113			0.2790	0.3085	0.2946	0.2882	0.3071	0.2988	0.2960	4	AVG	
2-Propanol			0.9378	1.0859	1.0919	1.3247	1.0802	1.1772	1.1163	11	AVG	
Methyl Iodide			0.5059	0.5333	0.5541	0.5338	0.5578	0.5474	0.5387	4	AVG	
Carbon Disulfide			0.7997	0.8330	0.8463	0.8407	0.8843	0.8505	0.8424	3	AVG	
Methyl Acetate			0.2282	0.2378	0.2011	0.1925	0.1997	0.1949	0.2090	9	AVG	
Allyl Chloride			0.5013	0.4898	0.4880	0.4877	0.5031	0.4654	0.4892	3	AVG	
Methylene Chloride			0.2909	0.2986	0.2904	0.2831	0.2903	0.2778	0.2885	2	AVG	
t-Butyl alcohol			1.3811	1.2450	1.2102	1.2677	1.2127	1.1339	1.2418	7	AVG	
Acrylonitrile			0.1032	0.1110	0.0959	0.0970	0.0961	0.0911	0.0991	7	AVG	
Methyl Tertiary Butyl Ether			0.7860	0.8352	0.7923	0.7915	0.7973	0.7826	0.7975	2	AVG	
trans-1,2-Dichloroethene			0.2776	0.2905	0.2964	0.2871	0.2971	0.2819	0.2884	3	AVG	
n-Hexane			0.4644	0.5057	0.5030	0.5210	0.5427	0.5389	0.5126	6	AVG	
1,1-Dichloroethane	#		0.5504	0.5699	0.5871	0.5681	0.5881	0.5753	0.5731	2	AVG	#
di-Isopropyl ether			1.1120	1.1762	1.1817	1.1544	1.1878	1.1492	1.1602	2	AVG	
2-Chloro-1,3-butadiene			0.4692	0.5100	0.5339	0.5218	0.5510	0.5383	0.5207	6	AVG	
Ethyl t-butyl ether			0.8945	0.9546	0.9853	0.9854	1.0111	1.0051	0.9727	4	AVG	
2-Butanone			7.1353	7.2724	7.4916	7.9621	7.1791	6.8822	7.3204	5	AVG	
cis-1,2-Dichloroethene			0.3111	0.3303	0.3397	0.3333	0.3451	0.3458	0.3342	4	AVG	
2,2-Dichloropropane			0.3625	0.4052	0.4224	0.4310	0.4616	0.4679	0.4251	9	AVG	
Propionitrile			1.8864	1.9537	2.0773	2.2150	2.0246	1.9793	2.0227	6	AVG	
Methacrylonitrile			0.1142	0.1249	0.1114	0.1153	0.1164	0.1201	0.1170	4	AVG	
Bromochloromethane			0.1557	0.1642	0.1602	0.1628	0.1669	0.1713	0.1635	3	AVG	
Tetrahydrofuran			1.3912	1.5533	1.5880	1.7875	1.6127	1.5810	1.5856	8	AVG	
Chloroform	*		0.5030	0.5322	0.5455	0.5356	0.5526	0.5494	0.5364	3	AVG	*
1,1,1-Trichloroethane			0.5352	0.5079	0.5223	0.4905	0.5246	0.5285	0.5181	3	AVG	
Cyclohexane			0.5629	0.6493	0.6177	0.6222	0.6647	0.6642	0.6302	6	AVG	
Cyclohexane(2)			0.5006	0.4943	0.4711	0.5565	0.5111	0.5144	0.5080	6	AVG	
Cyclohexane(3)			0.1594	0.1839	0.1769	0.1801	0.1918	0.1929	0.1808	7	AVG	
1,1-Dichloropropene			0.4023	0.4334	0.4383	0.4280	0.4510	0.4497	0.4338	4	AVG	
Carbon Tetrachloride			0.3244	0.3604	0.3721	0.3810	0.4190	0.4414	0.3830	11	AVG	
Isobutyl Alcohol			0.4628	0.4806	0.5053	0.5387	0.5193	0.5508	0.5096	7	AVG	
Benzene			1.2429	1.2621	1.2830	1.2419	1.2844	1.2513	1.2609	2	AVG	
1,2-Dichloroethane			0.4024	0.4213	0.4097	0.4022	0.4096	0.4129	0.4097	2	AVG	
1,2-Dichloroethane(2)			0.0303	0.0375	0.0352	0.0355	0.0359	0.0376	0.0353	8	AVG	
t-Amyl methyl ether			0.7479	0.8064	0.7995	0.8156	0.8448	0.8723	0.8144	5	AVG	
n-Heptane			0.5526	0.6424	0.5700	0.6187	0.6421	0.6485	0.6124	7	AVG	
n-Butanol			0.3098	0.3268	0.3694	0.4162	0.4027	0.4324	0.3762	13	AVG	
Trichloroethene			0.3036	0.3195	0.3239	0.3175	0.3348	0.3368	0.3227	4	AVG	
Methylcyclohexane			0.5819	0.5773	0.5413	0.6122	0.6392	0.6478	0.6000	7	AVG	
1,2-Dichloropropane	*		0.3067	0.3305	0.3383	0.3336	0.3432	0.3461	0.3331	4	AVG	*

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Methyl Methacrylate			0.1686	0.1881	0.1830	0.1917	0.1998	0.2129	0.1907	8	AVG	
1,4-Dioxane			0.1110	0.1248	0.1466	0.1630	0.1467	0.1540	0.1410	14	AVG	
Dibromomethane			0.1663	0.1816	0.1759	0.1784	0.1836	0.1913	0.1795	5	AVG	
Bromodichloromethane			0.3248	0.3638	0.3817	0.3882	0.4109	0.4303	0.3833	10	AVG	
2-Nitropropane			2.0194	2.2729	2.3607	2.9534	3.0464		2.5306	18	2NDDEG	
2-Chloroethyl Vinyl Ether			0.1410	0.1558	0.1576	0.1696	0.1760	0.1863	0.1644	10	AVG	
cis-1,3-Dichloropropene			0.3779	0.4439	0.4672	0.4804	0.5078	0.5238	0.4668	11	AVG	
4-Methyl-2-pentanone			0.2576	0.3163	0.2933	0.3176	0.3143	0.3227	0.3036	8	AVG	
Toluene		*	0.9247	1.0130	1.0229	0.9901	1.0314	1.0079	0.9983	4	AVG	*
trans-1,3-Dichloropropene			0.3948	0.4659	0.4870	0.5175	0.5510	0.5732	0.4982	13	AVG	
Ethyl Methacrylate			0.3520	0.4298	0.4331	0.4721	0.4944	0.5152	0.4494	13	AVG	
1,1,2-Trichloroethane			0.3012	0.3296	0.3197	0.3250	0.3269	0.3353	0.3230	4	AVG	
Tetrachloroethene			0.4093	0.4669	0.4566	0.4543	0.4871	0.5045	0.4631	7	AVG	
1,3-Dichloropropane			0.5166	0.5690	0.5523	0.5568	0.5651	0.5712	0.5552	4	AVG	
2-Hexanone			0.2486	0.2841	0.2494	0.2778	0.2765	0.2830	0.2699	6	AVG	
Dibromochloromethane			0.2803	0.3263	0.3380	0.3678	0.3910	0.4236	0.3545	14	AVG	
1,2-Dibromoethane			0.2950	0.3284	0.3231	0.3289	0.3375	0.3495	0.3271	6	AVG	
1-Chlorohexane			0.4346	0.5414	0.5133	0.5396	0.5742	0.5820	0.5308	10	AVG	
Chlorobenzene		#	1.0337	1.1318	1.1257	1.0987	1.1318	1.1318	1.1089	4	AVG	#
1,1,1,2-Tetrachloroethane			0.3009	0.3456	0.3573	0.3779	0.4025	0.4298	0.3690	12	AVG	
Ethylbenzene		*	1.6800	1.9699	1.9294	1.9287	2.0003	1.9159	1.9040	6	AVG	*
m+p-Xylene			0.6648	0.7740	0.7603	0.7637	0.8001	0.7814	0.7574	6	AVG	
o-Xylene			0.6360	0.7611	0.7500	0.7650	0.8018	0.8129	0.7545	8	AVG	
Styrene			0.9609	1.1776	1.1925	1.2237	1.2853	1.2873	1.1879	10	AVG	
Bromoform		#	0.1645	0.1961	0.1982	0.2297	0.2506	0.2941	0.2222	21	2NDDEG	#
Isopropylbenzene			1.5872	1.9815	1.9075	1.9702	2.0668	1.9360	1.9082	9	AVG	
Cyclohexanone			0.6812	0.7882	0.8988	1.0192	0.9573	1.0561	0.9002	16	2NDDEG	
1,1,2,2-Tetrachloroethane		#	0.7205	0.8162	0.7382	0.7748	0.7628	0.7200	0.7554	5	AVG	#
Bromobenzene			0.7947	0.8809	0.8693	0.8361	0.8490	0.8151	0.8408	4	AVG	
trans-1,4-Dichloro-2-butene			0.2019	0.2266	0.1995	0.2076	0.2082	0.1977	0.2069	5	AVG	
1,2,3-Trichloropropane			0.2024	0.2234	0.2094	0.2076	0.2048	0.1963	0.2073	4	AVG	
n-Propylbenzene			3.5008	4.3012	4.0233	3.9668	4.0077	3.0592	3.8098	12	AVG	
2-Chlorotoluene			0.7479	0.8267	0.8112	0.7922	0.8147	0.7707	0.7939	4	AVG	
1,3,5-Trimethylbenzene			2.4376	3.0319	2.9345	2.9334	3.0104	2.5475	2.8159	9	AVG	
4-Chlorotoluene			0.7443	0.8644	0.8462	0.8227	0.8504	0.8075	0.8226	5	AVG	
tert-Butylbenzene			0.5308	0.6792	0.6465	0.6746	0.7119	0.6923	0.6559	10	AVG	
Pentachloroethane			0.3802	0.4286	0.4543	0.4969	0.5395	0.5791	0.4798	15	AVG	
1,2,4-Trimethylbenzene			2.5041	3.0952	2.9646	2.9932	3.0647	2.5702	2.8653	9	AVG	
sec-Butylbenzene			3.0756	3.9796	3.7154	3.8596	3.9223	3.0048	3.5929	12	AVG	
1,3-Dichlorobenzene			1.5244	1.7585	1.6901	1.6588	1.6810	1.6010	1.6523	5	AVG	
p-Isopropyltoluene			2.7340	3.5537	3.2781	3.3991	3.5023	2.7884	3.2092	11	AVG	
1,4-Dichlorobenzene			1.6392	1.8361	1.7301	1.7209	1.7376	1.6492	1.7189	4	AVG	
1,2,3-Trimethylbenzene			2.8974	3.0421	2.9914	3.0694	3.0912	2.5581	2.9416	7	AVG	
Benzyl Chloride			0.1500	0.2040	0.2096	0.2587	0.2746	0.3058	0.2338	24	2NDDEG	
1,3-Diethylbenzene			1.7470	1.8875	1.8283	1.9926	2.0187	1.8348	1.8848	6	AVG	
1,4-Diethylbenzene			1.8994	2.0158	1.9508	2.0984	2.1666	1.9375	2.0114	5	AVG	
n-Butylbenzene			1.4152	1.8153	1.6487	1.7385	1.7677	1.5699	1.6592	9	AVG	
1,2-Dichlorobenzene			1.5146	1.7324	1.6363	1.6557	1.7074	1.5992	1.6409	5	AVG	
1,2-Diethylbenzene			1.5329	1.6048	1.5604	1.6668	1.7022	1.5802	1.6079	4	AVG	
1,2-Dibromo-3-chloropropane			0.1139	0.1399	0.1216	0.1398	0.1402	0.1438	0.1332	9	AVG	
1,3,5-Trichlorobenzene			1.1954	1.4441	1.3236	1.3989	1.4374	1.4641	1.3773	7	AVG	
1,2,4-Trichlorobenzene			1.1029	1.3438	1.2359	1.3065	1.3308	1.3382	1.2763	7	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

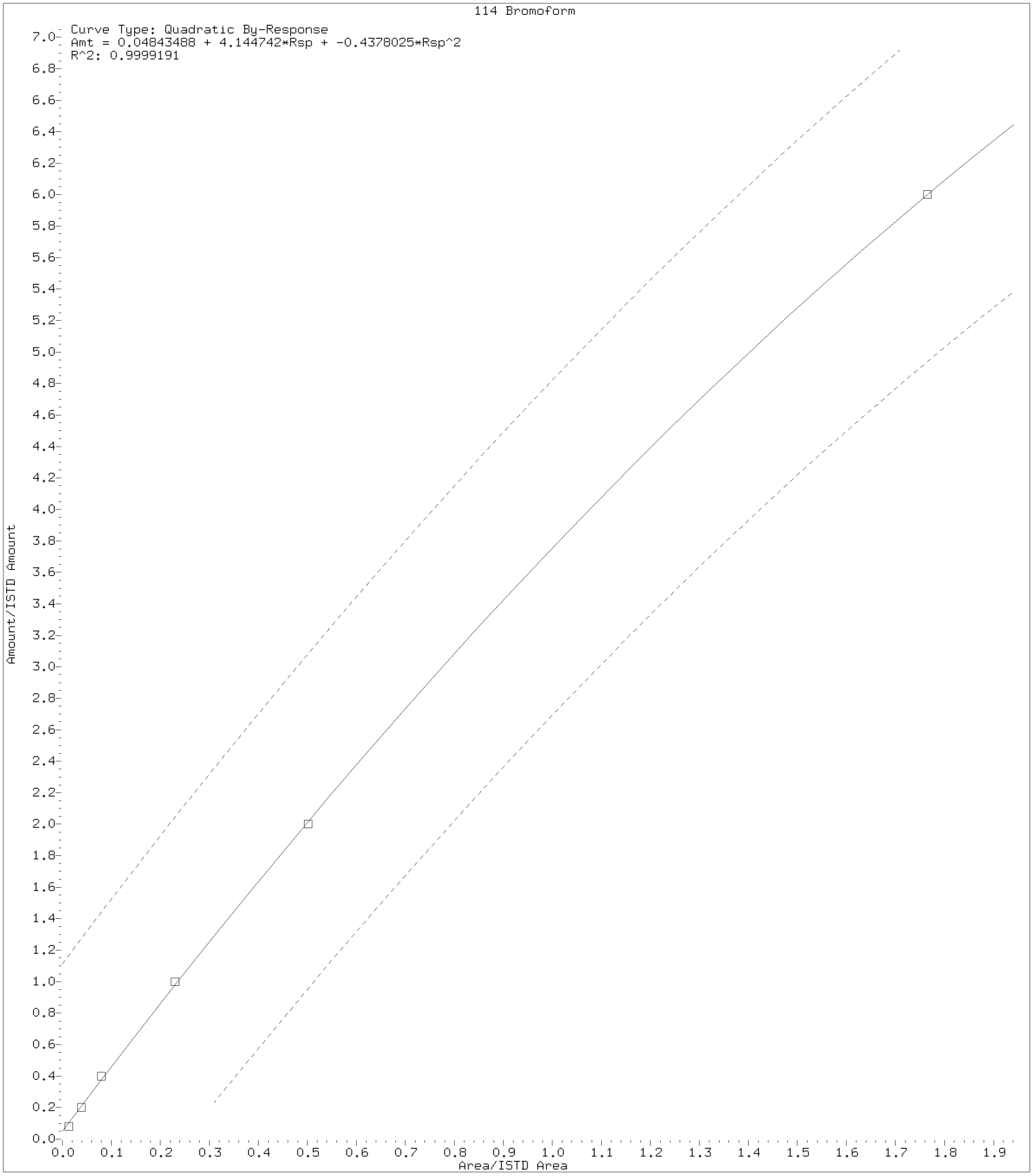
COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Hexachlorobutadiene		0.5066	0.6377	0.5818	0.6845	0.7278	0.8061	0.6574	16	2NDDEG
Naphthalene		2.4406	2.9700	2.6800	2.8364	2.7417	2.3077	2.6627	9	AVG
1,2,3-Trichlorobenzene		1.0742	1.2858	1.1530	1.2084	1.2213	1.1951	1.1896	6	AVG
2-Methylnaphthalene		1.3392	1.6688	1.6220	1.8294	1.8489	1.6210	1.6549	11	AVG
Dibromofluoromethane		0.2519	0.2489	0.2484	0.2517	0.2501	0.2499	0.2502	1	AVG
Dibromofluoromethane(2)		0.2544	0.2544	0.2542	0.2545	0.2579	0.2549	0.2550	1	AVG
1,2-Dichloroethane-d4		0.0560	0.0569	0.0536	0.0548	0.0539	0.0537	0.0548	2	AVG
1,2-Dichloroethane-d4(2)		0.2808	0.2847	0.2806	0.2924	0.2701	0.2713	0.2800	3	AVG
1,2-Dichloroethane-d4(3)		0.0351	0.0356	0.0338	0.0346	0.0342	0.0347	0.0347	2	AVG
Toluene-d8		1.2947	1.3100	1.3184	1.3142	1.3178	1.2772	1.3054	1	AVG
Toluene-d8(2)		0.8344	0.8400	0.8427	0.8577	0.8478	0.8390	0.8436	1	AVG
4-Bromofluorobenzene		0.4965	0.4992	0.4949	0.4976	0.4962	0.5077	0.4987	1	AVG
4-Bromofluorobenzene(2)		0.4326	0.4314	0.4350	0.4356	0.4288	0.4416	0.4342	1	AVG

Average %RSD 7

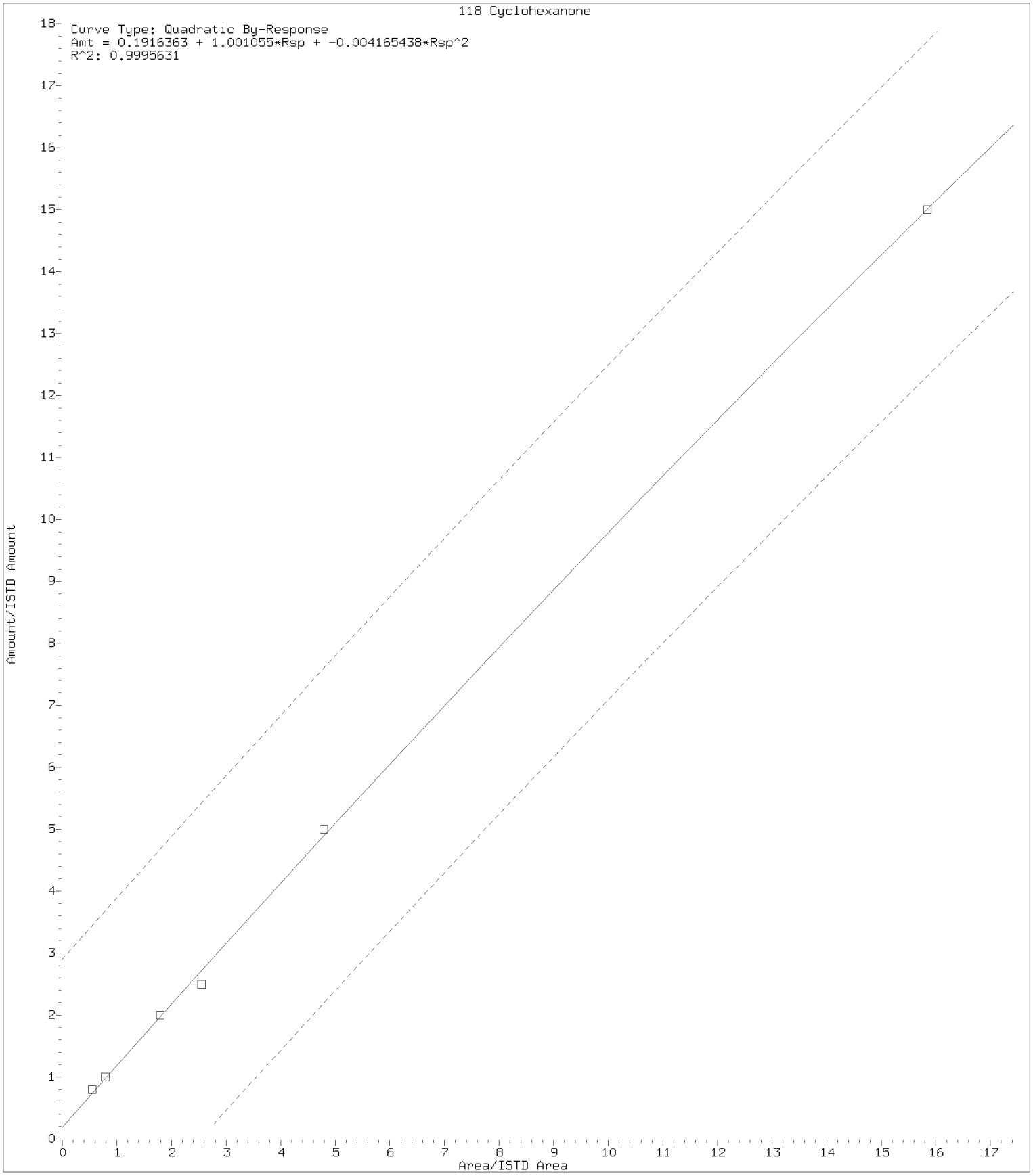
Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

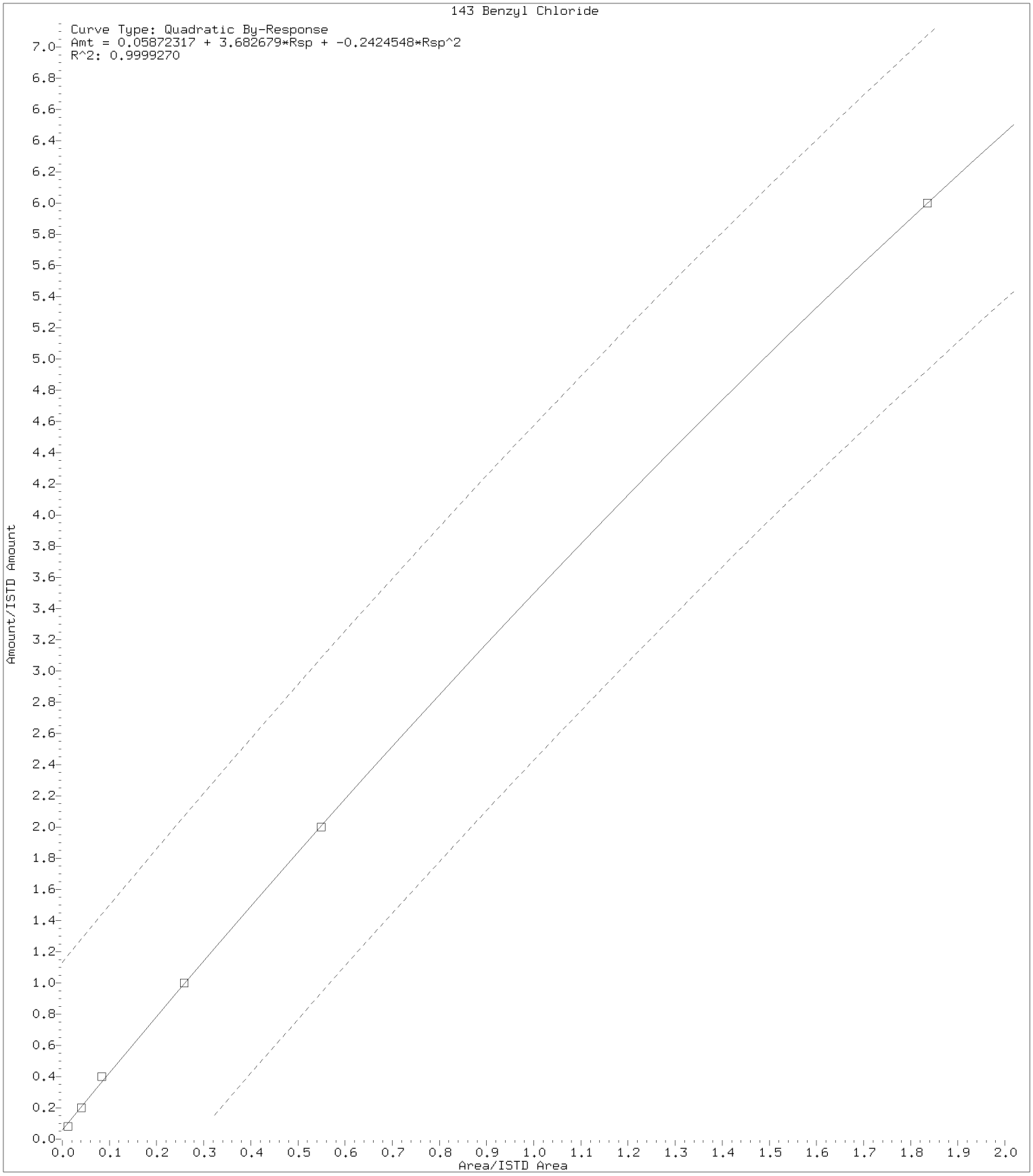
Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



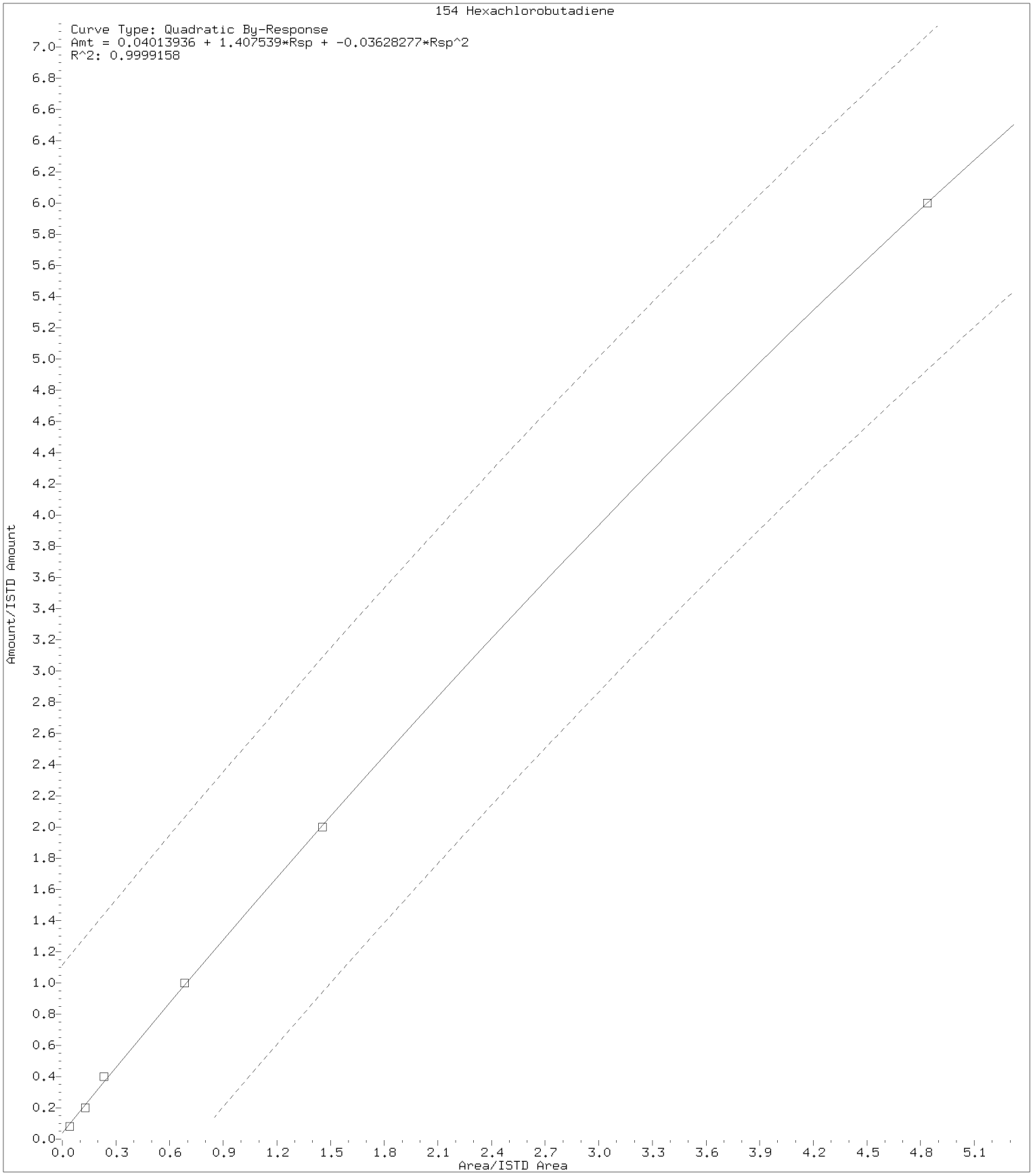
Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i01.d	VSTD300
/chem2/HP09953.i/18feb22i.b/bf22i02.d	VSTD100
/chem2/HP09953.i/18feb22i.b/bf22i03.d	VSTD050
/chem2/HP09953.i/18feb22i.b/bf22i04.d	VSTD020
/chem2/HP09953.i/18feb22i.b/bf22i05.d	VSTD010
/chem2/HP09953.i/18feb22i.b/bf22i06.d	VSTD004

Area Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	128217	123900	114201	115639	145100	130640	126283	9	Yes
Fluorobenzene	1184646	1204409	1207816	1194615	1209200	1184260	1197491	1	Yes
Chlorobenzene-d5	942767	935486	931957	925430	939957	919534	932522	1	Yes
1,4-Dichlorobenzene-d4	637692	560922	549119	528429	540311	528167	557440	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. RT
t-Butyl alcohol-d10	1.936	1.936	1.924	1.924	1.936	1.918	1.929
Fluorobenzene	3.956	3.962	3.956	3.950	3.962	3.950	3.956
Chlorobenzene-d5	7.156	7.156	7.156	7.156	7.156	7.156	7.156
1,4-Dichlorobenzene-d4	9.236	9.236	9.236	9.236	9.236	9.236	9.236

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 02/23/2018 at 11:24.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4728	19.24	20	-4	
#	Chloromethane	0.5872	0.6158	20.97	20	5	#
*	Vinyl Chloride	0.4173	0.4340	20.80	20	4	*
	Bromomethane	0.2899	0.3058	21.10	20	5	
	Chloroethane	0.2334	0.2382	20.41	20	2	
	Dichlorofluoromethane	0.5922	0.6121	20.67	20	3	
	Trichlorofluoromethane	0.5369	0.5575	20.77	20	4	
	Ethanol	0.1211	0.1297	1071.13	1000	7	
	Freon 123a	0.3518	0.3682	20.93	20	5	
	Acrolein	2.4281	2.1880	135.17	150	-10	
*	1,1-Dichloroethene	0.2459	0.2825	22.97	20	15	*
	Acetone	0.0248	0.0227	137.36	150	-8	
	Freon 113	0.2960	0.3175	21.45	20	7	
	2-Propanol	1.1163	1.3659	183.55	150	22	
	Methyl Iodide	0.5387	0.5563	20.65	20	3	
	Carbon Disulfide	0.8424	0.8761	20.80	20	4	
	Methyl Acetate	0.2090	0.2095	20.04	20	0	
	Allyl Chloride	0.4892	0.4957	20.27	20	1	
	Methylene Chloride	0.2885	0.3069	21.28	20	6	
	t-Butyl alcohol	1.2418	1.5044	242.30	200	21	
	Acrylonitrile	0.0991	0.0917	92.60	100	-7	
	Methyl Tertiary Butyl Ether	0.7975	0.7924	19.87	20	-1	
	trans-1,2-Dichloroethene	0.2884	0.3151	21.85	20	9	
	n-Hexane	0.5126	0.5289	20.63	20	3	
#	1,1-Dichloroethane	0.5731	0.5832	20.35	20	2	#
	di-Isopropyl ether	1.1602	1.2047	20.77	20	4	
	2-Chloro-1,3-butadiene	0.5207	0.5325	20.45	20	2	
	Ethyl t-butyl ether	0.9727	0.9547	19.63	20	-2	
	2-Butanone	7.3204	7.1037	145.56	150	-3	
	cis-1,2-Dichloroethene	0.3342	0.3513	21.02	20	5	
	2,2-Dichloropropane	0.4251	0.4226	19.88	20	-1	
	Propionitrile	2.0227	2.0620	152.91	150	2	
	Methacrylonitrile	0.1170	0.1114	142.70	150	-5	
	Bromochloromethane	0.1635	0.1615	19.75	20	-1	
	Tetrahydrofuran	1.5856	1.6585	104.60	100	5	
*	Chloroform	0.5364	0.5469	20.39	20	2	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1-Trichloroethane	0.5181	0.5094	19.66	20	-2	
	Cyclohexane	0.6302	0.6474	20.55	20	3	
	1,1-Dichloropropene	0.4338	0.4369	20.14	20	1	
	Carbon Tetrachloride	0.3830	0.3742	19.54	20	-2	
	Isobutyl Alcohol	0.5096	0.4746	465.70	500	-7	
	Benzene	1.2609	1.3047	20.69	20	3	
	1,2-Dichloroethane	0.4097	0.4020	19.62	20	-2	
	t-Amyl methyl ether	0.8144	0.7876	19.34	20	-3	
	n-Heptane	0.6124	0.6228	20.34	20	2	
	n-Butanol	0.3762	0.3592	954.90	1000	-5	
	Trichloroethene	0.3227	0.3246	20.12	20	1	
	Methylcyclohexane	0.6000	0.6140	20.47	20	2	
*	1,2-Dichloropropane	0.3331	0.3398	20.41	20	2	*
	Methyl Methacrylate	0.1907	0.1801	18.89	20	-6	
	1,4-Dioxane	0.1410	0.1584	561.79	500	12	
	Dibromomethane	0.1795	0.1764	19.65	20	-2	
	Bromodichloromethane	0.3833	0.3650	19.05	20	-5	
	2-Nitropropane	2.5306	2.1572	19.28	20	-4	
	2-Chloroethyl Vinyl Ether	0.1644	0.1537	18.70	20	-7	
	cis-1,3-Dichloropropene	0.4668	0.4466	19.13	20	-4	
	4-Methyl-2-pentanone	0.3036	0.2994	98.59	100	-1	
*	Toluene	0.9983	1.0240	20.52	20	3	*
	trans-1,3-Dichloropropene	0.4982	0.4608	18.50	20	-8	
	Ethyl Methacrylate	0.4494	0.4318	19.22	20	-4	
	1,1,2-Trichloroethane	0.3230	0.3247	20.11	20	1	
	Tetrachloroethene	0.4631	0.4617	19.94	20	0	
	1,3-Dichloropropane	0.5552	0.5421	19.53	20	-2	
	2-Hexanone	0.2699	0.2611	96.73	100	-3	
	Dibromochloromethane	0.3545	0.3274	18.47	20	-8	
	1,2-Dibromoethane	0.3271	0.3166	19.36	20	-3	
	1-Chlorohexane	0.5308	0.5369	20.23	20	1	
#	Chlorobenzene	1.1089	1.1099	20.02	20	0	#
	1,1,1,2-Tetrachloroethane	0.3690	0.3553	19.26	20	-4	
*	Ethylbenzene	1.9040	1.9461	20.44	20	2	*
	m+p-Xylene	0.7574	0.7692	40.62	40	2	
	o-Xylene	0.7545	0.7566	20.06	20	0	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Styrene	1.1879	1.1988	20.18	20	1	
#	Bromoform	0.2222	0.1877	17.86	20	-11	#
	Isopropylbenzene	1.9082	1.9760	20.71	20	4	
	Cyclohexanone	0.9002	0.8915	490.81	500	-2	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7363	19.49	20	-3	#
	Bromobenzene	0.8408	0.8515	20.25	20	1	
	trans-1,4-Dichloro-2-butene	0.2069	0.2084	100.71	100	1	
	1,2,3-Trichloropropane	0.2073	0.2109	20.35	20	2	
	n-Propylbenzene	3.8098	4.1293	21.68	20	8	
	2-Chlorotoluene	0.7939	0.8210	20.68	20	3	
	1,3,5-Trimethylbenzene	2.8159	2.9502	20.95	20	5	
	4-Chlorotoluene	0.8226	0.8362	20.33	20	2	
	tert-Butylbenzene	0.6559	0.6739	20.55	20	3	
	Pentachloroethane	0.4798	0.4633	19.31	20	-3	
	1,2,4-Trimethylbenzene	2.8653	3.0214	21.09	20	5	
	sec-Butylbenzene	3.5929	3.8830	21.61	20	8	
	1,3-Dichlorobenzene	1.6523	1.6406	19.86	20	-1	
	p-Isopropyltoluene	3.2092	3.4609	21.57	20	8	
	1,4-Dichlorobenzene	1.7189	1.7343	20.18	20	1	
	1,2,3-Trimethylbenzene	2.9416	3.1660	21.53	20	8	
	Benzyl Chloride	0.2338	0.2057	18.01	20	-10	
	1,3-Diethylbenzene	1.8848	1.9794	21.00	20	5	
	1,4-Diethylbenzene	2.0114	2.1215	21.09	20	5	
	n-Butylbenzene	1.6592	1.7527	21.13	20	6	
	1,2-Dichlorobenzene	1.6409	1.6525	20.14	20	1	
	1,2-Diethylbenzene	1.6079	1.6918	21.04	20	5	
	1,2-Dibromo-3-chloropropane	0.1332	0.1254	18.83	20	-6	
	1,3,5-Trichlorobenzene	1.3773	1.3816	20.06	20	0	
	1,2,4-Trichlorobenzene	1.2763	1.2697	19.90	20	-1	
	Hexachlorobutadiene	0.6574	0.6829	21.09	20	5	
	Naphthalene	2.6627	2.6918	20.22	20	1	
	1,2,3-Trichlorobenzene	1.1896	1.1979	20.14	20	1	
	2-Methylnaphthalene	1.6549	1.5945	19.27	20	-4	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date(s): 05/23/18 05/23/18

Heated Purge: (Y/N) Y Calibration Times: 14:38 17:01

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 1 = wy23i07.d RRF 4 = wy23i06.d RRF 10= wy23i05.d
RRF 20= wy23i04.d RRF 50= wy23i03.d RRF100= wy23i02.d RRF300= wy23i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Dichlorodifluoromethane	0.2731	0.3551	0.3592	0.3423	0.3943	0.3665	0.3326	0.3462	11	AVG
Chloromethane	#0.3601	0.3602	0.3951	0.3587	0.3972	0.3708	0.3324	0.3678	6	AVG #
1,3-Butadiene	0.3623	0.3420	0.2497	0.2680	0.2747	0.2659	0.2479	0.2872	16	2NDDEG
Vinyl Chloride	*0.3953	0.3994	0.3951	0.3678	0.4029	0.3793	0.3374	0.3825	6	AVG *
Bromomethane	0.2454	0.2617	0.2756	0.2562	0.2762	0.2621	0.2427	0.2600	5	AVG
Chloroethane	0.2058	0.2327	0.2387	0.2156	0.2347	0.2195	0.1980	0.2207	7	AVG
Dichlorofluoromethane	0.4789	0.5186	1.0085	0.5008	0.5073	0.5236	0.4660	0.5720	34	AVG
n-Pentane		0.4704	0.3811	0.3947	0.4140	0.4003	0.3810	0.4069	8	AVG
Trichlorofluoromethane	0.3311	0.4199	0.4413	0.4159	0.4774	0.4538	0.4212	0.4229	11	AVG
Ethanol	0.2431	0.1260	0.1303	0.0945	0.1191	0.0997	0.0879	0.1287	41	2NDDEG
Freon 123a	0.2671	0.3079	0.2598	0.2776	0.2894	0.2856	0.2706	0.2797	6	AVG
Acrolein	2.5238	2.5905	2.5937	2.5902	2.4935	2.6084	2.0619	2.4946	8	AVG
1,1-Dichloroethene	*0.1894	0.2187	0.1950	0.2120	0.2267	0.2260	0.2240	0.2131	7	AVG *
1,1-Dichloroethene(2)	*0.0963	0.1125	0.0939	0.1042	0.1121	0.1114	0.1077	0.1054	7	AVG *
Acetone	1.1652	1.1639	1.1473	1.1429	1.1109	1.0582	0.9548	1.1062	7	AVG
Freon 113	0.1869	0.2305	0.1928	0.2134	0.2304	0.2296	0.2207	0.2149	9	AVG
2-Propanol		0.6559	0.6822	0.6385	0.6748	0.6140	0.4995	0.6275	11	AVG
Methyl Iodide	0.3575	0.4135	0.3831	0.4100	0.4221	0.4167	0.4050	0.4011	6	AVG
Carbon Disulfide	0.5945	0.7146	0.6452	0.7143	0.7628	0.7652	0.7416	0.7054	9	AVG
Allyl Chloride	0.3154	0.3589	0.2872	0.3653	0.3574	0.3599	0.3423	0.3409	9	AVG
Methyl Acetate	0.3821	0.3334	0.2752	0.3048	0.2951	0.2767	0.2619	0.3042	14	AVG
Methylene Chloride	0.2564	0.2559	0.2509	0.2642	0.2607	0.2576	0.2515	0.2567	2	AVG
t-Butyl alcohol	1.3485	1.1727	1.3305	1.2480	1.3069	1.2224	1.0390	1.2383	9	AVG
Acrylonitrile	0.1252	0.1489	0.1514	0.1529	0.1542	0.1390	0.1531	0.1464	7	AVG
trans-1,2-Dichloroethene	0.2149	0.2521	0.2329	0.2471	0.2547	0.2508	0.2449	0.2425	6	AVG
Methyl Tertiary Butyl Ether	0.6870	0.7074	0.7133	0.7301	0.7200	0.7066	0.6613	0.7037	3	AVG
n-Hexane	0.2925	0.2913	0.2509	0.2692	0.2888	0.2843	0.2788	0.2794	5	AVG
1,1-Dichloroethane	#0.3971	0.4436	0.4170	0.4373	0.4426	0.4345	0.4156	0.4268	4	AVG #
di-Isopropyl ether	0.7462	0.8363	0.8194	0.8454	0.8369	0.8321	0.7822	0.8141	4	AVG
2-Chloro-1,3-butadiene	0.3033	0.3703	0.3381	0.3717	0.3883	0.3911	0.3753	0.3626	9	AVG
Ethyl t-butyl ether	0.6440	0.6722	0.6811	0.6927	0.6846	0.6654	0.6080	0.6640	4	AVG
cis-1,2-Dichloroethene	0.2453	0.2850	0.2688	0.2819	0.2861	0.2837	0.2776	0.2755	5	AVG
2-Butanone	0.1968	0.2066	0.2228	0.2100	0.2137	0.1964	0.2133	0.2085	5	AVG
2,2-Dichloropropane	0.1849	0.2219	0.1990	0.2239	0.2256	0.2209		0.2127	8	AVG
Propionitrile	1.6204	1.7426	1.7639	1.7876	1.7596	1.7097	1.5568	1.7058	5	AVG
Methacrylonitrile	0.1556	0.1657	0.1692	0.1768	0.1729	0.1703	0.1742	0.1692	4	AVG
Bromochloromethane	0.1206	0.1418	0.1299	0.1486	0.1420	0.1428	0.1405	0.1380	7	AVG
Tetrahydrofuran	1.8628	1.8462	1.8374	1.8302	1.7290	1.8207	1.4757	1.7717	8	AVG
Chloroform	*0.3823	0.4407	0.4220	0.4413	0.4486	0.4430	0.4296	0.4296	5	AVG *
1,1,1-Trichloroethane	0.3386	0.4123	0.3572	0.3765	0.3843	0.3806	0.3670	0.3738	6	AVG
Cyclohexane	0.3338	0.3980	0.3303	0.3773	0.4102	0.4054	0.3951	0.3786	9	AVG
Cyclohexane(2)	0.3113	0.3894	0.2912	0.3193	0.3516	0.3483	0.3373	0.3355	10	AVG
Cyclohexane(3)	0.1073	0.1190	0.1034	0.1138	0.1270	0.1248	0.1213	0.1167	8	AVG
1,1-Dichloropropene	0.2984	0.3508	0.3143	0.3430	0.3584	0.3552	0.3445	0.3378	7	AVG
Carbon Tetrachloride	0.1996	0.2323	0.2211	0.2605	0.2826	0.2953	0.3005	0.2560	15	AVG
Isobutyl Alcohol	0.4436	0.4276	0.4211	0.4278	0.4275	0.4230	0.3877	0.4226	4	AVG
Benzene	0.9617	1.0813	1.0104	1.0541	1.0786	1.0622	1.0268	1.0393	4	AVG
1,2-Dichloroethane	0.3798	0.3731	0.3587	0.3626	0.3606	0.3551	0.3484	0.3626	3	AVG
1,2-Dichloroethane(2)	0.0346	0.0346	0.0335	0.0349	0.0366	0.0356	0.0355	0.0350	3	AVG
t-Amyl methyl ether	0.6183	0.6884	0.6905	0.7144	0.7047	0.6914	0.6338	0.6774	5	AVG
n-Heptane		0.2756	0.2261	0.2411	0.2406	0.2398	0.2396	0.2438	7	AVG
n-Butanol	0.3992	0.3216	0.3560	0.3606	0.3660	0.3985	0.3399	0.3631	8	AVG

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date(s): 05/23/18 05/23/18

Heated Purge: (Y/N) Y Calibration Times: 14:38 17:01

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 1 = wy23i07.d RRF 4 = wy23i06.d RRF 10= wy23i05.d
RRF 20= wy23i04.d RRF 50= wy23i03.d RRF100= wy23i02.d RRF300= wy23i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Trichloroethene	0.2547	0.2779	0.2577	0.2779	0.2813	0.2748	0.2675	0.2703	4	AVG
Methylcyclohexane	0.3473	0.3265	0.2078	0.3256	0.3307	0.3322	0.3181	0.3126	15	AVG
Methylcyclohexane(2)	0.1666	0.1506	0.0967	0.1538	0.1546	0.1565	0.1492	0.1469	16	AVG
1,2-Dichloropropane	*0.2329	0.2678	0.2541	0.2742	0.2739	0.2752	0.2701	0.2640	6	AVG *
Dibromomethane	0.1544	0.1762	0.1805	0.1832	0.1822	0.1824	0.1819	0.1773	6	AVG
1,4-Dioxane	0.1437	0.0945	0.1230	0.1056	0.1132	0.1237	0.0996	0.1148	15	AVG
Methyl Methacrylate	0.2206	0.2572	0.2609	0.2804	0.2872	0.2841	0.2931	0.2691	9	AVG
Bromodichloromethane	0.2490	0.3006	0.2978	0.3242	0.3383	0.3408	0.3424	0.3133	11	AVG
2-Nitropropane	0.0536	0.0604	0.0618	0.0645	0.0738	0.0775	0.0913	0.0690	19	2NDDEG
2-Chloroethyl Vinyl Ether	0.1623	0.1793	0.1950	0.2069	0.2055	0.2099	0.2095	0.1955	9	AVG
cis-1,3-Dichloropropene	0.3180	0.3791	0.3875	0.4187	0.4385	0.4481	0.4460	0.4051	12	AVG
4-Methyl-2-pentanone	0.3542	0.3791	0.4278	0.4226	0.4290	0.4227	0.4353	0.4101	8	AVG
Toluene	*0.8671	0.9340	0.8612	0.9132	0.9277	0.9252	0.8823	0.9015	3	AVG *
trans-1,3-Dichloropropene	0.3628	0.4508	0.4553	0.5051	0.5223	0.5465	0.5379	0.4830	13	AVG
Ethyl Methacrylate	0.4465	0.5348	0.5748	0.6087	0.6373	0.6487	0.6346	0.5836	12	AVG
1,1,2-Trichloroethane	0.3183	0.3581	0.3541	0.3677	0.3640	0.3662	0.3556	0.3549	5	AVG
Tetrachloroethene	0.3305	0.3470	0.3155	0.3398	0.3516	0.3520	0.3405	0.3396	4	AVG
1,3-Dichloropropane	0.5586	0.6142	0.5974	0.6197	0.6079	0.6064	0.5843	0.5983	4	AVG
2-Hexanone	0.3601	0.3872	0.4328	0.4423	0.4444	0.4416	0.4367	0.4207	8	AVG
Dibromochloromethane	0.2742	0.2875	0.3104	0.3384	0.3662	0.3825	0.3886	0.3354	14	AVG
1,2-Dibromoethane	0.3349	0.3817	0.3783	0.3938	0.4011	0.4026	0.3928	0.3836	6	AVG
Chlorobenzene	#0.9485	1.0605	0.9764	1.0371	1.0454	1.0511	1.0187	1.0197	4	AVG #
1,1,1,2-Tetrachloroethane	0.2519	0.2896	0.2856	0.3178	0.3259	0.3387	0.3431	0.3075	11	AVG
Ethylbenzene	*1.4677	1.7340	1.5789	1.6779	1.7292	1.7276	1.6087	1.6463	6	AVG *
m+p-Xylene	0.5703	0.6654	0.6246	0.6709	0.7016	0.7099	0.6963	0.6627	8	AVG
o-Xylene	0.5917	0.6605	0.6281	0.6708	0.6992	0.7102	0.7181	0.6683	7	AVG
Styrene	0.8588	1.0124	1.0270	1.1459	1.1829	1.2204	1.2253	1.0961	12	AVG
Bromoform	#0.1663	0.1767	0.1984	0.2219	0.2498	0.2726	0.2964	0.2260	22	2NDDEG #
Isopropylbenzene	1.4454	1.5237	1.4205	1.5540	1.6201	1.6242	1.5234	1.5302	5	AVG
Cyclohexanone	0.4800	0.3670	0.4152	0.4064	0.4465	0.4615	0.3989	0.4251	9	AVG
Bromobenzene	0.7579	0.8005	0.7855	0.8024	0.8104	0.7963	0.7790	0.7903	2	AVG
1,1,2,2-Tetrachloroethane	#1.0813	1.1079	1.1025	1.1354	1.1426	1.1010	1.0696	1.1058	2	AVG #
1,2,3-Trichloropropane	0.3175	0.3427	0.3441	0.3576	0.3515	0.3394	0.3277	0.3401	4	AVG
trans-1,4-Dichloro-2-butene	0.2312	0.2714	0.2920	0.3189	0.3288	0.3336	0.3151	0.2987	12	AVG
n-Propylbenzene	3.4169	3.4336	1.1517	3.3248	3.4037	3.2441	2.7913	3.2523	7	AVG
2-Chlorotoluene	0.7308	0.7578	0.6855	0.7245	0.7421	0.7108	0.6754	0.7181	4	AVG
4-Chlorotoluene	0.7642	0.7775	0.7409	0.7921	0.7972	0.7891	0.7785	0.7770	2	AVG
1,3,5-Trimethylbenzene	2.4034	2.3854	2.2889	2.4457	2.5238	2.4597	2.2737	2.3972	4	AVG
tert-Butylbenzene	0.5708	0.5316	0.4749	0.5218	0.5314	0.5239	0.5149	0.5242	5	AVG
Pentachloroethane	0.3286	0.3551	0.3297	0.4111	0.4226	0.4346	0.4566	0.3912	13	AVG
1,2,4-Trimethylbenzene	2.4733	2.5084	2.4256	2.5575	2.6428	2.5619	2.3243	2.4991	4	AVG
sec-Butylbenzene	3.0707	2.6277	2.4665	2.6388	2.7059	2.6186	2.3243	2.6361	9	AVG
1,3-Dichlorobenzene	1.5830	1.4283	1.4061	1.4907	1.4982	1.4628	1.3905	1.4656	4	AVG
p-Isopropyltoluene	2.6508	2.3015	2.1623	2.3554	2.4399	2.3817	2.1518	2.3491	7	AVG
1,4-Dichlorobenzene	1.7180	1.5925	1.5222	1.5552	1.5651	1.5356	1.4607	1.5642	5	AVG
1,2,3-Trimethylbenzene	2.8224	2.6782	2.3687	2.7992	2.6928	2.6627	2.3464	2.6244	7	AVG
Benzyl Chloride	1.1467	1.3209	1.4765	1.7045	1.9184	2.0382	2.0335	1.6627	21	2NDDEG
1,3-Diethylbenzene	1.5769	1.3901	1.2011	1.4648	1.4483	1.4393	1.3033	1.4034	9	AVG
1,4-Diethylbenzene	1.6486	1.4166	1.2162	1.5024	1.4692	1.4680	1.3409	1.4374	9	AVG
1,2-Dichlorobenzene	1.6262	1.5284	1.4411	1.4985	1.5221	1.5251	1.4797	1.5173	4	AVG
n-Butylbenzene	1.4162	1.1122	1.0334	1.1039	1.1492	1.1376	1.0714	1.1463	11	AVG
1,2-Diethylbenzene	1.3918	1.1779	1.0668	1.2626	1.2365	1.2290	1.1030	1.2097	9	AVG

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date(s): 05/23/18 05/23/18

Heated Purge: (Y/N) Y Calibration Times: 14:38 17:01

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

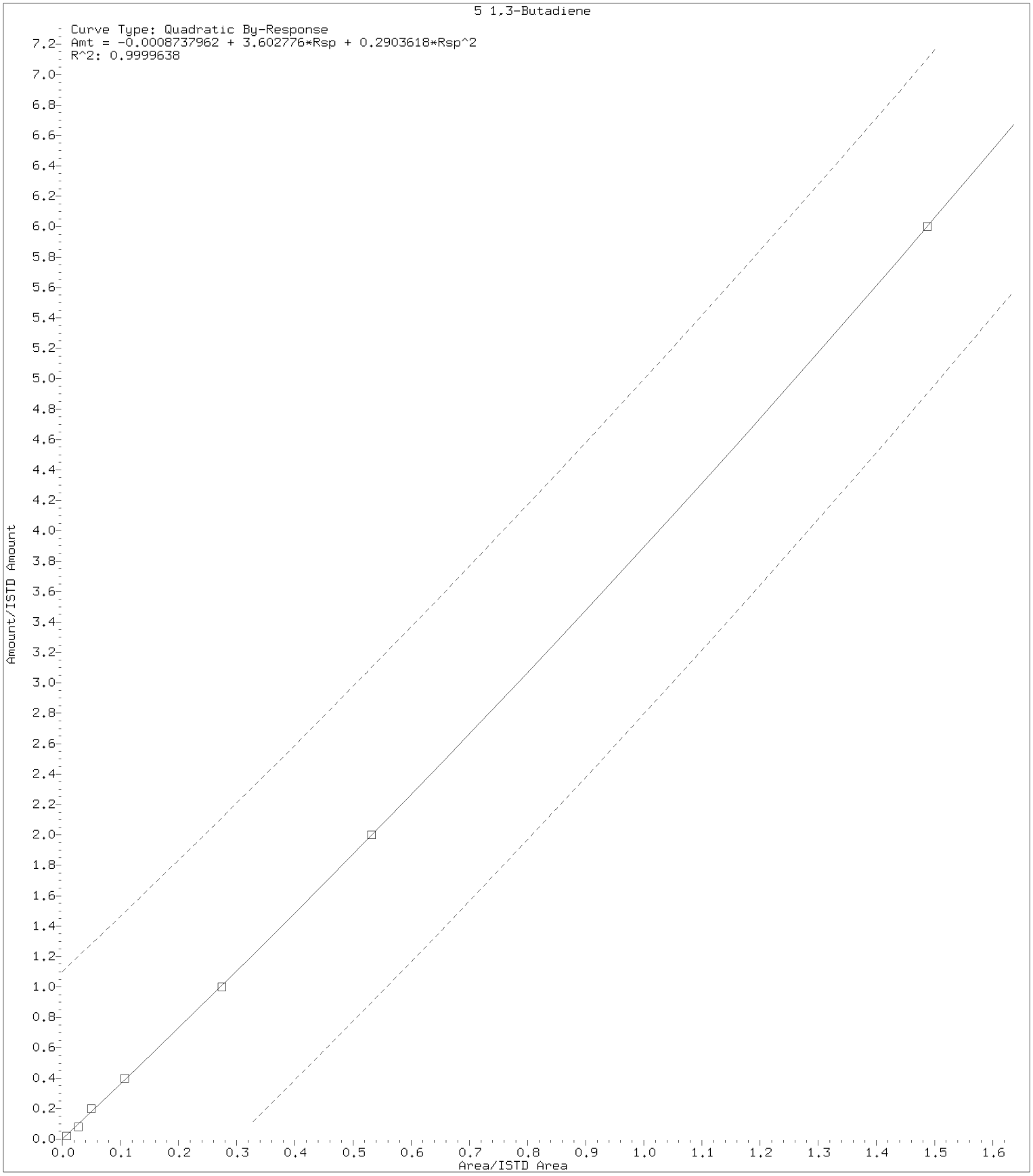
LAB FILE ID: RRF 1 = wy23i07.d RRF 4 = wy23i06.d RRF 10= wy23i05.d
RRF 20= wy23i04.d RRF 50= wy23i03.d RRF100= wy23i02.d RRF300= wy23i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,2-Dibromo-3-chloropropane		0.2209	0.2170	0.2342	0.2461	0.2465	0.2385	0.2339	5	AVG
1,3,5-Trichlorobenzene	1.1558	0.8197	0.7961	0.8411	0.8578	0.8443	0.7621	0.8681	15	AVG
1,2,4-Trichlorobenzene	1.2577	0.8667	0.8356	0.8478	0.8753	0.8640	0.7575	0.9007	18	2NDDEG
Hexachlorobutadiene		0.2801	0.2558	0.2792	0.2831	0.2816	0.2272	0.2678	8	AVG
Naphthalene	3.9443	3.2930	3.4728	3.5567	3.7234	3.6295	2.9138	3.5048	9	AVG
1,2,3-Trichlorobenzene	1.3071	0.8368	0.8024	0.8178	0.8588	0.8309	0.7177	0.8817	22	2NDDEG
2-Methylnaphthalene		1.5078	1.5667	1.8018	1.9181	1.8346	1.4643	1.6822	11	AVG
Dibromofluoromethane	0.2224	0.2250	0.2330	0.2296	0.2324	0.2298	0.2297	0.2288	2	AVG
Dibromofluoromethane(2)	0.2290	0.2304	0.2366	0.2348	0.2356	0.2337	0.2377	0.2340	1	AVG
1,2-Dichloroethane-d4	0.0633	0.0636	0.0649	0.0631	0.0624	0.0615	0.0595	0.0626	3	AVG
1,2-Dichloroethane-d4(2)	0.2810	0.2834	0.2889	0.2855	0.2767	0.2731	0.2721	0.2801	2	AVG
1,2-Dichloroethane-d4(3)	0.0393	0.0391	0.0407	0.0398	0.0405	0.0394	0.0402	0.0398	2	AVG
Toluene-d8	1.3203	1.3442	1.3248	1.3484	1.3229	1.3371	1.3054	1.3290	1	AVG
Toluene-d8(2)	0.8568	0.8645	0.8622	0.8652	0.8635	0.8671	0.8775	0.8653	1	AVG
4-Bromofluorobenzene	0.4723	0.4823	0.4804	0.4866	0.4901	0.4960	0.5025	0.4872	2	AVG
4-Bromofluorobenzene(2)	0.3729	0.3756	0.3795	0.3819	0.3824	0.3934	0.3957	0.3830	2	AVG

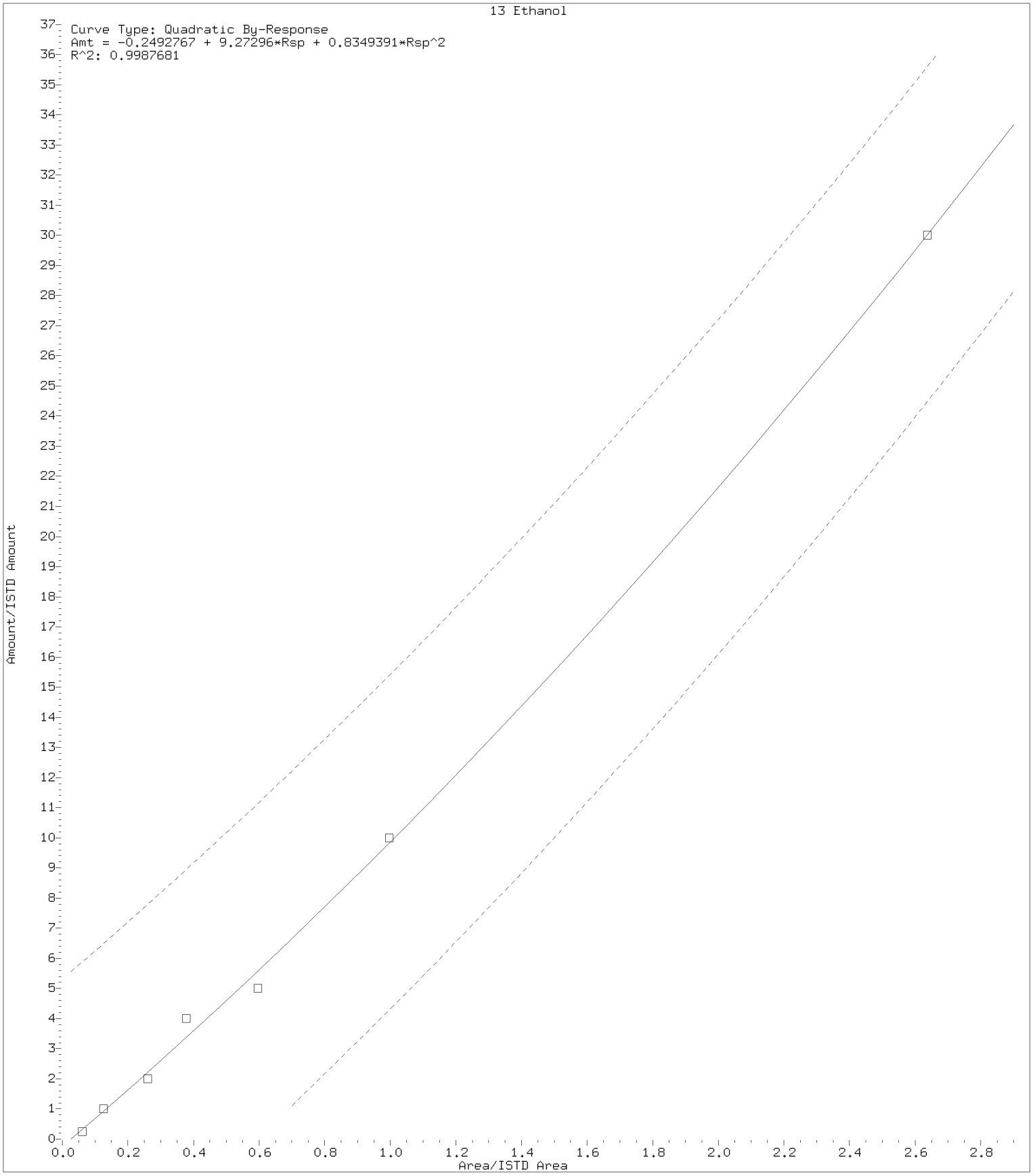
Average %RSD 8

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

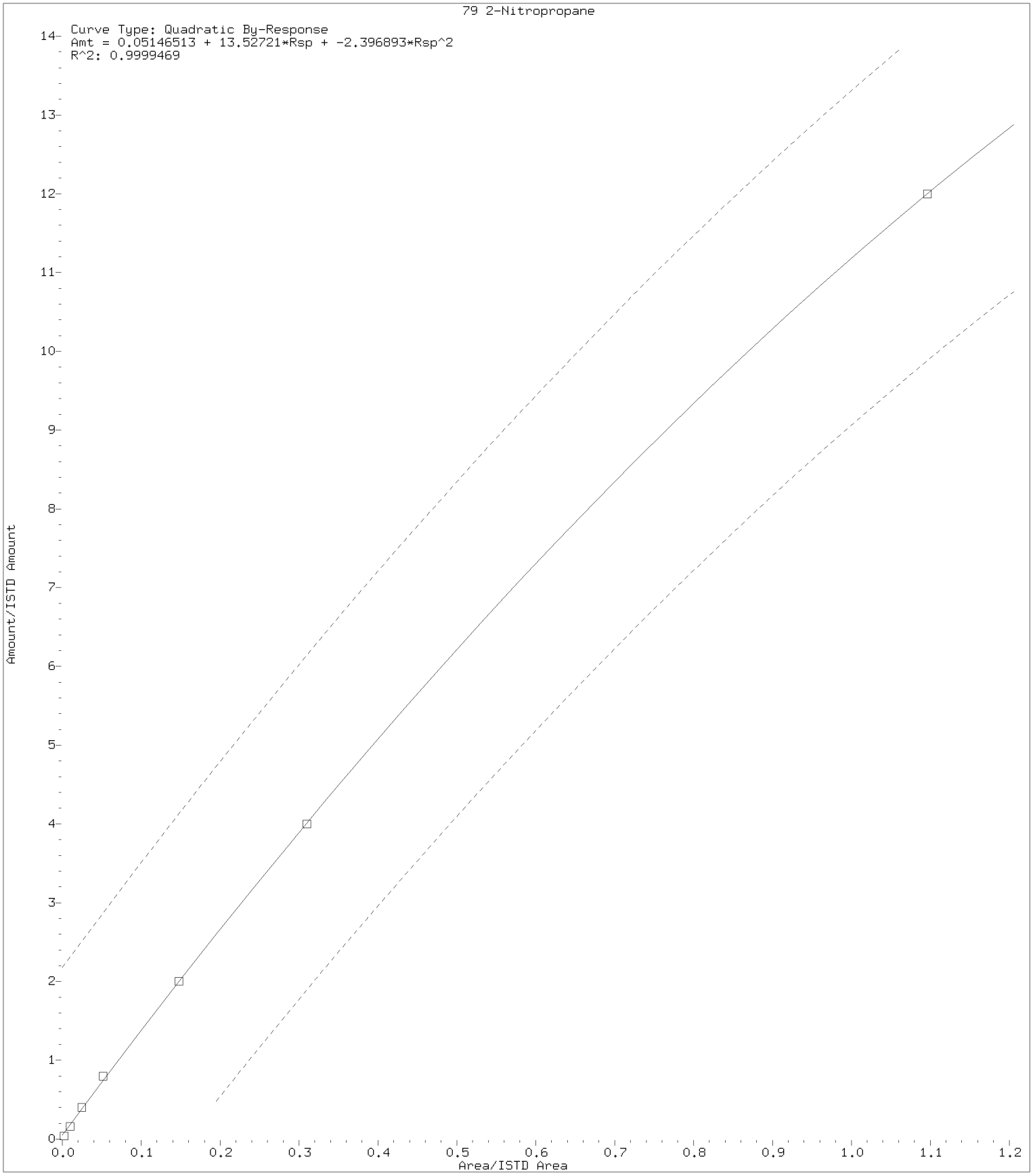
FORM VI VOA



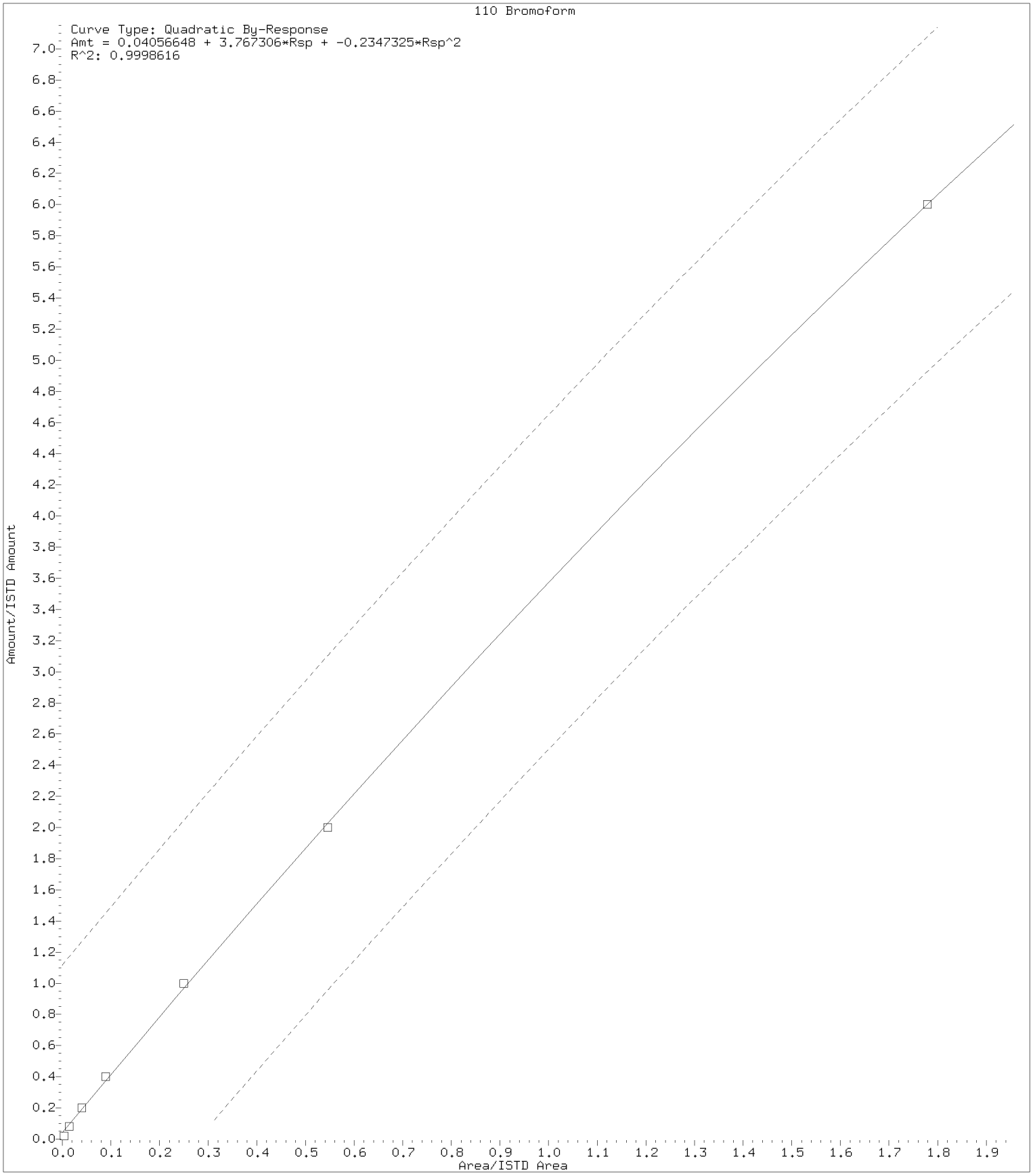
Digitally signed by Don V. Viray on 05/24/2018 at 21:35.
Target 3.5 esignature user ID: dvv10203



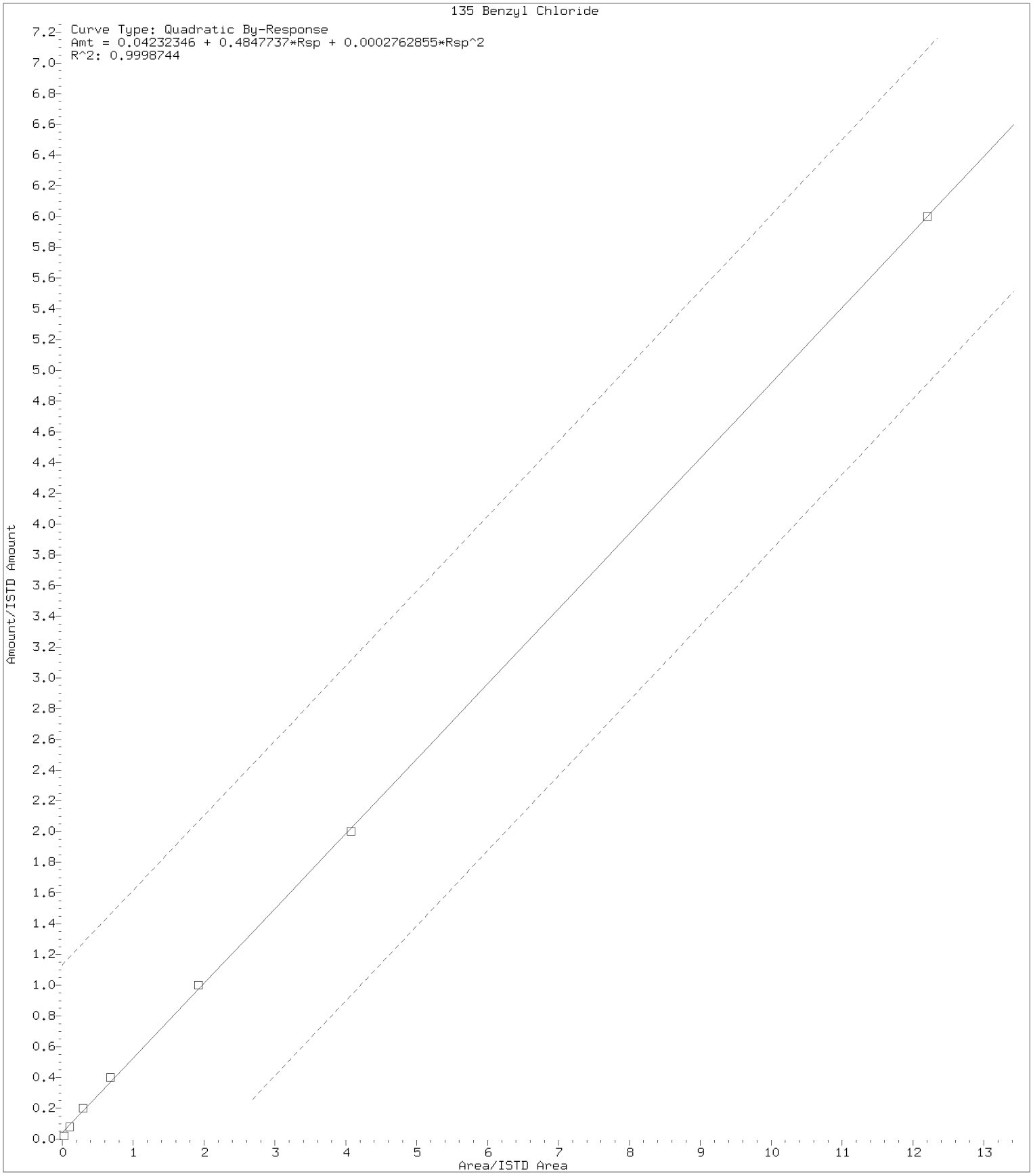
Digitally signed by Don V. Viray on 05/24/2018 at 21:35.
Target 3.5 esignature user ID: dvv10203



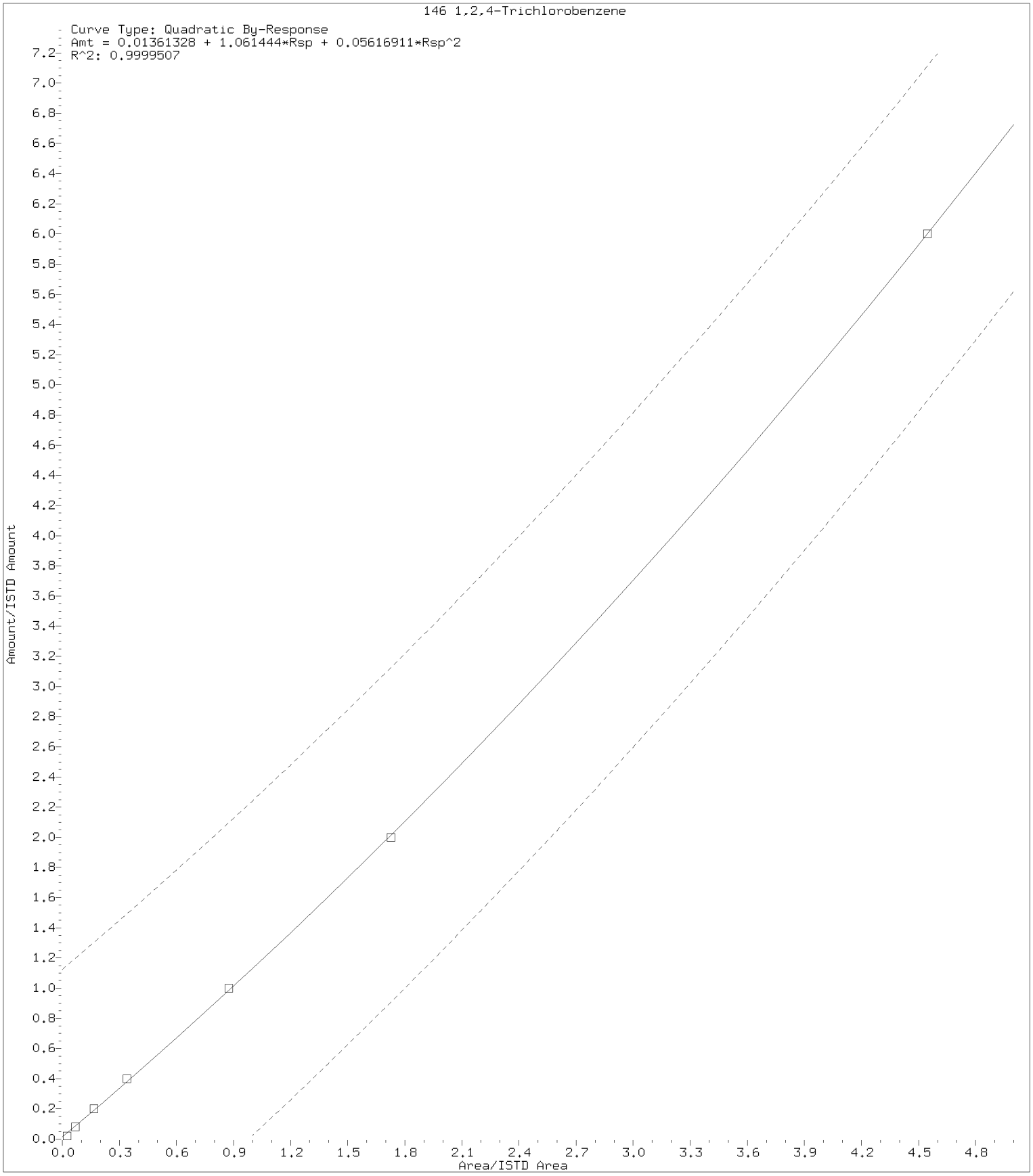
Digitally signed by Don V. Viray on 05/24/2018 at 21:35.
Target 3.5 esignature user ID: dvv10203



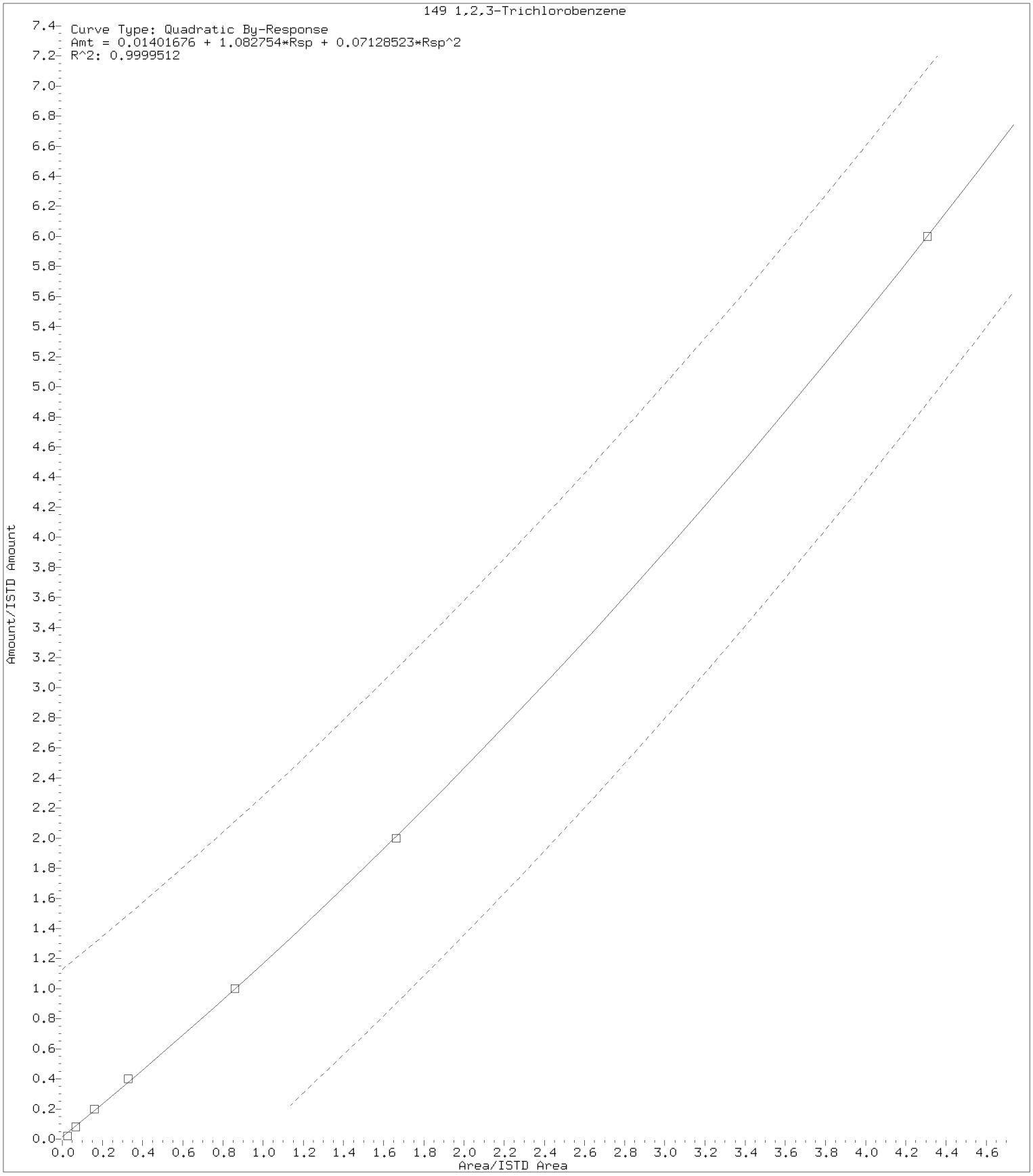
Digitally signed by Don V. Viray on 05/24/2018 at 21:35.
Target 3.5 esignature user ID: dvv10203



Digitally signed by Don V. Viray on 05/24/2018 at 21:35.
Target 3.5 esignature user ID: dvv10203



Digitally signed by Don V. Viray on 05/24/2018 at 21:35.
Target 3.5 esignature user ID: dvv10203



Digitally signed by Don V. Viray on 05/24/2018 at 21:35.
Target 3.5 esignature user ID: dvv10203

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem2/HP09137.i/18may23i.b/wy23i01.d	VSTD300
/chem2/HP09137.i/18may23i.b/wy23i02.d	VSTD100
/chem2/HP09137.i/18may23i.b/wy23i03.d	VSTD050
/chem2/HP09137.i/18may23i.b/wy23i04.d	VSTD020
/chem2/HP09137.i/18may23i.b/wy23i05.d	VSTD010
/chem2/HP09137.i/18may23i.b/wy23i06.d	VSTD004
/chem2/HP09137.i/18may23i.b/wy23i07.d	VSTD001

Area Summary

File ID:

Internal Standard Name	wy23i01.d	wy23i02.d	wy23i03.d	wy23i04.d	wy23i05.d	wy23i06.d	wy23i07.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	266341	201463	229067	213130	213201	205336	223994	221790	10	Yes
Fluorobenzene	1316934	1326674	1326838	1306371	1277734	1298035	1329676	1311752	1	Yes
Chlorobenzene-d5	1029344	1003924	1006908	987366	980049	974934	994664	996741	2	Yes
1,4-Dichlorobenzene-d4	622856	570496	545836	529032	515325	513537	517272	544908	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	wy23i01.d	wy23i02.d	wy23i03.d	wy23i04.d	wy23i05.d	wy23i06.d	wy23i07.d	Avg. RT
t-Butyl alcohol-d10	2.767	2.763	2.763	2.763	2.767	2.770	2.767	2.766
Fluorobenzene	5.071	5.071	5.067	5.067	5.071	5.070	5.067	5.069
Chlorobenzene-d5	8.196	8.196	8.196	8.196	8.196	8.193	8.193	8.195
1,4-Dichlorobenzene-d4	10.073	10.070	10.070	10.070	10.070	10.070	10.070	10.070

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 05/23/2018 at 22:41.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 ICV Date: 05/23/18 Time: 17:49

Lab File ID: wy23v01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3462	0.3324	19.20	20	-4	
#	Chloromethane	0.3678	0.3509	19.08	20	-5	#
	1,3-Butadiene	0.2872	0.2962	21.50	20	8	
*	Vinyl Chloride	0.3825	0.3686	19.28	20	-4	*
	Bromomethane	0.2600	0.2584	19.88	20	-1	
	Chloroethane	0.2207	0.2178	19.74	20	-1	
	Dichlorofluoromethane	0.5720	0.5294	18.51	20	-7	
	n-Pentane	0.4069	0.4248	20.88	20	4	
	Trichlorofluoromethane	0.4229	0.4386	20.74	20	4	
	Ethanol	0.1287	0.0970	395.09	500	-21	
	Freon 123a	0.2797	0.2954	21.12	20	6	
	Acrolein	2.4946	2.2103	132.90	150	-11	
*	1,1-Dichloroethene	0.2131	0.2388	22.41	20	12	*
	Acetone	1.1062	1.0909	147.93	150	-1	
	Freon 113	0.2149	0.2241	20.86	20	4	
	2-Propanol	0.6275	0.6292	150.42	150	0	
	Methyl Iodide	0.4011	0.4026	20.07	20	0	
	Carbon Disulfide	0.7054	0.7040	19.96	20	0	
	Allyl Chloride	0.3409	0.3626	21.27	20	6	
	Methyl Acetate	0.3042	0.2837	18.65	20	-7	
	Methylene Chloride	0.2567	0.2680	20.88	20	4	
	t-Butyl alcohol	1.2383	1.2478	201.54	200	1	
	Acrylonitrile	0.1464	0.1485	101.45	100	1	
	trans-1,2-Dichloroethene	0.2425	0.2638	21.76	20	9	
	Methyl Tertiary Butyl Ether	0.7037	0.6861	19.50	20	-3	
	n-Hexane	0.2794	0.2742	19.63	20	-2	
#	1,1-Dichloroethane	0.4268	0.4360	20.43	20	2	#
	di-Isopropyl ether	0.8141	0.8238	20.24	20	1	
	2-Chloro-1,3-butadiene	0.3626	0.3739	20.62	20	3	
	Ethyl t-butyl ether	0.6640	0.6572	19.80	20	-1	
	cis-1,2-Dichloroethene	0.2755	0.2962	21.50	20	8	
	2-Butanone	0.2085	0.2155	155.03	150	3	
	2,2-Dichloropropane	0.2127	0.2198	20.67	20	3	
	Propionitrile	1.7058	1.8122	159.35	150	6	
	Methacrylonitrile	0.1692	0.1733	153.58	150	2	
	Bromochloromethane	0.1380	0.1356	19.65	20	-2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 ICV Date: 05/23/18 Time: 17:49

Lab File ID: wy23v01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Tetrahydrofuran	1.7717	1.7652	99.63	100	0	
*	Chloroform	0.4296	0.4461	20.77	20	4	*
	1,1,1-Trichloroethane	0.3738	0.3787	20.27	20	1	
	Cyclohexane	0.3786	0.3963	20.94	20	5	
	1,1-Dichloropropene	0.3378	0.3487	20.65	20	3	
	Carbon Tetrachloride	0.2560	0.2541	19.85	20	-1	
	Isobutyl Alcohol	0.4226	0.4300	508.70	500	2	
	Benzene	1.0393	1.0683	20.56	20	3	
	1,2-Dichloroethane	0.3626	0.3596	19.84	20	-1	
	t-Amyl methyl ether	0.6774	0.6836	20.18	20	1	
	n-Heptane	0.2438	0.2415	19.81	20	-1	
	n-Butanol	0.3631	0.3138	864.09	1000	-14	
	Trichloroethene	0.2703	0.2744	20.31	20	2	
	Methylcyclohexane	0.3126	0.3217	20.58	20	3	
*	1,2-Dichloropropane	0.2640	0.2749	20.83	20	4	*
	Dibromomethane	0.1773	0.1793	20.23	20	1	
	1,4-Dioxane	0.1148	0.0807	351.52	500	-30	
	Methyl Methacrylate	0.2691	0.2643	19.65	20	-2	
	Bromodichloromethane	0.3133	0.3047	19.45	20	-3	
	2-Nitropropane	0.0690	0.0597	18.66	20	-7	
	2-Chloroethyl Vinyl Ether	0.1955	0.1880	19.24	20	-4	
	cis-1,3-Dichloropropene	0.4051	0.4054	20.01	20	0	
	4-Methyl-2-pentanone	0.4101	0.4332	105.64	100	6	
*	Toluene	0.9015	0.9332	20.70	20	4	*
	trans-1,3-Dichloropropene	0.4830	0.4849	20.08	20	0	
	Ethyl Methacrylate	0.5836	0.5797	19.86	20	-1	
	1,1,2-Trichloroethane	0.3549	0.3662	20.64	20	3	
	Tetrachloroethene	0.3396	0.3492	20.57	20	3	
	1,3-Dichloropropane	0.5983	0.6047	20.21	20	1	
	2-Hexanone	0.4207	0.4491	106.75	100	7	
	Dibromochloromethane	0.3354	0.3237	19.30	20	-3	
	1,2-Dibromoethane	0.3836	0.3917	20.42	20	2	
#	Chlorobenzene	1.0197	1.0316	20.23	20	1	#
	1,1,1,2-Tetrachloroethane	0.3075	0.3008	19.56	20	-2	
*	Ethylbenzene	1.6463	1.6877	20.50	20	3	*
	m+p-Xylene	0.6627	0.6818	41.16	40	3	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 ICV Date: 05/23/18 Time: 17:49

Lab File ID: wy23v01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	o-Xylene	0.6683	0.6657	19.92	20	0	
	Styrene	1.0961	1.1276	20.57	20	3	
#	Bromoform	0.2260	0.2070	17.54	20	-12	#
	Isopropylbenzene	1.5302	1.5942	20.84	20	4	
	Cyclohexanone	0.4251	0.3744	440.43	500	-12	
	Bromobenzene	0.7903	0.8027	20.31	20	2	
#	1,1,2,2-Tetrachloroethane	1.1058	1.1067	20.02	20	0	#
	1,2,3-Trichloropropane	0.3401	0.3662	21.53	20	8	
	trans-1,4-Dichloro-2-butene	0.2987	0.3288	110.06	100	10	
	n-Propylbenzene	3.2523	3.3932	20.87	20	4	
	2-Chlorotoluene	0.7181	0.7408	20.63	20	3	
	4-Chlorotoluene	0.7770	0.7709	19.84	20	-1	
	1,3,5-Trimethylbenzene	2.3972	2.4200	20.19	20	1	
	tert-Butylbenzene	0.5242	0.5098	19.45	20	-3	
	Pentachloroethane	0.3912	0.3684	18.84	20	-6	
	1,2,4-Trimethylbenzene	2.4991	2.5381	20.31	20	2	
	sec-Butylbenzene	2.6361	2.6463	20.08	20	0	
	1,3-Dichlorobenzene	1.4656	1.4243	19.44	20	-3	
	p-Isopropyltoluene	2.3491	2.3687	20.17	20	1	
	1,4-Dichlorobenzene	1.5642	1.5375	19.66	20	-2	
	1,2,3-Trimethylbenzene	2.6244	2.6469	20.17	20	1	
	Benzyl Chloride	1.6627	1.6108	17.74	20	-11	
	1,3-Diethylbenzene	1.4034	1.3603	19.39	20	-3	
	1,4-Diethylbenzene	1.4374	1.3750	19.13	20	-4	
	1,2-Dichlorobenzene	1.5173	1.4663	19.33	20	-3	
	n-Butylbenzene	1.1463	1.0837	18.91	20	-5	
	1,2-Diethylbenzene	1.2097	1.1640	19.24	20	-4	
	1,2-Dibromo-3-chloropropane	0.2339	0.2253	19.27	20	-4	
	1,3,5-Trichlorobenzene	0.8681	0.8053	18.55	20	-7	
	1,2,4-Trichlorobenzene	0.9007	0.7877	17.68	20	-12	
	Hexachlorobutadiene	0.2678	0.2479	18.51	20	-7	
	Naphthalene	3.5048	3.4054	19.43	20	-3	
	1,2,3-Trichlorobenzene	0.8817	0.7729	17.78	20	-11	
	2-Methylnaphthalene	1.6822	1.4622	17.38	20	-13	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i06.d
/chem2/HP09953.i/18feb22i.b/bf22i05.d
/chem2/HP09953.i/18feb22i.b/bf22i04.d
/chem2/HP09953.i/18feb22i.b/bf22i03.d
/chem2/HP09953.i/18feb22i.b/bf22i02.d
/chem2/HP09953.i/18feb22i.b/bf22i01.d

File /chem2/HP09953.i/18feb22i.b/bf22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09953.i/18jun12b.b/bu12c01.d

RT Summary

Internal Standard Name	File ID: bu12c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	1.930	1.924	Yes
Fluorobenzene	3.956	3.956	Yes
Chlorobenzene-d5	7.156	7.156	Yes
1,4-Dichlorobenzene-d4	9.236	9.236	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: bu12c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	93660	114201	57100	228402	Yes
Fluorobenzene	1029158	1207816	603908	2415632	Yes
Chlorobenzene-d5	741492	931957	465978	1863914	Yes
1,4-Dichlorobenzene-d4	418814	549119	274560	1098238	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/12/2018 at 21:02

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/12/18 Time: 20:05

Lab File ID: bu12c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4173	42.44	50	-15	
#	Chloromethane	0.5872	0.5233	44.56	50	-11	#
*	Vinyl Chloride	0.4173	0.3654	43.78	50	-12	*
	Bromomethane	0.2899	0.3050	52.59	50	5	
	Chloroethane	0.2334	0.2289	49.02	50	-2	
	Trichlorofluoromethane	0.5369	0.5462	50.86	50	2	
	Freon 123a	0.3518	0.3215	45.70	50	-9	
	Acrolein	2.4281	2.7048	556.99	500	11	
*	1,1-Dichloroethene	0.2459	0.2235	45.43	50	-9	*
	Acetone	0.0248	0.0218	87.84	100	-12	
	Freon 113	0.2960	0.2726	46.05	50	-8	
	2-Propanol	1.1163	0.9970	223.29	250	-11	
	Methyl Iodide	0.5387	0.4868	45.18	50	-10	
	Carbon Disulfide	0.8424	0.8084	47.98	50	-4	
	Methyl Acetate	0.2090	0.2085	49.86	50	0	
	Allyl Chloride	0.4892	0.5218	53.33	50	7	
	Methylene Chloride	0.2885	0.2639	45.74	50	-9	
	t-Butyl alcohol	1.2418	1.2994	261.61	250	5	
	Acrylonitrile	0.0991	0.0869	43.85	50	-12	
	Methyl Tertiary Butyl Ether	0.7975	0.7530	47.21	50	-6	
	trans-1,2-Dichloroethene	0.2884	0.2627	45.54	50	-9	
	n-Hexane	0.5126	0.4845	47.26	50	-5	
#	1,1-Dichloroethane	0.5731	0.5891	51.39	50	3	#
	di-Isopropyl ether	1.1602	1.1833	50.99	50	2	
	2-Chloro-1,3-butadiene	0.5207	0.5622	53.98	50	8	
	Ethyl t-butyl ether	0.9727	0.9892	50.85	50	2	
	2-Butanone	7.3204	7.6180	104.06	100	4	
	cis-1,2-Dichloroethene	0.3342	0.3196	47.81	50	-4	
	2,2-Dichloropropane	0.4251	0.4806	56.53	50	13	
	Propionitrile	2.0227	2.0469	252.99	250	1	
	Methacrylonitrile	0.1170	0.1046	111.68	125	-11	
	Bromochloromethane	0.1635	0.1533	46.88	50	-6	
	Tetrahydrofuran	1.5856	1.6191	102.11	100	2	
*	Chloroform	0.5364	0.5573	51.95	50	4	*
	1,1,1-Trichloroethane	0.5181	0.4975	48.01	50	-4	
	Cyclohexane	0.6302	0.5943	47.15	50	-6	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/12/18 Time: 20:05

Lab File ID: bu12c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Cyclohexane(2)	0.5080	0.4436	43.66	50	-13	
	Cyclohexane(3)	0.1808	0.1696	46.91	50	-6	
	1,1-Dichloropropene	0.4338	0.4343	50.05	50	0	
	Carbon Tetrachloride	0.3830	0.4171	54.45	50	9	
	Isobutyl Alcohol	0.5096	0.5767	707.37	625	13	
	Benzene	1.2609	1.2141	48.14	50	-4	
	1,2-Dichloroethane	0.4097	0.4482	54.70	50	9	
	1,2-Dichloroethane(2)	0.0353	0.0333	47.18	50	-6	
	t-Amyl methyl ether	0.8144	0.7925	48.65	50	-3	
	n-Heptane	0.6124	0.5460	44.58	50	-11	
	n-Butanol	0.3762	0.4050	1345.75	1250	8	
	Trichloroethene	0.3227	0.3083	47.78	50	-4	
	Methylcyclohexane	0.6000	0.5924	49.37	50	-1	
*	1,2-Dichloropropane	0.3331	0.3261	48.96	50	-2	*
	Methyl Methacrylate	0.1907	0.1755	46.02	50	-8	
	1,4-Dioxane	0.1410	0.1356	601.16	625	-4	
	Dibromomethane	0.1795	0.1737	48.38	50	-3	
	Bromodichloromethane	0.3833	0.4107	53.57	50	7	
	2-Nitropropane	2.5306	4.1255	138.87	100	39	
	2-Chloroethyl Vinyl Ether	0.1644	0.1569	47.73	50	-5	
	cis-1,3-Dichloropropene	0.4668	0.4916	52.66	50	5	
	4-Methyl-2-pentanone	0.3036	0.3086	101.64	100	2	
*	Toluene	0.9983	1.0188	51.02	50	2	*
	trans-1,3-Dichloropropene	0.4982	0.5854	58.75	50	17	
	Ethyl Methacrylate	0.4494	0.4799	53.39	50	7	
	1,1,2-Trichloroethane	0.3230	0.3286	50.88	50	2	
	Tetrachloroethene	0.4631	0.4384	47.33	50	-5	
	1,3-Dichloropropane	0.5552	0.5884	52.99	50	6	
	2-Hexanone	0.2699	0.3060	113.40	100	13	
	Dibromochloromethane	0.3545	0.3893	54.92	50	10	
	1,2-Dibromoethane	0.3271	0.3336	50.99	50	2	
	1-Chlorohexane	0.5308	0.5395	50.81	50	2	
#	Chlorobenzene	1.1089	1.1139	50.22	50	0	#
	1,1,1,2-Tetrachloroethane	0.3690	0.3949	53.51	50	7	
*	Ethylbenzene	1.9040	2.0240	53.15	50	6	*
	m+p-Xylene	0.7574	0.7648	100.97	100	1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/12/18 Time: 20:05

Lab File ID: bu12c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	o-Xylene	0.7545	0.7535	49.93	50	0	
	Styrene	1.1879	1.2341	51.94	50	4	
#	Bromoform	0.2222	0.2443	51.75	50	3	#
	Isopropylbenzene	1.9082	1.9627	51.43	50	3	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7952	52.63	50	5	#
	Bromobenzene	0.8408	0.8691	51.68	50	3	
	trans-1,4-Dichloro-2-butene	0.2069	0.2738	165.41	125	32	
	1,2,3-Trichloropropane	0.2073	0.2212	53.35	50	7	
	n-Propylbenzene	3.8098	4.3003	56.44	50	13	
	2-Chlorotoluene	0.7939	0.8233	51.85	50	4	
	1,3,5-Trimethylbenzene	2.8159	3.0852	54.78	50	10	
	4-Chlorotoluene	0.8226	0.8576	52.13	50	4	
	tert-Butylbenzene	0.6559	0.6534	49.81	50	0	
	Pentachloroethane	0.4798	0.5673	59.12	50	18	
	1,2,4-Trimethylbenzene	2.8653	3.1640	55.21	50	10	
	sec-Butylbenzene	3.5929	3.8292	53.29	50	7	
	1,3-Dichlorobenzene	1.6523	1.7035	51.55	50	3	
	p-Isopropyltoluene	3.2092	3.3903	52.82	50	6	
	1,4-Dichlorobenzene	1.7189	1.7536	51.01	50	2	
	1,2,3-Trimethylbenzene	2.9416	3.2962	56.03	50	12	
	Benzyl Chloride	0.2338	0.2960	56.38	50	13	
	1,3-Diethylbenzene	1.8848	2.0776	55.11	50	10	
	1,4-Diethylbenzene	2.0114	2.2133	55.02	50	10	
	n-Butylbenzene	1.6592	1.7506	52.76	50	6	
	1,2-Dichlorobenzene	1.6409	1.6638	50.70	50	1	
	1,2-Diethylbenzene	1.6079	1.7562	54.61	50	9	
	1,2-Dibromo-3-chloropropane	0.1332	0.1523	57.17	50	14	
	1,3,5-Trichlorobenzene	1.3773	1.3732	49.85	50	0	
	1,2,4-Trichlorobenzene	1.2763	1.2472	48.86	50	-2	
	Hexachlorobutadiene	0.6574	0.6128	44.45	50	-11	
	Naphthalene	2.6627	2.6890	50.49	50	1	
	1,2,3-Trichlorobenzene	1.1896	1.1780	49.51	50	-1	
	2-Methylnaphthalene	1.6549	1.7289	52.24	50	4	
	Dibromofluoromethane	0.2502	0.2512	50.21	50	0	
	Dibromofluoromethane(2)	0.2550	0.2579	50.57	50	1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/12/18 Time: 20:05

Lab File ID: bu12c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,2-Dichloroethane-d4	0.0548	0.0521	47.48	50	-5
1,2-Dichloroethane-d4(2)	0.2800	0.3058	54.61	50	9
1,2-Dichloroethane-d4(3)	0.0347	0.0334	48.11	50	-4
Toluene-d8	1.3054	1.3811	52.90	50	6
Toluene-d8(2)	0.8436	0.8796	52.14	50	4
4-Bromofluorobenzene	0.4987	0.5184	51.98	50	4
4-Bromofluorobenzene(2)	0.4342	0.4286	49.35	50	-1

Average %Drift 7

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i06.d
/chem2/HP09953.i/18feb22i.b/bf22i05.d
/chem2/HP09953.i/18feb22i.b/bf22i04.d
/chem2/HP09953.i/18feb22i.b/bf22i03.d
/chem2/HP09953.i/18feb22i.b/bf22i02.d
/chem2/HP09953.i/18feb22i.b/bf22i01.d

File /chem2/HP09953.i/18feb22i.b/bf22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09953.i/18jun13a.b/bu13c01.d

RT Summary

Internal Standard Name	File ID: bu13c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	1.924	1.924	Yes
Fluorobenzene	3.956	3.956	Yes
Chlorobenzene-d5	7.156	7.156	Yes
1,4-Dichlorobenzene-d4	9.236	9.236	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: bu13c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	97875	114201	57100	228402	Yes
Fluorobenzene	1059738	1207816	603908	2415632	Yes
Chlorobenzene-d5	758642	931957	465978	1863914	Yes
1,4-Dichlorobenzene-d4	426924	549119	274560	1098238	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/13/2018 at 19:15

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/13/18 Time: 18:49

Lab File ID: bu13c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.5631	57.27	50	15	
#	Chloromethane	0.5872	0.5908	50.30	50	1	#
*	Vinyl Chloride	0.4173	0.4294	51.45	50	3	*
	Bromomethane	0.2899	0.3362	57.99	50	16	
	Chloroethane	0.2334	0.2487	53.26	50	7	
	Trichlorofluoromethane	0.5369	0.6072	56.54	50	13	
	Ethanol	0.1211	0.1011	2086.74	2500	-17	
	Freon 123a	0.3518	0.3193	45.38	50	-9	
	Acrolein	2.4281	2.3250	478.78	500	-4	
*	1,1-Dichloroethene	0.2459	0.2224	45.22	50	-10	*
	Acetone	0.0248	0.0193	77.74	100	-22	
	Freon 113	0.2960	0.2803	47.35	50	-5	
	2-Propanol	1.1163	1.1021	246.82	250	-1	
	Methyl Iodide	0.5387	0.4745	44.04	50	-12	
	Carbon Disulfide	0.8424	0.7799	46.29	50	-7	
	Methyl Acetate	0.2090	0.1893	45.28	50	-9	
	Allyl Chloride	0.4892	0.4872	49.80	50	0	
	Methylene Chloride	0.2885	0.2583	44.76	50	-10	
	t-Butyl alcohol	1.2418	1.1954	240.67	250	-4	
	Acrylonitrile	0.0991	0.0825	41.63	50	-17	
	Methyl Tertiary Butyl Ether	0.7975	0.7552	47.35	50	-5	
	trans-1,2-Dichloroethene	0.2884	0.2592	44.94	50	-10	
	n-Hexane	0.5126	0.4974	48.51	50	-3	
#	1,1-Dichloroethane	0.5731	0.5861	51.13	50	2	#
	di-Isopropyl ether	1.1602	1.1582	49.91	50	0	
	2-Chloro-1,3-butadiene	0.5207	0.5672	54.47	50	9	
	Ethyl t-butyl ether	0.9727	0.9852	50.64	50	1	
	2-Butanone	7.3204	6.6413	90.72	100	-9	
	cis-1,2-Dichloroethene	0.3342	0.3171	47.44	50	-5	
	2,2-Dichloropropane	0.4251	0.4819	56.68	50	13	
	Propionitrile	2.0227	2.0153	249.09	250	0	
	Methacrylonitrile	0.1170	0.1023	109.20	125	-13	
	Bromochloromethane	0.1635	0.1471	44.98	50	-10	
	Tetrahydrofuran	1.5856	1.4706	92.75	100	-7	
*	Chloroform	0.5364	0.5561	51.84	50	4	*
	1,1,1-Trichloroethane	0.5181	0.5256	50.71	50	1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/13/18 Time: 18:49

Lab File ID: bu13c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Cyclohexane	0.6302	0.6128	48.62	50	-3	
	Cyclohexane(2)	0.5080	0.4586	45.14	50	-10	
	Cyclohexane(3)	0.1808	0.1760	48.66	50	-3	
	1,1-Dichloropropene	0.4338	0.4409	50.82	50	2	
	Carbon Tetrachloride	0.3830	0.4263	55.64	50	11	
	Isobutyl Alcohol	0.5096	0.5193	636.92	625	2	
	Benzene	1.2609	1.2000	47.58	50	-5	
	1,2-Dichloroethane	0.4097	0.4451	54.32	50	9	
	1,2-Dichloroethane(2)	0.0353	0.0324	45.91	50	-8	
	t-Amyl methyl ether	0.8144	0.7888	48.42	50	-3	
	n-Heptane	0.6124	0.5839	47.67	50	-5	
	n-Butanol	0.3762	0.3600	1196.30	1250	-4	
	Trichloroethene	0.3227	0.3075	47.64	50	-5	
	Methylcyclohexane	0.6000	0.5575	46.46	50	-7	
*	1,2-Dichloropropane	0.3331	0.3236	48.58	50	-3	*
	Methyl Methacrylate	0.1907	0.1723	45.19	50	-10	
	1,4-Dioxane	0.1410	0.1296	574.51	625	-8	
	Dibromomethane	0.1795	0.1683	46.87	50	-6	
	Bromodichloromethane	0.3833	0.4039	52.68	50	5	
	2-Nitropropane	2.5306	3.6283	123.19	100	23	
	2-Chloroethyl Vinyl Ether	0.1644	0.1419	43.18	50	-14	
	cis-1,3-Dichloropropene	0.4668	0.4783	51.23	50	2	
	4-Methyl-2-pentanone	0.3036	0.2621	86.33	100	-14	
*	Toluene	0.9983	1.0126	50.71	50	1	*
	trans-1,3-Dichloropropene	0.4982	0.5823	58.44	50	17	
	Ethyl Methacrylate	0.4494	0.4646	51.69	50	3	
	1,1,2-Trichloroethane	0.3230	0.3185	49.32	50	-1	
	Tetrachloroethene	0.4631	0.4406	47.57	50	-5	
	1,3-Dichloropropane	0.5552	0.5746	51.75	50	3	
	2-Hexanone	0.2699	0.2391	88.61	100	-11	
	Dibromochloromethane	0.3545	0.3856	54.39	50	9	
	1,2-Dibromoethane	0.3271	0.3239	49.52	50	-1	
	1-Chlorohexane	0.5308	0.5402	50.88	50	2	
#	Chlorobenzene	1.1089	1.0848	48.91	50	-2	#
	1,1,1,2-Tetrachloroethane	0.3690	0.4007	54.30	50	9	
*	Ethylbenzene	1.9040	1.9991	52.50	50	5	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/13/18 Time: 18:49

Lab File ID: bu13c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	m+p-Xylene	0.7574	0.7588	100.18	100	0	
	o-Xylene	0.7545	0.7515	49.81	50	0	
	Styrene	1.1879	1.2026	50.62	50	1	
#	Bromoform	0.2222	0.2351	49.93	50	0	#
	Isopropylbenzene	1.9082	2.0015	52.45	50	5	
	Cyclohexanone	0.9002	0.5563	393.92	625	-37	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7765	51.39	50	3	#
	Bromobenzene	0.8408	0.8496	50.52	50	1	
	trans-1,4-Dichloro-2-butene	0.2069	0.2635	159.20	125	27	
	1,2,3-Trichloropropane	0.2073	0.2158	52.04	50	4	
	n-Propylbenzene	3.8098	4.2533	55.82	50	12	
	2-Chlorotoluene	0.7939	0.8091	50.95	50	2	
	1,3,5-Trimethylbenzene	2.8159	3.1142	55.30	50	11	
	4-Chlorotoluene	0.8226	0.8415	51.15	50	2	
	tert-Butylbenzene	0.6559	0.6751	51.47	50	3	
	Pentachloroethane	0.4798	0.5594	58.30	50	17	
	1,2,4-Trimethylbenzene	2.8653	3.1758	55.42	50	11	
	sec-Butylbenzene	3.5929	3.9480	54.94	50	10	
	1,3-Dichlorobenzene	1.6523	1.6580	50.17	50	0	
	p-Isopropyltoluene	3.2092	3.4801	54.22	50	8	
	1,4-Dichlorobenzene	1.7189	1.7054	49.61	50	-1	
	1,2,3-Trimethylbenzene	2.9416	3.2319	54.93	50	10	
	Benzyl Chloride	0.2338	0.2831	54.10	50	8	
	1,3-Diethylbenzene	1.8848	2.0129	53.40	50	7	
	1,4-Diethylbenzene	2.0114	2.1054	52.34	50	5	
	n-Butylbenzene	1.6592	1.7978	54.18	50	8	
	1,2-Dichlorobenzene	1.6409	1.6183	49.31	50	-1	
	1,2-Diethylbenzene	1.6079	1.6875	52.48	50	5	
	1,2-Dibromo-3-chloropropane	0.1332	0.1501	56.33	50	13	
	1,3,5-Trichlorobenzene	1.3773	1.3800	50.10	50	0	
	1,2,4-Trichlorobenzene	1.2763	1.2650	49.56	50	-1	
	Hexachlorobutadiene	0.6574	0.7130	51.26	50	3	
	Naphthalene	2.6627	2.6278	49.34	50	-1	
	1,2,3-Trichlorobenzene	1.1896	1.1903	50.03	50	0	
	2-Methylnaphthalene	1.6549	1.7116	51.71	50	3	
	Dibromofluoromethane	0.2502	0.2545	50.88	50	2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/13/18 Time: 18:49

Lab File ID: bu13c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Dibromofluoromethane(2)	0.2550	0.2589	50.76	50	2
1,2-Dichloroethane-d4	0.0548	0.0569	51.91	50	4
1,2-Dichloroethane-d4(2)	0.2800	0.3376	60.29	50	21
1,2-Dichloroethane-d4(3)	0.0347	0.0336	48.46	50	-3
Toluene-d8	1.3054	1.3829	52.97	50	6
Toluene-d8(2)	0.8436	0.8867	52.55	50	5
4-Bromofluorobenzene	0.4987	0.5123	51.37	50	3
4-Bromofluorobenzene(2)	0.4342	0.4282	49.31	50	-1

Average %Drift 7

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i06.d
/chem2/HP09953.i/18feb22i.b/bf22i05.d
/chem2/HP09953.i/18feb22i.b/bf22i04.d
/chem2/HP09953.i/18feb22i.b/bf22i03.d
/chem2/HP09953.i/18feb22i.b/bf22i02.d
/chem2/HP09953.i/18feb22i.b/bf22i01.d

File /chem2/HP09953.i/18feb22i.b/bf22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09953.i/18jun14a.b/bu14c01.d

RT Summary

Internal Standard Name	File ID: bu14c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	1.930	1.924	Yes
Fluorobenzene	3.956	3.956	Yes
Chlorobenzene-d5	7.156	7.156	Yes
1,4-Dichlorobenzene-d4	9.236	9.236	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: bu14c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	101065	114201	57100	228402	Yes
Fluorobenzene	1000957	1207816	603908	2415632	Yes
Chlorobenzene-d5	710860	931957	465978	1863914	Yes
1,4-Dichlorobenzene-d4	396941	549119	274560	1098238	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/14/2018 at 15:14

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/14/18 Time: 14:41

Lab File ID: bu14c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.5165	52.53	50	5	
#	Chloromethane	0.5872	0.5545	47.21	50	-6	#
*	Vinyl Chloride	0.4173	0.3883	46.53	50	-7	*
	Bromomethane	0.2899	0.3162	54.52	50	9	
	Chloroethane	0.2334	0.2349	50.30	50	1	
	Trichlorofluoromethane	0.5369	0.5609	52.23	50	4	
	Ethanol	0.1211	0.0525	1084.25	2500	-57	
	Freon 123a	0.3518	0.3289	46.75	50	-7	
	Acrolein	2.4281	2.4169	497.70	500	0	
*	1,1-Dichloroethene	0.2459	0.2213	44.99	50	-10	*
	Acetone	0.0248	0.0230	92.60	100	-7	
	Freon 113	0.2960	0.2661	44.95	50	-10	
	2-Propanol	1.1163	1.0093	226.03	250	-10	
	Methyl Iodide	0.5387	0.4809	44.64	50	-11	
	Carbon Disulfide	0.8424	0.7820	46.42	50	-7	
	Methyl Acetate	0.2090	0.2320	55.49	50	11	
	Allyl Chloride	0.4892	0.4824	49.31	50	-1	
	Methylene Chloride	0.2885	0.2663	46.15	50	-8	
	t-Butyl alcohol	1.2418	1.2038	242.35	250	-3	
	Acrylonitrile	0.0991	0.0900	45.41	50	-9	
	Methyl Tertiary Butyl Ether	0.7975	0.7805	48.93	50	-2	
	trans-1,2-Dichloroethene	0.2884	0.2658	46.07	50	-8	
	n-Hexane	0.5126	0.4272	41.67	50	-17	
#	1,1-Dichloroethane	0.5731	0.6053	52.80	50	6	#
	di-Isopropyl ether	1.1602	1.1905	51.31	50	3	
	2-Chloro-1,3-butadiene	0.5207	0.5863	56.30	50	13	
	Ethyl t-butyl ether	0.9727	1.0110	51.97	50	4	
	2-Butanone	7.3204	7.0480	96.28	100	-4	
	cis-1,2-Dichloroethene	0.3342	0.3254	48.67	50	-3	
	2,2-Dichloropropane	0.4251	0.5082	59.77	50	20	
	Propionitrile	2.0227	2.0217	249.87	250	0	
	Methacrylonitrile	0.1170	0.1095	116.89	125	-6	
	Bromochloromethane	0.1635	0.1492	45.62	50	-9	
	Tetrahydrofuran	1.5856	1.5291	96.43	100	-4	
*	Chloroform	0.5364	0.5762	53.71	50	7	*
	1,1,1-Trichloroethane	0.5181	0.5447	52.56	50	5	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/14/18 Time: 14:41

Lab File ID: bu14c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Cyclohexane	0.6302	0.5802	46.04	50	-8	
	Cyclohexane(2)	0.5080	0.4384	43.16	50	-14	
	Cyclohexane(3)	0.1808	0.1694	46.85	50	-6	
	1,1-Dichloropropene	0.4338	0.4522	52.12	50	4	
	Carbon Tetrachloride	0.3830	0.4395	57.37	50	15	
	Isobutyl Alcohol	0.5096	0.5591	685.67	625	10	
	Benzene	1.2609	1.2307	48.80	50	-2	
	1,2-Dichloroethane	0.4097	0.4720	57.60	50	15	
	1,2-Dichloroethane(2)	0.0353	0.0336	47.49	50	-5	
	t-Amyl methyl ether	0.8144	0.8140	49.97	50	0	
	n-Heptane	0.6124	0.5881	48.01	50	-4	
	n-Butanol	0.3762	0.3904	1297.14	1250	4	
	Trichloroethene	0.3227	0.3194	49.50	50	-1	
	Methylcyclohexane	0.6000	0.5223	43.53	50	-13	
*	1,2-Dichloropropane	0.3331	0.3293	49.44	50	-1	*
	Methyl Methacrylate	0.1907	0.1860	48.77	50	-2	
	1,4-Dioxane	0.1410	0.1228	544.34	625	-13	
	Dibromomethane	0.1795	0.1774	49.40	50	-1	
	Bromodichloromethane	0.3833	0.4249	55.43	50	11	
	2-Nitropropane	2.5306	3.8629	130.61	100	31	
	2-Chloroethyl Vinyl Ether	0.1644	0.0985	29.97	50	-40	
	cis-1,3-Dichloropropene	0.4668	0.4952	53.03	50	6	
	4-Methyl-2-pentanone	0.3036	0.2998	98.74	100	-1	
*	Toluene	0.9983	1.0582	53.00	50	6	*
	trans-1,3-Dichloropropene	0.4982	0.6075	60.97	50	22	
	Ethyl Methacrylate	0.4494	0.4979	55.39	50	11	
	1,1,2-Trichloroethane	0.3230	0.3377	52.28	50	5	
	Tetrachloroethene	0.4631	0.4649	50.19	50	0	
	1,3-Dichloropropane	0.5552	0.6059	54.57	50	9	
	2-Hexanone	0.2699	0.2821	104.52	100	5	
	Dibromochloromethane	0.3545	0.4069	57.39	50	15	
	1,2-Dibromoethane	0.3271	0.3473	53.09	50	6	
	1-Chlorohexane	0.5308	0.5610	52.84	50	6	
#	Chlorobenzene	1.1089	1.1407	51.43	50	3	#
	1,1,1,2-Tetrachloroethane	0.3690	0.4195	56.84	50	14	
*	Ethylbenzene	1.9040	2.1096	55.40	50	11	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/14/18 Time: 14:41

Lab File ID: bu14c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	m+p-Xylene	0.7574	0.7916	104.52	100	5	
	o-Xylene	0.7545	0.7749	51.35	50	3	
	Styrene	1.1879	1.2595	53.01	50	6	
#	Bromoform	0.2222	0.2563	54.09	50	8	#
	Isopropylbenzene	1.9082	2.0921	54.82	50	10	
	Cyclohexanone	0.9002	0.5590	395.61	625	-37	
#	1,1,2,2-Tetrachloroethane	0.7554	0.8526	56.43	50	13	#
	Bromobenzene	0.8408	0.8953	53.24	50	6	
	trans-1,4-Dichloro-2-butene	0.2069	0.2966	179.19	125	43	
	1,2,3-Trichloropropane	0.2073	0.2395	57.77	50	16	
	n-Propylbenzene	3.8098	4.5294	59.44	50	19	
	2-Chlorotoluene	0.7939	0.8654	54.50	50	9	
	1,3,5-Trimethylbenzene	2.8159	3.2824	58.28	50	17	
	4-Chlorotoluene	0.8226	0.8862	53.87	50	8	
	tert-Butylbenzene	0.6559	0.7061	53.83	50	8	
	Pentachloroethane	0.4798	0.5771	60.14	50	20	
	1,2,4-Trimethylbenzene	2.8653	3.3443	58.36	50	17	
	sec-Butylbenzene	3.5929	4.2109	58.60	50	17	
	1,3-Dichlorobenzene	1.6523	1.7522	53.02	50	6	
	p-Isopropyltoluene	3.2092	3.6876	57.45	50	15	
	1,4-Dichlorobenzene	1.7189	1.7800	51.78	50	4	
	1,2,3-Trimethylbenzene	2.9416	3.3215	56.46	50	13	
	Benzyl Chloride	0.2338	0.3170	60.08	50	20	
	1,3-Diethylbenzene	1.8848	2.0814	55.21	50	10	
	1,4-Diethylbenzene	2.0114	2.2024	54.75	50	9	
	n-Butylbenzene	1.6592	1.9198	57.85	50	16	
	1,2-Dichlorobenzene	1.6409	1.7000	51.80	50	4	
	1,2-Diethylbenzene	1.6079	1.7467	54.32	50	9	
	1,2-Dibromo-3-chloropropane	0.1332	0.1704	63.95	50	28	
	1,3,5-Trichlorobenzene	1.3773	1.4569	52.89	50	6	
	1,2,4-Trichlorobenzene	1.2763	1.3332	52.23	50	4	
	Hexachlorobutadiene	0.6574	0.7758	55.52	50	11	
	Naphthalene	2.6627	2.8335	53.21	50	6	
	1,2,3-Trichlorobenzene	1.1896	1.2437	52.27	50	5	
	2-Methylnaphthalene	1.6549	1.7601	53.18	50	6	
	Dibromofluoromethane	0.2502	0.2523	50.43	50	1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/14/18 Time: 14:41

Lab File ID: bu14c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Dibromofluoromethane(2)	0.2550	0.2588	50.73	50	1
1,2-Dichloroethane-d4	0.0548	0.0537	48.97	50	-2
1,2-Dichloroethane-d4(2)	0.2800	0.3226	57.61	50	15
1,2-Dichloroethane-d4(3)	0.0347	0.0335	48.32	50	-3
Toluene-d8	1.3054	1.3836	52.99	50	6
Toluene-d8(2)	0.8436	0.8804	52.18	50	4
4-Bromofluorobenzene	0.4987	0.5112	51.26	50	3
4-Bromofluorobenzene(2)	0.4342	0.4285	49.35	50	-1

Average %Drift 9

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09137.i/18may23i.b/wy23i07.d
/chem2/HP09137.i/18may23i.b/wy23i06.d
/chem2/HP09137.i/18may23i.b/wy23i05.d
/chem2/HP09137.i/18may23i.b/wy23i04.d
/chem2/HP09137.i/18may23i.b/wy23i03.d
/chem2/HP09137.i/18may23i.b/wy23i02.d
/chem2/HP09137.i/18may23i.b/wy23i01.d

File /chem2/HP09137.i/18may23i.b/wy23i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09137.i/18jun20a.b/wu20c01.d

RT Summary

Internal Standard Name	File ID: wu20c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	2.767	2.763	Yes
Fluorobenzene	5.067	5.067	Yes
Chlorobenzene-d5	8.196	8.196	Yes
1,4-Dichlorobenzene-d4	10.070	10.070	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: wu20c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	314692	229067	114534	458134	Yes
Fluorobenzene	1326281	1326838	663419	2653676	Yes
Chlorobenzene-d5	1043694	1006908	503454	2013816	Yes
1,4-Dichlorobenzene-d4	597048	545836	272918	1091672	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/20/2018 at 08:13

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date: 06/20/18 Time: 07:45

Lab File ID: wu20c01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF150	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3462	0.4088	177.14	150	18	
#	Chloromethane	0.3678	0.3475	141.73	150	-6	#
	1,3-Butadiene	0.2872	0.2576	147.85	150	-1	
*	Vinyl Chloride	0.3825	0.3324	130.37	150	-13	*
	Bromomethane	0.2600	0.2632	151.83	150	1	
	Chloroethane	0.2207	0.1955	132.87	150	-11	
	n-Pentane	0.4069	0.4145	152.77	150	2	
	Trichlorofluoromethane	0.4229	0.4649	164.89	150	10	
	Ethanol	0.1287	0.0767	2881.39	3750	-23	
	Freon 123a	0.2797	0.2684	143.94	150	-4	
	Acrolein	2.4946	1.7147	1031.08	1500	-31	
*	1,1-Dichloroethene	0.2131	0.2374	167.09	150	11	*
*	1,1-Dichloroethene(2)	0.1054	0.1186	168.72	150	12	*
	Acetone	1.1062	0.9635	261.30	300	-13	
	Freon 113	0.2149	0.2398	167.37	150	12	
	2-Propanol	0.6275	0.6818	814.95	750	9	
	Methyl Iodide	0.4011	0.4146	155.06	150	3	
	Carbon Disulfide	0.7054	0.7690	163.51	150	9	
	Allyl Chloride	0.3409	0.3708	163.15	150	9	
	Methyl Acetate	0.3042	0.3163	155.98	150	4	
	Methylene Chloride	0.2567	0.2651	154.92	150	3	
	t-Butyl alcohol	1.2383	1.1139	674.68	750	-10	
	Acrylonitrile	0.1464	0.1740	178.26	150	19	
	trans-1,2-Dichloroethene	0.2425	0.2465	152.48	150	2	
	Methyl Tertiary Butyl Ether	0.7037	0.5884	125.43	150	-16	
	n-Hexane	0.2794	0.3762	201.97	150	35	
#	1,1-Dichloroethane	0.4268	0.4306	151.34	150	1	#
	di-Isopropyl ether	0.8141	0.7634	140.66	150	-6	
	2-Chloro-1,3-butadiene	0.3626	0.3857	159.57	150	6	
	Ethyl t-butyl ether	0.6640	0.5917	133.66	150	-11	
	cis-1,2-Dichloroethene	0.2755	0.2754	149.94	150	0	
	2-Butanone	0.2085	0.2426	348.99	300	16	
	2,2-Dichloropropane	0.2127	0.1712	120.70	150	-20	
	Propionitrile	1.7058	1.3856	609.22	750	-19	
	Methacrylonitrile	0.1692	0.1728	382.80	375	2	
	Bromochloromethane	0.1380	0.1431	155.53	150	4	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date: 06/20/18 Time: 07:45

Lab File ID: wu20c01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF150	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Tetrahydrofuran	1.7717	1.4048	237.86	300	-21	
*	Chloroform	0.4296	0.4293	149.86	150	0	*
	1,1,1-Trichloroethane	0.3738	0.3716	149.13	150	-1	
	Cyclohexane	0.3786	0.4432	175.61	150	17	
	Cyclohexane(2)	0.3355	0.3788	169.36	150	13	
	Cyclohexane(3)	0.1167	0.1359	174.71	150	16	
	1,1-Dichloropropene	0.3378	0.3550	157.62	150	5	
	Carbon Tetrachloride	0.2560	0.3071	179.93	150	20	
	Isobutyl Alcohol	0.4226	0.3983	1766.94	1875	-6	
	Benzene	1.0393	1.0341	149.25	150	-1	
	1,2-Dichloroethane	0.3626	0.3498	144.69	150	-4	
	1,2-Dichloroethane(2)	0.0350	0.0351	150.07	150	0	
	t-Amyl methyl ether	0.6774	0.6059	134.17	150	-11	
	n-Heptane	0.2438	0.3328	204.78	150	37	
	n-Butanol	0.3631	0.3581	3697.91	3750	-1	
	Trichloroethene	0.2703	0.2639	146.49	150	-2	
	Methylcyclohexane	0.3126	0.3910	187.62	150	25	
	Methylcyclohexane(2)	0.1469	0.1839	187.79	150	25	
*	1,2-Dichloropropane	0.2640	0.2736	155.42	150	4	*
	Dibromomethane	0.1773	0.1793	151.72	150	1	
	1,4-Dioxane	0.1148	0.1141	1864.28	1875	-1	
	Methyl Methacrylate	0.2691	0.2891	161.17	150	7	
	Bromodichloromethane	0.3133	0.3381	161.88	150	8	
	2-Nitropropane	0.0690	0.1055	382.62	300	28	
	2-Chloroethyl Vinyl Ether	0.1955	0.2213	169.80	150	13	
	cis-1,3-Dichloropropene	0.4051	0.4471	165.56	150	10	
	4-Methyl-2-pentanone	0.4101	0.4832	353.46	300	18	
*	Toluene	0.9015	0.8665	144.18	150	-4	*
	trans-1,3-Dichloropropene	0.4830	0.5313	165.00	150	10	
	Ethyl Methacrylate	0.5836	0.6195	159.21	150	6	
	1,1,2-Trichloroethane	0.3549	0.3473	146.78	150	-2	
	Tetrachloroethene	0.3396	0.3527	155.81	150	4	
	1,3-Dichloropropane	0.5983	0.5844	146.51	150	-2	
	2-Hexanone	0.4207	0.4814	343.26	300	14	
	Dibromochloromethane	0.3354	0.3684	164.78	150	10	
	1,2-Dibromoethane	0.3836	0.3815	149.20	150	-1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date: 06/20/18 Time: 07:45

Lab File ID: wu20c01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF150	ACTUAL CONC.	TRUE CONC.	% DRIFT	
#	Chlorobenzene	1.0197	0.9856	144.99	150	-3	#
	1,1,1,2-Tetrachloroethane	0.3075	0.3294	160.65	150	7	
*	Ethylbenzene	1.6463	1.6551	150.80	150	1	*
	m+p-Xylene	0.6627	0.6717	304.06	300	1	
	o-Xylene	0.6683	0.6704	150.47	150	0	
	Styrene	1.0961	1.1514	157.57	150	5	
#	Bromoform	0.2260	0.2740	148.96	150	-1	#
	Isopropylbenzene	1.5302	1.5899	155.85	150	4	
	Cyclohexanone	0.4251	0.3977	1754.12	1875	-6	
	Bromobenzene	0.7903	0.7715	146.43	150	-2	
#	1,1,2,2-Tetrachloroethane	1.1058	1.0461	141.91	150	-5	#
	1,2,3-Trichloropropane	0.3401	0.3258	143.71	150	-4	
	trans-1,4-Dichloro-2-butene	0.2987	0.3105	389.76	375	4	
	n-Propylbenzene	3.2523	3.1835	146.83	150	-2	
	2-Chlorotoluene	0.7181	0.6858	143.24	150	-5	
	4-Chlorotoluene	0.7770	0.7490	144.58	150	-4	
	1,3,5-Trimethylbenzene	2.3972	2.4195	151.39	150	1	
	tert-Butylbenzene	0.5242	0.5349	153.06	150	2	
	Pentachloroethane	0.3912	0.4556	174.69	150	16	
	1,2,4-Trimethylbenzene	2.4991	2.5240	151.50	150	1	
	sec-Butylbenzene	2.6361	2.7393	155.87	150	4	
	1,3-Dichlorobenzene	1.4656	1.4210	145.43	150	-3	
	p-Isopropyltoluene	2.3491	2.4727	157.89	150	5	
	1,4-Dichlorobenzene	1.5642	1.4832	142.24	150	-5	
	1,2,3-Trimethylbenzene	2.6244	2.6619	152.15	150	1	
	Benzyl Chloride	1.6627	2.1318	157.69	150	5	
	1,3-Diethylbenzene	1.4034	1.5077	161.15	150	7	
	1,4-Diethylbenzene	1.4374	1.5425	160.97	150	7	
	1,2-Dichlorobenzene	1.5173	1.4619	144.52	150	-4	
	n-Butylbenzene	1.1463	1.1930	156.12	150	4	
	1,2-Diethylbenzene	1.2097	1.2634	156.67	150	4	
	1,2-Dibromo-3-chloropropane	0.2339	0.2467	158.20	150	5	
	1,3,5-Trichlorobenzene	0.8681	0.8750	151.19	150	1	
	1,2,4-Trichlorobenzene	0.9007	0.8487	154.02	150	3	
	Hexachlorobutadiene	0.2678	0.2918	163.43	150	9	
	Naphthalene	3.5048	3.3822	144.75	150	-3	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date: 06/20/18 Time: 07:45

Lab File ID: wu20c01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF150	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,2,3-Trichlorobenzene	0.8817	0.7912	149.28	150	0
2-Methylnaphthalene	1.6822	1.6540	147.48	150	-2
Dibromofluoromethane	0.2288	0.2302	50.29	50	1
Dibromofluoromethane(2)	0.2340	0.2351	50.25	50	1
1,2-Dichloroethane-d4	0.0626	0.0622	49.65	50	-1
1,2-Dichloroethane-d4(2)	0.2801	0.2771	49.46	50	-1
1,2-Dichloroethane-d4(3)	0.0398	0.0396	49.74	50	-1
Toluene-d8	1.3290	1.2916	48.59	50	-3
Toluene-d8(2)	0.8653	0.8388	48.47	50	-3
4-Bromofluorobenzene	0.4872	0.4969	51.00	50	2
4-Bromofluorobenzene(2)	0.3830	0.4044	52.79	50	6

Average %Drift 7

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu12c01.d Date Analyzed: 06/12/18

Instrument ID: HP09953 Time Analyzed: 20:05

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(TBA)			IS2(FBZ)			IS3(CBZ)			IS4(DCB)		
		AREA	#	RT	AREA	#	RT	AREA	#	RT	AREA	#	RT
	12 HOUR STD	93660		1.930	1029158		3.956	741492		7.156	418814		9.236
	UPPER LIMIT	187320		2.430	2058316		4.456	1482984		7.656	837628		9.736
	LOWER LIMIT	46830		1.430	514579		3.456	370746		6.656	209407		8.736
	LAB SAMPLE ID												
01	VBLKB07	105777		1.918	1001314		3.950	739549		7.156	397204		9.236
02	LCSB07	128192		1.918	1061686		3.950	766584		7.156	435219		9.236
03	LCDB07	105172		1.924	1026312		3.956	753798		7.156	421502		9.236
04	9632085	96278		1.918	1039586		3.950	763192		7.156	415492		9.236
05	9632091	88688		1.924	980755		3.950	717133		7.156	380252		9.236
06	9632093	88201		1.918	960088		3.950	704534		7.156	373480		9.236
07	9632095	87547		1.930	949526		3.956	687362		7.156	366190		9.236
08	9640166	106119		1.918	933024		3.950	685986		7.156	370430		9.236
09	9640167	97761		1.924	931363		3.956	681997		7.156	366472		9.236
10	9649656	106898		1.924	926417		3.956	652553		7.156	305830		9.236
11	9653928	83431		1.924	910760		3.956	648221		7.156	348802		9.236
12	9653931	76877		1.906	921206		3.950	679476		7.156	343722		9.236
13	9653932	75390		1.918	930322		3.950	677150		7.156	344246		9.236
14	9653941	97541		1.912	869444		3.950	498037		7.156	147695	*	9.242
15	9653942	87088		1.912	931475		3.950	677026		7.156	329625		9.236
16	9651105	83026		1.930	935111		3.956	676040		7.156	336330		9.236
17	9651106	78502		1.918	919565		3.950	666056		7.156	339718		9.236
18	9651108	81308		1.912	941802		3.950	687309		7.156	357710		9.236
19	9651111	73425		1.924	916698		3.956	641457		7.156	297905		9.236
20	9650447	39474	*	1.918	824998		3.950	498889		7.156	171088	*	9.236
21	9653933	79061		1.918	839486		3.950	338670	*	7.156	40092	*	9.242
22	9653935	72519		1.912	962121		3.950	685190		7.156	333075		9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu13c01.d Date Analyzed: 06/13/18

Instrument ID: HP09953 Time Analyzed: 18:49

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(TBA) AREA	#	RT	#	IS2(FBZ) AREA	#	RT	#	IS3(CBZ) AREA	#	RT	#	IS4(DCB) AREA	#	RT
	12 HOUR STD	97875		1.924		1059738		3.956		758642		7.156		426924		9.236
	UPPER LIMIT	195750		2.424		2119476		4.456		1517284		7.656		853848		9.736
	LOWER LIMIT	48938		1.424		529869		3.456		379321		6.656		213462		8.736
	LAB SAMPLE ID															
01	VBLKB08	104406		1.924		997733		3.956		712175		7.156		382916		9.236
02	VBLKB09	104406		1.924		997733		3.956		712175		7.156		382916		9.236
03	LCSB08	107377		1.924		1011281		3.950		728800		7.156		406007		9.236
04	LCSB09	107377		1.924		1011281		3.950		728800		7.156		406007		9.236
05	LCDB08	120901		1.930		1022754		3.956		745274		7.156		422121		9.236
06	LCDB09	120901		1.930		1022754		3.956		745274		7.156		422121		9.236
07	9647138RE	100663		1.942		911321		3.962		499811		7.156		169839	*	9.236
08	SECC050	87761		1.924		1017983		3.956		734453		7.156		412834		9.236
09	9649555	84691		1.918		973223		3.950		705619		7.156		361791		9.236
10	9649556MS	81648		1.924		999300		3.950		702774		7.156		374186		9.236
11	9649557MSD	88855		1.918		1013716		3.950		723437		7.156		386896		9.236
12	9649546	92315		1.924		984814		3.956		624971		7.156		260368		9.236
13	9649547	80067		1.924		982260		3.956		714573		7.156		372608		9.236
14	9649548	77592		1.930		980743		3.956		723979		7.156		375962		9.236
15	9649549	67550		1.924		967087		3.956		710689		7.156		374044		9.236
16	9649552	60395		1.918		931411		3.950		667846		7.156		323792		9.236
17	9649553	69399		1.918		927141		3.950		681880		7.156		344059		9.236
18	9649554	69293		1.930		918000		3.956		685312		7.156		349382		9.236
19	9649558	64467		1.906		923095		3.950		682616		7.156		354292		9.236
20	9649559	70578		1.918		919724		3.950		663026		7.156		343554		9.236
21	9649560	75570		1.936		919216		3.956		664226		7.156		337711		9.236
22	9651112	66649		1.924		784489		3.956		577979		7.156		290652		9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu13c01.d Date Analyzed: 06/13/18

Instrument ID: HP09953 Time Analyzed: 18:49

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(TBA) AREA	#	RT	#	IS2(FBZ) AREA	#	RT	#	IS3(CBZ) AREA	#	RT	#	IS4(DCB) AREA	#	RT	#
	12 HOUR STD	97875		1.924		1059738		3.956		758642		7.156		426924		9.236	
	UPPER LIMIT	195750		2.424		2119476		4.456		1517284		7.656		853848		9.736	
	LOWER LIMIT	48938		1.424		529869		3.456		379321		6.656		213462		8.736	
	LAB SAMPLE ID																
23	9651113	70265		1.924		904101		3.956		665397		7.156		341844		9.236	
24	9651114	72201		1.918		901269		3.950		673230		7.156		355885		9.236	
25	9651116	84042		1.912		884326		3.950		651734		7.156		335479		9.236	
26	9653929	69560		1.918		897924		3.950		653906		7.156		349033		9.236	
27	9653933RE	73832		1.918		696753		3.950		224585	*	7.156		25422	*	9.242	

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu14c01.d Date Analyzed: 06/14/18

Instrument ID: HP09953 Time Analyzed: 14:41

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(TBA) AREA	#	RT	#	IS2(FBZ) AREA	#	RT	#	IS3(CBZ) AREA	#	RT	#	IS4(DCB) AREA	#	RT	#
	12 HOUR STD	101065		1.930		1000957		3.956		710860		7.156		396941		9.236	
	UPPER LIMIT	202130		2.430		2001914		4.456		1421720		7.656		793882		9.736	
	LOWER LIMIT	50532		1.430		500478		3.456		355430		6.656		198470		8.736	
	LAB SAMPLE ID																
01	VBLKB10	99679		1.930		945871		3.956		682794		7.156		361473		9.236	
02	VBLKB11	99679		1.930		945871		3.956		682794		7.156		361473		9.236	
03	LCSB10	106559		1.930		989657		3.956		709986		7.156		401228		9.236	
04	LCSB11	106559		1.930		989657		3.956		709986		7.156		401228		9.236	
05	LCDB10	112823		1.912		977804		3.950		708030		7.156		399545		9.236	
06	LCDB11	112823		1.912		977804		3.950		708030		7.156		399545		9.236	
07	9644038	117670		1.936		1052152		3.956		755630		7.156		379833		9.236	
08	9650982	100867		1.924		978479		3.956		722722		7.156		383905		9.236	
09	9657452	110730		1.930		961345		3.956		711276		7.156		389948		9.236	
10	9650985	129503		1.924		995819		3.956		755683		7.156		425116		9.236	
11	9651117	89741		1.936		1012298		3.962		711841		7.156		374373		9.236	
12	9651117MS	88897		1.924		1011356		3.956		709219		7.156		375661		9.236	
13	9651118	73433		1.912		1001232		3.950		717152		7.156		347441		9.236	
14	9655317	53064		1.930		834864		3.956		485341		7.156		145942	*	9.236	
15	9655318	46413	*	1.930		893494		3.956		531841		7.156		164782	*	9.236	
16	9656566	75044		1.924		964261		3.950		691038		7.156		362771		9.236	
17	9656567	75839		1.930		980627		3.956		701349		7.156		364360		9.236	
18	9656569	77574		1.930		968245		3.956		687369		7.156		358066		9.236	
19	9656570	73673		1.912		945162		3.950		673683		7.156		339884		9.236	
20	9656571	70954		1.912		996324		3.950		706324		7.156		347370		9.236	
21	9656572	83473		1.918		965199		3.950		693431		7.156		365615		9.236	
22	9656573	73769		1.912		906392		3.950		654613		7.156		333724		9.236	

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu14c01.d Date Analyzed: 06/14/18

Instrument ID: HP09953 Time Analyzed: 14:41

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA) AREA #	RT #	IS2(FBZ) AREA #	RT #	IS3(CBZ) AREA #	RT #	IS4(DCB) AREA #	RT #
12 HOUR STD	101065	1.930	1000957	3.956	710860	7.156	396941	9.236
UPPER LIMIT	202130	2.430	2001914	4.456	1421720	7.656	793882	9.736
LOWER LIMIT	50532	1.430	500478	3.456	355430	6.656	198470	8.736
LAB SAMPLE ID								
23 9656574	67890	1.924	922129	3.956	665016	7.156	338477	9.236
24 9656575	74098	1.924	920721	3.956	641944	7.156	285206	9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): wu20c01.d Date Analyzed: 06/20/18

Instrument ID: HP09137 Time Analyzed: 07:45

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(TBA) AREA	#	RT	#	IS2(FBZ) AREA	#	RT	#	IS3(CBZ) AREA	#	RT	#	IS4(DCB) AREA	#	RT	#
	12 HOUR STD	314692		2.767		1326281		5.068		1043694		8.196		597048		10.070	
	UPPER LIMIT	629384		3.267		2652562		5.568		2087388		8.696		1194096		10.570	
	LOWER LIMIT	157346		2.267		663140		4.568		521847		7.696		298524		9.570	
	LAB SAMPLE ID																
01	VBLKW87	295247		2.766		1281982		5.070		993984		8.193		526611		10.070	
02	LCSW87	281456		2.767		1299190		5.067		1009590		8.193		546874		10.070	
03	9651613	342361		2.770		1294774		5.074		1013354		8.196		536404		10.073	
04	9651613DL	293731		2.770		1277538		5.070		991799		8.196		526613		10.070	
05	9651107	295640		2.770		1254424		5.070		975418		8.193		518448		10.070	
06	9651107MS	294388		2.767		1281946		5.067		988428		8.196		538195		10.070	
07	9651107MSD	307348		2.770		1278657		5.070		991369		8.193		545030		10.070	
08	9651109	291324		2.767		1272061		5.071		993156		8.196		524428		10.070	
09	9651110	303249		2.763		1259278		5.071		974970		8.193		516670		10.070	
10	9651115	299677		2.767		1229043		5.067		959953		8.193		509858		10.070	
11	9651177	296926		2.763		1239106		5.067		959464		8.193		507420		10.070	
12	9651178	293991		2.767		1237692		5.071		957135		8.193		510863		10.070	
13	9651179	217179		2.763		1263540		5.067		976214		8.193		501539		10.070	
14	9651180	272590		2.766		1242613		5.067		974149		8.196		513275		10.070	
15	9651305	269299		2.766		1231804		5.067		948915		8.193		495357		10.070	
16	9651306	282854		2.767		1234401		5.071		956246		8.196		508166		10.070	
17	9651308	287703		2.763		1244956		5.067		968013		8.193		519275		10.070	
18	9651343	295024		2.766		1229661		5.070		961640		8.196		503875		10.070	
19	9651347	272699		2.770		1225759		5.067		954572		8.193		497576		10.070	
20	9661293	272377		2.767		1231900		5.067		952271		8.193		493164		10.070	
21	9658286	291171		2.770		1215109		5.067		943339		8.193		487979		10.070	
22	9658286MS	292128		2.766		1250682		5.067		970879		8.193		525591		10.070	

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): wu20c01.d Date Analyzed: 06/20/18

Instrument ID: HP09137 Time Analyzed: 07:45

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(TBA) AREA	#	RT	#	IS2(FBZ) AREA	#	RT	#	IS3(CBZ) AREA	#	RT	#	IS4(DCB) AREA	#	RT	#
	12 HOUR STD	314692		2.767		1326281		5.068		1043694		8.196		597048		10.070	
	UPPER LIMIT	629384		3.267		2652562		5.568		2087388		8.696		1194096		10.570	
	LOWER LIMIT	157346		2.267		663140		4.568		521847		7.696		298524		9.570	
	LAB SAMPLE ID																
23	9660225	279716		2.767		1246998		5.071		965075		8.193		517577		10.070	
24	9660226	284690		2.763		1231046		5.070		955987		8.193		502439		10.070	

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

Preparation and Run Logs

Volatiles by GC/MS

6-7-18 Prep of VOA6 Jan 7.18 X 7-7-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 558268 Danger 1 mL
Lot# A0125171
Expire: 08/2018 Store: 0°C or colder
Custom CS#6 Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Rulling 2032

6-7-18 Prep of QUOA6 Jun 7.18 X 7-7-18
Added 1.0 mL of...
to final volume of
25 mL MeOH
B+J lot # DT140

RESTEK 558268.SEC Danger 1 mL
Lot# A0136083
Expire: 09/2019 Store: 0°C or colder
Custom QCS #6 Standard
1000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Rulling 2032

6-7-18 Prep of QGASES Jun 7.18 X 7-14-18
Added 0.5 mL of...
to final volume of
25 mL MeOH
B+J lot # DT140

RESTEK 55669.SEC Danger 1 mL
Lot# A0129532
Expire: 08/2024 Store: 0°C or colder
Custom 502.2 "Q" Gas Mix
2000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Rulling 2032

6/7/18 QGas 524 Jun 7-18 x 6/14/18
20 ul 502.2 QGas Lt A0129532
20 ul DCFM ~~Lt A0~~ Lt 217091197
@JMLW3 6/7/18
900 ul MeOH B+J DT140
[signature] 1683

6-7-18 AR22 826 15/SS 6-7-18 X: 12-7-18
ADDED 0.819 mL OF...
TO A FINAL VOLUME OF
10 mL MEOH B+J #DT140
[signature] 1002

RESTEK 558267 Danger
Lot# A0117424
Custom 8260A IS Mix
Expire: 02/2019 Store: 0°C or colder
Full label information for the chemical is provided on the outside package
For Laboratory Use Only
1 mL
Made in USA

RESTEK 55671 Danger 1 mL
Lot# A0125172
Expire: 02/2020 Store: 0°C or colder
8260A Surrogate Mix
2500 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

6-11-18 Prep of VOA1 Jun 11,18 X 7-11-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-1 Danger 1 mL
Lot# A0126988
Expire: 04/2020 Store: 0°C or colder
Custom Revised V #1B Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 572312 Danger 1 mL
Lot# A0131271
Expire: 10/2018 Store: 0°C or colder
Custom V #4C (Rev 3) Standard
This product is photosensitive.
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Reilling 2032

6-11-18 Prep of VOA2 Jun 11,18 X 7-11-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Reilling 2032

6-11-18 Prep of VOA3 Jun 11,18 X 7-6-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 56736 Danger 1 mL
Lot# A0130926
Expire: 09/2020 Store: 0°C or colder
Custom V # 3B Standard
12500 - 25000 µg/mL each in P&T Methanol/Water (90:10)
Full label information for the chemical is provided on the outside package.

And 1.0 mL of
6-11-18 ③ LLR 2032
~~May 7,18~~
ACR May 7,18

Lori Reilling 2032

③ LLR 2032 6-11-18
X
③ LLR 2032 6-11-18

6-11-18 Prep of 2CEVE ~~May~~ June 11,18 X 7-11-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-2 Danger 1 mL
Lot# A0126036
Expire: 03/2020 Store: 0°C or colder
Custom V # 1B 2-CEVE Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Reilling 2032

6-13-18 AR27 SIM 15/SS Jun13-18 x: 8/27/18
1.0 mL at... Diox-d8 Jun07-18
Tol-d8 / Clbenzene-d5 Feb27-18
0.333mL 624 15/SS Lot # A0126691
To a final volume of
~~10 v~~ ③ KAS2648 6-14-18 50 mL MeOH B+J DT140
[signature] 2648

6-14-18 Prep of VOA1 Jun14,18 X 7-14-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-1 Danger 1 mL
Lot# A0126988
Expire: 04/2020 Store: 0°C or colder
Custom Revised V #1B Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 572312 Danger 1 mL
Lot# A0131271
Expire: 10/2018 Store: 0°C or colder
Custom V #4C (Rev 3) Standard
This product is photosensitive.
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Riulling 2032

6-14-18 Prep of 2CEVE Jun14,18 X 7-14-18
③ LLR/2032 6-14-18 Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-2 Danger 1 mL
Lot# A0126036
Expire: 03/2020 Store: 0°C or colder
Custom V # 1B 2-CEVE Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Riulling 2032

6-14-18
LLR 2032

6-14-18 Prep of VOA6 Jun14,18 X7-14-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot# DT140

RESTEK 558268 Danger 1 mL
Lot# A0125171
Expire: 08/2018 Store: 0°C or colder
Custom CS#6 Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-14-18 Prep of QVOA6 Jun14,18 X7-14-18
Added 1.0 mL of...
to final volume of
25 mL MeOH
B+J lot# DT140

RESTEK 558268.SEC Danger 1 mL
Lot# A0136083
Expire: 09/2019 Store: 0°C or colder
Custom QCS #6 Standard
1000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-14-18 Prep of QGASES Jun14,18 X6-21-18
Added 0.5 mL of...
to final volume of
25 mL MeOH
B+J lot# DT140

RESTEK 55669.SEC Danger 1 mL
Lot# A0129532
Expire: 08/2024 Store: 0°C or colder
Custom 502.2 "Q" Gas Mix
2000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-14-18 RV4 Gas 6-14-18 X6-21-18
25uL 502.2 "V" Gas Lot# A0136554
25uL DCFM Lot # 217091197
950uL MeOH B+J DT140

Q Gas 326 6-14-18 x 6-21-18
20uL 502.2 "Q" Gas Lot# A01295320
20uL DCFM Lot # 217091197
20uL BCE Lot # A0134146
940uL MeOH B+J DT140

[signature] 2052

6/14/18 ~~VVTP Jun13-18 x~~ VVTP Jun14-18 x: 6/21/18
100uL of... Custom SIM 8260C V Lot# A0109938
502.2 V Gas Lot # A0136554
To a final volume of 10mL MeOH BJ Lot DT140
[signature] 2648

QVTP Jun14-18 x: 6/21/18
100uL of... Custom SIM 8260C Q Lot# A019931
502.2 Q Lot# A01295320
To a final volume of 10mL MeOH BJ Lot DT140

6-18-18 Prep of VOA1 Jun 18.18 X 7-18-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-1 Danger 1 mL
Lot# A0126988
Expire: 04/2020 Store: 0°C or colder
Custom Revised V #1B Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 572312 Danger 1 mL
Lot# A0131271
Expire: 10/2018 Store: 0°C or colder
Custom V #4C (Rev 3) Standard
This product is photosensitive.
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-18-18 Prep of 2CEVE Jun 18.18 X 7-18-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-2 Danger 1 mL
Lot# A0126036
Expire: 03/2020 Store: 0°C or colder
Custom V # 1B 2-CEVE Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-18-18 Prep of VOA2 Jun 18.18 X 7-18-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Ruilling 2032

6-18-18 Prep of VOA3 Jun 18.18 X 7-6-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 56736 Danger 1 mL
Lot# A0130926
Expire: 09/2020 Store: 0°C or colder
Custom V # 3B Standard
12500 - 25000 µg/mL each in P&T Methanol/Water (90:10)
Full label information for the chemical is provided on the outside package

And 1.0 mL of
ACR May 7.18

Lori Ruilling 2032

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18feb22I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jkh09052	BF22T01.D	50NGBFB	02/22/2018	10:34	B180151AA	
JKH09052	BF22X01.D	BLK	02/22/2018	10:55		
JKH09052	BF22I01.D	VSTD300	02/22/2018	11:18		
JKH09052	BF22I02.D	VSTD100	02/22/2018	11:42		
JKH09052	BF22I03.D	VSTD050	02/22/2018	12:06		
JKH09052	BF22I04.D	VSTD020	02/22/2018	12:31		
JKH09052	BF22I05.D	VSTD010	02/22/2018	12:57		
JKH09052	BF22I06.D	VSTD004	02/22/2018	13:29		
JKH09052	BF22M01.D	MDL001	02/22/2018	13:51		
JKH09052	BF22V01.D	LGBICV	02/22/2018	14:16		

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09137 **HP #18**

Data Directory Path is - D:\DATA\18MAY23I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
NSL01327	WY23T01.D	50NGBFB	05/23/2018	12:34		
NSL01327	WY23T02.D	50NGBFB	05/23/2018	12:54		
NSL01327	WY23T03.D	50NGBFB	05/23/2018	13:07		
NSL01327	WY23T04.D	50NGBFB	05/23/2018	13:51		
nsl01327	WY23X05.D	CLNBLK	05/23/2018	14:14		
nsl01327	WY23I01.D	VSTD300	05/23/2018	14:38		
nsl01327	WY23I02.D	VSTD100	05/23/2018	15:02		
nsl01327	WY23I03.D	VSTD050	05/23/2018	15:26		
nsl01327	WY23I04.D	VSTD020	05/23/2018	15:50		
nsl01327	WY23I05.D	VSTD010	05/23/2018	16:14		
nsl01327	WY23I06.D	VSTD004	05/23/2018	16:37		
nsl01327	WY23I07.D	VSTD001	05/23/2018	17:01		
nsl01327	WY23M01.D	VSTD0.5	05/23/2018	17:25		
nsl01327	WY23V01.D	LCSWICV	05/23/2018	17:49	W1814311AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18jun12B\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
kd14068	BU12T10.D	50NGBFB	06/12/2018	19:08	B181633AA	
kd14068	BU12X1A.D	VBLKB07	06/12/2018	19:42	B181633AA	
kd14068	BU12C01.D	VSTD050	06/12/2018	20:05	B181633AA	
kd14068	BU12X11.D	VBLKB07	06/12/2018	20:28	B181633AA	
kd14068	BU12B10.D	VBLKB07	06/12/2018	20:51	B181633AA	
kd14068	BU12S61.D	LCSB07	06/12/2018	21:33	B181633AA	
kd14068	BU12S62.D	LCDB07	06/12/2018	21:56	B181633AA	
kd14068	BU12S64.D	9632085	06/12/2018	23:47	B181633AA	
kd14068	BU12S65.D	9632091	06/13/2018	00:09	B181633AA	
kd14068	BU12S66.D	9632093	06/13/2018	00:31	B181633AA	
kd14068	BU12S67.D	9632095	06/13/2018	00:54	B181633AA	
kd14068	BU12S68.D	9640166	06/13/2018	01:17	B181633AA	
kd14068	BU12S69.D	9640167	06/13/2018	01:39	B181633AA	
kd14068	BU12S70.D	9649656	06/13/2018	02:02	B181633AA	
kd14068	BU12S71.D	9653928	06/13/2018	02:24	B181633AA	
kd14068	BU12S72.D	9653931	06/13/2018	02:46	B181633AA	
kd14068	BU12S73.D	9653932	06/13/2018	03:09	B181633AA	
kd14068	BU12S74.D	9653941	06/13/2018	03:31	B181633AA	
kd14068	BU12S75.D	9653942	06/13/2018	03:54	B181633AA	
kd14068	BU12S76.D	9651105	06/13/2018	04:16	B181633AA	
kd14068	BU12S77.D	9651106	06/13/2018	04:39	B181633AA	
kd14068	BU12S78.D	9651108	06/13/2018	05:02	B181633AA	
kd14068	BU12S79.D	9651111	06/13/2018	05:24	B181633AA	
kd14068	BU12S80.D	9650447	06/13/2018	05:47	B181633AA	
kd14068	BU12S81.D	9653933	06/13/2018	06:10	B181633AA	
kd14068	BU12S82.D	9653935	06/13/2018	06:32	B181633AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18JUN13a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
pth10165	BU13T01.D	50NGBFB	06/13/2018	18:05	B180151AA	
pth10165	BU13X05.D	VBLKB08	06/13/2018	18:24	B181641AA	
pth10165	BU13C01.D	VSTD050	06/13/2018	18:49	B181641AA	
pth10165	BU13X06.D	VBLKB08	06/13/2018	19:11	B181641AA	
pth10165	BU13B01.D	VBLKB08	06/13/2018	19:39	B181641AA	
pth10165	BU13S01.D	LCSB08	06/13/2018	20:02	B181641AA	
pth10165	BU13S02.D	LCDB08	06/13/2018	20:24	B181641AA	
pth10165	BU13S33.D	9647138RE	06/13/2018	21:53	B181642AA	
pth10165	BU13C02.D	SECC050	06/13/2018	22:16	B181642AA	
pth10165	BU13S03.D	9649555	06/13/2018	22:39	B181641AA	
pth10165	BU13S04.D	9649556MS	06/13/2018	23:02	B181641AA	
pth10165	BU13S05.D	9649557MSD	06/13/2018	23:25	B181641AA	
pth10165	BU13S06.D	9649546	06/13/2018	23:49	B181641AA	
pth10165	BU13S07.D	9649547	06/14/2018	00:12	B181641AA	
pth10165	BU13S08.D	9649548	06/14/2018	00:34	B181641AA	
pth10165	BU13S09.D	9649549	06/14/2018	00:57	B181641AA	
pth10165	BU13S10.D	9649552	06/14/2018	01:19	B181641AA	
pth10165	BU13S11.D	9649553	06/14/2018	01:42	B181641AA	
pth10165	BU13S12.D	9649554	06/14/2018	02:04	B181641AA	
pth10165	BU13S13.D	9649558	06/14/2018	02:27	B181641AA	
pth10165	BU13S14.D	9649559	06/14/2018	02:49	B181641AA	
pth10165	BU13S15.D	9649560	06/14/2018	03:12	B181641AA	
pth10165	BU13S16.D	9651112	06/14/2018	03:35	B181641AA	
pth10165	BU13S17.D	9651113	06/14/2018	03:57	B181641AA	
pth10165	BU13S18.D	9651114	06/14/2018	04:19	B181641AA	
pth10165	BU13S19.D	9651116	06/14/2018	04:42	B181641AA	
pth10165	BU13S20.D	9653929	06/14/2018	05:04	B181641AA	
pth10165	BU13S21.D	9653933RE	06/14/2018	05:27	B181641AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18JUN14a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
pth10165	BU14T01.D	50NGBFB	06/14/2018	13:55	B180151AA	
pth10165	BU14X05.D	VBLKB10	06/14/2018	14:16	B181651AA	
pth10165	BU14C01.D	VSTD050	06/14/2018	14:41	B181651AA	
pth10165	BU14X06.D	VBLKB10	06/14/2018	15:04	B181651AA	
pth10165	BU14B01.D	VBLKB10	06/14/2018	15:36	B181651AA	
pth10165	BU14B05.D	VBLKB10	06/14/2018	15:59	B181651AA	
pth10165	BU14S01.D	LCSB10	06/14/2018	16:29	B181651AA	
pth10165	BU14S02.D	LCDB10	06/14/2018	16:51	B181651AA	
pth10165	BU14S03.D	9644038	06/14/2018	19:00	B181651AA	
pth10165	BU14S04.D	9650982	06/14/2018	19:22	B181651AA	
pth10165	BU14S05.D	9657452	06/14/2018	19:45	B181651AA	
pth10165	BU14S06.D	9650985	06/14/2018	20:08	B181651AA	
pth10165	BU14S33.D	9651117	06/14/2018	20:36	B181652AA	
pth10165	BU14S34.D	9651117MS	06/14/2018	20:59	B181652AA	
pth10165	BU14S35.D	9651118	06/14/2018	21:21	B181652AA	
pth10165	BU14S36.D	9655317	06/14/2018	21:44	B181652AA	
pth10165	BU14S37.D	9655318	06/14/2018	22:07	B181652AA	
pth10165	BU14S38.D	9656566	06/14/2018	22:29	B181652AA	
pth10165	BU14S39.D	9656567	06/14/2018	22:52	B181652AA	
pth10165	BU14S40.D	9656569	06/14/2018	23:15	B181652AA	
pth10165	BU14S41.D	9656570	06/14/2018	23:37	B181652AA	
pth10165	BU14S42.D	9656571	06/14/2018	23:59	B181652AA	
pth10165	BU14S43.D	9656572	06/15/2018	00:22	B181652AA	
pth10165	BU14S44.D	9656573	06/15/2018	00:44	B181652AA	
pth10165	BU14S45.D	9656574	06/15/2018	01:07	B181652AA	
pth10165	BU14S46.D	9656575	06/15/2018	01:29	B181652AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09137 **HP #18**

Data Directory Path is - D:\DATA\18JUN20A\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
LCP00895	WU20T01.D	NG50-BFB	06/20/2018	06:47		
LCP00895	WU20X00.D	VBLKW87	06/20/2018	07:20	W181711AA	
LCP00895	WU20C01.D	VSTD150	06/20/2018	07:45	W181711AA	
LCP00895	WU20B00.D	VBLKW87	06/20/2018	08:09	W181711AA	
LCP00895	WU20B01.D	VBLKW87	06/20/2018	08:33	W181711AA	
LCP00895	WU20S01.D	LCSW87	06/20/2018	08:56	W181711AA	
LCP00895	WU20S02.D	9651613	06/20/2018	09:46	W181711AA	
LCP00895	WU20S03.D	9651613DL	06/20/2018	10:10	W181711AA	10
LCP00895	WU20S04.D	9651107	06/20/2018	10:34	W181711AA	
LCP00895	WU20S05.D	9651107MS	06/20/2018	10:57	W181711AA	
LCP00895	WU20S06.D	9651107MSD	06/20/2018	11:21	W181711AA	
LCP00895	WU20S07.D	9651109	06/20/2018	11:46	W181711AA	
LCP00895	WU20S08.D	9651110	06/20/2018	12:10	W181711AA	
LCP00895	WU20S09.D	9651115	06/20/2018	12:34	W181711AA	
LCP00895	WU20S10.D	9651177	06/20/2018	12:57	W181711AA	
LCP00895	WU20S11.D	9651178	06/20/2018	13:21	W181711AA	
LCP00895	WU20S12.D	9651179	06/20/2018	13:45	W181711AA	
LCP00895	WU20S13.D	9651179DL	06/20/2018	14:09	W181711AA	10
LCP00895	WU20S14.D	9651180	06/20/2018	14:33	W181711AA	
LCP00895	WU20S15.D	9651305	06/20/2018	14:57	W181711AA	
LCP00895	WU20S16.D	9651306	06/20/2018	15:21	W181711AA	
LCP00895	WU20S17.D	9651308	06/20/2018	15:45	W181711AA	
LCP00895	WU20S18.D	9651343	06/20/2018	16:08	W181711AA	
LCP00895	WU20S19.D	9651347	06/20/2018	16:33	W181711AA	
LCP00895	WU20S20.D	9661293	06/20/2018	16:57	W181711AA	20
LCP00895	WU20S22.D	9658286	06/20/2018	17:20	W181711AA	20
LCP00895	WU20S23.D	9658286MS	06/20/2018	17:44	W181711AA	20
LCP00895	WU20S24.D	9660225	06/20/2018	18:08	W181711AA	20
LCP00895	WU20S25.D	9660226	06/20/2018	18:32	W181711AA	20

Preparation Logs

Volatiles by GC/MS

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VOA Prep Summary by SDG: DHR37

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
9651105	150A	07320	18796217	N	06/08/18 09:55	06/09/18 17:10	32.55 g	38.36 g	5.81 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651105	150B	07320	18796218	Y	06/08/18 09:55	06/09/18 17:10	32.36 g	37.88 g	5.52 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651105	169A	07578	18798245	N	06/08/18 09:55	06/09/18 16:32	29.44 g	35.36 g	5.92 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9651106	150A	07320	18796220	N	06/08/18 10:15	06/09/18 17:10	32.41 g	38.59 g	6.18 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651106	150B	07320	18796219	Y	06/08/18 10:15	06/09/18 17:10	32.58 g	38.46 g	5.88 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651106	169A	07578	18798244	N	06/08/18 10:15	06/09/18 16:36	29.40 g	35.61 g	6.21 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9651108	150A	07320	18796221	Y	06/08/18 10:35	06/09/18 17:10	32.57 g	37.85 g	5.28 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9651108	150B	07320	18796222	N	06/08/18 10:35	06/09/18 17:10	32.40 g	38.26 g	5.86 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651108	169A	07578	18798255	N	06/08/18 10:35	06/09/18 16:39	29.40 g	34.75 g	5.35 g	4.50 g - 5.50 g	Y	18144-1	MeOH w/surrogate (5 mL)	5.000	
9651111	150A	07320	18796223	Y	06/08/18 13:45	06/09/18 17:10	32.53 g	38.14 g	5.61 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651111	150B	07320	18796224	N	06/08/18 13:45	06/09/18 17:10	32.55 g	38.44 g	5.89 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651111	169A	07578	18798254	N	06/08/18 13:45	06/09/18 16:43	29.61 g	35.49 g	5.88 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9651112	150A	07320	18796225	N	06/08/18 14:00	06/09/18 17:10	32.35 g	38.42 g	6.07 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651112	150B	07320	18796226	Y	06/08/18 14:00	06/09/18 17:10	32.39 g	38.42 g	6.03 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651112	169A	07578	18798253	N	06/08/18 14:00	06/09/18 16:46	29.45 g	35.54 g	6.09 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9651113	150A	07320	18796227	N	06/08/18 14:05	06/09/18 17:11	32.45 g	38.41 g	5.96 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651113	150B	07320	18796228	Y	06/08/18 14:05	06/09/18 17:11	32.32 g	37.92 g	5.60 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651113	169A	07578	18798252	N	06/08/18 14:05	06/09/18 16:50	29.52 g	35.50 g	5.98 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9651114	150A	07320	18796229	Y	06/08/18 14:25	06/09/18 17:11	32.42 g	37.32 g	4.90 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9651114	150B	07320	18796230	N	06/08/18 14:25	06/09/18 17:11	32.54 g	36.36 g	3.82 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651114	169A	07578	18798251	N	06/08/18 14:25	06/09/18 16:53	29.54 g	34.10 g	4.56 g	4.50 g - 5.50 g	Y	18144-1	MeOH w/surrogate (5 mL)	5.000	
9651116	150A	07320	18796231	N	06/08/18 16:20	06/09/18 17:11	32.53 g	38.77 g	6.24 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651116	150B	07320	18796232	Y	06/08/18 16:20	06/09/18 17:11	32.46 g	38.67 g	6.21 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651116	169A	07578	18798250	N	06/08/18 16:20	06/09/18 16:57	29.56 g	35.06 g	5.50 g	4.50 g - 5.50 g	Y	18144-1	MeOH w/surrogate (5 mL)	5.000	

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

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VOA Prep Summary by SDG: DHR37

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
9651117	150A	07320	18796233	Y	06/08/18 16:30	06/09/18 17:11	31.96 g	37.80 g	5.84 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651117	150B	07320	18796234	N	06/08/18 16:30	06/09/18 17:11	32.28 g	38.21 g	5.93 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651117	169A	07578	18798261	N	06/08/18 16:30	06/09/18 17:00	29.45 g	35.71 g	6.26 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9651118	150A	07320	18796235	N	06/08/18 17:20	06/09/18 17:11	32.51 g	37.25 g	4.74 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9651118	150B	07320	18796236	Y	06/08/18 17:20	06/09/18 17:11	32.42 g	37.68 g	5.26 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9651118	169A	07578	18798260	N	06/08/18 17:20	06/09/18 17:04	29.51 g	34.57 g	5.06 g	4.50 g - 5.50 g	Y	18144-1	MeOH w/surrogate (5 mL)	5.000	
9649555	150A	07320	18796204	Y	06/07/18 15:45	06/08/18 18:55	32.53 g	37.81 g	5.28 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9649555	150B	07320	18796203	N	06/07/18 15:45	06/08/18 18:55	32.26 g	37.64 g	5.38 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9649555	169A	07578	18798240	N	06/07/18 15:45	06/08/18 18:14	29.64 g	35.38 g	5.74 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9649556	150A	07320	18796206	N	06/07/18 15:45	06/08/18 18:55	32.51 g	38.22 g	5.71 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9649556	150B	07320	18796205	Y	06/07/18 15:45	06/08/18 18:56	32.34 g	37.95 g	5.61 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9649556	169A	07578	18798247	N	06/07/18 15:45	06/08/18 18:17	29.49 g	33.85 g	4.36 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9649557	150A	07320	18796208	Y	06/07/18 15:45	06/08/18 18:56	32.56 g	38.23 g	5.67 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9649557	150B	07320	18796207	N	06/07/18 15:45	06/08/18 18:56	32.52 g	38.36 g	5.84 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9649557	169A	07578	18798246	N	06/07/18 15:45	06/08/18 18:22	29.48 g	35.29 g	5.81 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

Moisture Data

MOISTURE

SAMPLE NUMBERS:

Sample #	Sample Code
9651105	HR251
9651106	HR252
9651108	HR253
9651111	HR361
9651112	HR362
9651113	HRFD1FD
9651114	HR363
9651116	HR381
9651117	HR382
9651118	HR383

COMMENTS:

Method defined actions are taken for any failed matrix QC.

Laboratory Compliance Quality Control

Analysis Name		LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number:	18162820001B	Sample number(s):	9651105-9651106, 9651108, 9651111-9651114, 9651116-9651118			
Moisture		100		99-101		

Sample Matrix Quality Control

Analysis Name		BKG Conc	DUP Conc	RPD	RPD Max
Batch number:	18162820001B	Sample number(s):	9651105-9651106, 9651108, 9651111-9651114, 9651116-9651118		
Moisture		17.9	17.8	0	5

* - Outside of specification

(1) - The result for one or both determinations was less than five times the LOQ.

Moisture Data Report

Batch #: 18162820001

Sample ID	Batch ID	Analysis#	Tare Wt	Sample Wt	Dry Wt	%Moisture	Analysis Date (Emp#)	Verified Date (Emp#)
9651105	B	00111	1.0416	5.8931	6.1645	13.07	6/11/18 (835/LEB)	6/12/18 (236/CW)
9651106	B	00111	1.0757	5.7555	5.8917	16.32	6/11/18 (835/LEB)	6/12/18 (236/CW)
9651108	B	00111	1.0784	5.7063	6.4760	5.41	6/11/18 (835/LEB)	6/12/18 (236/CW)
9651111	B	00111	1.0842	5.5432	5.7566	15.71	6/11/18 (835/LEB)	6/12/18 (236/CW)
9651112	B	00111	1.0591	5.2742	5.3862	17.96	6/11/18 (835/LEB)	6/12/18 (236/CW)
9651113FD	B	00111	1.1030	5.8464	5.8519	18.77	6/11/18 (835/LEB)	6/12/18 (236/CW)
9651114	B	00111	1.0896	5.6155	6.4734	4.13	6/11/18 (835/LEB)	6/12/18 (236/CW)
9651116	B	00111	1.0690	5.5894	5.7999	15.36	6/11/18 (835/LEB)	6/12/18 (236/CW)
9651117	B	00111	1.0522	5.9469	6.0151	16.55	6/11/18 (835/LEB)	6/12/18 (236/CW)
9651118	B	00111	1.0877	5.3045	6.1822	3.96	6/11/18 (835/LEB)	6/12/18 (236/CW)
P650899BKG	B	00111	1.0911	5.4037	5.5300	17.85	6/11/18 (835/LEB)	6/12/18 (236/CW)
P650899DUP	B	00111	1.0964	5.5081	5.6251	17.78	6/11/18 (835/LEB)	6/12/18 (236/CW)
LCS 89.5% Std.		00111	1.0960	5.0280	1.6282	89.42	6/11/18 (835/LEB)	6/12/18 (236/CW)

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Type I (No Raw Data) Data Package

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Project: Dow Hanging Rock, OH
Soil Samples
Collected on 06/11/18

SDG# DHR38

GROUP	SAMPLE NUMBERS
1953843	9653928-9653935

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date:** **07/03/2018**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Natalie Luciano at (717) 556-7258.

2425 New Holland Pike, Lancaster, PA 17601 | 717-656-2300 | Fax: 717-656-2681 | www.LancasterLabs.com

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Sample Reference List for SDG Number DHR38 with a Data Package Type of I-NODATA

11372 - CH2M Hill, Inc.

Project: Dow Hanging Rock, OH

Lab Sample Number	Client Sample ID	Collection Date	Date Received
9653928	S01-SS42-0102-061118	06/11/2018 10:45	06/12/2018 10:05
9653929	S01-SS42-0608-061118	06/11/2018 11:11	06/12/2018 10:05
9653930	S01-SS22-0102-061118	06/11/2018 13:40	06/12/2018 10:05
9653931	S01-SS22-0607-061118	06/11/2018 13:58	06/12/2018 10:05
9653932	S01-SS33-0102-061118	06/11/2018 15:24	06/12/2018 10:05
9653933	S01-SS33-0708-061118	06/11/2018 15:34	06/12/2018 10:05
9653934	S01-SS30-0102-061118	06/11/2018 16:51	06/12/2018 10:05
9653935	S01-SS30-0607-061118	06/11/2018 16:58	06/12/2018 10:05

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10237 VOCs- Solid by 8260B

The soil sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996

07320 GC/MS - LL DIH2O Encore Prep

Two EnCore samples are collected per sample. The vials used for preparation are pre-preserved and pre-weighed. Two aliquots are extruded into DI water. The vials are re-weighed and the weight of the sample should be 5-g +/- .5 g. The prepared samples are then delivered to the lab for analysis. DI vials are frozen after they are weighed to complete preservation step.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

07578 GC/MS-HL Encore Prep-NC

The sample is collected in an EnCore sampler and is submitted to the laboratory. A vial containing 5-ml methanol is prepared for each sample and weighed prior to adding the sample. After the sample is added to the vial, the vial is reweighed and the weight of sample is determined by difference. The weight of the sample should be 5-g +/- .5 g. The sample vial is then delivered to the lab for analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

00111 Moisture

A well-mixed sample is heated by reflected infrared in an aluminum pan and dried to a constant weight. The decrease in weight in weight after drying is calculated as the moisture content.

Reference: SM 2540 G-1997 %Moisture Calculation for Dry Weight Determination

Analysis Reports / Field Chain of Custody

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ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Report Date: June 14, 2018 22:31

Project: Dow Hanging Rock, OH

Account #: 11372
Group Number: 1953843
SDG: DHR38
PO Number: 131005094
Release Number: DHR38
State of Sample Origin: OH

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ . To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To	CH2M Hill, Inc.	Attn: Marie Chiller
Electronic Copy To	CH2M Hill, Inc.	Attn: Shane Lowe

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

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SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
S01-SS42-0102-061118 Grab Soil	06/11/2018 10:45	9653928
S01-SS42-0608-061118 Grab Soil	06/11/2018 11:11	9653929
S01-SS22-0102-061118 Grab Soil	06/11/2018 13:40	9653930
S01-SS22-0607-061118 Grab Soil	06/11/2018 13:58	9653931
S01-SS33-0102-061118 Grab Soil	06/11/2018 15:24	9653932
S01-SS33-0708-061118 Grab Soil	06/11/2018 15:34	9653933
S01-SS30-0102-061118 Grab Soil	06/11/2018 16:51	9653934
S01-SS30-0607-061118 Grab Soil	06/11/2018 16:58	9653935

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: **S01-SS42-0102-061118 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/11/2018 10:45
SDG#: DHR38-01

CH2M Hill, Inc.
ELLE Sample #: SW 9653928
ELLE Group #: 1953843
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.88
10237	cis-1,2-Dichloroethene	156-59-2	6		5	1	0.88
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.88
10237	Tetrachloroethene	127-18-4	5	U	5	1	0.88
10237	Trichloroethene	79-01-6	5	U	5	1	0.88
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.88
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	17.5		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181633AA	06/13/2018 02:24	Kelly Devlin	0.88
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816350177	06/12/2018 12:35	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816350178	06/12/2018 12:53	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816350178	06/12/2018 12:53	Anastasia K Jaynes	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18163820005B	06/12/2018 15:45	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS42-0608-061118 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/11/2018 11:11
SDG#: DHR38-02

CH2M Hill, Inc.
ELLE Sample #: SW 9653929
ELLE Group #: 1953843
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	6	U	6	1	0.93
10237	cis-1,2-Dichloroethene	156-59-2	38		6	1	0.93
10237	trans-1,2-Dichloroethene	156-60-5	6	U	6	1	0.93
10237	Tetrachloroethene	127-18-4	2	J	6	1	0.93
10237	Trichloroethene	79-01-6	6	U	6	1	0.93
10237	Vinyl Chloride	75-01-4	6	U	6	1	0.93
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	15.8		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181641AA	06/14/2018 05:04	Patrick T Herres	0.93
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816350177	06/12/2018 12:37	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816350178	06/12/2018 12:53	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816350178	06/12/2018 12:53	Anastasia K Jaynes	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18163820005B	06/12/2018 15:45	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS22-0102-061118 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/11/2018 13:40
SDG#: DHR38-03

CH2M Hill, Inc.
ELLE Sample #: SW 9653930
ELLE Group #: 1953843
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	260	U	260	51	42.59
10237	cis-1,2-Dichloroethene	156-59-2	260	U	260	51	42.59
10237	trans-1,2-Dichloroethene	156-60-5	260	U	260	51	42.59
10237	Tetrachloroethene	127-18-4	260	U	260	51	42.59
10237	Trichloroethene	79-01-6	260	U	260	51	42.59
10237	Vinyl Chloride	75-01-4	260	U	260	51	42.59

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride

Reporting limits were raised due to interference from the sample matrix.

Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	16.5		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	Q181641AA	06/14/2018 04:28	Patrick T Herres	42.59
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816350177	06/12/2018 12:39	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816350178	06/12/2018 12:53	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816350178	06/12/2018 12:53	Anastasia K Jaynes	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18163820005B	06/12/2018 15:45	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS22-0607-061118 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/11/2018 13:58
SDG#: DHR38-04

CH2M Hill, Inc.
ELLE Sample #: SW 9653931
ELLE Group #: 1953843
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.81
10237	cis-1,2-Dichloroethene	156-59-2	4 J	5	1	0.81
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.81
10237	Tetrachloroethene	127-18-4	190	5	1	0.81
10237	Trichloroethene	79-01-6	15	5	1	0.81
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.81
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	16.7	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181633AA	06/13/2018 02:46	Kelly Devlin	0.81
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816350177	06/12/2018 12:40	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816350178	06/12/2018 12:53	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816350178	06/12/2018 12:53	Anastasia K Jaynes	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18163820005B	06/12/2018 15:45	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS33-0102-061118 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/11/2018 15:24
SDG#: DHR38-05

CH2M Hill, Inc.
ELLE Sample #: SW 9653932
ELLE Group #: 1953843
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.82
10237	cis-1,2-Dichloroethene	156-59-2	4	J	5	1	0.82
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.82
10237	Tetrachloroethene	127-18-4	2	J	5	1	0.82
10237	Trichloroethene	79-01-6	5	U	5	1	0.82
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.82
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	15.1		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181633AA	06/13/2018 03:09	Kelly Devlin	0.82
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816350177	06/12/2018 12:42	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816350178	06/12/2018 12:54	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816350178	06/12/2018 12:54	Anastasia K Jaynes	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18163820005B	06/12/2018 15:45	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS33-0708-061118 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/11/2018 15:34
SDG#: DHR38-06

CH2M Hill, Inc.
ELLE Sample #: SW 9653933
ELLE Group #: 1953843
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.9
10237	cis-1,2-Dichloroethene	156-59-2	230		5	1	0.9
10237	trans-1,2-Dichloroethene	156-60-5	4	J	5	1	0.9
10237	Tetrachloroethene	127-18-4	1,900	E	5	1	0.9
10237	Trichloroethene	79-01-6	95		5	1	0.9
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.9
Trial ID: DL							
10237	1,1-Dichloroethene	75-35-4	270	U	270	53	44.64
10237	cis-1,2-Dichloroethene	156-59-2	580		270	53	44.64
10237	trans-1,2-Dichloroethene	156-60-5	270	U	270	53	44.64
10237	Tetrachloroethene	127-18-4	1,400		270	53	44.64
10237	Trichloroethene	79-01-6	180	J	270	53	44.64
10237	Vinyl Chloride	75-01-4	270	U	270	53	44.64
Trial ID: RE							
10237	1,1-Dichloroethene	75-35-4	3	J	5	1	0.87
10237	cis-1,2-Dichloroethene	156-59-2	580	E	5	1	0.87
10237	trans-1,2-Dichloroethene	156-60-5	11		5	1	0.87
10237	Tetrachloroethene	127-18-4	3,600	E	5	1	0.87
10237	Trichloroethene	79-01-6	180		5	1	0.87
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.87

The LCS and/or LCSD recoveries are outside the stated QC window for trail 3 but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride

The recovery for the sample internal standard is outside the QC acceptance limits. The following action was taken: The sample was re-analyzed and the QC is again outside of the acceptance limits, indicating a matrix effect. The data is reported from the initial trial.

Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	16.5		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS33-0708-061118 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/11/2018 15:34
SDG#: DHR38-06

CH2M Hill, Inc.
ELLE Sample #: SW 9653933
ELLE Group #: 1953843
Matrix: Soil

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181633AA	06/13/2018 06:10	Kelly Devlin	0.9
10237	VOCs- Solid by 8260B	SW-846 8260B	2-RE	B181641AA	06/14/2018 05:27	Patrick T Herres	0.87
10237	VOCs- Solid by 8260B	SW-846 8260B	3-DL	Q181641AA	06/14/2018 04:51	Patrick T Herres	44.64
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816350177	06/12/2018 12:44	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816350178	06/12/2018 12:54	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816350178	06/12/2018 12:54	Anastasia K Jaynes	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18163820005B	06/12/2018 15:45	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS30-0102-061118 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/11/2018 16:51
SDG#: DHR38-07

CH2M Hill, Inc.
ELLE Sample #: SW 9653934
ELLE Group #: 1953843
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	250	U	250	49	41.05
10237	cis-1,2-Dichloroethene	156-59-2	250	U	250	49	41.05
10237	trans-1,2-Dichloroethene	156-60-5	250	U	250	49	41.05
10237	Tetrachloroethene	127-18-4	250	U	250	49	41.05
10237	Trichloroethene	79-01-6	250	U	250	49	41.05
10237	Vinyl Chloride	75-01-4	250	U	250	49	41.05

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride

Reporting limits were raised due to interference from the sample matrix.

Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	16.5		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	Q181641AA	06/14/2018 05:14	Patrick T Herres	41.05
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816350177	06/12/2018 12:45	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816350178	06/12/2018 12:54	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816350178	06/12/2018 12:54	Anastasia K Jaynes	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18163820005B	06/12/2018 15:45	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS30-0607-061118 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/11/2018 16:58
SDG#: DHR38-08

CH2M Hill, Inc.
ELLE Sample #: SW 9653935
ELLE Group #: 1953843
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.85
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.85
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.85
10237	Tetrachloroethene	127-18-4	39	5	1	0.85
10237	Trichloroethene	79-01-6	5 U	5	1	0.85
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.85
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	16.4	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181633AA	06/13/2018 06:32	Kelly Devlin	0.85
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816350177	06/12/2018 12:47	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816350178	06/12/2018 12:54	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816350178	06/12/2018 12:54	Anastasia K Jaynes	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18163820005B	06/12/2018 15:45	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/14/2018 22:31

Group Number: 1953843

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result		LOQ**	MDL
	ug/kg		ug/kg	ug/kg
Batch number: B181633AA	Sample number(s): 9653928,9653931-9653933,9653935			
1,1-Dichloroethene	5	U	5	1
cis-1,2-Dichloroethene	5	U	5	1
trans-1,2-Dichloroethene	5	U	5	1
Tetrachloroethene	5	U	5	1
Trichloroethene	5	U	5	1
Vinyl Chloride	5	U	5	1
Batch number: B181641AA	Sample number(s): 9653929,9653933			
1,1-Dichloroethene	5	U	5	1
cis-1,2-Dichloroethene	5	U	5	1
trans-1,2-Dichloroethene	5	U	5	1
Tetrachloroethene	5	U	5	1
Trichloroethene	5	U	5	1
Vinyl Chloride	5	U	5	1
Batch number: Q181641AA	Sample number(s): 9653930,9653933-9653934			
1,1-Dichloroethene	250	U	250	50
cis-1,2-Dichloroethene	250	U	250	50
trans-1,2-Dichloroethene	250	U	250	50
Tetrachloroethene	250	U	250	50
Trichloroethene	250	U	250	50
Vinyl Chloride	250	U	250	50

LCS/LCSD

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: B181633AA	Sample number(s): 9653928,9653931-9653933,9653935								
1,1-Dichloroethene	20	17.98	20	18.47	90	92	73-129	3	30
cis-1,2-Dichloroethene	20	18.54	20	19.42	93	97	80-120	5	30
trans-1,2-Dichloroethene	20	17.46	20	18.47	87	92	80-125	6	30
Tetrachloroethene	20	18.08	20	18.49	90	92	73-120	2	30
Trichloroethene	20	17.93	20	18.87	90	94	80-120	5	30
Vinyl Chloride	20	15.26	20	15.54	76	78	59-120	2	30
Batch number: B181641AA	Sample number(s): 9653929,9653933								

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/14/2018 22:31

Group Number: 1953843

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
1,1-Dichloroethene	20	20.66	20	17.45	103	87	73-129	17	30
cis-1,2-Dichloroethene	20	20.97	20	18.27	105	91	80-120	14	30
trans-1,2-Dichloroethene	20	20.82	20	16.79	104	84	80-125	21	30
Tetrachloroethene	20	20.36	20	16.99	102	85	73-120	18	30
Trichloroethene	20	19.82	20	17.17	99	86	80-120	14	30
Vinyl Chloride	20	15.41	20	12.81	77	64	59-120	18	30
Batch number: Q181641AA	Sample number(s): 9653930,9653933-9653934								
1,1-Dichloroethene	1000	956.29	1000	995.82	96	100	73-129	4	30
cis-1,2-Dichloroethene	1000	986.12	1000	997.96	99	100	80-120	1	30
trans-1,2-Dichloroethene	1000	968.76	1000	975.67	97	98	80-125	1	30
Tetrachloroethene	1000	963.34	1000	992.02	96	99	73-120	3	30
Trichloroethene	1000	940.02	1000	987.66	94	99	80-120	5	30
Vinyl Chloride	1000	592.84	1000	572.97	59	57*	59-120	3	30
	%	%	%	%					
Batch number: 18163820005B	Sample number(s): 9653928-9653935								
Moisture	89.5	89.4			100		99-101		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/kg	MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: B181641AA	Sample number(s): 9653929,9653933 UNSPK: P649555									
1,1-Dichloroethene	5 U	17.83	20.5	17.64	18.74	115	106	73-129	9	30
cis-1,2-Dichloroethene	5 U	17.83	20.46	17.64	18.47	115	105	80-120	10	30
trans-1,2-Dichloroethene	5 U	17.83	19.51	17.64	18.73	109	106	80-125	4	30
Tetrachloroethene	10.54	17.83	39.73	17.64	30.16	164*	111	73-120	27	30
Trichloroethene	5 U	17.83	20.09	17.64	18.01	113	102	80-120	11	30
Vinyl Chloride	5 U	17.83	14.9	17.64	14.42	84	82	59-120	3	30

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1953843
Reported: 06/14/2018 22:31

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc %	DUP Conc %	DUP RPD	DUP RPD Max
Batch number: 18163820005B	Sample number(s): 9653928-9653935 BKG: P653834			
Moisture	19.66	19.52	1	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- Solid by 8260B
Batch number: B181633AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9653928	102	99	106	97
9653931	101	98	102	95
9653932	101	96	103	94
9653933	102	94	173*	52
9653935	102	96	104	95
Blank	102	101	101	97
LCS	101	103	105	104
LCSD	100	100	104	102
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- Solid by 8260B
Batch number: B181641AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9653929	104	100	102	94
9653933RE	109	101	221*	50
Blank	102	101	103	97
LCS	104	104	105	104
LCSD	103	106	105	106
MS	100	99	108	102
MSD	100	99	107	102
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- Solid by 8260B
Batch number: Q181641AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9653930	79	83	77	80
9653933DL	72	76	53	37*
9653934	76	79	75	77
Blank	103	105	100	102

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1953843
Reported: 06/14/2018 22:31

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- Solid by 8260B
Batch number: Q181641AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
LCS	90	91	88	90
LCSD	91	93	90	93
Limits:	50-141	54-135	52-141	50-131

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody

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For Eurofins Lancaster Laboratories Environmental use only

Acct. # 11372 Group # 1953843 Sample # 9653928-35

COC # 563165

Client Information

Client: DOW c/o Jacobs	Acct. #:
Project Name/#: DOW Hanging Rocks RFI	PWSID #:
Project Manager: chiller / Shane Lowe	P.O. #:
Sampler: ~~OHIO~~ Billy Irish	Quote #:
State where samples were collected: OHIO	For Compliance: Yes ☐ No ☒

Matrix

Soil ☒ Sediment ☐ Tissue ☐ | Water: Potable ☐ Ground ☐ Surface ☐ NPDES ☐ | Other: ____

Analysis Requested

Preservation and Filtration Codes

For Lab Use Only

FSC: ____

SCR#: ____

Preservation Codes

H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Remarks

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	VOCs (Soil)	% moisture
S01-SS42-0102-061118	6-11-18	1045	X		4	X	X
S01-SS42-0608-061118	6-11-18	11:11	X		4	X	X
S01-SS42-2324-061118	6-11-18	11:50	X		4	X	X
S01-SS22-0102-061118	6-11-18	13:40	X		4	X	X
S01-SS22-0607-061118	6-11-18	13:58	X		4	X	X
S01-SS22-2223-061118	6-11-18	1412	X		4	X	X
S01-SS33-0102-061118	6-11-18	1524	X		4	X	X
S01-SS33-0708-061118	6-11-18	1534	X		4	X	X
S01-SS33-2324-061118	6-11-18	1551	X		4	X	X
S01-SS30-0102-061118	6-11-18	1651	X		4	X	X

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: ____

E-mail address: ____

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)

Type III (Reduced non-CLP) As Per Contract NJ DKQP TX TRRP-13

NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
	6-11-18	1800			
				6/12/18	1045

EDD Required? Yes No

If yes, format: ____

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS ____ FedEx X Other ____

Temperature upon receipt 09 °C

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

Environmental Analysis Request/Chain of Custody

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For Eurofins Lancaster Laboratories Environmental use only

Acct. # 11372 Group # 1953843 Sample # 9653928-35

COC # 563169

Client Information

Client: DOW c/o Jacobs	Acct. #:
Project Name/#: DOW Hanging Rock RFT	PWSID #:
Project Manager: Chiller / Shane Lowe	P.O. #:
Sampler: Billy Irish	Quote #:
State where samples were collected: OHIO	For Compliance: Yes ☐ No ☒

Matrix

Soil ☒ Sediment ☐ Tissue ☐ Water: Potable ☐ Ground ☐ NPDES ☐ Surface ☐ Other: ☐

Analysis Requested

Preservation and Filtration Codes

For Lab Use Only

FSC:

SCR#:

Preservation Codes

H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Remarks

Sample Identification	Collected Date	Collected Time	Grab	Composite	Soil/Sediment	Water	Other	Total # of Containers	VOCs (soil)	% moisture
SO1-SS30-0607-061118	6-11-18	1658	X		X			4	X	X
SO1-SS30-2324-061118	6-11-18	1717	X		X			4	X	X

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: _____

E-mail address: _____

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) As Per Contract
Type III (Reduced non-CLP)
NYSDEC Category A or B
Type VI (Raw Data Only)
NJ DKQP
MA MCP
TX TRRP-13
CT RCP

Relinquished by	Date	Time	Received by	Date	Time
	6-11-18	1800			
					6/12/18 1005

EDD Required? Yes No

If yes, format: _____

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS _____ FedEx X Other _____

Temperature upon receipt 0.9 °C

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Sample Administration Receipt Documentation Log

Doc Log ID: 218850

Group Number(s): 1953843

Client: Dow c/o Jacobs

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	06/12/2018 10:05
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OH		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Raysa Perez (14020) at 10:51 on 06/12/2018

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT131	0.9	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17601-2429

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mg**	milligram(s)
C	degrees Celsius	**mL**	milliliter(s)
cfu	colony forming units	**MPN**	Most Probable Number
CP Units	cobalt-chloroplatinate units	**N.D.**	non-detect
F	degrees Fahrenheit	**ng**	nanogram(s)
g	gram(s)	**NTU**	nephelometric turbidity units
IU	International Units	**pg/L**	picogram/liter
kg	kilogram(s)	**RL**	Reporting Limit
L	liter(s)	**TNTC**	Too Numerous To Count
lb.	pound(s)	**µg**	microgram(s)
m3	cubic meter(s)	**µL**	microliter(s)
meq	milliequivalents	**umhos/cm**	micromhos/cm

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

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Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Volatiles by GC/MS Data

Case Narrative/Conformance Summary

Volatiles by GC/MS

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR38

GC/MS Volatiles

Fraction: Volatiles by GC/MS

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
9653928	S01-SS42-0102-061118		X	0.88	
9653929	S01-SS42-0608-061118		X	0.93	
9653930	S01-SS22-0102-061118		X	42.59	
9653931	S01-SS22-0607-061118		X	0.81	
9653932	S01-SS33-0102-061118		X	0.82	
9653933	S01-SS33-0708-061118		X	44.64; 0.9	
9653934	S01-SS30-0102-061118		X	41.05	
9653935	S01-SS30-0607-061118		X	0.85	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

(Sample number(s): 9653928, 9653930-9653935: Analysis: 10237)
The VOA soil weight is outside the acceptable weight range.
See the VOA Prep Summary Sheet for the affected sample(s).

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

LCS/LCSD

Batch#: Q181641AA (Sample number(s): 9653930, 9653933-9653934)
The recovery(ies) for the following analyte(s) in the LCSD were below the acceptance window: Vinyl Chloride

MS/MSD

Matrix QC may not be included if site-specific QC were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, laboratory spike data (LCS) are provided.

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR38

GC/MS Volatiles

Fraction: Volatiles by GC/MS

Surrogate

Surrogate recoveries that are noncompliant are confirmed unless attributed to a dilution or otherwise noted.

Batch#: Q181641AA (Sample number(s): 9653930, 9653933-9653934)
The recovery(ies) for the following surrogate(s) were below the acceptance window: 4-Bromofluorobenzene (9653933DL)

Batch#: B181641AA (Sample number(s): 9653929, 9653933)
The recovery(ies) for the following surrogate(s) exceeded the acceptance window: Toluene-d8 (9653933RE)

Batch#: B181633AA (Sample number(s): 9653928, 9653931-9653933, 9653935)
The recovery(ies) for the following surrogate(s) exceeded the acceptance window: Toluene-d8 (9653933)

SAMPLE ANALYSIS:

(Sample number(s): 9653933: Analysis: 10237)
The LCS and/or LCSD recoveries are outside the stated QC window for trail 3 but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride
The recovery for the sample internal standard is outside the QC acceptance limits. The following action was taken: The sample was re-analyzed and the QC is again outside of the acceptance limits, indicating a matrix effect. The data is reported from the initial trial.

(Sample number(s): 9653934: Analysis: 10237)
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride
Reporting limits were raised due to interference from the sample matrix.

(Sample number(s): 9653930: Analysis: 10237)
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance: Vinyl Chloride

Reporting limits were raised due to interference from the sample matrix.

No additional problems were encountered with the analysis of the samples.

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR38

GC/MS Volatiles

Fraction: Volatiles by GC/MS

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Volatiles by GC/MS

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Quality Control Reference List
GC/MS Volatiles

CLIENT: CH2M Hill, Inc.
SDG: DHR38

Fraction: Volatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
VOCs- Solid by 8260B	B181633AA	VBLKB07	06/12/2018 20:51:00
		LCSB07	06/12/2018 21:33:00
		LCDB07	06/12/2018 21:56:00
		9653928	06/13/2018 02:24:00
		9653931	06/13/2018 02:46:00
		9653932	06/13/2018 03:09:00
		9653933	06/13/2018 06:10:00
		9653935	06/13/2018 06:32:00
VOCs- Solid by 8260B	B181641AA	VBLKB08	06/13/2018 19:39:00
		LCSB08	06/13/2018 20:02:00
		LCDB08	06/13/2018 20:24:00
		9653929	06/14/2018 05:04:00
		9653933RE	06/14/2018 05:27:00
VOCs- Solid by 8260B	Q181641AA	VBLKQ08	06/13/2018 22:59:00
		LCSQ08	06/13/2018 21:50:00
		LCDQ08	06/13/2018 22:14:00
		9653930	06/14/2018 04:28:00
		9653933DL	06/14/2018 04:51:00
		9653934	06/14/2018 05:14:00

Fraction: Volatiles by GC/MS

B181633AA / VBLKB07 **Analyte**	**Analysis Date**	**Blank Results**	**Units**	**MDL**	**LOQ**
Vinyl Chloride	06/12/18	N.D.	ug/kg	1	5
1,1-Dichloroethene	06/12/18	N.D.	ug/kg	1	5
cis-1,2-Dichloroethene	06/12/18	N.D.	ug/kg	1	5
trans-1,2-Dichloroethene	06/12/18	N.D.	ug/kg	1	5
Trichloroethene	06/12/18	N.D.	ug/kg	1	5
Tetrachloroethene	06/12/18	N.D.	ug/kg	1	5

B181641AA / VBLKB08 **Analyte**	**Analysis Date**	**Blank Results**	**Units**	**MDL**	**LOQ**
Vinyl Chloride	06/13/18	N.D.	ug/kg	1	5
1,1-Dichloroethene	06/13/18	N.D.	ug/kg	1	5
cis-1,2-Dichloroethene	06/13/18	N.D.	ug/kg	1	5
trans-1,2-Dichloroethene	06/13/18	N.D.	ug/kg	1	5
Trichloroethene	06/13/18	N.D.	ug/kg	1	5
Tetrachloroethene	06/13/18	N.D.	ug/kg	1	5

Q181641AA / VBLKQ08 **Analyte**	**Analysis Date**	**Blank Results**	**Units**	**MDL**	**LOQ**
Vinyl Chloride	06/13/18	N.D.	ug/kg	50	250
1,1-Dichloroethene	06/13/18	N.D.	ug/kg	50	250
cis-1,2-Dichloroethene	06/13/18	N.D.	ug/kg	50	250
trans-1,2-Dichloroethene	06/13/18	N.D.	ug/kg	50	250
Trichloroethene	06/13/18	N.D.	ug/kg	50	250
Tetrachloroethene	06/13/18	N.D.	ug/kg	50	250

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DHR38
Matrix: SOLID

Fraction: Volatiles by GC/MS

B181633AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKB07	101	54 - 135	97	50 - 131	102	50 - 141	101	52 - 141
LCSB07	103	54 - 135	104	50 - 131	101	50 - 141	105	52 - 141
LCDB07	100	54 - 135	102	50 - 131	100	50 - 141	104	52 - 141
9653928	99	54 - 135	97	50 - 131	102	50 - 141	106	52 - 141
9653931	98	54 - 135	95	50 - 131	101	50 - 141	102	52 - 141
9653932	96	54 - 135	94	50 - 131	101	50 - 141	103	52 - 141
9653933	94	54 - 135	52	50 - 131	102	50 - 141	173 *	52 - 141
9653935	96	54 - 135	95	50 - 131	102	50 - 141	104	52 - 141

B181641AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKB08	101	54 - 135	97	50 - 131	102	50 - 141	103	52 - 141
LCSB08	104	54 - 135	104	50 - 131	104	50 - 141	105	52 - 141
LCDB08	106	54 - 135	106	50 - 131	103	50 - 141	105	52 - 141
9653929	100	54 - 135	94	50 - 131	104	50 - 141	102	52 - 141
9653933RE	101	54 - 135	50	50 - 131	109	50 - 141	221 *	52 - 141

Q181641AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKQ08	105	54 - 135	102	50 - 131	103	50 - 141	100	52 - 141
LCSQ08	91	54 - 135	90	50 - 131	90	50 - 141	88	52 - 141
LCDQ08	93	54 - 135	93	50 - 131	91	50 - 141	90	52 - 141
9653930	83	54 - 135	80	50 - 131	79	50 - 141	77	52 - 141
9653933DL	76	54 - 135	37 *	50 - 131	72	50 - 141	53	52 - 141
9653934	79	54 - 135	77	50 - 131	76	50 - 141	75	52 - 141

Surrogate recoveries that are noncompliant are confirmed unless attributed to a dilution or otherwise noted.

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSB07 LCSD: LCDB07 **Analyte**	Batch: **B181633AA** (Sample number(s): 9653928, 9653931-9653933, 9653935)							
	Spike Added ug/kg	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	15.26	15.54	76	78	59-120	2	30
1,1-Dichloroethene	20	17.98	18.47	90	92	73-129	3	30
cis-1,2-Dichloroethene	20	18.54	19.42	93	97	80-120	5	30
trans-1,2-Dichloroethene	20	17.46	18.47	87	92	80-125	6	30
Trichloroethene	20	17.93	18.87	90	94	80-120	5	30
Tetrachloroethene	20	18.08	18.49	90	92	73-120	2	30

LCS: LCSB08 LCSD: LCDB08 **Analyte**	Batch: **B181641AA** (Sample number(s): 9653929, 9653933)							
	Spike Added ug/kg	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	15.41	12.81	77	64	59-120	18	30
1,1-Dichloroethene	20	20.66	17.45	103	87	73-129	17	30
cis-1,2-Dichloroethene	20	20.97	18.27	105	91	80-120	14	30
trans-1,2-Dichloroethene	20	20.82	16.79	104	84	80-125	21	30
Trichloroethene	20	19.82	17.17	99	86	80-120	14	30
Tetrachloroethene	20	20.36	16.99	102	85	73-120	18	30

LCS: LCSQ08 LCSD: LCDQ08 **Analyte**	Batch: **Q181641AA** (Sample number(s): 9653930, 9653933-9653934)							
	Spike Added ug/kg	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	1000	592.84	572.97	59	57 *	59-120	3	30
1,1-Dichloroethene	1000	956.29	995.82	96	100	73-129	4	30
cis-1,2-Dichloroethene	1000	986.12	997.96	99	100	80-120	1	30
trans-1,2-Dichloroethene	1000	968.76	975.67	97	98	80-125	1	30
Trichloroethene	1000	940.02	987.66	94	99	80-120	5	30
Tetrachloroethene	1000	963.34	992.02	96	99	73-120	3	30

Fraction: Volatiles by GC/MS

10237: VOCs- Solid by 8260B Analyte Name	Default MDL	Default LOQ	Units
Vinyl Chloride	1	5	ug/kg
1,1-Dichloroethene	1	5	ug/kg
trans-1,2-Dichloroethene	1	5	ug/kg
cis-1,2-Dichloroethene	1	5	ug/kg
Trichloroethene	1	5	ug/kg
Tetrachloroethene	1	5	ug/kg

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: bf22t01.d BFB Injection Date: 02/22/18

Instrument ID: HP09953 BFB Injection Time: 10:34

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.36
75	30.0 - 60.0% of mass 95	49.53
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.95
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	81.80
175	5.0 - 9.0% of mass 174	6.09 (7.45)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.92 (96.48)1
177	5.0 - 9.0% of mass 176	5.35 (6.77)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	bf22i01.d	02/22/18	11:18
02	VSTD100	bf22i02.d	02/22/18	11:42
03	VSTD50	bf22i03.d	02/22/18	12:06
04	VSTD20	bf22i04.d	02/22/18	12:31
05	VSTD10	bf22i05.d	02/22/18	12:57
06	VSTD4	bf22i06.d	02/22/18	13:29
07	MDL001 - MDL001	bf22m01.d	02/22/18	13:51
08	LGBICV	bf22v01.d	02/22/18	14:16

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu12t10.d BFB Injection Date: 06/12/18

Instrument ID: HP09953 BFB Injection Time: 19:08

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.69
75	30.0 - 60.0% of mass 95	51.74
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.87
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	80.01
175	5.0 - 9.0% of mass 174	6.14 (7.67)1
176	Greater than 95.0%, but less than 101.0% of mass 174	77.22 (96.51)1
177	5.0 - 9.0% of mass 176	5.21 (6.75)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	bu12c01.d	06/12/18	20:05
02	VBLKB07	bu12b10.d	06/12/18	20:51
03	LCSB07	bu12s61.d	06/12/18	21:33
04	LCDB07	bu12s62.d	06/12/18	21:56
05	9632085	bu12s64.d	06/12/18	23:47
06	9632091	bu12s65.d	06/13/18	00:09
07	9632093	bu12s66.d	06/13/18	00:31
08	9632095	bu12s67.d	06/13/18	00:54
09	9640166	bu12s68.d	06/13/18	01:17
10	9640167	bu12s69.d	06/13/18	01:39
11	9649656	bu12s70.d	06/13/18	02:02
12	9653928	bu12s71.d	06/13/18	02:24
13	9653931	bu12s72.d	06/13/18	02:46
14	9653932	bu12s73.d	06/13/18	03:09
15	9653941	bu12s74.d	06/13/18	03:31
16	9653942	bu12s75.d	06/13/18	03:54
17	9651105	bu12s76.d	06/13/18	04:16
18	9651106	bu12s77.d	06/13/18	04:39
19	9651108	bu12s78.d	06/13/18	05:02
20	9651111	bu12s79.d	06/13/18	05:24
21	9650447	bu12s80.d	06/13/18	05:47
22	9653933	bu12s81.d	06/13/18	06:10

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu12t10.d BFB Injection Date: 06/12/18

Instrument ID: HP09953 BFB Injection Time: 19:08

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.69
75	30.0 - 60.0% of mass 95	51.74
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.87
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	80.01
175	5.0 - 9.0% of mass 174	6.14 (7.67)1
176	Greater than 95.0%, but less than 101.0% of mass 174	77.22 (96.51)1
177	5.0 - 9.0% of mass 176	5.21 (6.75)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9653935	bu12s82.d	06/13/18	06:32

FORM V VOA

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu13t01.d BFB Injection Date: 06/13/18

Instrument ID: HP09953 BFB Injection Time: 18:05

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.88
75	30.0 - 60.0% of mass 95	50.95
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.89
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	83.38
175	5.0 - 9.0% of mass 174	6.50 (7.80)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.41 (97.64)1
177	5.0 - 9.0% of mass 176	5.21 (6.39)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	bu13c01.d	06/13/18	18:49
02	VBLKB08	bu13b01.d	06/13/18	19:39
03	VBLKB09	bu13b05.d	06/13/18	19:39
04	LCSB08	bu13s01.d	06/13/18	20:02
05	LCSB09	bu13s31.d	06/13/18	20:02
06	LCDB08	bu13s02.d	06/13/18	20:24
07	LCDB09	bu13s32.d	06/13/18	20:24
08	9647138RE	bu13s33.d	06/13/18	21:53
09	SECC050	bu13c02.d	06/13/18	22:16
10	9649555	bu13s03.d	06/13/18	22:39
11	9649556MS	bu13s04.d	06/13/18	23:02
12	9649557MSD	bu13s05.d	06/13/18	23:25
13	9649546	bu13s06.d	06/13/18	23:49
14	9649547	bu13s07.d	06/14/18	00:12
15	9649548	bu13s08.d	06/14/18	00:34
16	9649549	bu13s09.d	06/14/18	00:57
17	9649552	bu13s10.d	06/14/18	01:19
18	9649553	bu13s11.d	06/14/18	01:42
19	9649554	bu13s12.d	06/14/18	02:04
20	9649558	bu13s13.d	06/14/18	02:27
21	9649559	bu13s14.d	06/14/18	02:49
22	9649560	bu13s15.d	06/14/18	03:12

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu13t01.d BFB Injection Date: 06/13/18

Instrument ID: HP09953 BFB Injection Time: 18:05

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.88
75	30.0 - 60.0% of mass 95	50.95
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.89
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	83.38
175	5.0 - 9.0% of mass 174	6.50 (7.80)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.41 (97.64)1
177	5.0 - 9.0% of mass 176	5.21 (6.39)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9651112	bu13s16.d	06/14/18	03:35
24	9651113	bu13s17.d	06/14/18	03:57
25	9651114	bu13s18.d	06/14/18	04:19
26	9651116	bu13s19.d	06/14/18	04:42
27	9653929	bu13s20.d	06/14/18	05:04
28	9653933RE	bu13s21.d	06/14/18	05:27

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: qy24t10.d BFB Injection Date: 05/24/18

Instrument ID: HP07536 BFB Injection Time: 10:35

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.07
75	30.0 - 60.0% of mass 95	48.00
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	7.09
173	Less than 2.0% of mass 174	0.20 (0.22)1
174	Greater than 50.0% of mass 95	90.11
175	5.0 - 9.0% of mass 174	6.22 (6.91)1
176	Greater than 95.0%, but less than 101.0% of mass 174	86.19 (95.64)1
177	5.0 - 9.0% of mass 176	6.11 (7.09)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD4	qy24i10.d	05/24/18	11:51
02	VSTD10	qy24i11.d	05/24/18	12:14
03	VSTD20	qy24i12.d	05/24/18	12:37
04	VSTD50	qy24i13.d	05/24/18	13:00
05	VSTD100	qy24i14.d	05/24/18	13:23
06	VSTD300	qy24i15.d	05/24/18	13:46
07	MDL - MDL	qy24m10.d	05/24/18	14:55
08	QBICV	qy24v10.d	05/24/18	15:18
09	VSTD4	qy24i20.d	05/24/18	16:03
10	VSTD10	qy24i21.d	05/24/18	16:26
11	VSTD20	qy24i22.d	05/24/18	16:49
12	VSTD50	qy24i23.d	05/24/18	17:13
13	VSTD100	qy24i24.d	05/24/18	17:36
14	VSTD300	qy24i25.d	05/24/18	17:58
15	SMDL - SMDL	qy24m20.d	05/24/18	18:45
16	BSMICV	qy24v20.d	05/24/18	19:07

FORM V VOA

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: qu13t10.d BFB Injection Date: 06/13/18

Instrument ID: HP07536 BFB Injection Time: 21:05

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.32
75	30.0 - 60.0% of mass 95	45.73
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.64
173	Less than 2.0% of mass 174	0.22 (0.24)1
174	Greater than 50.0% of mass 95	93.35
175	5.0 - 9.0% of mass 174	6.94 (7.44)1
176	Greater than 95.0%, but less than 101.0% of mass 174	92.06 (98.62)1
177	5.0 - 9.0% of mass 176	6.10 (6.63)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	qu13c05.d	06/13/18	21:27
02	LCSQ08	qu13s31.d	06/13/18	21:50
03	LCSQ09	qu13s61.d	06/13/18	21:50
04	LCDQ08	qu13s32.d	06/13/18	22:14
05	LCDQ09	qu13s62.d	06/13/18	22:14
06	VBLKQ08	qu13b05.d	06/13/18	22:59
07	VBLKQ09	qu13b10.d	06/13/18	22:59
08	9632087	qu13s03.d	06/13/18	23:52
09	9632096	qu13s04.d	06/14/18	00:16
10	9632097	qu13s05.d	06/14/18	00:39
11	9632099	qu13s06.d	06/14/18	01:01
12	9632103	qu13s07.d	06/14/18	01:25
13	9632104	qu13s08.d	06/14/18	01:47
14	9640112	qu13s09.d	06/14/18	02:10
15	9642335	qu13s10.d	06/14/18	02:33
16	9642335DL	qu13s11.d	06/14/18	02:57
17	9643859	qu13s12.d	06/14/18	03:19
18	9647346DL	qu13s13.d	06/14/18	03:42
19	9649561	qu13s20.d	06/14/18	04:05
20	9653930	qu13s21.d	06/14/18	04:28
21	9653933DL	qu13s22.d	06/14/18	04:51
22	9653934	qu13s23.d	06/14/18	05:14

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: qu13t10.d BFB Injection Date: 06/13/18

Instrument ID: HP07536 BFB Injection Time: 21:05

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.32
75	30.0 - 60.0% of mass 95	45.73
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.64
173	Less than 2.0% of mass 174	0.22 (0.24)1
174	Greater than 50.0% of mass 95	93.35
175	5.0 - 9.0% of mass 174	6.94 (7.44)1
176	Greater than 95.0%, but less than 101.0% of mass 174	92.06 (98.62)1
177	5.0 - 9.0% of mass 176	6.10 (6.63)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	SECC050	qu13c06.d	06/14/18	06:22

FORM V VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane			0.4937	0.4887	0.4857	0.5026	0.5070	0.4719	0.4916	3	AVG	
Chloromethane	#		0.6250	0.6026	0.5854	0.5711	0.5965	0.5428	0.5872	5	AVG	#
Vinyl Chloride	*		0.4665	0.4310	0.4182	0.4099	0.4171	0.3607	0.4173	8	AVG	*
Bromomethane			0.3081	0.3006	0.2984	0.2909	0.2897	0.2518	0.2899	7	AVG	
Chloroethane			0.2404	0.2467	0.2409	0.2386	0.2372	0.1969	0.2334	8	AVG	
Dichlorofluoromethane			0.6106	0.5949	0.6079	0.5949	0.6009	0.5439	0.5922	4	AVG	
Trichlorofluoromethane			0.5424	0.5392	0.5339	0.5359	0.5516	0.5187	0.5369	2	AVG	
Ethanol			0.1197	0.1143	0.1250	0.1279	0.1217	0.1180	0.1211	4	AVG	
Freon 123a			0.3516	0.3561	0.3631	0.3465	0.3545	0.3389	0.3518	2	AVG	
Acrolein			2.4157	2.4240	2.5462	2.7115	2.3801	2.0909	2.4281	8	AVG	
1,1-Dichloroethene	*		0.2378	0.2477	0.2501	0.2415	0.2560	0.2425	0.2459	3	AVG	*
Acetone			0.0301	0.0281	0.0238	0.0230	0.0225	0.0213	0.0248	14	AVG	
Freon 113			0.2790	0.3085	0.2946	0.2882	0.3071	0.2988	0.2960	4	AVG	
2-Propanol			0.9378	1.0859	1.0919	1.3247	1.0802	1.1772	1.1163	11	AVG	
Methyl Iodide			0.5059	0.5333	0.5541	0.5338	0.5578	0.5474	0.5387	4	AVG	
Carbon Disulfide			0.7997	0.8330	0.8463	0.8407	0.8843	0.8505	0.8424	3	AVG	
Methyl Acetate			0.2282	0.2378	0.2011	0.1925	0.1997	0.1949	0.2090	9	AVG	
Allyl Chloride			0.5013	0.4898	0.4880	0.4877	0.5031	0.4654	0.4892	3	AVG	
Methylene Chloride			0.2909	0.2986	0.2904	0.2831	0.2903	0.2778	0.2885	2	AVG	
t-Butyl alcohol			1.3811	1.2450	1.2102	1.2677	1.2127	1.1339	1.2418	7	AVG	
Acrylonitrile			0.1032	0.1110	0.0959	0.0970	0.0961	0.0911	0.0991	7	AVG	
Methyl Tertiary Butyl Ether			0.7860	0.8352	0.7923	0.7915	0.7973	0.7826	0.7975	2	AVG	
trans-1,2-Dichloroethene			0.2776	0.2905	0.2964	0.2871	0.2971	0.2819	0.2884	3	AVG	
n-Hexane			0.4644	0.5057	0.5030	0.5210	0.5427	0.5389	0.5126	6	AVG	
1,1-Dichloroethane	#		0.5504	0.5699	0.5871	0.5681	0.5881	0.5753	0.5731	2	AVG	#
di-Isopropyl ether			1.1120	1.1762	1.1817	1.1544	1.1878	1.1492	1.1602	2	AVG	
2-Chloro-1,3-butadiene			0.4692	0.5100	0.5339	0.5218	0.5510	0.5383	0.5207	6	AVG	
Ethyl t-butyl ether			0.8945	0.9546	0.9853	0.9854	1.0111	1.0051	0.9727	4	AVG	
2-Butanone			7.1353	7.2724	7.4916	7.9621	7.1791	6.8822	7.3204	5	AVG	
cis-1,2-Dichloroethene			0.3111	0.3303	0.3397	0.3333	0.3451	0.3458	0.3342	4	AVG	
2,2-Dichloropropane			0.3625	0.4052	0.4224	0.4310	0.4616	0.4679	0.4251	9	AVG	
Propionitrile			1.8864	1.9537	2.0773	2.2150	2.0246	1.9793	2.0227	6	AVG	
Methacrylonitrile			0.1142	0.1249	0.1114	0.1153	0.1164	0.1201	0.1170	4	AVG	
Bromochloromethane			0.1557	0.1642	0.1602	0.1628	0.1669	0.1713	0.1635	3	AVG	
Tetrahydrofuran			1.3912	1.5533	1.5880	1.7875	1.6127	1.5810	1.5856	8	AVG	
Chloroform	*		0.5030	0.5322	0.5455	0.5356	0.5526	0.5494	0.5364	3	AVG	*
1,1,1-Trichloroethane			0.5352	0.5079	0.5223	0.4905	0.5246	0.5285	0.5181	3	AVG	
Cyclohexane			0.5629	0.6493	0.6177	0.6222	0.6647	0.6642	0.6302	6	AVG	
Cyclohexane(2)			0.5006	0.4943	0.4711	0.5565	0.5111	0.5144	0.5080	6	AVG	
Cyclohexane(3)			0.1594	0.1839	0.1769	0.1801	0.1918	0.1929	0.1808	7	AVG	
1,1-Dichloropropene			0.4023	0.4334	0.4383	0.4280	0.4510	0.4497	0.4338	4	AVG	
Carbon Tetrachloride			0.3244	0.3604	0.3721	0.3810	0.4190	0.4414	0.3830	11	AVG	
Isobutyl Alcohol			0.4628	0.4806	0.5053	0.5387	0.5193	0.5508	0.5096	7	AVG	
Benzene			1.2429	1.2621	1.2830	1.2419	1.2844	1.2513	1.2609	2	AVG	
1,2-Dichloroethane			0.4024	0.4213	0.4097	0.4022	0.4096	0.4129	0.4097	2	AVG	
1,2-Dichloroethane(2)			0.0303	0.0375	0.0352	0.0355	0.0359	0.0376	0.0353	8	AVG	
t-Amyl methyl ether			0.7479	0.8064	0.7995	0.8156	0.8448	0.8723	0.8144	5	AVG	
n-Heptane			0.5526	0.6424	0.5700	0.6187	0.6421	0.6485	0.6124	7	AVG	
n-Butanol			0.3098	0.3268	0.3694	0.4162	0.4027	0.4324	0.3762	13	AVG	
Trichloroethene			0.3036	0.3195	0.3239	0.3175	0.3348	0.3368	0.3227	4	AVG	
Methylcyclohexane			0.5819	0.5773	0.5413	0.6122	0.6392	0.6478	0.6000	7	AVG	
1,2-Dichloropropane	*		0.3067	0.3305	0.3383	0.3336	0.3432	0.3461	0.3331	4	AVG	*

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Methyl Methacrylate			0.1686	0.1881	0.1830	0.1917	0.1998	0.2129	0.1907	8	AVG	
1,4-Dioxane			0.1110	0.1248	0.1466	0.1630	0.1467	0.1540	0.1410	14	AVG	
Dibromomethane			0.1663	0.1816	0.1759	0.1784	0.1836	0.1913	0.1795	5	AVG	
Bromodichloromethane			0.3248	0.3638	0.3817	0.3882	0.4109	0.4303	0.3833	10	AVG	
2-Nitropropane			2.0194	2.2729	2.3607	2.9534	3.0464		2.5306	18	2NDDEG	
2-Chloroethyl Vinyl Ether			0.1410	0.1558	0.1576	0.1696	0.1760	0.1863	0.1644	10	AVG	
cis-1,3-Dichloropropene			0.3779	0.4439	0.4672	0.4804	0.5078	0.5238	0.4668	11	AVG	
4-Methyl-2-pentanone			0.2576	0.3163	0.2933	0.3176	0.3143	0.3227	0.3036	8	AVG	
Toluene		*	0.9247	1.0130	1.0229	0.9901	1.0314	1.0079	0.9983	4	AVG	*
trans-1,3-Dichloropropene			0.3948	0.4659	0.4870	0.5175	0.5510	0.5732	0.4982	13	AVG	
Ethyl Methacrylate			0.3520	0.4298	0.4331	0.4721	0.4944	0.5152	0.4494	13	AVG	
1,1,2-Trichloroethane			0.3012	0.3296	0.3197	0.3250	0.3269	0.3353	0.3230	4	AVG	
Tetrachloroethene			0.4093	0.4669	0.4566	0.4543	0.4871	0.5045	0.4631	7	AVG	
1,3-Dichloropropane			0.5166	0.5690	0.5523	0.5568	0.5651	0.5712	0.5552	4	AVG	
2-Hexanone			0.2486	0.2841	0.2494	0.2778	0.2765	0.2830	0.2699	6	AVG	
Dibromochloromethane			0.2803	0.3263	0.3380	0.3678	0.3910	0.4236	0.3545	14	AVG	
1,2-Dibromoethane			0.2950	0.3284	0.3231	0.3289	0.3375	0.3495	0.3271	6	AVG	
1-Chlorohexane			0.4346	0.5414	0.5133	0.5396	0.5742	0.5820	0.5308	10	AVG	
Chlorobenzene		#	1.0337	1.1318	1.1257	1.0987	1.1318	1.1318	1.1089	4	AVG	#
1,1,1,2-Tetrachloroethane			0.3009	0.3456	0.3573	0.3779	0.4025	0.4298	0.3690	12	AVG	
Ethylbenzene		*	1.6800	1.9699	1.9294	1.9287	2.0003	1.9159	1.9040	6	AVG	*
m+p-Xylene			0.6648	0.7740	0.7603	0.7637	0.8001	0.7814	0.7574	6	AVG	
o-Xylene			0.6360	0.7611	0.7500	0.7650	0.8018	0.8129	0.7545	8	AVG	
Styrene			0.9609	1.1776	1.1925	1.2237	1.2853	1.2873	1.1879	10	AVG	
Bromoform		#	0.1645	0.1961	0.1982	0.2297	0.2506	0.2941	0.2222	21	2NDDEG	#
Isopropylbenzene			1.5872	1.9815	1.9075	1.9702	2.0668	1.9360	1.9082	9	AVG	
Cyclohexanone			0.6812	0.7882	0.8988	1.0192	0.9573	1.0561	0.9002	16	2NDDEG	
1,1,2,2-Tetrachloroethane		#	0.7205	0.8162	0.7382	0.7748	0.7628	0.7200	0.7554	5	AVG	#
Bromobenzene			0.7947	0.8809	0.8693	0.8361	0.8490	0.8151	0.8408	4	AVG	
trans-1,4-Dichloro-2-butene			0.2019	0.2266	0.1995	0.2076	0.2082	0.1977	0.2069	5	AVG	
1,2,3-Trichloropropane			0.2024	0.2234	0.2094	0.2076	0.2048	0.1963	0.2073	4	AVG	
n-Propylbenzene			3.5008	4.3012	4.0233	3.9668	4.0077	3.0592	3.8098	12	AVG	
2-Chlorotoluene			0.7479	0.8267	0.8112	0.7922	0.8147	0.7707	0.7939	4	AVG	
1,3,5-Trimethylbenzene			2.4376	3.0319	2.9345	2.9334	3.0104	2.5475	2.8159	9	AVG	
4-Chlorotoluene			0.7443	0.8644	0.8462	0.8227	0.8504	0.8075	0.8226	5	AVG	
tert-Butylbenzene			0.5308	0.6792	0.6465	0.6746	0.7119	0.6923	0.6559	10	AVG	
Pentachloroethane			0.3802	0.4286	0.4543	0.4969	0.5395	0.5791	0.4798	15	AVG	
1,2,4-Trimethylbenzene			2.5041	3.0952	2.9646	2.9932	3.0647	2.5702	2.8653	9	AVG	
sec-Butylbenzene			3.0756	3.9796	3.7154	3.8596	3.9223	3.0048	3.5929	12	AVG	
1,3-Dichlorobenzene			1.5244	1.7585	1.6901	1.6588	1.6810	1.6010	1.6523	5	AVG	
p-Isopropyltoluene			2.7340	3.5537	3.2781	3.3991	3.5023	2.7884	3.2092	11	AVG	
1,4-Dichlorobenzene			1.6392	1.8361	1.7301	1.7209	1.7376	1.6492	1.7189	4	AVG	
1,2,3-Trimethylbenzene			2.8974	3.0421	2.9914	3.0694	3.0912	2.5581	2.9416	7	AVG	
Benzyl Chloride			0.1500	0.2040	0.2096	0.2587	0.2746	0.3058	0.2338	24	2NDDEG	
1,3-Diethylbenzene			1.7470	1.8875	1.8283	1.9926	2.0187	1.8348	1.8848	6	AVG	
1,4-Diethylbenzene			1.8994	2.0158	1.9508	2.0984	2.1666	1.9375	2.0114	5	AVG	
n-Butylbenzene			1.4152	1.8153	1.6487	1.7385	1.7677	1.5699	1.6592	9	AVG	
1,2-Dichlorobenzene			1.5146	1.7324	1.6363	1.6557	1.7074	1.5992	1.6409	5	AVG	
1,2-Diethylbenzene			1.5329	1.6048	1.5604	1.6668	1.7022	1.5802	1.6079	4	AVG	
1,2-Dibromo-3-chloropropane			0.1139	0.1399	0.1216	0.1398	0.1402	0.1438	0.1332	9	AVG	
1,3,5-Trichlorobenzene			1.1954	1.4441	1.3236	1.3989	1.4374	1.4641	1.3773	7	AVG	
1,2,4-Trichlorobenzene			1.1029	1.3438	1.2359	1.3065	1.3308	1.3382	1.2763	7	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

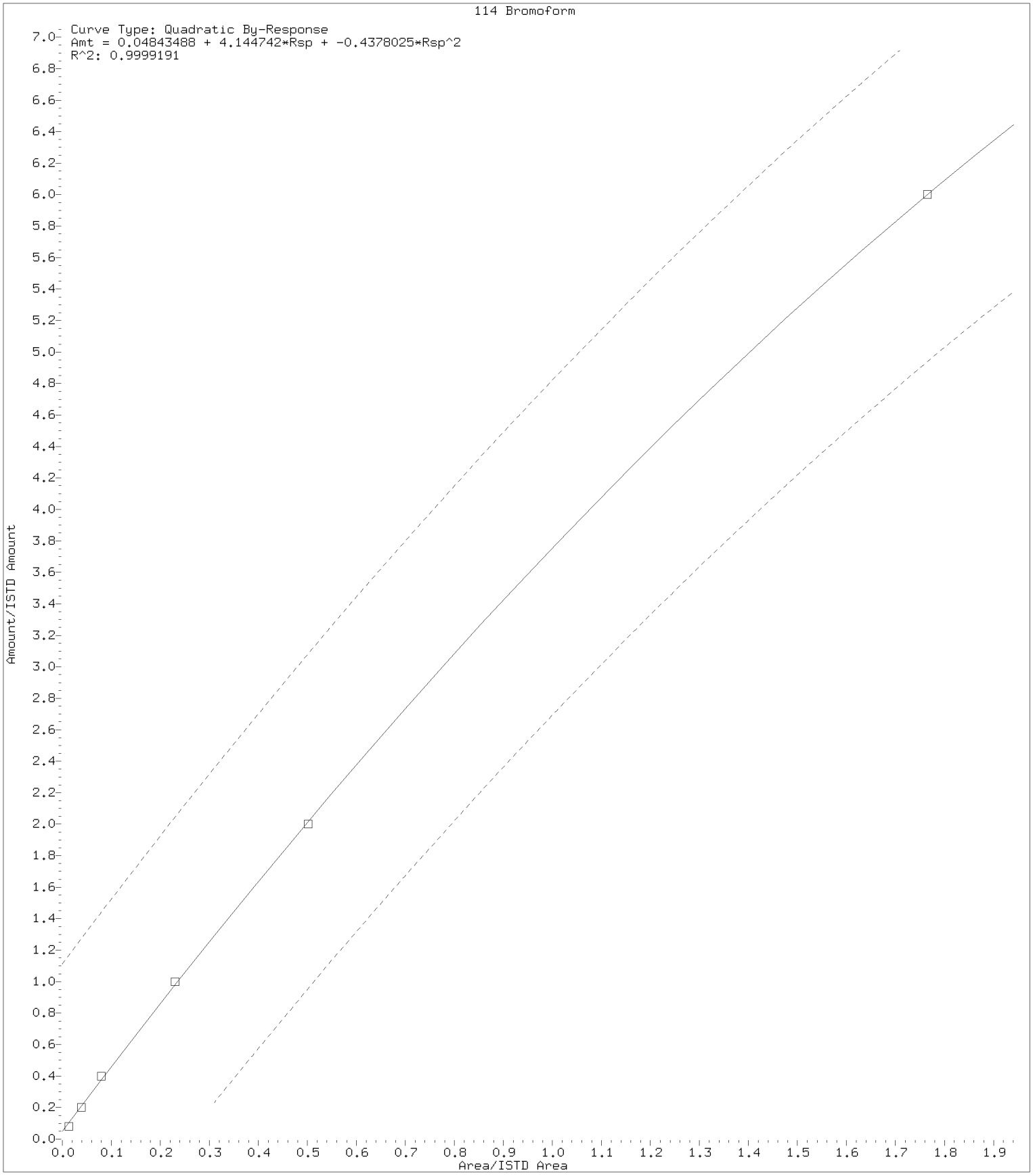
COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Hexachlorobutadiene		0.5066	0.6377	0.5818	0.6845	0.7278	0.8061	0.6574	16	2NDDEG
Naphthalene		2.4406	2.9700	2.6800	2.8364	2.7417	2.3077	2.6627	9	AVG
1,2,3-Trichlorobenzene		1.0742	1.2858	1.1530	1.2084	1.2213	1.1951	1.1896	6	AVG
2-Methylnaphthalene		1.3392	1.6688	1.6220	1.8294	1.8489	1.6210	1.6549	11	AVG
Dibromofluoromethane		0.2519	0.2489	0.2484	0.2517	0.2501	0.2499	0.2502	1	AVG
Dibromofluoromethane(2)		0.2544	0.2544	0.2542	0.2545	0.2579	0.2549	0.2550	1	AVG
1,2-Dichloroethane-d4		0.0560	0.0569	0.0536	0.0548	0.0539	0.0537	0.0548	2	AVG
1,2-Dichloroethane-d4(2)		0.2808	0.2847	0.2806	0.2924	0.2701	0.2713	0.2800	3	AVG
1,2-Dichloroethane-d4(3)		0.0351	0.0356	0.0338	0.0346	0.0342	0.0347	0.0347	2	AVG
Toluene-d8		1.2947	1.3100	1.3184	1.3142	1.3178	1.2772	1.3054	1	AVG
Toluene-d8(2)		0.8344	0.8400	0.8427	0.8577	0.8478	0.8390	0.8436	1	AVG
4-Bromofluorobenzene		0.4965	0.4992	0.4949	0.4976	0.4962	0.5077	0.4987	1	AVG
4-Bromofluorobenzene(2)		0.4326	0.4314	0.4350	0.4356	0.4288	0.4416	0.4342	1	AVG

Average %RSD 7

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



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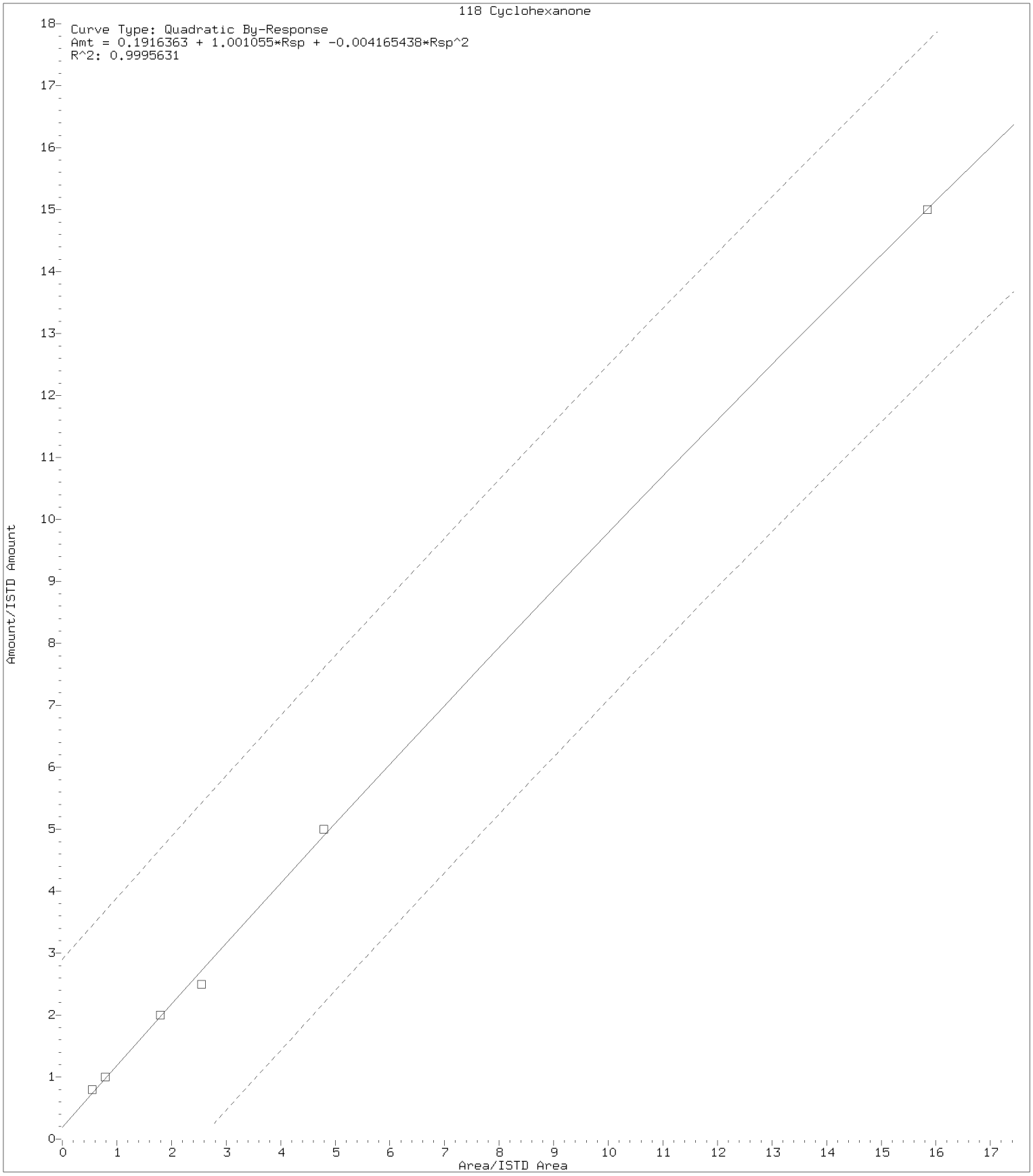
Target 3.5 esignature user ID: jkh09052



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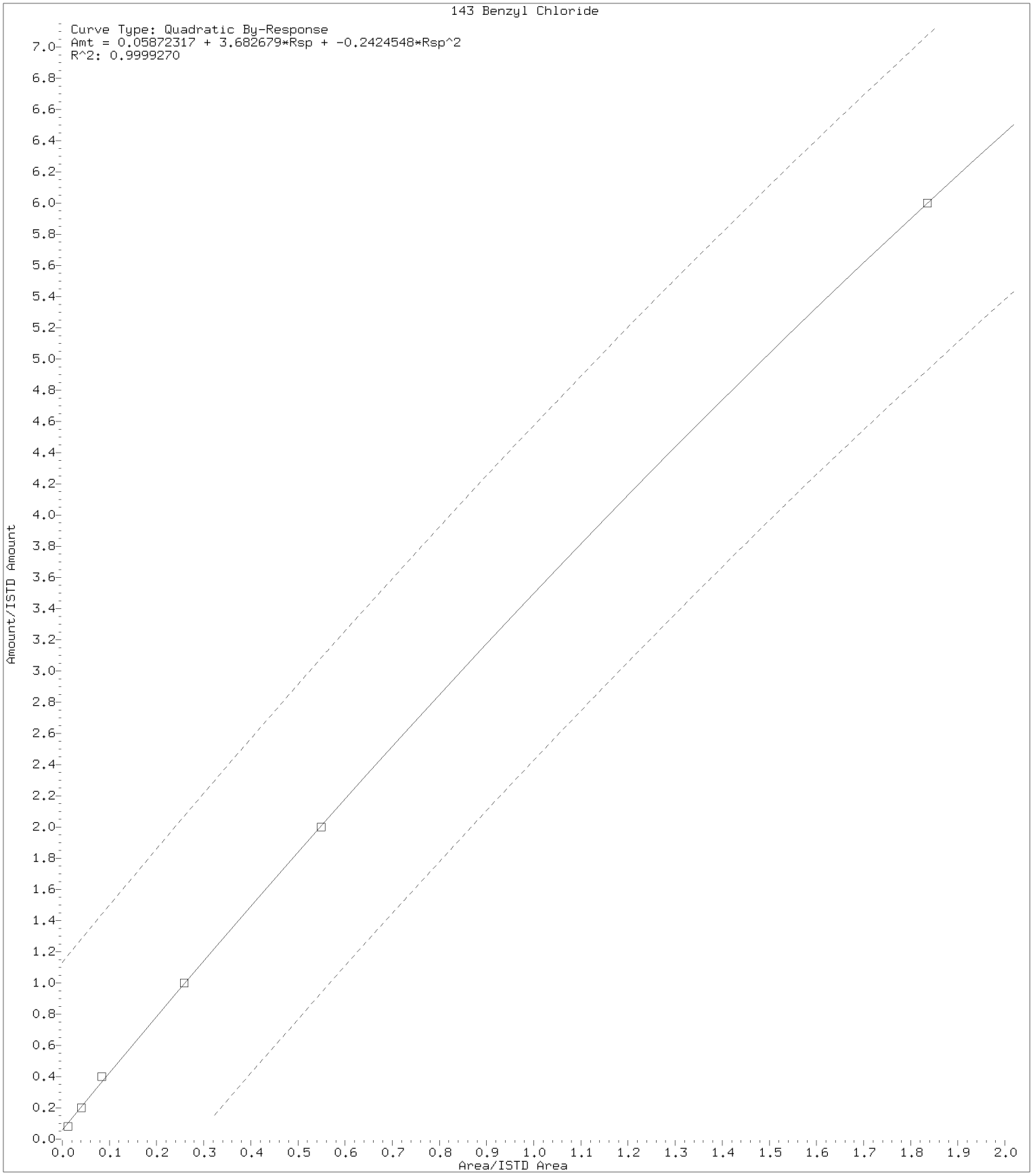
Target 3.5 esignature user ID: jkh09052



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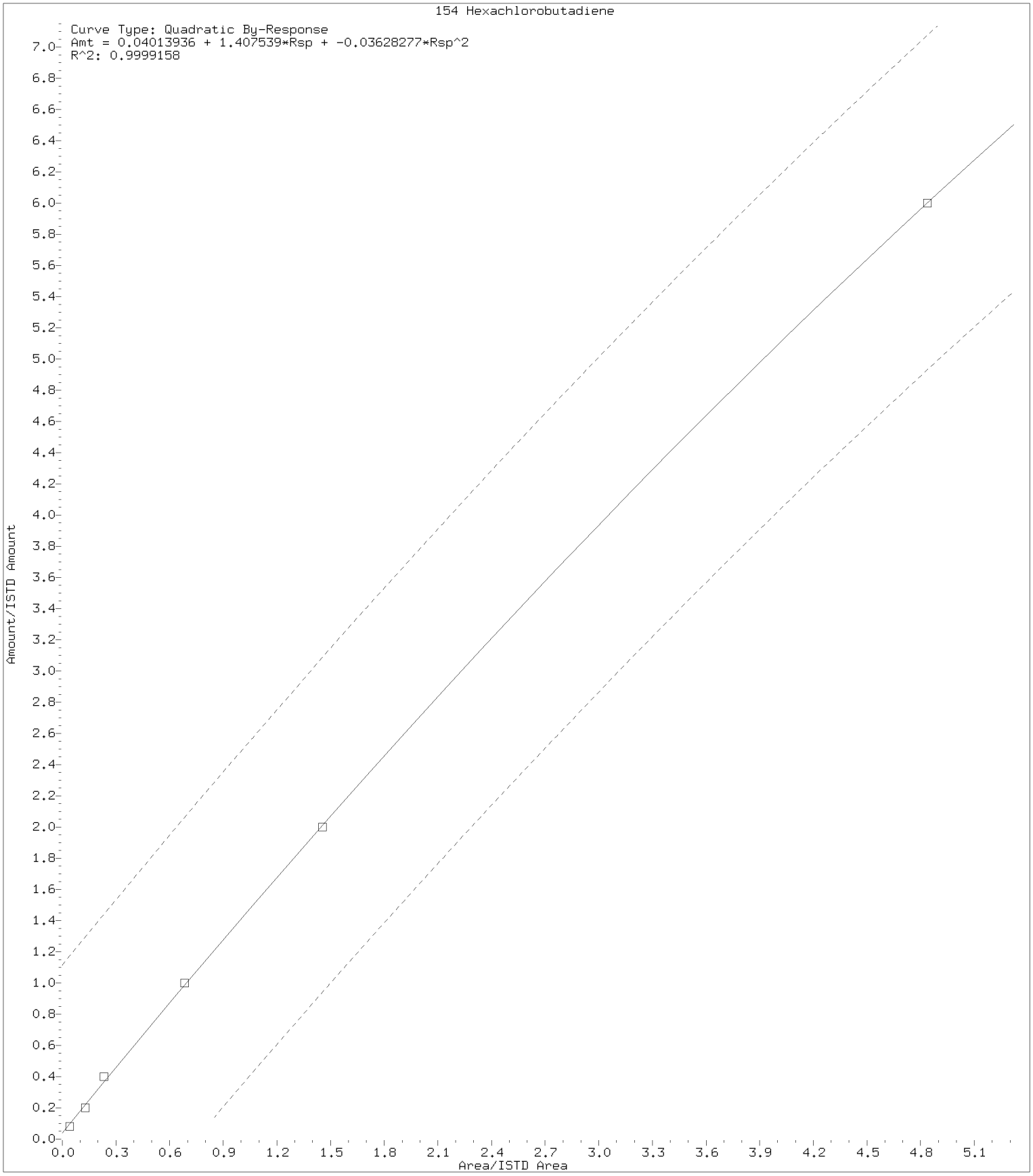
Target 3.5 esignature user ID: jkh09052



Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i01.d	VSTD300
/chem2/HP09953.i/18feb22i.b/bf22i02.d	VSTD100
/chem2/HP09953.i/18feb22i.b/bf22i03.d	VSTD050
/chem2/HP09953.i/18feb22i.b/bf22i04.d	VSTD020
/chem2/HP09953.i/18feb22i.b/bf22i05.d	VSTD010
/chem2/HP09953.i/18feb22i.b/bf22i06.d	VSTD004

Area Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	128217	123900	114201	115639	145100	130640	126283	9	Yes
Fluorobenzene	1184646	1204409	1207816	1194615	1209200	1184260	1197491	1	Yes
Chlorobenzene-d5	942767	935486	931957	925430	939957	919534	932522	1	Yes
1,4-Dichlorobenzene-d4	637692	560922	549119	528429	540311	528167	557440	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. RT
t-Butyl alcohol-d10	1.936	1.936	1.924	1.924	1.936	1.918	1.929
Fluorobenzene	3.956	3.962	3.956	3.950	3.962	3.950	3.956
Chlorobenzene-d5	7.156	7.156	7.156	7.156	7.156	7.156	7.156
1,4-Dichlorobenzene-d4	9.236	9.236	9.236	9.236	9.236	9.236	9.236

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 02/23/2018 at 11:24.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4728	19.24	20	-4	
#	Chloromethane	0.5872	0.6158	20.97	20	5	#
*	Vinyl Chloride	0.4173	0.4340	20.80	20	4	*
	Bromomethane	0.2899	0.3058	21.10	20	5	
	Chloroethane	0.2334	0.2382	20.41	20	2	
	Dichlorofluoromethane	0.5922	0.6121	20.67	20	3	
	Trichlorofluoromethane	0.5369	0.5575	20.77	20	4	
	Ethanol	0.1211	0.1297	1071.13	1000	7	
	Freon 123a	0.3518	0.3682	20.93	20	5	
	Acrolein	2.4281	2.1880	135.17	150	-10	
*	1,1-Dichloroethene	0.2459	0.2825	22.97	20	15	*
	Acetone	0.0248	0.0227	137.36	150	-8	
	Freon 113	0.2960	0.3175	21.45	20	7	
	2-Propanol	1.1163	1.3659	183.55	150	22	
	Methyl Iodide	0.5387	0.5563	20.65	20	3	
	Carbon Disulfide	0.8424	0.8761	20.80	20	4	
	Methyl Acetate	0.2090	0.2095	20.04	20	0	
	Allyl Chloride	0.4892	0.4957	20.27	20	1	
	Methylene Chloride	0.2885	0.3069	21.28	20	6	
	t-Butyl alcohol	1.2418	1.5044	242.30	200	21	
	Acrylonitrile	0.0991	0.0917	92.60	100	-7	
	Methyl Tertiary Butyl Ether	0.7975	0.7924	19.87	20	-1	
	trans-1,2-Dichloroethene	0.2884	0.3151	21.85	20	9	
	n-Hexane	0.5126	0.5289	20.63	20	3	
#	1,1-Dichloroethane	0.5731	0.5832	20.35	20	2	#
	di-Isopropyl ether	1.1602	1.2047	20.77	20	4	
	2-Chloro-1,3-butadiene	0.5207	0.5325	20.45	20	2	
	Ethyl t-butyl ether	0.9727	0.9547	19.63	20	-2	
	2-Butanone	7.3204	7.1037	145.56	150	-3	
	cis-1,2-Dichloroethene	0.3342	0.3513	21.02	20	5	
	2,2-Dichloropropane	0.4251	0.4226	19.88	20	-1	
	Propionitrile	2.0227	2.0620	152.91	150	2	
	Methacrylonitrile	0.1170	0.1114	142.70	150	-5	
	Bromochloromethane	0.1635	0.1615	19.75	20	-1	
	Tetrahydrofuran	1.5856	1.6585	104.60	100	5	
*	Chloroform	0.5364	0.5469	20.39	20	2	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1-Trichloroethane	0.5181	0.5094	19.66	20	-2	
	Cyclohexane	0.6302	0.6474	20.55	20	3	
	1,1-Dichloropropene	0.4338	0.4369	20.14	20	1	
	Carbon Tetrachloride	0.3830	0.3742	19.54	20	-2	
	Isobutyl Alcohol	0.5096	0.4746	465.70	500	-7	
	Benzene	1.2609	1.3047	20.69	20	3	
	1,2-Dichloroethane	0.4097	0.4020	19.62	20	-2	
	t-Amyl methyl ether	0.8144	0.7876	19.34	20	-3	
	n-Heptane	0.6124	0.6228	20.34	20	2	
	n-Butanol	0.3762	0.3592	954.90	1000	-5	
	Trichloroethene	0.3227	0.3246	20.12	20	1	
	Methylcyclohexane	0.6000	0.6140	20.47	20	2	
*	1,2-Dichloropropane	0.3331	0.3398	20.41	20	2	*
	Methyl Methacrylate	0.1907	0.1801	18.89	20	-6	
	1,4-Dioxane	0.1410	0.1584	561.79	500	12	
	Dibromomethane	0.1795	0.1764	19.65	20	-2	
	Bromodichloromethane	0.3833	0.3650	19.05	20	-5	
	2-Nitropropane	2.5306	2.1572	19.28	20	-4	
	2-Chloroethyl Vinyl Ether	0.1644	0.1537	18.70	20	-7	
	cis-1,3-Dichloropropene	0.4668	0.4466	19.13	20	-4	
	4-Methyl-2-pentanone	0.3036	0.2994	98.59	100	-1	
*	Toluene	0.9983	1.0240	20.52	20	3	*
	trans-1,3-Dichloropropene	0.4982	0.4608	18.50	20	-8	
	Ethyl Methacrylate	0.4494	0.4318	19.22	20	-4	
	1,1,2-Trichloroethane	0.3230	0.3247	20.11	20	1	
	Tetrachloroethene	0.4631	0.4617	19.94	20	0	
	1,3-Dichloropropane	0.5552	0.5421	19.53	20	-2	
	2-Hexanone	0.2699	0.2611	96.73	100	-3	
	Dibromochloromethane	0.3545	0.3274	18.47	20	-8	
	1,2-Dibromoethane	0.3271	0.3166	19.36	20	-3	
	1-Chlorohexane	0.5308	0.5369	20.23	20	1	
#	Chlorobenzene	1.1089	1.1099	20.02	20	0	#
	1,1,1,2-Tetrachloroethane	0.3690	0.3553	19.26	20	-4	
*	Ethylbenzene	1.9040	1.9461	20.44	20	2	*
	m+p-Xylene	0.7574	0.7692	40.62	40	2	
	o-Xylene	0.7545	0.7566	20.06	20	0	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Styrene	1.1879	1.1988	20.18	20	1	
#	Bromoform	0.2222	0.1877	17.86	20	-11	#
	Isopropylbenzene	1.9082	1.9760	20.71	20	4	
	Cyclohexanone	0.9002	0.8915	490.81	500	-2	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7363	19.49	20	-3	#
	Bromobenzene	0.8408	0.8515	20.25	20	1	
	trans-1,4-Dichloro-2-butene	0.2069	0.2084	100.71	100	1	
	1,2,3-Trichloropropane	0.2073	0.2109	20.35	20	2	
	n-Propylbenzene	3.8098	4.1293	21.68	20	8	
	2-Chlorotoluene	0.7939	0.8210	20.68	20	3	
	1,3,5-Trimethylbenzene	2.8159	2.9502	20.95	20	5	
	4-Chlorotoluene	0.8226	0.8362	20.33	20	2	
	tert-Butylbenzene	0.6559	0.6739	20.55	20	3	
	Pentachloroethane	0.4798	0.4633	19.31	20	-3	
	1,2,4-Trimethylbenzene	2.8653	3.0214	21.09	20	5	
	sec-Butylbenzene	3.5929	3.8830	21.61	20	8	
	1,3-Dichlorobenzene	1.6523	1.6406	19.86	20	-1	
	p-Isopropyltoluene	3.2092	3.4609	21.57	20	8	
	1,4-Dichlorobenzene	1.7189	1.7343	20.18	20	1	
	1,2,3-Trimethylbenzene	2.9416	3.1660	21.53	20	8	
	Benzyl Chloride	0.2338	0.2057	18.01	20	-10	
	1,3-Diethylbenzene	1.8848	1.9794	21.00	20	5	
	1,4-Diethylbenzene	2.0114	2.1215	21.09	20	5	
	n-Butylbenzene	1.6592	1.7527	21.13	20	6	
	1,2-Dichlorobenzene	1.6409	1.6525	20.14	20	1	
	1,2-Diethylbenzene	1.6079	1.6918	21.04	20	5	
	1,2-Dibromo-3-chloropropane	0.1332	0.1254	18.83	20	-6	
	1,3,5-Trichlorobenzene	1.3773	1.3816	20.06	20	0	
	1,2,4-Trichlorobenzene	1.2763	1.2697	19.90	20	-1	
	Hexachlorobutadiene	0.6574	0.6829	21.09	20	5	
	Naphthalene	2.6627	2.6918	20.22	20	1	
	1,2,3-Trichlorobenzene	1.1896	1.1979	20.14	20	1	
	2-Methylnaphthalene	1.6549	1.5945	19.27	20	-4	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

page 3 of 3 FORM VII VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date(s): 05/24/18 05/24/18

Heated Purge: (Y/N) N Calibration Times: 11:51 13:46

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

LAB FILE ID: RRF = RRF 4 = qy24i10.d RRF 10= qy24i11.d
RRF 20= qy24i12.d RRF 50= qy24i13.d RRF100= qy24i14.d RRF300= qy24i15.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane			0.3642	0.3414	0.3491	0.3408	0.3388	0.3228	0.3429	4	AVG	
Chloromethane	#		0.4301	0.4317	0.3950	0.3899	0.3900	0.3714	0.4013	6	AVG	#
Vinyl Chloride	*		0.4143	0.3980	0.3746	0.3627	0.3615	0.3388	0.3750	7	AVG	*
Bromomethane			7.0358	7.0101	6.6548	5.8940	5.5146	5.1495	6.2098	13	AVG	
Chloroethane			4.7411	4.7230	4.4418	4.0786	3.9050	3.6748	4.2607	10	AVG	
Dichlorofluoromethane			0.4699	0.4516	0.4077	0.3846	0.3933	0.3585	0.4109	10	AVG	
Trichlorofluoromethane			0.4196	0.4092	0.4069	0.3831	0.3889	0.3687	0.3961	5	AVG	
n-Pentane			0.3834	0.2873	0.3068	0.2986	0.2975	0.2662	0.3066	13	AVG	
Ethanol			0.1616	0.1498	0.1473	0.1448	0.1361	0.1305	0.1450	8	AVG	
Freon 123a			0.3584	0.3423	0.3499	0.3156	0.3241	0.3066	0.3328	6	AVG	
Acrolein			3.0112	3.2559	2.9809	2.7369	2.7132	2.6319	2.8883	8	AVG	
1,1-Dichloroethene	*		0.2713	0.2547	0.2601	0.2423	0.2499	0.2393	0.2529	5	AVG	*
1,1-Dichloroethene(2)	*		0.1295	0.1271	0.1338	0.1247	0.1286	0.1194	0.1272	4	AVG	*
Acetone			0.0294	0.0322	0.0294	0.0282	0.0289	0.0279	0.0293	5	AVG	
Freon 113			0.2356	0.2087	0.2221	0.2127	0.2208	0.2104	0.2184	5	AVG	
2-Propanol			0.8399	0.8888	0.9340	0.8852	0.8569	0.8283	0.8722	4	AVG	
Methyl Iodide			0.5462	0.5239	0.5361	0.5130	0.5259	0.5094	0.5258	3	AVG	
Carbon Disulfide			0.9561	0.9227	0.9441	0.9070	0.9469	0.9075	0.9307	2	AVG	
Methyl Acetate			0.2609	0.2533	0.2475	0.2428	0.2457	0.2316	0.2470	4	AVG	
Allyl Chloride			0.4976	0.4688	0.4834	0.4700	0.4849	0.4557	0.4767	3	AVG	
Methylene Chloride			0.3294	0.3163	0.3108	0.2999	0.3103	0.2981	0.3108	4	AVG	
t-Butyl alcohol			1.3048	1.3072	1.3298	1.2603	1.2697	1.2273	1.2832	3	AVG	
Acrylonitrile			0.1281	0.1369	0.1272	0.1230	0.1264	0.1225	0.1273	4	AVG	
Methyl Tertiary Butyl Ether			0.9085	0.8668	0.8644	0.8421	0.8605	0.8092	0.8586	4	AVG	
trans-1,2-Dichloroethene			0.2998	0.2962	0.2979	0.2882	0.2998	0.2865	0.2948	2	AVG	
n-Hexane			0.2505	0.2270	0.2431	0.2360	0.2506	0.2414	0.2414	4	AVG	
1,1-Dichloroethane	#		0.5409	0.5426	0.5364	0.5213	0.5352	0.5157	0.5320	2	AVG	#
di-Isopropyl ether			1.0437	1.0133	1.0152	0.9813	1.0020	0.9449	1.0000	3	AVG	
2-Chloro-1,3-butadiene			0.4487	0.4541	0.4523	0.4337	0.4489	0.4259	0.4439	3	AVG	
Ethyl t-butyl ether			0.9599	0.9595	0.9478	0.9157	0.9396	0.8683	0.9318	4	AVG	
2-Butanone			6.4579	7.0906	6.3581	5.8394	5.7682	5.5749	6.1815	9	AVG	
2-Butanone(2)			1.6338	1.7684	1.6384	1.5780	1.5665	1.5487	1.6223	5	AVG	
cis-1,2-Dichloroethene			0.3347	0.3306	0.3271	0.3203	0.3317	0.3165	0.3268	2	AVG	
2,2-Dichloropropane			0.4224	0.4265	0.4222	0.4093	0.4257	0.4057	0.4186	2	AVG	
Propionitrile			0.0453	0.0458	0.0465	0.0448	0.0466	0.0447	0.0456	2	AVG	
Methacrylonitrile			0.1363	0.1374	0.1364	0.1329	0.1388	0.1325	0.1357	2	AVG	
Bromochloromethane			0.1661	0.1686	0.1723	0.1700	0.1748	0.1683	0.1700	2	AVG	
Tetrahydrofuran			1.6325	1.7338	1.6418	1.5512	1.5323	1.5206	1.6020	5	AVG	
Chloroform	*		0.4967	0.5005	0.4997	0.4937	0.5036	0.4902	0.4974	1	AVG	*
1,1,1-Trichloroethane			0.4826	0.4489	0.4607	0.4285	0.4412	0.4395	0.4502	4	AVG	
Cyclohexane			0.3864	0.3628	0.3785	0.3629	0.3758	0.3629	0.3715	3	AVG	
Cyclohexane(2)			0.3273	0.3042	0.3102	0.2973	0.3112	0.3023	0.3087	3	AVG	
Cyclohexane(3)			0.1168	0.1101	0.1106	0.1099	0.1139	0.1098	0.1118	3	AVG	
1,1-Dichloropropene			0.4015	0.3915	0.3999	0.3794	0.3896	0.3820	0.3907	2	AVG	
Carbon Tetrachloride			0.3090	0.3117	0.3238	0.3208	0.3431	0.3490	0.3262	5	AVG	
Isobutyl Alcohol			0.4126	0.4340	0.4416	0.4342	0.4074	0.4062	0.4227	4	AVG	
Benzene			1.2084	1.1813	1.1855	1.1500	1.1611	1.1359	1.1704	2	AVG	
1,2-Dichloroethane			0.4007	0.4060	0.3964	0.3871	0.3835	0.3804	0.3923	3	AVG	
1,2-Dichloroethane(2)			0.0421	0.0403	0.0406	0.0398	0.0394	0.0395	0.0403	2	AVG	
t-Amyl methyl ether			0.8974	0.9028	0.8994	0.8869	0.8905	0.8372	0.8857	3	AVG	
n-Heptane			0.2292	0.2055	0.2122	0.2092	0.2141	0.2031	0.2122	4	AVG	
n-Butanol			0.3190	0.3427	0.3734	0.3670	0.3497	0.3503	0.3504	5	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date(s): 05/24/18 05/24/18

Heated Purge: (Y/N) N Calibration Times: 11:51 13:46

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

LAB FILE ID: RRF = RRF 4 = qy24i10.d RRF 10= qy24i11.d
RRF 20= qy24i12.d RRF 50= qy24i13.d RRF100= qy24i14.d RRF300= qy24i15.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Trichloroethene		0.3033	0.2951	0.3024	0.2905	0.2896	0.2826	0.2939		3	AVG	
Methylcyclohexane		0.2930	0.2634	0.2842	0.2851	0.2837	0.2708	0.2800		4	AVG	
1,2-Dichloropropane	*	0.3221	0.3157	0.3248	0.3140	0.3087	0.3005	0.3143		3	AVG	*
Methyl Methacrylate		0.2181	0.2209	0.2316	0.2306	0.2315	0.2293	0.2270		3	AVG	
1,4-Dioxane		0.1360	0.1427	0.1481	0.1526	0.1393	0.1372	0.1426		5	AVG	
Dibromomethane		0.1904	0.1874	0.1917	0.1911	0.1912	0.1896	0.1902		1	AVG	
Bromodichloromethane		0.3240	0.3308	0.3509	0.3647	0.3710	0.3731	0.3524		6	AVG	
2-Nitropropane		1.8685	2.0867	2.1844	2.3519	2.4762	2.8229	2.2984		14	AVG	
2-Chloroethyl Vinyl Ether		0.2067	0.2121	0.2217	0.2228	0.2255	0.2143	0.2172		3	AVG	
cis-1,3-Dichloropropene		0.4613	0.4784	0.4898	0.4959	0.5203	0.4897	0.4892		4	AVG	
4-Methyl-2-pentanone		0.2905	0.3206	0.3037	0.2950	0.3073	0.2810	0.2997		5	AVG	
Toluene	*	0.9929	1.0008	1.0083	0.9719	0.9450	0.9074	0.9710		4	AVG	*
trans-1,3-Dichloropropene		0.5465	0.5814	0.6023	0.6058	0.6121	0.6060	0.5923		4	AVG	
Ethyl Methacrylate		0.5560	0.5792	0.5955	0.5956	0.5870	0.5731	0.5811		3	AVG	
1,1,2-Trichloroethane		0.3804	0.3794	0.3842	0.3810	0.3676	0.3563	0.3748		3	AVG	
Tetrachloroethene		0.3930	0.3900	0.3937	0.3791	0.3700	0.3618	0.3812		3	AVG	
1,3-Dichloropropane		0.6685	0.6660	0.6612	0.6513	0.6338	0.6016	0.6471		4	AVG	
2-Hexanone		0.2589	0.3037	0.2955	0.2877	0.2851	0.2689	0.2833		6	AVG	
Dibromochloromethane		0.3033	0.3311	0.3625	0.3913	0.4098	0.4260	0.3707		13	AVG	
1,2-Dibromoethane		0.3836	0.3996	0.3980	0.3956	0.3912	0.3862	0.3924		2	AVG	
1-Chlorohexane		0.4162	0.3945	0.3977	0.3735	0.3699	0.3555	0.3845		6	AVG	
Chlorobenzene	#	1.0869	1.0676	1.0863	1.0524	1.0397	0.9900	1.0538		3	AVG	#
1,1,1,2-Tetrachloroethane		0.3316	0.3470	0.3587	0.3686	0.3749	0.3708	0.3586		5	AVG	
Ethylbenzene	*	1.6942	1.6937	1.7064	1.6593	1.6306	1.5311	1.6525		4	AVG	*
m+p-Xylene		0.6749	0.6678	0.6867	0.6560	0.6471	0.6022	0.6558		5	AVG	
o-Xylene		0.6660	0.6700	0.6861	0.6654	0.6487	0.6098	0.6576		4	AVG	
Styrene		1.0973	1.1346	1.1690	1.1482	1.1260	1.0612	1.1227		3	AVG	
Bromoform	#	0.1771	0.1964	0.2206	0.2535	0.2724	0.2973	0.2362		20	2NDDEG	#
Isopropylbenzene		1.4472	1.4441	1.4934	1.4202	1.3951	1.3126	1.4187		4	AVG	
Cyclohexanone		0.4648	0.5100	0.5373	0.5403	0.5157	0.4943	0.5104		6	AVG	
1,1,2,2-Tetrachloroethane	#	1.1395	1.1051	1.1559	1.0903	1.1132	1.0625	1.1111		3	AVG	#
Bromobenzene		1.0527	1.0556	1.0438	1.0070	1.0084	0.9805	1.0247		3	AVG	
trans-1,4-Dichloro-2-butene		0.2979	0.3169	0.3249	0.3133	0.3145	0.2905	0.3097		4	AVG	
1,2,3-Trichloropropane		0.3382	0.3451	0.3360	0.3278	0.3236	0.3131	0.3306		3	AVG	
n-Propylbenzene		3.7363	3.7399	3.6743	3.5045	3.4590	3.2077	3.5536		6	AVG	
2-Chlorotoluene		0.8300	0.8484	0.8237	0.7891	0.7913	0.7474	0.8050		5	AVG	
1,3,5-Trimethylbenzene		2.7683	2.7331	2.7131	2.6281	2.5909	2.4142	2.6413		5	AVG	
4-Chlorotoluene		0.8819	0.8952	0.9088	0.8484	0.8438	0.7862	0.8607		5	AVG	
tert-Butylbenzene		0.5407	0.5606	0.5673	0.5214	0.5144	0.4984	0.5338		5	AVG	
Pentachloroethane		0.4525	0.4908	0.5285	0.5681	0.5863	0.5913	0.5362		10	AVG	
1,2,4-Trimethylbenzene		2.8469	2.8740	2.8925	2.7762	2.7439	2.6028	2.7894		4	AVG	
sec-Butylbenzene		3.0096	3.0052	3.0495	2.8543	2.8015	2.5947	2.8858		6	AVG	
1,3-Dichlorobenzene		1.6672	1.6475	1.6485	1.6151	1.5823	1.5139	1.6124		4	AVG	
p-Isopropyltoluene		2.6542	2.6848	2.6983	2.5787	2.5674	2.3803	2.5940		5	AVG	
1,4-Dichlorobenzene		1.8108	1.7688	1.7621	1.6774	1.6644	1.5864	1.7117		5	AVG	
1,2,3-Trimethylbenzene		3.0362	2.9666	3.0303	2.9906	2.9190	2.7364	2.9465		4	AVG	
Benzyl Chloride		0.3573	0.4139	0.4626	0.4772	0.4925	0.4909	0.4491		12	AVG	
1,3-Diethylbenzene		1.5371	1.5460	1.6086	1.5786	1.5384	1.4411	1.5416		4	AVG	
1,4-Diethylbenzene		1.6234	1.6008	1.6366	1.5943	1.5511	1.4494	1.5759		4	AVG	
n-Butylbenzene		1.2088	1.2856	1.2234	1.1911	1.1580	1.0973	1.1940		5	AVG	
1,2-Dichlorobenzene		1.6691	1.6660	1.6242	1.5875	1.5663	1.5043	1.6029		4	AVG	
1,2-Diethylbenzene		1.4381	1.3979	1.4058	1.3519	1.3138	1.2277	1.3559		6	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date(s): 05/24/18 05/24/18

Heated Purge: (Y/N) N Calibration Times: 11:51 13:46

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

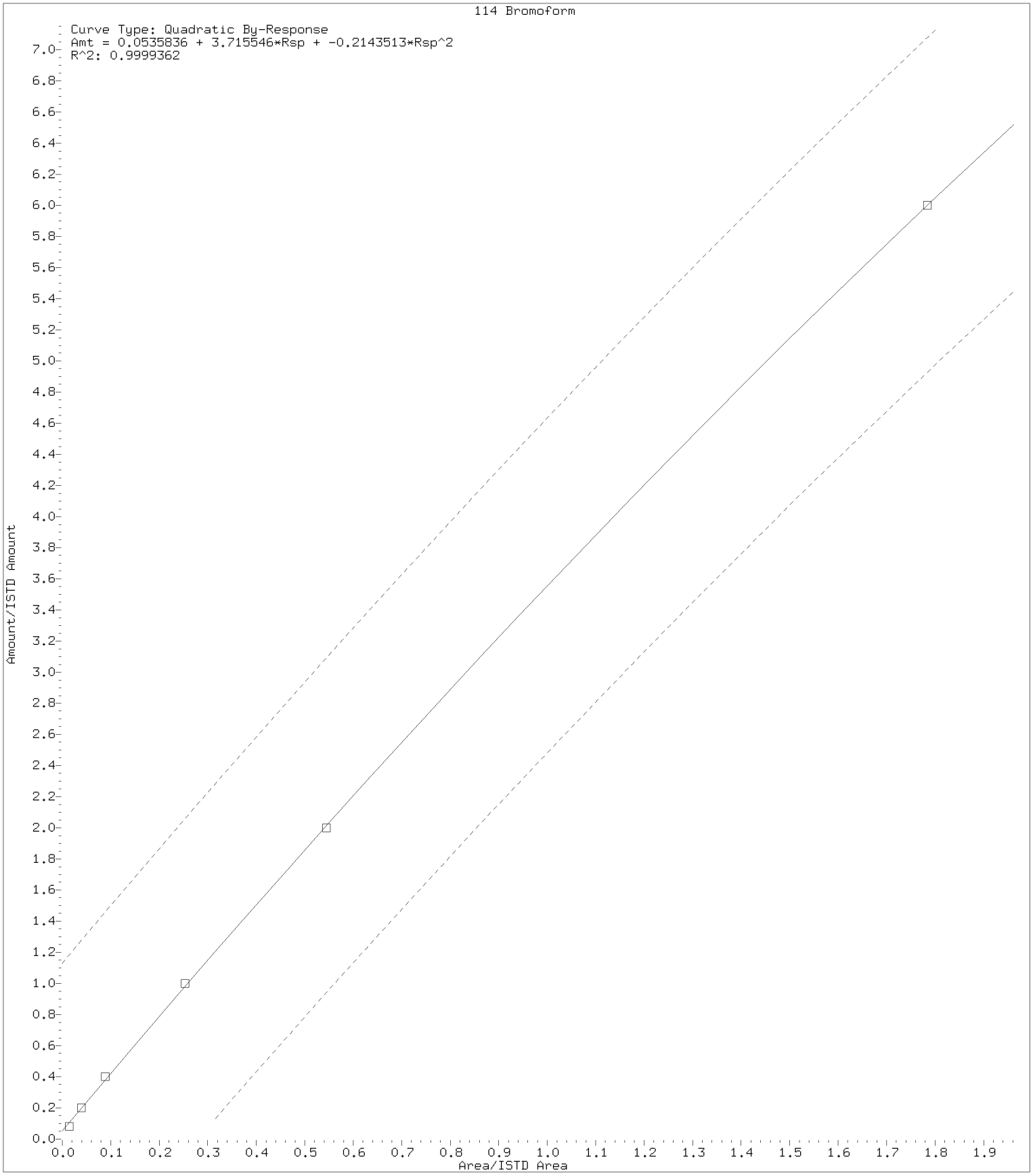
LAB FILE ID: RRF = RRF 4 = qy24i10.d RRF 10= qy24i11.d
RRF 20= qy24i12.d RRF 50= qy24i13.d RRF100= qy24i14.d RRF300= qy24i15.d

COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,2-Dibromo-3-chloropropane		0.1744	0.1822	0.1923	0.1945	0.2019	0.2034	0.1915	6	AVG
1,3,5-Trichlorobenzene		1.0377	1.0730	1.0772	1.0233	1.0151	0.9852	1.0352	3	AVG
1,2,4-Trichlorobenzene		0.9687	1.0542	1.0617	1.0230	1.0140	0.9846	1.0177	4	AVG
Hexachlorobutadiene		0.4497	0.4525	0.4663	0.4357	0.4376	0.4144	0.4427	4	AVG
Naphthalene		2.9001	3.0321	3.1203	3.0145	3.0036	2.8365	2.9845	3	AVG
1,2,3-Trichlorobenzene		0.9499	0.9698	1.0042	0.9576	0.9437	0.9138	0.9565	3	AVG
2-Methylnaphthalene		1.4156	1.5542	1.7485	1.7170	1.6972	1.5788	1.6185	8	AVG
Dibromofluoromethane		0.2730	0.2806	0.2662	0.2653	0.2743	0.2731	0.2721	2	AVG
Dibromofluoromethane(2)		0.2647	0.2856	0.2720	0.2713	0.2796	0.2771	0.2751	3	AVG
1,2-Dichloroethane-d4		0.0765	0.0797	0.0723	0.0729	0.0730	0.0728	0.0745	4	AVG
1,2-Dichloroethane-d4(2)		0.3507	0.3505	0.3225	0.3165	0.3189	0.3105	0.3283	5	AVG
1,2-Dichloroethane-d4(3)		0.0430	0.0485	0.0472	0.0463	0.0466	0.0465	0.0463	4	AVG
Toluene-d8		1.4845	1.5380	1.4739	1.4294	1.3837	1.3036	1.4355	6	AVG
Toluene-d8(2)		0.9510	0.9993	0.9603	0.9335	0.9025	0.8530	0.9333	5	AVG
4-Bromofluorobenzene		0.4647	0.4906	0.4730	0.4641	0.4539	0.4499	0.4660	3	AVG
4-Bromofluorobenzene(2)		0.4211	0.4339	0.4225	0.4118	0.4045	0.4073	0.4169	3	AVG

Average %RSD 5

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA



Digitally signed by Patrick T. Herres on 05/24/2018 at 17:55.
Target 3.5 esignature user ID: pth10165

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP07536.i/18may24i.b/qy24i10.d	VSTD004
/chem/HP07536.i/18may24i.b/qy24i11.d	VSTD010
/chem/HP07536.i/18may24i.b/qy24i12.d	VSTD020
/chem/HP07536.i/18may24i.b/qy24i13.d	VSTD050
/chem/HP07536.i/18may24i.b/qy24i14.d	VSTD100
/chem/HP07536.i/18may24i.b/qy24i15.d	VSTD300

Area Summary

File ID:

Internal Standard Name	qy24i10.d	qy24i11.d	qy24i12.d	qy24i13.d	qy24i14.d	qy24i15.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	146288	140176	139062	141858	146551	147485	143570	3	Yes
Fluorobenzene	1167642	1175004	1167197	1158639	1142959	1173639	1164180	1	Yes
Chlorobenzene-d5	845846	845275	830601	836232	875273	877084	851718	2	Yes
1,4-Dichlorobenzene-d4	359564	363811	363351	373559	390181	399162	374938	4	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	qy24i10.d	qy24i11.d	qy24i12.d	qy24i13.d	qy24i14.d	qy24i15.d	Avg. RT
t-Butyl alcohol-d10	4.201	4.204	4.209	4.206	4.208	4.228	4.209
Fluorobenzene	7.686	7.689	7.687	7.688	7.686	7.690	7.688
Chlorobenzene-d5	11.158	11.157	11.156	11.157	11.158	11.159	11.157
1,4-Dichlorobenzene-d4	13.032	13.031	13.033	13.030	13.032	13.033	13.032

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 05/24/2018 at 17:54.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 ICV Date: 05/24/18 Time: 15:18

Lab File ID: qy24v10.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3429	0.3084	17.99	20	-10	
#	Chloromethane	0.4013	0.3859	19.23	20	-4	#
*	Vinyl Chloride	0.3750	0.3631	19.36	20	-3	*
	Bromomethane	6.2098	6.7954	21.89	20	9	
	Chloroethane	4.2607	4.5178	21.21	20	6	
	Dichlorofluoromethane	0.4109	0.4302	20.94	20	5	
	Trichlorofluoromethane	0.3961	0.3889	19.64	20	-2	
	n-Pentane	0.3066	0.2966	19.34	20	-3	
	Ethanol	0.1450	0.1460	1007.03	1000	1	
	Freon 123a	0.3328	0.3258	19.58	20	-2	
	Acrolein	2.8883	2.6005	135.05	150	-10	
*	1,1-Dichloroethene	0.2529	0.2691	21.28	20	6	*
	Acetone	0.0293	0.0284	145.12	150	-3	
	Freon 113	0.2184	0.2050	18.77	20	-6	
	2-Propanol	0.8722	0.8951	153.94	150	3	
	Methyl Iodide	0.5258	0.5161	19.63	20	-2	
	Carbon Disulfide	0.9307	0.9067	19.48	20	-3	
	Methyl Acetate	0.2470	0.2377	19.25	20	-4	
	Allyl Chloride	0.4767	0.4544	19.06	20	-5	
	Methylene Chloride	0.3108	0.3255	20.94	20	5	
	t-Butyl alcohol	1.2832	1.3091	204.04	200	2	
	Acrylonitrile	0.1273	0.1199	94.17	100	-6	
	Methyl Tertiary Butyl Ether	0.8586	0.8442	19.67	20	-2	
	trans-1,2-Dichloroethene	0.2948	0.3067	20.81	20	4	
	n-Hexane	0.2414	0.2297	19.03	20	-5	
#	1,1-Dichloroethane	0.5320	0.5404	20.31	20	2	#
	di-Isopropyl ether	1.0000	1.0036	20.07	20	0	
	2-Chloro-1,3-butadiene	0.4439	0.4327	19.50	20	-3	
	Ethyl t-butyl ether	0.9318	0.9241	19.84	20	-1	
	2-Butanone	6.1815	6.0936	147.87	150	-1	
	cis-1,2-Dichloroethene	0.3268	0.3448	21.10	20	6	
	2,2-Dichloropropane	0.4186	0.4238	20.25	20	1	
	Propionitrile	0.0456	0.0451	148.38	150	-1	
	Methacrylonitrile	0.1357	0.1354	149.67	150	0	
	Bromochloromethane	0.1700	0.1620	19.06	20	-5	
	Tetrahydrofuran	1.6020	1.6693	104.20	100	4	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 ICV Date: 05/24/18 Time: 15:18

Lab File ID: qy24v10.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.4974	0.5031	20.23	20	1	*
	1,1,1-Trichloroethane	0.4502	0.4558	20.25	20	1	
	Cyclohexane	0.3715	0.3538	19.04	20	-5	
	1,1-Dichloropropene	0.3907	0.3819	19.55	20	-2	
	Carbon Tetrachloride	0.3262	0.3211	19.68	20	-2	
	Isobutyl Alcohol	0.4227	0.4324	511.46	500	2	
	Benzene	1.1704	1.1901	20.34	20	2	
	1,2-Dichloroethane	0.3923	0.3985	20.31	20	2	
	t-Amyl methyl ether	0.8857	0.8924	20.15	20	1	
	n-Heptane	0.2122	0.2008	18.93	20	-5	
	n-Butanol	0.3504	0.3522	1005.32	1000	1	
	Trichloroethene	0.2939	0.2939	20.00	20	0	
	Methylcyclohexane	0.2800	0.2610	18.64	20	-7	
*	1,2-Dichloropropane	0.3143	0.3268	20.79	20	4	*
	Methyl Methacrylate	0.2270	0.2208	19.45	20	-3	
	1,4-Dioxane	0.1426	0.1412	494.73	500	-1	
	Dibromomethane	0.1902	0.1968	20.69	20	3	
	Bromodichloromethane	0.3524	0.3501	19.87	20	-1	
	2-Nitropropane	2.2984	2.2245	19.36	20	-3	
	2-Chloroethyl Vinyl Ether	0.2172	0.2090	19.25	20	-4	
	cis-1,3-Dichloropropene	0.4892	0.4787	19.57	20	-2	
	4-Methyl-2-pentanone	0.2997	0.2931	97.80	100	-2	
*	Toluene	0.9710	0.9941	20.48	20	2	*
	trans-1,3-Dichloropropene	0.5923	0.5885	19.87	20	-1	
	Ethyl Methacrylate	0.5811	0.5755	19.81	20	-1	
	1,1,2-Trichloroethane	0.3748	0.3841	20.49	20	2	
	Tetrachloroethene	0.3812	0.3828	20.08	20	0	
	1,3-Dichloropropane	0.6471	0.6583	20.35	20	2	
	2-Hexanone	0.2833	0.2840	100.24	100	0	
	Dibromochloromethane	0.3707	0.3771	20.35	20	2	
	1,2-Dibromoethane	0.3924	0.3999	20.38	20	2	
	1-Chlorohexane	0.3845	0.3832	19.93	20	0	
#	Chlorobenzene	1.0538	1.0836	20.57	20	3	#
	1,1,1,2-Tetrachloroethane	0.3586	0.3660	20.41	20	2	
*	Ethylbenzene	1.6525	1.6809	20.34	20	2	*
	m+p-Xylene	0.6558	0.6668	40.68	40	2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 ICV Date: 05/24/18 Time: 15:18

Lab File ID: qy24v10.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	o-Xylene	0.6576	0.6609	20.10	20	0	
	Styrene	1.1227	1.1596	20.66	20	3	
#	Bromoform	0.2362	0.2216	19.06	20	-5	#
	Isopropylbenzene	1.4187	1.4532	20.49	20	2	
	Cyclohexanone	0.5104	0.4328	423.99	500	-15	
#	1,1,2,2-Tetrachloroethane	1.1111	1.1256	20.26	20	1	#
	Bromobenzene	1.0247	1.0472	20.44	20	2	
	trans-1,4-Dichloro-2-butene	0.3097	0.3292	106.31	100	6	
	1,2,3-Trichloropropane	0.3306	0.3584	21.68	20	8	
	n-Propylbenzene	3.5536	3.6888	20.76	20	4	
	2-Chlorotoluene	0.8050	0.8300	20.62	20	3	
	1,3,5-Trimethylbenzene	2.6413	2.7123	20.54	20	3	
	4-Chlorotoluene	0.8607	0.8858	20.58	20	3	
	tert-Butylbenzene	0.5338	0.5452	20.43	20	2	
	Pentachloroethane	0.5362	0.5237	19.53	20	-2	
	1,2,4-Trimethylbenzene	2.7894	2.8356	20.33	20	2	
	sec-Butylbenzene	2.8858	3.0386	21.06	20	5	
	1,3-Dichlorobenzene	1.6124	1.6251	20.16	20	1	
	p-Isopropyltoluene	2.5940	2.7220	20.99	20	5	
	1,4-Dichlorobenzene	1.7117	1.7533	20.49	20	2	
	1,2,3-Trimethylbenzene	2.9465	3.0415	20.64	20	3	
	Benzyl Chloride	0.4491	0.4349	19.37	20	-3	
	1,3-Diethylbenzene	1.5416	1.5684	20.35	20	2	
	1,4-Diethylbenzene	1.5759	1.6153	20.50	20	2	
	n-Butylbenzene	1.1940	1.2406	20.78	20	4	
	1,2-Dichlorobenzene	1.6029	1.6232	20.25	20	1	
	1,2-Diethylbenzene	1.3559	1.3736	20.26	20	1	
	1,2-Dibromo-3-chloropropane	0.1915	0.1858	19.41	20	-3	
	1,3,5-Trichlorobenzene	1.0352	1.0709	20.69	20	3	
	1,2,4-Trichlorobenzene	1.0177	1.0820	21.26	20	6	
	Hexachlorobutadiene	0.4427	0.5331	24.09	20	20	
	Naphthalene	2.9845	3.0820	20.65	20	3	
	1,2,3-Trichlorobenzene	0.9565	1.0330	21.60	20	8	
	2-Methylnaphthalene	1.6185	1.6822	20.79	20	4	

Average %Drift 3

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i06.d
/chem2/HP09953.i/18feb22i.b/bf22i05.d
/chem2/HP09953.i/18feb22i.b/bf22i04.d
/chem2/HP09953.i/18feb22i.b/bf22i03.d
/chem2/HP09953.i/18feb22i.b/bf22i02.d
/chem2/HP09953.i/18feb22i.b/bf22i01.d

File /chem2/HP09953.i/18feb22i.b/bf22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09953.i/18jun12b.b/bu12c01.d

RT Summary

Internal Standard Name	File ID: bu12c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	1.930	1.924	Yes
Fluorobenzene	3.956	3.956	Yes
Chlorobenzene-d5	7.156	7.156	Yes
1,4-Dichlorobenzene-d4	9.236	9.236	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: bu12c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	93660	114201	57100	228402	Yes
Fluorobenzene	1029158	1207816	603908	2415632	Yes
Chlorobenzene-d5	741492	931957	465978	1863914	Yes
1,4-Dichlorobenzene-d4	418814	549119	274560	1098238	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/12/2018 at 21:02

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/12/18 Time: 20:05

Lab File ID: bu12c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4173	42.44	50	-15	
#	Chloromethane	0.5872	0.5233	44.56	50	-11	#
*	Vinyl Chloride	0.4173	0.3654	43.78	50	-12	*
	Bromomethane	0.2899	0.3050	52.59	50	5	
	Chloroethane	0.2334	0.2289	49.02	50	-2	
	Trichlorofluoromethane	0.5369	0.5462	50.86	50	2	
	Freon 123a	0.3518	0.3215	45.70	50	-9	
	Acrolein	2.4281	2.7048	556.99	500	11	
*	1,1-Dichloroethene	0.2459	0.2235	45.43	50	-9	*
	Acetone	0.0248	0.0218	87.84	100	-12	
	Freon 113	0.2960	0.2726	46.05	50	-8	
	2-Propanol	1.1163	0.9970	223.29	250	-11	
	Methyl Iodide	0.5387	0.4868	45.18	50	-10	
	Carbon Disulfide	0.8424	0.8084	47.98	50	-4	
	Methyl Acetate	0.2090	0.2085	49.86	50	0	
	Allyl Chloride	0.4892	0.5218	53.33	50	7	
	Methylene Chloride	0.2885	0.2639	45.74	50	-9	
	t-Butyl alcohol	1.2418	1.2994	261.61	250	5	
	Acrylonitrile	0.0991	0.0869	43.85	50	-12	
	Methyl Tertiary Butyl Ether	0.7975	0.7530	47.21	50	-6	
	trans-1,2-Dichloroethene	0.2884	0.2627	45.54	50	-9	
	n-Hexane	0.5126	0.4845	47.26	50	-5	
#	1,1-Dichloroethane	0.5731	0.5891	51.39	50	3	#
	di-Isopropyl ether	1.1602	1.1833	50.99	50	2	
	2-Chloro-1,3-butadiene	0.5207	0.5622	53.98	50	8	
	Ethyl t-butyl ether	0.9727	0.9892	50.85	50	2	
	2-Butanone	7.3204	7.6180	104.06	100	4	
	cis-1,2-Dichloroethene	0.3342	0.3196	47.81	50	-4	
	2,2-Dichloropropane	0.4251	0.4806	56.53	50	13	
	Propionitrile	2.0227	2.0469	252.99	250	1	
	Methacrylonitrile	0.1170	0.1046	111.68	125	-11	
	Bromochloromethane	0.1635	0.1533	46.88	50	-6	
	Tetrahydrofuran	1.5856	1.6191	102.11	100	2	
*	Chloroform	0.5364	0.5573	51.95	50	4	*
	1,1,1-Trichloroethane	0.5181	0.4975	48.01	50	-4	
	Cyclohexane	0.6302	0.5943	47.15	50	-6	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/12/18 Time: 20:05

Lab File ID: bu12c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Cyclohexane(2)	0.5080	0.4436	43.66	50	-13	
	Cyclohexane(3)	0.1808	0.1696	46.91	50	-6	
	1,1-Dichloropropene	0.4338	0.4343	50.05	50	0	
	Carbon Tetrachloride	0.3830	0.4171	54.45	50	9	
	Isobutyl Alcohol	0.5096	0.5767	707.37	625	13	
	Benzene	1.2609	1.2141	48.14	50	-4	
	1,2-Dichloroethane	0.4097	0.4482	54.70	50	9	
	1,2-Dichloroethane(2)	0.0353	0.0333	47.18	50	-6	
	t-Amyl methyl ether	0.8144	0.7925	48.65	50	-3	
	n-Heptane	0.6124	0.5460	44.58	50	-11	
	n-Butanol	0.3762	0.4050	1345.75	1250	8	
	Trichloroethene	0.3227	0.3083	47.78	50	-4	
	Methylcyclohexane	0.6000	0.5924	49.37	50	-1	
*	1,2-Dichloropropane	0.3331	0.3261	48.96	50	-2	*
	Methyl Methacrylate	0.1907	0.1755	46.02	50	-8	
	1,4-Dioxane	0.1410	0.1356	601.16	625	-4	
	Dibromomethane	0.1795	0.1737	48.38	50	-3	
	Bromodichloromethane	0.3833	0.4107	53.57	50	7	
	2-Nitropropane	2.5306	4.1255	138.87	100	39	
	2-Chloroethyl Vinyl Ether	0.1644	0.1569	47.73	50	-5	
	cis-1,3-Dichloropropene	0.4668	0.4916	52.66	50	5	
	4-Methyl-2-pentanone	0.3036	0.3086	101.64	100	2	
*	Toluene	0.9983	1.0188	51.02	50	2	*
	trans-1,3-Dichloropropene	0.4982	0.5854	58.75	50	17	
	Ethyl Methacrylate	0.4494	0.4799	53.39	50	7	
	1,1,2-Trichloroethane	0.3230	0.3286	50.88	50	2	
	Tetrachloroethene	0.4631	0.4384	47.33	50	-5	
	1,3-Dichloropropane	0.5552	0.5884	52.99	50	6	
	2-Hexanone	0.2699	0.3060	113.40	100	13	
	Dibromochloromethane	0.3545	0.3893	54.92	50	10	
	1,2-Dibromoethane	0.3271	0.3336	50.99	50	2	
	1-Chlorohexane	0.5308	0.5395	50.81	50	2	
#	Chlorobenzene	1.1089	1.1139	50.22	50	0	#
	1,1,1,2-Tetrachloroethane	0.3690	0.3949	53.51	50	7	
*	Ethylbenzene	1.9040	2.0240	53.15	50	6	*
	m+p-Xylene	0.7574	0.7648	100.97	100	1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/12/18 Time: 20:05

Lab File ID: bu12c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	o-Xylene	0.7545	0.7535	49.93	50	0	
	Styrene	1.1879	1.2341	51.94	50	4	
#	Bromoform	0.2222	0.2443	51.75	50	3	#
	Isopropylbenzene	1.9082	1.9627	51.43	50	3	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7952	52.63	50	5	#
	Bromobenzene	0.8408	0.8691	51.68	50	3	
	trans-1,4-Dichloro-2-butene	0.2069	0.2738	165.41	125	32	
	1,2,3-Trichloropropane	0.2073	0.2212	53.35	50	7	
	n-Propylbenzene	3.8098	4.3003	56.44	50	13	
	2-Chlorotoluene	0.7939	0.8233	51.85	50	4	
	1,3,5-Trimethylbenzene	2.8159	3.0852	54.78	50	10	
	4-Chlorotoluene	0.8226	0.8576	52.13	50	4	
	tert-Butylbenzene	0.6559	0.6534	49.81	50	0	
	Pentachloroethane	0.4798	0.5673	59.12	50	18	
	1,2,4-Trimethylbenzene	2.8653	3.1640	55.21	50	10	
	sec-Butylbenzene	3.5929	3.8292	53.29	50	7	
	1,3-Dichlorobenzene	1.6523	1.7035	51.55	50	3	
	p-Isopropyltoluene	3.2092	3.3903	52.82	50	6	
	1,4-Dichlorobenzene	1.7189	1.7536	51.01	50	2	
	1,2,3-Trimethylbenzene	2.9416	3.2962	56.03	50	12	
	Benzyl Chloride	0.2338	0.2960	56.38	50	13	
	1,3-Diethylbenzene	1.8848	2.0776	55.11	50	10	
	1,4-Diethylbenzene	2.0114	2.2133	55.02	50	10	
	n-Butylbenzene	1.6592	1.7506	52.76	50	6	
	1,2-Dichlorobenzene	1.6409	1.6638	50.70	50	1	
	1,2-Diethylbenzene	1.6079	1.7562	54.61	50	9	
	1,2-Dibromo-3-chloropropane	0.1332	0.1523	57.17	50	14	
	1,3,5-Trichlorobenzene	1.3773	1.3732	49.85	50	0	
	1,2,4-Trichlorobenzene	1.2763	1.2472	48.86	50	-2	
	Hexachlorobutadiene	0.6574	0.6128	44.45	50	-11	
	Naphthalene	2.6627	2.6890	50.49	50	1	
	1,2,3-Trichlorobenzene	1.1896	1.1780	49.51	50	-1	
	2-Methylnaphthalene	1.6549	1.7289	52.24	50	4	
	Dibromofluoromethane	0.2502	0.2512	50.21	50	0	
	Dibromofluoromethane(2)	0.2550	0.2579	50.57	50	1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/12/18 Time: 20:05

Lab File ID: bu12c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,2-Dichloroethane-d4	0.0548	0.0521	47.48	50	-5
1,2-Dichloroethane-d4(2)	0.2800	0.3058	54.61	50	9
1,2-Dichloroethane-d4(3)	0.0347	0.0334	48.11	50	-4
Toluene-d8	1.3054	1.3811	52.90	50	6
Toluene-d8(2)	0.8436	0.8796	52.14	50	4
4-Bromofluorobenzene	0.4987	0.5184	51.98	50	4
4-Bromofluorobenzene(2)	0.4342	0.4286	49.35	50	-1

Average %Drift 7

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i06.d
/chem2/HP09953.i/18feb22i.b/bf22i05.d
/chem2/HP09953.i/18feb22i.b/bf22i04.d
/chem2/HP09953.i/18feb22i.b/bf22i03.d
/chem2/HP09953.i/18feb22i.b/bf22i02.d
/chem2/HP09953.i/18feb22i.b/bf22i01.d

File /chem2/HP09953.i/18feb22i.b/bf22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09953.i/18jun13a.b/bu13c01.d

RT Summary

Internal Standard Name	File ID: bu13c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	1.924	1.924	Yes
Fluorobenzene	3.956	3.956	Yes
Chlorobenzene-d5	7.156	7.156	Yes
1,4-Dichlorobenzene-d4	9.236	9.236	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: bu13c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	97875	114201	57100	228402	Yes
Fluorobenzene	1059738	1207816	603908	2415632	Yes
Chlorobenzene-d5	758642	931957	465978	1863914	Yes
1,4-Dichlorobenzene-d4	426924	549119	274560	1098238	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/13/2018 at 19:15

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/13/18 Time: 18:49

Lab File ID: bu13c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.5631	57.27	50	15	
#	Chloromethane	0.5872	0.5908	50.30	50	1	#
*	Vinyl Chloride	0.4173	0.4294	51.45	50	3	*
	Bromomethane	0.2899	0.3362	57.99	50	16	
	Chloroethane	0.2334	0.2487	53.26	50	7	
	Trichlorofluoromethane	0.5369	0.6072	56.54	50	13	
	Ethanol	0.1211	0.1011	2086.74	2500	-17	
	Freon 123a	0.3518	0.3193	45.38	50	-9	
	Acrolein	2.4281	2.3250	478.78	500	-4	
*	1,1-Dichloroethene	0.2459	0.2224	45.22	50	-10	*
	Acetone	0.0248	0.0193	77.74	100	-22	
	Freon 113	0.2960	0.2803	47.35	50	-5	
	2-Propanol	1.1163	1.1021	246.82	250	-1	
	Methyl Iodide	0.5387	0.4745	44.04	50	-12	
	Carbon Disulfide	0.8424	0.7799	46.29	50	-7	
	Methyl Acetate	0.2090	0.1893	45.28	50	-9	
	Allyl Chloride	0.4892	0.4872	49.80	50	0	
	Methylene Chloride	0.2885	0.2583	44.76	50	-10	
	t-Butyl alcohol	1.2418	1.1954	240.67	250	-4	
	Acrylonitrile	0.0991	0.0825	41.63	50	-17	
	Methyl Tertiary Butyl Ether	0.7975	0.7552	47.35	50	-5	
	trans-1,2-Dichloroethene	0.2884	0.2592	44.94	50	-10	
	n-Hexane	0.5126	0.4974	48.51	50	-3	
#	1,1-Dichloroethane	0.5731	0.5861	51.13	50	2	#
	di-Isopropyl ether	1.1602	1.1582	49.91	50	0	
	2-Chloro-1,3-butadiene	0.5207	0.5672	54.47	50	9	
	Ethyl t-butyl ether	0.9727	0.9852	50.64	50	1	
	2-Butanone	7.3204	6.6413	90.72	100	-9	
	cis-1,2-Dichloroethene	0.3342	0.3171	47.44	50	-5	
	2,2-Dichloropropane	0.4251	0.4819	56.68	50	13	
	Propionitrile	2.0227	2.0153	249.09	250	0	
	Methacrylonitrile	0.1170	0.1023	109.20	125	-13	
	Bromochloromethane	0.1635	0.1471	44.98	50	-10	
	Tetrahydrofuran	1.5856	1.4706	92.75	100	-7	
*	Chloroform	0.5364	0.5561	51.84	50	4	*
	1,1,1-Trichloroethane	0.5181	0.5256	50.71	50	1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/13/18 Time: 18:49

Lab File ID: bu13c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Cyclohexane	0.6302	0.6128	48.62	50	-3	
	Cyclohexane(2)	0.5080	0.4586	45.14	50	-10	
	Cyclohexane(3)	0.1808	0.1760	48.66	50	-3	
	1,1-Dichloropropene	0.4338	0.4409	50.82	50	2	
	Carbon Tetrachloride	0.3830	0.4263	55.64	50	11	
	Isobutyl Alcohol	0.5096	0.5193	636.92	625	2	
	Benzene	1.2609	1.2000	47.58	50	-5	
	1,2-Dichloroethane	0.4097	0.4451	54.32	50	9	
	1,2-Dichloroethane(2)	0.0353	0.0324	45.91	50	-8	
	t-Amyl methyl ether	0.8144	0.7888	48.42	50	-3	
	n-Heptane	0.6124	0.5839	47.67	50	-5	
	n-Butanol	0.3762	0.3600	1196.30	1250	-4	
	Trichloroethene	0.3227	0.3075	47.64	50	-5	
	Methylcyclohexane	0.6000	0.5575	46.46	50	-7	
*	1,2-Dichloropropane	0.3331	0.3236	48.58	50	-3	*
	Methyl Methacrylate	0.1907	0.1723	45.19	50	-10	
	1,4-Dioxane	0.1410	0.1296	574.51	625	-8	
	Dibromomethane	0.1795	0.1683	46.87	50	-6	
	Bromodichloromethane	0.3833	0.4039	52.68	50	5	
	2-Nitropropane	2.5306	3.6283	123.19	100	23	
	2-Chloroethyl Vinyl Ether	0.1644	0.1419	43.18	50	-14	
	cis-1,3-Dichloropropene	0.4668	0.4783	51.23	50	2	
	4-Methyl-2-pentanone	0.3036	0.2621	86.33	100	-14	
*	Toluene	0.9983	1.0126	50.71	50	1	*
	trans-1,3-Dichloropropene	0.4982	0.5823	58.44	50	17	
	Ethyl Methacrylate	0.4494	0.4646	51.69	50	3	
	1,1,2-Trichloroethane	0.3230	0.3185	49.32	50	-1	
	Tetrachloroethene	0.4631	0.4406	47.57	50	-5	
	1,3-Dichloropropane	0.5552	0.5746	51.75	50	3	
	2-Hexanone	0.2699	0.2391	88.61	100	-11	
	Dibromochloromethane	0.3545	0.3856	54.39	50	9	
	1,2-Dibromoethane	0.3271	0.3239	49.52	50	-1	
	1-Chlorohexane	0.5308	0.5402	50.88	50	2	
#	Chlorobenzene	1.1089	1.0848	48.91	50	-2	#
	1,1,1,2-Tetrachloroethane	0.3690	0.4007	54.30	50	9	
*	Ethylbenzene	1.9040	1.9991	52.50	50	5	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/13/18 Time: 18:49

Lab File ID: bu13c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	m+p-Xylene	0.7574	0.7588	100.18	100	0	
	o-Xylene	0.7545	0.7515	49.81	50	0	
	Styrene	1.1879	1.2026	50.62	50	1	
#	Bromoform	0.2222	0.2351	49.93	50	0	#
	Isopropylbenzene	1.9082	2.0015	52.45	50	5	
	Cyclohexanone	0.9002	0.5563	393.92	625	-37	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7765	51.39	50	3	#
	Bromobenzene	0.8408	0.8496	50.52	50	1	
	trans-1,4-Dichloro-2-butene	0.2069	0.2635	159.20	125	27	
	1,2,3-Trichloropropane	0.2073	0.2158	52.04	50	4	
	n-Propylbenzene	3.8098	4.2533	55.82	50	12	
	2-Chlorotoluene	0.7939	0.8091	50.95	50	2	
	1,3,5-Trimethylbenzene	2.8159	3.1142	55.30	50	11	
	4-Chlorotoluene	0.8226	0.8415	51.15	50	2	
	tert-Butylbenzene	0.6559	0.6751	51.47	50	3	
	Pentachloroethane	0.4798	0.5594	58.30	50	17	
	1,2,4-Trimethylbenzene	2.8653	3.1758	55.42	50	11	
	sec-Butylbenzene	3.5929	3.9480	54.94	50	10	
	1,3-Dichlorobenzene	1.6523	1.6580	50.17	50	0	
	p-Isopropyltoluene	3.2092	3.4801	54.22	50	8	
	1,4-Dichlorobenzene	1.7189	1.7054	49.61	50	-1	
	1,2,3-Trimethylbenzene	2.9416	3.2319	54.93	50	10	
	Benzyl Chloride	0.2338	0.2831	54.10	50	8	
	1,3-Diethylbenzene	1.8848	2.0129	53.40	50	7	
	1,4-Diethylbenzene	2.0114	2.1054	52.34	50	5	
	n-Butylbenzene	1.6592	1.7978	54.18	50	8	
	1,2-Dichlorobenzene	1.6409	1.6183	49.31	50	-1	
	1,2-Diethylbenzene	1.6079	1.6875	52.48	50	5	
	1,2-Dibromo-3-chloropropane	0.1332	0.1501	56.33	50	13	
	1,3,5-Trichlorobenzene	1.3773	1.3800	50.10	50	0	
	1,2,4-Trichlorobenzene	1.2763	1.2650	49.56	50	-1	
	Hexachlorobutadiene	0.6574	0.7130	51.26	50	3	
	Naphthalene	2.6627	2.6278	49.34	50	-1	
	1,2,3-Trichlorobenzene	1.1896	1.1903	50.03	50	0	
	2-Methylnaphthalene	1.6549	1.7116	51.71	50	3	
	Dibromofluoromethane	0.2502	0.2545	50.88	50	2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/13/18 Time: 18:49

Lab File ID: bu13c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Dibromofluoromethane(2)	0.2550	0.2589	50.76	50	2
1,2-Dichloroethane-d4	0.0548	0.0569	51.91	50	4
1,2-Dichloroethane-d4(2)	0.2800	0.3376	60.29	50	21
1,2-Dichloroethane-d4(3)	0.0347	0.0336	48.46	50	-3
Toluene-d8	1.3054	1.3829	52.97	50	6
Toluene-d8(2)	0.8436	0.8867	52.55	50	5
4-Bromofluorobenzene	0.4987	0.5123	51.37	50	3
4-Bromofluorobenzene(2)	0.4342	0.4282	49.31	50	-1

Average %Drift 7

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem/HP07536.i/18may24i.b/qy24i10.d
/chem/HP07536.i/18may24i.b/qy24i11.d
/chem/HP07536.i/18may24i.b/qy24i12.d
/chem/HP07536.i/18may24i.b/qy24i13.d
/chem/HP07536.i/18may24i.b/qy24i14.d
/chem/HP07536.i/18may24i.b/qy24i15.d

File /chem/HP07536.i/18may24i.b/qy24i13.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem/HP07536.i/18jun13b.b/qu13c05.d

RT Summary

Internal Standard Name	File ID: qu13c05.d	ICAL RT	In Spec
t-Butyl alcohol-d10	4.206	4.206	Yes
Fluorobenzene	7.684	7.688	Yes
Chlorobenzene-d5	11.153	11.157	Yes
1,4-Dichlorobenzene-d4	13.023	13.030	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: qu13c05.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	136529	141858	70929	283716	Yes
Fluorobenzene	995880	1158639	579320	2317278	Yes
Chlorobenzene-d5	755409	836232	418116	1672464	Yes
1,4-Dichlorobenzene-d4	340164	373559	186780	747118	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/13/2018 at 22:05

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date: 06/13/18 Time: 21:27

Lab File ID: qu13c05.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3429	0.4347	63.39	50	27	
#	Chloromethane	0.4013	0.3511	43.74	50	-13	#
*	Vinyl Chloride	0.3750	0.3122	41.63	50	-17	*
	Bromomethane	6.2098	7.8393	63.12	50	26	
	Chloroethane	4.2607	4.3151	50.64	50	1	
	Trichlorofluoromethane	0.3961	0.4325	54.60	50	9	
	n-Pentane	0.3066	0.2346	38.26	50	-23	
	Ethanol	0.1450	0.1278	2202.55	2500	-12	
	Freon 123a	0.3328	0.2906	43.66	50	-13	
	Acrolein	2.8883	2.2904	396.48	500	-21	
*	1,1-Dichloroethene	0.2529	0.2224	43.97	50	-12	*
*	1,1-Dichloroethene(2)	0.1272	0.1131	44.45	50	-11	*
	Acetone	0.0293	0.0274	93.46	100	-7	
	Freon 113	0.2184	0.2178	49.87	50	0	
	2-Propanol	0.8722	0.8738	250.45	250	0	
	Methyl Iodide	0.5258	0.4634	44.07	50	-12	
	Carbon Disulfide	0.9307	0.8067	43.34	50	-13	
	Methyl Acetate	0.2470	0.2346	47.49	50	-5	
	Allyl Chloride	0.4767	0.4283	44.92	50	-10	
	Methylene Chloride	0.3108	0.2792	44.91	50	-10	
	t-Butyl alcohol	1.2832	1.1558	225.19	250	-10	
	Acrylonitrile	0.1273	0.1163	45.66	50	-9	
	Methyl Tertiary Butyl Ether	0.8586	0.7886	45.92	50	-8	
	trans-1,2-Dichloroethene	0.2948	0.2658	45.08	50	-10	
	n-Hexane	0.2414	0.2462	50.98	50	2	
#	1,1-Dichloroethane	0.5320	0.4704	44.20	50	-12	#
	di-Isopropyl ether	1.0000	0.9061	45.30	50	-9	
	2-Chloro-1,3-butadiene	0.4439	0.4009	45.15	50	-10	
	Ethyl t-butyl ether	0.9318	0.8614	46.22	50	-8	
	2-Butanone	6.1815	4.9405	79.92	100	-20	
	2-Butanone(2)	1.6223	1.3111	80.82	100	-19	
	cis-1,2-Dichloroethene	0.3268	0.2975	45.52	50	-9	
	2,2-Dichloropropane	0.4186	0.3744	44.71	50	-11	
	Propionitrile	0.0456	0.0451	247.22	250	-1	
	Methacrylonitrile	0.1357	0.1313	120.94	125	-3	
	Bromochloromethane	0.1700	0.1552	45.66	50	-9	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date: 06/13/18 Time: 21:27

Lab File ID: qu13c05.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Tetrahydrofuran	1.6020	1.3067	81.57	100	-18	
*	Chloroform	0.4974	0.4609	46.33	50	-7	*
	1,1,1-Trichloroethane	0.4502	0.3924	43.57	50	-13	
	Cyclohexane	0.3715	0.3620	48.72	50	-3	
	Cyclohexane(2)	0.3087	0.2875	46.56	50	-7	
	Cyclohexane(3)	0.1118	0.1080	48.28	50	-3	
	1,1-Dichloropropene	0.3907	0.3446	44.10	50	-12	
	Carbon Tetrachloride	0.3262	0.3092	47.39	50	-5	
	Isobutyl Alcohol	0.4227	0.3915	578.87	625	-7	
	Benzene	1.1704	1.0570	45.15	50	-10	
	1,2-Dichloroethane	0.3923	0.3690	47.02	50	-6	
	1,2-Dichloroethane(2)	0.0403	0.0359	44.61	50	-11	
	t-Amyl methyl ether	0.8857	0.8022	45.29	50	-9	
	n-Heptane	0.2122	0.2238	52.73	50	5	
	n-Butanol	0.3504	0.3446	1229.57	1250	-2	
	Trichloroethene	0.2939	0.2696	45.86	50	-8	
	Methylcyclohexane	0.2800	0.2742	48.95	50	-2	
*	1,2-Dichloropropane	0.3143	0.2791	44.40	50	-11	*
	Methyl Methacrylate	0.2270	0.2141	47.16	50	-6	
	1,4-Dioxane	0.1426	0.1421	622.52	625	0	
	Dibromomethane	0.1902	0.1794	47.14	50	-6	
	Bromodichloromethane	0.3524	0.3480	49.37	50	-1	
	2-Nitropropane	2.2984	2.5907	112.72	100	13	
	2-Chloroethyl Vinyl Ether	0.2172	0.2058	47.38	50	-5	
	cis-1,3-Dichloropropene	0.4892	0.4591	46.93	50	-6	
	4-Methyl-2-pentanone	0.2997	0.2684	89.55	100	-10	
*	Toluene	0.9710	0.8394	43.22	50	-14	*
	trans-1,3-Dichloropropene	0.5923	0.5608	47.34	50	-5	
	Ethyl Methacrylate	0.5811	0.5329	45.86	50	-8	
	1,1,2-Trichloroethane	0.3748	0.3363	44.86	50	-10	
	Tetrachloroethene	0.3812	0.3420	44.85	50	-10	
	1,3-Dichloropropane	0.6471	0.5706	44.09	50	-12	
	2-Hexanone	0.2833	0.2557	90.26	100	-10	
	Dibromochloromethane	0.3707	0.3745	50.52	50	1	
	1,2-Dibromoethane	0.3924	0.3598	45.85	50	-8	
	1-Chlorohexane	0.3845	0.3279	42.64	50	-15	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date: 06/13/18 Time: 21:27

Lab File ID: qu13c05.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
#	Chlorobenzene	1.0538	0.9113	43.24	50	-14	#
	1,1,1,2-Tetrachloroethane	0.3586	0.3265	45.52	50	-9	
*	Ethylbenzene	1.6525	1.4177	42.90	50	-14	*
	m+p-Xylene	0.6558	0.5552	84.67	100	-15	
	o-Xylene	0.6576	0.5536	42.09	50	-16	
	Styrene	1.1227	0.9567	42.60	50	-15	
#	Bromoform	0.2362	0.2735	52.68	50	5	#
	Isopropylbenzene	1.4187	1.1979	42.22	50	-16	
	Cyclohexanone	0.5104	0.4404	539.24	625	-14	
#	1,1,2,2-Tetrachloroethane	1.1111	0.9771	43.97	50	-12	#
	Bromobenzene	1.0247	0.8767	42.78	50	-14	
	trans-1,4-Dichloro-2-butene	0.3097	0.3050	123.10	125	-2	
	1,2,3-Trichloropropane	0.3306	0.2995	45.29	50	-9	
	n-Propylbenzene	3.5536	3.0151	42.42	50	-15	
	2-Chlorotoluene	0.8050	0.6795	42.20	50	-16	
	1,3,5-Trimethylbenzene	2.6413	2.2379	42.36	50	-15	
	4-Chlorotoluene	0.8607	0.7211	41.89	50	-16	
	tert-Butylbenzene	0.5338	0.4326	40.52	50	-19	
	Pentachloroethane	0.5362	0.5173	48.24	50	-4	
	1,2,4-Trimethylbenzene	2.7894	2.3190	41.57	50	-17	
	sec-Butylbenzene	2.8858	2.4120	41.79	50	-16	
	1,3-Dichlorobenzene	1.6124	1.3557	42.04	50	-16	
	p-Isopropyltoluene	2.5940	2.1283	41.02	50	-18	
	1,4-Dichlorobenzene	1.7117	1.4262	41.66	50	-17	
	1,2,3-Trimethylbenzene	2.9465	2.4262	41.17	50	-18	
	Benzyl Chloride	0.4491	0.4371	48.67	50	-3	
	1,3-Diethylbenzene	1.5416	1.2667	41.08	50	-18	
	1,4-Diethylbenzene	1.5759	1.2746	40.44	50	-19	
	n-Butylbenzene	1.1940	0.9878	41.36	50	-17	
	1,2-Dichlorobenzene	1.6029	1.3390	41.77	50	-16	
	1,2-Diethylbenzene	1.3559	1.0733	39.58	50	-21	
	1,2-Dibromo-3-chloropropane	0.1915	0.1792	46.79	50	-6	
	1,3,5-Trichlorobenzene	1.0352	0.9368	45.24	50	-10	
	1,2,4-Trichlorobenzene	1.0177	0.9286	45.62	50	-9	
	Hexachlorobutadiene	0.4427	0.4203	47.48	50	-5	
	Naphthalene	2.9845	2.6435	44.29	50	-11	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date: 06/13/18 Time: 21:27

Lab File ID: qu13c05.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,2,3-Trichlorobenzene	0.9565	0.8687	45.41	50	-9
2-Methylnaphthalene	1.6185	1.5101	46.65	50	-7
Dibromofluoromethane	0.2721	0.2260	41.53	50	-17
Dibromofluoromethane(2)	0.2751	0.2335	42.44	50	-15
1,2-Dichloroethane-d4	0.0745	0.0628	42.16	50	-16
1,2-Dichloroethane-d4(2)	0.3283	0.2802	42.68	50	-15
1,2-Dichloroethane-d4(3)	0.0463	0.0400	43.16	50	-14
Toluene-d8	1.4355	1.1416	39.76	50	-20
Toluene-d8(2)	0.9333	0.7418	39.74	50	-21
4-Bromofluorobenzene	0.4660	0.3824	41.03	50	-18
4-Bromofluorobenzene(2)	0.4169	0.3554	42.63	50	-15

Average %Drift 11

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu12c01.d Date Analyzed: 06/12/18

Instrument ID: HP09953 Time Analyzed: 20:05

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	93660	1.930	1029158	3.956	741492	7.156	418814	9.236
UPPER LIMIT	187320	2.430	2058316	4.456	1482984	7.656	837628	9.736
LOWER LIMIT	46830	1.430	514579	3.456	370746	6.656	209407	8.736
LAB SAMPLE ID								
01 VBLKB07	105777	1.918	1001314	3.950	739549	7.156	397204	9.236
02 LCSB07	128192	1.918	1061686	3.950	766584	7.156	435219	9.236
03 LCDB07	105172	1.924	1026312	3.956	753798	7.156	421502	9.236
04 9632085	96278	1.918	1039586	3.950	763192	7.156	415492	9.236
05 9632091	88688	1.924	980755	3.950	717133	7.156	380252	9.236
06 9632093	88201	1.918	960088	3.950	704534	7.156	373480	9.236
07 9632095	87547	1.930	949526	3.956	687362	7.156	366190	9.236
08 9640166	106119	1.918	933024	3.950	685986	7.156	370430	9.236
09 9640167	97761	1.924	931363	3.956	681997	7.156	366472	9.236
10 9649656	106898	1.924	926417	3.956	652553	7.156	305830	9.236
11 9653928	83431	1.924	910760	3.956	648221	7.156	348802	9.236
12 9653931	76877	1.906	921206	3.950	679476	7.156	343722	9.236
13 9653932	75390	1.918	930322	3.950	677150	7.156	344246	9.236
14 9653941	97541	1.912	869444	3.950	498037	7.156	147695 *	9.242
15 9653942	87088	1.912	931475	3.950	677026	7.156	329625	9.236
16 9651105	83026	1.930	935111	3.956	676040	7.156	336330	9.236
17 9651106	78502	1.918	919565	3.950	666056	7.156	339718	9.236
18 9651108	81308	1.912	941802	3.950	687309	7.156	357710	9.236
19 9651111	73425	1.924	916698	3.956	641457	7.156	297905	9.236
20 9650447	39474 *	1.918	824998	3.950	498889	7.156	171088 *	9.236
21 9653933	79061	1.918	839486	3.950	338670 *	7.156	40092 *	9.242
22 9653935	72519	1.912	962121	3.950	685190	7.156	333075	9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu13c01.d Date Analyzed: 06/13/18

Instrument ID: HP09953 Time Analyzed: 18:49

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	97875	1.924	1059738	3.956	758642	7.156	426924	9.236
UPPER LIMIT	195750	2.424	2119476	4.456	1517284	7.656	853848	9.736
LOWER LIMIT	48938	1.424	529869	3.456	379321	6.656	213462	8.736
LAB SAMPLE ID								
01 VBLKB08	104406	1.924	997733	3.956	712175	7.156	382916	9.236
02 VBLKB09	104406	1.924	997733	3.956	712175	7.156	382916	9.236
03 LCSB08	107377	1.924	1011281	3.950	728800	7.156	406007	9.236
04 LCSB09	107377	1.924	1011281	3.950	728800	7.156	406007	9.236
05 LCDB08	120901	1.930	1022754	3.956	745274	7.156	422121	9.236
06 LCDB09	120901	1.930	1022754	3.956	745274	7.156	422121	9.236
07 9647138RE	100663	1.942	911321	3.962	499811	7.156	169839 *	9.236
08 SECC050	87761	1.924	1017983	3.956	734453	7.156	412834	9.236
09 9649555	84691	1.918	973223	3.950	705619	7.156	361791	9.236
10 9649556MS	81648	1.924	999300	3.950	702774	7.156	374186	9.236
11 9649557MSD	88855	1.918	1013716	3.950	723437	7.156	386896	9.236
12 9649546	92315	1.924	984814	3.956	624971	7.156	260368	9.236
13 9649547	80067	1.924	982260	3.956	714573	7.156	372608	9.236
14 9649548	77592	1.930	980743	3.956	723979	7.156	375962	9.236
15 9649549	67550	1.924	967087	3.956	710689	7.156	374044	9.236
16 9649552	60395	1.918	931411	3.950	667846	7.156	323792	9.236
17 9649553	69399	1.918	927141	3.950	681880	7.156	344059	9.236
18 9649554	69293	1.930	918000	3.956	685312	7.156	349382	9.236
19 9649558	64467	1.906	923095	3.950	682616	7.156	354292	9.236
20 9649559	70578	1.918	919724	3.950	663026	7.156	343554	9.236
21 9649560	75570	1.936	919216	3.956	664226	7.156	337711	9.236
22 9651112	66649	1.924	784489	3.956	577979	7.156	290652	9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu13c01.d Date Analyzed: 06/13/18

Instrument ID: HP09953 Time Analyzed: 18:49

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	97875	1.924	1059738	3.956	758642	7.156	426924	9.236
UPPER LIMIT	195750	2.424	2119476	4.456	1517284	7.656	853848	9.736
LOWER LIMIT	48938	1.424	529869	3.456	379321	6.656	213462	8.736
LAB SAMPLE ID								
23 9651113	70265	1.924	904101	3.956	665397	7.156	341844	9.236
24 9651114	72201	1.918	901269	3.950	673230	7.156	355885	9.236
25 9651116	84042	1.912	884326	3.950	651734	7.156	335479	9.236
26 9653929	69560	1.918	897924	3.950	653906	7.156	349033	9.236
27 9653933RE	73832	1.918	696753	3.950	224585 *	7.156	25422 *	9.242

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): qu13c05.d Date Analyzed: 06/13/18

Instrument ID: HP07536 Time Analyzed: 21:27

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	136529	4.206	995880	7.684	755409	11.153	340164	13.023
UPPER LIMIT	273058	4.706	1991760	8.184	1510818	11.653	680328	13.523
LOWER LIMIT	68264	3.706	497940	7.184	377704	10.653	170082	12.523
LAB SAMPLE ID								
01 LCSQ08	124247	4.209	951010	7.687	715786	11.153	300379	13.027
02 LCSQ09	124247	4.209	951010	7.687	715786	11.153	300379	13.027
03 LCDQ08	121911	4.204	933518	7.692	692826	11.154	299403	13.028
04 LCDQ09	121911	4.204	933518	7.692	692826	11.154	299403	13.028
05 VBLKQ08	102610	4.212	837986	7.688	634908	11.156	269345	13.027
06 VBLKQ09	102610	4.212	837986	7.688	634908	11.156	269345	13.027
07 9632087	113104	4.224	924401	7.690	692601	11.152	321080	13.029
08 9632096	111369	4.210	910863	7.689	674746	11.154	297634	13.028
09 9632097	109260	4.215	918280	7.690	682807	11.156	288991	13.030
10 9632099	110038	4.211	883198	7.690	662304	11.155	286308	13.029
11 9632103	112144	4.215	896266	7.687	676464	11.156	297691	13.027
12 9632104	98653	4.212	821964	7.690	605028	11.156	250301	13.030
13 9640112	114363	4.205	907001	7.690	678958	11.156	308331	13.029
14 9642335	112736	4.234	899672	7.693	641755	11.155	279422	13.029
15 9642335DL	110951	4.195	874774	7.690	649819	11.155	266802	13.029
16 9643859	110194	4.209	872990	7.687	654201	11.156	278463	13.030
17 9647346DL	101482	4.199	833596	7.690	626273	11.156	267368	13.030
18 9649561	111000	4.209	906891	7.691	684963	11.156	305130	13.030
19 9653930	106291	4.215	890814	7.690	680191	11.155	288781	13.029
20 9653933DL	109313	4.205	900673	7.690	673510	11.155	306679	13.029
21 9653934	99052	4.212	885794	7.693	658732	11.156	271603	13.026
22 SECC050	106597	4.202	895790	7.690	677150	11.155	293195	13.026

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

Preparation and Run Logs

Volatiles by GC/MS

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VOA Prep Summary by SDG: DHR38

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
9653928	150A	07320	18796238	Y	06/11/18 10:45	06/12/18 12:53	32.63 g	38.33 g	5.70 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653928	150B	07320	18796237	N	06/11/18 10:45	06/12/18 12:53	32.43 g	38.76 g	6.33 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653928	169A	07578	18798259	N	06/11/18 10:45	06/12/18 12:35	29.53 g	35.27 g	5.74 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9653929	150A	07320	18796240	N	06/11/18 11:11	06/12/18 12:53	32.49 g	38.55 g	6.06 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653929	150B	07320	18796239	Y	06/11/18 11:11	06/12/18 12:53	32.59 g	37.95 g	5.36 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9653929	169A	07578	18798258	N	06/11/18 11:11	06/12/18 12:37	29.42 g	35.40 g	5.98 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9653930	150A	07320	18796242	N	06/11/18 13:40	06/12/18 12:53	32.40 g	38.12 g	5.72 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653930	150B	07320	18796241	N	06/11/18 13:40	06/12/18 12:53	32.43 g	38.27 g	5.84 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653930	169A	07578	18798257	Y	06/11/18 13:40	06/12/18 12:39	29.45 g	35.32 g	5.87 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9653931	150A	07320	18796244	N	06/11/18 13:58	06/12/18 12:53	32.41 g	38.91 g	6.50 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653931	150B	07320	18796243	Y	06/11/18 13:58	06/12/18 12:53	32.49 g	38.66 g	6.17 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653931	169A	07578	18798256	N	06/11/18 13:58	06/12/18 12:40	29.64 g	35.54 g	5.90 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9653932	150A	07320	18796246	Y	06/11/18 15:24	06/12/18 12:54	32.50 g	38.60 g	6.10 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653932	150B	07320	18796245	N	06/11/18 15:24	06/12/18 12:54	32.36 g	38.71 g	6.35 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653932	169A	07578	18798267	N	06/11/18 15:24	06/12/18 12:42	29.53 g	35.41 g	5.88 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9653933	150A	07320	18796248	Y	06/11/18 15:34	06/12/18 12:54	32.48 g	38.24 g	5.76 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653933	150B	07320	18796247	Y	06/11/18 15:34	06/12/18 12:54	32.50 g	38.05 g	5.55 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653933	169A	07578	18798266	Y	06/11/18 15:34	06/12/18 12:44	29.57 g	35.17 g	5.60 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9653934	150A	07320	18796250	N	06/11/18 16:51	06/12/18 12:54	32.68 g	38.59 g	5.91 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653934	150B	07320	18796249	N	06/11/18 16:51	06/12/18 12:54	32.52 g	38.60 g	6.08 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653934	169A	07578	18798265	Y	06/11/18 16:51	06/12/18 12:45	29.60 g	35.69 g	6.09 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9653935	150A	07320	18796252	Y	06/11/18 16:58	06/12/18 12:54	32.51 g	38.40 g	5.89 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653935	150B	07320	18796251	N	06/11/18 16:58	06/12/18 12:54	32.35 g	38.46 g	6.11 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653935	169A	07578	18798264	N	06/11/18 16:58	06/12/18 12:47	29.37 g	34.96 g	5.59 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

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VOA Prep Summary by SDG: DHR38

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
9649555	150A	07320	18796204	Y	06/07/18 15:45	06/08/18 18:55	32.53 g	37.81 g	5.28 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9649555	150B	07320	18796203	N	06/07/18 15:45	06/08/18 18:55	32.26 g	37.64 g	5.38 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9649555	169A	07578	18798240	N	06/07/18 15:45	06/08/18 18:14	29.64 g	35.38 g	5.74 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9649556	150A	07320	18796206	N	06/07/18 15:45	06/08/18 18:55	32.51 g	38.22 g	5.71 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9649556	150B	07320	18796205	Y	06/07/18 15:45	06/08/18 18:56	32.34 g	37.95 g	5.61 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9649556	169A	07578	18798247	N	06/07/18 15:45	06/08/18 18:17	29.49 g	33.85 g	4.36 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9649557	150A	07320	18796208	Y	06/07/18 15:45	06/08/18 18:56	32.56 g	38.23 g	5.67 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9649557	150B	07320	18796207	N	06/07/18 15:45	06/08/18 18:56	32.52 g	38.36 g	5.84 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9649557	169A	07578	18798246	N	06/07/18 15:45	06/08/18 18:22	29.48 g	35.29 g	5.81 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

6-7-18 Prep of BFB Jan 7-18 x 7-7-18
Added 10 mL of...
to final volume of
5 mL MeOH
BFB Lot # DT140
Jan Redding 2032

6-7-18 Prep of QuantaSure 7-18 x 7-7-18
Added 10 mL of...
to final volume of
25 mL MeOH
BFB Lot # DT140
Jan Redding 2032

RESTEK 110 Benner Circle Bellefonte, PA 16823 814-353-1300 Made in USA For Laboratory Use Only
558268 Danger 1 mL
Lot# A0125171
Expire: 08/2018 Store: 0°C or colder
Custom CS#6 Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 110 Benner Circle Bellefonte, PA 16823 814-353-1300 Made in USA For Laboratory Use Only
558268.SEC Danger 1 mL
Lot# A0136083
Expire: 09/2019 Store: 0°C or colder
Custom QCS #6 Standard
1000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

6-7-18 Prep of QCGas 524 Jan 7-18 x 7-14-18
Added 05 mL of...
to final volume of
25 mL MeOH
BFB Lot # DT140
Jan Redding 2032

RESTEK 110 Benner Circle Bellefonte, PA 16823 814-353-1300 Made in USA For Laboratory Use Only
55669.SEC Danger 1 mL
Lot# A0129532
Expire: 08/2024 Store: 0°C or colder
Custom 502.2 "Q" Gas Mix
2000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

6/7/18 QGas 524 Jan 7-18 x 6/14/18
20 mL 502.2 QGas Lt A0129532
20 mL OCFM ~~Lt A0~~ Lt 21709197
QJMcW 6/7/18
960 mL MeoH BFB DT140
Jan Redding 1603

6-7-18 AR22 8260 IS/SS 6-7-18 X: 12-7-18
ADDED 0.819 mL OF...
TO A FINAL VOLUME OF
10 mL MEOH BFB DT140
Not used

RESTEK 110 Benner Circle Bellefonte, PA 16823 814-353-1300
558267 Danger
Lot# A0117424
Custom 8260A IS Mix
Expire: 02/2019 Store: 0°C or colder
Full label information for the chemical is provided on the outside package
For Laboratory Use Only
1 mL
Made in USA

RESTEK 110 Benner Circle Bellefonte, PA 16823 814-353-1300 Made in USA For Laboratory Use Only
55671 Danger 1 mL
Lot# A0125172
Expire: 02/2020 Store: 0°C or colder
8260A Surrogate Mix
2500 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

6-11-18 Prep of VOA1 Jun 11,18 X 7-11-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-1 Danger 1 mL
Lot# A0126988
Expire: 04/2020 Store: 0°C or colder
Custom Revised V #1B Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 572312 Danger 1 mL
Lot# A0131271
Expire: 10/2018 Store: 0°C or colder
Custom V #4C (Rev 3) Standard
This product is photosensitive.
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lou Reilling 2032

6-11-18 Prep of VOA2 Jun 11,18 X 7-11-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lou Reilling 2032

6-11-18 Prep of VOA3 Jun 11,18 X 7-6-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 56736 Danger 1 mL
Lot# A0130926
Expire: 09/2020 Store: 0°C or colder
Custom V # 3B Standard
12500 - 25000 µg/mL each in P&T Methanol/Water (90:10)
Full label information for the chemical is provided on the outside package.

And 1.0 mL of
6-11-18 ③ LLR 2032
~~May 7,18~~
ACR May 7,18

Lou Reilling 2032

③ LLR 2032 6-11-18
X
③ LLR 2032 6-11-18

6-11-18 Prep of 2CEVE ~~May~~ June 11,18 X 7-11-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-2 Danger 1 mL
Lot# A0126036
Expire: 03/2020 Store: 0°C or colder
Custom V # 1B 2-CEVE Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lou Reilling 2032

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18feb22I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jkh09052	BF22T01.D	50NGBFB	02/22/2018	10:34	B180151AA	
JKH09052	BF22X01.D	BLK	02/22/2018	10:55		
JKH09052	BF22I01.D	VSTD300	02/22/2018	11:18		
JKH09052	BF22I02.D	VSTD100	02/22/2018	11:42		
JKH09052	BF22I03.D	VSTD050	02/22/2018	12:06		
JKH09052	BF22I04.D	VSTD020	02/22/2018	12:31		
JKH09052	BF22I05.D	VSTD010	02/22/2018	12:57		
JKH09052	BF22I06.D	VSTD004	02/22/2018	13:29		
JKH09052	BF22M01.D	MDL001	02/22/2018	13:51		
JKH09052	BF22V01.D	LGBICV	02/22/2018	14:16		

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07536 **HP #14**

Data Directory Path is - d:\data\18may24I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
scn10072	QY24T10.D	50NGBFB	05/24/2018	10:35		
scn10072	QY24X10.D	CBLK	05/24/2018	10:59		
scn10072	QY24X11.D	CBLK	05/24/2018	11:28		
scn10072	QY24I10.D	VSTD004	05/24/2018	11:51		
scn10072	QY24I11.D	VSTD010	05/24/2018	12:14		
scn10072	QY24I12.D	VSTD020	05/24/2018	12:37		
scn10072	QY24I13.D	VSTD050	05/24/2018	13:00		
scn10072	QY24I14.D	VSTD100	05/24/2018	13:23		
scn10072	QY24I15.D	VSTD300	05/24/2018	13:46		
scn10072	QY24X12.D	CBLK	05/24/2018	14:09		
scn10072	QY24X13.D	CBLK	05/24/2018	14:32		
scn10072	QY24M10.D	MDL	05/24/2018	14:55		
scn10072	QY24V10.D	QBICV	05/24/2018	15:18		
scn10072	QY24X14.D	CBLK	05/24/2018	15:41		
scn10072	QY24I20.D	VSTD004	05/24/2018	16:03		
scn10072	QY24I21.D	VSTD010	05/24/2018	16:26		
scn10072	QY24I22.D	VSTD020	05/24/2018	16:49		
scn10072	QY24I23.D	VSTD050	05/24/2018	17:13		
scn10072	QY24I24.D	VSTD100	05/24/2018	17:36		
scn10072	QY24I25.D	VSTD300	05/24/2018	17:58		
scn10072	QY24X15.D	CBLK	05/24/2018	18:22		
scn10072	QY24M20.D	SMDL	05/24/2018	18:45		
scn10072	QY24V20.D	BSMICV	05/24/2018	19:07		

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18jun12B\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
kd14068	BU12T10.D	50NGBFB	06/12/2018	19:08	B181633AA	
kd14068	BU12X1A.D	VBLKB07	06/12/2018	19:42	B181633AA	
kd14068	BU12C01.D	VSTD050	06/12/2018	20:05	B181633AA	
kd14068	BU12X11.D	VBLKB07	06/12/2018	20:28	B181633AA	
kd14068	BU12B10.D	VBLKB07	06/12/2018	20:51	B181633AA	
kd14068	BU12S61.D	LCSB07	06/12/2018	21:33	B181633AA	
kd14068	BU12S62.D	LCDB07	06/12/2018	21:56	B181633AA	
kd14068	BU12S64.D	9632085	06/12/2018	23:47	B181633AA	
kd14068	BU12S65.D	9632091	06/13/2018	00:09	B181633AA	
kd14068	BU12S66.D	9632093	06/13/2018	00:31	B181633AA	
kd14068	BU12S67.D	9632095	06/13/2018	00:54	B181633AA	
kd14068	BU12S68.D	9640166	06/13/2018	01:17	B181633AA	
kd14068	BU12S69.D	9640167	06/13/2018	01:39	B181633AA	
kd14068	BU12S70.D	9649656	06/13/2018	02:02	B181633AA	
kd14068	BU12S71.D	9653928	06/13/2018	02:24	B181633AA	
kd14068	BU12S72.D	9653931	06/13/2018	02:46	B181633AA	
kd14068	BU12S73.D	9653932	06/13/2018	03:09	B181633AA	
kd14068	BU12S74.D	9653941	06/13/2018	03:31	B181633AA	
kd14068	BU12S75.D	9653942	06/13/2018	03:54	B181633AA	
kd14068	BU12S76.D	9651105	06/13/2018	04:16	B181633AA	
kd14068	BU12S77.D	9651106	06/13/2018	04:39	B181633AA	
kd14068	BU12S78.D	9651108	06/13/2018	05:02	B181633AA	
kd14068	BU12S79.D	9651111	06/13/2018	05:24	B181633AA	
kd14068	BU12S80.D	9650447	06/13/2018	05:47	B181633AA	
kd14068	BU12S81.D	9653933	06/13/2018	06:10	B181633AA	
kd14068	BU12S82.D	9653935	06/13/2018	06:32	B181633AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18JUN13a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
pth10165	BU13T01.D	50NGBFB	06/13/2018	18:05	B180151AA	
pth10165	BU13X05.D	VBLKB08	06/13/2018	18:24	B181641AA	
pth10165	BU13C01.D	VSTD050	06/13/2018	18:49	B181641AA	
pth10165	BU13X06.D	VBLKB08	06/13/2018	19:11	B181641AA	
pth10165	BU13B01.D	VBLKB08	06/13/2018	19:39	B181641AA	
pth10165	BU13S01.D	LCSB08	06/13/2018	20:02	B181641AA	
pth10165	BU13S02.D	LCDB08	06/13/2018	20:24	B181641AA	
pth10165	BU13S33.D	9647138RE	06/13/2018	21:53	B181642AA	
pth10165	BU13C02.D	SECC050	06/13/2018	22:16	B181642AA	
pth10165	BU13S03.D	9649555	06/13/2018	22:39	B181641AA	
pth10165	BU13S04.D	9649556MS	06/13/2018	23:02	B181641AA	
pth10165	BU13S05.D	9649557MSD	06/13/2018	23:25	B181641AA	
pth10165	BU13S06.D	9649546	06/13/2018	23:49	B181641AA	
pth10165	BU13S07.D	9649547	06/14/2018	00:12	B181641AA	
pth10165	BU13S08.D	9649548	06/14/2018	00:34	B181641AA	
pth10165	BU13S09.D	9649549	06/14/2018	00:57	B181641AA	
pth10165	BU13S10.D	9649552	06/14/2018	01:19	B181641AA	
pth10165	BU13S11.D	9649553	06/14/2018	01:42	B181641AA	
pth10165	BU13S12.D	9649554	06/14/2018	02:04	B181641AA	
pth10165	BU13S13.D	9649558	06/14/2018	02:27	B181641AA	
pth10165	BU13S14.D	9649559	06/14/2018	02:49	B181641AA	
pth10165	BU13S15.D	9649560	06/14/2018	03:12	B181641AA	
pth10165	BU13S16.D	9651112	06/14/2018	03:35	B181641AA	
pth10165	BU13S17.D	9651113	06/14/2018	03:57	B181641AA	
pth10165	BU13S18.D	9651114	06/14/2018	04:19	B181641AA	
pth10165	BU13S19.D	9651116	06/14/2018	04:42	B181641AA	
pth10165	BU13S20.D	9653929	06/14/2018	05:04	B181641AA	
pth10165	BU13S21.D	9653933RE	06/14/2018	05:27	B181641AA	

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07536 **HP #14**

Data Directory Path is - d:\data\18JUN13B\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
PTH10165	QU13T10.D	50ng bfb	06/13/2018	21:05		
PTH10165	QU13C05.D	VSTD050	06/13/2018	21:27	Q181641AA	
PTH10165	QU13S31.D	LCSQ08	06/13/2018	21:50	Q181641AA	
PTH10165	QU13S32.D	LCDQ08	06/13/2018	22:14	Q181641AA	
PTH10165	QU13X15.D	VBLKQ08	06/13/2018	22:36	Q181641AA	
PTH10165	QU13B05.D	VBLKQ08	06/13/2018	22:59	Q181641AA	
PTH10165	QU13S03.D	9632087	06/13/2018	23:52	Q181641AA	50
PTH10165	QU13S04.D	9632096	06/14/2018	00:16	Q181641AA	50
PTH10165	QU13S05.D	9632097	06/14/2018	00:39	Q181641AA	50
PTH10165	QU13S06.D	9632099	06/14/2018	01:01	Q181641AA	50
PTH10165	QU13S07.D	9632103	06/14/2018	01:25	Q181641AA	50
PTH10165	QU13S08.D	9632104	06/14/2018	01:47	Q181641AA	50
PTH10165	QU13S09.D	9640112	06/14/2018	02:10	Q181641AA	50
PTH10165	QU13S10.D	9642335	06/14/2018	02:33	Q181641AA	50
PTH10165	QU13S11.D	9642335DL	06/14/2018	02:57	Q181641AA	500
PTH10165	QU13S12.D	9643859	06/14/2018	03:19	Q181641AA	200
PTH10165	QU13S13.D	9647346DL	06/14/2018	03:42	Q181641AA	5000
PTH10165	QU13S20.D	9649561	06/14/2018	04:05	Q181641AA	50
PTH10165	QU13S21.D	9653930	06/14/2018	04:28	Q181641AA	50
PTH10165	QU13S22.D	9653933DL	06/14/2018	04:51	Q181641AA	50
PTH10165	QU13S23.D	9653934	06/14/2018	05:14	Q181641AA	50
PTH10165	QU13X98.D	CLNBLANK	06/14/2018	05:37	Q181641AA	50
PTH10165	QU13S63.D	9647224	06/14/2018	06:00	Q181642AA	50
PTH10165	QU13C06.D	SECC050	06/14/2018	06:22	Q181642AA	

Moisture Data

MOISTURE

SAMPLE NUMBERS:

Sample #	Sample Code
9653928	SS421
9653929	SS422
9653930	SS221
9653931	SS222
9653932	SS331
9653933	SS332
9653934	SS301
9653935	SS302

COMMENTS:

Method defined actions are taken for any failed matrix QC.

Laboratory Compliance Quality Control

Analysis Name		LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number:	18163820005B	Sample number(s):		9653928-9653935		
Moisture		100		99-101		

Sample Matrix Quality Control

Analysis Name		BKG Conc	DUP Conc	RPD	RPD Max
Batch number:	18163820005B	Sample number(s):		9653928-9653935	
Moisture		19.7	19.5	1	5

* - Outside of specification

(1) - The result for one or both determinations was less than five times the LOQ.

Moisture Data Report

Batch #: 18163820005

Sample ID	Batch ID	Analysis#	Tare Wt	Sample Wt	Dry Wt	%Moisture	Analysis Date (Emp#)	Verified Date (Emp#)
9653928	B	00111	1.0984	5.4109	5.5613	17.52	6/12/18 (835/LEB)	6/13/18 (236/CW)
9653929	B	00111	1.1034	5.7414	5.9401	15.76	6/12/18 (835/LEB)	6/13/18 (236/CW)
9653930	B	00111	1.0975	5.1075	5.3604	16.54	6/12/18 (835/LEB)	6/13/18 (236/CW)
9653931	B	00111	1.0879	5.7315	5.8598	16.74	6/12/18 (835/LEB)	6/13/18 (236/CW)
9653932	B	00111	1.1171	5.5766	5.8525	15.08	6/12/18 (835/LEB)	6/13/18 (236/CW)
9653933	B	00111	1.0914	5.1260	5.3730	16.47	6/12/18 (835/LEB)	6/13/18 (236/CW)
9653934	B	00111	1.0976	5.5290	5.7116	16.55	6/12/18 (835/LEB)	6/13/18 (236/CW)
9653935	B	00111	1.1019	5.1287	5.3896	16.40	6/12/18 (835/LEB)	6/13/18 (236/CW)
P653834BKG	B	00111	1.0831	5.2686	5.3158	19.66	6/12/18 (835/LEB)	6/13/18 (236/CW)
P653834DUP	B	00111	1.1037	5.2680	5.3435	19.52	6/12/18 (835/LEB)	6/13/18 (236/CW)
LCS 89.5% Std.		00111	1.0995	5.0713	1.6370	89.40	6/12/18 (835/LEB)	6/13/18 (236/CW)

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Type I (No Raw Data) Data Package

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Project: Dow Hanging Rock, OH
Soil Samples
Collected on 06/11/18

SDG# DHR39

GROUP	SAMPLE NUMBERS
1953845	9653939-9653942

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date:** **07/03/2018**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Natalie Luciano at (717) 556-7258.

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Sample Reference List for SDG Number DHR39 with a Data Package Type of I-NODATA

11372 - CH2M Hill, Inc.

Project: Dow Hanging Rock, OH

Lab Sample Number	Client Sample ID	Collection Date	Date Received
9653939	S01-SS42-2324-061118	06/11/2018 11:50	06/12/2018 10:05
9653940	S01-SS22-2223-061118	06/11/2018 14:12	06/12/2018 10:05
9653941	S01-SS33-2324-061118	06/11/2018 15:51	06/12/2018 10:05
9653942	S01-SS30-2324-061118	06/11/2018 17:12	06/12/2018 10:05

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10237 VOCs- Solid by 8260B

The soil sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996

07320 GC/MS - LL DIH2O Encore Prep

Two EnCore samples are collected per sample. The vials used for preparation are pre-preserved and pre-weighed. Two aliquots are extruded into DI water. The vials are re-weighed and the weight of the sample should be 5-g +/- .5 g. The prepared samples are then delivered to the lab for analysis. DI vials are frozen after they are weighed to complete preservation step.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

07578 GC/MS-HL Encore Prep-NC

The sample is collected in an EnCore sampler and is submitted to the laboratory. A vial containing 5-ml methanol is prepared for each sample and weighed prior to adding the sample. After the sample is added to the vial, the vial is reweighed and the weight of sample is determined by difference. The weight of the sample should be 5-g +/- .5 g. The sample vial is then delivered to the lab for analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

00111 Moisture

A well-mixed sample is heated by reflected infrared in an aluminum pan and dried to a constant weight. The decrease in weight in weight after drying is calculated as the moisture content.

Reference: SM 2540 G-1997 %Moisture Calculation for Dry Weight Determination

Analysis Reports / Field Chain of Custody

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ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Report Date: June 19, 2018 18:31

Project: Dow Hanging Rock, OH

Account #: 11372
Group Number: 1953845
SDG: DHR39
PO Number: 131005094
Release Number: DHR39
State of Sample Origin: OH

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ . To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To	CH2M Hill, Inc.	Attn: Marie Chiller
Electronic Copy To	CH2M Hill, Inc.	Attn: Shane Lowe

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

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SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
S01-SS42-2324-061118 Grab Soil	06/11/2018 11:50	9653939
S01-SS22-2223-061118 Grab Soil	06/11/2018 14:12	9653940
S01-SS33-2324-061118 Grab Soil	06/11/2018 15:51	9653941
S01-SS30-2324-061118 Grab Soil	06/11/2018 17:12	9653942

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: **S01-SS42-2324-061118 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/11/2018 11:50
SDG#: DHR39-01

CH2M Hill, Inc.
ELLE Sample #: SW 9653939
ELLE Group #: 1953845
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	240	U	240	48	46.55
10237	cis-1,2-Dichloroethene	156-59-2	100	J	240	48	46.55
10237	trans-1,2-Dichloroethene	156-60-5	240	U	240	48	46.55
10237	Tetrachloroethene	127-18-4	900		240	48	46.55
10237	Trichloroethene	79-01-6	130	J	240	48	46.55
10237	Vinyl Chloride	75-01-4	240	U	240	48	46.55
	Reporting limits were raised due to interference from the sample matrix.						
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	3.3		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	R181691AA	06/18/2018 11:39	Stephen C Nolte	46.55
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816350179	06/12/2018 12:53	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816350179	06/12/2018 13:03	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816350179	06/12/2018 13:03	Anastasia K Jaynes	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18163820005B	06/12/2018 15:45	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS22-2223-061118 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/11/2018 14:12
SDG#: DHR39-02

CH2M Hill, Inc.
ELLE Sample #: SW 9653940
ELLE Group #: 1953845
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	250	U	250	51	49.02
10237	cis-1,2-Dichloroethene	156-59-2	250	U	250	51	49.02
10237	trans-1,2-Dichloroethene	156-60-5	250	U	250	51	49.02
10237	Tetrachloroethene	127-18-4	150	J	250	51	49.02
10237	Trichloroethene	79-01-6	250	U	250	51	49.02
10237	Vinyl Chloride	75-01-4	250	U	250	51	49.02
	Reporting limits were raised due to interference from the sample matrix.						
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	3.5		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	R181691AA	06/18/2018 12:03	Stephen C Nolte	49.02
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816350179	06/12/2018 12:54	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816350179	06/12/2018 13:03	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816350179	06/12/2018 13:04	Anastasia K Jaynes	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18163820005B	06/12/2018 15:45	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS33-2324-061118 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/11/2018 15:51
SDG#: DHR39-03

CH2M Hill, Inc.
ELLE Sample #: SW 9653941
ELLE Group #: 1953845
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.87
10237	cis-1,2-Dichloroethene	156-59-2	3	J	5	1	0.87
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.87
10237	Tetrachloroethene	127-18-4	650	E	5	1	0.87
10237	Trichloroethene	79-01-6	40		5	1	0.87
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.87
Trial ID: DL							
10237	1,1-Dichloroethene	75-35-4	250	U	250	50	43.33
10237	cis-1,2-Dichloroethene	156-59-2	250	U	250	50	43.33
10237	trans-1,2-Dichloroethene	156-60-5	250	U	250	50	43.33
10237	Tetrachloroethene	127-18-4	250		250	50	43.33
10237	Trichloroethene	79-01-6	250	U	250	50	43.33
10237	Vinyl Chloride	75-01-4	250	U	250	50	43.33

The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance fro trial 1: Vinyl Chloride

Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	13.5		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181633AA	06/13/2018 03:31	Kelly Devlin	0.87
10237	VOCs- Solid by 8260B	SW-846 8260B	2-DL	Q181681AA	06/17/2018 16:27	Stephen C Nolte	43.33
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816350179	06/12/2018 12:56	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816350179	06/12/2018 13:04	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816350179	06/12/2018 13:04	Anastasia K Jaynes	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18163820005B	06/12/2018 15:45	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS30-2324-061118 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/11/2018 17:12
SDG#: DHR39-04

CH2M Hill, Inc.
ELLE Sample #: SW 9653942
ELLE Group #: 1953845
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.96
10237	cis-1,2-Dichloroethene	156-59-2	1	J	5	1	0.96
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.96
10237	Tetrachloroethene	127-18-4	63		5	1	0.96
10237	Trichloroethene	79-01-6	5	J	5	1	0.96
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.96
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	5.5		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181633AA	06/13/2018 03:54	Kelly Devlin	0.96
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816350179	06/12/2018 12:58	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816350179	06/12/2018 13:04	Anastasia K Jaynes	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816350179	06/12/2018 13:04	Anastasia K Jaynes	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18163820005B	06/12/2018 15:45	Larry E Bevins	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/19/2018 18:31

Group Number: 1953845

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result		LOQ**	MDL
	ug/kg		ug/kg	ug/kg
Batch number: B181633AA	Sample number(s): 9653941-9653942			
1,1-Dichloroethene	5	U	5	1
cis-1,2-Dichloroethene	5	U	5	1
trans-1,2-Dichloroethene	5	U	5	1
Tetrachloroethene	5	U	5	1
Trichloroethene	5	U	5	1
Vinyl Chloride	5	U	5	1
Batch number: Q181681AA	Sample number(s): 9653941			
1,1-Dichloroethene	250	U	250	50
cis-1,2-Dichloroethene	250	U	250	50
trans-1,2-Dichloroethene	250	U	250	50
Tetrachloroethene	250	U	250	50
Trichloroethene	250	U	250	50
Vinyl Chloride	250	U	250	50
Batch number: R181691AA	Sample number(s): 9653939-9653940			
1,1-Dichloroethene	250	U	250	50
cis-1,2-Dichloroethene	250	U	250	50
trans-1,2-Dichloroethene	250	U	250	50
Tetrachloroethene	250	U	250	50
Trichloroethene	250	U	250	50
Vinyl Chloride	250	U	250	50

LCS/LCSD

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: B181633AA	Sample number(s): 9653941-9653942								
1,1-Dichloroethene	20	17.98	20	18.47	90	92	73-129	3	30
cis-1,2-Dichloroethene	20	18.54	20	19.42	93	97	80-120	5	30
trans-1,2-Dichloroethene	20	17.46	20	18.47	87	92	80-125	6	30
Tetrachloroethene	20	18.08	20	18.49	90	92	73-120	2	30
Trichloroethene	20	17.93	20	18.87	90	94	80-120	5	30
Vinyl Chloride	20	15.26	20	15.54	76	78	59-120	2	30
Batch number: Q181681AA	Sample number(s): 9653941								

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/19/2018 18:31

Group Number: 1953845

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
1,1-Dichloroethene	1000	998.3	1000	988.49	100	99	73-129	1	30
cis-1,2-Dichloroethene	1000	1038.65	1000	1015.41	104	102	80-120	2	30
trans-1,2-Dichloroethene	1000	1016.42	1000	1009.55	102	101	80-125	1	30
Tetrachloroethene	1000	947.65	1000	946.86	95	95	73-120	0	30
Trichloroethene	1000	976.7	1000	980.82	98	98	80-120	0	30
Vinyl Chloride	1000	576.15	1000	554.76	58*	55*	59-120	4	30
Batch number: R181691AA	Sample number(s): 9653939-9653940								
1,1-Dichloroethene	1000	1072.1	1000	1026.58	107	103	73-129	4	30
cis-1,2-Dichloroethene	1000	950.05	1000	1012.22	95	101	80-120	6	30
trans-1,2-Dichloroethene	1000	993.94	1000	1006.04	99	101	80-125	1	30
Tetrachloroethene	1000	993.37	1000	937.21	99	94	73-120	6	30
Trichloroethene	1000	923.72	1000	917.39	92	92	80-120	1	30
Vinyl Chloride	1000	825.25	1000	774.7	83	77	59-120	6	30
	%	%	%	%					
Batch number: 18163820005B	Sample number(s): 9653939-9653942								
Moisture	89.5	89.4			100		99-101		

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc	DUP Conc	DUP RPD	DUP RPD Max
	%	%		
Batch number: 18163820005B	Sample number(s): 9653939-9653942 BKG: P653834			
Moisture	19.66	19.52	1	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- Solid by 8260B
Batch number: B181633AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9653941	105	105	121	72
9653942	103	101	105	91
Blank	102	101	101	97
LCS	101	103	105	104

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/19/2018 18:31

Group Number: 1953845

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- Solid by 8260B
Batch number: B181633AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
LCSD	100	100	104	102
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- Solid by 8260B
Batch number: Q181681AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9653941DL	94	99	95	94
Blank	100	106	100	99
LCS	91	93	89	91
LCSD	91	91	90	93
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- Solid by 8260B
Batch number: R181691AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9653939	90	92	90	82
9653940	90	95	93	86
Blank	109	110	111	105
LCS	96	97	96	95
LCSD	99	99	98	95
Limits:	50-141	54-135	52-141	50-131

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody

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Acct. # 11372 Group # 1953845 Sample # 9653939-42

COC # 563165

Client Information

Client: DOW c/o Jacobs	Acct. #:
Project Name/#: DOW Hanging Rock RFI	PWSID #:
Project Manager: chiller / Shane Lowe	P.O. #:
Sampler: ~~OHIO~~ Billy Irish	Quote #:
State where samples were collected: OHIO	For Compliance: Yes ☐ No ☒

Matrix

Soil ☒ Sediment ☐ Tissue ☐ Water: Potable ☐ Ground ☐ NPDES ☐ Surface ☐ Other: ____

Analysis Requested

Preservation and Filtration Codes

For Lab Use Only

FSC: ____

SCR#: ____

Preservation Codes

H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Remarks

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	VOCs (Soil)	% moisture
SO1-SS42-0102-061118	6-11-18	1045	X		4	X	X
SO1-SS42-0608-061118	6-11-18	11:11	X		4	X	X
SO1-SS42-2324-061118	6-11-18	11:50	X		4	X	X
SO1-SS22-0102-061118	6-11-18	13:40	X		4	X	X
SO1-SS22-0607-061118	6-11-18	13:58	X		4	X	X
SO1-SS22-2223-061118	6-11-18	1412	X		4	X	X
SO1-SS33-0102-061118	6-11-18	1524	X		4	X	X
SO1-SS33-0708-061118	6-11-18	1534	X		4	X	X
SO1-SS33-2324-061118	6-11-18	1551	X		4	X	X
SO1-SS30-0102-061118	6-11-18	1651	X		4	X	X

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: ____

E-mail address: ____

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) As Per Contract
Type III (Reduced non-CLP)
Type VI (Raw Data Only)
NJ DKQP
TX TRRP-13
NYSDEC Category A or B
MA MCP
CT RCP

Relinquished by	Date	Time	Received by	Date	Time
	6-11-18	1800			
				6/12/18	1005

EDD Required? Yes No

If yes, format: ____

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS ____ FedEx ☒ Other ____

Temperature upon receipt 0.9 °C

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Environmental Analysis Request/Chain of Custody

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Acct. # 11372 Group # 1953845 Sample # 9653939-42

COC # 563169

Client Information

Client: DOW c/o Jacobs	Acct. #:
Project Name/#: DOW Hanging Rock KFT	PWSID #:
Project Manager: Chiller / Shane Lowe	P.O. #:
Sampler: Billy Irish	Quote #:
State where samples were collected: OHIO	For Compliance: Yes ☐ No ☒

Matrix

Soil ☒ Sediment ☐ Tissue ☐ Water: Potable ☐ Ground ☐ NPDES ☐ Surface ☐ Other: ___

Analysis Requested

Preservation and Filtration Codes

For Lab Use Only

FSC: ___

SCR#: ___

Preservation Codes

H=HCl	T=Thiosulfate
N=HNO_3	B=NaOH
S=H_2SO_4	P=H_3PO_4
F=Field Filtered	O=Other

Remarks

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	VOCs (soil)	% moisture
SO1-SS3D-0607-061118	6-11-18	1658	X		4	X	X
SO1-SS3D-7324-061118	6-11-18	1737	X		4	X	X

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: ___

E-mail address: ___

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) As Per contract

Type III (Reduced non-CLP)

Type VI (Raw Data Only)

NJ DKQP TX TRRP-13

NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
[signature]	6-11-18	1800			
			[signature]	6/12/18	1005

EDD Required? Yes No

If yes, format: ___

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS ___ FedEx X Other ___

Temperature upon receipt 0.9 °C

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Sample Administration Receipt Documentation Log

Doc Log ID: 218850

Group Number(s): 1953845

Client: Dow c/o Jacobs

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	06/12/2018 10:05
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OH		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Raysa Perez (14020) at 10:51 on 06/12/2018

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT131	0.9	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mg**	milligram(s)
C	degrees Celsius	**mL**	milliliter(s)
cfu	colony forming units	**MPN**	Most Probable Number
CP Units	cobalt-chloroplatinate units	**N.D.**	non-detect
F	degrees Fahrenheit	**ng**	nanogram(s)
g	gram(s)	**NTU**	nephelometric turbidity units
IU	International Units	**pg/L**	picogram/liter
kg	kilogram(s)	**RL**	Reporting Limit
L	liter(s)	**TNTC**	Too Numerous To Count
lb.	pound(s)	**µg**	microgram(s)
m3	cubic meter(s)	**µL**	microliter(s)
meq	milliequivalents	**umhos/cm**	micromhos/cm

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Volatiles by GC/MS Data

Case Narrative/Conformance Summary

Volatiles by GC/MS

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR39

GC/MS Volatiles

Fraction: Volatiles by GC/MS

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
9653939	S01-SS42-2324-061118		X	46.55	
9653940	S01-SS22-2223-061118		X	49.02	
9653941	S01-SS33-2324-061118		X	43.33; 0.87	
9653942	S01-SS30-2324-061118		X	0.96	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

(Sample number(s): 9653941DL: Analysis: 10237)
The VOA soil weight is outside the acceptable weight range for both trials.
See the VOA Prep Summary Sheet for the affected sample(s).

The recovery for the sample internal standard is outside the QC acceptance limits. The following action was taken: Since this internal standard was not used to quantitate any target analytes for trail 1, the data is reported.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

LCS/LCSD

Batch#: Q181681AA (Sample number(s): 9653941)
The recovery(ies) for the following analyte(s) in the LCS and LCSD were below the acceptance window: Vinyl Chloride
Refer to the QC Summary forms for more information.

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR39

GC/MS Volatiles

Fraction: Volatiles by GC/MS

MS/MSD

Matrix QC may not be included if site-specific QC were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, laboratory spike data (LCS) are provided.

SAMPLE ANALYSIS:

(Sample number(s): 9653941: Analysis: 10237)
The LCS and/or LCSD recoveries are outside the stated QC window but within the marginal exceedance allowance of +/- 4 standard deviations as defined in the TNI/DoD Standards. The following analytes are accepted based on this allowance fro trial 1: Vinyl Chloride

(Sample number(s): 9653939-9653940: Analysis: 10237)
Reporting limits were raised due to interference from the sample matrix.

No additional problems were encountered with the analysis of the samples.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Volatiles by GC/MS

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Quality Control Reference List
GC/MS Volatiles

CLIENT: CH2M Hill, Inc.
SDG: DHR39

Fraction: Volatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
VOCs- Solid by 8260B	B181633AA	VBLKB07	06/12/2018 20:51
		LCSB07	06/12/2018 21:33
		LCDB07	06/12/2018 21:56
		9653941	06/13/2018 03:31
		9653942	06/13/2018 03:54
VOCs- Solid by 8260B	Q181681AA	VBLKQ12	06/17/2018 11:38
		LCSQ12	06/17/2018 10:24
		LCDQ12	06/17/2018 10:48
		9653941DL	06/17/2018 16:27
VOCs- Solid by 8260B	R181691AA	VBLKR92	06/18/2018 10:58
		LCSR92	06/18/2018 09:26
		LCDR92	06/18/2018 09:51
		9653939	06/18/2018 11:39
		9653940	06/18/2018 12:03

Fraction: Volatiles by GC/MS

B181633AA / VBLKB07 **Analyte**	**Analysis Date**	**Blank Results**	**Units**	**MDL**	**LOQ**
Vinyl Chloride	06/12/18	N.D.	ug/kg	1	5
1,1-Dichloroethene	06/12/18	N.D.	ug/kg	1	5
cis-1,2-Dichloroethene	06/12/18	N.D.	ug/kg	1	5
trans-1,2-Dichloroethene	06/12/18	N.D.	ug/kg	1	5
Trichloroethene	06/12/18	N.D.	ug/kg	1	5
Tetrachloroethene	06/12/18	N.D.	ug/kg	1	5

Q181681AA / VBLKQ12 **Analyte**	**Analysis Date**	**Blank Results**	**Units**	**MDL**	**LOQ**
Vinyl Chloride	06/17/18	N.D.	ug/kg	50	250
1,1-Dichloroethene	06/17/18	N.D.	ug/kg	50	250
cis-1,2-Dichloroethene	06/17/18	N.D.	ug/kg	50	250
trans-1,2-Dichloroethene	06/17/18	N.D.	ug/kg	50	250
Trichloroethene	06/17/18	N.D.	ug/kg	50	250
Tetrachloroethene	06/17/18	N.D.	ug/kg	50	250

R181691AA / VBLKR92 **Analyte**	**Analysis Date**	**Blank Results**	**Units**	**MDL**	**LOQ**
Vinyl Chloride	06/18/18	N.D.	ug/kg	50	250
1,1-Dichloroethene	06/18/18	N.D.	ug/kg	50	250
cis-1,2-Dichloroethene	06/18/18	N.D.	ug/kg	50	250
trans-1,2-Dichloroethene	06/18/18	N.D.	ug/kg	50	250
Trichloroethene	06/18/18	N.D.	ug/kg	50	250
Tetrachloroethene	06/18/18	N.D.	ug/kg	50	250

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DHR39
Matrix: SOLID

Fraction: Volatiles by GC/MS

B181633AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKB07	101	54 - 135	97	50 - 131	102	50 - 141	101	52 - 141
LCSB07	103	54 - 135	104	50 - 131	101	50 - 141	105	52 - 141
LCDB07	100	54 - 135	102	50 - 131	100	50 - 141	104	52 - 141
9653941	105	54 - 135	72	50 - 131	105	50 - 141	121	52 - 141
9653942	101	54 - 135	91	50 - 131	103	50 - 141	105	52 - 141

Q181681AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKQ12	106	54 - 135	99	50 - 131	100	50 - 141	100	52 - 141
LCSQ12	93	54 - 135	91	50 - 131	91	50 - 141	89	52 - 141
LCDQ12	91	54 - 135	93	50 - 131	91	50 - 141	90	52 - 141
9653941DL	99	54 - 135	94	50 - 131	94	50 - 141	95	52 - 141

R181691AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKR92	110	54 - 135	105	50 - 131	109	50 - 141	111	52 - 141
LCSR92	97	54 - 135	95	50 - 131	96	50 - 141	96	52 - 141
LCDR92	99	54 - 135	95	50 - 131	99	50 - 141	98	52 - 141
9653939	92	54 - 135	82	50 - 131	90	50 - 141	90	52 - 141
9653940	95	54 - 135	86	50 - 131	90	50 - 141	93	52 - 141

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSB07 LCSD: LCDB07 **Analyte**	Batch: **B181633AA** (Sample number(s): 9653941-9653942) **Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	15.26	15.54	76	78	59-120	2	30
1,1-Dichloroethene	20	17.98	18.47	90	92	73-129	3	30
cis-1,2-Dichloroethene	20	18.54	19.42	93	97	80-120	5	30
trans-1,2-Dichloroethene	20	17.46	18.47	87	92	80-125	6	30
Trichloroethene	20	17.93	18.87	90	94	80-120	5	30
Tetrachloroethene	20	18.08	18.49	90	92	73-120	2	30

LCS: LCSQ12 LCSD: LCDQ12 **Analyte**	Batch: **Q181681AA** (Sample number(s): 9653941) **Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	1000	576.15	554.76	58 *	55 *	59-120	4	30
1,1-Dichloroethene	1000	998.3	988.49	100	99	73-129	1	30
cis-1,2-Dichloroethene	1000	1038.65	1015.41	104	102	80-120	2	30
trans-1,2-Dichloroethene	1000	1016.42	1009.55	102	101	80-125	1	30
Trichloroethene	1000	976.7	980.82	98	98	80-120	0	30
Tetrachloroethene	1000	947.65	946.86	95	95	73-120	0	30

LCS: LCSR92 LCSD: LCDR92 **Analyte**	Batch: **R181691AA** (Sample number(s): 9653939-9653940) **Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	1000	825.25	774.7	83	77	59-120	6	30
1,1-Dichloroethene	1000	1072.1	1026.58	107	103	73-129	4	30
cis-1,2-Dichloroethene	1000	950.05	1012.22	95	101	80-120	6	30
trans-1,2-Dichloroethene	1000	993.94	1006.04	99	101	80-125	1	30
Trichloroethene	1000	923.72	917.39	92	92	80-120	1	30
Tetrachloroethene	1000	993.37	937.21	99	94	73-120	6	30

Fraction: Volatiles by GC/MS

10237: VOCs- Solid by 8260B Analyte Name	Default MDL	Default LOQ	Units
Vinyl Chloride	1	5	ug/kg
1,1-Dichloroethene	1	5	ug/kg
trans-1,2-Dichloroethene	1	5	ug/kg
cis-1,2-Dichloroethene	1	5	ug/kg
Trichloroethene	1	5	ug/kg
Tetrachloroethene	1	5	ug/kg

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: bf22t01.d BFB Injection Date: 02/22/18

Instrument ID: HP09953 BFB Injection Time: 10:34

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.36
75	30.0 - 60.0% of mass 95	49.53
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.95
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	81.80
175	5.0 - 9.0% of mass 174	6.09 (7.45)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.92 (96.48)1
177	5.0 - 9.0% of mass 176	5.35 (6.77)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	bf22i01.d	02/22/18	11:18
02	VSTD100	bf22i02.d	02/22/18	11:42
03	VSTD50	bf22i03.d	02/22/18	12:06
04	VSTD20	bf22i04.d	02/22/18	12:31
05	VSTD10	bf22i05.d	02/22/18	12:57
06	VSTD4	bf22i06.d	02/22/18	13:29
07	MDL001 - MDL001	bf22m01.d	02/22/18	13:51
08	LGBICV	bf22v01.d	02/22/18	14:16

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu12t10.d BFB Injection Date: 06/12/18

Instrument ID: HP09953 BFB Injection Time: 19:08

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.69
75	30.0 - 60.0% of mass 95	51.74
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.87
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	80.01
175	5.0 - 9.0% of mass 174	6.14 (7.67)1
176	Greater than 95.0%, but less than 101.0% of mass 174	77.22 (96.51)1
177	5.0 - 9.0% of mass 176	5.21 (6.75)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	bu12c01.d	06/12/18	20:05
02	VBLKB07	bu12b10.d	06/12/18	20:51
03	LCSB07	bu12s61.d	06/12/18	21:33
04	LCDB07	bu12s62.d	06/12/18	21:56
05	9632085	bu12s64.d	06/12/18	23:47
06	9632091	bu12s65.d	06/13/18	00:09
07	9632093	bu12s66.d	06/13/18	00:31
08	9632095	bu12s67.d	06/13/18	00:54
09	9640166	bu12s68.d	06/13/18	01:17
10	9640167	bu12s69.d	06/13/18	01:39
11	9649656	bu12s70.d	06/13/18	02:02
12	9653928	bu12s71.d	06/13/18	02:24
13	9653931	bu12s72.d	06/13/18	02:46
14	9653932	bu12s73.d	06/13/18	03:09
15	9653941	bu12s74.d	06/13/18	03:31
16	9653942	bu12s75.d	06/13/18	03:54
17	9651105	bu12s76.d	06/13/18	04:16
18	9651106	bu12s77.d	06/13/18	04:39
19	9651108	bu12s78.d	06/13/18	05:02
20	9651111	bu12s79.d	06/13/18	05:24
21	9650447	bu12s80.d	06/13/18	05:47
22	9653933	bu12s81.d	06/13/18	06:10

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu12t10.d BFB Injection Date: 06/12/18

Instrument ID: HP09953 BFB Injection Time: 19:08

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.69
75	30.0 - 60.0% of mass 95	51.74
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.87
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	80.01
175	5.0 - 9.0% of mass 174	6.14 (7.67)1
176	Greater than 95.0%, but less than 101.0% of mass 174	77.22 (96.51)1
177	5.0 - 9.0% of mass 176	5.21 (6.75)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9653935	bu12s82.d	06/13/18	06:32

FORM V VOA

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: qy24t10.d BFB Injection Date: 05/24/18

Instrument ID: HP07536 BFB Injection Time: 10:35

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.07
75	30.0 - 60.0% of mass 95	48.00
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	7.09
173	Less than 2.0% of mass 174	0.20 (0.22)1
174	Greater than 50.0% of mass 95	90.11
175	5.0 - 9.0% of mass 174	6.22 (6.91)1
176	Greater than 95.0%, but less than 101.0% of mass 174	86.19 (95.64)1
177	5.0 - 9.0% of mass 176	6.11 (7.09)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD4	qy24i10.d	05/24/18	11:51
02	VSTD10	qy24i11.d	05/24/18	12:14
03	VSTD20	qy24i12.d	05/24/18	12:37
04	VSTD50	qy24i13.d	05/24/18	13:00
05	VSTD100	qy24i14.d	05/24/18	13:23
06	VSTD300	qy24i15.d	05/24/18	13:46
07	MDL - MDL	qy24m10.d	05/24/18	14:55
08	QBICV	qy24v10.d	05/24/18	15:18
09	VSTD4	qy24i20.d	05/24/18	16:03
10	VSTD10	qy24i21.d	05/24/18	16:26
11	VSTD20	qy24i22.d	05/24/18	16:49
12	VSTD50	qy24i23.d	05/24/18	17:13
13	VSTD100	qy24i24.d	05/24/18	17:36
14	VSTD300	qy24i25.d	05/24/18	17:58
15	SMDL - SMDL	qy24m20.d	05/24/18	18:45
16	BSMICV	qy24v20.d	05/24/18	19:07

FORM V VOA

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: qu17t10.d BFB Injection Date: 06/17/18

Instrument ID: HP07536 BFB Injection Time: 08:58

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.84
75	30.0 - 60.0% of mass 95	47.65
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.70
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	92.14
175	5.0 - 9.0% of mass 174	6.66 (7.23)1
176	Greater than 95.0%, but less than 101.0% of mass 174	88.94 (96.53)1
177	5.0 - 9.0% of mass 176	6.16 (6.93)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	qu17c10.d	06/17/18	09:58
02	LCSQ12	qu17l10.d	06/17/18	10:24
03	LCSQ13	qu17l20.d	06/17/18	10:24
04	LCDQ12	qu17l11.d	06/17/18	10:48
05	LCDQ13	qu17l21.d	06/17/18	10:48
06	VBLKQ12	qu17b10.d	06/17/18	11:38
07	VBLKQ13	qu17b20.d	06/17/18	11:38
08	9647224DL	qu17s33.d	06/17/18	12:15
09	SECC050	qu17ec1.d	06/17/18	12:38
10	9660184	qu17s11.d	06/17/18	13:24
11	9647491	qu17s12.d	06/17/18	13:48
12	9647479	qu17s13.d	06/17/18	14:10
13	9647485	qu17s14.d	06/17/18	14:33
14	9647487	qu17s15.d	06/17/18	14:56
15	9647481	qu17s16.d	06/17/18	15:19
16	9647483	qu17s17.d	06/17/18	15:41
17	9647489	qu17s18.d	06/17/18	16:04
18	9653941DL	qu17s19.d	06/17/18	16:27
19	9650182	qu17s20.d	06/17/18	16:50
20	9650183	qu17s21.d	06/17/18	17:13
21	9650184	qu17s22.d	06/17/18	17:35
22	9650185	qu17s23.d	06/17/18	17:58

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: qu17t10.d BFB Injection Date: 06/17/18

Instrument ID: HP07536 BFB Injection Time: 08:58

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.84
75	30.0 - 60.0% of mass 95	47.65
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.70
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	92.14
175	5.0 - 9.0% of mass 174	6.66 (7.23)1
176	Greater than 95.0%, but less than 101.0% of mass 174	88.94 (96.53)1
177	5.0 - 9.0% of mass 176	6.16 (6.93)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9650186	qu17s24.d	06/17/18	18:21
24	9650181	qu17s25.d	06/17/18	18:44

FORM V VOA

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: ry29t10.d BFB Injection Date: 05/29/18

Instrument ID: HP07566 BFB Injection Time: 11:34

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.97
75	30.0 - 60.0% of mass 95	51.05
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.91
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	65.09
175	5.0 - 9.0% of mass 174	5.04 (7.75)1
176	Greater than 95.0%, but less than 101.0% of mass 174	63.23 (97.14)1
177	5.0 - 9.0% of mass 176	4.00 (6.33)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD4	ry29i10.d	05/29/18	12:21
02	VSTD10	ry29i11.d	05/29/18	12:45
03	VSTD20	ry29i12.d	05/29/18	13:09
04	VSTD50	ry29i13.d	05/29/18	13:35
05	VSTD100	ry29i14.d	05/29/18	13:59
06	VSTD300	ry29i15.d	05/29/18	14:23
07	MDL001 - MDL001	ry29m10.d	05/29/18	15:37
08	RICV	ry29v10.d	05/29/18	16:02
09	VSTD4	ry29i20.d	05/29/18	16:51
10	VSTD10	ry29i21.d	05/29/18	17:16
11	VSTD20	ry29i22.d	05/29/18	17:41
12	VSTD50	ry29i23.d	05/29/18	18:06
13	VSTD100	ry29i24.d	05/29/18	18:30
14	VSTD300	ry29i25.d	05/29/18	18:55
15	SMDL - SMDL	ry29m20.d	05/29/18	19:44
16	SMRICV	ry29v20.d	05/29/18	20:09

FORM V VOA

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: ru18t01.d BFB Injection Date: 06/18/18

Instrument ID: HP07566 BFB Injection Time: 07:42

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.94
75	30.0 - 60.0% of mass 95	49.01
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	7.39
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	66.10
175	5.0 - 9.0% of mass 174	4.96 (7.50)1
176	Greater than 95.0%, but less than 101.0% of mass 174	65.30 (98.79)1
177	5.0 - 9.0% of mass 176	4.02 (6.16)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	ru18c01.d	06/18/18	08:32
02	LCSR92	ru18l01.d	06/18/18	09:26
03	LCDR92	ru18l02.d	06/18/18	09:51
04	VBLKR92	ru18b01.d	06/18/18	10:58
05	9653939	ru18s02.d	06/18/18	11:39
06	9653940	ru18s03.d	06/18/18	12:03
07	9656568	ru18s04.d	06/18/18	12:26
08	9654945	ru18s05.d	06/18/18	12:50
09	9650181DL	ru18s06.d	06/18/18	13:15
10	9650186DL	ru18s07.d	06/18/18	13:39
11	9651601	ru18s08.d	06/18/18	14:04
12	9651606	ru18s09.d	06/18/18	14:29
13	9651608	ru18s10.d	06/18/18	14:53
14	9651609	ru18s11.d	06/18/18	15:18
15	9651612	ru18s12.d	06/18/18	15:42
16	9651614DL	ru18s13.d	06/18/18	16:07
17	9651616	ru18s14.d	06/18/18	16:31
18	9651607	ru18s15.d	06/18/18	16:55
19	9651611	ru18s17.d	06/18/18	17:44
20	9651611DL	ru18s18.d	06/18/18	18:09
21	9651610	ru18s19.d	06/18/18	18:33
22	9651610DL	ru18s20.d	06/18/18	18:57

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND		RRF	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane		0.4937	0.4887	0.4857	0.5026	0.5070	0.4719	0.4916	3	AVG	
Chloromethane	#	0.6250	0.6026	0.5854	0.5711	0.5965	0.5428	0.5872	5	AVG	#
Vinyl Chloride	*	0.4665	0.4310	0.4182	0.4099	0.4171	0.3607	0.4173	8	AVG	*
Bromomethane		0.3081	0.3006	0.2984	0.2909	0.2897	0.2518	0.2899	7	AVG	
Chloroethane		0.2404	0.2467	0.2409	0.2386	0.2372	0.1969	0.2334	8	AVG	
Dichlorofluoromethane		0.6106	0.5949	0.6079	0.5949	0.6009	0.5439	0.5922	4	AVG	
Trichlorofluoromethane		0.5424	0.5392	0.5339	0.5359	0.5516	0.5187	0.5369	2	AVG	
Ethanol		0.1197	0.1143	0.1250	0.1279	0.1217	0.1180	0.1211	4	AVG	
Freon 123a		0.3516	0.3561	0.3631	0.3465	0.3545	0.3389	0.3518	2	AVG	
Acrolein		2.4157	2.4240	2.5462	2.7115	2.3801	2.0909	2.4281	8	AVG	
1,1-Dichloroethene	*	0.2378	0.2477	0.2501	0.2415	0.2560	0.2425	0.2459	3	AVG	*
Acetone		0.0301	0.0281	0.0238	0.0230	0.0225	0.0213	0.0248	14	AVG	
Freon 113		0.2790	0.3085	0.2946	0.2882	0.3071	0.2988	0.2960	4	AVG	
2-Propanol		0.9378	1.0859	1.0919	1.3247	1.0802	1.1772	1.1163	11	AVG	
Methyl Iodide		0.5059	0.5333	0.5541	0.5338	0.5578	0.5474	0.5387	4	AVG	
Carbon Disulfide		0.7997	0.8330	0.8463	0.8407	0.8843	0.8505	0.8424	3	AVG	
Methyl Acetate		0.2282	0.2378	0.2011	0.1925	0.1997	0.1949	0.2090	9	AVG	
Allyl Chloride		0.5013	0.4898	0.4880	0.4877	0.5031	0.4654	0.4892	3	AVG	
Methylene Chloride		0.2909	0.2986	0.2904	0.2831	0.2903	0.2778	0.2885	2	AVG	
t-Butyl alcohol		1.3811	1.2450	1.2102	1.2677	1.2127	1.1339	1.2418	7	AVG	
Acrylonitrile		0.1032	0.1110	0.0959	0.0970	0.0961	0.0911	0.0991	7	AVG	
Methyl Tertiary Butyl Ether		0.7860	0.8352	0.7923	0.7915	0.7973	0.7826	0.7975	2	AVG	
trans-1,2-Dichloroethene		0.2776	0.2905	0.2964	0.2871	0.2971	0.2819	0.2884	3	AVG	
n-Hexane		0.4644	0.5057	0.5030	0.5210	0.5427	0.5389	0.5126	6	AVG	
1,1-Dichloroethane	#	0.5504	0.5699	0.5871	0.5681	0.5881	0.5753	0.5731	2	AVG	#
di-Isopropyl ether		1.1120	1.1762	1.1817	1.1544	1.1878	1.1492	1.1602	2	AVG	
2-Chloro-1,3-butadiene		0.4692	0.5100	0.5339	0.5218	0.5510	0.5383	0.5207	6	AVG	
Ethyl t-butyl ether		0.8945	0.9546	0.9853	0.9854	1.0111	1.0051	0.9727	4	AVG	
2-Butanone		7.1353	7.2724	7.4916	7.9621	7.1791	6.8822	7.3204	5	AVG	
cis-1,2-Dichloroethene		0.3111	0.3303	0.3397	0.3333	0.3451	0.3458	0.3342	4	AVG	
2,2-Dichloropropane		0.3625	0.4052	0.4224	0.4310	0.4616	0.4679	0.4251	9	AVG	
Propionitrile		1.8864	1.9537	2.0773	2.2150	2.0246	1.9793	2.0227	6	AVG	
Methacrylonitrile		0.1142	0.1249	0.1114	0.1153	0.1164	0.1201	0.1170	4	AVG	
Bromochloromethane		0.1557	0.1642	0.1602	0.1628	0.1669	0.1713	0.1635	3	AVG	
Tetrahydrofuran		1.3912	1.5533	1.5880	1.7875	1.6127	1.5810	1.5856	8	AVG	
Chloroform	*	0.5030	0.5322	0.5455	0.5356	0.5526	0.5494	0.5364	3	AVG	*
1,1,1-Trichloroethane		0.5352	0.5079	0.5223	0.4905	0.5246	0.5285	0.5181	3	AVG	
Cyclohexane		0.5629	0.6493	0.6177	0.6222	0.6647	0.6642	0.6302	6	AVG	
Cyclohexane(2)		0.5006	0.4943	0.4711	0.5565	0.5111	0.5144	0.5080	6	AVG	
Cyclohexane(3)		0.1594	0.1839	0.1769	0.1801	0.1918	0.1929	0.1808	7	AVG	
1,1-Dichloropropene		0.4023	0.4334	0.4383	0.4280	0.4510	0.4497	0.4338	4	AVG	
Carbon Tetrachloride		0.3244	0.3604	0.3721	0.3810	0.4190	0.4414	0.3830	11	AVG	
Isobutyl Alcohol		0.4628	0.4806	0.5053	0.5387	0.5193	0.5508	0.5096	7	AVG	
Benzene		1.2429	1.2621	1.2830	1.2419	1.2844	1.2513	1.2609	2	AVG	
1,2-Dichloroethane		0.4024	0.4213	0.4097	0.4022	0.4096	0.4129	0.4097	2	AVG	
1,2-Dichloroethane(2)		0.0303	0.0375	0.0352	0.0355	0.0359	0.0376	0.0353	8	AVG	
t-Amyl methyl ether		0.7479	0.8064	0.7995	0.8156	0.8448	0.8723	0.8144	5	AVG	
n-Heptane		0.5526	0.6424	0.5700	0.6187	0.6421	0.6485	0.6124	7	AVG	
n-Butanol		0.3098	0.3268	0.3694	0.4162	0.4027	0.4324	0.3762	13	AVG	
Trichloroethene		0.3036	0.3195	0.3239	0.3175	0.3348	0.3368	0.3227	4	AVG	
Methylcyclohexane		0.5819	0.5773	0.5413	0.6122	0.6392	0.6478	0.6000	7	AVG	
1,2-Dichloropropane	*	0.3067	0.3305	0.3383	0.3336	0.3432	0.3461	0.3331	4	AVG	*

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Methyl Methacrylate			0.1686	0.1881	0.1830	0.1917	0.1998	0.2129	0.1907	8	AVG	
1,4-Dioxane			0.1110	0.1248	0.1466	0.1630	0.1467	0.1540	0.1410	14	AVG	
Dibromomethane			0.1663	0.1816	0.1759	0.1784	0.1836	0.1913	0.1795	5	AVG	
Bromodichloromethane			0.3248	0.3638	0.3817	0.3882	0.4109	0.4303	0.3833	10	AVG	
2-Nitropropane			2.0194	2.2729	2.3607	2.9534	3.0464		2.5306	18	2NDDEG	
2-Chloroethyl Vinyl Ether			0.1410	0.1558	0.1576	0.1696	0.1760	0.1863	0.1644	10	AVG	
cis-1,3-Dichloropropene			0.3779	0.4439	0.4672	0.4804	0.5078	0.5238	0.4668	11	AVG	
4-Methyl-2-pentanone			0.2576	0.3163	0.2933	0.3176	0.3143	0.3227	0.3036	8	AVG	
Toluene		*	0.9247	1.0130	1.0229	0.9901	1.0314	1.0079	0.9983	4	AVG	*
trans-1,3-Dichloropropene			0.3948	0.4659	0.4870	0.5175	0.5510	0.5732	0.4982	13	AVG	
Ethyl Methacrylate			0.3520	0.4298	0.4331	0.4721	0.4944	0.5152	0.4494	13	AVG	
1,1,2-Trichloroethane			0.3012	0.3296	0.3197	0.3250	0.3269	0.3353	0.3230	4	AVG	
Tetrachloroethene			0.4093	0.4669	0.4566	0.4543	0.4871	0.5045	0.4631	7	AVG	
1,3-Dichloropropane			0.5166	0.5690	0.5523	0.5568	0.5651	0.5712	0.5552	4	AVG	
2-Hexanone			0.2486	0.2841	0.2494	0.2778	0.2765	0.2830	0.2699	6	AVG	
Dibromochloromethane			0.2803	0.3263	0.3380	0.3678	0.3910	0.4236	0.3545	14	AVG	
1,2-Dibromoethane			0.2950	0.3284	0.3231	0.3289	0.3375	0.3495	0.3271	6	AVG	
1-Chlorohexane			0.4346	0.5414	0.5133	0.5396	0.5742	0.5820	0.5308	10	AVG	
Chlorobenzene		#	1.0337	1.1318	1.1257	1.0987	1.1318	1.1318	1.1089	4	AVG	#
1,1,1,2-Tetrachloroethane			0.3009	0.3456	0.3573	0.3779	0.4025	0.4298	0.3690	12	AVG	
Ethylbenzene		*	1.6800	1.9699	1.9294	1.9287	2.0003	1.9159	1.9040	6	AVG	*
m+p-Xylene			0.6648	0.7740	0.7603	0.7637	0.8001	0.7814	0.7574	6	AVG	
o-Xylene			0.6360	0.7611	0.7500	0.7650	0.8018	0.8129	0.7545	8	AVG	
Styrene			0.9609	1.1776	1.1925	1.2237	1.2853	1.2873	1.1879	10	AVG	
Bromoform		#	0.1645	0.1961	0.1982	0.2297	0.2506	0.2941	0.2222	21	2NDDEG	#
Isopropylbenzene			1.5872	1.9815	1.9075	1.9702	2.0668	1.9360	1.9082	9	AVG	
Cyclohexanone			0.6812	0.7882	0.8988	1.0192	0.9573	1.0561	0.9002	16	2NDDEG	
1,1,2,2-Tetrachloroethane		#	0.7205	0.8162	0.7382	0.7748	0.7628	0.7200	0.7554	5	AVG	#
Bromobenzene			0.7947	0.8809	0.8693	0.8361	0.8490	0.8151	0.8408	4	AVG	
trans-1,4-Dichloro-2-butene			0.2019	0.2266	0.1995	0.2076	0.2082	0.1977	0.2069	5	AVG	
1,2,3-Trichloropropane			0.2024	0.2234	0.2094	0.2076	0.2048	0.1963	0.2073	4	AVG	
n-Propylbenzene			3.5008	4.3012	4.0233	3.9668	4.0077	3.0592	3.8098	12	AVG	
2-Chlorotoluene			0.7479	0.8267	0.8112	0.7922	0.8147	0.7707	0.7939	4	AVG	
1,3,5-Trimethylbenzene			2.4376	3.0319	2.9345	2.9334	3.0104	2.5475	2.8159	9	AVG	
4-Chlorotoluene			0.7443	0.8644	0.8462	0.8227	0.8504	0.8075	0.8226	5	AVG	
tert-Butylbenzene			0.5308	0.6792	0.6465	0.6746	0.7119	0.6923	0.6559	10	AVG	
Pentachloroethane			0.3802	0.4286	0.4543	0.4969	0.5395	0.5791	0.4798	15	AVG	
1,2,4-Trimethylbenzene			2.5041	3.0952	2.9646	2.9932	3.0647	2.5702	2.8653	9	AVG	
sec-Butylbenzene			3.0756	3.9796	3.7154	3.8596	3.9223	3.0048	3.5929	12	AVG	
1,3-Dichlorobenzene			1.5244	1.7585	1.6901	1.6588	1.6810	1.6010	1.6523	5	AVG	
p-Isopropyltoluene			2.7340	3.5537	3.2781	3.3991	3.5023	2.7884	3.2092	11	AVG	
1,4-Dichlorobenzene			1.6392	1.8361	1.7301	1.7209	1.7376	1.6492	1.7189	4	AVG	
1,2,3-Trimethylbenzene			2.8974	3.0421	2.9914	3.0694	3.0912	2.5581	2.9416	7	AVG	
Benzyl Chloride			0.1500	0.2040	0.2096	0.2587	0.2746	0.3058	0.2338	24	2NDDEG	
1,3-Diethylbenzene			1.7470	1.8875	1.8283	1.9926	2.0187	1.8348	1.8848	6	AVG	
1,4-Diethylbenzene			1.8994	2.0158	1.9508	2.0984	2.1666	1.9375	2.0114	5	AVG	
n-Butylbenzene			1.4152	1.8153	1.6487	1.7385	1.7677	1.5699	1.6592	9	AVG	
1,2-Dichlorobenzene			1.5146	1.7324	1.6363	1.6557	1.7074	1.5992	1.6409	5	AVG	
1,2-Diethylbenzene			1.5329	1.6048	1.5604	1.6668	1.7022	1.5802	1.6079	4	AVG	
1,2-Dibromo-3-chloropropane			0.1139	0.1399	0.1216	0.1398	0.1402	0.1438	0.1332	9	AVG	
1,3,5-Trichlorobenzene			1.1954	1.4441	1.3236	1.3989	1.4374	1.4641	1.3773	7	AVG	
1,2,4-Trichlorobenzene			1.1029	1.3438	1.2359	1.3065	1.3308	1.3382	1.2763	7	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

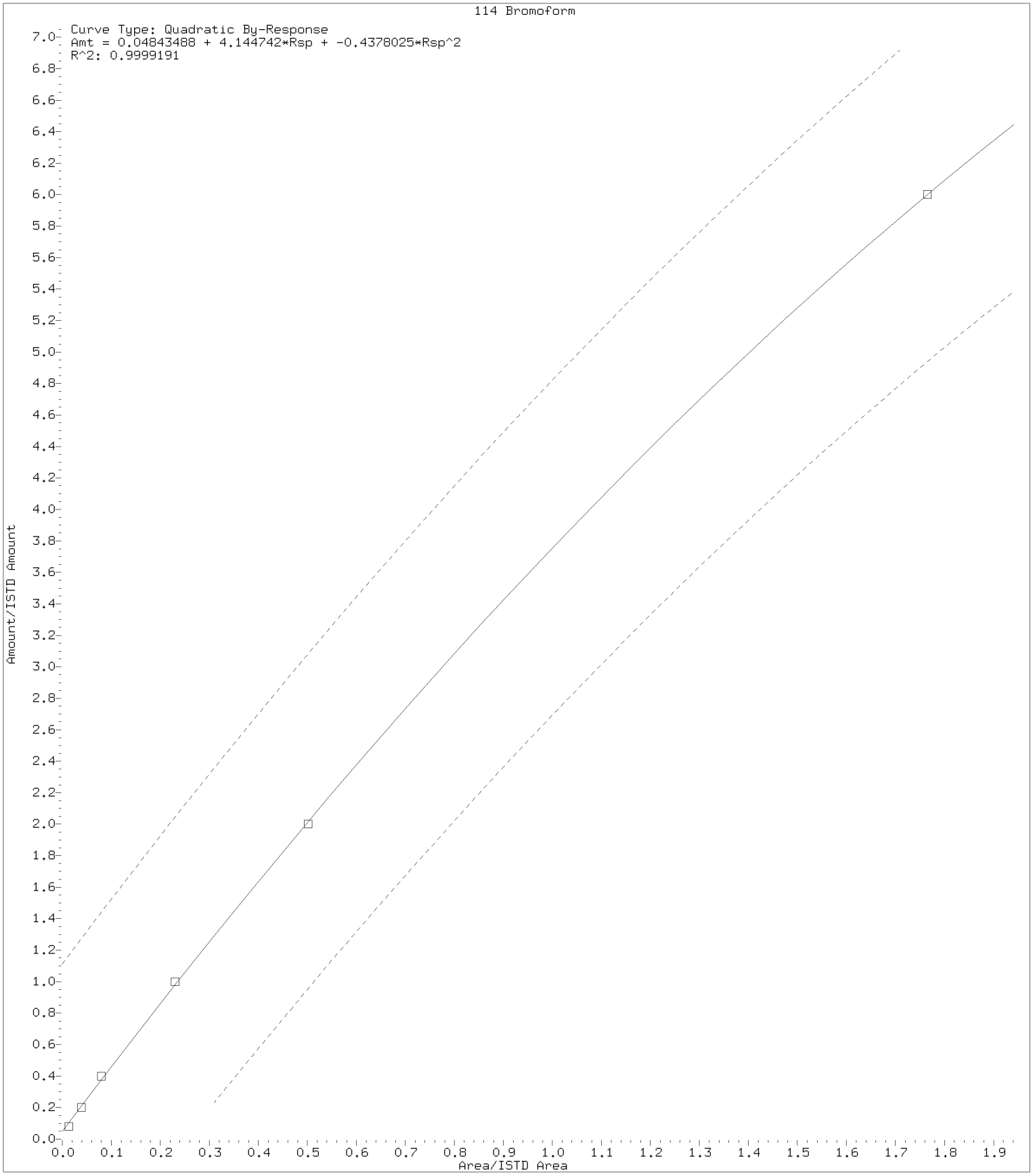
COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Hexachlorobutadiene		0.5066	0.6377	0.5818	0.6845	0.7278	0.8061	0.6574	16	2NDDEG
Naphthalene		2.4406	2.9700	2.6800	2.8364	2.7417	2.3077	2.6627	9	AVG
1,2,3-Trichlorobenzene		1.0742	1.2858	1.1530	1.2084	1.2213	1.1951	1.1896	6	AVG
2-Methylnaphthalene		1.3392	1.6688	1.6220	1.8294	1.8489	1.6210	1.6549	11	AVG
Dibromofluoromethane		0.2519	0.2489	0.2484	0.2517	0.2501	0.2499	0.2502	1	AVG
Dibromofluoromethane(2)		0.2544	0.2544	0.2542	0.2545	0.2579	0.2549	0.2550	1	AVG
1,2-Dichloroethane-d4		0.0560	0.0569	0.0536	0.0548	0.0539	0.0537	0.0548	2	AVG
1,2-Dichloroethane-d4(2)		0.2808	0.2847	0.2806	0.2924	0.2701	0.2713	0.2800	3	AVG
1,2-Dichloroethane-d4(3)		0.0351	0.0356	0.0338	0.0346	0.0342	0.0347	0.0347	2	AVG
Toluene-d8		1.2947	1.3100	1.3184	1.3142	1.3178	1.2772	1.3054	1	AVG
Toluene-d8(2)		0.8344	0.8400	0.8427	0.8577	0.8478	0.8390	0.8436	1	AVG
4-Bromofluorobenzene		0.4965	0.4992	0.4949	0.4976	0.4962	0.5077	0.4987	1	AVG
4-Bromofluorobenzene(2)		0.4326	0.4314	0.4350	0.4356	0.4288	0.4416	0.4342	1	AVG

Average %RSD 7

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



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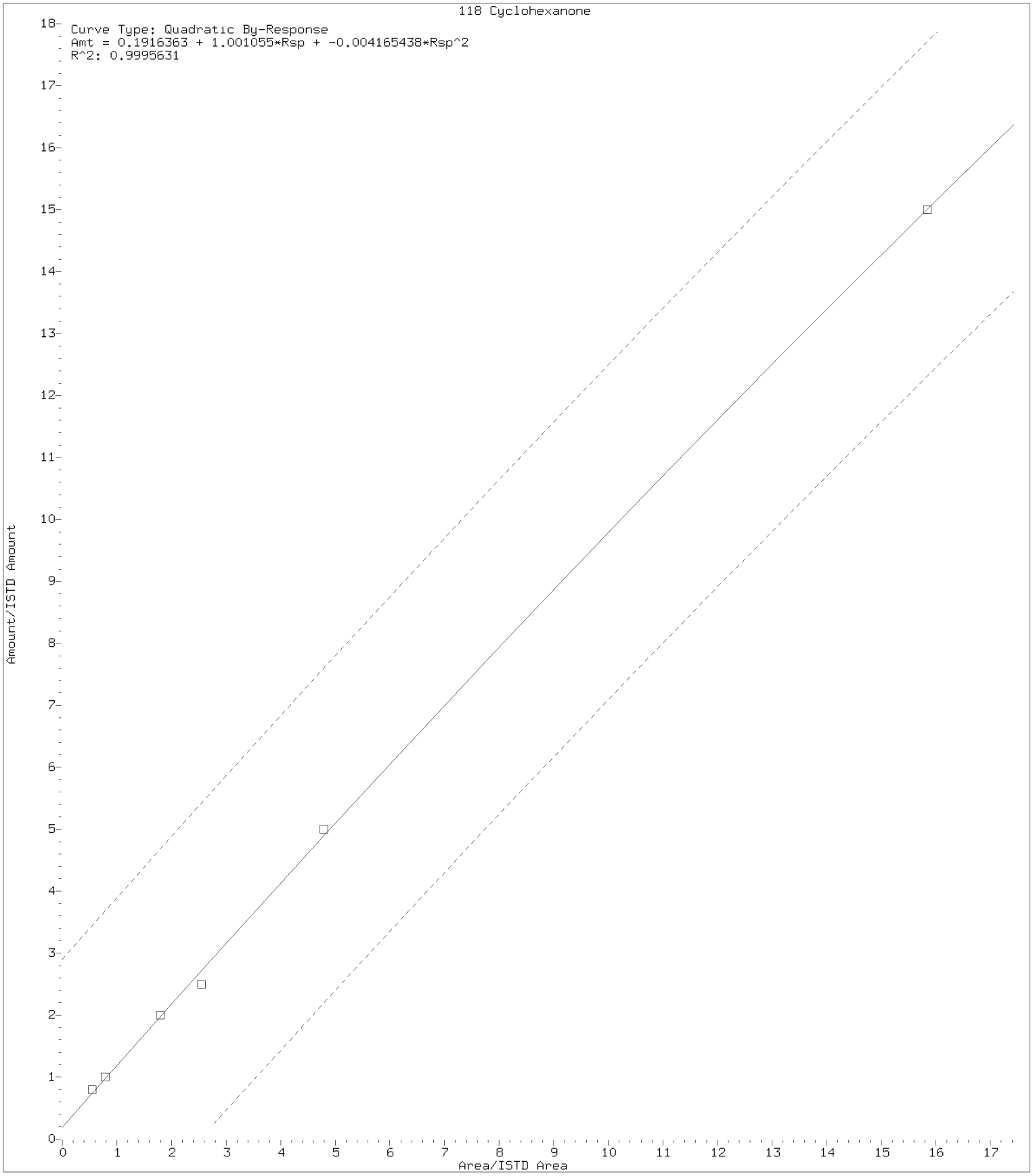
Target 3.5 esignature user ID: jkh09052



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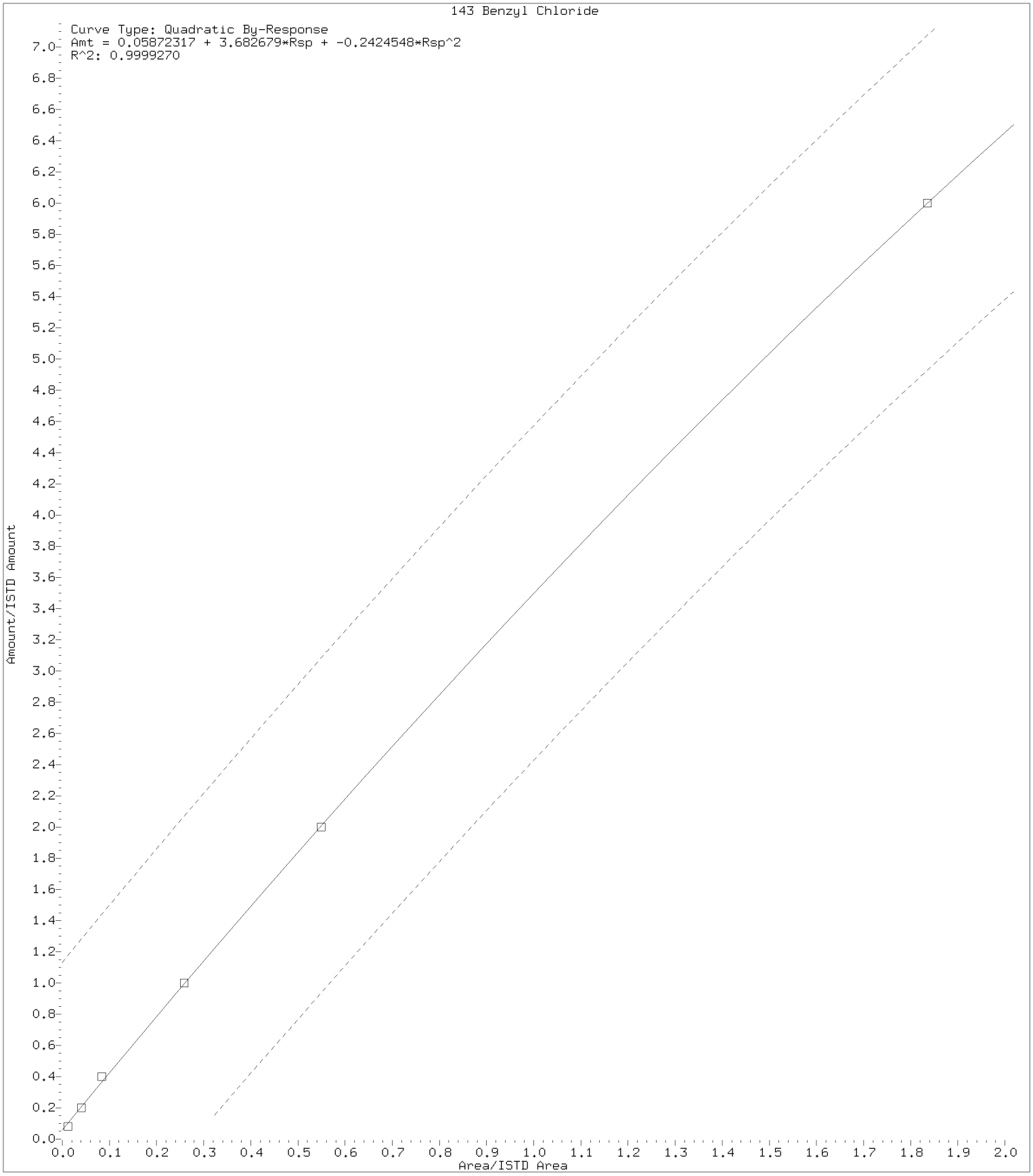
Target 3.5 esignature user ID: jkh09052



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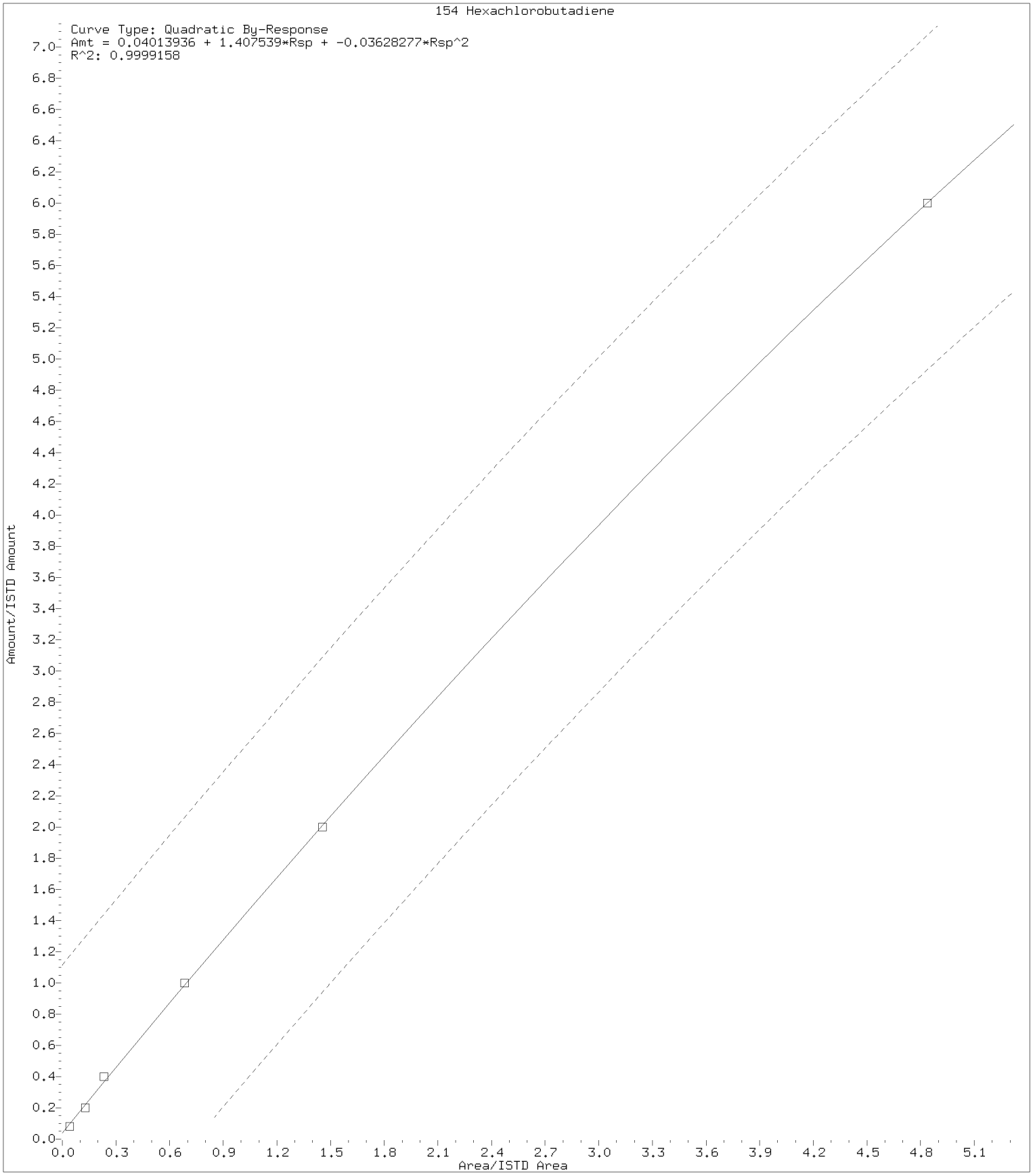
Target 3.5 esignature user ID: jkh09052



Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i01.d	VSTD300
/chem2/HP09953.i/18feb22i.b/bf22i02.d	VSTD100
/chem2/HP09953.i/18feb22i.b/bf22i03.d	VSTD050
/chem2/HP09953.i/18feb22i.b/bf22i04.d	VSTD020
/chem2/HP09953.i/18feb22i.b/bf22i05.d	VSTD010
/chem2/HP09953.i/18feb22i.b/bf22i06.d	VSTD004

Area Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	128217	123900	114201	115639	145100	130640	126283	9	Yes
Fluorobenzene	1184646	1204409	1207816	1194615	1209200	1184260	1197491	1	Yes
Chlorobenzene-d5	942767	935486	931957	925430	939957	919534	932522	1	Yes
1,4-Dichlorobenzene-d4	637692	560922	549119	528429	540311	528167	557440	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. RT
t-Butyl alcohol-d10	1.936	1.936	1.924	1.924	1.936	1.918	1.929
Fluorobenzene	3.956	3.962	3.956	3.950	3.962	3.950	3.956
Chlorobenzene-d5	7.156	7.156	7.156	7.156	7.156	7.156	7.156
1,4-Dichlorobenzene-d4	9.236	9.236	9.236	9.236	9.236	9.236	9.236

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 02/23/2018 at 11:24.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4728	19.24	20	-4	
#	Chloromethane	0.5872	0.6158	20.97	20	5	#
*	Vinyl Chloride	0.4173	0.4340	20.80	20	4	*
	Bromomethane	0.2899	0.3058	21.10	20	5	
	Chloroethane	0.2334	0.2382	20.41	20	2	
	Dichlorofluoromethane	0.5922	0.6121	20.67	20	3	
	Trichlorofluoromethane	0.5369	0.5575	20.77	20	4	
	Ethanol	0.1211	0.1297	1071.13	1000	7	
	Freon 123a	0.3518	0.3682	20.93	20	5	
	Acrolein	2.4281	2.1880	135.17	150	-10	
*	1,1-Dichloroethene	0.2459	0.2825	22.97	20	15	*
	Acetone	0.0248	0.0227	137.36	150	-8	
	Freon 113	0.2960	0.3175	21.45	20	7	
	2-Propanol	1.1163	1.3659	183.55	150	22	
	Methyl Iodide	0.5387	0.5563	20.65	20	3	
	Carbon Disulfide	0.8424	0.8761	20.80	20	4	
	Methyl Acetate	0.2090	0.2095	20.04	20	0	
	Allyl Chloride	0.4892	0.4957	20.27	20	1	
	Methylene Chloride	0.2885	0.3069	21.28	20	6	
	t-Butyl alcohol	1.2418	1.5044	242.30	200	21	
	Acrylonitrile	0.0991	0.0917	92.60	100	-7	
	Methyl Tertiary Butyl Ether	0.7975	0.7924	19.87	20	-1	
	trans-1,2-Dichloroethene	0.2884	0.3151	21.85	20	9	
	n-Hexane	0.5126	0.5289	20.63	20	3	
#	1,1-Dichloroethane	0.5731	0.5832	20.35	20	2	#
	di-Isopropyl ether	1.1602	1.2047	20.77	20	4	
	2-Chloro-1,3-butadiene	0.5207	0.5325	20.45	20	2	
	Ethyl t-butyl ether	0.9727	0.9547	19.63	20	-2	
	2-Butanone	7.3204	7.1037	145.56	150	-3	
	cis-1,2-Dichloroethene	0.3342	0.3513	21.02	20	5	
	2,2-Dichloropropane	0.4251	0.4226	19.88	20	-1	
	Propionitrile	2.0227	2.0620	152.91	150	2	
	Methacrylonitrile	0.1170	0.1114	142.70	150	-5	
	Bromochloromethane	0.1635	0.1615	19.75	20	-1	
	Tetrahydrofuran	1.5856	1.6585	104.60	100	5	
*	Chloroform	0.5364	0.5469	20.39	20	2	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1-Trichloroethane	0.5181	0.5094	19.66	20	-2	
	Cyclohexane	0.6302	0.6474	20.55	20	3	
	1,1-Dichloropropene	0.4338	0.4369	20.14	20	1	
	Carbon Tetrachloride	0.3830	0.3742	19.54	20	-2	
	Isobutyl Alcohol	0.5096	0.4746	465.70	500	-7	
	Benzene	1.2609	1.3047	20.69	20	3	
	1,2-Dichloroethane	0.4097	0.4020	19.62	20	-2	
	t-Amyl methyl ether	0.8144	0.7876	19.34	20	-3	
	n-Heptane	0.6124	0.6228	20.34	20	2	
	n-Butanol	0.3762	0.3592	954.90	1000	-5	
	Trichloroethene	0.3227	0.3246	20.12	20	1	
	Methylcyclohexane	0.6000	0.6140	20.47	20	2	
*	1,2-Dichloropropane	0.3331	0.3398	20.41	20	2	*
	Methyl Methacrylate	0.1907	0.1801	18.89	20	-6	
	1,4-Dioxane	0.1410	0.1584	561.79	500	12	
	Dibromomethane	0.1795	0.1764	19.65	20	-2	
	Bromodichloromethane	0.3833	0.3650	19.05	20	-5	
	2-Nitropropane	2.5306	2.1572	19.28	20	-4	
	2-Chloroethyl Vinyl Ether	0.1644	0.1537	18.70	20	-7	
	cis-1,3-Dichloropropene	0.4668	0.4466	19.13	20	-4	
	4-Methyl-2-pentanone	0.3036	0.2994	98.59	100	-1	
*	Toluene	0.9983	1.0240	20.52	20	3	*
	trans-1,3-Dichloropropene	0.4982	0.4608	18.50	20	-8	
	Ethyl Methacrylate	0.4494	0.4318	19.22	20	-4	
	1,1,2-Trichloroethane	0.3230	0.3247	20.11	20	1	
	Tetrachloroethene	0.4631	0.4617	19.94	20	0	
	1,3-Dichloropropane	0.5552	0.5421	19.53	20	-2	
	2-Hexanone	0.2699	0.2611	96.73	100	-3	
	Dibromochloromethane	0.3545	0.3274	18.47	20	-8	
	1,2-Dibromoethane	0.3271	0.3166	19.36	20	-3	
	1-Chlorohexane	0.5308	0.5369	20.23	20	1	
#	Chlorobenzene	1.1089	1.1099	20.02	20	0	#
	1,1,1,2-Tetrachloroethane	0.3690	0.3553	19.26	20	-4	
*	Ethylbenzene	1.9040	1.9461	20.44	20	2	*
	m+p-Xylene	0.7574	0.7692	40.62	40	2	
	o-Xylene	0.7545	0.7566	20.06	20	0	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Styrene	1.1879	1.1988	20.18	20	1	
#	Bromoform	0.2222	0.1877	17.86	20	-11	#
	Isopropylbenzene	1.9082	1.9760	20.71	20	4	
	Cyclohexanone	0.9002	0.8915	490.81	500	-2	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7363	19.49	20	-3	#
	Bromobenzene	0.8408	0.8515	20.25	20	1	
	trans-1,4-Dichloro-2-butene	0.2069	0.2084	100.71	100	1	
	1,2,3-Trichloropropane	0.2073	0.2109	20.35	20	2	
	n-Propylbenzene	3.8098	4.1293	21.68	20	8	
	2-Chlorotoluene	0.7939	0.8210	20.68	20	3	
	1,3,5-Trimethylbenzene	2.8159	2.9502	20.95	20	5	
	4-Chlorotoluene	0.8226	0.8362	20.33	20	2	
	tert-Butylbenzene	0.6559	0.6739	20.55	20	3	
	Pentachloroethane	0.4798	0.4633	19.31	20	-3	
	1,2,4-Trimethylbenzene	2.8653	3.0214	21.09	20	5	
	sec-Butylbenzene	3.5929	3.8830	21.61	20	8	
	1,3-Dichlorobenzene	1.6523	1.6406	19.86	20	-1	
	p-Isopropyltoluene	3.2092	3.4609	21.57	20	8	
	1,4-Dichlorobenzene	1.7189	1.7343	20.18	20	1	
	1,2,3-Trimethylbenzene	2.9416	3.1660	21.53	20	8	
	Benzyl Chloride	0.2338	0.2057	18.01	20	-10	
	1,3-Diethylbenzene	1.8848	1.9794	21.00	20	5	
	1,4-Diethylbenzene	2.0114	2.1215	21.09	20	5	
	n-Butylbenzene	1.6592	1.7527	21.13	20	6	
	1,2-Dichlorobenzene	1.6409	1.6525	20.14	20	1	
	1,2-Diethylbenzene	1.6079	1.6918	21.04	20	5	
	1,2-Dibromo-3-chloropropane	0.1332	0.1254	18.83	20	-6	
	1,3,5-Trichlorobenzene	1.3773	1.3816	20.06	20	0	
	1,2,4-Trichlorobenzene	1.2763	1.2697	19.90	20	-1	
	Hexachlorobutadiene	0.6574	0.6829	21.09	20	5	
	Naphthalene	2.6627	2.6918	20.22	20	1	
	1,2,3-Trichlorobenzene	1.1896	1.1979	20.14	20	1	
	2-Methylnaphthalene	1.6549	1.5945	19.27	20	-4	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date(s): 05/24/18 05/24/18

Heated Purge: (Y/N) N Calibration Times: 11:51 13:46

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

LAB FILE ID: RRF = RRF 4 = qy24i10.d RRF 10= qy24i11.d
RRF 20= qy24i12.d RRF 50= qy24i13.d RRF100= qy24i14.d RRF300= qy24i15.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane			0.3642	0.3414	0.3491	0.3408	0.3388	0.3228	0.3429	4	AVG	
Chloromethane	#		0.4301	0.4317	0.3950	0.3899	0.3900	0.3714	0.4013	6	AVG	#
Vinyl Chloride	*		0.4143	0.3980	0.3746	0.3627	0.3615	0.3388	0.3750	7	AVG	*
Bromomethane			7.0358	7.0101	6.6548	5.8940	5.5146	5.1495	6.2098	13	AVG	
Chloroethane			4.7411	4.7230	4.4418	4.0786	3.9050	3.6748	4.2607	10	AVG	
Dichlorofluoromethane			0.4699	0.4516	0.4077	0.3846	0.3933	0.3585	0.4109	10	AVG	
Trichlorofluoromethane			0.4196	0.4092	0.4069	0.3831	0.3889	0.3687	0.3961	5	AVG	
n-Pentane			0.3834	0.2873	0.3068	0.2986	0.2975	0.2662	0.3066	13	AVG	
Ethanol			0.1616	0.1498	0.1473	0.1448	0.1361	0.1305	0.1450	8	AVG	
Freon 123a			0.3584	0.3423	0.3499	0.3156	0.3241	0.3066	0.3328	6	AVG	
Acrolein			3.0112	3.2559	2.9809	2.7369	2.7132	2.6319	2.8883	8	AVG	
1,1-Dichloroethene	*		0.2713	0.2547	0.2601	0.2423	0.2499	0.2393	0.2529	5	AVG	*
1,1-Dichloroethene(2)	*		0.1295	0.1271	0.1338	0.1247	0.1286	0.1194	0.1272	4	AVG	*
Acetone			0.0294	0.0322	0.0294	0.0282	0.0289	0.0279	0.0293	5	AVG	
Freon 113			0.2356	0.2087	0.2221	0.2127	0.2208	0.2104	0.2184	5	AVG	
2-Propanol			0.8399	0.8888	0.9340	0.8852	0.8569	0.8283	0.8722	4	AVG	
Methyl Iodide			0.5462	0.5239	0.5361	0.5130	0.5259	0.5094	0.5258	3	AVG	
Carbon Disulfide			0.9561	0.9227	0.9441	0.9070	0.9469	0.9075	0.9307	2	AVG	
Methyl Acetate			0.2609	0.2533	0.2475	0.2428	0.2457	0.2316	0.2470	4	AVG	
Allyl Chloride			0.4976	0.4688	0.4834	0.4700	0.4849	0.4557	0.4767	3	AVG	
Methylene Chloride			0.3294	0.3163	0.3108	0.2999	0.3103	0.2981	0.3108	4	AVG	
t-Butyl alcohol			1.3048	1.3072	1.3298	1.2603	1.2697	1.2273	1.2832	3	AVG	
Acrylonitrile			0.1281	0.1369	0.1272	0.1230	0.1264	0.1225	0.1273	4	AVG	
Methyl Tertiary Butyl Ether			0.9085	0.8668	0.8644	0.8421	0.8605	0.8092	0.8586	4	AVG	
trans-1,2-Dichloroethene			0.2998	0.2962	0.2979	0.2882	0.2998	0.2865	0.2948	2	AVG	
n-Hexane			0.2505	0.2270	0.2431	0.2360	0.2506	0.2414	0.2414	4	AVG	
1,1-Dichloroethane	#		0.5409	0.5426	0.5364	0.5213	0.5352	0.5157	0.5320	2	AVG	#
di-Isopropyl ether			1.0437	1.0133	1.0152	0.9813	1.0020	0.9449	1.0000	3	AVG	
2-Chloro-1,3-butadiene			0.4487	0.4541	0.4523	0.4337	0.4489	0.4259	0.4439	3	AVG	
Ethyl t-butyl ether			0.9599	0.9595	0.9478	0.9157	0.9396	0.8683	0.9318	4	AVG	
2-Butanone			6.4579	7.0906	6.3581	5.8394	5.7682	5.5749	6.1815	9	AVG	
2-Butanone(2)			1.6338	1.7684	1.6384	1.5780	1.5665	1.5487	1.6223	5	AVG	
cis-1,2-Dichloroethene			0.3347	0.3306	0.3271	0.3203	0.3317	0.3165	0.3268	2	AVG	
2,2-Dichloropropane			0.4224	0.4265	0.4222	0.4093	0.4257	0.4057	0.4186	2	AVG	
Propionitrile			0.0453	0.0458	0.0465	0.0448	0.0466	0.0447	0.0456	2	AVG	
Methacrylonitrile			0.1363	0.1374	0.1364	0.1329	0.1388	0.1325	0.1357	2	AVG	
Bromochloromethane			0.1661	0.1686	0.1723	0.1700	0.1748	0.1683	0.1700	2	AVG	
Tetrahydrofuran			1.6325	1.7338	1.6418	1.5512	1.5323	1.5206	1.6020	5	AVG	
Chloroform	*		0.4967	0.5005	0.4997	0.4937	0.5036	0.4902	0.4974	1	AVG	*
1,1,1-Trichloroethane			0.4826	0.4489	0.4607	0.4285	0.4412	0.4395	0.4502	4	AVG	
Cyclohexane			0.3864	0.3628	0.3785	0.3629	0.3758	0.3629	0.3715	3	AVG	
Cyclohexane(2)			0.3273	0.3042	0.3102	0.2973	0.3112	0.3023	0.3087	3	AVG	
Cyclohexane(3)			0.1168	0.1101	0.1106	0.1099	0.1139	0.1098	0.1118	3	AVG	
1,1-Dichloropropene			0.4015	0.3915	0.3999	0.3794	0.3896	0.3820	0.3907	2	AVG	
Carbon Tetrachloride			0.3090	0.3117	0.3238	0.3208	0.3431	0.3490	0.3262	5	AVG	
Isobutyl Alcohol			0.4126	0.4340	0.4416	0.4342	0.4074	0.4062	0.4227	4	AVG	
Benzene			1.2084	1.1813	1.1855	1.1500	1.1611	1.1359	1.1704	2	AVG	
1,2-Dichloroethane			0.4007	0.4060	0.3964	0.3871	0.3835	0.3804	0.3923	3	AVG	
1,2-Dichloroethane(2)			0.0421	0.0403	0.0406	0.0398	0.0394	0.0395	0.0403	2	AVG	
t-Amyl methyl ether			0.8974	0.9028	0.8994	0.8869	0.8905	0.8372	0.8857	3	AVG	
n-Heptane			0.2292	0.2055	0.2122	0.2092	0.2141	0.2031	0.2122	4	AVG	
n-Butanol			0.3190	0.3427	0.3734	0.3670	0.3497	0.3503	0.3504	5	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date(s): 05/24/18 05/24/18

Heated Purge: (Y/N) N Calibration Times: 11:51 13:46

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

LAB FILE ID: RRF = RRF 4 = qy24i10.d RRF 10= qy24i11.d
RRF 20= qy24i12.d RRF 50= qy24i13.d RRF100= qy24i14.d RRF300= qy24i15.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Trichloroethene		0.3033	0.2951	0.3024	0.2905	0.2896	0.2826	0.2939		3	AVG	
Methylcyclohexane		0.2930	0.2634	0.2842	0.2851	0.2837	0.2708	0.2800		4	AVG	
1,2-Dichloropropane	*	0.3221	0.3157	0.3248	0.3140	0.3087	0.3005	0.3143		3	AVG	*
Methyl Methacrylate		0.2181	0.2209	0.2316	0.2306	0.2315	0.2293	0.2270		3	AVG	
1,4-Dioxane		0.1360	0.1427	0.1481	0.1526	0.1393	0.1372	0.1426		5	AVG	
Dibromomethane		0.1904	0.1874	0.1917	0.1911	0.1912	0.1896	0.1902		1	AVG	
Bromodichloromethane		0.3240	0.3308	0.3509	0.3647	0.3710	0.3731	0.3524		6	AVG	
2-Nitropropane		1.8685	2.0867	2.1844	2.3519	2.4762	2.8229	2.2984		14	AVG	
2-Chloroethyl Vinyl Ether		0.2067	0.2121	0.2217	0.2228	0.2255	0.2143	0.2172		3	AVG	
cis-1,3-Dichloropropene		0.4613	0.4784	0.4898	0.4959	0.5203	0.4897	0.4892		4	AVG	
4-Methyl-2-pentanone		0.2905	0.3206	0.3037	0.2950	0.3073	0.2810	0.2997		5	AVG	
Toluene	*	0.9929	1.0008	1.0083	0.9719	0.9450	0.9074	0.9710		4	AVG	*
trans-1,3-Dichloropropene		0.5465	0.5814	0.6023	0.6058	0.6121	0.6060	0.5923		4	AVG	
Ethyl Methacrylate		0.5560	0.5792	0.5955	0.5956	0.5870	0.5731	0.5811		3	AVG	
1,1,2-Trichloroethane		0.3804	0.3794	0.3842	0.3810	0.3676	0.3563	0.3748		3	AVG	
Tetrachloroethene		0.3930	0.3900	0.3937	0.3791	0.3700	0.3618	0.3812		3	AVG	
1,3-Dichloropropane		0.6685	0.6660	0.6612	0.6513	0.6338	0.6016	0.6471		4	AVG	
2-Hexanone		0.2589	0.3037	0.2955	0.2877	0.2851	0.2689	0.2833		6	AVG	
Dibromochloromethane		0.3033	0.3311	0.3625	0.3913	0.4098	0.4260	0.3707		13	AVG	
1,2-Dibromoethane		0.3836	0.3996	0.3980	0.3956	0.3912	0.3862	0.3924		2	AVG	
1-Chlorohexane		0.4162	0.3945	0.3977	0.3735	0.3699	0.3555	0.3845		6	AVG	
Chlorobenzene	#	1.0869	1.0676	1.0863	1.0524	1.0397	0.9900	1.0538		3	AVG	#
1,1,1,2-Tetrachloroethane		0.3316	0.3470	0.3587	0.3686	0.3749	0.3708	0.3586		5	AVG	
Ethylbenzene	*	1.6942	1.6937	1.7064	1.6593	1.6306	1.5311	1.6525		4	AVG	*
m+p-Xylene		0.6749	0.6678	0.6867	0.6560	0.6471	0.6022	0.6558		5	AVG	
o-Xylene		0.6660	0.6700	0.6861	0.6654	0.6487	0.6098	0.6576		4	AVG	
Styrene		1.0973	1.1346	1.1690	1.1482	1.1260	1.0612	1.1227		3	AVG	
Bromoform	#	0.1771	0.1964	0.2206	0.2535	0.2724	0.2973	0.2362		20	2NDDEG	#
Isopropylbenzene		1.4472	1.4441	1.4934	1.4202	1.3951	1.3126	1.4187		4	AVG	
Cyclohexanone		0.4648	0.5100	0.5373	0.5403	0.5157	0.4943	0.5104		6	AVG	
1,1,2,2-Tetrachloroethane	#	1.1395	1.1051	1.1559	1.0903	1.1132	1.0625	1.1111		3	AVG	#
Bromobenzene		1.0527	1.0556	1.0438	1.0070	1.0084	0.9805	1.0247		3	AVG	
trans-1,4-Dichloro-2-butene		0.2979	0.3169	0.3249	0.3133	0.3145	0.2905	0.3097		4	AVG	
1,2,3-Trichloropropane		0.3382	0.3451	0.3360	0.3278	0.3236	0.3131	0.3306		3	AVG	
n-Propylbenzene		3.7363	3.7399	3.6743	3.5045	3.4590	3.2077	3.5536		6	AVG	
2-Chlorotoluene		0.8300	0.8484	0.8237	0.7891	0.7913	0.7474	0.8050		5	AVG	
1,3,5-Trimethylbenzene		2.7683	2.7331	2.7131	2.6281	2.5909	2.4142	2.6413		5	AVG	
4-Chlorotoluene		0.8819	0.8952	0.9088	0.8484	0.8438	0.7862	0.8607		5	AVG	
tert-Butylbenzene		0.5407	0.5606	0.5673	0.5214	0.5144	0.4984	0.5338		5	AVG	
Pentachloroethane		0.4525	0.4908	0.5285	0.5681	0.5863	0.5913	0.5362		10	AVG	
1,2,4-Trimethylbenzene		2.8469	2.8740	2.8925	2.7762	2.7439	2.6028	2.7894		4	AVG	
sec-Butylbenzene		3.0096	3.0052	3.0495	2.8543	2.8015	2.5947	2.8858		6	AVG	
1,3-Dichlorobenzene		1.6672	1.6475	1.6485	1.6151	1.5823	1.5139	1.6124		4	AVG	
p-Isopropyltoluene		2.6542	2.6848	2.6983	2.5787	2.5674	2.3803	2.5940		5	AVG	
1,4-Dichlorobenzene		1.8108	1.7688	1.7621	1.6774	1.6644	1.5864	1.7117		5	AVG	
1,2,3-Trimethylbenzene		3.0362	2.9666	3.0303	2.9906	2.9190	2.7364	2.9465		4	AVG	
Benzyl Chloride		0.3573	0.4139	0.4626	0.4772	0.4925	0.4909	0.4491		12	AVG	
1,3-Diethylbenzene		1.5371	1.5460	1.6086	1.5786	1.5384	1.4411	1.5416		4	AVG	
1,4-Diethylbenzene		1.6234	1.6008	1.6366	1.5943	1.5511	1.4494	1.5759		4	AVG	
n-Butylbenzene		1.2088	1.2856	1.2234	1.1911	1.1580	1.0973	1.1940		5	AVG	
1,2-Dichlorobenzene		1.6691	1.6660	1.6242	1.5875	1.5663	1.5043	1.6029		4	AVG	
1,2-Diethylbenzene		1.4381	1.3979	1.4058	1.3519	1.3138	1.2277	1.3559		6	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date(s): 05/24/18 05/24/18

Heated Purge: (Y/N) N Calibration Times: 11:51 13:46

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

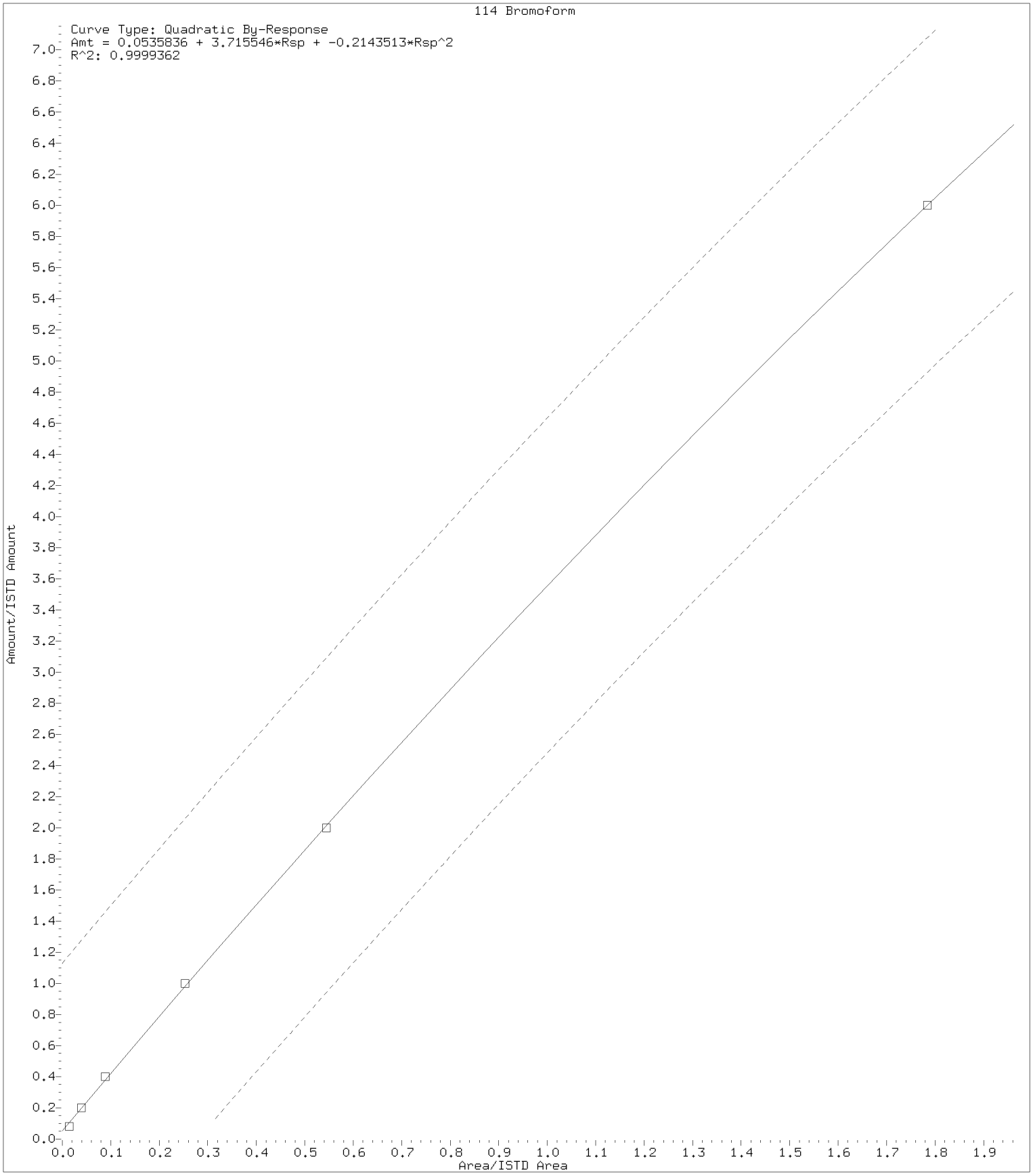
LAB FILE ID: RRF = RRF 4 = qy24i10.d RRF 10= qy24i11.d
RRF 20= qy24i12.d RRF 50= qy24i13.d RRF100= qy24i14.d RRF300= qy24i15.d

COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,2-Dibromo-3-chloropropane		0.1744	0.1822	0.1923	0.1945	0.2019	0.2034	0.1915	6	AVG
1,3,5-Trichlorobenzene		1.0377	1.0730	1.0772	1.0233	1.0151	0.9852	1.0352	3	AVG
1,2,4-Trichlorobenzene		0.9687	1.0542	1.0617	1.0230	1.0140	0.9846	1.0177	4	AVG
Hexachlorobutadiene		0.4497	0.4525	0.4663	0.4357	0.4376	0.4144	0.4427	4	AVG
Naphthalene		2.9001	3.0321	3.1203	3.0145	3.0036	2.8365	2.9845	3	AVG
1,2,3-Trichlorobenzene		0.9499	0.9698	1.0042	0.9576	0.9437	0.9138	0.9565	3	AVG
2-Methylnaphthalene		1.4156	1.5542	1.7485	1.7170	1.6972	1.5788	1.6185	8	AVG
Dibromofluoromethane		0.2730	0.2806	0.2662	0.2653	0.2743	0.2731	0.2721	2	AVG
Dibromofluoromethane(2)		0.2647	0.2856	0.2720	0.2713	0.2796	0.2771	0.2751	3	AVG
1,2-Dichloroethane-d4		0.0765	0.0797	0.0723	0.0729	0.0730	0.0728	0.0745	4	AVG
1,2-Dichloroethane-d4(2)		0.3507	0.3505	0.3225	0.3165	0.3189	0.3105	0.3283	5	AVG
1,2-Dichloroethane-d4(3)		0.0430	0.0485	0.0472	0.0463	0.0466	0.0465	0.0463	4	AVG
Toluene-d8		1.4845	1.5380	1.4739	1.4294	1.3837	1.3036	1.4355	6	AVG
Toluene-d8(2)		0.9510	0.9993	0.9603	0.9335	0.9025	0.8530	0.9333	5	AVG
4-Bromofluorobenzene		0.4647	0.4906	0.4730	0.4641	0.4539	0.4499	0.4660	3	AVG
4-Bromofluorobenzene(2)		0.4211	0.4339	0.4225	0.4118	0.4045	0.4073	0.4169	3	AVG

Average %RSD 5

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA



Digitally signed by Patrick T. Herres on 05/24/2018 at 17:55.
Target 3.5 esignature user ID: pth10165

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP07536.i/18may24i.b/qy24i10.d	VSTD004
/chem/HP07536.i/18may24i.b/qy24i11.d	VSTD010
/chem/HP07536.i/18may24i.b/qy24i12.d	VSTD020
/chem/HP07536.i/18may24i.b/qy24i13.d	VSTD050
/chem/HP07536.i/18may24i.b/qy24i14.d	VSTD100
/chem/HP07536.i/18may24i.b/qy24i15.d	VSTD300

Area Summary

File ID:

Internal Standard Name	qy24i10.d	qy24i11.d	qy24i12.d	qy24i13.d	qy24i14.d	qy24i15.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	146288	140176	139062	141858	146551	147485	143570	3	Yes
Fluorobenzene	1167642	1175004	1167197	1158639	1142959	1173639	1164180	1	Yes
Chlorobenzene-d5	845846	845275	830601	836232	875273	877084	851718	2	Yes
1,4-Dichlorobenzene-d4	359564	363811	363351	373559	390181	399162	374938	4	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	qy24i10.d	qy24i11.d	qy24i12.d	qy24i13.d	qy24i14.d	qy24i15.d	Avg. RT
t-Butyl alcohol-d10	4.201	4.204	4.209	4.206	4.208	4.228	4.209
Fluorobenzene	7.686	7.689	7.687	7.688	7.686	7.690	7.688
Chlorobenzene-d5	11.158	11.157	11.156	11.157	11.158	11.159	11.157
1,4-Dichlorobenzene-d4	13.032	13.031	13.033	13.030	13.032	13.033	13.032

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 05/24/2018 at 17:54.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 ICV Date: 05/24/18 Time: 15:18

Lab File ID: qy24v10.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3429	0.3084	17.99	20	-10	
#	Chloromethane	0.4013	0.3859	19.23	20	-4	#
*	Vinyl Chloride	0.3750	0.3631	19.36	20	-3	*
	Bromomethane	6.2098	6.7954	21.89	20	9	
	Chloroethane	4.2607	4.5178	21.21	20	6	
	Dichlorofluoromethane	0.4109	0.4302	20.94	20	5	
	Trichlorofluoromethane	0.3961	0.3889	19.64	20	-2	
	n-Pentane	0.3066	0.2966	19.34	20	-3	
	Ethanol	0.1450	0.1460	1007.03	1000	1	
	Freon 123a	0.3328	0.3258	19.58	20	-2	
	Acrolein	2.8883	2.6005	135.05	150	-10	
*	1,1-Dichloroethene	0.2529	0.2691	21.28	20	6	*
	Acetone	0.0293	0.0284	145.12	150	-3	
	Freon 113	0.2184	0.2050	18.77	20	-6	
	2-Propanol	0.8722	0.8951	153.94	150	3	
	Methyl Iodide	0.5258	0.5161	19.63	20	-2	
	Carbon Disulfide	0.9307	0.9067	19.48	20	-3	
	Methyl Acetate	0.2470	0.2377	19.25	20	-4	
	Allyl Chloride	0.4767	0.4544	19.06	20	-5	
	Methylene Chloride	0.3108	0.3255	20.94	20	5	
	t-Butyl alcohol	1.2832	1.3091	204.04	200	2	
	Acrylonitrile	0.1273	0.1199	94.17	100	-6	
	Methyl Tertiary Butyl Ether	0.8586	0.8442	19.67	20	-2	
	trans-1,2-Dichloroethene	0.2948	0.3067	20.81	20	4	
	n-Hexane	0.2414	0.2297	19.03	20	-5	
#	1,1-Dichloroethane	0.5320	0.5404	20.31	20	2	#
	di-Isopropyl ether	1.0000	1.0036	20.07	20	0	
	2-Chloro-1,3-butadiene	0.4439	0.4327	19.50	20	-3	
	Ethyl t-butyl ether	0.9318	0.9241	19.84	20	-1	
	2-Butanone	6.1815	6.0936	147.87	150	-1	
	cis-1,2-Dichloroethene	0.3268	0.3448	21.10	20	6	
	2,2-Dichloropropane	0.4186	0.4238	20.25	20	1	
	Propionitrile	0.0456	0.0451	148.38	150	-1	
	Methacrylonitrile	0.1357	0.1354	149.67	150	0	
	Bromochloromethane	0.1700	0.1620	19.06	20	-5	
	Tetrahydrofuran	1.6020	1.6693	104.20	100	4	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 ICV Date: 05/24/18 Time: 15:18

Lab File ID: qy24v10.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.4974	0.5031	20.23	20	1	*
	1,1,1-Trichloroethane	0.4502	0.4558	20.25	20	1	
	Cyclohexane	0.3715	0.3538	19.04	20	-5	
	1,1-Dichloropropene	0.3907	0.3819	19.55	20	-2	
	Carbon Tetrachloride	0.3262	0.3211	19.68	20	-2	
	Isobutyl Alcohol	0.4227	0.4324	511.46	500	2	
	Benzene	1.1704	1.1901	20.34	20	2	
	1,2-Dichloroethane	0.3923	0.3985	20.31	20	2	
	t-Amyl methyl ether	0.8857	0.8924	20.15	20	1	
	n-Heptane	0.2122	0.2008	18.93	20	-5	
	n-Butanol	0.3504	0.3522	1005.32	1000	1	
	Trichloroethene	0.2939	0.2939	20.00	20	0	
	Methylcyclohexane	0.2800	0.2610	18.64	20	-7	
*	1,2-Dichloropropane	0.3143	0.3268	20.79	20	4	*
	Methyl Methacrylate	0.2270	0.2208	19.45	20	-3	
	1,4-Dioxane	0.1426	0.1412	494.73	500	-1	
	Dibromomethane	0.1902	0.1968	20.69	20	3	
	Bromodichloromethane	0.3524	0.3501	19.87	20	-1	
	2-Nitropropane	2.2984	2.2245	19.36	20	-3	
	2-Chloroethyl Vinyl Ether	0.2172	0.2090	19.25	20	-4	
	cis-1,3-Dichloropropene	0.4892	0.4787	19.57	20	-2	
	4-Methyl-2-pentanone	0.2997	0.2931	97.80	100	-2	
*	Toluene	0.9710	0.9941	20.48	20	2	*
	trans-1,3-Dichloropropene	0.5923	0.5885	19.87	20	-1	
	Ethyl Methacrylate	0.5811	0.5755	19.81	20	-1	
	1,1,2-Trichloroethane	0.3748	0.3841	20.49	20	2	
	Tetrachloroethene	0.3812	0.3828	20.08	20	0	
	1,3-Dichloropropane	0.6471	0.6583	20.35	20	2	
	2-Hexanone	0.2833	0.2840	100.24	100	0	
	Dibromochloromethane	0.3707	0.3771	20.35	20	2	
	1,2-Dibromoethane	0.3924	0.3999	20.38	20	2	
	1-Chlorohexane	0.3845	0.3832	19.93	20	0	
#	Chlorobenzene	1.0538	1.0836	20.57	20	3	#
	1,1,1,2-Tetrachloroethane	0.3586	0.3660	20.41	20	2	
*	Ethylbenzene	1.6525	1.6809	20.34	20	2	*
	m+p-Xylene	0.6558	0.6668	40.68	40	2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 ICV Date: 05/24/18 Time: 15:18

Lab File ID: qy24v10.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	o-Xylene	0.6576	0.6609	20.10	20	0	
	Styrene	1.1227	1.1596	20.66	20	3	
#	Bromoform	0.2362	0.2216	19.06	20	-5	#
	Isopropylbenzene	1.4187	1.4532	20.49	20	2	
	Cyclohexanone	0.5104	0.4328	423.99	500	-15	
#	1,1,2,2-Tetrachloroethane	1.1111	1.1256	20.26	20	1	#
	Bromobenzene	1.0247	1.0472	20.44	20	2	
	trans-1,4-Dichloro-2-butene	0.3097	0.3292	106.31	100	6	
	1,2,3-Trichloropropane	0.3306	0.3584	21.68	20	8	
	n-Propylbenzene	3.5536	3.6888	20.76	20	4	
	2-Chlorotoluene	0.8050	0.8300	20.62	20	3	
	1,3,5-Trimethylbenzene	2.6413	2.7123	20.54	20	3	
	4-Chlorotoluene	0.8607	0.8858	20.58	20	3	
	tert-Butylbenzene	0.5338	0.5452	20.43	20	2	
	Pentachloroethane	0.5362	0.5237	19.53	20	-2	
	1,2,4-Trimethylbenzene	2.7894	2.8356	20.33	20	2	
	sec-Butylbenzene	2.8858	3.0386	21.06	20	5	
	1,3-Dichlorobenzene	1.6124	1.6251	20.16	20	1	
	p-Isopropyltoluene	2.5940	2.7220	20.99	20	5	
	1,4-Dichlorobenzene	1.7117	1.7533	20.49	20	2	
	1,2,3-Trimethylbenzene	2.9465	3.0415	20.64	20	3	
	Benzyl Chloride	0.4491	0.4349	19.37	20	-3	
	1,3-Diethylbenzene	1.5416	1.5684	20.35	20	2	
	1,4-Diethylbenzene	1.5759	1.6153	20.50	20	2	
	n-Butylbenzene	1.1940	1.2406	20.78	20	4	
	1,2-Dichlorobenzene	1.6029	1.6232	20.25	20	1	
	1,2-Diethylbenzene	1.3559	1.3736	20.26	20	1	
	1,2-Dibromo-3-chloropropane	0.1915	0.1858	19.41	20	-3	
	1,3,5-Trichlorobenzene	1.0352	1.0709	20.69	20	3	
	1,2,4-Trichlorobenzene	1.0177	1.0820	21.26	20	6	
	Hexachlorobutadiene	0.4427	0.5331	24.09	20	20	
	Naphthalene	2.9845	3.0820	20.65	20	3	
	1,2,3-Trichlorobenzene	0.9565	1.0330	21.60	20	8	
	2-Methylnaphthalene	1.6185	1.6822	20.79	20	4	

Average %Drift 3

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date(s): 05/29/18 05/29/18

Heated Purge: (Y/N) N Calibration Times: 12:21 14:23

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

LAB FILE ID: RRF = RRF 4 = ry29i10.d RRF 10= ry29i11.d
RRF 20= ry29i12.d RRF 50= ry29i13.d RRF100= ry29i14.d RRF300= ry29i15.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane		0.3752	0.3149	0.3318	0.2950	0.3055	0.3492	0.3286	9	AVG	
Chloromethane	#	0.4591	0.4235	0.4022	0.3622	0.3838	0.4101	0.4068	8	AVG	#
Vinyl Chloride	*	0.3889	0.3395	0.3235	0.2996	0.3079	0.3251	0.3307	10	AVG	*
Bromomethane		7.9238	6.1006	5.3334	5.4232	5.4518	5.4872	5.9534	17	2NDDEG	
Chloroethane		6.5466	5.2422	5.0143	4.8158	4.9120	5.0688	5.2666	12	AVG	
Dichlorofluoromethane		0.5496	0.4557	0.4238	0.3800	0.3972	0.4281	0.4391	14	AVG	
Trichlorofluoromethane		0.3868	0.3420	0.3612	0.3139	0.3307	0.3706	0.3509	8	AVG	
Ethanol		0.1797	0.1408	0.1397	0.1255	0.1236	0.1302	0.1399	15	AVG	
Freon 123a		0.4030	0.3292	0.3316	0.2828	0.2976	0.3187	0.3271	13	AVG	
Acrolein		3.2340	2.9193	2.8494	2.6750	2.7308	2.9720	2.8968	7	AVG	
1,1-Dichloroethene	*	0.2532	0.2041	0.2217	0.1861	0.2011	0.2149	0.2135	11	AVG	*
1,1-Dichloroethene(2)	*	0.1488	0.1198	0.1303	0.1071	0.1156	0.1239	0.1243	12	AVG	*
Acetone		0.0346	0.0305	0.0311	0.0279	0.0290	0.0317	0.0308	8	AVG	
Freon 113		0.1932	0.1560	0.1765	0.1493	0.1609	0.1778	0.1690	10	AVG	
2-Propanol		0.9724	0.8147	0.7451	0.6991	0.7147	0.7514	0.7829	13	AVG	
Methyl Iodide		0.4465	0.3607	0.3850	0.3410	0.3693	0.3877	0.3817	9	AVG	
Carbon Disulfide		0.7517	0.5721	0.6786	0.5460	0.5935	0.6791	0.6368	12	AVG	
Methyl Acetate		0.3175	0.2595	0.2730	0.2518	0.2652	0.2844	0.2752	9	AVG	
Allyl Chloride		0.6282	0.4984	0.5470	0.4771	0.5103	0.5533	0.5357	10	AVG	
Methylene Chloride		0.3270	0.2739	0.2817	0.2601	0.2662	0.2861	0.2825	8	AVG	
t-Butyl alcohol		1.4052	1.2435	1.2190	1.1581	1.1631	1.2453	1.2390	7	AVG	
Acrylonitrile		0.1429	0.1450	0.1403	0.1306	0.1341	0.1495	0.1404	5	AVG	
Methyl Tertiary Butyl Ether		1.0221	0.8829	0.8791	0.8092	0.8465	0.9031	0.8905	8	AVG	
trans-1,2-Dichloroethene		0.2987	0.2534	0.2522	0.2301	0.2411	0.2600	0.2559	9	AVG	
n-Hexane		0.2363	0.1959	0.2115	0.1903	0.2004	0.2221	0.2094	8	AVG	
1,1-Dichloroethane	#	0.6068	0.5266	0.5348	0.4939	0.5131	0.5487	0.5373	7	AVG	#
di-Isopropyl ether		1.2581	1.1061	1.1088	1.0414	1.0581	1.1160	1.1148	7	AVG	
2-Chloro-1,3-butadiene		0.5357	0.4677	0.4666	0.4328	0.4504	0.4785	0.4719	7	AVG	
Ethyl t-butyl ether		1.1151	0.9963	0.9750	0.9015	0.9532	1.0114	0.9921	7	AVG	
2-Butanone		7.7211	7.1356	6.2221	6.2313	6.3192	6.8824	6.7519	9	AVG	
2-Butanone(2)		1.3140	1.4087	1.3665	1.3970	1.4265	1.5793	1.4153	6	AVG	
cis-1,2-Dichloroethene		0.3214	0.2812	0.2762	0.2610	0.2739	0.2839	0.2829	7	AVG	
2,2-Dichloropropane		0.4159	0.3663	0.3679	0.3410	0.3688	0.3916	0.3753	7	AVG	
Propionitrile		0.0544	0.0489	0.0488	0.0459	0.0469	0.0502	0.0492	6	AVG	
Methacrylonitrile		0.1516	0.1367	0.1352	0.1350	0.1353	0.1431	0.1395	5	AVG	
Bromochloromethane		0.1410	0.1235	0.1275	0.1236	0.1271	0.1364	0.1299	6	AVG	
Tetrahydrofuran		1.4765	1.4739	1.3506	1.4670	1.4596	1.5838	1.4686	5	AVG	
Chloroform	*	0.5054	0.4504	0.4487	0.4411	0.4464	0.4779	0.4616	5	AVG	*
1,1,1-Trichloroethane		0.4760	0.3677	0.3813	0.3508	0.3638	0.3896	0.3882	12	AVG	
Cyclohexane		0.3662	0.2924	0.3047	0.2900	0.2964	0.3179	0.3113	9	AVG	
Cyclohexane(2)		0.2644	0.2167	0.2320	0.2189	0.2262	0.2423	0.2334	8	AVG	
Cyclohexane(3)		0.1063	0.0872	0.0889	0.0849	0.0874	0.0947	0.0916	9	AVG	
1,1-Dichloropropene		0.3938	0.3380	0.3465	0.3347	0.3371	0.3623	0.3521	6	AVG	
Carbon Tetrachloride		0.2591	0.2213	0.2343	0.2372	0.2500	0.2804	0.2471	8	AVG	
Isobutyl Alcohol		0.4663	0.4409	0.3970	0.4219	0.4144	0.4500	0.4318	6	AVG	
Benzene		1.2727	1.0907	1.1033	1.0742	1.0697	1.1123	1.1205	7	AVG	
1,2-Dichloroethane		0.4585	0.4038	0.4081	0.4006	0.4027	0.4261	0.4166	5	AVG	
1,2-Dichloroethane(2)		0.0369	0.0320	0.0342	0.0333	0.0339	0.0359	0.0344	5	AVG	
t-Amyl methyl ether		0.9664	0.8503	0.8634	0.8463	0.8464	0.9010	0.8790	5	AVG	
n-Heptane		0.2746	0.2319	0.2247	0.2144	0.2188	0.2321	0.2328	9	AVG	
n-Butanol		0.3387	0.3073	0.3201	0.3182	0.3149	0.3333	0.3221	4	AVG	
Trichloroethene		0.2759	0.2393	0.2455	0.2388	0.2389	0.2532	0.2486	6	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date(s): 05/29/18 05/29/18

Heated Purge: (Y/N) N Calibration Times: 12:21 14:23

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

LAB FILE ID: RRF = RRF 4 = ry29i10.d RRF 10= ry29i11.d
RRF 20= ry29i12.d RRF 50= ry29i13.d RRF100= ry29i14.d RRF300= ry29i15.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Methylcyclohexane			0.2569	0.2051	0.2299	0.2168	0.2194	0.2369	0.2275	8	AVG	
1,2-Dichloropropane	*		0.3494	0.3052	0.3147	0.3083	0.3050	0.3197	0.3171	5	AVG	*
Methyl Methacrylate			0.2544	0.2218	0.2344	0.2449	0.2379	0.2527	0.2410	5	AVG	
1,4-Dioxane			0.1186	0.1136	0.1157	0.1110	0.1053	0.1141	0.1130	4	AVG	
Dibromomethane			0.1805	0.1600	0.1659	0.1694	0.1639	0.1769	0.1694	5	AVG	
Bromodichloromethane			0.3225	0.2921	0.3128	0.3257	0.3301	0.3707	0.3256	8	AVG	
2-Nitropropane			2.6582	2.2288	2.2892	2.8655	3.0744	3.6935	2.8016	19	2NDDEG	
2-Chloroethyl Vinyl Ether			0.2352	0.2073	0.2265	0.2294	0.2172	0.2346	0.2250	5	AVG	
cis-1,3-Dichloropropene			0.4778	0.4363	0.4519	0.4656	0.4700	0.5018	0.4672	5	AVG	
4-Methyl-2-pentanone			0.3767	0.3521	0.3525	0.3527	0.3432	0.3765	0.3589	4	AVG	
Toluene	*		1.0102	0.9147	0.8921	0.8676	0.8897	0.9349	0.9182	6	AVG	*
trans-1,3-Dichloropropene			0.5888	0.5833	0.5829	0.6320	0.6696	0.7079	0.6274	8	AVG	
Ethyl Methacrylate			0.6897	0.6519	0.6294	0.6647	0.6539	0.7014	0.6652	4	AVG	
1,1,2-Trichloroethane			0.3988	0.3530	0.3387	0.3408	0.3508	0.3718	0.3590	6	AVG	
Tetrachloroethene			0.2700	0.2365	0.2273	0.2209	0.2342	0.2477	0.2395	7	AVG	
1,3-Dichloropropane			0.7356	0.6803	0.6608	0.6574	0.6717	0.7068	0.6854	4	AVG	
2-Hexanone			0.3646	0.3704	0.3609	0.3679	0.3718	0.4180	0.3756	6	AVG	
Dibromochloromethane			0.2773	0.2693	0.2892	0.3164	0.3433	0.3904	0.3143	15	AVG	
1,2-Dibromoethane			0.3785	0.3475	0.3502	0.3534	0.3612	0.3867	0.3629	4	AVG	
1-Chlorohexane			0.3767	0.3185	0.3132	0.2996	0.3025	0.3179	0.3214	9	AVG	
Chlorobenzene	#		1.0433	0.9099	0.9063	0.8962	0.8921	0.9252	0.9288	6	AVG	#
1,1,1,2-Tetrachloroethane			0.2874	0.2724	0.2811	0.2896	0.2981	0.3213	0.2916	6	AVG	
Ethylbenzene	*		1.6157	1.4413	1.4098	1.3935	1.3839	1.4249	1.4448	6	AVG	*
m+p-Xylene			0.5884	0.5372	0.5311	0.5191	0.5165	0.5274	0.5366	5	AVG	
o-Xylene			0.6044	0.5445	0.5392	0.5247	0.5259	0.5374	0.5460	5	AVG	
Styrene			1.0580	0.9601	0.9504	0.9429	0.9475	0.9720	0.9718	4	AVG	
Bromoform	#		0.1394	0.1350	0.1467	0.1712	0.1921	0.2300	0.1690	22	2NDDEG	#
Isopropylbenzene			1.2598	1.1417	1.0985	1.0840	1.0902	1.1512	1.1376	6	AVG	
Cyclohexanone			0.4187	0.3477	0.3707	0.3997	0.3954	0.4403	0.3954	8	AVG	
1,1,2,2-Tetrachloroethane	#		1.7001	1.2995	1.3871	1.2969	1.2958	1.4037	1.3972	11	AVG	#
Bromobenzene			1.0509	0.8608	0.8868	0.8298	0.8411	0.8500	0.8866	9	AVG	
trans-1,4-Dichloro-2-butene			0.5201	0.4273	0.4606	0.4399	0.4477	0.4716	0.4612	7	AVG	
1,2,3-Trichloropropane			0.4640	0.3729	0.3808	0.3677	0.3595	0.3877	0.3887	10	AVG	
n-Propylbenzene			4.4226	3.6662	3.7284	3.5060	3.5159	3.6994	3.7564	9	AVG	
2-Chlorotoluene			0.9081	0.7430	0.7955	0.7312	0.7324	0.7854	0.7826	9	AVG	
1,3,5-Trimethylbenzene			3.2045	2.6014	2.7301	2.5684	2.5900	2.7432	2.7396	9	AVG	
4-Chlorotoluene			0.9565	0.8035	0.8272	0.7791	0.7789	0.8334	0.8298	8	AVG	
tert-Butylbenzene			0.5907	0.5086	0.5095	0.5025	0.4885	0.5149	0.5191	7	AVG	
Pentachloroethane			0.4188	0.3726	0.4270	0.4325	0.4524	0.4991	0.4337	10	AVG	
1,2,4-Trimethylbenzene			3.3100	2.8954	2.8993	2.7094	2.7023	2.8153	2.8886	8	AVG	
sec-Butylbenzene			3.5623	3.0609	3.0881	2.8731	2.8954	2.9871	3.0778	8	AVG	
1,3-Dichlorobenzene			1.5938	1.3878	1.3926	1.3627	1.3509	1.4179	1.4176	6	AVG	
p-Isopropyltoluene			2.9605	2.6087	2.6521	2.5079	2.5101	2.6177	2.6428	6	AVG	
1,4-Dichlorobenzene			1.6984	1.4651	1.4809	1.4141	1.4079	1.4596	1.4877	7	AVG	
1,2,3-Trimethylbenzene			3.5251	2.8824	2.9661	2.8387	2.8180	2.9556	2.9976	9	AVG	
Benzyl Chloride			0.4177	0.3711	0.4449	0.4812	0.5045	0.5696	0.4648	15	AVG	
1,3-Diethylbenzene			1.7737	1.4750	1.5833	1.4741	1.4996	1.5713	1.5628	7	AVG	
1,4-Diethylbenzene			1.7884	1.5210	1.6281	1.5222	1.4736	1.5606	1.5823	7	AVG	
n-Butylbenzene			1.4584	1.2908	1.3273	1.2587	1.2164	1.2866	1.3064	6	AVG	
1,2-Dichlorobenzene			1.5748	1.3822	1.4262	1.3858	1.3175	1.4156	1.4170	6	AVG	
1,2-Diethylbenzene			1.5166	1.3087	1.3894	1.2797	1.2429	1.3080	1.3409	7	AVG	
1,2-Dibromo-3-chloropropane			0.2216	0.2032	0.2341	0.2497	0.2511	0.2754	0.2392	11	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date(s): 05/29/18 05/29/18

Heated Purge: (Y/N) N Calibration Times: 12:21 14:23

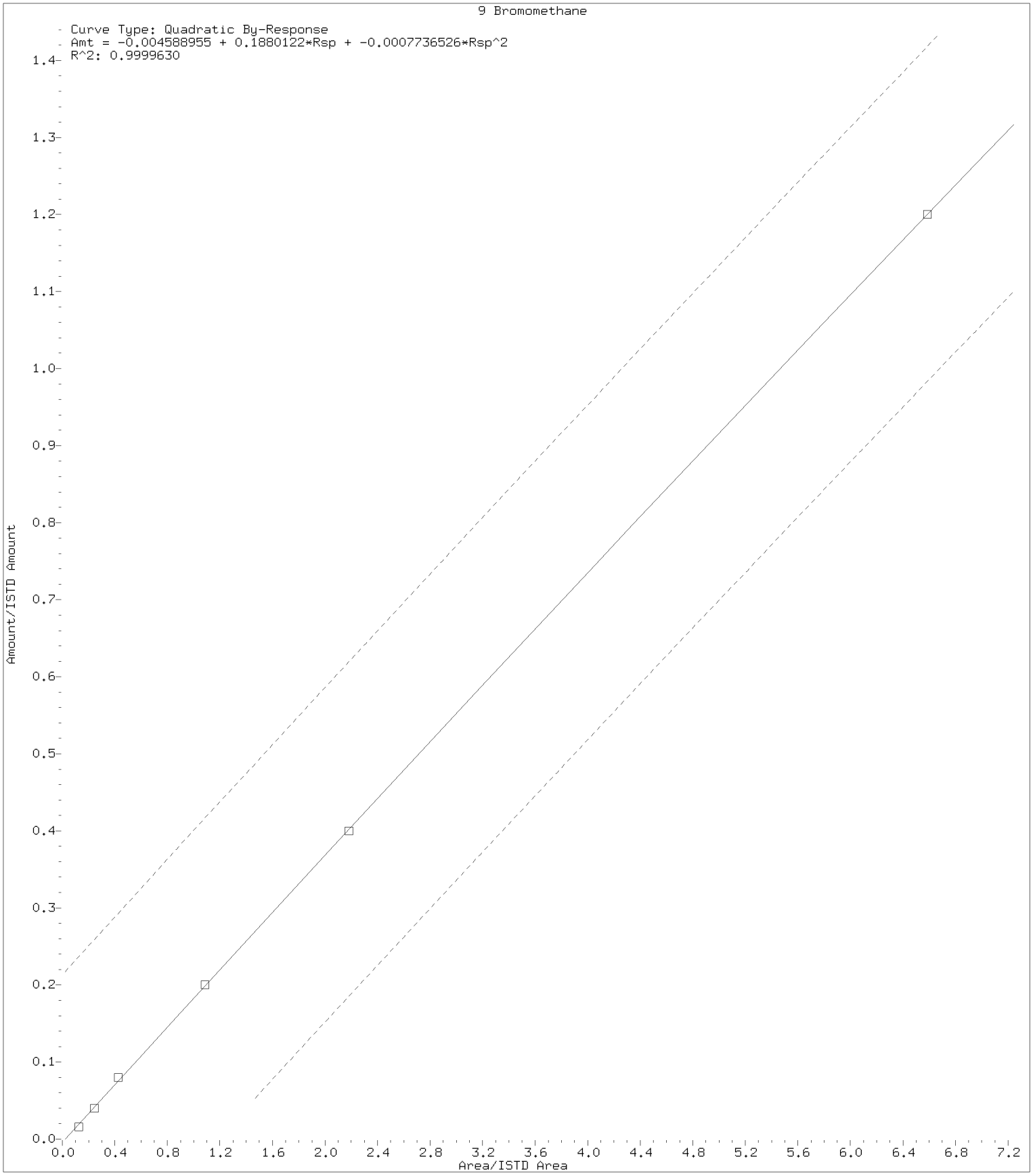
Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

LAB FILE ID: RRF = RRF 4 = ry29i10.d RRF 10= ry29i11.d
RRF 20= ry29i12.d RRF 50= ry29i13.d RRF100= ry29i14.d RRF300= ry29i15.d

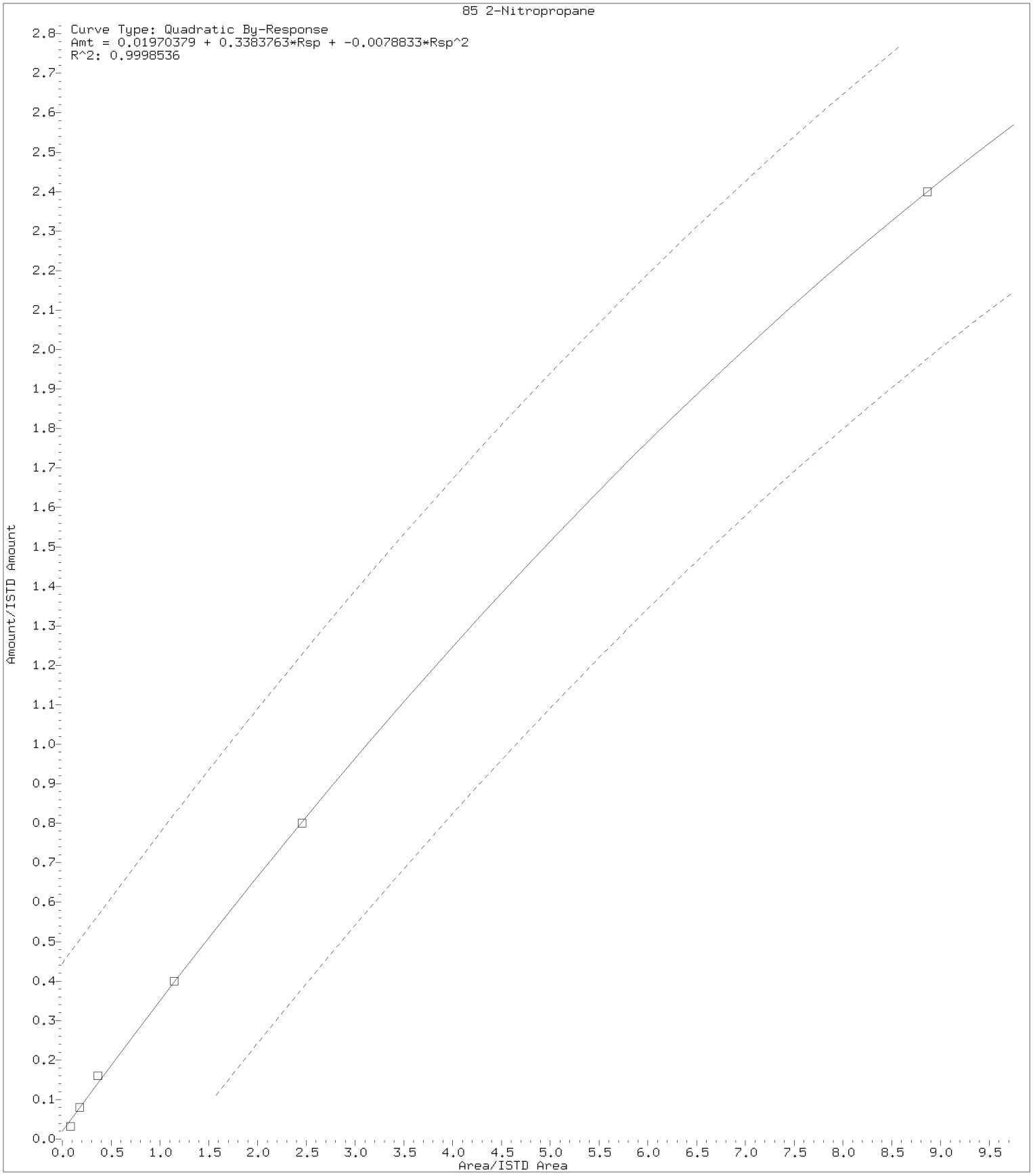
COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,3,5-Trichlorobenzene		0.9132	0.7822	0.8270	0.7846	0.7977	0.8281	0.8221	6	AVG
1,2,4-Trichlorobenzene		0.8727	0.7694	0.8058	0.7638	0.7919	0.8187	0.8037	5	AVG
Hexachlorobutadiene		0.3554	0.3141	0.3380	0.3106	0.3215	0.3372	0.3295	5	AVG
Naphthalene		3.2445	2.7303	2.8996	2.7384	2.8319	2.9076	2.8921	7	AVG
1,2,3-Trichlorobenzene		0.8183	0.7072	0.7566	0.7093	0.7437	0.7711	0.7510	6	AVG
2-Methylnaphthalene		1.4704	1.3696	1.5685	1.5539	1.5215	1.5554	1.5065	5	AVG
Dibromofluoromethane		0.2335	0.2192	0.2133	0.2104	0.2169	0.2363	0.2216	5	AVG
Dibromofluoromethane(2)		0.2395	0.2268	0.2194	0.2174	0.2226	0.2443	0.2283	5	AVG
1,2-Dichloroethane-d4		0.0668	0.0622	0.0575	0.0576	0.0584	0.0632	0.0609	6	AVG
1,2-Dichloroethane-d4(2)		0.3824	0.3537	0.3086	0.3057	0.3085	0.3294	0.3314	9	AVG
1,2-Dichloroethane-d4(3)		0.0420	0.0391	0.0376	0.0364	0.0371	0.0403	0.0387	5	AVG
Toluene-d8		1.4166	1.3645	1.2467	1.2052	1.2484	1.3275	1.3015	6	AVG
Toluene-d8(2)		0.9129	0.8917	0.8139	0.7840	0.8134	0.8612	0.8462	6	AVG
4-Bromofluorobenzene		0.4651	0.4451	0.4152	0.4019	0.4111	0.4458	0.4307	6	AVG
4-Bromofluorobenzene(2)		0.2971	0.2784	0.2609	0.2526	0.2643	0.2889	0.2737	6	AVG

Average %RSD 8

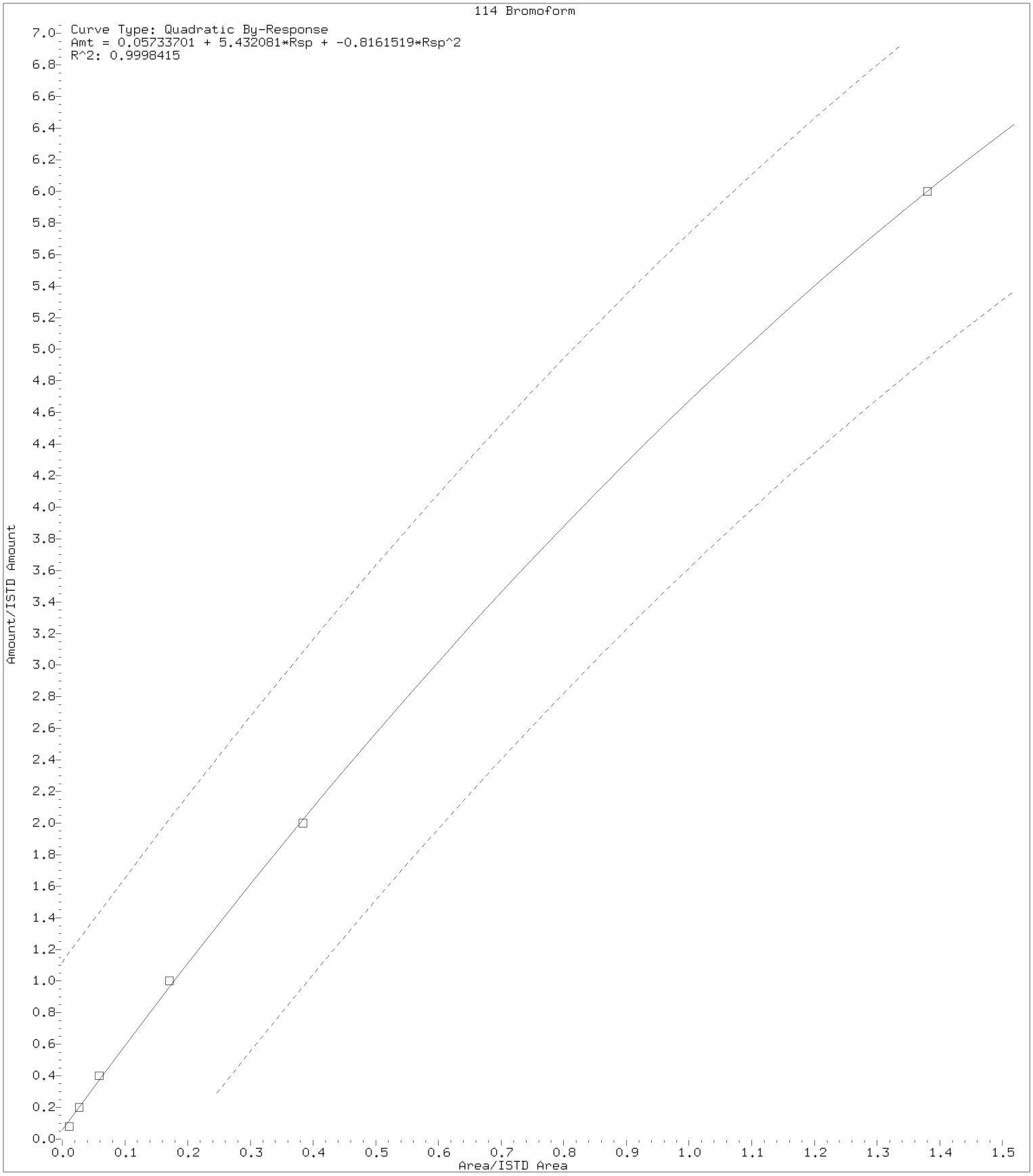
Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%



Digitally signed by Stephen C. Nolte on 05/30/2018 at 07:17.
Target 3.5 esignature user ID: scn10072



Digitally signed by Stephen C. Nolte on 05/30/2018 at 07:17.
Target 3.5 esignature user ID: scn10072



Digitally signed by Stephen C. Nolte on 05/30/2018 at 07:17.
Target 3.5 esignature user ID: scn10072

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP07566.i/18may29i.b/ry29i10.d	VSTD004
/chem/HP07566.i/18may29i.b/ry29i11.d	VSTD010
/chem/HP07566.i/18may29i.b/ry29i12.d	VSTD020
/chem/HP07566.i/18may29i.b/ry29i13.d	VSTD050
/chem/HP07566.i/18may29i.b/ry29i14.d	VSTD100
/chem/HP07566.i/18may29i.b/ry29i15.d	VSTD300

Area Summary

File ID:

Internal Standard Name	ry29i10.d	ry29i11.d	ry29i12.d	ry29i13.d	ry29i14.d	ry29i15.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	129657	143097	139891	139011	137781	129486	136487	4	Yes
Fluorobenzene	928790	1055590	1004186	1067421	1055625	967892	1013251	6	Yes
Chlorobenzene-d5	619201	672073	674573	706361	692315	629164	665614	5	Yes
1,4-Dichlorobenzene-d4	204258	238993	230929	248671	246289	226184	232554	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	ry29i10.d	ry29i11.d	ry29i12.d	ry29i13.d	ry29i14.d	ry29i15.d	Avg. RT
t-Butyl alcohol-d10	4.003	4.007	4.010	4.014	4.003	4.006	4.007
Fluorobenzene	7.498	7.498	7.498	7.495	7.497	7.498	7.497
Chlorobenzene-d5	11.043	11.044	11.044	11.041	11.043	11.043	11.043
1,4-Dichlorobenzene-d4	12.953	12.950	12.950	12.954	12.949	12.949	12.951

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 05/30/2018 at 06:55.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 ICV Date: 05/29/18 Time: 16:02

Lab File ID: ry29v10.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3286	0.2903	17.67	20	-12	
#	Chloromethane	0.4068	0.3939	19.37	20	-3	#
*	Vinyl Chloride	0.3307	0.3367	20.36	20	2	*
	Bromomethane	5.9534	6.2125	22.17	20	11	
	Chloroethane	5.2666	5.1171	19.43	20	-3	
	Dichlorofluoromethane	0.4391	0.4358	19.85	20	-1	
	Trichlorofluoromethane	0.3509	0.3467	19.76	20	-1	
	Ethanol	0.1399	0.1356	969.33	1000	-3	
	Freon 123a	0.3271	0.3206	19.60	20	-2	
	Acrolein	2.8968	2.4196	125.29	150	-16	
*	1,1-Dichloroethene	0.2135	0.2355	22.06	20	10	*
	Acetone	0.0308	0.0301	146.49	150	-2	
	Freon 113	0.1690	0.1638	19.39	20	-3	
	2-Propanol	0.7829	0.8766	167.95	150	12	
	Methyl Iodide	0.3817	0.3844	20.14	20	1	
	Carbon Disulfide	0.6368	0.6322	19.86	20	-1	
	Methyl Acetate	0.2752	0.2693	19.57	20	-2	
	Allyl Chloride	0.5357	0.5229	19.52	20	-2	
	Methylene Chloride	0.2825	0.2843	20.12	20	1	
	t-Butyl alcohol	1.2390	1.1696	188.80	200	-6	
	Acrylonitrile	0.1404	0.1335	95.14	100	-5	
	Methyl Tertiary Butyl Ether	0.8905	0.8533	19.16	20	-4	
	trans-1,2-Dichloroethene	0.2559	0.2580	20.17	20	1	
	n-Hexane	0.2094	0.2021	19.31	20	-3	
#	1,1-Dichloroethane	0.5373	0.5396	20.09	20	0	#
	di-Isopropyl ether	1.1148	1.1304	20.28	20	1	
	2-Chloro-1,3-butadiene	0.4719	0.4592	19.46	20	-3	
	Ethyl t-butyl ether	0.9921	0.9883	19.92	20	0	
	2-Butanone	6.7519	6.3069	140.11	150	-7	
	cis-1,2-Dichloroethene	0.2829	0.2952	20.87	20	4	
	2,2-Dichloropropane	0.3753	0.3695	19.70	20	-2	
	Propionitrile	0.0492	0.0498	151.78	150	1	
	Methacrylonitrile	0.1395	0.1394	149.91	150	0	
	Bromochloromethane	0.1299	0.1274	19.62	20	-2	
	Tetrahydrofuran	1.4686	1.4468	98.51	100	-1	
*	Chloroform	0.4616	0.4601	19.93	20	0	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 ICV Date: 05/29/18 Time: 16:02

Lab File ID: ry29v10.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1-Trichloroethane	0.3882	0.3726	19.19	20	-4	
	Cyclohexane	0.3113	0.2926	18.80	20	-6	
	1,1-Dichloropropene	0.3521	0.3418	19.42	20	-3	
	Carbon Tetrachloride	0.2471	0.2327	18.84	20	-6	
	Isobutyl Alcohol	0.4318	0.3827	443.20	500	-11	
	Benzene	1.1205	1.1215	20.02	20	0	
	1,2-Dichloroethane	0.4166	0.4100	19.68	20	-2	
	t-Amyl methyl ether	0.8790	0.8540	19.43	20	-3	
	n-Heptane	0.2328	0.2163	18.59	20	-7	
	n-Butanol	0.3221	0.3002	932.07	1000	-7	
	Trichloroethene	0.2486	0.2452	19.73	20	-1	
	Methylcyclohexane	0.2275	0.2155	18.95	20	-5	
*	1,2-Dichloropropane	0.3171	0.3142	19.82	20	-1	*
	Methyl Methacrylate	0.2410	0.2285	18.96	20	-5	
	1,4-Dioxane	0.1130	0.1100	486.40	500	-3	
	Dibromomethane	0.1694	0.1696	20.02	20	0	
	Bromodichloromethane	0.3256	0.3141	19.29	20	-4	
	2-Nitropropane	2.8016	2.5098	21.83	20	9	
	2-Chloroethyl Vinyl Ether	0.2250	0.2214	19.68	20	-2	
	cis-1,3-Dichloropropene	0.4672	0.4530	19.39	20	-3	
	4-Methyl-2-pentanone	0.3589	0.3608	100.51	100	1	
*	Toluene	0.9182	0.9154	19.94	20	0	*
	trans-1,3-Dichloropropene	0.6274	0.5877	18.73	20	-6	
	Ethyl Methacrylate	0.6652	0.6406	19.26	20	-4	
	1,1,2-Trichloroethane	0.3590	0.3515	19.58	20	-2	
	Tetrachloroethene	0.2395	0.2268	18.94	20	-5	
	1,3-Dichloropropane	0.6854	0.6513	19.00	20	-5	
	2-Hexanone	0.3756	0.3576	95.20	100	-5	
	Dibromochloromethane	0.3143	0.2886	18.36	20	-8	
	1,2-Dibromoethane	0.3629	0.3519	19.39	20	-3	
	1-Chlorohexane	0.3214	0.3008	18.72	20	-6	
#	Chlorobenzene	0.9288	0.8945	19.26	20	-4	#
	1,1,1,2-Tetrachloroethane	0.2916	0.2747	18.84	20	-6	
*	Ethylbenzene	1.4448	1.3946	19.30	20	-3	*
	m+p-Xylene	0.5366	0.5252	39.15	40	-2	
	o-Xylene	0.5460	0.5189	19.01	20	-5	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 ICV Date: 05/29/18 Time: 16:02

Lab File ID: ry29v10.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Styrene	0.9718	0.9454	19.46	20	-3	
#	Bromoform	0.1690	0.1439	18.36	20	-8	#
	Isopropylbenzene	1.1376	1.1007	19.35	20	-3	
	Cyclohexanone	0.3954	0.3579	452.59	500	-9	
#	1,1,2,2-Tetrachloroethane	1.3972	1.3127	18.79	20	-6	#
	Bromobenzene	0.8866	0.8592	19.38	20	-3	
	trans-1,4-Dichloro-2-butene	0.4612	0.4484	97.23	100	-3	
	1,2,3-Trichloropropane	0.3887	0.3699	19.03	20	-5	
	n-Propylbenzene	3.7564	3.5480	18.89	20	-6	
	2-Chlorotoluene	0.7826	0.7322	18.71	20	-6	
	1,3,5-Trimethylbenzene	2.7396	2.5723	18.78	20	-6	
	4-Chlorotoluene	0.8298	0.7907	19.06	20	-5	
	tert-Butylbenzene	0.5191	0.4716	18.17	20	-9	
	Pentachloroethane	0.4337	0.4124	19.02	20	-5	
	1,2,4-Trimethylbenzene	2.8886	2.6990	18.69	20	-7	
	sec-Butylbenzene	3.0778	2.9210	18.98	20	-5	
	1,3-Dichlorobenzene	1.4176	1.3266	18.72	20	-6	
	p-Isopropyltoluene	2.6428	2.5373	19.20	20	-4	
	1,4-Dichlorobenzene	1.4877	1.4426	19.39	20	-3	
	1,2,3-Trimethylbenzene	2.9976	2.9429	19.63	20	-2	
	Benzyl Chloride	0.4648	0.4148	17.85	20	-11	
	1,3-Diethylbenzene	1.5628	1.4903	19.07	20	-5	
	1,4-Diethylbenzene	1.5823	1.5350	19.40	20	-3	
	n-Butylbenzene	1.3064	1.2659	19.38	20	-3	
	1,2-Dichlorobenzene	1.4170	1.3675	19.30	20	-3	
	1,2-Diethylbenzene	1.3409	1.3099	19.54	20	-2	
	1,2-Dibromo-3-chloropropane	0.2392	0.2230	18.65	20	-7	
	1,3,5-Trichlorobenzene	0.8221	0.8028	19.53	20	-2	
	1,2,4-Trichlorobenzene	0.8037	0.7922	19.71	20	-1	
	Hexachlorobutadiene	0.3295	0.4184	25.40	20	27	
	Naphthalene	2.8921	2.7534	19.04	20	-5	
	1,2,3-Trichlorobenzene	0.7510	0.7710	20.53	20	3	
	2-Methylnaphthalene	1.5065	1.5022	19.94	20	0	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i06.d
/chem2/HP09953.i/18feb22i.b/bf22i05.d
/chem2/HP09953.i/18feb22i.b/bf22i04.d
/chem2/HP09953.i/18feb22i.b/bf22i03.d
/chem2/HP09953.i/18feb22i.b/bf22i02.d
/chem2/HP09953.i/18feb22i.b/bf22i01.d

File /chem2/HP09953.i/18feb22i.b/bf22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09953.i/18jun12b.b/bu12c01.d

RT Summary

Internal Standard Name	File ID: bu12c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	1.930	1.924	Yes
Fluorobenzene	3.956	3.956	Yes
Chlorobenzene-d5	7.156	7.156	Yes
1,4-Dichlorobenzene-d4	9.236	9.236	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: bu12c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	93660	114201	57100	228402	Yes
Fluorobenzene	1029158	1207816	603908	2415632	Yes
Chlorobenzene-d5	741492	931957	465978	1863914	Yes
1,4-Dichlorobenzene-d4	418814	549119	274560	1098238	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/12/2018 at 21:02

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/12/18 Time: 20:05

Lab File ID: bu12c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4173	42.44	50	-15	
#	Chloromethane	0.5872	0.5233	44.56	50	-11	#
*	Vinyl Chloride	0.4173	0.3654	43.78	50	-12	*
	Bromomethane	0.2899	0.3050	52.59	50	5	
	Chloroethane	0.2334	0.2289	49.02	50	-2	
	Trichlorofluoromethane	0.5369	0.5462	50.86	50	2	
	Freon 123a	0.3518	0.3215	45.70	50	-9	
	Acrolein	2.4281	2.7048	556.99	500	11	
*	1,1-Dichloroethene	0.2459	0.2235	45.43	50	-9	*
	Acetone	0.0248	0.0218	87.84	100	-12	
	Freon 113	0.2960	0.2726	46.05	50	-8	
	2-Propanol	1.1163	0.9970	223.29	250	-11	
	Methyl Iodide	0.5387	0.4868	45.18	50	-10	
	Carbon Disulfide	0.8424	0.8084	47.98	50	-4	
	Methyl Acetate	0.2090	0.2085	49.86	50	0	
	Allyl Chloride	0.4892	0.5218	53.33	50	7	
	Methylene Chloride	0.2885	0.2639	45.74	50	-9	
	t-Butyl alcohol	1.2418	1.2994	261.61	250	5	
	Acrylonitrile	0.0991	0.0869	43.85	50	-12	
	Methyl Tertiary Butyl Ether	0.7975	0.7530	47.21	50	-6	
	trans-1,2-Dichloroethene	0.2884	0.2627	45.54	50	-9	
	n-Hexane	0.5126	0.4845	47.26	50	-5	
#	1,1-Dichloroethane	0.5731	0.5891	51.39	50	3	#
	di-Isopropyl ether	1.1602	1.1833	50.99	50	2	
	2-Chloro-1,3-butadiene	0.5207	0.5622	53.98	50	8	
	Ethyl t-butyl ether	0.9727	0.9892	50.85	50	2	
	2-Butanone	7.3204	7.6180	104.06	100	4	
	cis-1,2-Dichloroethene	0.3342	0.3196	47.81	50	-4	
	2,2-Dichloropropane	0.4251	0.4806	56.53	50	13	
	Propionitrile	2.0227	2.0469	252.99	250	1	
	Methacrylonitrile	0.1170	0.1046	111.68	125	-11	
	Bromochloromethane	0.1635	0.1533	46.88	50	-6	
	Tetrahydrofuran	1.5856	1.6191	102.11	100	2	
*	Chloroform	0.5364	0.5573	51.95	50	4	*
	1,1,1-Trichloroethane	0.5181	0.4975	48.01	50	-4	
	Cyclohexane	0.6302	0.5943	47.15	50	-6	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/12/18 Time: 20:05

Lab File ID: bu12c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Cyclohexane(2)	0.5080	0.4436	43.66	50	-13	
	Cyclohexane(3)	0.1808	0.1696	46.91	50	-6	
	1,1-Dichloropropene	0.4338	0.4343	50.05	50	0	
	Carbon Tetrachloride	0.3830	0.4171	54.45	50	9	
	Isobutyl Alcohol	0.5096	0.5767	707.37	625	13	
	Benzene	1.2609	1.2141	48.14	50	-4	
	1,2-Dichloroethane	0.4097	0.4482	54.70	50	9	
	1,2-Dichloroethane(2)	0.0353	0.0333	47.18	50	-6	
	t-Amyl methyl ether	0.8144	0.7925	48.65	50	-3	
	n-Heptane	0.6124	0.5460	44.58	50	-11	
	n-Butanol	0.3762	0.4050	1345.75	1250	8	
	Trichloroethene	0.3227	0.3083	47.78	50	-4	
	Methylcyclohexane	0.6000	0.5924	49.37	50	-1	
*	1,2-Dichloropropane	0.3331	0.3261	48.96	50	-2	*
	Methyl Methacrylate	0.1907	0.1755	46.02	50	-8	
	1,4-Dioxane	0.1410	0.1356	601.16	625	-4	
	Dibromomethane	0.1795	0.1737	48.38	50	-3	
	Bromodichloromethane	0.3833	0.4107	53.57	50	7	
	2-Nitropropane	2.5306	4.1255	138.87	100	39	
	2-Chloroethyl Vinyl Ether	0.1644	0.1569	47.73	50	-5	
	cis-1,3-Dichloropropene	0.4668	0.4916	52.66	50	5	
	4-Methyl-2-pentanone	0.3036	0.3086	101.64	100	2	
*	Toluene	0.9983	1.0188	51.02	50	2	*
	trans-1,3-Dichloropropene	0.4982	0.5854	58.75	50	17	
	Ethyl Methacrylate	0.4494	0.4799	53.39	50	7	
	1,1,2-Trichloroethane	0.3230	0.3286	50.88	50	2	
	Tetrachloroethene	0.4631	0.4384	47.33	50	-5	
	1,3-Dichloropropane	0.5552	0.5884	52.99	50	6	
	2-Hexanone	0.2699	0.3060	113.40	100	13	
	Dibromochloromethane	0.3545	0.3893	54.92	50	10	
	1,2-Dibromoethane	0.3271	0.3336	50.99	50	2	
	1-Chlorohexane	0.5308	0.5395	50.81	50	2	
#	Chlorobenzene	1.1089	1.1139	50.22	50	0	#
	1,1,1,2-Tetrachloroethane	0.3690	0.3949	53.51	50	7	
*	Ethylbenzene	1.9040	2.0240	53.15	50	6	*
	m+p-Xylene	0.7574	0.7648	100.97	100	1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/12/18 Time: 20:05

Lab File ID: bu12c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	o-Xylene	0.7545	0.7535	49.93	50	0	
	Styrene	1.1879	1.2341	51.94	50	4	
#	Bromoform	0.2222	0.2443	51.75	50	3	#
	Isopropylbenzene	1.9082	1.9627	51.43	50	3	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7952	52.63	50	5	#
	Bromobenzene	0.8408	0.8691	51.68	50	3	
	trans-1,4-Dichloro-2-butene	0.2069	0.2738	165.41	125	32	
	1,2,3-Trichloropropane	0.2073	0.2212	53.35	50	7	
	n-Propylbenzene	3.8098	4.3003	56.44	50	13	
	2-Chlorotoluene	0.7939	0.8233	51.85	50	4	
	1,3,5-Trimethylbenzene	2.8159	3.0852	54.78	50	10	
	4-Chlorotoluene	0.8226	0.8576	52.13	50	4	
	tert-Butylbenzene	0.6559	0.6534	49.81	50	0	
	Pentachloroethane	0.4798	0.5673	59.12	50	18	
	1,2,4-Trimethylbenzene	2.8653	3.1640	55.21	50	10	
	sec-Butylbenzene	3.5929	3.8292	53.29	50	7	
	1,3-Dichlorobenzene	1.6523	1.7035	51.55	50	3	
	p-Isopropyltoluene	3.2092	3.3903	52.82	50	6	
	1,4-Dichlorobenzene	1.7189	1.7536	51.01	50	2	
	1,2,3-Trimethylbenzene	2.9416	3.2962	56.03	50	12	
	Benzyl Chloride	0.2338	0.2960	56.38	50	13	
	1,3-Diethylbenzene	1.8848	2.0776	55.11	50	10	
	1,4-Diethylbenzene	2.0114	2.2133	55.02	50	10	
	n-Butylbenzene	1.6592	1.7506	52.76	50	6	
	1,2-Dichlorobenzene	1.6409	1.6638	50.70	50	1	
	1,2-Diethylbenzene	1.6079	1.7562	54.61	50	9	
	1,2-Dibromo-3-chloropropane	0.1332	0.1523	57.17	50	14	
	1,3,5-Trichlorobenzene	1.3773	1.3732	49.85	50	0	
	1,2,4-Trichlorobenzene	1.2763	1.2472	48.86	50	-2	
	Hexachlorobutadiene	0.6574	0.6128	44.45	50	-11	
	Naphthalene	2.6627	2.6890	50.49	50	1	
	1,2,3-Trichlorobenzene	1.1896	1.1780	49.51	50	-1	
	2-Methylnaphthalene	1.6549	1.7289	52.24	50	4	
	Dibromofluoromethane	0.2502	0.2512	50.21	50	0	
	Dibromofluoromethane(2)	0.2550	0.2579	50.57	50	1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/12/18 Time: 20:05

Lab File ID: bu12c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,2-Dichloroethane-d4	0.0548	0.0521	47.48	50	-5
1,2-Dichloroethane-d4(2)	0.2800	0.3058	54.61	50	9
1,2-Dichloroethane-d4(3)	0.0347	0.0334	48.11	50	-4
Toluene-d8	1.3054	1.3811	52.90	50	6
Toluene-d8(2)	0.8436	0.8796	52.14	50	4
4-Bromofluorobenzene	0.4987	0.5184	51.98	50	4
4-Bromofluorobenzene(2)	0.4342	0.4286	49.35	50	-1

Average %Drift 7

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem/HP07536.i/18may24i.b/qy24i10.d
/chem/HP07536.i/18may24i.b/qy24i11.d
/chem/HP07536.i/18may24i.b/qy24i12.d
/chem/HP07536.i/18may24i.b/qy24i13.d
/chem/HP07536.i/18may24i.b/qy24i14.d
/chem/HP07536.i/18may24i.b/qy24i15.d

File /chem/HP07536.i/18may24i.b/qy24i13.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem/HP07536.i/18jun17a.b/qu17c10.d

RT Summary

Internal Standard Name	File ID: qu17c10.d	ICAL RT	In Spec
t-Butyl alcohol-d10	4.205	4.206	Yes
Fluorobenzene	7.687	7.688	Yes
Chlorobenzene-d5	11.152	11.157	Yes
1,4-Dichlorobenzene-d4	13.026	13.030	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: qu17c10.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	140771	141858	70929	283716	Yes
Fluorobenzene	1067155	1158639	579320	2317278	Yes
Chlorobenzene-d5	798471	836232	418116	1672464	Yes
1,4-Dichlorobenzene-d4	335915	373559	186780	747118	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/17/2018 at 10:27

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date: 06/17/18 Time: 09:58

Lab File ID: qu17c10.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3429	0.3498	51.01	50	2	
#	Chloromethane	0.4013	0.3408	42.46	50	-15	#
*	Vinyl Chloride	0.3750	0.3121	41.61	50	-17	*
	Bromomethane	6.2098	8.7286	70.28	50	41	
	Chloroethane	4.2607	4.5355	53.22	50	6	
	Trichlorofluoromethane	0.3961	0.3918	49.46	50	-1	
	n-Pentane	0.3066	0.2757	44.95	50	-10	
	Ethanol	0.1450	0.1389	2393.79	2500	-4	
	Freon 123a	0.3328	0.3248	48.80	50	-2	
	Acrolein	2.8883	2.7437	474.97	500	-5	
*	1,1-Dichloroethene	0.2529	0.2463	48.69	50	-3	*
*	1,1-Dichloroethene(2)	0.1272	0.1257	49.40	50	-1	*
	Acetone	0.0293	0.0303	103.39	100	3	
	Freon 113	0.2184	0.2226	50.96	50	2	
	2-Propanol	0.8722	0.9463	271.23	250	8	
	Methyl Iodide	0.5258	0.5185	49.31	50	-1	
	Carbon Disulfide	0.9307	0.9108	48.93	50	-2	
	Methyl Acetate	0.2470	0.2578	52.19	50	4	
	Allyl Chloride	0.4767	0.4733	49.64	50	-1	
	Methylene Chloride	0.3108	0.3133	50.40	50	1	
	t-Butyl alcohol	1.2832	1.3128	255.78	250	2	
	Acrylonitrile	0.1273	0.1316	51.68	50	3	
	Methyl Tertiary Butyl Ether	0.8586	0.8824	51.39	50	3	
	trans-1,2-Dichloroethene	0.2948	0.2940	49.87	50	0	
	n-Hexane	0.2414	0.2512	52.01	50	4	
#	1,1-Dichloroethane	0.5320	0.5283	49.65	50	-1	#
	di-Isopropyl ether	1.0000	1.0156	50.78	50	2	
	2-Chloro-1,3-butadiene	0.4439	0.4445	50.06	50	0	
	Ethyl t-butyl ether	0.9318	0.9669	51.88	50	4	
	2-Butanone	6.1815	5.6259	91.01	100	-9	
	2-Butanone(2)	1.6223	1.5259	94.06	100	-6	
	cis-1,2-Dichloroethene	0.3268	0.3331	50.96	50	2	
	2,2-Dichloropropane	0.4186	0.4213	50.32	50	1	
	Propionitrile	0.0456	0.0499	273.40	250	9	
	Methacrylonitrile	0.1357	0.1464	134.86	125	8	
	Bromochloromethane	0.1700	0.1670	49.12	50	-2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date: 06/17/18 Time: 09:58

Lab File ID: qu17c10.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Tetrahydrofuran	1.6020	1.4992	93.59	100	-6	
*	Chloroform	0.4974	0.5122	51.49	50	3	*
	1,1,1-Trichloroethane	0.4502	0.4294	47.69	50	-5	
	Cyclohexane	0.3715	0.3689	49.64	50	-1	
	Cyclohexane(2)	0.3087	0.2986	48.36	50	-3	
	Cyclohexane(3)	0.1118	0.1107	49.50	50	-1	
	1,1-Dichloropropene	0.3907	0.3849	49.26	50	-1	
	Carbon Tetrachloride	0.3262	0.3394	52.02	50	4	
	Isobutyl Alcohol	0.4227	0.4413	652.56	625	4	
	Benzene	1.1704	1.1915	50.90	50	2	
	1,2-Dichloroethane	0.3923	0.4135	52.70	50	5	
	1,2-Dichloroethane(2)	0.0403	0.0411	51.05	50	2	
	t-Amyl methyl ether	0.8857	0.9178	51.81	50	4	
	n-Heptane	0.2122	0.2086	49.15	50	-2	
	n-Butanol	0.3504	0.3700	1320.21	1250	6	
	Trichloroethene	0.2939	0.2996	50.96	50	2	
	Methylcyclohexane	0.2800	0.2681	47.88	50	-4	
*	1,2-Dichloropropane	0.3143	0.3169	50.41	50	1	*
	Methyl Methacrylate	0.2270	0.2435	53.63	50	7	
	1,4-Dioxane	0.1426	0.1513	662.82	625	6	
	Dibromomethane	0.1902	0.2017	53.02	50	6	
	Bromodichloromethane	0.3524	0.3942	55.92	50	12	
	2-Nitropropane	2.2984	3.1451	136.83	100	37	
	2-Chloroethyl Vinyl Ether	0.2172	0.2321	53.44	50	7	
	cis-1,3-Dichloropropene	0.4892	0.5173	52.87	50	6	
	4-Methyl-2-pentanone	0.2997	0.3127	104.33	100	4	
*	Toluene	0.9710	0.9467	48.75	50	-3	*
	trans-1,3-Dichloropropene	0.5923	0.6287	53.07	50	6	
	Ethyl Methacrylate	0.5811	0.6004	51.66	50	3	
	1,1,2-Trichloroethane	0.3748	0.3869	51.61	50	3	
	Tetrachloroethene	0.3812	0.3822	50.12	50	0	
	1,3-Dichloropropane	0.6471	0.6462	49.93	50	0	
	2-Hexanone	0.2833	0.2915	102.90	100	3	
	Dibromochloromethane	0.3707	0.4309	58.13	50	16	
	1,2-Dibromoethane	0.3924	0.4105	52.31	50	5	
	1-Chlorohexane	0.3845	0.3584	46.60	50	-7	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date: 06/17/18 Time: 09:58

Lab File ID: qu17c10.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
#	Chlorobenzene	1.0538	1.0216	48.47	50	-3	#
	1,1,1,2-Tetrachloroethane	0.3586	0.3717	51.83	50	4	
*	Ethylbenzene	1.6525	1.6054	48.57	50	-3	*
	m+p-Xylene	0.6558	0.6266	95.54	100	-4	
	o-Xylene	0.6576	0.6322	48.07	50	-4	
	Styrene	1.1227	1.0885	48.48	50	-3	
#	Bromoform	0.2362	0.3034	58.06	50	16	#
	Isopropylbenzene	1.4187	1.3473	47.48	50	-5	
	Cyclohexanone	0.5104	0.4305	527.12	625	-16	
#	1,1,2,2-Tetrachloroethane	1.1111	1.1908	53.59	50	7	#
	Bromobenzene	1.0247	1.0785	52.63	50	5	
	trans-1,4-Dichloro-2-butene	0.3097	0.3634	146.71	125	17	
	1,2,3-Trichloropropane	0.3306	0.3566	53.93	50	8	
	n-Propylbenzene	3.5536	3.5615	50.11	50	0	
	2-Chlorotoluene	0.8050	0.8067	50.11	50	0	
	1,3,5-Trimethylbenzene	2.6413	2.6330	49.84	50	0	
	4-Chlorotoluene	0.8607	0.8573	49.80	50	0	
	tert-Butylbenzene	0.5338	0.5182	48.54	50	-3	
	Pentachloroethane	0.5362	0.6006	56.00	50	12	
	1,2,4-Trimethylbenzene	2.7894	2.7491	49.28	50	-1	
	sec-Butylbenzene	2.8858	2.7474	47.60	50	-5	
	1,3-Dichlorobenzene	1.6124	1.6491	51.14	50	2	
	p-Isopropyltoluene	2.5940	2.4864	47.93	50	-4	
	1,4-Dichlorobenzene	1.7117	1.7054	49.82	50	0	
	1,2,3-Trimethylbenzene	2.9465	2.8353	48.11	50	-4	
	Benzyl Chloride	0.4491	0.5417	60.31	50	21	
	1,3-Diethylbenzene	1.5416	1.4577	47.28	50	-5	
	1,4-Diethylbenzene	1.5759	1.4554	46.18	50	-8	
	n-Butylbenzene	1.1940	1.1264	47.17	50	-6	
	1,2-Dichlorobenzene	1.6029	1.6284	50.80	50	2	
	1,2-Diethylbenzene	1.3559	1.2313	45.41	50	-9	
	1,2-Dibromo-3-chloropropane	0.1915	0.2190	57.19	50	14	
	1,3,5-Trichlorobenzene	1.0352	1.0535	50.88	50	2	
	1,2,4-Trichlorobenzene	1.0177	1.0459	51.39	50	3	
	Hexachlorobutadiene	0.4427	0.4414	49.85	50	0	
	Naphthalene	2.9845	3.1244	52.34	50	5	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07536 Calibration Date: 06/17/18 Time: 09:58

Lab File ID: qu17c10.d Init. Calib. Date(s): 05/24/18 05/24/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: Rxi-624Sil .25

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,2,3-Trichlorobenzene	0.9565	0.9793	51.19	50	2
2-Methylnaphthalene	1.6185	1.6521	51.04	50	2
Dibromofluoromethane	0.2721	0.2683	49.31	50	-1
Dibromofluoromethane(2)	0.2751	0.2741	49.82	50	0
1,2-Dichloroethane-d4	0.0745	0.0727	48.74	50	-3
1,2-Dichloroethane-d4(2)	0.3283	0.3292	50.13	50	0
1,2-Dichloroethane-d4(3)	0.0463	0.0474	51.13	50	2
Toluene-d8	1.4355	1.3647	47.53	50	-5
Toluene-d8(2)	0.9333	0.8839	47.35	50	-5
4-Bromofluorobenzene	0.4660	0.4540	48.71	50	-3
4-Bromofluorobenzene(2)	0.4169	0.4280	51.33	50	3

Average %Drift 5

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem/HP07566.i/18may29i.b/ry29i10.d
/chem/HP07566.i/18may29i.b/ry29i11.d
/chem/HP07566.i/18may29i.b/ry29i12.d
/chem/HP07566.i/18may29i.b/ry29i13.d
/chem/HP07566.i/18may29i.b/ry29i14.d
/chem/HP07566.i/18may29i.b/ry29i15.d

File /chem/HP07566.i/18may29i.b/ry29i13.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem/HP07566.i/18jun18a.b/ru18c01.d

RT Summary

Internal Standard Name	File ID: ru18c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	4.006	4.014	Yes
Fluorobenzene	7.501	7.495	Yes
Chlorobenzene-d5	11.043	11.041	Yes
1,4-Dichlorobenzene-d4	12.952	12.954	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: ru18c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	130374	139011	69506	278022	Yes
Fluorobenzene	1024004	1067421	533710	2134842	Yes
Chlorobenzene-d5	689787	706361	353180	1412722	Yes
1,4-Dichlorobenzene-d4	235447	248671	124336	497342	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/18/2018 at 08:53

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/18/18 Time: 08:32

Lab File ID: ru18c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3286	0.3165	48.16	50	-4	
#	Chloromethane	0.4068	0.3422	42.06	50	-16	#
*	Vinyl Chloride	0.3307	0.2773	41.92	50	-16	*
	Bromomethane	5.9534	7.0501	64.74	50	29	
	Chloroethane	5.2666	5.2094	49.46	50	-1	
	Trichlorofluoromethane	0.3509	0.3561	50.75	50	1	
	Ethanol	0.1399	0.1434	2561.74	2500	2	
	Freon 123a	0.3271	0.3137	47.95	50	-4	
	Acrolein	2.8968	3.0119	519.88	500	4	
*	1,1-Dichloroethene	0.2135	0.2098	49.13	50	-2	*
*	1,1-Dichloroethene(2)	0.1243	0.1187	47.76	50	-4	*
	Acetone	0.0308	0.0317	102.84	100	3	
	Freon 113	0.1690	0.1601	47.37	50	-5	
	2-Propanol	0.7829	0.7628	243.59	250	-3	
	Methyl Iodide	0.3817	0.3715	48.66	50	-3	
	Carbon Disulfide	0.6368	0.6354	49.89	50	0	
	Methyl Acetate	0.2752	0.2654	48.22	50	-4	
	Allyl Chloride	0.5357	0.4897	45.71	50	-9	
	Methylene Chloride	0.2825	0.2652	46.93	50	-6	
	t-Butyl alcohol	1.2390	1.2237	246.91	250	-1	
	Acrylonitrile	0.1404	0.1328	47.29	50	-5	
	Methyl Tertiary Butyl Ether	0.8905	0.8278	46.48	50	-7	
	trans-1,2-Dichloroethene	0.2559	0.2415	47.19	50	-6	
	n-Hexane	0.2094	0.1793	42.80	50	-14	
#	1,1-Dichloroethane	0.5373	0.4964	46.20	50	-8	#
	di-Isopropyl ether	1.1148	1.0129	45.43	50	-9	
	2-Chloro-1,3-butadiene	0.4719	0.4154	44.00	50	-12	
	Ethyl t-butyl ether	0.9921	0.8570	43.19	50	-14	
	2-Butanone	6.7519	6.2870	93.11	100	-7	
	2-Butanone(2)	1.4153	1.4214	100.43	100	0	
	cis-1,2-Dichloroethene	0.2829	0.2652	46.87	50	-6	
	2,2-Dichloropropane	0.3753	0.3416	45.51	50	-9	
	Propionitrile	0.0492	0.0464	236.11	250	-6	
	Methacrylonitrile	0.1395	0.1292	115.75	125	-7	
	Bromochloromethane	0.1299	0.1238	47.69	50	-5	
	Tetrahydrofuran	1.4686	1.4277	97.21	100	-3	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/18/18 Time: 08:32

Lab File ID: ru18c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.4616	0.4321	46.80	50	-6	*
	1,1,1-Trichloroethane	0.3882	0.3385	43.60	50	-13	
	Cyclohexane	0.3113	0.2647	42.52	50	-15	
	Cyclohexane(2)	0.2334	0.2040	43.70	50	-13	
	Cyclohexane(3)	0.0916	0.0782	42.72	50	-15	
	1,1-Dichloropropene	0.3521	0.3248	46.12	50	-8	
	Carbon Tetrachloride	0.2471	0.2373	48.02	50	-4	
	Isobutyl Alcohol	0.4318	0.4186	605.89	625	-3	
	Benzene	1.1205	1.0427	46.53	50	-7	
	1,2-Dichloroethane	0.4166	0.3976	47.71	50	-5	
	1,2-Dichloroethane(2)	0.0344	0.0334	48.60	50	-3	
	t-Amyl methyl ether	0.8790	0.7901	44.94	50	-10	
	n-Heptane	0.2328	0.1840	39.53	50	-21	
	n-Butanol	0.3221	0.3017	1171.00	1250	-6	
	Trichloroethene	0.2486	0.2388	48.04	50	-4	
	Methylcyclohexane	0.2275	0.2045	44.95	50	-10	
*	1,2-Dichloropropane	0.3171	0.3010	47.46	50	-5	*
	Methyl Methacrylate	0.2410	0.2301	47.73	50	-5	
	1,4-Dioxane	0.1130	0.1064	588.00	625	-6	
	Dibromomethane	0.1694	0.1687	49.78	50	0	
	Bromodichloromethane	0.3256	0.3272	50.23	50	0	
	2-Nitropropane	2.8016	2.9960	103.47	100	3	
	2-Chloroethyl Vinyl Ether	0.2250	0.1781	39.57	50	-21	
	cis-1,3-Dichloropropene	0.4672	0.4675	50.03	50	0	
	4-Methyl-2-pentanone	0.3589	0.3428	95.50	100	-4	
*	Toluene	0.9182	0.8414	45.82	50	-8	*
	trans-1,3-Dichloropropene	0.6274	0.6340	50.53	50	1	
	Ethyl Methacrylate	0.6652	0.6463	48.58	50	-3	
	1,1,2-Trichloroethane	0.3590	0.3491	48.62	50	-3	
	Tetrachloroethene	0.2395	0.2257	47.14	50	-6	
	1,3-Dichloropropane	0.6854	0.6558	47.84	50	-4	
	2-Hexanone	0.3756	0.3605	95.99	100	-4	
	Dibromochloromethane	0.3143	0.3433	54.61	50	9	
	1,2-Dibromoethane	0.3629	0.3575	49.25	50	-1	
	1-Chlorohexane	0.3214	0.2884	44.86	50	-10	
#	Chlorobenzene	0.9288	0.8887	47.84	50	-4	#

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/18/18 Time: 08:32

Lab File ID: ru18c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1,2-Tetrachloroethane	0.2916	0.2918	50.03	50	0	
*	Ethylbenzene	1.4448	1.3246	45.84	50	-8	*
	m+p-Xylene	0.5366	0.5050	94.11	100	-6	
	o-Xylene	0.5460	0.5001	45.79	50	-8	
	Styrene	0.9718	0.8793	45.24	50	-10	
#	Bromoform	0.1690	0.1898	52.96	50	6	#
	Isopropylbenzene	1.1376	1.0112	44.44	50	-11	
	Cyclohexanone	0.3954	0.3890	614.93	625	-2	
#	1,1,2,2-Tetrachloroethane	1.3972	1.3757	49.23	50	-2	#
	Bromobenzene	0.8866	0.8826	49.77	50	0	
	trans-1,4-Dichloro-2-butene	0.4612	0.4793	129.90	125	4	
	1,2,3-Trichloropropane	0.3887	0.3855	49.58	50	-1	
	n-Propylbenzene	3.7564	3.5417	47.14	50	-6	
	2-Chlorotoluene	0.7826	0.7555	48.27	50	-3	
	1,3,5-Trimethylbenzene	2.7396	2.6002	47.46	50	-5	
	4-Chlorotoluene	0.8298	0.8079	48.68	50	-3	
	tert-Butylbenzene	0.5191	0.4788	46.12	50	-8	
	Pentachloroethane	0.4337	0.4911	56.62	50	13	
	1,2,4-Trimethylbenzene	2.8886	2.7082	46.88	50	-6	
	sec-Butylbenzene	3.0778	2.8258	45.91	50	-8	
	1,3-Dichlorobenzene	1.4176	1.3951	49.20	50	-2	
	p-Isopropyltoluene	2.6428	2.4713	46.75	50	-6	
	1,4-Dichlorobenzene	1.4877	1.4458	48.59	50	-3	
	1,2,3-Trimethylbenzene	2.9976	2.7939	46.60	50	-7	
	Benzyl Chloride	0.4648	0.5119	55.07	50	10	
	1,3-Diethylbenzene	1.5628	1.4349	45.91	50	-8	
	1,4-Diethylbenzene	1.5823	1.4411	45.54	50	-9	
	n-Butylbenzene	1.3064	1.1677	44.69	50	-11	
	1,2-Dichlorobenzene	1.4170	1.3758	48.55	50	-3	
	1,2-Diethylbenzene	1.3409	1.2016	44.81	50	-10	
	1,2-Dibromo-3-chloropropane	0.2392	0.2562	53.56	50	7	
	1,3,5-Trichlorobenzene	0.8221	0.7513	45.69	50	-9	
	1,2,4-Trichlorobenzene	0.8037	0.7461	46.42	50	-7	
	Hexachlorobutadiene	0.3295	0.2971	45.09	50	-10	
	Naphthalene	2.8921	2.8354	49.02	50	-2	
	1,2,3-Trichlorobenzene	0.7510	0.7122	47.42	50	-5	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/18/18 Time: 08:32

Lab File ID: ru18c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Methylnaphthalene	1.5065	1.6938	56.21	50	12
Dibromofluoromethane	0.2216	0.2199	49.62	50	-1
Dibromofluoromethane(2)	0.2283	0.2264	49.57	50	-1
1,2-Dichloroethane-d4	0.0609	0.0599	49.14	50	-2
1,2-Dichloroethane-d4(2)	0.3314	0.3116	47.02	50	-6
1,2-Dichloroethane-d4(3)	0.0387	0.0379	48.97	50	-2
Toluene-d8	1.3015	1.2401	47.64	50	-5
Toluene-d8(2)	0.8462	0.8099	47.85	50	-4
4-Bromofluorobenzene	0.4307	0.4067	47.21	50	-6
4-Bromofluorobenzene(2)	0.2737	0.2672	48.81	50	-2

Average %Drift 6

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu12c01.d Date Analyzed: 06/12/18

Instrument ID: HP09953 Time Analyzed: 20:05

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	93660	1.930	1029158	3.956	741492	7.156	418814	9.236
UPPER LIMIT	187320	2.430	2058316	4.456	1482984	7.656	837628	9.736
LOWER LIMIT	46830	1.430	514579	3.456	370746	6.656	209407	8.736
LAB SAMPLE ID								
01 VBLKB07	105777	1.918	1001314	3.950	739549	7.156	397204	9.236
02 LCSB07	128192	1.918	1061686	3.950	766584	7.156	435219	9.236
03 LCDB07	105172	1.924	1026312	3.956	753798	7.156	421502	9.236
04 9632085	96278	1.918	1039586	3.950	763192	7.156	415492	9.236
05 9632091	88688	1.924	980755	3.950	717133	7.156	380252	9.236
06 9632093	88201	1.918	960088	3.950	704534	7.156	373480	9.236
07 9632095	87547	1.930	949526	3.956	687362	7.156	366190	9.236
08 9640166	106119	1.918	933024	3.950	685986	7.156	370430	9.236
09 9640167	97761	1.924	931363	3.956	681997	7.156	366472	9.236
10 9649656	106898	1.924	926417	3.956	652553	7.156	305830	9.236
11 9653928	83431	1.924	910760	3.956	648221	7.156	348802	9.236
12 9653931	76877	1.906	921206	3.950	679476	7.156	343722	9.236
13 9653932	75390	1.918	930322	3.950	677150	7.156	344246	9.236
14 9653941	97541	1.912	869444	3.950	498037	7.156	147695 *	9.242
15 9653942	87088	1.912	931475	3.950	677026	7.156	329625	9.236
16 9651105	83026	1.930	935111	3.956	676040	7.156	336330	9.236
17 9651106	78502	1.918	919565	3.950	666056	7.156	339718	9.236
18 9651108	81308	1.912	941802	3.950	687309	7.156	357710	9.236
19 9651111	73425	1.924	916698	3.956	641457	7.156	297905	9.236
20 9650447	39474 *	1.918	824998	3.950	498889	7.156	171088 *	9.236
21 9653933	79061	1.918	839486	3.950	338670 *	7.156	40092 *	9.242
22 9653935	72519	1.912	962121	3.950	685190	7.156	333075	9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): qu17c10.d Date Analyzed: 06/17/18

Instrument ID: HP07536 Time Analyzed: 09:58

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	140771	4.205	1067155	7.687	798471	11.152	335915	13.026
UPPER LIMIT	281542	4.705	2134310	8.187	1596942	11.652	671830	13.526
LOWER LIMIT	70386	3.705	533578	7.187	399236	10.652	167958	12.526
LAB SAMPLE ID								
01 LCSQ12	138646	4.204	1082939	7.686	818096	11.154	350937	13.028
02 LCSQ13	138646	4.204	1082939	7.686	818096	11.154	350937	13.028
03 LCDQ12	135182	4.205	1082692	7.690	810325	11.155	347874	13.026
04 LCDQ13	135182	4.205	1082692	7.690	810325	11.155	347874	13.026
05 VBLKQ12	115947	4.200	962659	7.688	718568	11.157	309647	13.028
06 VBLKQ13	115947	4.200	962659	7.688	718568	11.157	309647	13.028
07 9647224DL	130549	4.208	1056360	7.686	789158	11.155	371611	13.029
08 SECC050	125799	4.204	1068503	7.689	795324	11.154	347028	13.028
09 9660184	126333	4.212	1049996	7.690	798567	11.155	349708	13.029
10 9647491	122269	4.208	1036109	7.693	790051	11.156	343267	13.026
11 9647479	111315	4.211	964541	7.692	706493	11.154	303902	13.032
12 9647485	124868	4.211	1020737	7.690	767553	11.155	331506	13.029
13 9647487	121828	4.206	1021737	7.691	769552	11.156	335076	13.030
14 9647481	121957	4.199	1006827	7.690	773414	11.156	336283	13.026
15 9647483	121461	4.202	984797	7.690	756589	11.155	326947	13.029
16 9647489	125970	4.202	1012236	7.693	760635	11.155	323994	13.029
17 9653941DL	110823	4.212	918140	7.690	694282	11.156	307045	13.030
18 9650182	121412	4.201	997067	7.692	761019	11.155	318030	13.029
19 9650183	126201	4.223	993648	7.695	739468	11.158	310225	13.032
20 9650184	126002	4.202	997468	7.693	722946	11.155	317024	13.029
21 9650185	138724	4.209	941286	7.690	698960	11.156	322898	13.030
22 9650186	130595	4.208	960931	7.692	731461	11.155	317549	13.029

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): qu17c10.d Date Analyzed: 06/17/18

Instrument ID: HP07536 Time Analyzed: 09:58

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	140771	4.205	1067155	7.687	798471	11.152	335915	13.026
UPPER LIMIT	281542	4.705	2134310	8.187	1596942	11.652	671830	13.526
LOWER LIMIT	70386	3.705	533578	7.187	399236	10.652	167958	12.526
LAB SAMPLE ID								
23 9650181	143170	4.221	852838	7.693	648822	11.155	289052	13.029

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): ru18c01.d Date Analyzed: 06/18/18

Instrument ID: HP07566 Time Analyzed: 08:32

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	130374	4.006	1024004	7.501	689787	11.043	235447	12.952
UPPER LIMIT	260748	4.506	2048008	8.001	1379574	11.543	470894	13.452
LOWER LIMIT	65187	3.506	512002	7.001	344894	10.543	117724	12.452
LAB SAMPLE ID								
01 LCSR92	134512	4.005	1043091	7.496	666222	11.042	232776	12.951
02 LCDR92	137904	4.006	1047879	7.498	684348	11.043	230348	12.949
03 VBLKR92	118373	3.993	921843	7.497	606328	11.043	202574	12.952
04 9653939	125125	4.007	1017732	7.498	648016	11.044	223692	12.950
05 9653940	126801	4.000	1034977	7.501	673643	11.043	216917	12.953
06 9656568	119709	4.013	1019122	7.501	649406	11.043	218105	12.952
07 9654945	124503	4.007	1072186	7.502	671908	11.044	223966	12.954
08 9650181DL	131746	4.007	1036641	7.501	697672	11.044	242842	12.950
09 9650186DL	110166	4.006	923098	7.501	615310	11.043	218556	12.953
10 9651601	125763	4.004	1035331	7.499	649733	11.041	215671	12.950
11 9651606	125185	4.005	1034940	7.500	674338	11.042	226402	12.951
12 9651608	122149	4.007	1033864	7.501	656612	11.044	224282	12.950
13 9651609	120100	4.001	1024868	7.505	664847	11.044	219753	12.953
14 9651612	125115	4.010	1032994	7.501	667526	11.044	232646	12.953
15 9651614DL	128909	4.010	1033655	7.504	698180	11.043	229501	12.953
16 9651616	107851	4.002	902630	7.497	599801	11.043	190824	12.952
17 9651607	129131	3.997	1153421	7.501	702591	11.044	234742	12.953
18 9651611	154441	4.000	1053242	7.501	702025	11.044	225144	12.953
19 9651611DL	152768	4.002	1063395	7.503	683157	11.042	229894	12.951
20 9651610	154668	4.014	1159957	7.498	796382	11.044	259292	12.954
21 9651610DL	130244	4.003	1101849	7.500	709747	11.043	228755	12.952

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

Preparation and Run Logs

Volatiles by GC/MS

eurofins | Lancaster Laboratories Environmental

VOA Prep Summary by SDG: DHR39

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
9653939	150A	07320	18796256	N	06/11/18 11:50	06/12/18 13:03	32.29 g	36.88 g	4.59 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9653939	150B	07320	18796255	N	06/11/18 11:50	06/12/18 13:03	32.52 g	35.88 g	3.36 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A,D
9653939	169A	07578	18798263	Y	06/11/18 11:50	06/12/18 12:53	29.48 g	34.85 g	5.37 g	4.50 g - 5.50 g	Y	18144-1	MeOH w/surrogate (5 mL)	5.000	
9653940	150A	07320	18796254	N	06/11/18 14:12	06/12/18 13:03	32.55 g	37.07 g	4.52 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9653940	150B	07320	18796253	N	06/11/18 14:12	06/12/18 13:04	32.34 g	37.53 g	5.19 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9653940	169A	07578	18798262	Y	06/11/18 14:12	06/12/18 12:54	29.48 g	34.58 g	5.10 g	4.50 g - 5.50 g	Y	18144-1	MeOH w/surrogate (5 mL)	5.000	
9653941	150A	07320	18796258	Y	06/11/18 15:51	06/12/18 13:04	32.40 g	38.13 g	5.73 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653941	150B	07320	18796257	N	06/11/18 15:51	06/12/18 13:04	32.33 g	38.11 g	5.78 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653941	169A	07578	18798273	Y	06/11/18 15:51	06/12/18 12:56	29.58 g	35.35 g	5.77 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9653942	150A	07320	18796260	N	06/11/18 17:12	06/12/18 13:04	32.49 g	38.46 g	5.97 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9653942	150B	07320	18796259	Y	06/11/18 17:12	06/12/18 13:04	32.42 g	37.63 g	5.21 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9653942	169A	07578	18798272	N	06/11/18 17:12	06/12/18 12:58	29.47 g	35.08 g	5.61 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

6-7-18 Prep of VOA6 Jan 7.18 X 7-7-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 558268 Danger 1 mL
Lot# A0125171
Expire: 08/2018 Store: 0°C or colder
Custom CS#6 Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Rulling 2032

6-7-18 Prep of QUOA6 Jun 7.18 X 7-7-18
Added 1.0 mL of...
to final volume of
25 mL MeOH
B+J lot # DT140

RESTEK 558268.SEC Danger 1 mL
Lot# A0136083
Expire: 09/2019 Store: 0°C or colder
Custom QCS #6 Standard
1000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Rulling 2032

6-7-18 Prep of QGASES Jun 7.18 X 7-14-18
Added 0.5 mL of...
to final volume of
25 mL MeOH
B+J lot # DT140

RESTEK 55669.SEC Danger 1 mL
Lot# A0129532
Expire: 08/2024 Store: 0°C or colder
Custom 502.2 "Q" Gas Mix
2000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Rulling 2032

6/7/18 QGas 524 Jun 7-18 x 6/14/18
20 ul 502.2 QGas Lt A0129532
20 ul DCFM ~~Lt A0~~ Lt 217091197
@JMLW3 6/7/18
900 ul MeOH B+J DT140
[signature] 1683

6-7-18 AR22 826 15/SS 6-7-18 X: 12-7-18
ADDED 0.819 mL OF...
TO A FINAL VOLUME OF
10 mL MEOH B+J #DT140
[signature] 1002

RESTEK 558267 Danger
Lot# A0117424
Custom 8260A IS Mix
Expire: 02/2019 Store: 0°C or colder
Full label information for the chemical is provided on the outside package
For Laboratory Use Only
1 mL
Made in USA

RESTEK 55671 Danger 1 mL
Lot# A0125172
Expire: 02/2020 Store: 0°C or colder
8260A Surrogate Mix
2500 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

6-11-18 Prep of VOA1 Jun 11,18 X 7-11-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-1 Danger 1 mL
Lot# A0126988
Expire: 04/2020 Store: 0°C or colder
Custom Revised V #1B Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 572312 Danger 1 mL
Lot# A0131271
Expire: 10/2018 Store: 0°C or colder
Custom V #4C (Rev 3) Standard
This product is photosensitive.
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Reilling 2032

6-11-18 Prep of VOA2 Jun 11,18 X 7-11-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Reilling 2032

6-11-18 Prep of VOA3 Jun 11,18 X 7-6-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 56736 Danger 1 mL
Lot# A0130926
Expire: 09/2020 Store: 0°C or colder
Custom V # 3B Standard
12500 - 25000 µg/mL each in P&T Methanol/Water (90:10)
Full label information for the chemical is provided on the outside package.

And 1.0 mL of
6-11-18 ③ LLR 2032
~~May 7,18~~
ACR May 7,18

Lori Reilling 2032

③ LLR 2032 6-11-18
X
③ LLR 2032 6-11-18

6-11-18 Prep of 2CEVE ~~May~~ June 11,18 X 7-11-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-2 Danger 1 mL
Lot# A0126036
Expire: 03/2020 Store: 0°C or colder
Custom V # 1B 2-CEVE Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Reilling 2032

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18feb22I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jkh09052	BF22T01.D	50NGBFB	02/22/2018	10:34	B180151AA	
JKH09052	BF22X01.D	BLK	02/22/2018	10:55		
JKH09052	BF22I01.D	VSTD300	02/22/2018	11:18		
JKH09052	BF22I02.D	VSTD100	02/22/2018	11:42		
JKH09052	BF22I03.D	VSTD050	02/22/2018	12:06		
JKH09052	BF22I04.D	VSTD020	02/22/2018	12:31		
JKH09052	BF22I05.D	VSTD010	02/22/2018	12:57		
JKH09052	BF22I06.D	VSTD004	02/22/2018	13:29		
JKH09052	BF22M01.D	MDL001	02/22/2018	13:51		
JKH09052	BF22V01.D	LGBICV	02/22/2018	14:16		

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07536 **HP #14**

Data Directory Path is - d:\data\18may24I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
scn10072	QY24T10.D	50NGBFB	05/24/2018	10:35		
scn10072	QY24X10.D	CBLK	05/24/2018	10:59		
scn10072	QY24X11.D	CBLK	05/24/2018	11:28		
scn10072	QY24I10.D	VSTD004	05/24/2018	11:51		
scn10072	QY24I11.D	VSTD010	05/24/2018	12:14		
scn10072	QY24I12.D	VSTD020	05/24/2018	12:37		
scn10072	QY24I13.D	VSTD050	05/24/2018	13:00		
scn10072	QY24I14.D	VSTD100	05/24/2018	13:23		
scn10072	QY24I15.D	VSTD300	05/24/2018	13:46		
scn10072	QY24X12.D	CBLK	05/24/2018	14:09		
scn10072	QY24X13.D	CBLK	05/24/2018	14:32		
scn10072	QY24M10.D	MDL	05/24/2018	14:55		
scn10072	QY24V10.D	QBICV	05/24/2018	15:18		
scn10072	QY24X14.D	CBLK	05/24/2018	15:41		
scn10072	QY24I20.D	VSTD004	05/24/2018	16:03		
scn10072	QY24I21.D	VSTD010	05/24/2018	16:26		
scn10072	QY24I22.D	VSTD020	05/24/2018	16:49		
scn10072	QY24I23.D	VSTD050	05/24/2018	17:13		
scn10072	QY24I24.D	VSTD100	05/24/2018	17:36		
scn10072	QY24I25.D	VSTD300	05/24/2018	17:58		
scn10072	QY24X15.D	CBLK	05/24/2018	18:22		
scn10072	QY24M20.D	SMDL	05/24/2018	18:45		
scn10072	QY24V20.D	BSMICV	05/24/2018	19:07		

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Volatiles
Runlog for Hewlett Packard GC/MS System HP07566 **HP #15**

Data Directory Path is - D:\DATA\18MAY29i\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
scn10072	RY29T10.D	50NGBFB	05/29/2018	11:34	R152031AA	50
scn10072	RY29X10.D	CBLK	05/29/2018	11:57	R152031AA	50
scn10072	RY29I10.D	VSTD004	05/29/2018	12:21		50
scn10072	RY29I11.D	VSTD010	05/29/2018	12:45		50
scn10072	RY29I12.D	VSTD010	05/29/2018	13:09		50
scn10072	RY29I13.D	VSTD050	05/29/2018	13:35		50
scn10072	RY29I14.D	VSTD100	05/29/2018	13:59		50
scn10072	RY29I15.D	VSTD300	05/29/2018	14:23		50
scn10072	RY29X11.D	CBLK	05/29/2018	14:47	R152031AA	50
scn10072	RY29X12.D	CBLK	05/29/2018	15:12	R152031AA	50
scn10072	RY29M10.D	MDL001	05/29/2018	15:37		50
scn10072	RY29V10.D	RICV	05/29/2018	16:02		50
scn10072	RY29X13.D	CBLK	05/29/2018	16:27	R152031AA	50
scn10072	RY29I20.D	VSTD004	05/29/2018	16:51		50
scn10072	RY29I21.D	VSTD010	05/29/2018	17:16		50
scn10072	RY29I22.D	VSTD020	05/29/2018	17:41		50
scn10072	RY29I23.D	VSTD050	05/29/2018	18:06		50
scn10072	RY29I24.D	VSTD100	05/29/2018	18:30		50
scn10072	RY29I25.D	VSTD300	05/29/2018	18:55		50
scn10072	RY29X14.D	CBLK	05/29/2018	19:20	R152031AA	50
scn10072	RY29M20.D	SMDL	05/29/2018	19:44		50
scn10072	RY29V20.D	SMRICV	05/29/2018	20:09		50

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18jun12B\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
kd14068	BU12T10.D	50NGBFB	06/12/2018	19:08	B181633AA	
kd14068	BU12X1A.D	VBLKB07	06/12/2018	19:42	B181633AA	
kd14068	BU12C01.D	VSTD050	06/12/2018	20:05	B181633AA	
kd14068	BU12X11.D	VBLKB07	06/12/2018	20:28	B181633AA	
kd14068	BU12B10.D	VBLKB07	06/12/2018	20:51	B181633AA	
kd14068	BU12S61.D	LCSB07	06/12/2018	21:33	B181633AA	
kd14068	BU12S62.D	LCDB07	06/12/2018	21:56	B181633AA	
kd14068	BU12S64.D	9632085	06/12/2018	23:47	B181633AA	
kd14068	BU12S65.D	9632091	06/13/2018	00:09	B181633AA	
kd14068	BU12S66.D	9632093	06/13/2018	00:31	B181633AA	
kd14068	BU12S67.D	9632095	06/13/2018	00:54	B181633AA	
kd14068	BU12S68.D	9640166	06/13/2018	01:17	B181633AA	
kd14068	BU12S69.D	9640167	06/13/2018	01:39	B181633AA	
kd14068	BU12S70.D	9649656	06/13/2018	02:02	B181633AA	
kd14068	BU12S71.D	9653928	06/13/2018	02:24	B181633AA	
kd14068	BU12S72.D	9653931	06/13/2018	02:46	B181633AA	
kd14068	BU12S73.D	9653932	06/13/2018	03:09	B181633AA	
kd14068	BU12S74.D	9653941	06/13/2018	03:31	B181633AA	
kd14068	BU12S75.D	9653942	06/13/2018	03:54	B181633AA	
kd14068	BU12S76.D	9651105	06/13/2018	04:16	B181633AA	
kd14068	BU12S77.D	9651106	06/13/2018	04:39	B181633AA	
kd14068	BU12S78.D	9651108	06/13/2018	05:02	B181633AA	
kd14068	BU12S79.D	9651111	06/13/2018	05:24	B181633AA	
kd14068	BU12S80.D	9650447	06/13/2018	05:47	B181633AA	
kd14068	BU12S81.D	9653933	06/13/2018	06:10	B181633AA	
kd14068	BU12S82.D	9653935	06/13/2018	06:32	B181633AA	

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Volatiles
Runlog for Hewlett Packard GC/MS System HP07536 **HP #14**

Data Directory Path is - d:\data\18JUN14B\18jun17a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
scn10072	QU17T10.D	50NGBFB	06/17/2018	08:58	Q181681AA	
scn10072	QU17X10.D	VBLKQ12	06/17/2018	09:35	Q181681AA	
scn10072	QU17C10.D	VSTD050	06/17/2018	09:58	Q181681AA	
scn10072	QU17L10.D	LCSQ12	06/17/2018	10:24	Q181681AA	
scn10072	QU17L11.D	LCDQ12	06/17/2018	10:48	Q181681AA	
scn10072	QU17X11.D	VBLKQ12	06/17/2018	11:13	Q181681AA	
scn10072	QU17B10.D	VBLKQ12	06/17/2018	11:38	Q181681AA	
scn10072	QU17S33.D	9647224DL	06/17/2018	12:15	Q181682AA	500
scn10072	QU17EC1.D	SECC050	06/17/2018	12:38	Q181682AA	
scn10072	QU17X35.D	VBLKQ13	06/17/2018	13:01	Q181682AA	
scn10072	QU17S11.D	9660184	06/17/2018	13:24	Q181681AA	50
scn10072	QU17S12.D	9647491	06/17/2018	13:48	Q181681AA	50
scn10072	QU17S13.D	9647479	06/17/2018	14:10	Q181681AA	50
scn10072	QU17S14.D	9647485	06/17/2018	14:33	Q181681AA	50
scn10072	QU17S15.D	9647487	06/17/2018	14:56	Q181681AA	50
scn10072	QU17S16.D	9647481	06/17/2018	15:19	Q181681AA	50
scn10072	QU17S17.D	9647483	06/17/2018	15:41	Q181681AA	50
scn10072	QU17S18.D	9647489	06/17/2018	16:04	Q181681AA	50
scn10072	QU17S19.D	9653941DL	06/17/2018	16:27	Q181681AA	50
scn10072	QU17S20.D	9650182	06/17/2018	16:50	Q181681AA	50
scn10072	QU17S21.D	9650183	06/17/2018	17:13	Q181681AA	50
scn10072	QU17S22.D	9650184	06/17/2018	17:35	Q181681AA	50
scn10072	QU17S23.D	9650185	06/17/2018	17:58	Q181681AA	50
scn10072	QU17S24.D	9650186	06/17/2018	18:21	Q181681AA	50
scn10072	QU17S25.D	9650181	06/17/2018	18:44	Q181681AA	100

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Volatiles
Runlog for Hewlett Packard GC/MS System HP07566 **HP #15**

Data Directory Path is - d:\data\18jun18a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
scn10072	RU18T01.D	50NGBFB	06/18/2018	07:42	R181691AA	
scn10072	RU18X01.D	VBLKR92	06/18/2018	08:08	R181691AA	
scn10072	RU18C01.D	VSTD050	06/18/2018	08:32	R181691AA	
scn10072	RU18L01.D	LCSR92	06/18/2018	09:26	R181691AA	
scn10072	RU18L02.D	LCDR92	06/18/2018	09:51	R181691AA	
scn10072	RU18X02.D	VBLKR92	06/18/2018	10:16	R181691AA	
scn10072	RU18B01.D	VBLKR92	06/18/2018	10:58	R181691AA	
scn10072	RU18S02.D	9653939	06/18/2018	11:39	R181691AA	50
scn10072	RU18S03.D	9653940	06/18/2018	12:03	R181691AA	50
scn10072	RU18S04.D	9656568	06/18/2018	12:26	R181691AA	50
scn10072	RU18S05.D	9654945	06/18/2018	12:50	R181691AA	2500
scn10072	RU18S06.D	9650181DL	06/18/2018	13:15	R181691AA	1000
scn10072	RU18S07.D	9650186DL	06/18/2018	13:39	R181691AA	500
scn10072	RU18S08.D	9651601	06/18/2018	14:04	R181691AA	50
scn10072	RU18S09.D	9651606	06/18/2018	14:29	R181691AA	50
scn10072	RU18S10.D	9651608	06/18/2018	14:53	R181691AA	50
scn10072	RU18S11.D	9651609	06/18/2018	15:18	R181691AA	50
scn10072	RU18S12.D	9651612	06/18/2018	15:42	R181691AA	50
scn10072	RU18S13.D	9651614	06/18/2018	16:07	R181691AA	50
scn10072	RU18S14.D	9651616	06/18/2018	16:31	R181691AA	50
scn10072	RU18S15.D	9651607	06/18/2018	16:55	R181691AA	50
scn10072	RU18S16.D	9651607DL	06/18/2018	17:19	R181691AA	500
scn10072	RU18S17.D	9651611	06/18/2018	17:44	R181691AA	50
scn10072	RU18S18.D	9651611DL	06/18/2018	18:09	R181691AA	500
scn10072	RU18S19.D	9651610	06/18/2018	18:33	R181691AA	100
scn10072	RU18S20.D	9651610DL	06/18/2018	18:57	R181691AA	1000
scn10072	RU18X27.D	VBLKR92	06/18/2018	19:21	R181691AA	
scn10072	RU18X28.D	VBLKR92	06/18/2018	19:46	R181691AA	
scn10072	RU18X29.D	VBLKR92	06/18/2018	20:10	R181691AA	
scn10072	RU18X30.D	VBLKR92	06/18/2018	20:34	R181691AA	

Moisture Data

MOISTURE

SAMPLE NUMBERS:

Sample #	Sample Code
9653939	SS423
9653940	SS223
9653941	SS333
9653942	SS303

COMMENTS:

Method defined actions are taken for any failed matrix QC.

Laboratory Compliance Quality Control

Analysis Name		LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number:	18163820005B	Sample number(s):		9653939-9653942		
Moisture		100		99-101		

Sample Matrix Quality Control

Analysis Name		BKG Conc	DUP Conc	RPD	RPD Max
Batch number:	18163820005B	Sample number(s):		9653939-9653942	
Moisture		19.7	19.5	1	5

* - Outside of specification

(1) - The result for one or both determinations was less than five times the LOQ.

Moisture Data Report

Batch #: **18163820005**

Sample ID	Batch ID	Analysis#	Tare Wt	Sample Wt	Dry Wt	%Moisture	Analysis Date (Emp#)	Verified Date (Emp#)
9653939	B	00111	1.0934	5.4687	6.3799	3.33	6/12/18 (835/LEB)	6/13/18 (236/CW)
9653940	B	00111	1.0898	5.7084	6.5991	3.49	6/12/18 (835/LEB)	6/13/18 (236/CW)
9653941	B	00111	1.1082	5.4610	5.8294	13.55	6/12/18 (835/LEB)	6/13/18 (236/CW)
9653942	B	00111	1.1121	5.9364	6.7247	5.45	6/12/18 (835/LEB)	6/13/18 (236/CW)
P653834BKG	B	00111	1.0831	5.2686	5.3158	19.66	6/12/18 (835/LEB)	6/13/18 (236/CW)
P653834DUP	B	00111	1.1037	5.2680	5.3435	19.52	6/12/18 (835/LEB)	6/13/18 (236/CW)
LCS 89.5% Std.		00111	1.0995	5.0713	1.6370	89.40	6/12/18 (835/LEB)	6/13/18 (236/CW)

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Type I (No Raw Data) Data Package

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Project: Dow Hanging Rock, OH
Groundwater and Water Samples
Collected on 06/09/18

SDG# DHR40

GROUP	SAMPLE NUMBERS
1953867	9654049-9654052

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date:** **07/02/2018**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Natalie Luciano at (717) 556-7258.

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Sample Reference List for SDG Number DHR40 with a Data Package Type of I-NODATA

11372 - CH2M Hill, Inc.

Project: Dow Hanging Rock, OH

Lab Sample Number	Client Sample ID	Collection Date	Date Received
9654049	S01-MW08-2636-060918	06/09/2018 11:05	06/12/2018 10:05
9654050	S01-MW08-2636-060918MS	06/09/2018 11:05	06/12/2018 10:05
9654051	S01-MW08-2636-060918MSD	06/09/2018 11:05	06/12/2018 10:05
9654052	060918TB	06/09/2018 11:10	06/12/2018 10:05

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Sample pH Log

SDG: DHR40

LLI Sample Number	Bottle Code	Actual pH	Exp. pH	*pH Check Code	Adj. pH	Adjusted Date	Adjusted Time	Preservative Added	Preservative Lot #	LLI Supplied Bottle?	Sulfide Present?	Corrective Substance	CS Lot #	**Chlorine Present?	Corrective Substance	CS Lot #	Record Date	Employee
9654049	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/15/2018 10:28:30AM	9052
9654049	038B	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/15/2018 10:28:30AM	9052
9654050	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/15/2018 10:28:30AM	9052
9654051	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/15/2018 10:28:30AM	9052
9654052	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/15/2018 10:28:30AM	9052

*pH Check Code Key
PK = Original container checked - pH is within the correct range. (No preservative was added)
PA = Original container checked - pH adjusted to correct range. (Preservative was added)
PV = Volatile container checked
PC = pH checked (unpreserved container)
SPK = Subsampled from an original container. Original container checked - pH is within correct range
SPA = Subsampled from an original container. Subsample container checked - pH adjusted to correct range.
SPC = Subsampled from an original container. pH checked (unpreserved container).
SUP = Subsampled from original container. Unable to be preserved due to the matrix of the sample.
UP = Unable to preserve due to matrix of the sample.
NA = Not applicable

**Chlorine Present Code Key
NA = Chlorine Not Checked
Y = Chlorine Present
N = Chlorine Not Present

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01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030B, December 1996.

02898 VOCs- 25ml Water by 8260B

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996.

Analysis Reports / Field Chain of Custody

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ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Report Date: June 19, 2018 10:48

Project: Dow Hanging Rock, OH

Account #: 11372
Group Number: 1953867
SDG: DHR40
PO Number: 131005094
Release Number: DHR40
State of Sample Origin: OH

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ . To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To	CH2M Hill, Inc.	Attn: Marie Chiller
Electronic Copy To	CH2M Hill, Inc.	Attn: Shane Lowe

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

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SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
S01-MW08-2636-060918 Grab Groundwater	06/09/2018 11:05	9654049
S01-MW08-2636-060918MS Grab Groundwater	06/09/2018 11:05	9654050
S01-MW08-2636-060918MSD Grab Groundwater	06/09/2018 11:05	9654051
060918TB Water	06/09/2018 11:10	9654052

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: **S01-MW08-2636-060918 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/09/2018 11:05
SDG#: DHR40-01BKG

CH2M Hill, Inc.
ELLE Sample #: WW 9654049
ELLE Group #: 1953867
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	0.5	U	0.5	0.1	1
02898	cis-1,2-Dichloroethene	156-59-2	1.9		0.5	0.1	1
02898	trans-1,2-Dichloroethene	156-60-5	0.5	U	0.5	0.1	1
02898	Tetrachloroethene	127-18-4	66	E	0.5	0.1	1
02898	Trichloroethene	79-01-6	5.8		0.5	0.1	1
02898	Vinyl Chloride	75-01-4	0.5	U	0.5	0.1	1
Trial ID: DL							
02898	1,1-Dichloroethene	75-35-4	10	U	10	2.0	20
02898	cis-1,2-Dichloroethene	156-59-2	10	U	10	2.0	20
02898	trans-1,2-Dichloroethene	156-60-5	10	U	10	2.0	20
02898	Tetrachloroethene	127-18-4	51		10	2.0	20
02898	Trichloroethene	79-01-6	4.6	J	10	2.0	20
02898	Vinyl Chloride	75-01-4	10	U	10	2.0	20

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181651AA	06/14/2018 13:04	Jennifer K Howe	1
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	2-DL	I181651AA	06/14/2018 14:07	Jennifer K Howe	20
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181651AA	06/14/2018 13:04	Jennifer K Howe	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	I181651AA	06/14/2018 14:07	Jennifer K Howe	20

*=This limit was used in the evaluation of the final result

Sample Description: **S01-MW08-2636-060918MS Grab Groundwater Dow Hanging Rock, OH**

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/09/2018 11:05
SDG#: DHR40-01MS

CH2M Hill, Inc.
ELLE Sample #: WW 9654050
ELLE Group #: 1953867
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	6.2		0.5	0.1	1
02898	cis-1,2-Dichloroethene	156-59-2	7.9		0.5	0.1	1
02898	trans-1,2-Dichloroethene	156-60-5	5.9		0.5	0.1	1
02898	Tetrachloroethene	127-18-4	62	E	0.5	0.1	1
02898	Trichloroethene	79-01-6	11		0.5	0.1	1
02898	Vinyl Chloride	75-01-4	6.7		0.5	0.1	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181651AA	06/14/2018 13:25	Jennifer K Howe	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181651AA	06/14/2018 13:25	Jennifer K Howe	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-MW08-2636-060918MSD Grab Groundwater Dow Hanging Rock, OH**

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/09/2018 11:05
SDG#: DHR40-01MSD

CH2M Hill, Inc.
ELLE Sample #: WW 9654051
ELLE Group #: 1953867
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	6.2		0.5	0.1	1
02898	cis-1,2-Dichloroethene	156-59-2	7.9		0.5	0.1	1
02898	trans-1,2-Dichloroethene	156-60-5	5.9		0.5	0.1	1
02898	Tetrachloroethene	127-18-4	72	E	0.5	0.1	1
02898	Trichloroethene	79-01-6	12		0.5	0.1	1
02898	Vinyl Chloride	75-01-4	6.9		0.5	0.1	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181651AA	06/14/2018 13:46	Jennifer K Howe	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181651AA	06/14/2018 13:46	Jennifer K Howe	1

*=This limit was used in the evaluation of the final result

Sample Description: **060918TB Water**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/12/2018 10:05
Collection Date/Time: 06/09/2018 11:10
SDG#: DHR40-02TB

CH2M Hill, Inc.
ELLE Sample #: WW 9654052
ELLE Group #: 1953867
Matrix: Water

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	0.5	U	0.5	0.1	1
02898	cis-1,2-Dichloroethene	156-59-2	0.5	U	0.5	0.1	1
02898	trans-1,2-Dichloroethene	156-60-5	0.5	U	0.5	0.1	1
02898	Tetrachloroethene	127-18-4	0.5	U	0.5	0.1	1
02898	Trichloroethene	79-01-6	0.5	U	0.5	0.1	1
02898	Vinyl Chloride	75-01-4	0.5	U	0.5	0.1	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181651AA	06/14/2018 12:42	Jennifer K Howe	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181651AA	06/14/2018 12:42	Jennifer K Howe	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/19/2018 10:48

Group Number: 1953867

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	LOQ**	MDL
	ug/l	ug/l	ug/l
Batch number: I181651AA	Sample number(s): 9654049-9654052		
1,1-Dichloroethene	0.5 U	0.5	0.1
cis-1,2-Dichloroethene	0.5 U	0.5	0.1
trans-1,2-Dichloroethene	0.5 U	0.5	0.1
Tetrachloroethene	0.5 U	0.5	0.1
Trichloroethene	0.5 U	0.5	0.1
Vinyl Chloride	0.5 U	0.5	0.1

LCS/LCSD

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: I181651AA	Sample number(s): 9654049-9654052								
1,1-Dichloroethene	5.00	5.58	5.00	5.17	112	103	80-124	8	30
cis-1,2-Dichloroethene	5.00	5.56	5.00	5.22	111	104	80-120	6	30
trans-1,2-Dichloroethene	5.00	5.47	5.00	5.06	109	101	80-120	8	30
Tetrachloroethene	5.00	5.33	5.00	4.99	107	100	80-120	7	30
Trichloroethene	5.00	5.58	5.00	5.21	112	104	80-120	7	30
Vinyl Chloride	5.00	5.88	5.00	5.53	118	111	56-120	6	30

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: I181651AA	Sample number(s): 9654049-9654052 UNSPK: 9654049									
1,1-Dichloroethene	0.5 U	5.00	6.19	5.00	6.19	124	124	80-124	0	30
cis-1,2-Dichloroethene	1.87	5.00	7.90	5.00	7.87	121*	120	80-120	0	30
trans-1,2-Dichloroethene	0.5 U	5.00	5.87	5.00	5.87	117	117	80-120	0	30
Tetrachloroethene	66.07	5.00	62.42	5.00	72.42	-72 (2)	127 (2)	80-120	15	30
Trichloroethene	5.83	5.00	11.39	5.00	11.88	111	121*	80-120	4	30

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/19/2018 10:48

Group Number: 1953867

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Vinyl Chloride	0.5 U	5.00	6.73	5.00	6.87	135*	137*	56-120	2	30

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- 25ml Water by 8260B
Batch number: I181651AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9654049	111	107	97	96
9654049DL	108	106	95	96
9654050	104	99	98	102
9654051	104	100	98	103
9654052	110	108	95	97
Blank	105	103	97	99
LCS	101	99	98	102
LCSD	101	101	99	102
MS	104	99	98	102
MSD	104	100	98	103
Limits:	80-120	80-120	80-120	80-120

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody

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Acct. # 11372 Group # 1953867 Sample # 9654049-52

COC # 563181

Client Information

Client: Dow C/o Jacobs

Acct. #:

Project Name/#: Dow Hanging Rock RFI

PWSID #:

Project Manager: Chillis / Shane Lowe

P.O. #:

Sampler: Jim Mallis

Quote #:

State where samples were collected: OH

For Compliance: Yes ☐ No ☒

Matrix

Soil ☐ Sediment ☐ Tissue ☐ | Water ☒ Potable ☐ Ground ☐ NPDES ☐ Surface ☐ | Other: ____

Total # of Containers

Analysis Requested

Preservation and Filtration Codes

VOCs in Water

For Lab Use Only

FSC:

SCR#: 226017

Preservation Codes

H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Remarks

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	Remarks
SOI-MW8-2636-060918	6/9/18	1125	X		9	MS/MSD
060918TB	6/9/18	1110	X		2	

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: _____

E-mail address: _____

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)

Type III (Reduced non-CLP) NJ DKQP TX TRRP-13

NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
	6/11/18	0900			
				6-12-18	1005

EDD Required? Yes No

If yes, format: _____

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:

UPS _____ FedEx ☒ Other _____

Temperature upon receipt 5.5 °C

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Sample Administration Receipt Documentation Log

Doc Log ID: 218858

Group Number(s): 1953867

Client: DOW c/o JACOBS

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	06/12/2018 10:05
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OH		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	Yes
Samples Chilled:	Yes	VOA IDs (≥ 6mm):	See Below
Paperwork Enclosed:	Yes	Total Trip Blank Qty:	2
Samples Intact:	Yes	Trip Blank Type:	HCl
Missing Samples:	No	Air Quality Samples Present:	No
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

VOA Vial IDs (Headspace ≥ 6mm): (2) TRIP BLANK

Unpacked by Suegeily Mendez (14 058) at 11:18 on 06/12/2018

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	32170023	5.5	IR	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17601-2465
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mg**	milligram(s)
C	degrees Celsius	**mL**	milliliter(s)
cfu	colony forming units	**MPN**	Most Probable Number
CP Units	cobalt-chloroplatinate units	**N.D.**	non-detect
F	degrees Fahrenheit	**ng**	nanogram(s)
g	gram(s)	**NTU**	nephelometric turbidity units
IU	International Units	**pg/L**	picogram/liter
kg	kilogram(s)	**RL**	Reporting Limit
L	liter(s)	**TNTC**	Too Numerous To Count
lb.	pound(s)	**µg**	microgram(s)
m3	cubic meter(s)	**µL**	microliter(s)
meq	milliequivalents	**umhos/cm**	micromhos/cm

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Volatiles by GC/MS Data

Case Narrative/Conformance Summary

Volatiles by GC/MS

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR40

GC/MS Volatiles

Fraction: Volatiles by GC/MS

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
9654049	S01-MW08-2636-060918	X		20; 1	Unspiked
9654050	S01-MW08-2636-060918MS	X		1	Matrix Spike
9654051	S01-MW08-2636-060918MSD	X		1	Matrix Spike Duplicate
9654052	060918TB	X		1	Trip Blank

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

MS/MSD

Batch#: I181651AA (Sample number(s): 9654049-9654052, UNSPK: 9654049)
The recovery(ies) for the following analyte(s) in the MS were below the acceptance window: Tetrachloroethene
The recovery(ies) for the following analyte(s) in the MS exceeded the acceptance window indicating a positive bias: cis-1,2-Dichloroethene
The recovery(ies) for the following analyte(s) in the MSD exceeded the acceptance window indicating a positive bias:Tetrachloroethene, Trichloroethene
The recovery(ies) for the following analyte(s) in the MS and MSD exceeded the acceptance window indicating a positive bias: Vinyl Chloride

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR40

GC/MS Volatiles

Fraction: Volatiles by GC/MS

SAMPLE ANALYSIS:

No problems were encountered with the analysis of the samples.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Volatiles by GC/MS

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Quality Control Reference List
GC/MS Volatiles

CLIENT: CH2M Hill, Inc.
SDG: DHR40

Fraction: Volatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
VOCs- 25ml Water by 8260B	I181651AA	VBLKI21	06/14/2018 11:37
		LCSI21	06/14/2018 10:33
		LCDI21	06/14/2018 10:54
		9654049 UNSPK	06/14/2018 13:04
		9654049DL UNSPK	06/14/2018 14:07
		9654050 MS	06/14/2018 13:25
		9654051 MSD	06/14/2018 13:46
		9654052	06/14/2018 12:42

Quality Control Summary
Method Blank
GC/MS Volatiles
SDG: DHR40
Matrix: LIQUID

Fraction: Volatiles by GC/MS

I181651AA / VBLKI21 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/14/18	N.D.	ug/l	0.1	0.5
1,1-Dichloroethene	06/14/18	N.D.	ug/l	0.1	0.5
trans-1,2-Dichloroethene	06/14/18	N.D.	ug/l	0.1	0.5
cis-1,2-Dichloroethene	06/14/18	N.D.	ug/l	0.1	0.5
Trichloroethene	06/14/18	N.D.	ug/l	0.1	0.5
Tetrachloroethene	06/14/18	N.D.	ug/l	0.1	0.5

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DHR40
Matrix: LIQUID

Fraction: Volatiles by GC/MS

I181651AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	10 ug/l	Spike Added	10 ug/l	Spike Added	10 ug/l	Spike Added	10 ug/l
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKI21	103	80 - 120	99	80 - 120	105	80 - 120	97	80 - 120
LCSI21	99	80 - 120	102	80 - 120	101	80 - 120	98	80 - 120
LCDI21	101	80 - 120	102	80 - 120	101	80 - 120	99	80 - 120
9654049 UNSPK	107	80 - 120	96	80 - 120	111	80 - 120	97	80 - 120
9654049DL UNSPK	106	80 - 120	96	80 - 120	108	80 - 120	95	80 - 120
9654050 MS	99	80 - 120	102	80 - 120	104	80 - 120	98	80 - 120
9654051 MSD	100	80 - 120	103	80 - 120	104	80 - 120	98	80 - 120
9654052	108	80 - 120	97	80 - 120	110	80 - 120	95	80 - 120

GC/MS Volatiles

Fraction: Volatiles by GC/MS

UNSPK: 9654049 MS: 9654050 MSD: 9654051 **Analyte**	Batch: **I181651AA** (Sample number(s): 9654049-9654052)								
	Spike Added ug/l	**Unspiked Conc ug/l**	**MS Conc ug/l**	**MSD Conc ug/l**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	5.00	N.D.	6.73	6.87	135 *	137 *	56-120	2	30
1,1-Dichloroethene	5.00	N.D.	6.19	6.19	124	124	80-124	0	30
trans-1,2-Dichloroethene	5.00	N.D.	5.87	5.87	117	117	80-120	0	30
cis-1,2-Dichloroethene	5.00	1.87	7.90	7.87	121 *	120	80-120	0	30
Trichloroethene	5.00	5.83	11.39	11.88	111	121 *	80-120	4	30
Tetrachloroethene	5.00	66.07	62.42	72.42	-72 (2)	127 (2)	80-120	15	30

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DHR40
Matrix: LIQUID

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSI21 LCSD: LCDI21 **Analyte**	Batch: **I181651AA** (Sample number(s): 9654049-9654052)							
	Spike Added ug/l	**LCS Conc ug/l**	**LCSD Conc ug/l**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	5.00	5.88	5.53	118	111	56-120	6	30
1,1-Dichloroethene	5.00	5.58	5.17	112	103	80-124	8	30
trans-1,2-Dichloroethene	5.00	5.47	5.06	109	101	80-120	8	30
cis-1,2-Dichloroethene	5.00	5.56	5.22	111	104	80-120	6	30
Trichloroethene	5.00	5.58	5.21	112	104	80-120	7	30
Tetrachloroethene	5.00	5.33	4.99	107	100	80-120	7	30

Fraction: Volatiles by GC/MS

02898: VOCs- 25ml Water by 8260B Analyte Name	Default MDL	Default LOQ	Units
Vinyl Chloride	0.1	0.5	ug/l
1,1-Dichloroethene	0.1	0.5	ug/l
trans-1,2-Dichloroethene	0.1	0.5	ug/l
cis-1,2-Dichloroethene	0.1	0.5	ug/l
Trichloroethene	0.1	0.5	ug/l
Tetrachloroethene	0.1	0.5	ug/l

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: iu04t01.d BFB Injection Date: 06/04/18

Instrument ID: HP19930 BFB Injection Time: 10:45

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.70
75	30.0 - 60.0% of mass 95	47.38
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.64
173	Less than 2.0% of mass 174	0.67 (0.78)1
174	Greater than 50.0% of mass 95	85.68
175	5.0 - 9.0% of mass 174	6.26 (7.30)1
176	Greater than 95.0%, but less than 101.0% of mass 174	82.01 (95.71)1
177	5.0 - 9.0% of mass 176	5.59 (6.81)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD25	iu04i01.d	06/04/18	12:33
02	VSTD10	iu04i02.d	06/04/18	12:54
03	VSTD5	iu04i03.d	06/04/18	13:15
04	VSTD2	iu04i04.d	06/04/18	13:36
05	VSTD1	iu04i05.d	06/04/18	13:57
06	VSTD.5	iu04i06.d	06/04/18	14:19
07	VSTD.2	iu04i07.d	06/04/18	14:40
08	MDL0.1 - MDL0.1	iu04m01.d	06/04/18	15:02
09	LCSILG	iu04v01.d	06/04/18	15:23

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: iu14t02.d BFB Injection Date: 06/14/18

Instrument ID: HP19930 BFB Injection Time: 09:36

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.12
75	30.0 - 60.0% of mass 95	49.32
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.61
173	Less than 2.0% of mass 174	0.58 (0.72)1
174	Greater than 50.0% of mass 95	80.50
175	5.0 - 9.0% of mass 174	6.04 (7.51)1
176	Greater than 95.0%, but less than 101.0% of mass 174	77.07 (95.75)1
177	5.0 - 9.0% of mass 176	4.77 (6.19)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD10	iu14c02.d	06/14/18	10:11
02	LCSI21	iu14l01.d	06/14/18	10:33
03	LCDI21	iu14l02.d	06/14/18	10:54
04	VBLKI21	iu14b01.d	06/14/18	11:37
05	9651576	iu14s02.d	06/14/18	12:00
06	9651587	iu14s03.d	06/14/18	12:21
07	9654052	iu14s04.d	06/14/18	12:42
08	9654049	iu14s05.d	06/14/18	13:04
09	9654050MS	iu14s06.d	06/14/18	13:25
10	9654051MSD	iu14s07.d	06/14/18	13:46
11	9654049DL	iu14s08.d	06/14/18	14:07
12	9656466	iu14s09.d	06/14/18	14:28
13	9656500	iu14s10.d	06/14/18	14:50
14	9656535	iu14s11.d	06/14/18	15:11
15	9656563	iu14s12.d	06/14/18	15:32
16	9656576	iu14s13.d	06/14/18	15:54
17	9656589	iu14s14.d	06/14/18	16:15
18	9653936	iu14s15.d	06/14/18	16:36
19	9651572	iu14s18.d	06/14/18	17:40
20	9651572DL	iu14s19.d	06/14/18	18:01
21	9651573	iu14s20.d	06/14/18	18:22
22	9651573DL	iu14s21.d	06/14/18	18:43

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: iu14t02.d BFB Injection Date: 06/14/18

Instrument ID: HP19930 BFB Injection Time: 09:36

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.12
75	30.0 - 60.0% of mass 95	49.32
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.61
173	Less than 2.0% of mass 174	0.58 (0.72)1
174	Greater than 50.0% of mass 95	80.50
175	5.0 - 9.0% of mass 174	6.04 (7.51)1
176	Greater than 95.0%, but less than 101.0% of mass 174	77.07 (95.75)1
177	5.0 - 9.0% of mass 176	4.77 (6.19)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9651574	iu14s22.d	06/14/18	19:05
24	9651574DL	iu14s23.d	06/14/18	19:27
25	9651575	iu14s24.d	06/14/18	19:48
26	9651575DL	iu14s25.d	06/14/18	20:09
27	9654171	iu14s26.d	06/14/18	20:30

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date(s): 06/04/18 06/04/18

Heated Purge: (Y/N) Y Calibration Times: 12:33 14:40

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF0.2= iu04i07.d RRF0.5= iu04i06.d RRF 1 = iu04i05.d
RRF 2 = iu04i04.d RRF 5 = iu04i03.d RRF 10= iu04i02.d RRF 25= iu04i01.d

COMPOUND	RRF0.2	RRF0.5	RRF 1	RRF 2	RRF 5	RRF 10	RRF 25	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane	0.3727	0.3897	0.4372	0.4212	0.4078	0.4278	0.4540	0.4158	7	AVG	
Chloromethane	#0.3625	0.3489	0.3457	0.3309	0.3158	0.3189	0.3174	0.3343	5	AVG	#
Vinyl Chloride	*0.3833	0.3695	0.3802	0.3669	0.3476	0.3434	0.3492	0.3629	4	AVG	*
1,3-Butadiene	0.2381	0.2322	0.2626	0.2544	0.2481	0.2450	0.2508	0.2473	4	AVG	
Bromomethane	0.3242	0.3150	0.2979	0.2832	0.2654	0.2609	0.2545	0.2859	10	AVG	
Chloroethane	0.2554	0.2480	0.2392	0.2331	0.2177	0.2183	0.1989	0.2301	9	AVG	
Dichlorofluoromethane	0.6348	0.6332	0.6278	0.6147	0.5653	0.5691	0.5629	0.6011	6	AVG	
Trichlorofluoromethane	0.5183	0.5211	0.5737	0.5514	0.5272	0.5480	0.5639	0.5434	4	AVG	
Ethyl ether	0.2174	0.2275	0.2381	0.2379	0.2262	0.2235	0.2215	0.2274	3	AVG	
Freon 123a	0.3377	0.3374	0.3642	0.3633	0.3508	0.3445	0.3371	0.3478	3	AVG	
Acrolein	2.5707	2.5496	2.7803	2.3861	2.7178	2.3449	2.5201	2.5528	6	AVG	
1,1-Dichloroethene	*0.2540	0.2503	0.2718	0.2653	0.2585	0.2584	0.2574	0.2594	3	AVG	*
Freon 113	0.2556	0.2583	0.3122	0.3145	0.3044	0.3047	0.3064	0.2937	9	AVG	
Acetone	4.1991	3.3796	3.3785	3.1160	2.9253	2.8895	2.9709	3.2656	14	AVG	
Methyl Iodide	0.4806	0.4818	0.4974	0.5064	0.5005	0.5104	0.5086	0.4979	2	AVG	
Bromoethane	0.2014	0.2221	0.2351	0.2303	0.2214	0.2227	0.2251	0.2226	5	AVG	
Carbon Disulfide	0.7237	0.7350	0.7577	0.7659	0.7518	0.7616	0.7625	0.7512	2	AVG	
Allyl Chloride	0.3981	0.4269	0.4603	0.4469	0.4439	0.4564	0.4648	0.4425	5	AVG	
Methyl Acetate		0.0985	0.1063	0.1018	0.1070	0.1160	0.1186	0.1080	7	AVG	
Methylene Chloride	0.3371	0.2988	0.2984	0.3038	0.2884	0.2893	0.2855	0.3002	6	AVG	
t-Butyl Alcohol	1.2586	1.1274	1.1405	1.2589	1.0792	1.2246	1.1125	1.1717	6	AVG	
Acrylonitrile	3.5919	3.8517	4.1968	3.8625	4.2914	3.9867	4.4211	4.0289	7	AVG	
trans-1,2-Dichloroethene	0.2850	0.2863	0.2935	0.2992	0.2929	0.2919	0.2915	0.2915	2	AVG	
Methyl Tertiary Butyl Ether	0.5603	0.5746	0.6182	0.6781	0.6799	0.7061	0.6858	0.6433	9	AVG	
n-Hexane	0.2679	0.2988	0.4052	0.4415	0.4624	0.4702	0.4820	0.4040	21	2NDDEG	
1,1-Dichloroethane	#0.5319	0.5281	0.5357	0.5491	0.5380	0.5449	0.5388	0.5380	1	AVG	#
di-Isopropyl Ether	0.6819	0.7302	0.8208	0.8929	0.9071	0.9237	0.9029	0.8371	11	AVG	
2-Chloro-1,3-Butadiene	0.3090	0.3537	0.4132	0.4397	0.4510	0.4621	0.4756	0.4149	15	AVG	
Ethyl t-butyl ether	0.5857	0.6187	0.7038	0.7731	0.7984	0.8360	0.8220	0.7339	14	AVG	
cis-1,2-Dichloroethene	0.3039	0.3104	0.3212	0.3353	0.3319	0.3340	0.3267	0.3234	4	AVG	
2,2-Dichloropropane	0.3843	0.3856	0.4181	0.4258	0.4200	0.4278	0.4301	0.4131	5	AVG	
2-Butanone	4.4992	4.8736	5.6359	5.0670	5.7323	5.2532	5.7780	5.2628	9	AVG	
Propionitrile	1.2894	1.3150	1.5145	1.4825	1.4983	1.3992	1.4897	1.4269	7	AVG	
Methacrylonitrile	4.2770	4.8841	5.9198	4.9785	6.0295	5.2263	5.9541	5.3242	13	AVG	
Bromochloromethane	0.1406	0.1395	0.1530	0.1502	0.1434	0.1466	0.1462	0.1456	3	AVG	
Tetrahydrofuran		1.5246	1.7433	1.5127	1.7925	1.5535	1.7588	1.6476	8	AVG	
Chloroform	*0.5281	0.5134	0.5302	0.5424	0.5283	0.5322	0.5325	0.5296	2	AVG	*
1,1,1-Trichloroethane	0.4495	0.4434	0.4664	0.4778	0.4658	0.4781	0.4856	0.4667	3	AVG	
Cyclohexane	0.3601	0.3993	0.5110	0.5417	0.5513	0.5582	0.5605	0.4974	17	2NDDEG	
Cyclohexane(2)	0.3076	0.3428	0.4355	0.4684	0.4752	0.4758	0.4802	0.4265	17	2NDDEG	
Cyclohexane(3)	0.1029	0.1215	0.1524	0.1656	0.1712	0.1708	0.1734	0.1511	19	2NDDEG	
1,1-Dichloropropene	0.3409	0.3675	0.4098	0.4244	0.4206	0.4262	0.4276	0.4024	9	AVG	
Carbon Tetrachloride	0.3898	0.3795	0.4180	0.4227	0.4195	0.4293	0.4395	0.4140	5	AVG	
Isobutyl Alcohol	0.4196	0.3831	0.4123	0.4165	0.4010	0.4093	0.3918	0.4048	3	AVG	
Benzene	1.2188	1.2256	1.2473	1.2819	1.2514	1.2460	1.2238	1.2421	2	AVG	
1,2-Dichloroethane	0.3553	0.3245	0.3351	0.3352	0.3199	0.3260	0.3284	0.3320	4	AVG	
1,2-Dichloroethane(2)	0.0296	0.0300	0.0315	0.0323	0.0318	0.0319	0.0322	0.0313	3	AVG	
t-Amyl methyl ether	0.5372	0.5597	0.6431	0.7055	0.7219	0.7566	0.7424	0.6666	13	AVG	
n-Heptane	0.3788	0.3658	0.4666	0.4711	0.4765	0.4794	0.4869	0.4464	11	AVG	
n-Butanol	0.2160	0.2344	0.2716	0.3187	0.3492	0.3540	0.3551	0.2998	20	1STDEG	
Trichloroethene	0.2934	0.2995	0.3225	0.3313	0.3294	0.3346	0.3351	0.3208	5	AVG	
Methylcyclohexane	0.3123	0.4213	0.5433	0.5786	0.5684	0.5989	0.6085	0.5188	21	2NDDEG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date(s): 06/04/18 06/04/18

Heated Purge: (Y/N) Y Calibration Times: 12:33 14:40

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF0.2= iu04i07.d RRF0.5= iu04i06.d RRF 1 = iu04i05.d
RRF 2 = iu04i04.d RRF 5 = iu04i03.d RRF 10= iu04i02.d RRF 25= iu04i01.d

COMPOUND	RRF0.2	RRF0.5	RRF 1	RRF 2	RRF 5	RRF 10	RRF 25	RRF	% RSD	CAL. METHOD
1,2-Dichloropropane	*0.2767	0.2924	0.3045	0.3164	0.3079	0.3070	0.2969	0.3003	4	AVG *
Methyl Methacrylate	6.1886	8.1431	10.131	8.8774	11.745	10.190	12.255	9.6472	22	2NDDEG
Dibromomethane	0.1306	0.1316	0.1425	0.1471	0.1408	0.1463	0.1465	0.1408	5	AVG
1,4-Dioxane		0.0604	0.0732	0.0794	0.0844	0.0763		0.0747	12	AVG
Bromodichloromethane	0.3273	0.3232	0.3465	0.3686	0.3710	0.3847	0.3983	0.3600	8	AVG
2-Nitropropane	2.6227	2.6819	3.1055	2.6425	3.2583	2.9524	3.5061	2.9671	12	AVG
1-Bromo-2-chloroethane	0.2753	0.2871	0.3179	0.3182	0.3077	0.3234	0.3240	0.3076	6	AVG
cis-1,3-Dichloropropene	0.3215	0.3465	0.3914	0.4287	0.4497	0.4730	0.4822	0.4133	15	AVG
4-Methyl-2-Pentanone	0.1307	0.1427	0.1663	0.1944	0.1854	0.1959	0.1773	0.1704	15	AVG
Toluene	*0.9803	0.9867	1.0227	1.0477	1.0382	1.0321	1.0156	1.0176	3	AVG *
trans-1,3-Dichloropropene	0.3733	0.3792	0.4094	0.4548	0.4693	0.4990	0.5143	0.4427	13	AVG
Ethyl Methacrylate		0.2601	0.3005	0.3592	0.3878	0.4223	0.4282	0.3597	19	2NDDEG
1,1,2-Trichloroethane	0.2678	0.2717	0.2842	0.2903	0.2821	0.2865	0.2834	0.2808	3	AVG
Tetrachloroethene	0.4515	0.4666	0.4948	0.5036	0.4964	0.5011	0.5043	0.4883	4	AVG
1,3-Dichloropropane	0.4271	0.4307	0.4633	0.4922	0.4839	0.4873	0.4807	0.4665	6	AVG
2-Hexanone	0.1297	0.1381	0.1574	0.1788	0.1711	0.1787	0.1625	0.1595	12	AVG
Dibromochloromethane	0.2775	0.2916	0.3115	0.3367	0.3404	0.3579	0.3691	0.3264	10	AVG
1,2-Dibromoethane	0.2322	0.2349	0.2520	0.2712	0.2645	0.2722	0.2743	0.2573	7	AVG
1-Chlorohexane	0.5039	0.4866	0.5274	0.5524	0.5627	0.5773	0.5777	0.5411	7	AVG
Chlorobenzene	#1.1431	1.1243	1.1671	1.1850	1.1399	1.1469	1.1076	1.1449	2	AVG #
1,1,1,2-Tetrachloroethane	0.3734	0.3539	0.3774	0.3971	0.3946	0.4017	0.3973	0.3850	5	AVG
Ethylbenzene	*1.6509	1.7308	1.8931	1.9807	1.9819	1.9746	1.8671	1.8684	7	AVG *
m+p-Xylene	0.6197	0.6930	0.7548	0.8002	0.7914	0.7923	0.7618	0.7448	9	AVG
o-Xylene	0.5549	0.6157	0.7013	0.7613	0.7723	0.7907	0.7771	0.7105	13	AVG
Styrene	0.7575	0.9121	1.0686	1.1889	1.2257	1.2442	1.2161	1.0876	17	1STDEG
Bromoform	#0.1490	0.1573	0.1686	0.1907	0.1970	0.2178	0.2281	0.1869	16	2NDDEG #
Isopropylbenzene	1.3330	1.5622	1.8154	1.9913	2.0450	2.0732	1.9218	1.8203	15	2NDDEG
1,1,2,2-Tetrachloroethane	#0.6129	0.5886	0.6114	0.6454	0.6346	0.6625	0.6284	0.6263	4	AVG #
Bromobenzene	0.7926	0.7836	0.8509	0.8771	0.8873	0.8905	0.8846	0.8524	5	AVG
trans-1,4-Dichloro-2-butene		4.0502	4.9137	4.2384	5.3103	4.4278	4.9866	4.6545	11	AVG
1,2,3-Trichloropropane	0.1653	0.1596	0.1680	0.1796	0.1709	0.1747	0.1679	0.1694	4	AVG
n-Propylbenzene	3.3586	3.7210	4.0868	4.3079	4.3454	4.2865	3.5984	3.9578	10	AVG
2-Chlorotoluene	0.7105	0.7568	0.8163	0.8441	0.8666	0.8669	0.8547	0.8165	7	AVG
1,3,5-Trimethylbenzene	2.1710	2.4977	2.8001	3.0278	3.1006	3.1180	2.9636	2.8112	13	AVG
4-Chlorotoluene	0.7073	0.7855	0.8309	0.8817	0.8836	0.8819	0.8715	0.8346	8	AVG
tert-Butylbenzene	0.4231	0.4899	0.5897	0.6325	0.6585	0.6765	0.6819	0.5932	17	2NDDEG
Pentachloroethane	0.4305	0.4644	0.5355	0.5299	0.5391	0.5695	0.5793	0.5212	10	AVG
1,2,4-Trimethylbenzene	1.9849	2.4221	2.7709	3.0735	3.1105	3.1058	2.9185	2.7694	15	AVG
sec-Butylbenzene	2.6732	3.1164	3.5992	3.9000	4.0644	4.0702	3.4826	3.5580	15	AVG
1,3-Dichlorobenzene	1.4802	1.5511	1.6642	1.7536	1.7777	1.7745	1.7425	1.6777	7	AVG
p-Isopropyltoluene	2.0081	2.5204	2.9966	3.2958	3.4111	3.4747	3.1390	2.9780	18	2NDDEG
1,4-Dichlorobenzene	1.7700	1.6729	1.7342	1.7721	1.7598	1.7674	1.7175	1.7420	2	AVG
1,2,3-Trimethylbenzene	1.2091	1.2744	1.3516	1.3583	1.3325	1.3750	1.3328	1.3191	4	AVG
Benzyl Chloride	0.1430	0.1582	0.1862	0.2149	0.2320	0.2612	0.2684	0.2091	23	2NDDEG
n-Butylbenzene	1.0886	1.2935	1.5159	1.6296	1.6616	1.6966	1.6500	1.5051	15	AVG
1,2-Dichlorobenzene	1.4929	1.4963	1.5964	1.6383	1.6009	1.6317	1.5673	1.5748	4	AVG
1,2-Dibromo-3-chloropropane		2.1319	2.4843	2.3720	2.6734	2.6813	3.1233	2.5777	13	AVG
1,3,5-Trichlorobenzene	1.0894	1.0397	1.1524	1.2356	1.2361	1.3651	1.3176	1.2051	10	AVG
1,2,4-Trichlorobenzene	0.9038	0.8394	0.9321	1.0576	1.0350	1.2220	1.1288	1.0170	13	AVG
Hexachlorobutadiene	0.3523	0.3630	0.3989	0.4371	0.4419	0.4862	0.4851	0.4235	13	AVG
Naphthalene	1.4001	1.3109	1.4881	1.9322	1.8329	2.1909	1.8910	1.7209	19	1STDEG
1,2,3-Trichlorobenzene	0.8076	0.7647	0.8317	0.9852	0.8886	1.0685	0.9293	0.8965	12	AVG

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date(s): 06/04/18 06/04/18

Heated Purge: (Y/N) Y Calibration Times: 12:33 14:40

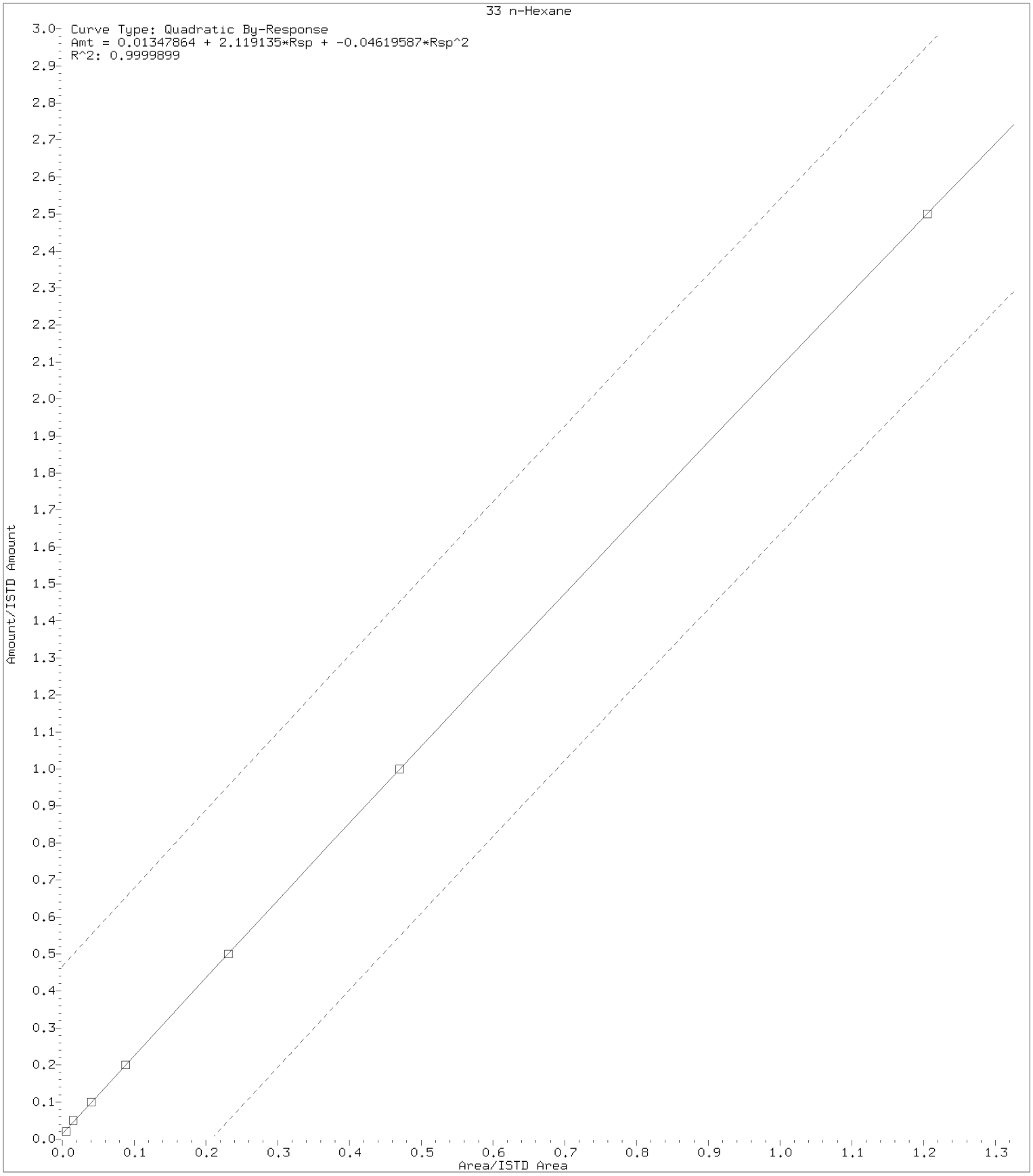
Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF0.2= iu04i07.d RRF0.5= iu04i06.d RRF 1 = iu04i05.d
RRF 2 = iu04i04.d RRF 5 = iu04i03.d RRF 10= iu04i02.d RRF 25= iu04i01.d

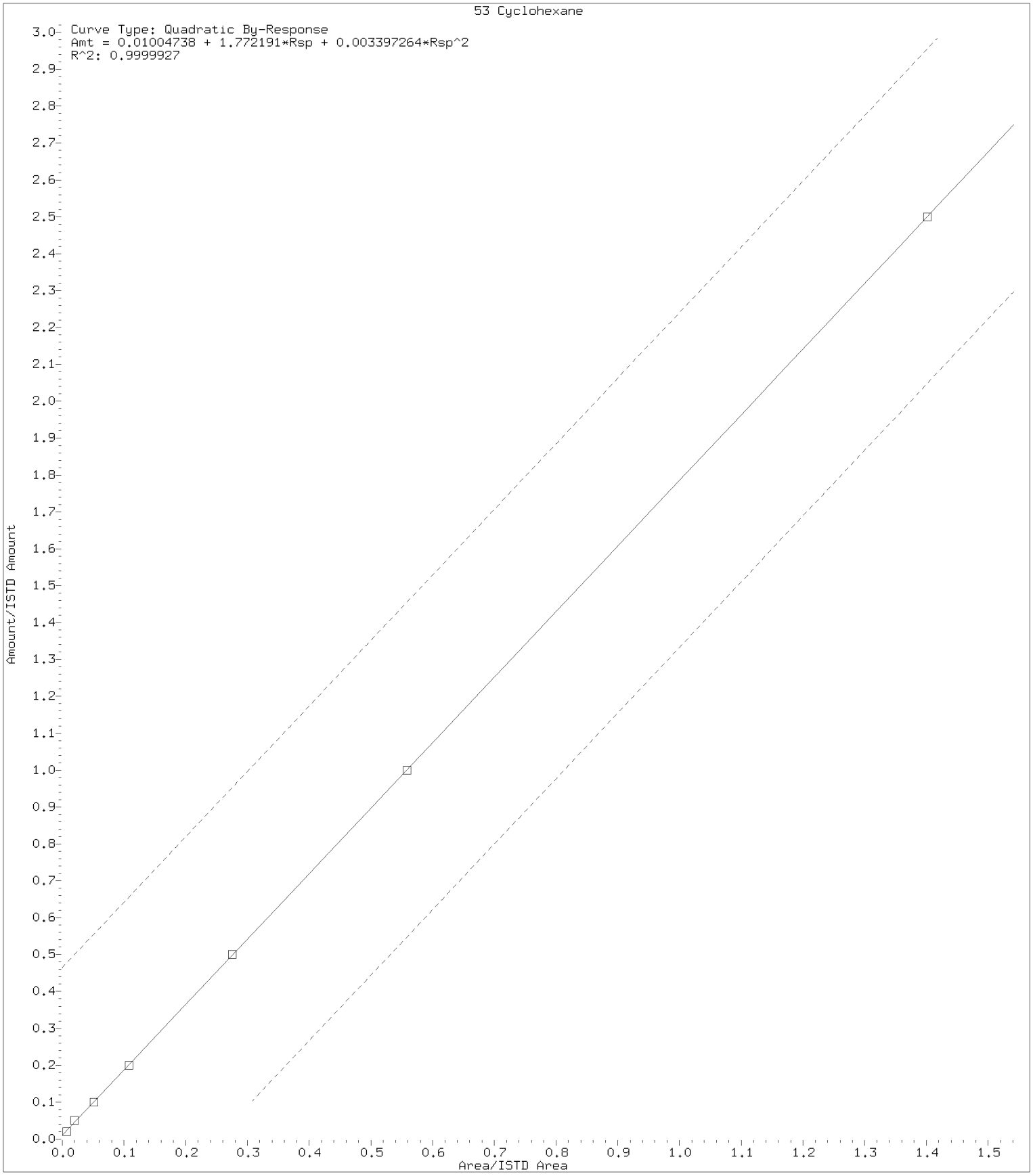
COMPOUND	RRF0.2	RRF0.5	RRF 1	RRF 2	RRF 5	RRF 10	RRF 25	RRF	% RSD	CAL. METHOD
Dibromofluoromethane	0.2479	0.2447	0.2445	0.2428	0.2405	0.2437	0.2449	0.2441	1	AVG
Dibromofluoromethane(2)	0.2527	0.2508	0.2499	0.2487	0.2462	0.2482	0.2511	0.2497	1	AVG
1,2-Dichloroethane-d4	0.0518	0.0515	0.0522	0.0511	0.0499	0.0507	0.0509	0.0511	2	AVG
1,2-Dichloroethane-d4(2)	0.2396	0.2396	0.2391	0.2375	0.2371	0.2471	0.2342	0.2392	2	AVG
1,2-Dichloroethane-d4(3)	0.0334	0.0326	0.0328	0.0327	0.0323	0.0331	0.0325	0.0328	1	AVG
Toluene-d8	1.2790	1.3075	1.3001	1.2989	1.2907	1.2757	1.2840	1.2908	1	AVG
Toluene-d8(2)	0.8293	0.8490	0.8475	0.8425	0.8418	0.8263	0.8585	0.8421	1	AVG
4-Bromofluorobenzene	0.4635	0.4718	0.4779	0.4779	0.4747	0.4759	0.4832	0.4750	1	AVG
4-Bromofluorobenzene(2)	0.4239	0.4322	0.4314	0.4326	0.4282	0.4251	0.4307	0.4292	1	AVG

Average %RSD 8

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%



Digitally signed by Jennifer K. Howe on 06/11/2018 at 14:47.
Target 3.5 esignature user ID: jkh09052



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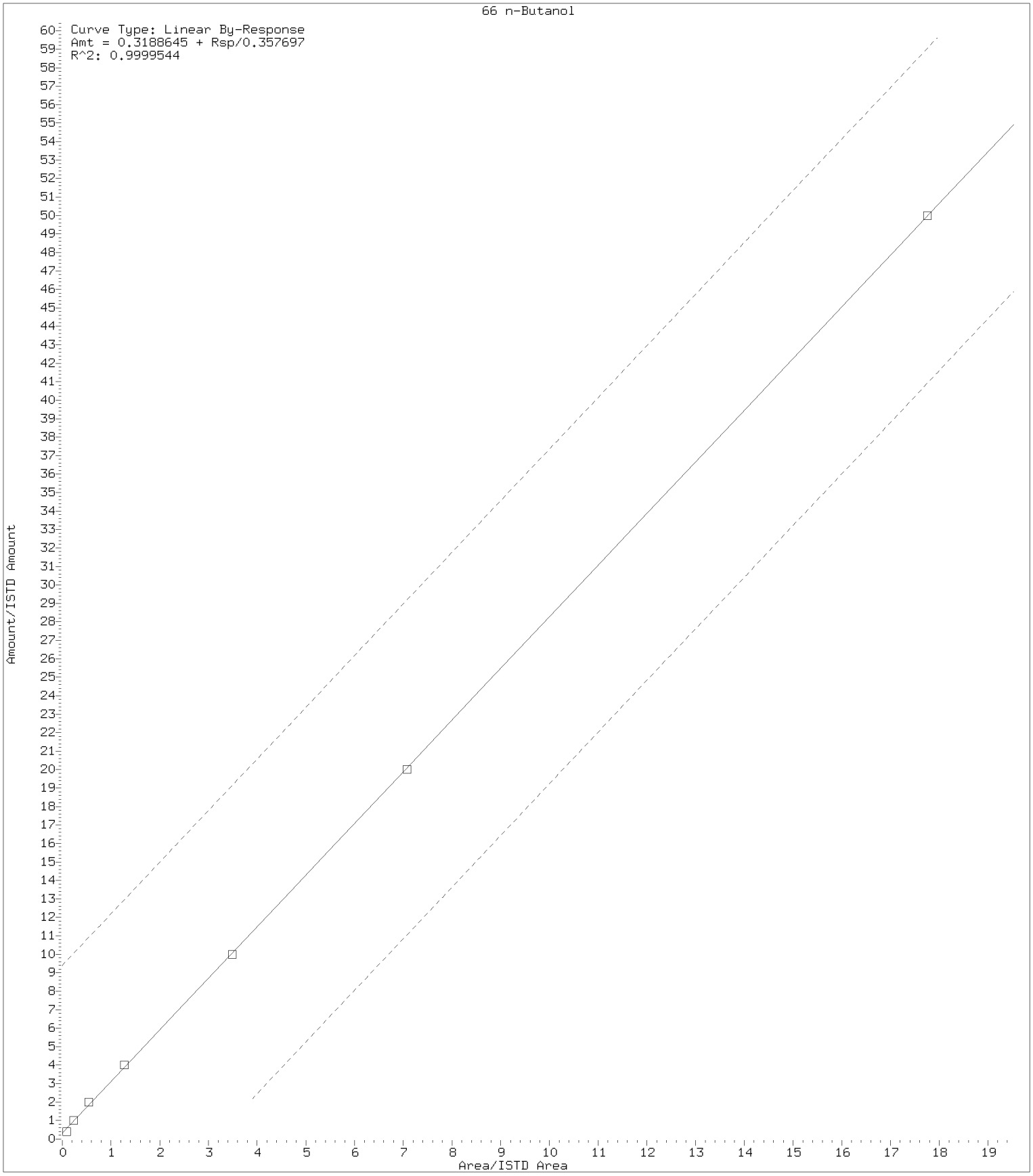
Target 3.5 esignature user ID: jkh09052



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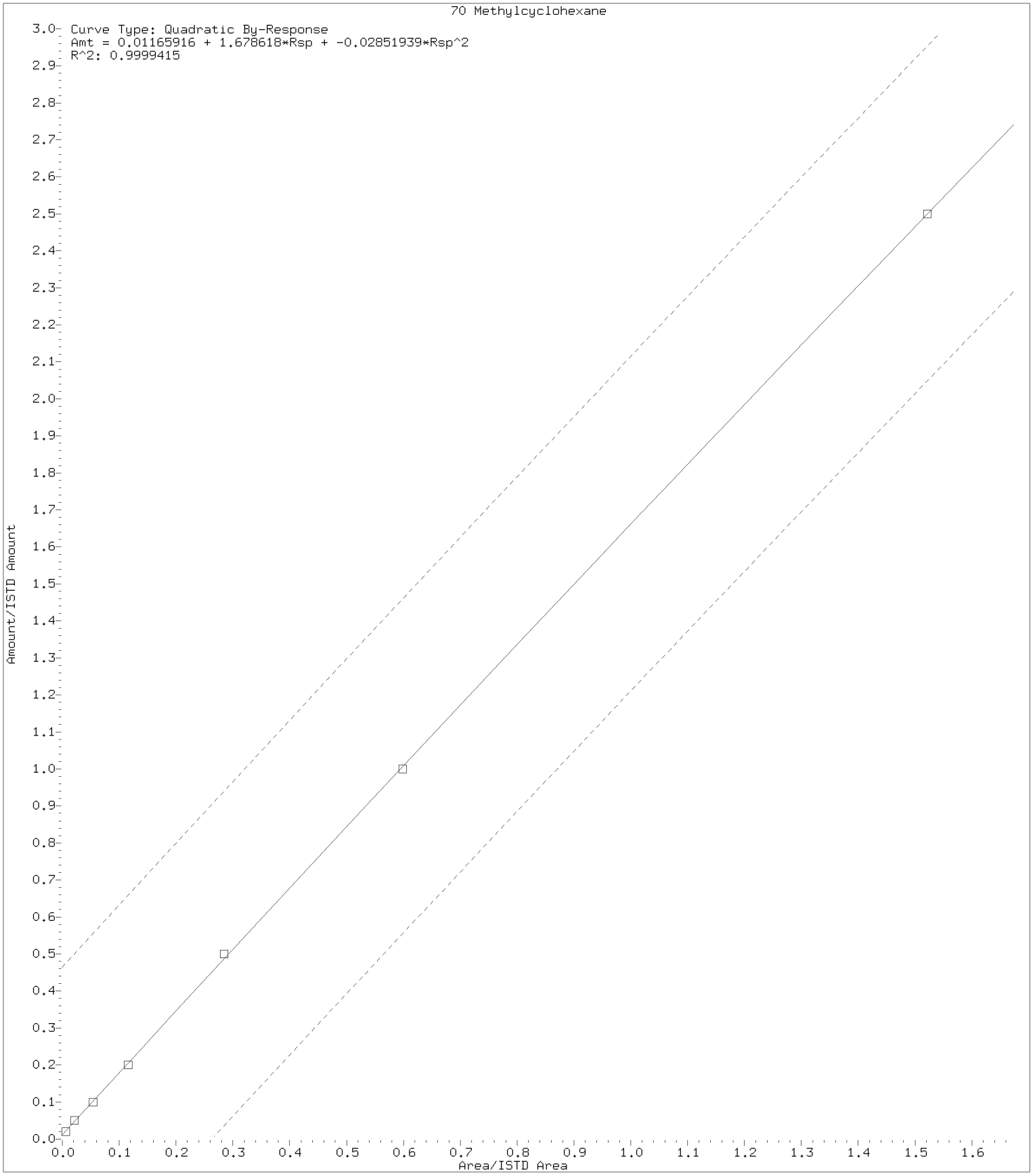

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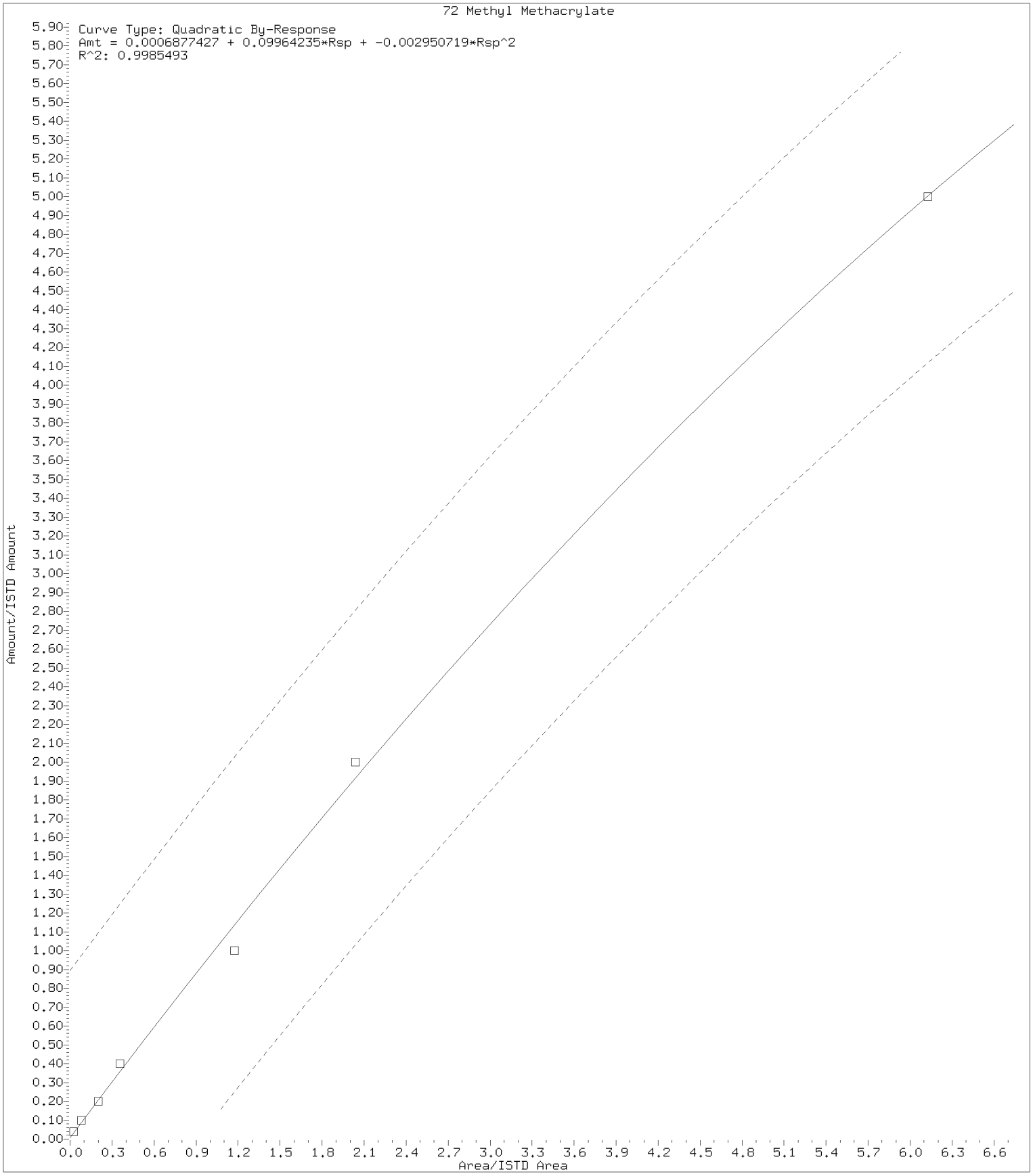

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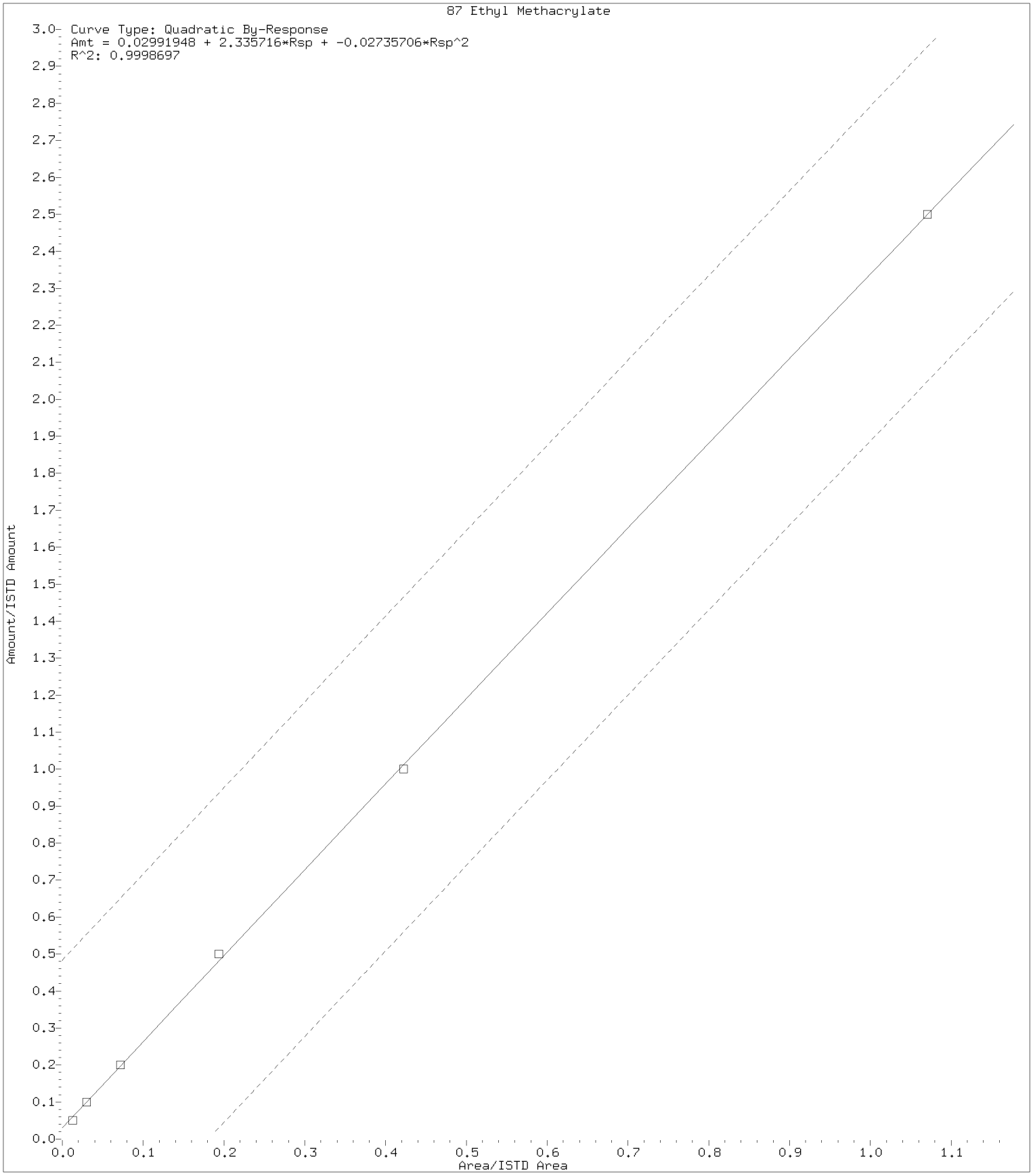
Target 3.5 esignature user ID: jkh09052



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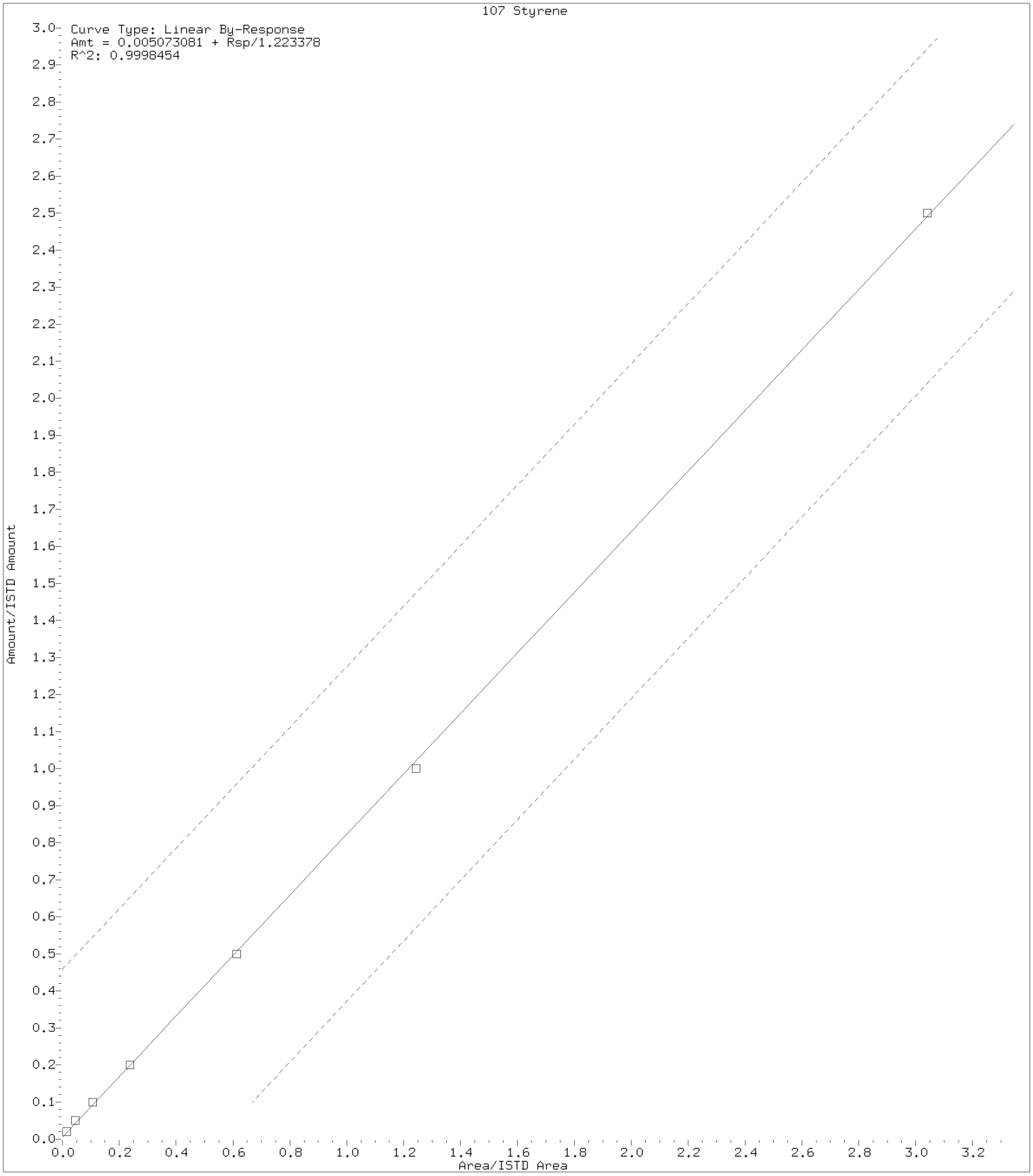

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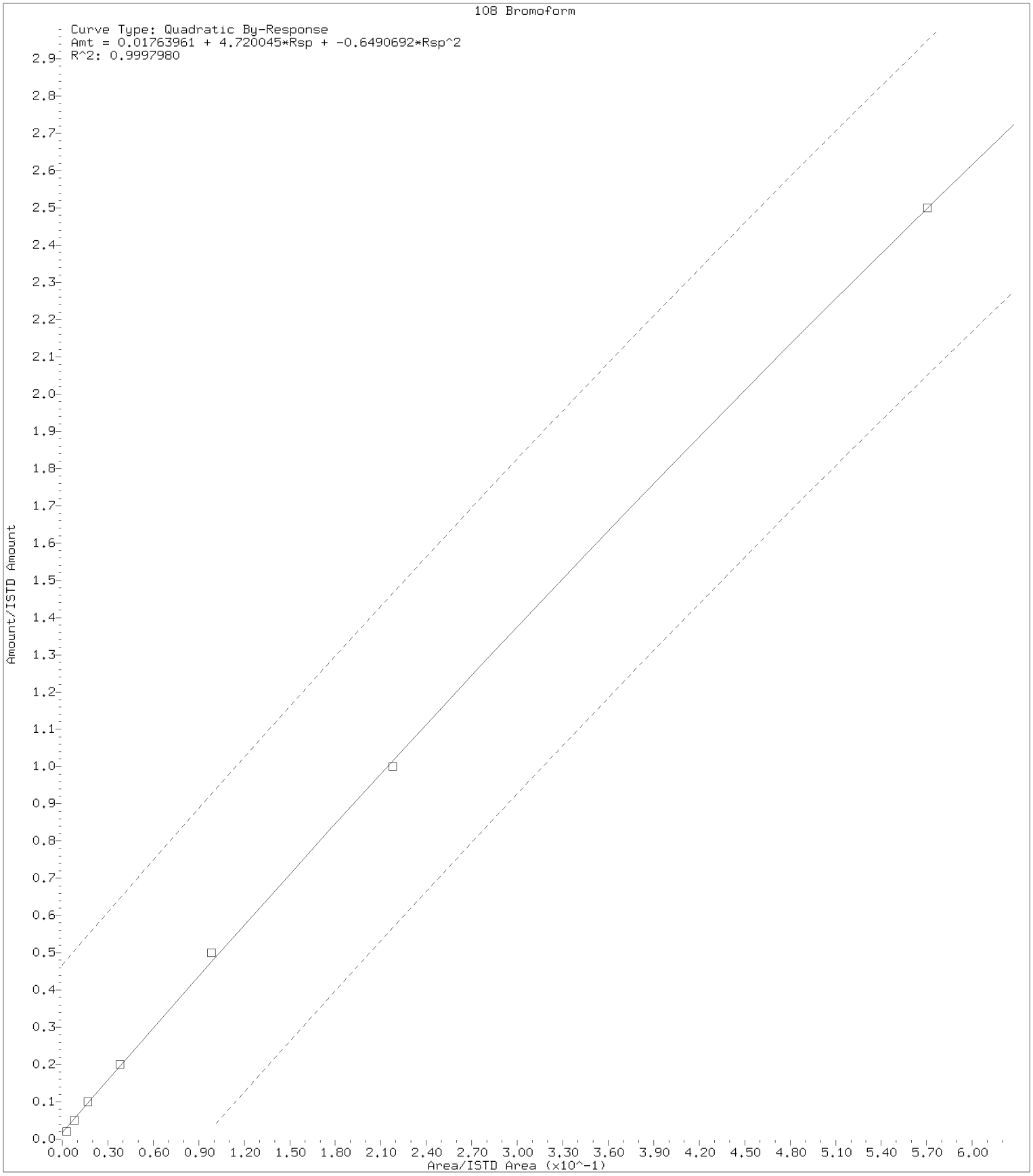

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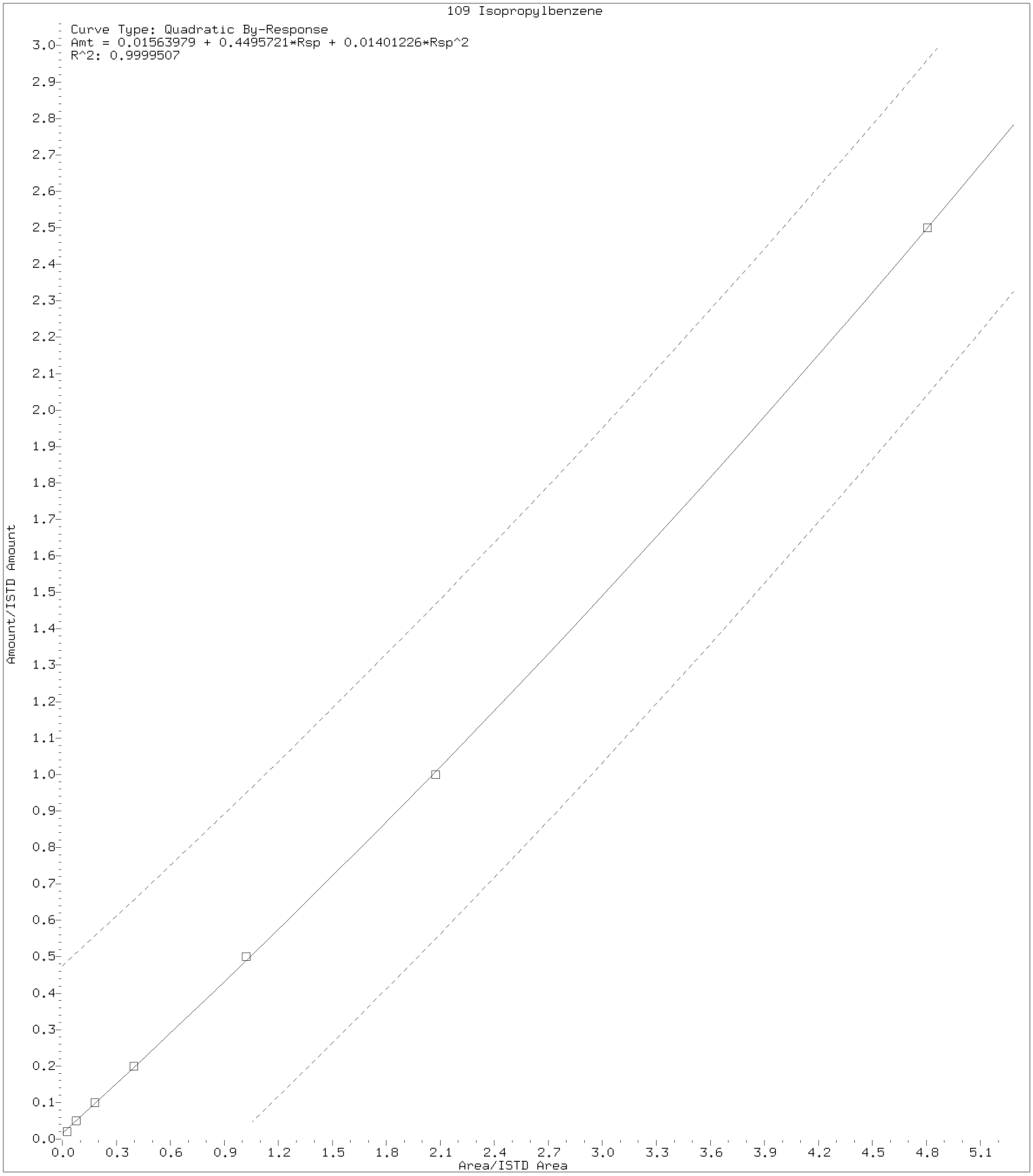

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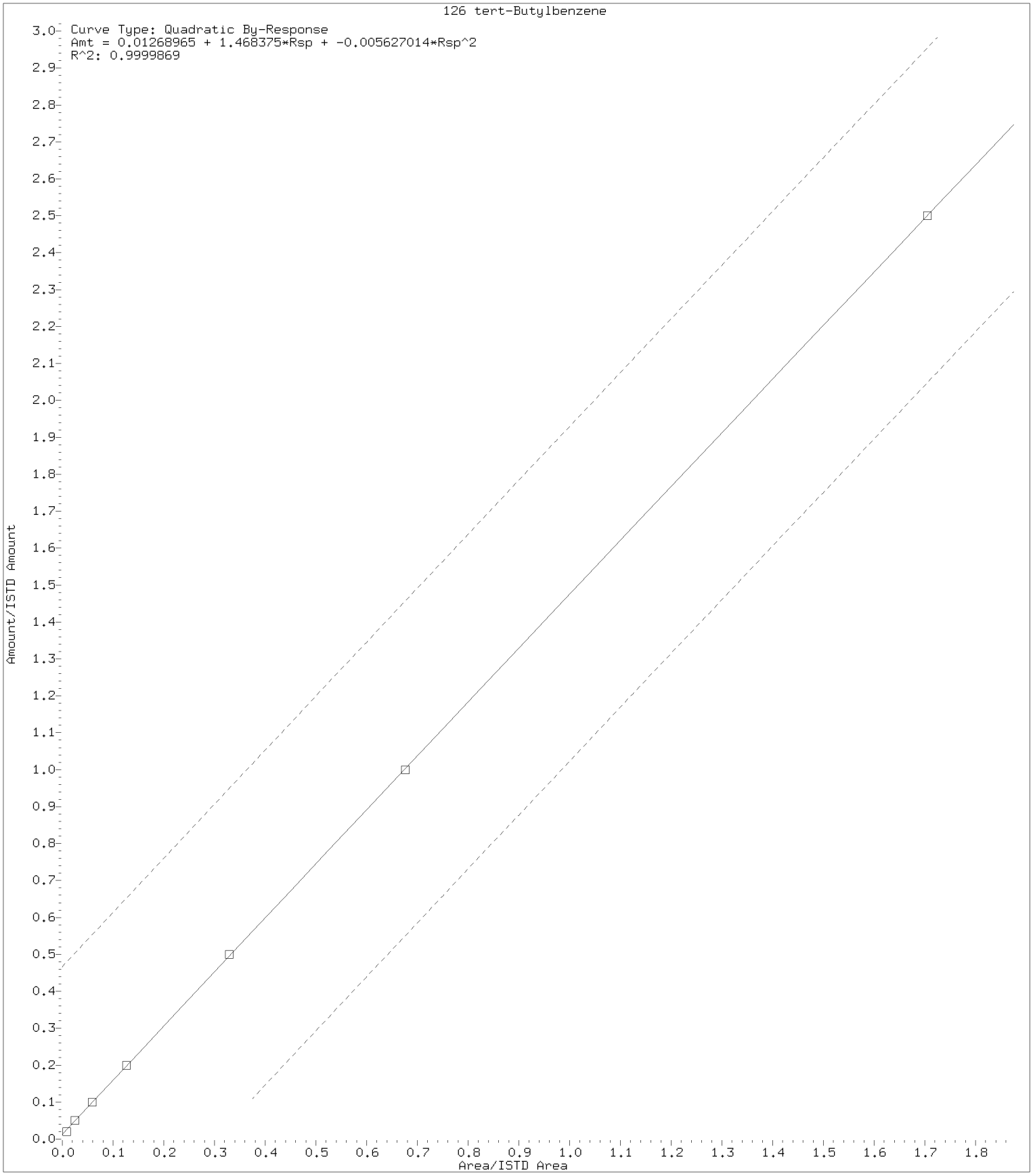

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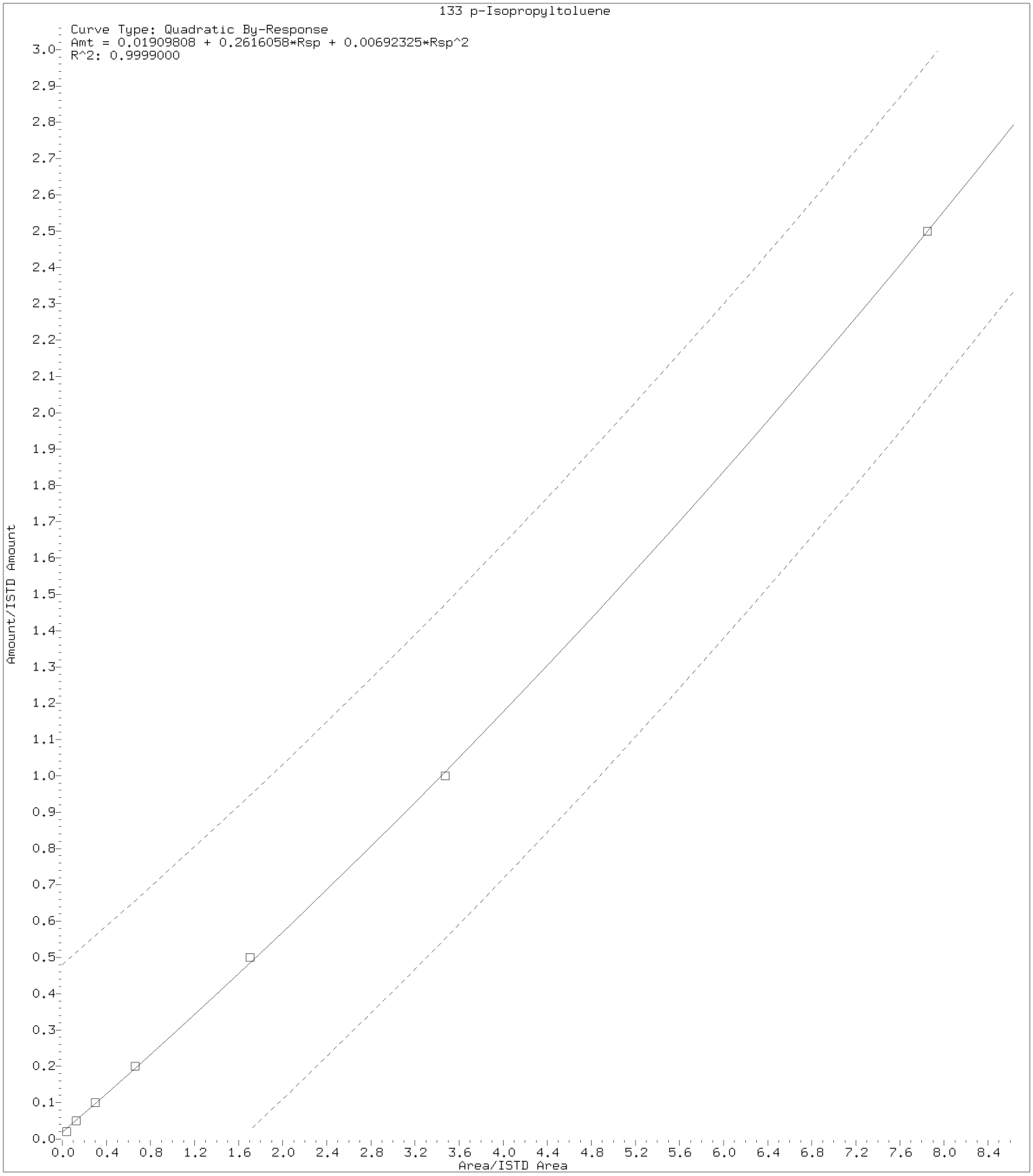

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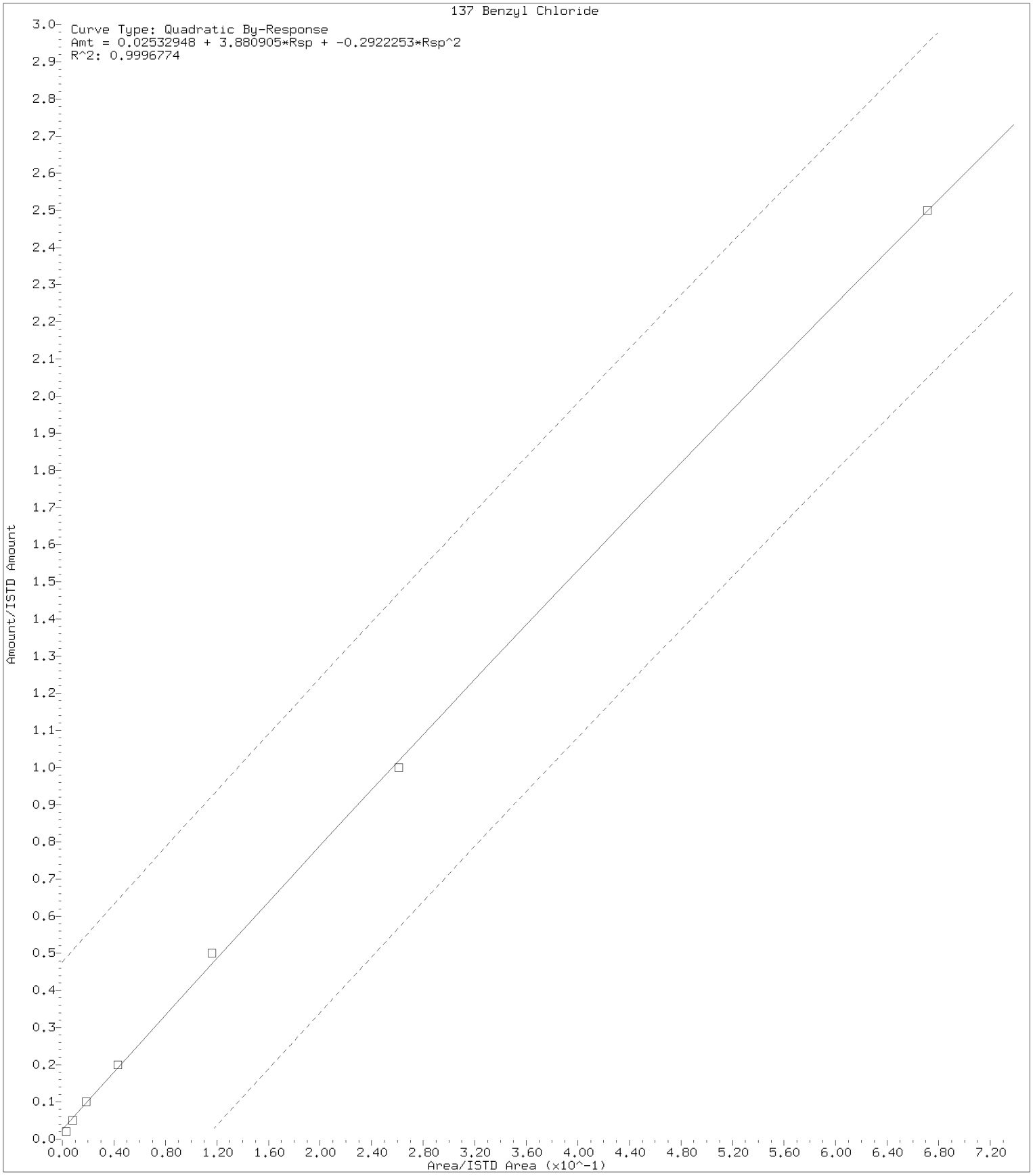

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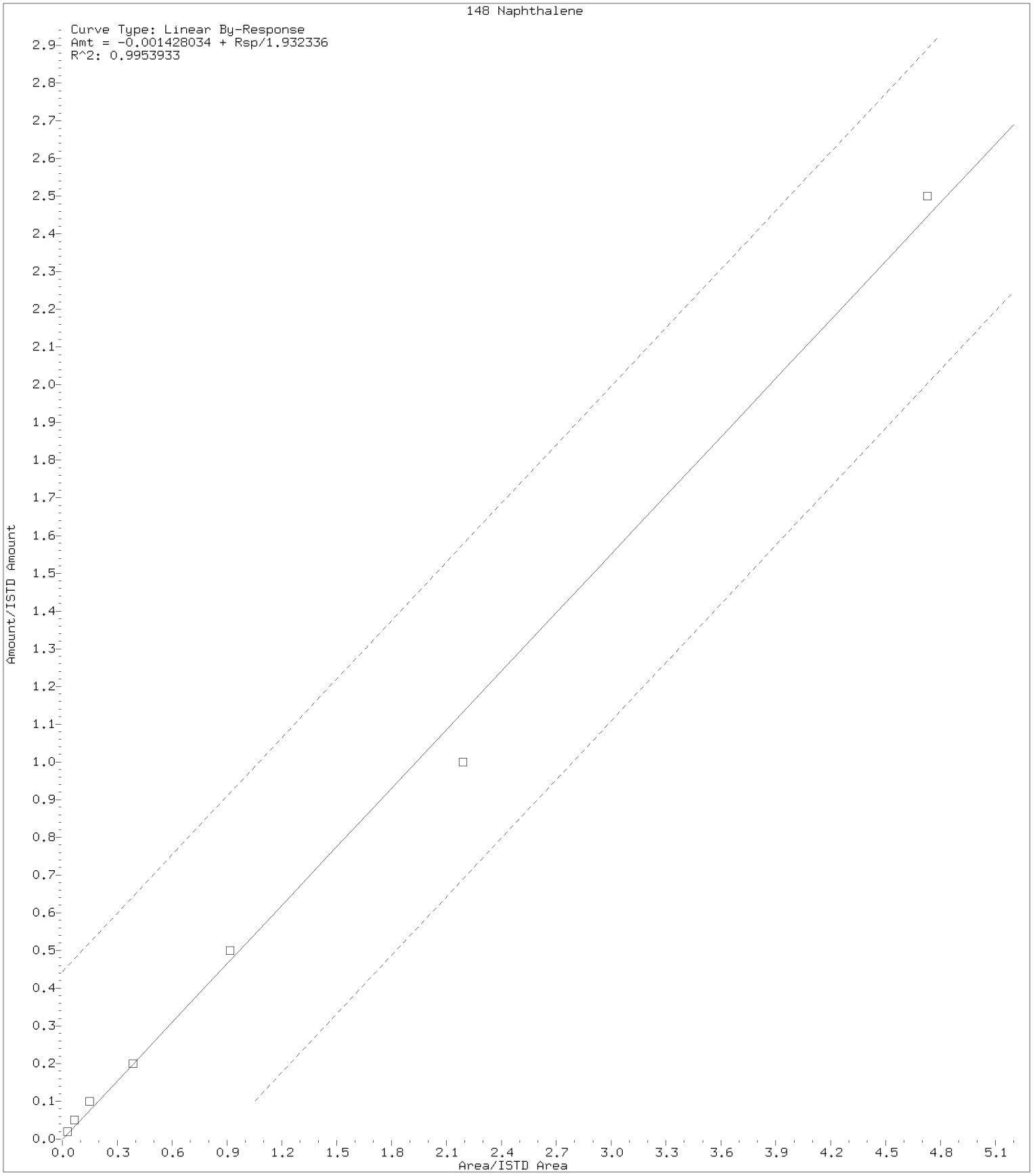
Target 3.5 esignature user ID: jkh09052



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Target 3.5 esignature user ID: jkh09052

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

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/chem2/HP19930.i/18jun04i.b/iu04i02.d	VSTD010
/chem2/HP19930.i/18jun04i.b/iu04i03.d	VSTD005
/chem2/HP19930.i/18jun04i.b/iu04i04.d	VSTD002
/chem2/HP19930.i/18jun04i.b/iu04i05.d	VSTD001
/chem2/HP19930.i/18jun04i.b/iu04i06.d	VSTD0.5
/chem2/HP19930.i/18jun04i.b/iu04i07.d	VSTD0.2

Area Summary

File ID:

Internal Standard Name	iu04i01.d	iu04i02.d	iu04i03.d	iu04i04.d	iu04i05.d	iu04i06.d	iu04i07.d	Avg. Area	%RSD	In Spec
t-Butyl Alcohol-d10	222888	286510	227147	287116	218434	238141	235514	245107	12	Yes
Fluorobenzene	3579782	3860980	3794784	3753514	3677146	3729143	3565613	3708709	3	Yes
Chlorobenzene-d5	2815387	3007894	2922964	2879087	2821924	2848533	2759494	2865040	3	Yes
1,4-Dichlorobenzene-d4	1573743	1683997	1621273	1648071	1607823	1636575	1570859	1620334	3	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	iu04i01.d	iu04i02.d	iu04i03.d	iu04i04.d	iu04i05.d	iu04i06.d	iu04i07.d	Avg. RT
t-Butyl Alcohol-d10	4.141	4.159	4.160	4.147	4.196	4.178	4.190	4.167
Fluorobenzene	7.659	7.671	7.671	7.671	7.677	7.671	7.671	7.670
Chlorobenzene-d5	11.140	11.146	11.146	11.146	11.146	11.146	11.146	11.145
1,4-Dichlorobenzene-d4	13.017	13.017	13.018	13.017	13.018	13.017	13.018	13.017

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 06/04/2018 at 15:33.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 ICV Date: 06/04/18 Time: 15:23

Lab File ID: iu04v01.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4158	0.3977	4.78	5	-4	
#	Chloromethane	0.3343	0.3088	4.62	5	-8	#
*	Vinyl Chloride	0.3629	0.3497	4.82	5	-4	*
	1,3-Butadiene	0.2473	0.2587	5.23	5	5	
	Bromomethane	0.2859	0.2708	4.74	5	-5	
	Chloroethane	0.2301	0.2067	4.49	5	-10	
	Dichlorofluoromethane	0.6011	0.5731	4.77	5	-5	
	Trichlorofluoromethane	0.5434	0.5492	5.05	5	1	
	Ethyl ether	0.2274	0.2251	4.95	5	-1	
	Freon 123a	0.3478	0.3528	5.07	5	1	
	Acrolein	2.5528	2.6725	39.26	37.5	5	
*	1,1-Dichloroethene	0.2594	0.2731	5.26	5	5	*
	Freon 113	0.2937	0.2946	5.02	5	0	
	Acetone	3.2656	3.0388	34.90	37.5	-7	
	Methyl Iodide	0.4979	0.4790	4.81	5	-4	
	Bromoethane	0.2226	0.2355	5.29	5	6	
	Carbon Disulfide	0.7512	0.7046	4.69	5	-6	
	Allyl Chloride	0.4425	0.4036	4.56	5	-9	
	Methyl Acetate	0.1080	0.0956	4.42	5	-12	
	Methylene Chloride	0.3002	0.2936	4.89	5	-2	
	t-Butyl Alcohol	1.1717	1.0452	44.60	50	-11	
	Acrylonitrile	4.0289	4.4920	27.87	25	11	
	trans-1,2-Dichloroethene	0.2915	0.2999	5.15	5	3	
	Methyl Tertiary Butyl Ether	0.6433	0.6427	5.00	5	0	
	n-Hexane	0.4040	0.4165	4.53	5	-9	
#	1,1-Dichloroethane	0.5380	0.5344	4.97	5	-1	#
	di-Isopropyl Ether	0.8371	0.8875	5.30	5	6	
	2-Chloro-1,3-Butadiene	0.4149	0.4504	5.43	5	9	
	Ethyl t-butyl ether	0.7339	0.7524	5.13	5	3	
	cis-1,2-Dichloroethene	0.3234	0.3354	5.19	5	4	
	2,2-Dichloropropane	0.4131	0.4188	5.07	5	1	
	2-Butanone	5.2628	6.0184	42.88	37.5	14	
	Propionitrile	1.4269	1.6138	42.41	37.5	13	
	Methacrylonitrile	5.3242	6.7463	47.52	37.5	27	
	Bromochloromethane	0.1456	0.1374	4.72	5	-6	
	Tetrahydrofuran	1.6476	1.8649	28.30	25	13	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 ICV Date: 06/04/18 Time: 15:23

Lab File ID: iu04v01.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.5296	0.5322	5.02	5	0	*
	1,1,1-Trichloroethane	0.4667	0.4680	5.01	5	0	
	Cyclohexane	0.4974	0.5251	4.76	5	-5	
	1,1-Dichloropropene	0.4024	0.4090	5.08	5	2	
	Carbon Tetrachloride	0.4140	0.4202	5.08	5	2	
	Isobutyl Alcohol	0.4048	0.3927	121.27	125	-3	
	Benzene	1.2421	1.2409	5.00	5	0	
	1,2-Dichloroethane	0.3320	0.3216	4.84	5	-3	
	t-Amyl methyl ether	0.6666	0.7016	5.26	5	5	
	n-Heptane	0.4464	0.4404	4.93	5	-1	
	n-Butanol	0.2998	0.2951	222.20	250	-11	
	Trichloroethene	0.3208	0.3240	5.05	5	1	
	Methylcyclohexane	0.5188	0.5411	4.64	5	-7	
*	1,2-Dichloropropane	0.3003	0.3056	5.09	5	2	*
	Methyl Methacrylate	9.6472	12.2438	5.91	5	18	
	Dibromomethane	0.1408	0.1434	5.09	5	2	
	1,4-Dioxane	0.0747	0.0723	120.95	125	-3	
	Bromodichloromethane	0.3600	0.3629	5.04	5	1	
	2-Nitropropane	2.9671	3.1066	5.24	5	5	
	1-Bromo-2-chloroethane	0.3076	0.3024	4.92	5	-2	
	cis-1,3-Dichloropropene	0.4133	0.4205	5.09	5	2	
	4-Methyl-2-Pentanone	0.1704	0.1714	25.15	25	1	
*	Toluene	1.0176	1.0256	5.04	5	1	*
	trans-1,3-Dichloropropene	0.4427	0.4431	5.00	5	0	
	Ethyl Methacrylate	0.3597	0.3660	4.56	5	-9	
	1,1,2-Trichloroethane	0.2808	0.2822	5.02	5	0	
	Tetrachloroethene	0.4883	0.4903	5.02	5	0	
	1,3-Dichloropropane	0.4665	0.4679	5.02	5	0	
	2-Hexanone	0.1595	0.1642	25.75	25	3	
	Dibromochloromethane	0.3264	0.3335	5.11	5	2	
	1,2-Dibromoethane	0.2573	0.2567	4.99	5	0	
	1-Chlorohexane	0.5411	0.5375	4.97	5	-1	
#	Chlorobenzene	1.1449	1.1303	4.94	5	-1	#
	1,1,1,2-Tetrachloroethane	0.3850	0.3824	4.97	5	-1	
*	Ethylbenzene	1.8684	1.9527	5.23	5	5	*
	m+p-Xylene	0.7448	0.7809	10.49	10	5	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 ICV Date: 06/04/18 Time: 15:23

Lab File ID: iu04v01.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	o-Xylene	0.7105	0.7489	5.27	5	5	
	Styrene	1.0876	1.2075	4.99	5	0	
#	Bromoform	0.1869	0.1848	4.48	5	-10	#
	Isopropylbenzene	1.8203	1.9998	4.79	5	-4	
#	1,1,2,2-Tetrachloroethane	0.6263	0.6068	4.84	5	-3	#
	Bromobenzene	0.8524	0.8665	5.08	5	2	
	trans-1,4-Dichloro-2-butene	4.6545	6.0556	32.53	25	30	
	1,2,3-Trichloropropane	0.1694	0.1706	5.03	5	1	
	n-Propylbenzene	3.9578	4.2845	5.41	5	8	
	2-Chlorotoluene	0.8165	0.8468	5.18	5	4	
	1,3,5-Trimethylbenzene	2.8112	3.0405	5.41	5	8	
	4-Chlorotoluene	0.8346	0.8602	5.15	5	3	
	tert-Butylbenzene	0.5932	0.6388	4.81	5	-4	
	Pentachloroethane	0.5212	0.5288	5.07	5	1	
	1,2,4-Trimethylbenzene	2.7694	3.0528	5.51	5	10	
	sec-Butylbenzene	3.5580	3.9933	5.61	5	12	
	1,3-Dichlorobenzene	1.6777	1.7028	5.07	5	1	
	p-Isopropyltoluene	2.9780	3.3890	4.82	5	-4	
	1,4-Dichlorobenzene	1.7420	1.7264	4.96	5	-1	
	1,2,3-Trimethylbenzene	1.3191	1.3477	5.11	5	2	
	Benzyl Chloride	0.2091	0.2197	4.48	5	-10	
	n-Butylbenzene	1.5051	1.6288	5.41	5	8	
	1,2-Dichlorobenzene	1.5748	1.5630	4.96	5	-1	
	1,2-Dibromo-3-chloropropane	2.5777	2.8200	5.47	5	9	
	1,3,5-Trichlorobenzene	1.2051	1.1830	4.91	5	-2	
	1,2,4-Trichlorobenzene	1.0170	0.9390	4.62	5	-8	
	Hexachlorobutadiene	0.4235	0.4254	5.02	5	0	
	Naphthalene	1.7209	1.6104	4.15	5	-17	
	1,2,3-Trichlorobenzene	0.8965	0.8198	4.57	5	-9	

Average %Drift 5

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories

Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP19930.i/18jun04i.b/iu04i07.d
/chem2/HP19930.i/18jun04i.b/iu04i06.d
/chem2/HP19930.i/18jun04i.b/iu04i05.d
/chem2/HP19930.i/18jun04i.b/iu04i04.d
/chem2/HP19930.i/18jun04i.b/iu04i03.d
/chem2/HP19930.i/18jun04i.b/iu04i02.d
/chem2/HP19930.i/18jun04i.b/iu04i01.d

File /chem2/HP19930.i/18jun04i.b/iu04i02.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP19930.i/18jun14b.b/iu14c02.d

RT Summary

Internal Standard Name	File ID: iu14c02.d	ICAL RT	In Spec
t-Butyl Alcohol-d10	4.147	4.159	Yes
Fluorobenzene	7.665	7.671	Yes
Chlorobenzene-d5	11.140	11.146	Yes
1,4-Dichlorobenzene-d4	13.018	13.017	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: iu14c02.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl Alcohol-d10	350738	286510	143255	573020	Yes
Fluorobenzene	4329394	3860980	1930490	7721960	Yes
Chlorobenzene-d5	3406679	3007894	1503947	6015788	Yes
1,4-Dichlorobenzene-d4	1943177	1683997	841998	3367994	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/14/2018 at 10:59

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date: 06/14/18 Time: 10:11

Lab File ID: iu14c02.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF10	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4158	0.5524	13.29	10	33	
#	Chloromethane	0.3343	0.4477	13.39	10	34	#
*	Vinyl Chloride	0.3629	0.4348	11.98	10	20	*
	1,3-Butadiene	0.2473	0.7164	28.97	10	190	
	Bromomethane	0.2859	0.3106	10.87	10	9	
	Chloroethane	0.2301	0.2079	9.04	10	-10	
	Dichlorofluoromethane	0.6011	0.5369	8.93	10	-11	
	Trichlorofluoromethane	0.5434	0.6268	11.54	10	15	
	Ethyl ether	0.2274	0.2201	9.68	10	-3	
	Freon 123a	0.3478	0.3530	10.15	10	1	
	Acrolein	2.5528	2.2539	441.46	500	-12	
*	1,1-Dichloroethene	0.2594	0.2553	9.84	10	-2	*
	Freon 113	0.2937	0.3073	10.46	10	5	
	Acetone	3.2656	3.2288	98.87	100	-1	
	Methyl Iodide	0.4979	0.4987	10.02	10	0	
	Bromoethane	0.2226	0.2005	9.01	10	-10	
	Carbon Disulfide	0.7512	0.7295	9.71	10	-3	
	Allyl Chloride	0.4425	0.4119	9.31	10	-7	
	Methyl Acetate	0.1080	0.1314	12.16	10	22	
	Methylene Chloride	0.3002	0.2862	9.53	10	-5	
	t-Butyl Alcohol	1.1717	1.2325	210.38	200	5	
	Acrylonitrile	4.0289	3.9607	49.15	50	-2	
	trans-1,2-Dichloroethene	0.2915	0.2870	9.85	10	-2	
	Methyl Tertiary Butyl Ether	0.6433	0.6940	10.79	10	8	
	n-Hexane	0.4040	0.4645	9.88	10	-1	
#	1,1-Dichloroethane	0.5380	0.5432	10.10	10	1	#
	di-Isopropyl Ether	0.8371	0.9198	10.99	10	10	
	2-Chloro-1,3-Butadiene	0.4149	0.4770	11.50	10	15	
	Ethyl t-butyl ether	0.7339	0.7935	10.81	10	8	
	cis-1,2-Dichloroethene	0.3234	0.3262	10.09	10	1	
	2,2-Dichloropropane	0.4131	0.4201	10.17	10	2	
	2-Butanone	5.2628	5.4829	104.18	100	4	
	Propionitrile	1.4269	1.4947	209.50	200	5	
	Methacrylonitrile	5.3242	5.1045	95.87	100	-4	
	Bromochloromethane	0.1456	0.1391	9.55	10	-4	
	Tetrahydrofuran	1.6476	1.5537	94.30	100	-6	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date: 06/14/18 Time: 10:11

Lab File ID: iu14c02.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF10	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.5296	0.5487	10.36	10	4	*
	1,1,1-Trichloroethane	0.4667	0.4876	10.45	10	4	
	Cyclohexane	0.4974	0.5505	9.87	10	-1	
	Cyclohexane(2)	0.4265	0.4612	9.67	10	-3	
	Cyclohexane(3)	0.1511	0.1681	9.81	10	-2	
	1,1-Dichloropropene	0.4024	0.4306	10.70	10	7	
	Carbon Tetrachloride	0.4140	0.4476	10.81	10	8	
	Isobutyl Alcohol	0.4048	0.4486	554.16	500	11	
	Benzene	1.2421	1.2269	9.88	10	-1	
	1,2-Dichloroethane	0.3320	0.3623	10.91	10	9	
	1,2-Dichloroethane(2)	0.0313	0.0322	10.29	10	3	
	t-Amyl methyl ether	0.6666	0.7197	10.80	10	8	
	n-Heptane	0.4464	0.4923	11.03	10	10	
	n-Butanol	0.2998	0.3804	1079.45	1000	8	
	Trichloroethene	0.3208	0.3341	10.41	10	4	
	Methylcyclohexane	0.5188	0.5457	9.19	10	-8	
*	1,2-Dichloropropane	0.3003	0.3061	10.19	10	2	*
	Methyl Methacrylate	9.6472	9.7001	9.14	10	-9	
	Dibromomethane	0.1408	0.1504	10.68	10	7	
	1,4-Dioxane	0.0747	0.0816	545.80	500	9	
	Bromodichloromethane	0.3600	0.3902	10.84	10	8	
	2-Nitropropane	2.9671	3.2594	109.85	100	10	
	1-Bromo-2-chloroethane	0.3076	0.3095	10.06	10	1	
	cis-1,3-Dichloropropene	0.4133	0.4442	10.75	10	7	
	4-Methyl-2-Pentanone	0.1704	0.2230	130.89	100	31	
*	Toluene	1.0176	1.0002	9.83	10	-2	*
	trans-1,3-Dichloropropene	0.4427	0.4746	10.72	10	7	
	Ethyl Methacrylate	0.3597	0.4299	10.29	10	3	
	1,1,2-Trichloroethane	0.2808	0.2867	10.21	10	2	
	Tetrachloroethene	0.4883	0.4888	10.01	10	0	
	1,3-Dichloropropane	0.4665	0.4896	10.50	10	5	
	2-Hexanone	0.1595	0.2027	127.08	100	27	
	Dibromochloromethane	0.3264	0.3411	10.45	10	5	
	1,2-Dibromoethane	0.2573	0.2750	10.69	10	7	
	1-Chlorohexane	0.5411	0.5577	10.31	10	3	
#	Chlorobenzene	1.1449	1.1089	9.69	10	-3	#

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date: 06/14/18 Time: 10:11

Lab File ID: iu14c02.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF10	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1,2-Tetrachloroethane	0.3850	0.4086	10.61	10	6	
*	Ethylbenzene	1.8684	1.9719	10.55	10	6	*
	m+p-Xylene	0.7448	0.7753	20.82	20	4	
	o-Xylene	0.7105	0.7668	10.79	10	8	
	Styrene	1.0876	1.2338	10.14	10	1	
#	Bromoform	0.1869	0.1959	9.17	10	-8	#
	Isopropylbenzene	1.8203	2.0306	9.86	10	-1	
#	1,1,2,2-Tetrachloroethane	0.6263	0.6622	10.57	10	6	#
	Bromobenzene	0.8524	0.8723	10.23	10	2	
	trans-1,4-Dichloro-2-butene	4.6545	3.5425	76.11	100	-24	
	1,2,3-Trichloropropane	0.1694	0.1844	10.88	10	9	
	n-Propylbenzene	3.9578	4.2150	10.65	10	6	
	2-Chlorotoluene	0.8165	0.8368	10.25	10	2	
	1,3,5-Trimethylbenzene	2.8112	3.0349	10.80	10	8	
	4-Chlorotoluene	0.8346	0.8588	10.29	10	3	
	tert-Butylbenzene	0.5932	0.6478	9.62	10	-4	
	Pentachloroethane	0.5212	0.5194	9.96	10	0	
	1,2,4-Trimethylbenzene	2.7694	3.0507	11.02	10	10	
	sec-Butylbenzene	3.5580	3.9510	11.10	10	11	
	1,3-Dichlorobenzene	1.6777	1.7274	10.30	10	3	
	p-Isopropyltoluene	2.9780	3.4080	9.91	10	-1	
	1,4-Dichlorobenzene	1.7420	1.7260	9.91	10	-1	
	1,2,3-Trimethylbenzene	1.3191	1.2537	9.50	10	-5	
	Benzyl Chloride	0.2091	0.2619	10.22	10	2	
	n-Butylbenzene	1.5051	1.6846	11.19	10	12	
	1,2-Dichlorobenzene	1.5748	1.6038	10.18	10	2	
	1,2-Dibromo-3-chloropropane	2.5777	2.4975	9.69	10	-3	
	1,3,5-Trichlorobenzene	1.2051	1.2541	10.41	10	4	
	1,2,4-Trichlorobenzene	1.0170	1.0557	10.38	10	4	
	Hexachlorobutadiene	0.4235	0.4575	10.80	10	8	
	Naphthalene	1.7209	1.9417	10.03	10	0	
	1,2,3-Trichlorobenzene	0.8965	0.8906	9.93	10	-1	
	Dibromofluoromethane	0.2441	0.2480	10.16	10	2	
	Dibromofluoromethane(2)	0.2497	0.2545	10.20	10	2	
	1,2-Dichloroethane-d4	0.0511	0.0519	10.14	10	1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date: 06/14/18 Time: 10:11

Lab File ID: iu14c02.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	RRF	RRF10	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,2-Dichloroethane-d4(2)	0.2392	0.2604	10.89	10	9
1,2-Dichloroethane-d4(3)	0.0328	0.0330	10.07	10	1
Toluene-d8	1.2908	1.2637	9.79	10	-2
Toluene-d8(2)	0.8421	0.8079	9.59	10	-4
4-Bromofluorobenzene	0.4750	0.4886	10.29	10	3
4-Bromofluorobenzene(2)	0.4292	0.4370	10.18	10	2

Average %Drift 8

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): iu14c02.d Date Analyzed: 06/14/18

Instrument ID: HP19930 Time Analyzed: 10:11

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	350738	4.147	4329394	7.665	3406679	11.140	1943177	13.018
UPPER LIMIT	701476	4.647	8658788	8.165	6813358	11.640	3886354	13.518
LOWER LIMIT	175369	3.647	2164697	7.165	1703340	10.640	971588	12.518
LAB SAMPLE ID								
01 LCSI21	358822	4.159	4338623	7.677	3427941	11.146	1965139	13.017
02 LCDI21	372292	4.159	4649734	7.671	3662796	11.146	2068239	13.017
03 VBLKI21	351126	4.178	4060136	7.677	3147981	11.146	1751047	13.024
04 9651576	297345	4.159	3841107	7.677	3022724	11.146	1692642	13.024
05 9651587	285814	4.172	3585922	7.677	2843885	11.146	1580536	13.017
06 9654052	279565	4.159	3454831	7.677	2757671	11.146	1541375	13.024
07 9654049	216818	4.172	3459863	7.671	2859007	11.146	1576527	13.024
08 9654050MS	232912	4.184	3649584	7.677	2907307	11.146	1686298	13.017
09 9654051MSD	240649	4.160	3704664	7.671	2954920	11.146	1711044	13.018
10 9654049DL	261597	4.172	3520065	7.671	2817893	11.146	1552346	13.018
11 9656466	259191	4.172	3285172	7.677	2632850	11.146	1466072	13.024
12 9656500	259030	4.160	3274905	7.677	2603632	11.146	1431600	13.024
13 9656535	222011	4.166	3187197	7.677	2536585	11.146	1413015	13.024
14 9656563	90951 *	4.239	3182168	7.677	2540858	11.146	1406211	13.024
15 9656576	90508 *	4.196	3197398	7.677	2571874	11.146	1429157	13.024
16 9656589	98410 *	4.208	3057607	7.677	2451299	11.146	1338792	13.024
17 9653936	105131 *	4.233	3118171	7.671	2485033	11.146	1362526	13.018
18 9651572	218872	4.166	3177326	7.671	2424379	11.146	1400101	13.024
19 9651572DL	200004	4.166	3071300	7.677	2401276	11.146	1341905	13.024
20 9651573	228434	4.165	3225287	7.671	2450533	11.146	1472733	13.017
21 9651573DL	223900	4.166	3168408	7.671	2450036	11.146	1389527	13.018
22 9651574	211794	4.172	3297612	7.677	2555503	11.146	1485889	13.018

IS1 (TBA)=t-Butyl Alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): iu14c02.d Date Analyzed: 06/14/18

Instrument ID: HP19930 Time Analyzed: 10:11

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	350738	4.147	4329394	7.665	3406679	11.140	1943177	13.018
UPPER LIMIT	701476	4.647	8658788	8.165	6813358	11.640	3886354	13.518
LOWER LIMIT	175369	3.647	2164697	7.165	1703340	10.640	971588	12.518
LAB SAMPLE ID								
23 9651574DL	240839	4.165	3260951	7.671	2554547	11.146	1442723	13.024
24 9651575	231636	4.166	3312733	7.671	2568489	11.146	1518267	13.018
25 9651575DL	229803	4.147	3250512	7.671	2519285	11.146	1445646	13.024
26 9654171	232424	4.178	3113223	7.677	2473182	11.146	1381307	13.024

IS1 (TBA)=t-Butyl Alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

Preparation and Run Logs

Volatiles by GC/MS

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP19930 **HP #31**

Data Directory Path is - D:\DATA\18jun04i\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jkh09052	Iu04T01.D	50NGBFB	06/04/2018	10:45	I181063AB	
jkh09052	Iu04X01.D	blk	06/04/2018	12:11		
jkh09052	Iu04I01.D	VSTD025	06/04/2018	12:33		
jkh09052	Iu04I02.D	VSTD010	06/04/2018	12:54		
jkh09052	Iu04I03.D	VSTD005	06/04/2018	13:15		
jkh09052	Iu04I04.D	VSTD002	06/04/2018	13:36		
jkh09052	Iu04I05.D	VSTD001	06/04/2018	13:57		
jkh09052	Iu04I06.D	VSTD0.5	06/04/2018	14:19		
jkh09052	Iu04I07.D	VSTD0.2	06/04/2018	14:40		
jkh09052	Iu04M01.D	MDL0.1	06/04/2018	15:02		
jkh09052	Iu04V01.D	LCSILG	06/04/2018	15:23		

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP19930 **HP #31**

Data Directory Path is - D:\DATA\18JUN14B\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
JKH09052	IU14T02.D	50NGBFB	06/14/2018	09:36	I181063AB	
JKH09052	IU14X00.D	VBLKI21	06/14/2018	09:50	I181651AA	
JKH09052	IU14C02.D	VSTD010	06/14/2018	10:11	I181651AA	
JKH09052	IU14L01.D	LCSI21	06/14/2018	10:33	I181651AA	
JKH09052	IU14L02.D	LCDI21	06/14/2018	10:54	I181651AA	
JKH09052	IU14X01.D	VBLKI21	06/14/2018	11:15	I181651AA	
JKH09052	IU14B01.D	VBLKI21	06/14/2018	11:37	I181651AA	
JKH09052	IU14S02.D	9651576	06/14/2018	12:00	I181651AA	
JKH09052	IU14S03.D	9651587	06/14/2018	12:21	I181651AA	
JKH09052	IU14S04.D	9654052	06/14/2018	12:42	I181651AA	
JKH09052	IU14S05.D	9654049	06/14/2018	13:04	I181651AA	
JKH09052	IU14S06.D	9654050MS	06/14/2018	13:25	I181651AA	
JKH09052	IU14S07.D	9654051MSD	06/14/2018	13:46	I181651AA	
JKH09052	IU14S08.D	9654049DL	06/14/2018	14:07	I181651AA	20
JKH09052	IU14S09.D	9656466	06/14/2018	14:28	I181651AA	
JKH09052	IU14S10.D	9656500	06/14/2018	14:50	I181651AA	
JKH09052	IU14S11.D	9656535	06/14/2018	15:11	I181651AA	
JKH09052	IU14S12.D	9656563	06/14/2018	15:32	I181651AA	
JKH09052	IU14S13.D	9656576	06/14/2018	15:54	I181651AA	
JKH09052	IU14S14.D	9656589	06/14/2018	16:15	I181651AA	
JKH09052	IU14S15.D	9653936	06/14/2018	16:36	I181651AA	
JKH09052	IU14S16.D	9651571	06/14/2018	16:58	I181651AA	200
JKH09052	IU14S17.D	9651571DL	06/14/2018	17:19	I181651AA	2000
JKH09052	IU14S18.D	9651572	06/14/2018	17:40	I181651AA	
JKH09052	IU14S19.D	9651572DL	06/14/2018	18:01	I181651AA	20
JKH09052	IU14S20.D	9651573	06/14/2018	18:22	I181651AA	100
JKH09052	IU14S21.D	9651573DL	06/14/2018	18:43	I181651AA	1000
JKH09052	IU14S22.D	9651574	06/14/2018	19:05	I181651AA	50
JKH09052	IU14S23.D	9651574DL	06/14/2018	19:27	I181651AA	500
JKH09052	IU14S24.D	9651575	06/14/2018	19:48	I181651AA	50
JKH09052	IU14S25.D	9651575DL	06/14/2018	20:09	I181651AA	500
JKH09052	IU14S26.D	9654171	06/14/2018	20:30	I181651AA	20

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Type I (No Raw Data) Data Package

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Project: Dow Hanging Rock, OH
Soil Samples
Collected on 06/12/18

SDG# DHR41

GROUP	SAMPLE NUMBERS
1954441	9656566-9656575

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date: 07/03/2018**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Natalie Luciano at (717) 556-7258.

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Sample Reference List for SDG Number DHR41 with a Data Package Type of I-NODATA

11372 - CH2M Hill, Inc.

Project: Dow Hanging Rock, OH

Lab Sample Number	Client Sample ID	Collection Date	Date Received
9656566	S01-SS26-0102-061218	06/12/2018 09:22	06/13/2018 09:55
9656567	S01-SS26-0607-061218	06/12/2018 09:28	06/13/2018 09:55
9656568	S01-SS26-2223-061218	06/12/2018 09:45	06/13/2018 09:55
9656569	S01-SS20-0102-061218	06/12/2018 11:34	06/13/2018 09:55
9656570	S01-SS20-0607-061218	06/12/2018 11:47	06/13/2018 09:55
9656571	S01-SS20-2526-061218	06/12/2018 12:24	06/13/2018 09:55
9656572	S01-SS34-0708-061218	06/12/2018 14:42	06/13/2018 09:55
9656573	S01-SS18-0102-061218	06/12/2018 15:06	06/13/2018 09:55
9656574	S01-SS18-0708-061218	06/12/2018 15:18	06/13/2018 09:55
9656575	S01-SS18-2526-061218	06/12/2018 16:05	06/13/2018 09:55

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10237 VOCs- Solid by 8260B

The soil sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996

07320 GC/MS - LL DIH2O Encore Prep

Two EnCore samples are collected per sample. The vials used for preparation are pre-preserved and pre-weighed. Two aliquots are extruded into DI water. The vials are re-weighed and the weight of the sample should be 5-g +/- .5 g. The prepared samples are then delivered to the lab for analysis. DI vials are frozen after they are weighed to complete preservation step.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

07578 GC/MS-HL Encore Prep-NC

The sample is collected in an EnCore sampler and is submitted to the laboratory. A vial containing 5-ml methanol is prepared for each sample and weighed prior to adding the sample. After the sample is added to the vial, the vial is reweighed and the weight of sample is determined by difference. The weight of the sample should be 5-g +/- .5 g. The sample vial is then delivered to the lab for analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

00111 Moisture

A well-mixed sample is heated by reflected infrared in an aluminum pan and dried to a constant weight. The decrease in weight in weight after drying is calculated as the moisture content.

Reference: SM 2540 G-1997 %Moisture Calculation for Dry Weight Determination

Analysis Reports / Field Chain of Custody

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ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Report Date: June 19, 2018 18:32

Project: Dow Hanging Rock, OH

Account #: 11372
Group Number: 1954441
SDG: DHR41
PO Number: 131005094
Release Number: DHR41
State of Sample Origin: OH

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ . To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To	CH2M Hill, Inc.	Attn: Marie Chiller
Electronic Copy To	CH2M Hill, Inc.	Attn: Shane Lowe

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

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SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
S01-SS26-0102-061218 Grab Soil	06/12/2018 09:22	9656566
S01-SS26-0607-061218 Grab Soil	06/12/2018 09:28	9656567
S01-SS26-2223-061218 Grab Soil	06/12/2018 09:45	9656568
S01-SS20-0102-061218 Grab Soil	06/12/2018 11:34	9656569
S01-SS20-0607-061218 Grab Soil	06/12/2018 11:47	9656570
S01-SS20-2526-061218 Grab Soil	06/12/2018 12:24	9656571
S01-SS34-0708-061218 Grab Soil	06/12/2018 14:42	9656572
S01-SS18-0102-061218 Grab Soil	06/12/2018 15:06	9656573
S01-SS18-0708-061218 Grab Soil	06/12/2018 15:18	9656574
S01-SS18-2526-061218 Grab Soil	06/12/2018 16:05	9656575

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: **S01-SS26-0102-061218 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/13/2018 09:55
Collection Date/Time: 06/12/2018 09:22
SDG#: DHR41-01

CH2M Hill, Inc.
ELLE Sample #: SW 9656566
ELLE Group #: 1954441
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.83
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.83
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.83
10237	Tetrachloroethene	127-18-4	5 U	5	1	0.83
10237	Trichloroethene	79-01-6	5 U	5	1	0.83
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.83
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	17.6	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181652AA	06/14/2018 22:29	Patrick T Herres	0.83
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816450193	06/13/2018 13:25	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18164820003A	06/13/2018 21:36	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS26-0607-061218 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/13/2018 09:55
Collection Date/Time: 06/12/2018 09:28
SDG#: DHR41-02

CH2M Hill, Inc.
ELLE Sample #: SW 9656567
ELLE Group #: 1954441
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.9
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.9
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.9
10237	Tetrachloroethene	127-18-4	7		5	1	0.9
10237	Trichloroethene	79-01-6	5	U	5	1	0.9
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.9
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	17.7		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181652AA	06/14/2018 22:52	Patrick T Herres	0.9
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816450193	06/13/2018 13:29	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18164820003A	06/13/2018 21:36	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS26-2223-061218 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/13/2018 09:55
Collection Date/Time: 06/12/2018 09:45
SDG#: DHR41-03

CH2M Hill, Inc.
ELLE Sample #: SW 9656568
ELLE Group #: 1954441
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	200	U	200	41	38.94
10237	cis-1,2-Dichloroethene	156-59-2	200	U	200	41	38.94
10237	trans-1,2-Dichloroethene	156-60-5	200	U	200	41	38.94
10237	Tetrachloroethene	127-18-4	2,200		200	41	38.94
10237	Trichloroethene	79-01-6	98	J	200	41	38.94
10237	Vinyl Chloride	75-01-4	200	U	200	41	38.94
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	4.2		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	R181691AA	06/18/2018 12:26	Stephen C Nolte	38.94
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816450193	06/13/2018 13:34	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18164820003A	06/13/2018 21:36	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS20-0102-061218 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/13/2018 09:55
Collection Date/Time: 06/12/2018 11:34
SDG#: DHR41-04

CH2M Hill, Inc.
ELLE Sample #: SW 9656569
ELLE Group #: 1954441
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.87
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.87
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.87
10237	Tetrachloroethene	127-18-4	5 U	5	1	0.87
10237	Trichloroethene	79-01-6	5 U	5	1	0.87
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.87
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	16.8	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181652AA	06/14/2018 23:15	Patrick T Herres	0.87
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816450193	06/13/2018 13:37	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18164820003A	06/13/2018 21:36	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS20-0607-061218 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/13/2018 09:55
Collection Date/Time: 06/12/2018 11:47
SDG#: DHR41-05

CH2M Hill, Inc.
ELLE Sample #: SW 9656570
ELLE Group #: 1954441
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.85
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.85
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.85
10237	Tetrachloroethene	127-18-4	10		5	1	0.85
10237	Trichloroethene	79-01-6	5	U	5	1	0.85
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.85
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	16.3		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181652AA	06/14/2018 23:37	Patrick T Herres	0.85
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816450193	06/13/2018 13:41	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18164820003A	06/13/2018 21:36	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS20-2526-061218 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/13/2018 09:55
Collection Date/Time: 06/12/2018 12:24
SDG#: DHR41-06

CH2M Hill, Inc.
ELLE Sample #: SW 9656571
ELLE Group #: 1954441
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.98
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.98
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.98
10237	Tetrachloroethene	127-18-4	31		5	1	0.98
10237	Trichloroethene	79-01-6	1	J	5	1	0.98
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.98
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	4.4		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181652AA	06/14/2018 23:59	Patrick T Herres	0.98
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816450193	06/13/2018 13:44	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18164820003A	06/13/2018 21:36	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS34-0708-061218 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/13/2018 09:55
Collection Date/Time: 06/12/2018 14:42
SDG#: DHR41-07

CH2M Hill, Inc.
ELLE Sample #: SW 9656572
ELLE Group #: 1954441
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.9
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.9
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.9
10237	Tetrachloroethene	127-18-4	3	J	5	1	0.9
10237	Trichloroethene	79-01-6	5	U	5	1	0.9
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.9
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	16.3		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181652AA	06/15/2018 00:22	Patrick T Herres	0.9
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816450193	06/13/2018 13:47	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18164820003A	06/13/2018 21:36	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS18-0102-061218 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/13/2018 09:55
Collection Date/Time: 06/12/2018 15:06
SDG#: DHR41-08

CH2M Hill, Inc.
ELLE Sample #: SW 9656573
ELLE Group #: 1954441
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.84
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.84
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.84
10237	Tetrachloroethene	127-18-4	7		5	1	0.84
10237	Trichloroethene	79-01-6	5	U	5	1	0.84
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.84
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	18.9		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181652AA	06/15/2018 00:44	Patrick T Herres	0.84
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816450193	06/13/2018 13:50	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816450193	06/13/2018 14:18	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18164820003A	06/13/2018 21:36	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS18-0708-061218 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/13/2018 09:55
Collection Date/Time: 06/12/2018 15:18
SDG#: DHR41-09

CH2M Hill, Inc.
ELLE Sample #: SW 9656574
ELLE Group #: 1954441
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	6 U	6	1	0.92
10237	cis-1,2-Dichloroethene	156-59-2	6 U	6	1	0.92
10237	trans-1,2-Dichloroethene	156-60-5	6 U	6	1	0.92
10237	Tetrachloroethene	127-18-4	39	6	1	0.92
10237	Trichloroethene	79-01-6	6 U	6	1	0.92
10237	Vinyl Chloride	75-01-4	6 U	6	1	0.92
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	18.3	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181652AA	06/15/2018 01:07	Patrick T Herres	0.92
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816450193	06/13/2018 13:53	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816450193	06/13/2018 14:19	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816450193	06/13/2018 14:19	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18164820003A	06/13/2018 21:36	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS18-2526-061218 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/13/2018 09:55
Collection Date/Time: 06/12/2018 16:05
SDG#: DHR41-10

CH2M Hill, Inc.
ELLE Sample #: SW 9656575
ELLE Group #: 1954441
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.92
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.92
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.92
10237	Tetrachloroethene	127-18-4	18		5	1	0.92
10237	Trichloroethene	79-01-6	5	U	5	1	0.92
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.92
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	5.6		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181652AA	06/15/2018 01:29	Patrick T Herres	0.92
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816450193	06/13/2018 14:11	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816450193	06/13/2018 14:19	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816450193	06/13/2018 14:19	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18164820003A	06/13/2018 21:36	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/19/2018 18:32

Group Number: 1954441

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result		LOQ**	MDL
	ug/kg		ug/kg	ug/kg
Batch number: B181652AA	Sample number(s): 9656566-9656567,9656569-9656575			
1,1-Dichloroethene	5	U	5	1
cis-1,2-Dichloroethene	5	U	5	1
trans-1,2-Dichloroethene	5	U	5	1
Tetrachloroethene	5	U	5	1
Trichloroethene	5	U	5	1
Vinyl Chloride	5	U	5	1
Batch number: R181691AA	Sample number(s): 9656568			
1,1-Dichloroethene	250	U	250	50
cis-1,2-Dichloroethene	250	U	250	50
trans-1,2-Dichloroethene	250	U	250	50
Tetrachloroethene	250	U	250	50
Trichloroethene	250	U	250	50
Vinyl Chloride	250	U	250	50

LCS/LCSD

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: B181652AA	Sample number(s): 9656566-9656567,9656569-9656575								
1,1-Dichloroethene	20	19.47	20	19.92	97	100	73-129	2	30
cis-1,2-Dichloroethene	20	19.64	20	20.17	98	101	80-120	3	30
trans-1,2-Dichloroethene	20	18.82	20	19.19	94	96	80-125	2	30
Tetrachloroethene	20	19.64	20	19.75	98	99	73-120	1	30
Trichloroethene	20	19.37	20	19.64	97	98	80-120	1	30
Vinyl Chloride	20	15.88	20	16.6	79	83	59-120	4	30
Batch number: R181691AA	Sample number(s): 9656568								
1,1-Dichloroethene	1000	1072.1	1000	1026.58	107	103	73-129	4	30
cis-1,2-Dichloroethene	1000	950.05	1000	1012.22	95	101	80-120	6	30
trans-1,2-Dichloroethene	1000	993.94	1000	1006.04	99	101	80-125	1	30
Tetrachloroethene	1000	993.37	1000	937.21	99	94	73-120	6	30
Trichloroethene	1000	923.72	1000	917.39	92	92	80-120	1	30
Vinyl Chloride	1000	825.25	1000	774.7	83	77	59-120	6	30

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/19/2018 18:32

Group Number: 1954441

LCS/LCSD (continued)

Analysis Name	LCS Spike Added %	LCS Conc %	LCSD Spike Added %	LCSD Conc %	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 18164820003A	Sample number(s): 9656566-9656575								
Moisture	89.5	89.41			100		99-101		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/kg	MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: B181652AA	Sample number(s): 9656566-9656567,9656569-9656575 UNSPK: P651117									
1,1-Dichloroethene	4 U	16.86	18.93			112		73-129		
cis-1,2-Dichloroethene	4 U	16.86	19.12			113		80-120		
trans-1,2-Dichloroethene	4 U	16.86	18.3			108		80-125		
Tetrachloroethene	48.24	16.86	86.65			228*		73-120		
Trichloroethene	4 U	16.86	18.94			112		80-120		
Vinyl Chloride	4 U	16.86	15.38			91		59-120		

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc %	DUP Conc %	DUP RPD	DUP RPD Max
Batch number: 18164820003A	Sample number(s): 9656566-9656575 BKG: P653839			
Moisture	23.26	22.43	4	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- Solid by 8260B
Batch number: B181652AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9656566	100	98	104	95
9656567	101	99	103	95

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/19/2018 18:32

Group Number: 1954441

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- Solid by 8260B
Batch number: B181652AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9656569	101	98	104	97
9656570	101	97	104	93
9656571	102	100	105	93
9656572	102	99	102	96
9656573	102	98	103	93
9656574	103	98	104	93
9656575	79	98	105	90
Blank	102	102	102	97
LCS	102	101	105	104
LCSD	102	103	105	105
MS	100	103	107	101
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- Solid by 8260B
Batch number: R181691AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9656568	80	84	85	79
Blank	109	110	111	105
LCS	96	97	96	95
LCSD	99	99	98	95
Limits:	50-141	54-135	52-141	50-131

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody

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Acct. # 11372 Group # 1954441 Sample # 9656566-75

COC # 562624

Client Information

Client: Dow c/o Jacobs	Acct. #:
Project Name/#: Dow Hanging Rocks, OHIO	PWSID #:
Project Manager: Chiller / Shane Lowe	P.O. #:
Sampler: Billy Irish	Quote #:
State where samples were collected: Ohio	For Compliance: Yes ☐ No ☒

Matrix

Soil ☒ Sediment ☐ Tissue ☐ | Water: Potable ☐ Ground ☐ NPDES ☐ Surface ☐ | Other: ____

Analysis Requested

Preservation and Filtration Codes

For Lab Use Only
FSC:
SCR#:

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Remarks

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	VOCs (Soil)	% moisture
SO1-SS26-0102-061218	6-12-18	9:22	X		4	X	X
SO1-SS26-0607-061218	6-12-18	9:28	X		4	X	X
SO1-SS26-2223-061218	6-12-18	9:45	X		4	X	X
~~SO1-SS27-0102-061218~~	~~6-12-18~~	~~1020~~	~~X~~		~~4~~	~~X~~	~~X~~
~~SO1-SS27-0708-061218~~	~~6-12-18~~	~~1035~~	~~X~~		~~4~~	~~X~~	~~X~~
~~SO1-SS27-2425-061218~~	~~6-12-18~~	~~1050~~	~~X~~		~~4~~	~~X~~	~~X~~
SO1-SS20-0102-061218	6-12-18	1134	X		4	X	X
SO1-SS20-0607-061218	6-12-18	1147	X		4	X	X
SO1-SS20-2526-061218	6-12-18	1224	X		4	X	X
SO1-SS34-0708-061218	6-12-18	1442	X		4	X	X

Turnaround Time (TAT) Requested (please circle)

Standard ~~Rush~~

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: ~~24hr~~ Standard

E-mail address:

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) | Type VI (Raw Data Only)

Type III (Reduced non-CLP) | NJ DKQP | TX TRRP-13

NYSDEC Category A or B | MA MCP | CT RCP

Relinquished by	Date	Time	Received by	Date	Time
[signature]	6-12-18	1813			
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by [signature]	6-13-18	955

EDD Required? ~~Yes~~ No

If yes, format: As per Contract

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:

UPS ____ FedEx X Other ____

Temperature upon receipt 1.7 °C

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

Environmental Analysis Request/Chain of Custody

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Acct. # 11372 Group # 1954441 Sample # 96565666-75

COC # 562625

Client Information

Client: DOW c/o Jacobs	Acct. #:
Project Name/#: DOW Hanging Rock, OH10	PWSID #:
Project Manager: Chiller / Shawn Lowe	P.O. #:
Sampler: Billy Irish	Quote #:
State where samples were collected: OH10	For Compliance: Yes ☐ No ☒

Matrix

Soil ☒ Sediment ☐ Tissue ☐ Water: Potable ☐ Ground ☐ Surface ☐ NPDES ☐ Other: ____

Analysis Requested

Preservation and Filtration Codes

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	VOC's (Soil)	% moisture
SO1-SS18-0102-061218	6-12-18	1506	X		4	X	X
SO1-SS18-0708-061218	6-12-18	1518	X		4	X	X
SO1-SS18-2526-061218	6-12-18	1605	X		4	X	X

For Lab Use Only

FSC: _____

SCR#: _____

Preservation Codes

H=HCl	T=Thiosulfate
N=HNO_3	B=NaOH
S=H_2SO_4	P=H_3PO_4
F=Field Filtered	O=Other

Remarks

Turnaround Time (TAT) Requested (please circle)

Standard ~~Rush~~

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: 24 hr Standard

E-mail address: _____

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) | Type VI (Raw Data Only)

Type III (Reduced non-CLP) | NJ DKQP | TX TRRP-13

NYSDEC Category A or B | MA MCP | CT RCP

Relinquished by	Date	Time	Received by	Date	Time
[signature]	6-12-18	1813			
			[signature]	6-13-18	955

EDD Required? Yes No

If yes, format: As per Contract

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS _____ FedEx X Other T-2

Temperature upon receipt 1.7 °C

Eurofins Lancaster Laboratories Environmental, LLC • 2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

7044 0717

Page 2 of 2

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Sample Administration Receipt Documentation Log

Doc Log ID: 218978

Group Number(s): 1954441

Client: DOW c/o JACOBS

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	06/13/2018 9:55
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OH		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Suegeily Mendez (14058) at 11:16 on 06/13/2018

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT42-02	1.7	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17601-5994
T : 717-656-2300
F : 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mg**	milligram(s)
C	degrees Celsius	**mL**	milliliter(s)
cfu	colony forming units	**MPN**	Most Probable Number
CP Units	cobalt-chloroplatinate units	**N.D.**	non-detect
F	degrees Fahrenheit	**ng**	nanogram(s)
g	gram(s)	**NTU**	nephelometric turbidity units
IU	International Units	**pg/L**	picogram/liter
kg	kilogram(s)	**RL**	Reporting Limit
L	liter(s)	**TNTC**	Too Numerous To Count
lb.	pound(s)	**µg**	microgram(s)
m3	cubic meter(s)	**µL**	microliter(s)
meq	milliequivalents	**umhos/cm**	micromhos/cm

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Volatiles by GC/MS Data

Case Narrative/Conformance Summary

Volatiles by GC/MS

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR41

GC/MS Volatiles

Fraction: Volatiles by GC/MS

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
9656566	S01-SS26-0102-061218		X	0.83	
9656567	S01-SS26-0607-061218		X	0.9	
9656568	S01-SS26-2223-061218		X	38.94	
9656569	S01-SS20-0102-061218		X	0.87	
9656570	S01-SS20-0607-061218		X	0.85	
9656571	S01-SS20-2526-061218		X	0.98	
9656572	S01-SS34-0708-061218		X	0.9	
9656573	S01-SS18-0102-061218		X	0.84	
9656574	S01-SS18-0708-061218		X	0.92	
9656575	S01-SS18-2526-061218		X	0.92	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

(Sample number(s): 9656566-9656570, 9656572-9656573: Analysis: 10237)
The VOA soil weight is outside the acceptable weight range.
See the VOA Prep Summary Sheet for the affected sample(s).

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

MS/MSD

Matrix QC may not be included if site-specific QC were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, laboratory spike data (LCS) are provided.

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR41

GC/MS Volatiles

Fraction: Volatiles by GC/MS

SAMPLE ANALYSIS:

No problems were encountered with the analysis of the samples.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Volatiles by GC/MS

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Quality Control Reference List
GC/MS Volatiles

CLIENT: CH2M Hill, Inc.
SDG: DHR41

Fraction: Volatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
VOCs- Solid by 8260B	B181652AA	VBLKB11	06/14/2018 15:59
		LCSB11	06/14/2018 16:29
		LCDB11	06/14/2018 16:51
		9656566	06/14/2018 22:29
		9656567	06/14/2018 22:52
		9656569	06/14/2018 23:15
		9656570	06/14/2018 23:37
		9656571	06/14/2018 23:59
		9656572	06/15/2018 00:22
		9656573	06/15/2018 00:44
		9656574	06/15/2018 01:07
		9656575	06/15/2018 01:29
VOCs- Solid by 8260B	R181691AA	VBLKR92	06/18/2018 10:58
		LCSR92	06/18/2018 09:26
		LCDR92	06/18/2018 09:51
		9656568	06/18/2018 12:26

Quality Control Summary
Method Blank
GC/MS Volatiles
SDG: DHR41
Matrix: SOLID

Fraction: Volatiles by GC/MS

B181652AA / VBLKB11 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/14/18	N.D.	ug/kg	1	5
1,1-Dichloroethene	06/14/18	N.D.	ug/kg	1	5
cis-1,2-Dichloroethene	06/14/18	N.D.	ug/kg	1	5
trans-1,2-Dichloroethene	06/14/18	N.D.	ug/kg	1	5
Trichloroethene	06/14/18	N.D.	ug/kg	1	5
Tetrachloroethene	06/14/18	N.D.	ug/kg	1	5

R181691AA / VBLKR92 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/18/18	N.D.	ug/kg	50	250
1,1-Dichloroethene	06/18/18	N.D.	ug/kg	50	250
cis-1,2-Dichloroethene	06/18/18	N.D.	ug/kg	50	250
trans-1,2-Dichloroethene	06/18/18	N.D.	ug/kg	50	250
Trichloroethene	06/18/18	N.D.	ug/kg	50	250
Tetrachloroethene	06/18/18	N.D.	ug/kg	50	250

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DHR41
Matrix: SOLID

Fraction: Volatiles by GC/MS

B181652AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKB11	102	54 - 135	97	50 - 131	102	50 - 141	102	52 - 141
LCSB11	101	54 - 135	104	50 - 131	102	50 - 141	105	52 - 141
LCDB11	103	54 - 135	105	50 - 131	102	50 - 141	105	52 - 141
9656566	98	54 - 135	95	50 - 131	100	50 - 141	104	52 - 141
9656567	99	54 - 135	95	50 - 131	101	50 - 141	103	52 - 141
9656569	98	54 - 135	97	50 - 131	101	50 - 141	104	52 - 141
9656570	97	54 - 135	93	50 - 131	101	50 - 141	104	52 - 141
9656571	100	54 - 135	93	50 - 131	102	50 - 141	105	52 - 141
9656572	99	54 - 135	96	50 - 131	102	50 - 141	102	52 - 141
9656573	98	54 - 135	93	50 - 131	102	50 - 141	103	52 - 141
9656574	98	54 - 135	93	50 - 131	103	50 - 141	104	52 - 141
9656575	98	54 - 135	90	50 - 131	79	50 - 141	105	52 - 141

R181691AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKR92	110	54 - 135	105	50 - 131	109	50 - 141	111	52 - 141
LCSR92	97	54 - 135	95	50 - 131	96	50 - 141	96	52 - 141
LCDR92	99	54 - 135	95	50 - 131	99	50 - 141	98	52 - 141
9656568	84	54 - 135	79	50 - 131	80	50 - 141	85	52 - 141

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSB11 LCSD: LCDB11 **Analyte**	Batch: **B181652AA** (Sample number(s): 9656566-9656567, 9656569-9656575)							
	Spike Added ug/kg	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	15.88	16.6	79	83	59-120	4	30
1,1-Dichloroethene	20	19.47	19.92	97	100	73-129	2	30
cis-1,2-Dichloroethene	20	19.64	20.17	98	101	80-120	3	30
trans-1,2-Dichloroethene	20	18.82	19.19	94	96	80-125	2	30
Trichloroethene	20	19.37	19.64	97	98	80-120	1	30
Tetrachloroethene	20	19.64	19.75	98	99	73-120	1	30

LCS: LCSR92 LCSD: LCDR92 **Analyte**	Batch: **R181691AA** (Sample number(s): 9656568)							
	Spike Added ug/kg	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	1000	825.25	774.7	83	77	59-120	6	30
1,1-Dichloroethene	1000	1072.1	1026.58	107	103	73-129	4	30
cis-1,2-Dichloroethene	1000	950.05	1012.22	95	101	80-120	6	30
trans-1,2-Dichloroethene	1000	993.94	1006.04	99	101	80-125	1	30
Trichloroethene	1000	923.72	917.39	92	92	80-120	1	30
Tetrachloroethene	1000	993.37	937.21	99	94	73-120	6	30

Fraction: Volatiles by GC/MS

10237: VOCs- Solid by 8260B Analyte Name	Default MDL	Default LOQ	Units
Vinyl Chloride	1	5	ug/kg
1,1-Dichloroethene	1	5	ug/kg
trans-1,2-Dichloroethene	1	5	ug/kg
cis-1,2-Dichloroethene	1	5	ug/kg
Trichloroethene	1	5	ug/kg
Tetrachloroethene	1	5	ug/kg

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: bf22t01.d BFB Injection Date: 02/22/18

Instrument ID: HP09953 BFB Injection Time: 10:34

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.36
75	30.0 - 60.0% of mass 95	49.53
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.95
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	81.80
175	5.0 - 9.0% of mass 174	6.09 (7.45)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.92 (96.48)1
177	5.0 - 9.0% of mass 176	5.35 (6.77)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	bf22i01.d	02/22/18	11:18
02	VSTD100	bf22i02.d	02/22/18	11:42
03	VSTD50	bf22i03.d	02/22/18	12:06
04	VSTD20	bf22i04.d	02/22/18	12:31
05	VSTD10	bf22i05.d	02/22/18	12:57
06	VSTD4	bf22i06.d	02/22/18	13:29
07	MDL001 - MDL001	bf22m01.d	02/22/18	13:51
08	LGBICV	bf22v01.d	02/22/18	14:16

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu14t01.d BFB Injection Date: 06/14/18

Instrument ID: HP09953 BFB Injection Time: 13:55

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.48
75	30.0 - 60.0% of mass 95	52.06
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.73
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	84.73
175	5.0 - 9.0% of mass 174	6.49 (7.65)1
176	Greater than 95.0%, but less than 101.0% of mass 174	83.30 (98.31)1
177	5.0 - 9.0% of mass 176	5.61 (6.74)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	bu14c01.d	06/14/18	14:41
02	VBLKB10	bu14b05.d	06/14/18	15:59
03	VBLKB11	bu14b10.d	06/14/18	15:59
04	LCSB10	bu14s01.d	06/14/18	16:29
05	LCSB11	bu14s31.d	06/14/18	16:29
06	LCDB10	bu14s02.d	06/14/18	16:51
07	LCDB11	bu14s32.d	06/14/18	16:51
08	9644038	bu14s03.d	06/14/18	19:00
09	9650982	bu14s04.d	06/14/18	19:22
10	9657452	bu14s05.d	06/14/18	19:45
11	9650985	bu14s06.d	06/14/18	20:08
12	9651117	bu14s33.d	06/14/18	20:36
13	9651117MS	bu14s34.d	06/14/18	20:59
14	9651118	bu14s35.d	06/14/18	21:21
15	9655317	bu14s36.d	06/14/18	21:44
16	9655318	bu14s37.d	06/14/18	22:07
17	9656566	bu14s38.d	06/14/18	22:29
18	9656567	bu14s39.d	06/14/18	22:52
19	9656569	bu14s40.d	06/14/18	23:15
20	9656570	bu14s41.d	06/14/18	23:37
21	9656571	bu14s42.d	06/14/18	23:59
22	9656572	bu14s43.d	06/15/18	00:22

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu14t01.d BFB Injection Date: 06/14/18

Instrument ID: HP09953 BFB Injection Time: 13:55

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.48
75	30.0 - 60.0% of mass 95	52.06
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.73
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	84.73
175	5.0 - 9.0% of mass 174	6.49 (7.65)1
176	Greater than 95.0%, but less than 101.0% of mass 174	83.30 (98.31)1
177	5.0 - 9.0% of mass 176	5.61 (6.74)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9656573	bu14s44.d	06/15/18	00:44
24	9656574	bu14s45.d	06/15/18	01:07
25	9656575	bu14s46.d	06/15/18	01:29

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: ry29t10.d BFB Injection Date: 05/29/18

Instrument ID: HP07566 BFB Injection Time: 11:34

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.97
75	30.0 - 60.0% of mass 95	51.05
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.91
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	65.09
175	5.0 - 9.0% of mass 174	5.04 (7.75)1
176	Greater than 95.0%, but less than 101.0% of mass 174	63.23 (97.14)1
177	5.0 - 9.0% of mass 176	4.00 (6.33)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD4	ry29i10.d	05/29/18	12:21
02	VSTD10	ry29i11.d	05/29/18	12:45
03	VSTD20	ry29i12.d	05/29/18	13:09
04	VSTD50	ry29i13.d	05/29/18	13:35
05	VSTD100	ry29i14.d	05/29/18	13:59
06	VSTD300	ry29i15.d	05/29/18	14:23
07	MDL001 - MDL001	ry29m10.d	05/29/18	15:37
08	RICV	ry29v10.d	05/29/18	16:02
09	VSTD4	ry29i20.d	05/29/18	16:51
10	VSTD10	ry29i21.d	05/29/18	17:16
11	VSTD20	ry29i22.d	05/29/18	17:41
12	VSTD50	ry29i23.d	05/29/18	18:06
13	VSTD100	ry29i24.d	05/29/18	18:30
14	VSTD300	ry29i25.d	05/29/18	18:55
15	SMDL - SMDL	ry29m20.d	05/29/18	19:44
16	SMRICV	ry29v20.d	05/29/18	20:09

FORM V VOA

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: ru18t01.d BFB Injection Date: 06/18/18

Instrument ID: HP07566 BFB Injection Time: 07:42

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.94
75	30.0 - 60.0% of mass 95	49.01
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	7.39
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	66.10
175	5.0 - 9.0% of mass 174	4.96 (7.50)1
176	Greater than 95.0%, but less than 101.0% of mass 174	65.30 (98.79)1
177	5.0 - 9.0% of mass 176	4.02 (6.16)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	ru18c01.d	06/18/18	08:32
02	LCSR92	ru18l01.d	06/18/18	09:26
03	LCDR92	ru18l02.d	06/18/18	09:51
04	VBLKR92	ru18b01.d	06/18/18	10:58
05	9653939	ru18s02.d	06/18/18	11:39
06	9653940	ru18s03.d	06/18/18	12:03
07	9656568	ru18s04.d	06/18/18	12:26
08	9654945	ru18s05.d	06/18/18	12:50
09	9650181DL	ru18s06.d	06/18/18	13:15
10	9650186DL	ru18s07.d	06/18/18	13:39
11	9651601	ru18s08.d	06/18/18	14:04
12	9651606	ru18s09.d	06/18/18	14:29
13	9651608	ru18s10.d	06/18/18	14:53
14	9651609	ru18s11.d	06/18/18	15:18
15	9651612	ru18s12.d	06/18/18	15:42
16	9651614DL	ru18s13.d	06/18/18	16:07
17	9651616	ru18s14.d	06/18/18	16:31
18	9651607	ru18s15.d	06/18/18	16:55
19	9651611	ru18s17.d	06/18/18	17:44
20	9651611DL	ru18s18.d	06/18/18	18:09
21	9651610	ru18s19.d	06/18/18	18:33
22	9651610DL	ru18s20.d	06/18/18	18:57

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane		0.4937	0.4887	0.4857	0.5026	0.5070	0.4719	0.4916	3	AVG	
Chloromethane	#	0.6250	0.6026	0.5854	0.5711	0.5965	0.5428	0.5872	5	AVG	#
Vinyl Chloride	*	0.4665	0.4310	0.4182	0.4099	0.4171	0.3607	0.4173	8	AVG	*
Bromomethane		0.3081	0.3006	0.2984	0.2909	0.2897	0.2518	0.2899	7	AVG	
Chloroethane		0.2404	0.2467	0.2409	0.2386	0.2372	0.1969	0.2334	8	AVG	
Dichlorofluoromethane		0.6106	0.5949	0.6079	0.5949	0.6009	0.5439	0.5922	4	AVG	
Trichlorofluoromethane		0.5424	0.5392	0.5339	0.5359	0.5516	0.5187	0.5369	2	AVG	
Ethanol		0.1197	0.1143	0.1250	0.1279	0.1217	0.1180	0.1211	4	AVG	
Freon 123a		0.3516	0.3561	0.3631	0.3465	0.3545	0.3389	0.3518	2	AVG	
Acrolein		2.4157	2.4240	2.5462	2.7115	2.3801	2.0909	2.4281	8	AVG	
1,1-Dichloroethene	*	0.2378	0.2477	0.2501	0.2415	0.2560	0.2425	0.2459	3	AVG	*
Acetone		0.0301	0.0281	0.0238	0.0230	0.0225	0.0213	0.0248	14	AVG	
Freon 113		0.2790	0.3085	0.2946	0.2882	0.3071	0.2988	0.2960	4	AVG	
2-Propanol		0.9378	1.0859	1.0919	1.3247	1.0802	1.1772	1.1163	11	AVG	
Methyl Iodide		0.5059	0.5333	0.5541	0.5338	0.5578	0.5474	0.5387	4	AVG	
Carbon Disulfide		0.7997	0.8330	0.8463	0.8407	0.8843	0.8505	0.8424	3	AVG	
Methyl Acetate		0.2282	0.2378	0.2011	0.1925	0.1997	0.1949	0.2090	9	AVG	
Allyl Chloride		0.5013	0.4898	0.4880	0.4877	0.5031	0.4654	0.4892	3	AVG	
Methylene Chloride		0.2909	0.2986	0.2904	0.2831	0.2903	0.2778	0.2885	2	AVG	
t-Butyl alcohol		1.3811	1.2450	1.2102	1.2677	1.2127	1.1339	1.2418	7	AVG	
Acrylonitrile		0.1032	0.1110	0.0959	0.0970	0.0961	0.0911	0.0991	7	AVG	
Methyl Tertiary Butyl Ether		0.7860	0.8352	0.7923	0.7915	0.7973	0.7826	0.7975	2	AVG	
trans-1,2-Dichloroethene		0.2776	0.2905	0.2964	0.2871	0.2971	0.2819	0.2884	3	AVG	
n-Hexane		0.4644	0.5057	0.5030	0.5210	0.5427	0.5389	0.5126	6	AVG	
1,1-Dichloroethane	#	0.5504	0.5699	0.5871	0.5681	0.5881	0.5753	0.5731	2	AVG	#
di-Isopropyl ether		1.1120	1.1762	1.1817	1.1544	1.1878	1.1492	1.1602	2	AVG	
2-Chloro-1,3-butadiene		0.4692	0.5100	0.5339	0.5218	0.5510	0.5383	0.5207	6	AVG	
Ethyl t-butyl ether		0.8945	0.9546	0.9853	0.9854	1.0111	1.0051	0.9727	4	AVG	
2-Butanone		7.1353	7.2724	7.4916	7.9621	7.1791	6.8822	7.3204	5	AVG	
cis-1,2-Dichloroethene		0.3111	0.3303	0.3397	0.3333	0.3451	0.3458	0.3342	4	AVG	
2,2-Dichloropropane		0.3625	0.4052	0.4224	0.4310	0.4616	0.4679	0.4251	9	AVG	
Propionitrile		1.8864	1.9537	2.0773	2.2150	2.0246	1.9793	2.0227	6	AVG	
Methacrylonitrile		0.1142	0.1249	0.1114	0.1153	0.1164	0.1201	0.1170	4	AVG	
Bromochloromethane		0.1557	0.1642	0.1602	0.1628	0.1669	0.1713	0.1635	3	AVG	
Tetrahydrofuran		1.3912	1.5533	1.5880	1.7875	1.6127	1.5810	1.5856	8	AVG	
Chloroform	*	0.5030	0.5322	0.5455	0.5356	0.5526	0.5494	0.5364	3	AVG	*
1,1,1-Trichloroethane		0.5352	0.5079	0.5223	0.4905	0.5246	0.5285	0.5181	3	AVG	
Cyclohexane		0.5629	0.6493	0.6177	0.6222	0.6647	0.6642	0.6302	6	AVG	
Cyclohexane(2)		0.5006	0.4943	0.4711	0.5565	0.5111	0.5144	0.5080	6	AVG	
Cyclohexane(3)		0.1594	0.1839	0.1769	0.1801	0.1918	0.1929	0.1808	7	AVG	
1,1-Dichloropropene		0.4023	0.4334	0.4383	0.4280	0.4510	0.4497	0.4338	4	AVG	
Carbon Tetrachloride		0.3244	0.3604	0.3721	0.3810	0.4190	0.4414	0.3830	11	AVG	
Isobutyl Alcohol		0.4628	0.4806	0.5053	0.5387	0.5193	0.5508	0.5096	7	AVG	
Benzene		1.2429	1.2621	1.2830	1.2419	1.2844	1.2513	1.2609	2	AVG	
1,2-Dichloroethane		0.4024	0.4213	0.4097	0.4022	0.4096	0.4129	0.4097	2	AVG	
1,2-Dichloroethane(2)		0.0303	0.0375	0.0352	0.0355	0.0359	0.0376	0.0353	8	AVG	
t-Amyl methyl ether		0.7479	0.8064	0.7995	0.8156	0.8448	0.8723	0.8144	5	AVG	
n-Heptane		0.5526	0.6424	0.5700	0.6187	0.6421	0.6485	0.6124	7	AVG	
n-Butanol		0.3098	0.3268	0.3694	0.4162	0.4027	0.4324	0.3762	13	AVG	
Trichloroethene		0.3036	0.3195	0.3239	0.3175	0.3348	0.3368	0.3227	4	AVG	
Methylcyclohexane		0.5819	0.5773	0.5413	0.6122	0.6392	0.6478	0.6000	7	AVG	
1,2-Dichloropropane	*	0.3067	0.3305	0.3383	0.3336	0.3432	0.3461	0.3331	4	AVG	*

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Methyl Methacrylate			0.1686	0.1881	0.1830	0.1917	0.1998	0.2129	0.1907	8	AVG	
1,4-Dioxane			0.1110	0.1248	0.1466	0.1630	0.1467	0.1540	0.1410	14	AVG	
Dibromomethane			0.1663	0.1816	0.1759	0.1784	0.1836	0.1913	0.1795	5	AVG	
Bromodichloromethane			0.3248	0.3638	0.3817	0.3882	0.4109	0.4303	0.3833	10	AVG	
2-Nitropropane			2.0194	2.2729	2.3607	2.9534	3.0464		2.5306	18	2NDDEG	
2-Chloroethyl Vinyl Ether			0.1410	0.1558	0.1576	0.1696	0.1760	0.1863	0.1644	10	AVG	
cis-1,3-Dichloropropene			0.3779	0.4439	0.4672	0.4804	0.5078	0.5238	0.4668	11	AVG	
4-Methyl-2-pentanone			0.2576	0.3163	0.2933	0.3176	0.3143	0.3227	0.3036	8	AVG	
Toluene		*	0.9247	1.0130	1.0229	0.9901	1.0314	1.0079	0.9983	4	AVG	*
trans-1,3-Dichloropropene			0.3948	0.4659	0.4870	0.5175	0.5510	0.5732	0.4982	13	AVG	
Ethyl Methacrylate			0.3520	0.4298	0.4331	0.4721	0.4944	0.5152	0.4494	13	AVG	
1,1,2-Trichloroethane			0.3012	0.3296	0.3197	0.3250	0.3269	0.3353	0.3230	4	AVG	
Tetrachloroethene			0.4093	0.4669	0.4566	0.4543	0.4871	0.5045	0.4631	7	AVG	
1,3-Dichloropropane			0.5166	0.5690	0.5523	0.5568	0.5651	0.5712	0.5552	4	AVG	
2-Hexanone			0.2486	0.2841	0.2494	0.2778	0.2765	0.2830	0.2699	6	AVG	
Dibromochloromethane			0.2803	0.3263	0.3380	0.3678	0.3910	0.4236	0.3545	14	AVG	
1,2-Dibromoethane			0.2950	0.3284	0.3231	0.3289	0.3375	0.3495	0.3271	6	AVG	
1-Chlorohexane			0.4346	0.5414	0.5133	0.5396	0.5742	0.5820	0.5308	10	AVG	
Chlorobenzene		#	1.0337	1.1318	1.1257	1.0987	1.1318	1.1318	1.1089	4	AVG	#
1,1,1,2-Tetrachloroethane			0.3009	0.3456	0.3573	0.3779	0.4025	0.4298	0.3690	12	AVG	
Ethylbenzene		*	1.6800	1.9699	1.9294	1.9287	2.0003	1.9159	1.9040	6	AVG	*
m+p-Xylene			0.6648	0.7740	0.7603	0.7637	0.8001	0.7814	0.7574	6	AVG	
o-Xylene			0.6360	0.7611	0.7500	0.7650	0.8018	0.8129	0.7545	8	AVG	
Styrene			0.9609	1.1776	1.1925	1.2237	1.2853	1.2873	1.1879	10	AVG	
Bromoform		#	0.1645	0.1961	0.1982	0.2297	0.2506	0.2941	0.2222	21	2NDDEG	#
Isopropylbenzene			1.5872	1.9815	1.9075	1.9702	2.0668	1.9360	1.9082	9	AVG	
Cyclohexanone			0.6812	0.7882	0.8988	1.0192	0.9573	1.0561	0.9002	16	2NDDEG	
1,1,2,2-Tetrachloroethane		#	0.7205	0.8162	0.7382	0.7748	0.7628	0.7200	0.7554	5	AVG	#
Bromobenzene			0.7947	0.8809	0.8693	0.8361	0.8490	0.8151	0.8408	4	AVG	
trans-1,4-Dichloro-2-butene			0.2019	0.2266	0.1995	0.2076	0.2082	0.1977	0.2069	5	AVG	
1,2,3-Trichloropropane			0.2024	0.2234	0.2094	0.2076	0.2048	0.1963	0.2073	4	AVG	
n-Propylbenzene			3.5008	4.3012	4.0233	3.9668	4.0077	3.0592	3.8098	12	AVG	
2-Chlorotoluene			0.7479	0.8267	0.8112	0.7922	0.8147	0.7707	0.7939	4	AVG	
1,3,5-Trimethylbenzene			2.4376	3.0319	2.9345	2.9334	3.0104	2.5475	2.8159	9	AVG	
4-Chlorotoluene			0.7443	0.8644	0.8462	0.8227	0.8504	0.8075	0.8226	5	AVG	
tert-Butylbenzene			0.5308	0.6792	0.6465	0.6746	0.7119	0.6923	0.6559	10	AVG	
Pentachloroethane			0.3802	0.4286	0.4543	0.4969	0.5395	0.5791	0.4798	15	AVG	
1,2,4-Trimethylbenzene			2.5041	3.0952	2.9646	2.9932	3.0647	2.5702	2.8653	9	AVG	
sec-Butylbenzene			3.0756	3.9796	3.7154	3.8596	3.9223	3.0048	3.5929	12	AVG	
1,3-Dichlorobenzene			1.5244	1.7585	1.6901	1.6588	1.6810	1.6010	1.6523	5	AVG	
p-Isopropyltoluene			2.7340	3.5537	3.2781	3.3991	3.5023	2.7884	3.2092	11	AVG	
1,4-Dichlorobenzene			1.6392	1.8361	1.7301	1.7209	1.7376	1.6492	1.7189	4	AVG	
1,2,3-Trimethylbenzene			2.8974	3.0421	2.9914	3.0694	3.0912	2.5581	2.9416	7	AVG	
Benzyl Chloride			0.1500	0.2040	0.2096	0.2587	0.2746	0.3058	0.2338	24	2NDDEG	
1,3-Diethylbenzene			1.7470	1.8875	1.8283	1.9926	2.0187	1.8348	1.8848	6	AVG	
1,4-Diethylbenzene			1.8994	2.0158	1.9508	2.0984	2.1666	1.9375	2.0114	5	AVG	
n-Butylbenzene			1.4152	1.8153	1.6487	1.7385	1.7677	1.5699	1.6592	9	AVG	
1,2-Dichlorobenzene			1.5146	1.7324	1.6363	1.6557	1.7074	1.5992	1.6409	5	AVG	
1,2-Diethylbenzene			1.5329	1.6048	1.5604	1.6668	1.7022	1.5802	1.6079	4	AVG	
1,2-Dibromo-3-chloropropane			0.1139	0.1399	0.1216	0.1398	0.1402	0.1438	0.1332	9	AVG	
1,3,5-Trichlorobenzene			1.1954	1.4441	1.3236	1.3989	1.4374	1.4641	1.3773	7	AVG	
1,2,4-Trichlorobenzene			1.1029	1.3438	1.2359	1.3065	1.3308	1.3382	1.2763	7	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

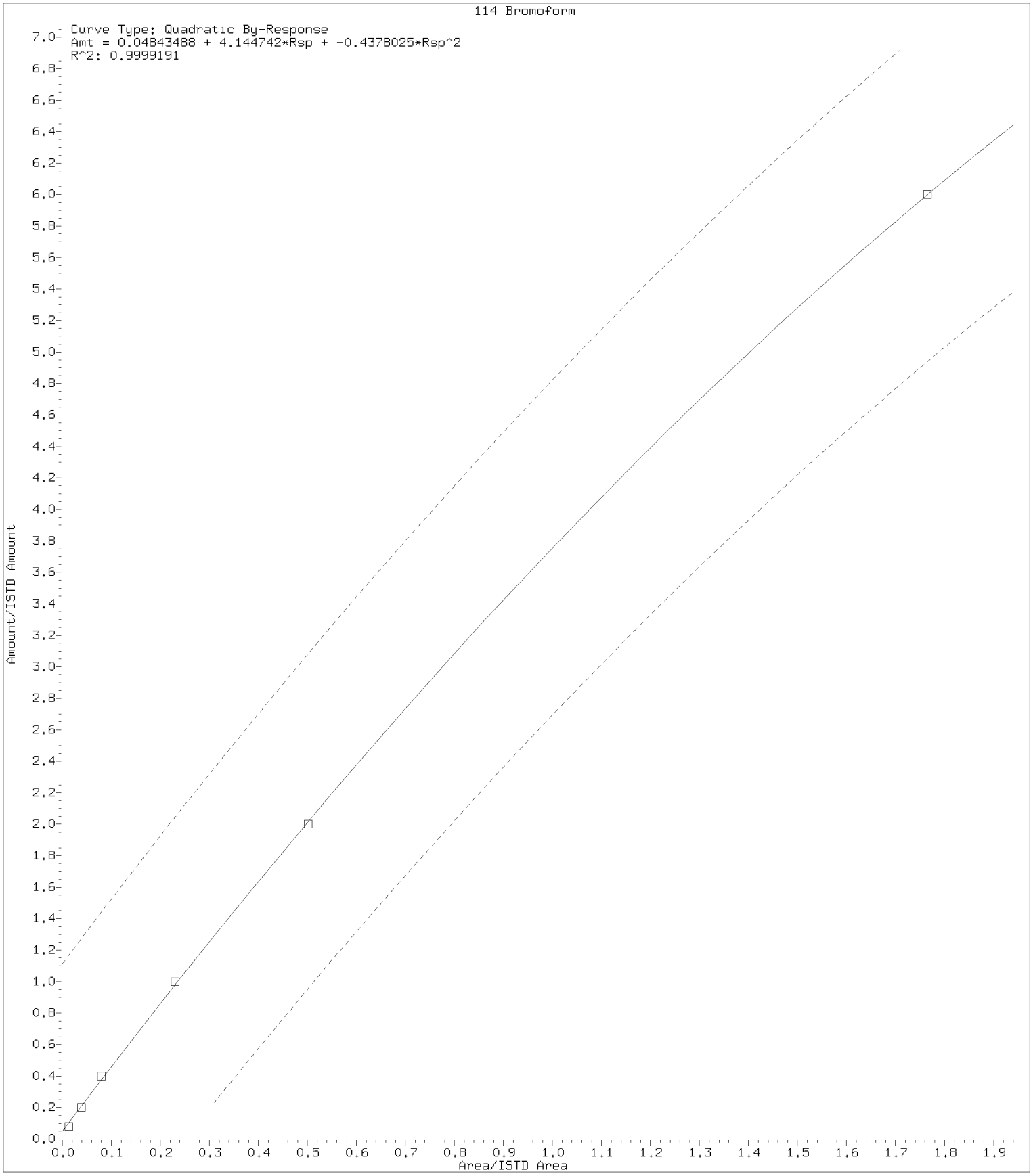
LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Hexachlorobutadiene		0.5066	0.6377	0.5818	0.6845	0.7278	0.8061	0.6574	16	2NDDEG
Naphthalene		2.4406	2.9700	2.6800	2.8364	2.7417	2.3077	2.6627	9	AVG
1,2,3-Trichlorobenzene		1.0742	1.2858	1.1530	1.2084	1.2213	1.1951	1.1896	6	AVG
2-Methylnaphthalene		1.3392	1.6688	1.6220	1.8294	1.8489	1.6210	1.6549	11	AVG
Dibromofluoromethane		0.2519	0.2489	0.2484	0.2517	0.2501	0.2499	0.2502	1	AVG
Dibromofluoromethane(2)		0.2544	0.2544	0.2542	0.2545	0.2579	0.2549	0.2550	1	AVG
1,2-Dichloroethane-d4		0.0560	0.0569	0.0536	0.0548	0.0539	0.0537	0.0548	2	AVG
1,2-Dichloroethane-d4(2)		0.2808	0.2847	0.2806	0.2924	0.2701	0.2713	0.2800	3	AVG
1,2-Dichloroethane-d4(3)		0.0351	0.0356	0.0338	0.0346	0.0342	0.0347	0.0347	2	AVG
Toluene-d8		1.2947	1.3100	1.3184	1.3142	1.3178	1.2772	1.3054	1	AVG
Toluene-d8(2)		0.8344	0.8400	0.8427	0.8577	0.8478	0.8390	0.8436	1	AVG
4-Bromofluorobenzene		0.4965	0.4992	0.4949	0.4976	0.4962	0.5077	0.4987	1	AVG
4-Bromofluorobenzene(2)		0.4326	0.4314	0.4350	0.4356	0.4288	0.4416	0.4342	1	AVG

Average %RSD 7

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



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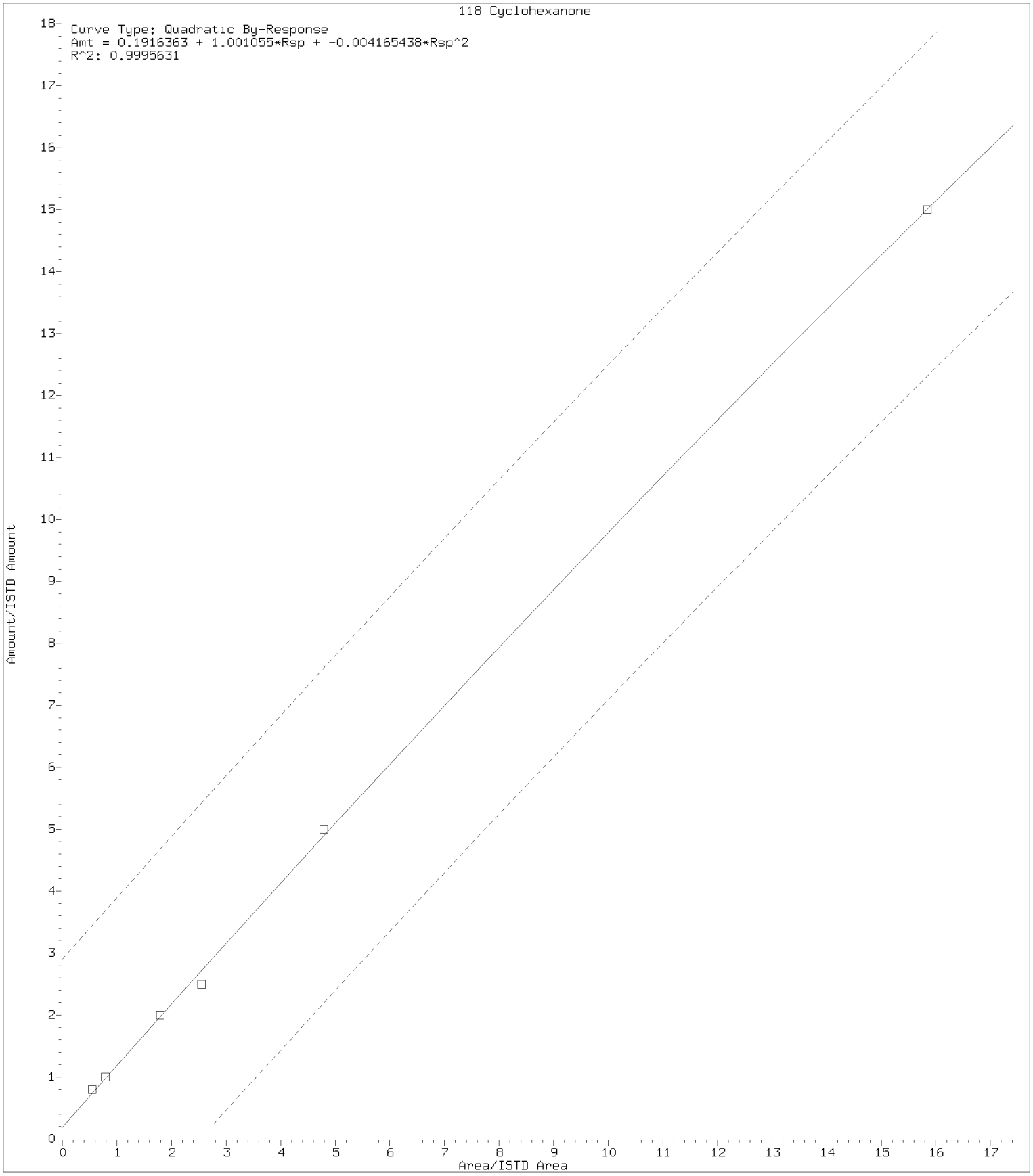
Target 3.5 esignature user ID: jkh09052



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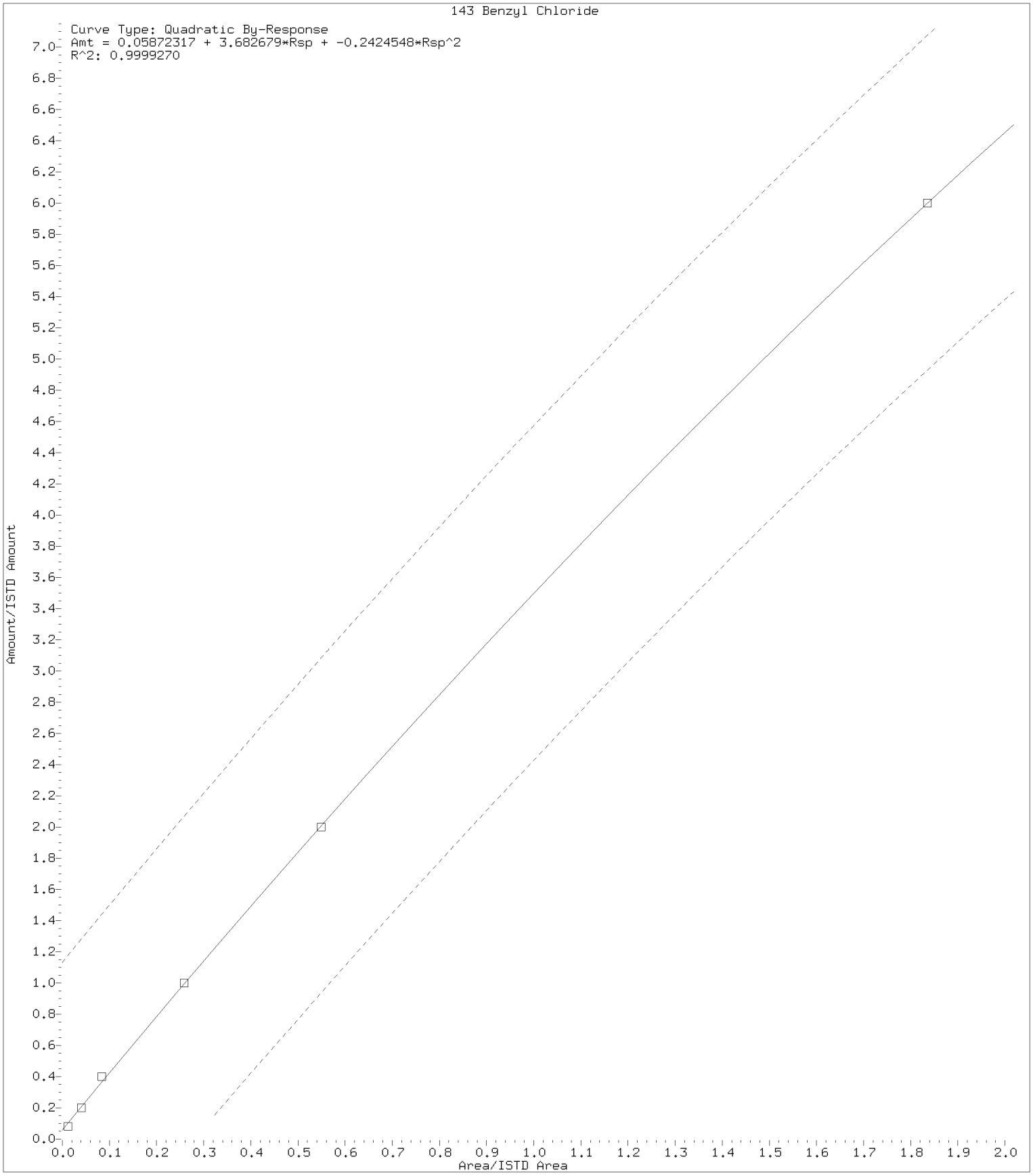
Target 3.5 esignature user ID: jkh09052



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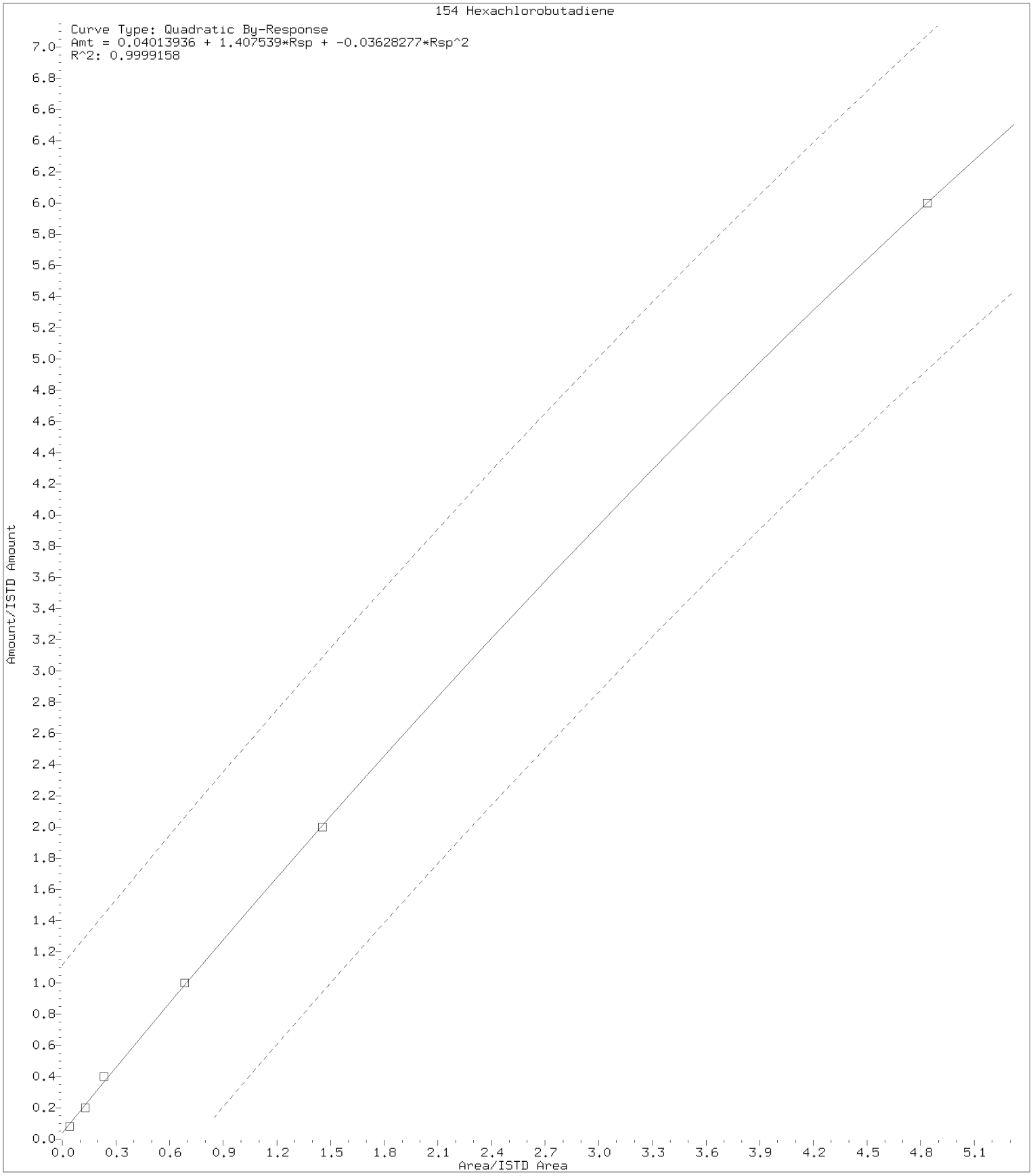
Target 3.5 esignature user ID: jkh09052



Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i01.d	VSTD300
/chem2/HP09953.i/18feb22i.b/bf22i02.d	VSTD100
/chem2/HP09953.i/18feb22i.b/bf22i03.d	VSTD050
/chem2/HP09953.i/18feb22i.b/bf22i04.d	VSTD020
/chem2/HP09953.i/18feb22i.b/bf22i05.d	VSTD010
/chem2/HP09953.i/18feb22i.b/bf22i06.d	VSTD004

Area Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	128217	123900	114201	115639	145100	130640	126283	9	Yes
Fluorobenzene	1184646	1204409	1207816	1194615	1209200	1184260	1197491	1	Yes
Chlorobenzene-d5	942767	935486	931957	925430	939957	919534	932522	1	Yes
1,4-Dichlorobenzene-d4	637692	560922	549119	528429	540311	528167	557440	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. RT
t-Butyl alcohol-d10	1.936	1.936	1.924	1.924	1.936	1.918	1.929
Fluorobenzene	3.956	3.962	3.956	3.950	3.962	3.950	3.956
Chlorobenzene-d5	7.156	7.156	7.156	7.156	7.156	7.156	7.156
1,4-Dichlorobenzene-d4	9.236	9.236	9.236	9.236	9.236	9.236	9.236

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 02/23/2018 at 11:24.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4728	19.24	20	-4	
#	Chloromethane	0.5872	0.6158	20.97	20	5	#
*	Vinyl Chloride	0.4173	0.4340	20.80	20	4	*
	Bromomethane	0.2899	0.3058	21.10	20	5	
	Chloroethane	0.2334	0.2382	20.41	20	2	
	Dichlorofluoromethane	0.5922	0.6121	20.67	20	3	
	Trichlorofluoromethane	0.5369	0.5575	20.77	20	4	
	Ethanol	0.1211	0.1297	1071.13	1000	7	
	Freon 123a	0.3518	0.3682	20.93	20	5	
	Acrolein	2.4281	2.1880	135.17	150	-10	
*	1,1-Dichloroethene	0.2459	0.2825	22.97	20	15	*
	Acetone	0.0248	0.0227	137.36	150	-8	
	Freon 113	0.2960	0.3175	21.45	20	7	
	2-Propanol	1.1163	1.3659	183.55	150	22	
	Methyl Iodide	0.5387	0.5563	20.65	20	3	
	Carbon Disulfide	0.8424	0.8761	20.80	20	4	
	Methyl Acetate	0.2090	0.2095	20.04	20	0	
	Allyl Chloride	0.4892	0.4957	20.27	20	1	
	Methylene Chloride	0.2885	0.3069	21.28	20	6	
	t-Butyl alcohol	1.2418	1.5044	242.30	200	21	
	Acrylonitrile	0.0991	0.0917	92.60	100	-7	
	Methyl Tertiary Butyl Ether	0.7975	0.7924	19.87	20	-1	
	trans-1,2-Dichloroethene	0.2884	0.3151	21.85	20	9	
	n-Hexane	0.5126	0.5289	20.63	20	3	
#	1,1-Dichloroethane	0.5731	0.5832	20.35	20	2	#
	di-Isopropyl ether	1.1602	1.2047	20.77	20	4	
	2-Chloro-1,3-butadiene	0.5207	0.5325	20.45	20	2	
	Ethyl t-butyl ether	0.9727	0.9547	19.63	20	-2	
	2-Butanone	7.3204	7.1037	145.56	150	-3	
	cis-1,2-Dichloroethene	0.3342	0.3513	21.02	20	5	
	2,2-Dichloropropane	0.4251	0.4226	19.88	20	-1	
	Propionitrile	2.0227	2.0620	152.91	150	2	
	Methacrylonitrile	0.1170	0.1114	142.70	150	-5	
	Bromochloromethane	0.1635	0.1615	19.75	20	-1	
	Tetrahydrofuran	1.5856	1.6585	104.60	100	5	
*	Chloroform	0.5364	0.5469	20.39	20	2	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1-Trichloroethane	0.5181	0.5094	19.66	20	-2	
	Cyclohexane	0.6302	0.6474	20.55	20	3	
	1,1-Dichloropropene	0.4338	0.4369	20.14	20	1	
	Carbon Tetrachloride	0.3830	0.3742	19.54	20	-2	
	Isobutyl Alcohol	0.5096	0.4746	465.70	500	-7	
	Benzene	1.2609	1.3047	20.69	20	3	
	1,2-Dichloroethane	0.4097	0.4020	19.62	20	-2	
	t-Amyl methyl ether	0.8144	0.7876	19.34	20	-3	
	n-Heptane	0.6124	0.6228	20.34	20	2	
	n-Butanol	0.3762	0.3592	954.90	1000	-5	
	Trichloroethene	0.3227	0.3246	20.12	20	1	
	Methylcyclohexane	0.6000	0.6140	20.47	20	2	
*	1,2-Dichloropropane	0.3331	0.3398	20.41	20	2	*
	Methyl Methacrylate	0.1907	0.1801	18.89	20	-6	
	1,4-Dioxane	0.1410	0.1584	561.79	500	12	
	Dibromomethane	0.1795	0.1764	19.65	20	-2	
	Bromodichloromethane	0.3833	0.3650	19.05	20	-5	
	2-Nitropropane	2.5306	2.1572	19.28	20	-4	
	2-Chloroethyl Vinyl Ether	0.1644	0.1537	18.70	20	-7	
	cis-1,3-Dichloropropene	0.4668	0.4466	19.13	20	-4	
	4-Methyl-2-pentanone	0.3036	0.2994	98.59	100	-1	
*	Toluene	0.9983	1.0240	20.52	20	3	*
	trans-1,3-Dichloropropene	0.4982	0.4608	18.50	20	-8	
	Ethyl Methacrylate	0.4494	0.4318	19.22	20	-4	
	1,1,2-Trichloroethane	0.3230	0.3247	20.11	20	1	
	Tetrachloroethene	0.4631	0.4617	19.94	20	0	
	1,3-Dichloropropane	0.5552	0.5421	19.53	20	-2	
	2-Hexanone	0.2699	0.2611	96.73	100	-3	
	Dibromochloromethane	0.3545	0.3274	18.47	20	-8	
	1,2-Dibromoethane	0.3271	0.3166	19.36	20	-3	
	1-Chlorohexane	0.5308	0.5369	20.23	20	1	
#	Chlorobenzene	1.1089	1.1099	20.02	20	0	#
	1,1,1,2-Tetrachloroethane	0.3690	0.3553	19.26	20	-4	
*	Ethylbenzene	1.9040	1.9461	20.44	20	2	*
	m+p-Xylene	0.7574	0.7692	40.62	40	2	
	o-Xylene	0.7545	0.7566	20.06	20	0	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Styrene	1.1879	1.1988	20.18	20	1	
#	Bromoform	0.2222	0.1877	17.86	20	-11	#
	Isopropylbenzene	1.9082	1.9760	20.71	20	4	
	Cyclohexanone	0.9002	0.8915	490.81	500	-2	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7363	19.49	20	-3	#
	Bromobenzene	0.8408	0.8515	20.25	20	1	
	trans-1,4-Dichloro-2-butene	0.2069	0.2084	100.71	100	1	
	1,2,3-Trichloropropane	0.2073	0.2109	20.35	20	2	
	n-Propylbenzene	3.8098	4.1293	21.68	20	8	
	2-Chlorotoluene	0.7939	0.8210	20.68	20	3	
	1,3,5-Trimethylbenzene	2.8159	2.9502	20.95	20	5	
	4-Chlorotoluene	0.8226	0.8362	20.33	20	2	
	tert-Butylbenzene	0.6559	0.6739	20.55	20	3	
	Pentachloroethane	0.4798	0.4633	19.31	20	-3	
	1,2,4-Trimethylbenzene	2.8653	3.0214	21.09	20	5	
	sec-Butylbenzene	3.5929	3.8830	21.61	20	8	
	1,3-Dichlorobenzene	1.6523	1.6406	19.86	20	-1	
	p-Isopropyltoluene	3.2092	3.4609	21.57	20	8	
	1,4-Dichlorobenzene	1.7189	1.7343	20.18	20	1	
	1,2,3-Trimethylbenzene	2.9416	3.1660	21.53	20	8	
	Benzyl Chloride	0.2338	0.2057	18.01	20	-10	
	1,3-Diethylbenzene	1.8848	1.9794	21.00	20	5	
	1,4-Diethylbenzene	2.0114	2.1215	21.09	20	5	
	n-Butylbenzene	1.6592	1.7527	21.13	20	6	
	1,2-Dichlorobenzene	1.6409	1.6525	20.14	20	1	
	1,2-Diethylbenzene	1.6079	1.6918	21.04	20	5	
	1,2-Dibromo-3-chloropropane	0.1332	0.1254	18.83	20	-6	
	1,3,5-Trichlorobenzene	1.3773	1.3816	20.06	20	0	
	1,2,4-Trichlorobenzene	1.2763	1.2697	19.90	20	-1	
	Hexachlorobutadiene	0.6574	0.6829	21.09	20	5	
	Naphthalene	2.6627	2.6918	20.22	20	1	
	1,2,3-Trichlorobenzene	1.1896	1.1979	20.14	20	1	
	2-Methylnaphthalene	1.6549	1.5945	19.27	20	-4	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date(s): 05/29/18 05/29/18

Heated Purge: (Y/N) N Calibration Times: 12:21 14:23

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

LAB FILE ID: RRF = RRF 4 = ry29i10.d RRF 10= ry29i11.d
RRF 20= ry29i12.d RRF 50= ry29i13.d RRF100= ry29i14.d RRF300= ry29i15.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane			0.3752	0.3149	0.3318	0.2950	0.3055	0.3492	0.3286	9	AVG	
Chloromethane	#		0.4591	0.4235	0.4022	0.3622	0.3838	0.4101	0.4068	8	AVG	#
Vinyl Chloride	*		0.3889	0.3395	0.3235	0.2996	0.3079	0.3251	0.3307	10	AVG	*
Bromomethane			7.9238	6.1006	5.3334	5.4232	5.4518	5.4872	5.9534	17	2NDDEG	
Chloroethane			6.5466	5.2422	5.0143	4.8158	4.9120	5.0688	5.2666	12	AVG	
Dichlorofluoromethane			0.5496	0.4557	0.4238	0.3800	0.3972	0.4281	0.4391	14	AVG	
Trichlorofluoromethane			0.3868	0.3420	0.3612	0.3139	0.3307	0.3706	0.3509	8	AVG	
Ethanol			0.1797	0.1408	0.1397	0.1255	0.1236	0.1302	0.1399	15	AVG	
Freon 123a			0.4030	0.3292	0.3316	0.2828	0.2976	0.3187	0.3271	13	AVG	
Acrolein			3.2340	2.9193	2.8494	2.6750	2.7308	2.9720	2.8968	7	AVG	
1,1-Dichloroethene	*		0.2532	0.2041	0.2217	0.1861	0.2011	0.2149	0.2135	11	AVG	*
1,1-Dichloroethene(2)	*		0.1488	0.1198	0.1303	0.1071	0.1156	0.1239	0.1243	12	AVG	*
Acetone			0.0346	0.0305	0.0311	0.0279	0.0290	0.0317	0.0308	8	AVG	
Freon 113			0.1932	0.1560	0.1765	0.1493	0.1609	0.1778	0.1690	10	AVG	
2-Propanol			0.9724	0.8147	0.7451	0.6991	0.7147	0.7514	0.7829	13	AVG	
Methyl Iodide			0.4465	0.3607	0.3850	0.3410	0.3693	0.3877	0.3817	9	AVG	
Carbon Disulfide			0.7517	0.5721	0.6786	0.5460	0.5935	0.6791	0.6368	12	AVG	
Methyl Acetate			0.3175	0.2595	0.2730	0.2518	0.2652	0.2844	0.2752	9	AVG	
Allyl Chloride			0.6282	0.4984	0.5470	0.4771	0.5103	0.5533	0.5357	10	AVG	
Methylene Chloride			0.3270	0.2739	0.2817	0.2601	0.2662	0.2861	0.2825	8	AVG	
t-Butyl alcohol			1.4052	1.2435	1.2190	1.1581	1.1631	1.2453	1.2390	7	AVG	
Acrylonitrile			0.1429	0.1450	0.1403	0.1306	0.1341	0.1495	0.1404	5	AVG	
Methyl Tertiary Butyl Ether			1.0221	0.8829	0.8791	0.8092	0.8465	0.9031	0.8905	8	AVG	
trans-1,2-Dichloroethene			0.2987	0.2534	0.2522	0.2301	0.2411	0.2600	0.2559	9	AVG	
n-Hexane			0.2363	0.1959	0.2115	0.1903	0.2004	0.2221	0.2094	8	AVG	
1,1-Dichloroethane	#		0.6068	0.5266	0.5348	0.4939	0.5131	0.5487	0.5373	7	AVG	#
di-Isopropyl ether			1.2581	1.1061	1.1088	1.0414	1.0581	1.1160	1.1148	7	AVG	
2-Chloro-1,3-butadiene			0.5357	0.4677	0.4666	0.4328	0.4504	0.4785	0.4719	7	AVG	
Ethyl t-butyl ether			1.1151	0.9963	0.9750	0.9015	0.9532	1.0114	0.9921	7	AVG	
2-Butanone			7.7211	7.1356	6.2221	6.2313	6.3192	6.8824	6.7519	9	AVG	
2-Butanone(2)			1.3140	1.4087	1.3665	1.3970	1.4265	1.5793	1.4153	6	AVG	
cis-1,2-Dichloroethene			0.3214	0.2812	0.2762	0.2610	0.2739	0.2839	0.2829	7	AVG	
2,2-Dichloropropane			0.4159	0.3663	0.3679	0.3410	0.3688	0.3916	0.3753	7	AVG	
Propionitrile			0.0544	0.0489	0.0488	0.0459	0.0469	0.0502	0.0492	6	AVG	
Methacrylonitrile			0.1516	0.1367	0.1352	0.1350	0.1353	0.1431	0.1395	5	AVG	
Bromochloromethane			0.1410	0.1235	0.1275	0.1236	0.1271	0.1364	0.1299	6	AVG	
Tetrahydrofuran			1.4765	1.4739	1.3506	1.4670	1.4596	1.5838	1.4686	5	AVG	
Chloroform	*		0.5054	0.4504	0.4487	0.4411	0.4464	0.4779	0.4616	5	AVG	*
1,1,1-Trichloroethane			0.4760	0.3677	0.3813	0.3508	0.3638	0.3896	0.3882	12	AVG	
Cyclohexane			0.3662	0.2924	0.3047	0.2900	0.2964	0.3179	0.3113	9	AVG	
Cyclohexane(2)			0.2644	0.2167	0.2320	0.2189	0.2262	0.2423	0.2334	8	AVG	
Cyclohexane(3)			0.1063	0.0872	0.0889	0.0849	0.0874	0.0947	0.0916	9	AVG	
1,1-Dichloropropene			0.3938	0.3380	0.3465	0.3347	0.3371	0.3623	0.3521	6	AVG	
Carbon Tetrachloride			0.2591	0.2213	0.2343	0.2372	0.2500	0.2804	0.2471	8	AVG	
Isobutyl Alcohol			0.4663	0.4409	0.3970	0.4219	0.4144	0.4500	0.4318	6	AVG	
Benzene			1.2727	1.0907	1.1033	1.0742	1.0697	1.1123	1.1205	7	AVG	
1,2-Dichloroethane			0.4585	0.4038	0.4081	0.4006	0.4027	0.4261	0.4166	5	AVG	
1,2-Dichloroethane(2)			0.0369	0.0320	0.0342	0.0333	0.0339	0.0359	0.0344	5	AVG	
t-Amyl methyl ether			0.9664	0.8503	0.8634	0.8463	0.8464	0.9010	0.8790	5	AVG	
n-Heptane			0.2746	0.2319	0.2247	0.2144	0.2188	0.2321	0.2328	9	AVG	
n-Butanol			0.3387	0.3073	0.3201	0.3182	0.3149	0.3333	0.3221	4	AVG	
Trichloroethene			0.2759	0.2393	0.2455	0.2388	0.2389	0.2532	0.2486	6	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date(s): 05/29/18 05/29/18

Heated Purge: (Y/N) N Calibration Times: 12:21 14:23

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

LAB FILE ID: RRF = RRF 4 = ry29i10.d RRF 10= ry29i11.d
RRF 20= ry29i12.d RRF 50= ry29i13.d RRF100= ry29i14.d RRF300= ry29i15.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Methylcyclohexane			0.2569	0.2051	0.2299	0.2168	0.2194	0.2369	0.2275	8	AVG	
1,2-Dichloropropane	*		0.3494	0.3052	0.3147	0.3083	0.3050	0.3197	0.3171	5	AVG	*
Methyl Methacrylate			0.2544	0.2218	0.2344	0.2449	0.2379	0.2527	0.2410	5	AVG	
1,4-Dioxane			0.1186	0.1136	0.1157	0.1110	0.1053	0.1141	0.1130	4	AVG	
Dibromomethane			0.1805	0.1600	0.1659	0.1694	0.1639	0.1769	0.1694	5	AVG	
Bromodichloromethane			0.3225	0.2921	0.3128	0.3257	0.3301	0.3707	0.3256	8	AVG	
2-Nitropropane			2.6582	2.2288	2.2892	2.8655	3.0744	3.6935	2.8016	19	2NDDEG	
2-Chloroethyl Vinyl Ether			0.2352	0.2073	0.2265	0.2294	0.2172	0.2346	0.2250	5	AVG	
cis-1,3-Dichloropropene			0.4778	0.4363	0.4519	0.4656	0.4700	0.5018	0.4672	5	AVG	
4-Methyl-2-pentanone			0.3767	0.3521	0.3525	0.3527	0.3432	0.3765	0.3589	4	AVG	
Toluene	*		1.0102	0.9147	0.8921	0.8676	0.8897	0.9349	0.9182	6	AVG	*
trans-1,3-Dichloropropene			0.5888	0.5833	0.5829	0.6320	0.6696	0.7079	0.6274	8	AVG	
Ethyl Methacrylate			0.6897	0.6519	0.6294	0.6647	0.6539	0.7014	0.6652	4	AVG	
1,1,2-Trichloroethane			0.3988	0.3530	0.3387	0.3408	0.3508	0.3718	0.3590	6	AVG	
Tetrachloroethene			0.2700	0.2365	0.2273	0.2209	0.2342	0.2477	0.2395	7	AVG	
1,3-Dichloropropane			0.7356	0.6803	0.6608	0.6574	0.6717	0.7068	0.6854	4	AVG	
2-Hexanone			0.3646	0.3704	0.3609	0.3679	0.3718	0.4180	0.3756	6	AVG	
Dibromochloromethane			0.2773	0.2693	0.2892	0.3164	0.3433	0.3904	0.3143	15	AVG	
1,2-Dibromoethane			0.3785	0.3475	0.3502	0.3534	0.3612	0.3867	0.3629	4	AVG	
1-Chlorohexane			0.3767	0.3185	0.3132	0.2996	0.3025	0.3179	0.3214	9	AVG	
Chlorobenzene	#		1.0433	0.9099	0.9063	0.8962	0.8921	0.9252	0.9288	6	AVG	#
1,1,1,2-Tetrachloroethane			0.2874	0.2724	0.2811	0.2896	0.2981	0.3213	0.2916	6	AVG	
Ethylbenzene	*		1.6157	1.4413	1.4098	1.3935	1.3839	1.4249	1.4448	6	AVG	*
m+p-Xylene			0.5884	0.5372	0.5311	0.5191	0.5165	0.5274	0.5366	5	AVG	
o-Xylene			0.6044	0.5445	0.5392	0.5247	0.5259	0.5374	0.5460	5	AVG	
Styrene			1.0580	0.9601	0.9504	0.9429	0.9475	0.9720	0.9718	4	AVG	
Bromoform	#		0.1394	0.1350	0.1467	0.1712	0.1921	0.2300	0.1690	22	2NDDEG	#
Isopropylbenzene			1.2598	1.1417	1.0985	1.0840	1.0902	1.1512	1.1376	6	AVG	
Cyclohexanone			0.4187	0.3477	0.3707	0.3997	0.3954	0.4403	0.3954	8	AVG	
1,1,2,2-Tetrachloroethane	#		1.7001	1.2995	1.3871	1.2969	1.2958	1.4037	1.3972	11	AVG	#
Bromobenzene			1.0509	0.8608	0.8868	0.8298	0.8411	0.8500	0.8866	9	AVG	
trans-1,4-Dichloro-2-butene			0.5201	0.4273	0.4606	0.4399	0.4477	0.4716	0.4612	7	AVG	
1,2,3-Trichloropropane			0.4640	0.3729	0.3808	0.3677	0.3595	0.3877	0.3887	10	AVG	
n-Propylbenzene			4.4226	3.6662	3.7284	3.5060	3.5159	3.6994	3.7564	9	AVG	
2-Chlorotoluene			0.9081	0.7430	0.7955	0.7312	0.7324	0.7854	0.7826	9	AVG	
1,3,5-Trimethylbenzene			3.2045	2.6014	2.7301	2.5684	2.5900	2.7432	2.7396	9	AVG	
4-Chlorotoluene			0.9565	0.8035	0.8272	0.7791	0.7789	0.8334	0.8298	8	AVG	
tert-Butylbenzene			0.5907	0.5086	0.5095	0.5025	0.4885	0.5149	0.5191	7	AVG	
Pentachloroethane			0.4188	0.3726	0.4270	0.4325	0.4524	0.4991	0.4337	10	AVG	
1,2,4-Trimethylbenzene			3.3100	2.8954	2.8993	2.7094	2.7023	2.8153	2.8886	8	AVG	
sec-Butylbenzene			3.5623	3.0609	3.0881	2.8731	2.8954	2.9871	3.0778	8	AVG	
1,3-Dichlorobenzene			1.5938	1.3878	1.3926	1.3627	1.3509	1.4179	1.4176	6	AVG	
p-Isopropyltoluene			2.9605	2.6087	2.6521	2.5079	2.5101	2.6177	2.6428	6	AVG	
1,4-Dichlorobenzene			1.6984	1.4651	1.4809	1.4141	1.4079	1.4596	1.4877	7	AVG	
1,2,3-Trimethylbenzene			3.5251	2.8824	2.9661	2.8387	2.8180	2.9556	2.9976	9	AVG	
Benzyl Chloride			0.4177	0.3711	0.4449	0.4812	0.5045	0.5696	0.4648	15	AVG	
1,3-Diethylbenzene			1.7737	1.4750	1.5833	1.4741	1.4996	1.5713	1.5628	7	AVG	
1,4-Diethylbenzene			1.7884	1.5210	1.6281	1.5222	1.4736	1.5606	1.5823	7	AVG	
n-Butylbenzene			1.4584	1.2908	1.3273	1.2587	1.2164	1.2866	1.3064	6	AVG	
1,2-Dichlorobenzene			1.5748	1.3822	1.4262	1.3858	1.3175	1.4156	1.4170	6	AVG	
1,2-Diethylbenzene			1.5166	1.3087	1.3894	1.2797	1.2429	1.3080	1.3409	7	AVG	
1,2-Dibromo-3-chloropropane			0.2216	0.2032	0.2341	0.2497	0.2511	0.2754	0.2392	11	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date(s): 05/29/18 05/29/18

Heated Purge: (Y/N) N Calibration Times: 12:21 14:23

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

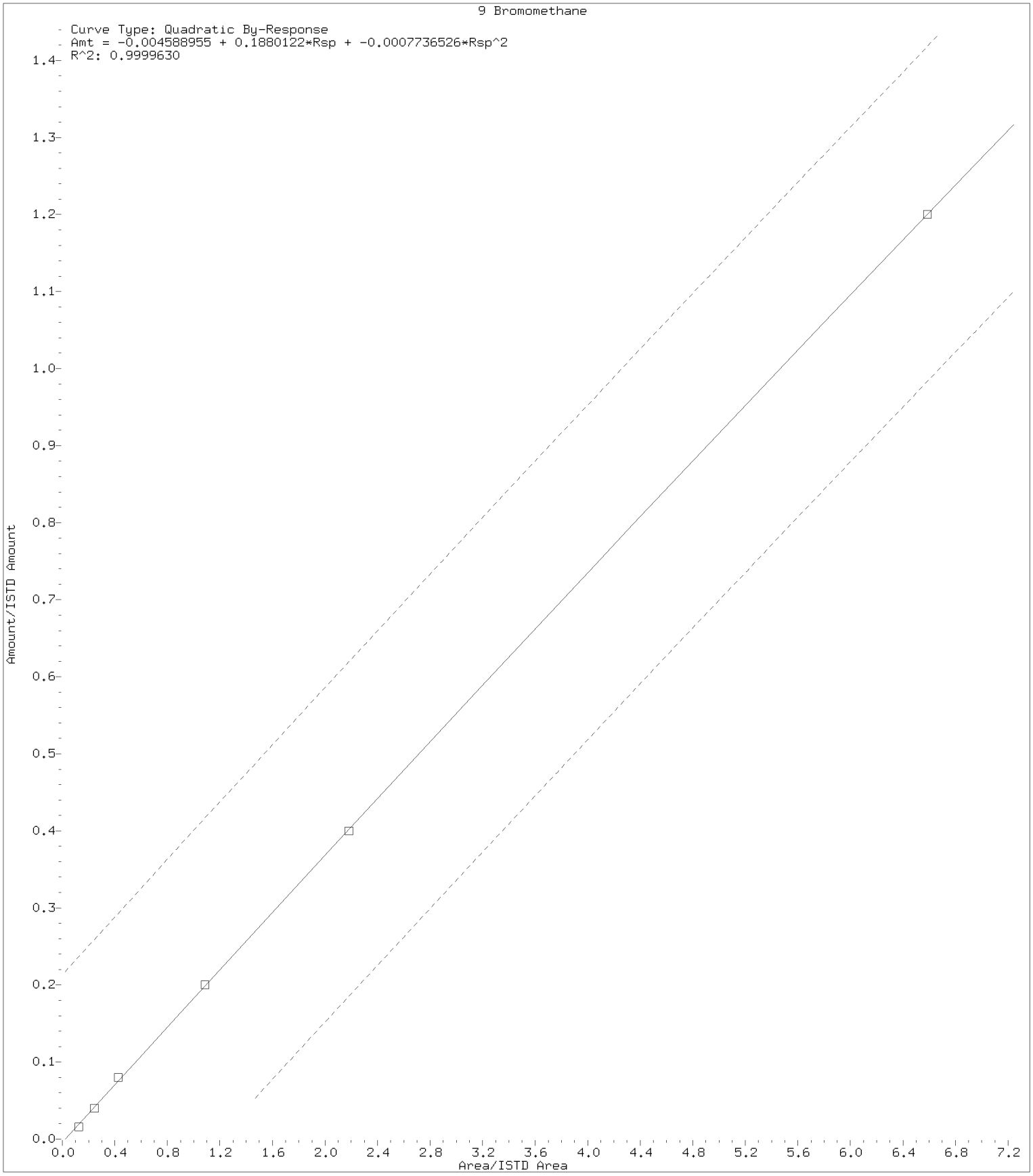
LAB FILE ID: RRF = RRF 4 = ry29i10.d RRF 10= ry29i11.d
RRF 20= ry29i12.d RRF 50= ry29i13.d RRF100= ry29i14.d RRF300= ry29i15.d

COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,3,5-Trichlorobenzene		0.9132	0.7822	0.8270	0.7846	0.7977	0.8281	0.8221	6	AVG
1,2,4-Trichlorobenzene		0.8727	0.7694	0.8058	0.7638	0.7919	0.8187	0.8037	5	AVG
Hexachlorobutadiene		0.3554	0.3141	0.3380	0.3106	0.3215	0.3372	0.3295	5	AVG
Naphthalene		3.2445	2.7303	2.8996	2.7384	2.8319	2.9076	2.8921	7	AVG
1,2,3-Trichlorobenzene		0.8183	0.7072	0.7566	0.7093	0.7437	0.7711	0.7510	6	AVG
2-Methylnaphthalene		1.4704	1.3696	1.5685	1.5539	1.5215	1.5554	1.5065	5	AVG
Dibromofluoromethane		0.2335	0.2192	0.2133	0.2104	0.2169	0.2363	0.2216	5	AVG
Dibromofluoromethane(2)		0.2395	0.2268	0.2194	0.2174	0.2226	0.2443	0.2283	5	AVG
1,2-Dichloroethane-d4		0.0668	0.0622	0.0575	0.0576	0.0584	0.0632	0.0609	6	AVG
1,2-Dichloroethane-d4(2)		0.3824	0.3537	0.3086	0.3057	0.3085	0.3294	0.3314	9	AVG
1,2-Dichloroethane-d4(3)		0.0420	0.0391	0.0376	0.0364	0.0371	0.0403	0.0387	5	AVG
Toluene-d8		1.4166	1.3645	1.2467	1.2052	1.2484	1.3275	1.3015	6	AVG
Toluene-d8(2)		0.9129	0.8917	0.8139	0.7840	0.8134	0.8612	0.8462	6	AVG
4-Bromofluorobenzene		0.4651	0.4451	0.4152	0.4019	0.4111	0.4458	0.4307	6	AVG
4-Bromofluorobenzene(2)		0.2971	0.2784	0.2609	0.2526	0.2643	0.2889	0.2737	6	AVG

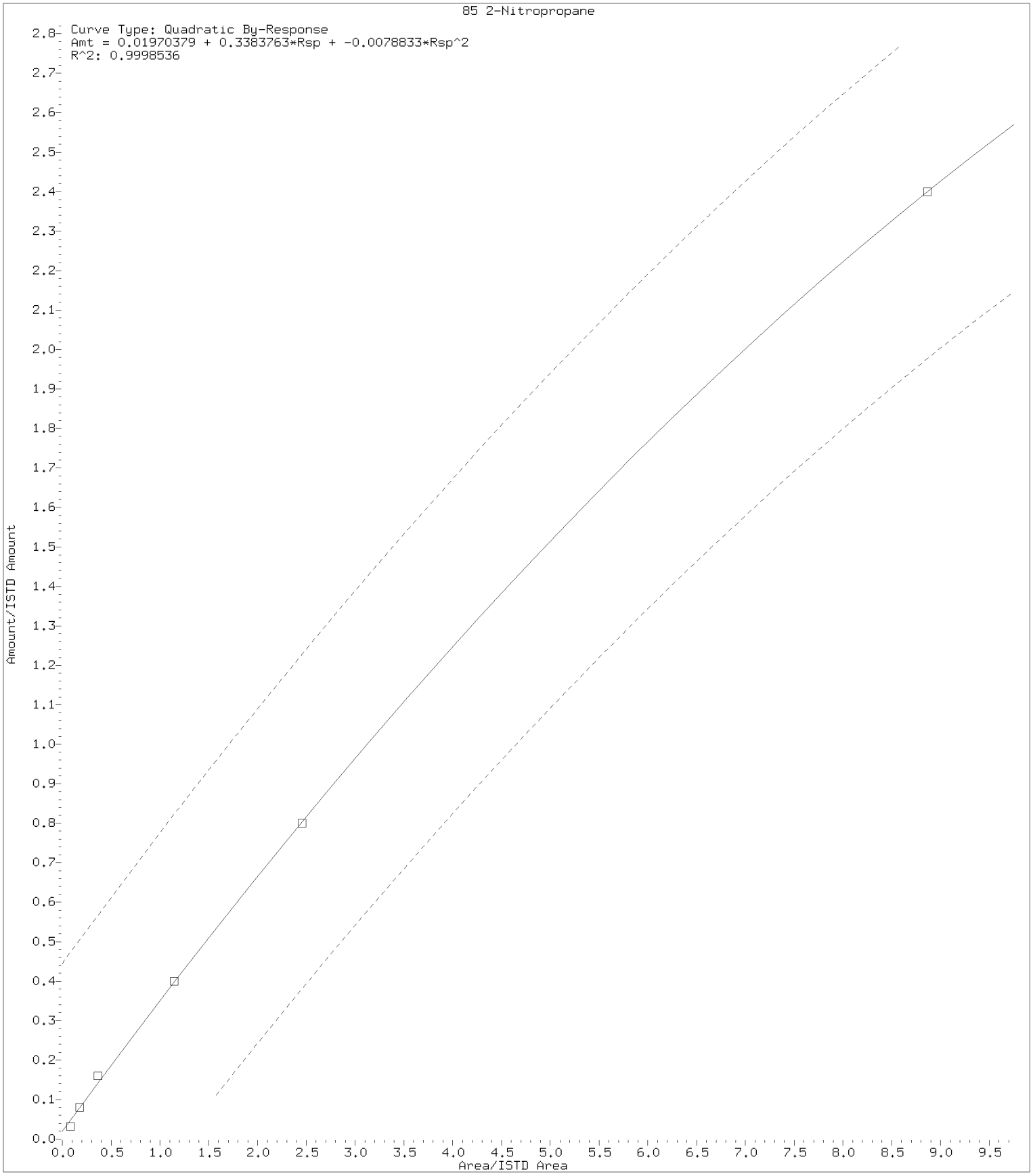
Average %RSD 8

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

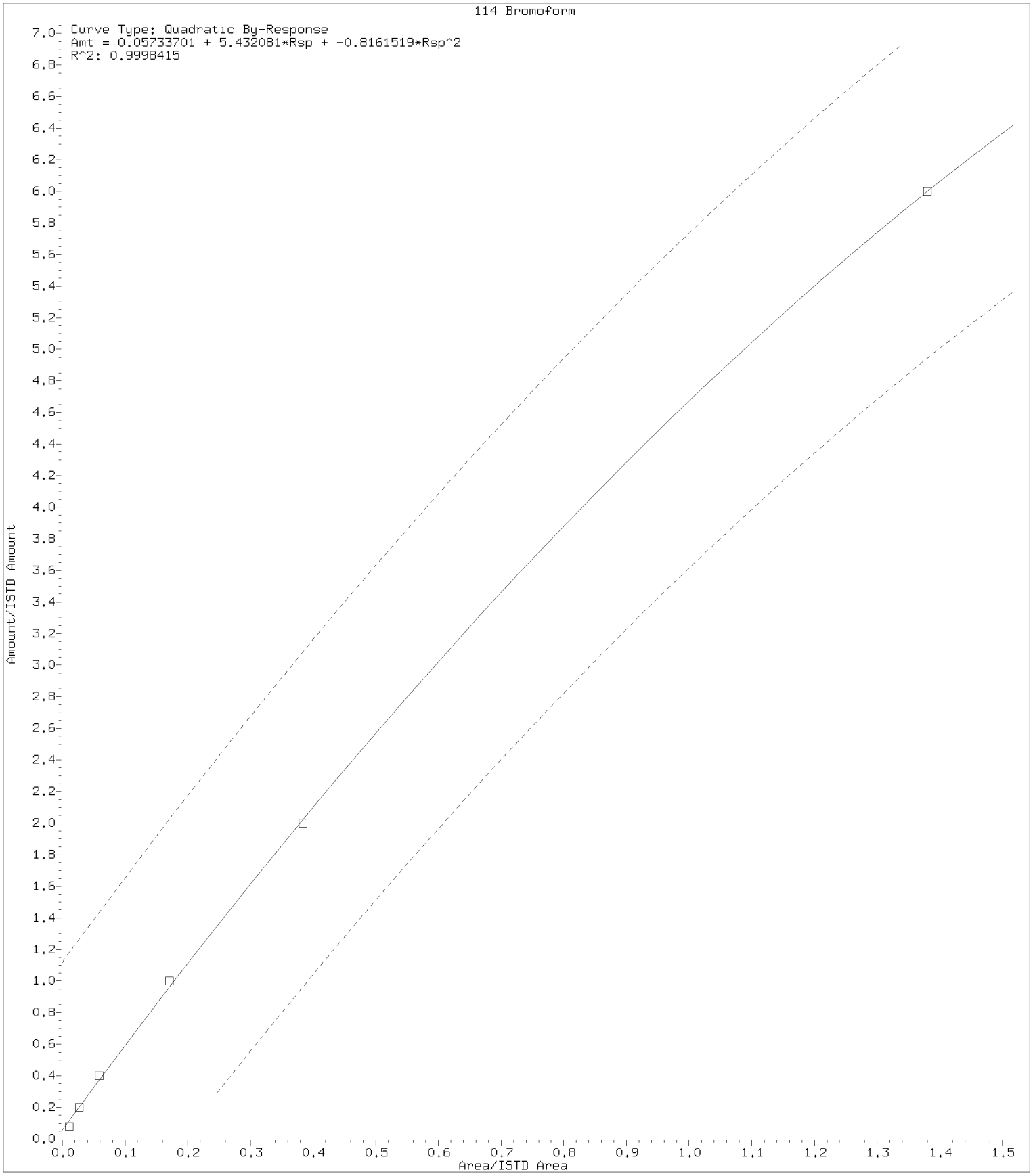
FORM VI VOA



Digitally signed by Stephen C. Nolte on 05/30/2018 at 07:17.
Target 3.5 esignature user ID: scn10072



Digitally signed by Stephen C. Nolte on 05/30/2018 at 07:17.
Target 3.5 esignature user ID: scn10072



Digitally signed by Stephen C. Nolte on 05/30/2018 at 07:17.
Target 3.5 esignature user ID: scn10072

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP07566.i/18may29i.b/ry29i10.d	VSTD004
/chem/HP07566.i/18may29i.b/ry29i11.d	VSTD010
/chem/HP07566.i/18may29i.b/ry29i12.d	VSTD020
/chem/HP07566.i/18may29i.b/ry29i13.d	VSTD050
/chem/HP07566.i/18may29i.b/ry29i14.d	VSTD100
/chem/HP07566.i/18may29i.b/ry29i15.d	VSTD300

Area Summary

File ID:

Internal Standard Name	ry29i10.d	ry29i11.d	ry29i12.d	ry29i13.d	ry29i14.d	ry29i15.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	129657	143097	139891	139011	137781	129486	136487	4	Yes
Fluorobenzene	928790	1055590	1004186	1067421	1055625	967892	1013251	6	Yes
Chlorobenzene-d5	619201	672073	674573	706361	692315	629164	665614	5	Yes
1,4-Dichlorobenzene-d4	204258	238993	230929	248671	246289	226184	232554	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	ry29i10.d	ry29i11.d	ry29i12.d	ry29i13.d	ry29i14.d	ry29i15.d	Avg. RT
t-Butyl alcohol-d10	4.003	4.007	4.010	4.014	4.003	4.006	4.007
Fluorobenzene	7.498	7.498	7.498	7.495	7.497	7.498	7.497
Chlorobenzene-d5	11.043	11.044	11.044	11.041	11.043	11.043	11.043
1,4-Dichlorobenzene-d4	12.953	12.950	12.950	12.954	12.949	12.949	12.951

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 05/30/2018 at 06:55.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 ICV Date: 05/29/18 Time: 16:02

Lab File ID: ry29v10.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3286	0.2903	17.67	20	-12	
#	Chloromethane	0.4068	0.3939	19.37	20	-3	#
*	Vinyl Chloride	0.3307	0.3367	20.36	20	2	*
	Bromomethane	5.9534	6.2125	22.17	20	11	
	Chloroethane	5.2666	5.1171	19.43	20	-3	
	Dichlorofluoromethane	0.4391	0.4358	19.85	20	-1	
	Trichlorofluoromethane	0.3509	0.3467	19.76	20	-1	
	Ethanol	0.1399	0.1356	969.33	1000	-3	
	Freon 123a	0.3271	0.3206	19.60	20	-2	
	Acrolein	2.8968	2.4196	125.29	150	-16	
*	1,1-Dichloroethene	0.2135	0.2355	22.06	20	10	*
	Acetone	0.0308	0.0301	146.49	150	-2	
	Freon 113	0.1690	0.1638	19.39	20	-3	
	2-Propanol	0.7829	0.8766	167.95	150	12	
	Methyl Iodide	0.3817	0.3844	20.14	20	1	
	Carbon Disulfide	0.6368	0.6322	19.86	20	-1	
	Methyl Acetate	0.2752	0.2693	19.57	20	-2	
	Allyl Chloride	0.5357	0.5229	19.52	20	-2	
	Methylene Chloride	0.2825	0.2843	20.12	20	1	
	t-Butyl alcohol	1.2390	1.1696	188.80	200	-6	
	Acrylonitrile	0.1404	0.1335	95.14	100	-5	
	Methyl Tertiary Butyl Ether	0.8905	0.8533	19.16	20	-4	
	trans-1,2-Dichloroethene	0.2559	0.2580	20.17	20	1	
	n-Hexane	0.2094	0.2021	19.31	20	-3	
#	1,1-Dichloroethane	0.5373	0.5396	20.09	20	0	#
	di-Isopropyl ether	1.1148	1.1304	20.28	20	1	
	2-Chloro-1,3-butadiene	0.4719	0.4592	19.46	20	-3	
	Ethyl t-butyl ether	0.9921	0.9883	19.92	20	0	
	2-Butanone	6.7519	6.3069	140.11	150	-7	
	cis-1,2-Dichloroethene	0.2829	0.2952	20.87	20	4	
	2,2-Dichloropropane	0.3753	0.3695	19.70	20	-2	
	Propionitrile	0.0492	0.0498	151.78	150	1	
	Methacrylonitrile	0.1395	0.1394	149.91	150	0	
	Bromochloromethane	0.1299	0.1274	19.62	20	-2	
	Tetrahydrofuran	1.4686	1.4468	98.51	100	-1	
*	Chloroform	0.4616	0.4601	19.93	20	0	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 ICV Date: 05/29/18 Time: 16:02

Lab File ID: ry29v10.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1-Trichloroethane	0.3882	0.3726	19.19	20	-4	
	Cyclohexane	0.3113	0.2926	18.80	20	-6	
	1,1-Dichloropropene	0.3521	0.3418	19.42	20	-3	
	Carbon Tetrachloride	0.2471	0.2327	18.84	20	-6	
	Isobutyl Alcohol	0.4318	0.3827	443.20	500	-11	
	Benzene	1.1205	1.1215	20.02	20	0	
	1,2-Dichloroethane	0.4166	0.4100	19.68	20	-2	
	t-Amyl methyl ether	0.8790	0.8540	19.43	20	-3	
	n-Heptane	0.2328	0.2163	18.59	20	-7	
	n-Butanol	0.3221	0.3002	932.07	1000	-7	
	Trichloroethene	0.2486	0.2452	19.73	20	-1	
	Methylcyclohexane	0.2275	0.2155	18.95	20	-5	
*	1,2-Dichloropropane	0.3171	0.3142	19.82	20	-1	*
	Methyl Methacrylate	0.2410	0.2285	18.96	20	-5	
	1,4-Dioxane	0.1130	0.1100	486.40	500	-3	
	Dibromomethane	0.1694	0.1696	20.02	20	0	
	Bromodichloromethane	0.3256	0.3141	19.29	20	-4	
	2-Nitropropane	2.8016	2.5098	21.83	20	9	
	2-Chloroethyl Vinyl Ether	0.2250	0.2214	19.68	20	-2	
	cis-1,3-Dichloropropene	0.4672	0.4530	19.39	20	-3	
	4-Methyl-2-pentanone	0.3589	0.3608	100.51	100	1	
*	Toluene	0.9182	0.9154	19.94	20	0	*
	trans-1,3-Dichloropropene	0.6274	0.5877	18.73	20	-6	
	Ethyl Methacrylate	0.6652	0.6406	19.26	20	-4	
	1,1,2-Trichloroethane	0.3590	0.3515	19.58	20	-2	
	Tetrachloroethene	0.2395	0.2268	18.94	20	-5	
	1,3-Dichloropropane	0.6854	0.6513	19.00	20	-5	
	2-Hexanone	0.3756	0.3576	95.20	100	-5	
	Dibromochloromethane	0.3143	0.2886	18.36	20	-8	
	1,2-Dibromoethane	0.3629	0.3519	19.39	20	-3	
	1-Chlorohexane	0.3214	0.3008	18.72	20	-6	
#	Chlorobenzene	0.9288	0.8945	19.26	20	-4	#
	1,1,1,2-Tetrachloroethane	0.2916	0.2747	18.84	20	-6	
*	Ethylbenzene	1.4448	1.3946	19.30	20	-3	*
	m+p-Xylene	0.5366	0.5252	39.15	40	-2	
	o-Xylene	0.5460	0.5189	19.01	20	-5	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 ICV Date: 05/29/18 Time: 16:02

Lab File ID: ry29v10.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Styrene	0.9718	0.9454	19.46	20	-3	
#	Bromoform	0.1690	0.1439	18.36	20	-8	#
	Isopropylbenzene	1.1376	1.1007	19.35	20	-3	
	Cyclohexanone	0.3954	0.3579	452.59	500	-9	
#	1,1,2,2-Tetrachloroethane	1.3972	1.3127	18.79	20	-6	#
	Bromobenzene	0.8866	0.8592	19.38	20	-3	
	trans-1,4-Dichloro-2-butene	0.4612	0.4484	97.23	100	-3	
	1,2,3-Trichloropropane	0.3887	0.3699	19.03	20	-5	
	n-Propylbenzene	3.7564	3.5480	18.89	20	-6	
	2-Chlorotoluene	0.7826	0.7322	18.71	20	-6	
	1,3,5-Trimethylbenzene	2.7396	2.5723	18.78	20	-6	
	4-Chlorotoluene	0.8298	0.7907	19.06	20	-5	
	tert-Butylbenzene	0.5191	0.4716	18.17	20	-9	
	Pentachloroethane	0.4337	0.4124	19.02	20	-5	
	1,2,4-Trimethylbenzene	2.8886	2.6990	18.69	20	-7	
	sec-Butylbenzene	3.0778	2.9210	18.98	20	-5	
	1,3-Dichlorobenzene	1.4176	1.3266	18.72	20	-6	
	p-Isopropyltoluene	2.6428	2.5373	19.20	20	-4	
	1,4-Dichlorobenzene	1.4877	1.4426	19.39	20	-3	
	1,2,3-Trimethylbenzene	2.9976	2.9429	19.63	20	-2	
	Benzyl Chloride	0.4648	0.4148	17.85	20	-11	
	1,3-Diethylbenzene	1.5628	1.4903	19.07	20	-5	
	1,4-Diethylbenzene	1.5823	1.5350	19.40	20	-3	
	n-Butylbenzene	1.3064	1.2659	19.38	20	-3	
	1,2-Dichlorobenzene	1.4170	1.3675	19.30	20	-3	
	1,2-Diethylbenzene	1.3409	1.3099	19.54	20	-2	
	1,2-Dibromo-3-chloropropane	0.2392	0.2230	18.65	20	-7	
	1,3,5-Trichlorobenzene	0.8221	0.8028	19.53	20	-2	
	1,2,4-Trichlorobenzene	0.8037	0.7922	19.71	20	-1	
	Hexachlorobutadiene	0.3295	0.4184	25.40	20	27	
	Naphthalene	2.8921	2.7534	19.04	20	-5	
	1,2,3-Trichlorobenzene	0.7510	0.7710	20.53	20	3	
	2-Methylnaphthalene	1.5065	1.5022	19.94	20	0	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i06.d
/chem2/HP09953.i/18feb22i.b/bf22i05.d
/chem2/HP09953.i/18feb22i.b/bf22i04.d
/chem2/HP09953.i/18feb22i.b/bf22i03.d
/chem2/HP09953.i/18feb22i.b/bf22i02.d
/chem2/HP09953.i/18feb22i.b/bf22i01.d

File /chem2/HP09953.i/18feb22i.b/bf22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09953.i/18jun14a.b/bu14c01.d

RT Summary

Internal Standard Name	File ID: bu14c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	1.930	1.924	Yes
Fluorobenzene	3.956	3.956	Yes
Chlorobenzene-d5	7.156	7.156	Yes
1,4-Dichlorobenzene-d4	9.236	9.236	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: bu14c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	101065	114201	57100	228402	Yes
Fluorobenzene	1000957	1207816	603908	2415632	Yes
Chlorobenzene-d5	710860	931957	465978	1863914	Yes
1,4-Dichlorobenzene-d4	396941	549119	274560	1098238	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/14/2018 at 15:14

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/14/18 Time: 14:41

Lab File ID: bu14c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.5165	52.53	50	5	
#	Chloromethane	0.5872	0.5545	47.21	50	-6	#
*	Vinyl Chloride	0.4173	0.3883	46.53	50	-7	*
	Bromomethane	0.2899	0.3162	54.52	50	9	
	Chloroethane	0.2334	0.2349	50.30	50	1	
	Trichlorofluoromethane	0.5369	0.5609	52.23	50	4	
	Ethanol	0.1211	0.0525	1084.25	2500	-57	
	Freon 123a	0.3518	0.3289	46.75	50	-7	
	Acrolein	2.4281	2.4169	497.70	500	0	
*	1,1-Dichloroethene	0.2459	0.2213	44.99	50	-10	*
	Acetone	0.0248	0.0230	92.60	100	-7	
	Freon 113	0.2960	0.2661	44.95	50	-10	
	2-Propanol	1.1163	1.0093	226.03	250	-10	
	Methyl Iodide	0.5387	0.4809	44.64	50	-11	
	Carbon Disulfide	0.8424	0.7820	46.42	50	-7	
	Methyl Acetate	0.2090	0.2320	55.49	50	11	
	Allyl Chloride	0.4892	0.4824	49.31	50	-1	
	Methylene Chloride	0.2885	0.2663	46.15	50	-8	
	t-Butyl alcohol	1.2418	1.2038	242.35	250	-3	
	Acrylonitrile	0.0991	0.0900	45.41	50	-9	
	Methyl Tertiary Butyl Ether	0.7975	0.7805	48.93	50	-2	
	trans-1,2-Dichloroethene	0.2884	0.2658	46.07	50	-8	
	n-Hexane	0.5126	0.4272	41.67	50	-17	
#	1,1-Dichloroethane	0.5731	0.6053	52.80	50	6	#
	di-Isopropyl ether	1.1602	1.1905	51.31	50	3	
	2-Chloro-1,3-butadiene	0.5207	0.5863	56.30	50	13	
	Ethyl t-butyl ether	0.9727	1.0110	51.97	50	4	
	2-Butanone	7.3204	7.0480	96.28	100	-4	
	cis-1,2-Dichloroethene	0.3342	0.3254	48.67	50	-3	
	2,2-Dichloropropane	0.4251	0.5082	59.77	50	20	
	Propionitrile	2.0227	2.0217	249.87	250	0	
	Methacrylonitrile	0.1170	0.1095	116.89	125	-6	
	Bromochloromethane	0.1635	0.1492	45.62	50	-9	
	Tetrahydrofuran	1.5856	1.5291	96.43	100	-4	
*	Chloroform	0.5364	0.5762	53.71	50	7	*
	1,1,1-Trichloroethane	0.5181	0.5447	52.56	50	5	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/14/18 Time: 14:41

Lab File ID: bu14c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Cyclohexane	0.6302	0.5802	46.04	50	-8	
	Cyclohexane(2)	0.5080	0.4384	43.16	50	-14	
	Cyclohexane(3)	0.1808	0.1694	46.85	50	-6	
	1,1-Dichloropropene	0.4338	0.4522	52.12	50	4	
	Carbon Tetrachloride	0.3830	0.4395	57.37	50	15	
	Isobutyl Alcohol	0.5096	0.5591	685.67	625	10	
	Benzene	1.2609	1.2307	48.80	50	-2	
	1,2-Dichloroethane	0.4097	0.4720	57.60	50	15	
	1,2-Dichloroethane(2)	0.0353	0.0336	47.49	50	-5	
	t-Amyl methyl ether	0.8144	0.8140	49.97	50	0	
	n-Heptane	0.6124	0.5881	48.01	50	-4	
	n-Butanol	0.3762	0.3904	1297.14	1250	4	
	Trichloroethene	0.3227	0.3194	49.50	50	-1	
	Methylcyclohexane	0.6000	0.5223	43.53	50	-13	
*	1,2-Dichloropropane	0.3331	0.3293	49.44	50	-1	*
	Methyl Methacrylate	0.1907	0.1860	48.77	50	-2	
	1,4-Dioxane	0.1410	0.1228	544.34	625	-13	
	Dibromomethane	0.1795	0.1774	49.40	50	-1	
	Bromodichloromethane	0.3833	0.4249	55.43	50	11	
	2-Nitropropane	2.5306	3.8629	130.61	100	31	
	2-Chloroethyl Vinyl Ether	0.1644	0.0985	29.97	50	-40	
	cis-1,3-Dichloropropene	0.4668	0.4952	53.03	50	6	
	4-Methyl-2-pentanone	0.3036	0.2998	98.74	100	-1	
*	Toluene	0.9983	1.0582	53.00	50	6	*
	trans-1,3-Dichloropropene	0.4982	0.6075	60.97	50	22	
	Ethyl Methacrylate	0.4494	0.4979	55.39	50	11	
	1,1,2-Trichloroethane	0.3230	0.3377	52.28	50	5	
	Tetrachloroethene	0.4631	0.4649	50.19	50	0	
	1,3-Dichloropropane	0.5552	0.6059	54.57	50	9	
	2-Hexanone	0.2699	0.2821	104.52	100	5	
	Dibromochloromethane	0.3545	0.4069	57.39	50	15	
	1,2-Dibromoethane	0.3271	0.3473	53.09	50	6	
	1-Chlorohexane	0.5308	0.5610	52.84	50	6	
#	Chlorobenzene	1.1089	1.1407	51.43	50	3	#
	1,1,1,2-Tetrachloroethane	0.3690	0.4195	56.84	50	14	
*	Ethylbenzene	1.9040	2.1096	55.40	50	11	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/14/18 Time: 14:41

Lab File ID: bu14c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	m+p-Xylene	0.7574	0.7916	104.52	100	5	
	o-Xylene	0.7545	0.7749	51.35	50	3	
	Styrene	1.1879	1.2595	53.01	50	6	
#	Bromoform	0.2222	0.2563	54.09	50	8	#
	Isopropylbenzene	1.9082	2.0921	54.82	50	10	
	Cyclohexanone	0.9002	0.5590	395.61	625	-37	
#	1,1,2,2-Tetrachloroethane	0.7554	0.8526	56.43	50	13	#
	Bromobenzene	0.8408	0.8953	53.24	50	6	
	trans-1,4-Dichloro-2-butene	0.2069	0.2966	179.19	125	43	
	1,2,3-Trichloropropane	0.2073	0.2395	57.77	50	16	
	n-Propylbenzene	3.8098	4.5294	59.44	50	19	
	2-Chlorotoluene	0.7939	0.8654	54.50	50	9	
	1,3,5-Trimethylbenzene	2.8159	3.2824	58.28	50	17	
	4-Chlorotoluene	0.8226	0.8862	53.87	50	8	
	tert-Butylbenzene	0.6559	0.7061	53.83	50	8	
	Pentachloroethane	0.4798	0.5771	60.14	50	20	
	1,2,4-Trimethylbenzene	2.8653	3.3443	58.36	50	17	
	sec-Butylbenzene	3.5929	4.2109	58.60	50	17	
	1,3-Dichlorobenzene	1.6523	1.7522	53.02	50	6	
	p-Isopropyltoluene	3.2092	3.6876	57.45	50	15	
	1,4-Dichlorobenzene	1.7189	1.7800	51.78	50	4	
	1,2,3-Trimethylbenzene	2.9416	3.3215	56.46	50	13	
	Benzyl Chloride	0.2338	0.3170	60.08	50	20	
	1,3-Diethylbenzene	1.8848	2.0814	55.21	50	10	
	1,4-Diethylbenzene	2.0114	2.2024	54.75	50	9	
	n-Butylbenzene	1.6592	1.9198	57.85	50	16	
	1,2-Dichlorobenzene	1.6409	1.7000	51.80	50	4	
	1,2-Diethylbenzene	1.6079	1.7467	54.32	50	9	
	1,2-Dibromo-3-chloropropane	0.1332	0.1704	63.95	50	28	
	1,3,5-Trichlorobenzene	1.3773	1.4569	52.89	50	6	
	1,2,4-Trichlorobenzene	1.2763	1.3332	52.23	50	4	
	Hexachlorobutadiene	0.6574	0.7758	55.52	50	11	
	Naphthalene	2.6627	2.8335	53.21	50	6	
	1,2,3-Trichlorobenzene	1.1896	1.2437	52.27	50	5	
	2-Methylnaphthalene	1.6549	1.7601	53.18	50	6	
	Dibromofluoromethane	0.2502	0.2523	50.43	50	1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/14/18 Time: 14:41

Lab File ID: bu14c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Dibromofluoromethane(2)	0.2550	0.2588	50.73	50	1
1,2-Dichloroethane-d4	0.0548	0.0537	48.97	50	-2
1,2-Dichloroethane-d4(2)	0.2800	0.3226	57.61	50	15
1,2-Dichloroethane-d4(3)	0.0347	0.0335	48.32	50	-3
Toluene-d8	1.3054	1.3836	52.99	50	6
Toluene-d8(2)	0.8436	0.8804	52.18	50	4
4-Bromofluorobenzene	0.4987	0.5112	51.26	50	3
4-Bromofluorobenzene(2)	0.4342	0.4285	49.35	50	-1

Average %Drift 9

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem/HP07566.i/18may29i.b/ry29i10.d
/chem/HP07566.i/18may29i.b/ry29i11.d
/chem/HP07566.i/18may29i.b/ry29i12.d
/chem/HP07566.i/18may29i.b/ry29i13.d
/chem/HP07566.i/18may29i.b/ry29i14.d
/chem/HP07566.i/18may29i.b/ry29i15.d

File /chem/HP07566.i/18may29i.b/ry29i13.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem/HP07566.i/18jun18a.b/ru18c01.d

RT Summary

Internal Standard Name	File ID: ru18c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	4.006	4.014	Yes
Fluorobenzene	7.501	7.495	Yes
Chlorobenzene-d5	11.043	11.041	Yes
1,4-Dichlorobenzene-d4	12.952	12.954	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: ru18c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	130374	139011	69506	278022	Yes
Fluorobenzene	1024004	1067421	533710	2134842	Yes
Chlorobenzene-d5	689787	706361	353180	1412722	Yes
1,4-Dichlorobenzene-d4	235447	248671	124336	497342	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/18/2018 at 08:53

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/18/18 Time: 08:32

Lab File ID: ru18c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3286	0.3165	48.16	50	-4	
#	Chloromethane	0.4068	0.3422	42.06	50	-16	#
*	Vinyl Chloride	0.3307	0.2773	41.92	50	-16	*
	Bromomethane	5.9534	7.0501	64.74	50	29	
	Chloroethane	5.2666	5.2094	49.46	50	-1	
	Trichlorofluoromethane	0.3509	0.3561	50.75	50	1	
	Ethanol	0.1399	0.1434	2561.74	2500	2	
	Freon 123a	0.3271	0.3137	47.95	50	-4	
	Acrolein	2.8968	3.0119	519.88	500	4	
*	1,1-Dichloroethene	0.2135	0.2098	49.13	50	-2	*
*	1,1-Dichloroethene(2)	0.1243	0.1187	47.76	50	-4	*
	Acetone	0.0308	0.0317	102.84	100	3	
	Freon 113	0.1690	0.1601	47.37	50	-5	
	2-Propanol	0.7829	0.7628	243.59	250	-3	
	Methyl Iodide	0.3817	0.3715	48.66	50	-3	
	Carbon Disulfide	0.6368	0.6354	49.89	50	0	
	Methyl Acetate	0.2752	0.2654	48.22	50	-4	
	Allyl Chloride	0.5357	0.4897	45.71	50	-9	
	Methylene Chloride	0.2825	0.2652	46.93	50	-6	
	t-Butyl alcohol	1.2390	1.2237	246.91	250	-1	
	Acrylonitrile	0.1404	0.1328	47.29	50	-5	
	Methyl Tertiary Butyl Ether	0.8905	0.8278	46.48	50	-7	
	trans-1,2-Dichloroethene	0.2559	0.2415	47.19	50	-6	
	n-Hexane	0.2094	0.1793	42.80	50	-14	
#	1,1-Dichloroethane	0.5373	0.4964	46.20	50	-8	#
	di-Isopropyl ether	1.1148	1.0129	45.43	50	-9	
	2-Chloro-1,3-butadiene	0.4719	0.4154	44.00	50	-12	
	Ethyl t-butyl ether	0.9921	0.8570	43.19	50	-14	
	2-Butanone	6.7519	6.2870	93.11	100	-7	
	2-Butanone(2)	1.4153	1.4214	100.43	100	0	
	cis-1,2-Dichloroethene	0.2829	0.2652	46.87	50	-6	
	2,2-Dichloropropane	0.3753	0.3416	45.51	50	-9	
	Propionitrile	0.0492	0.0464	236.11	250	-6	
	Methacrylonitrile	0.1395	0.1292	115.75	125	-7	
	Bromochloromethane	0.1299	0.1238	47.69	50	-5	
	Tetrahydrofuran	1.4686	1.4277	97.21	100	-3	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/18/18 Time: 08:32

Lab File ID: ru18c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.4616	0.4321	46.80	50	-6	*
	1,1,1-Trichloroethane	0.3882	0.3385	43.60	50	-13	
	Cyclohexane	0.3113	0.2647	42.52	50	-15	
	Cyclohexane(2)	0.2334	0.2040	43.70	50	-13	
	Cyclohexane(3)	0.0916	0.0782	42.72	50	-15	
	1,1-Dichloropropene	0.3521	0.3248	46.12	50	-8	
	Carbon Tetrachloride	0.2471	0.2373	48.02	50	-4	
	Isobutyl Alcohol	0.4318	0.4186	605.89	625	-3	
	Benzene	1.1205	1.0427	46.53	50	-7	
	1,2-Dichloroethane	0.4166	0.3976	47.71	50	-5	
	1,2-Dichloroethane(2)	0.0344	0.0334	48.60	50	-3	
	t-Amyl methyl ether	0.8790	0.7901	44.94	50	-10	
	n-Heptane	0.2328	0.1840	39.53	50	-21	
	n-Butanol	0.3221	0.3017	1171.00	1250	-6	
	Trichloroethene	0.2486	0.2388	48.04	50	-4	
	Methylcyclohexane	0.2275	0.2045	44.95	50	-10	
*	1,2-Dichloropropane	0.3171	0.3010	47.46	50	-5	*
	Methyl Methacrylate	0.2410	0.2301	47.73	50	-5	
	1,4-Dioxane	0.1130	0.1064	588.00	625	-6	
	Dibromomethane	0.1694	0.1687	49.78	50	0	
	Bromodichloromethane	0.3256	0.3272	50.23	50	0	
	2-Nitropropane	2.8016	2.9960	103.47	100	3	
	2-Chloroethyl Vinyl Ether	0.2250	0.1781	39.57	50	-21	
	cis-1,3-Dichloropropene	0.4672	0.4675	50.03	50	0	
	4-Methyl-2-pentanone	0.3589	0.3428	95.50	100	-4	
*	Toluene	0.9182	0.8414	45.82	50	-8	*
	trans-1,3-Dichloropropene	0.6274	0.6340	50.53	50	1	
	Ethyl Methacrylate	0.6652	0.6463	48.58	50	-3	
	1,1,2-Trichloroethane	0.3590	0.3491	48.62	50	-3	
	Tetrachloroethene	0.2395	0.2257	47.14	50	-6	
	1,3-Dichloropropane	0.6854	0.6558	47.84	50	-4	
	2-Hexanone	0.3756	0.3605	95.99	100	-4	
	Dibromochloromethane	0.3143	0.3433	54.61	50	9	
	1,2-Dibromoethane	0.3629	0.3575	49.25	50	-1	
	1-Chlorohexane	0.3214	0.2884	44.86	50	-10	
#	Chlorobenzene	0.9288	0.8887	47.84	50	-4	#

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/18/18 Time: 08:32

Lab File ID: ru18c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1,2-Tetrachloroethane	0.2916	0.2918	50.03	50	0	
*	Ethylbenzene	1.4448	1.3246	45.84	50	-8	*
	m+p-Xylene	0.5366	0.5050	94.11	100	-6	
	o-Xylene	0.5460	0.5001	45.79	50	-8	
	Styrene	0.9718	0.8793	45.24	50	-10	
#	Bromoform	0.1690	0.1898	52.96	50	6	#
	Isopropylbenzene	1.1376	1.0112	44.44	50	-11	
	Cyclohexanone	0.3954	0.3890	614.93	625	-2	
#	1,1,2,2-Tetrachloroethane	1.3972	1.3757	49.23	50	-2	#
	Bromobenzene	0.8866	0.8826	49.77	50	0	
	trans-1,4-Dichloro-2-butene	0.4612	0.4793	129.90	125	4	
	1,2,3-Trichloropropane	0.3887	0.3855	49.58	50	-1	
	n-Propylbenzene	3.7564	3.5417	47.14	50	-6	
	2-Chlorotoluene	0.7826	0.7555	48.27	50	-3	
	1,3,5-Trimethylbenzene	2.7396	2.6002	47.46	50	-5	
	4-Chlorotoluene	0.8298	0.8079	48.68	50	-3	
	tert-Butylbenzene	0.5191	0.4788	46.12	50	-8	
	Pentachloroethane	0.4337	0.4911	56.62	50	13	
	1,2,4-Trimethylbenzene	2.8886	2.7082	46.88	50	-6	
	sec-Butylbenzene	3.0778	2.8258	45.91	50	-8	
	1,3-Dichlorobenzene	1.4176	1.3951	49.20	50	-2	
	p-Isopropyltoluene	2.6428	2.4713	46.75	50	-6	
	1,4-Dichlorobenzene	1.4877	1.4458	48.59	50	-3	
	1,2,3-Trimethylbenzene	2.9976	2.7939	46.60	50	-7	
	Benzyl Chloride	0.4648	0.5119	55.07	50	10	
	1,3-Diethylbenzene	1.5628	1.4349	45.91	50	-8	
	1,4-Diethylbenzene	1.5823	1.4411	45.54	50	-9	
	n-Butylbenzene	1.3064	1.1677	44.69	50	-11	
	1,2-Dichlorobenzene	1.4170	1.3758	48.55	50	-3	
	1,2-Diethylbenzene	1.3409	1.2016	44.81	50	-10	
	1,2-Dibromo-3-chloropropane	0.2392	0.2562	53.56	50	7	
	1,3,5-Trichlorobenzene	0.8221	0.7513	45.69	50	-9	
	1,2,4-Trichlorobenzene	0.8037	0.7461	46.42	50	-7	
	Hexachlorobutadiene	0.3295	0.2971	45.09	50	-10	
	Naphthalene	2.8921	2.8354	49.02	50	-2	
	1,2,3-Trichlorobenzene	0.7510	0.7122	47.42	50	-5	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/18/18 Time: 08:32

Lab File ID: ru18c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Methylnaphthalene	1.5065	1.6938	56.21	50	12
Dibromofluoromethane	0.2216	0.2199	49.62	50	-1
Dibromofluoromethane(2)	0.2283	0.2264	49.57	50	-1
1,2-Dichloroethane-d4	0.0609	0.0599	49.14	50	-2
1,2-Dichloroethane-d4(2)	0.3314	0.3116	47.02	50	-6
1,2-Dichloroethane-d4(3)	0.0387	0.0379	48.97	50	-2
Toluene-d8	1.3015	1.2401	47.64	50	-5
Toluene-d8(2)	0.8462	0.8099	47.85	50	-4
4-Bromofluorobenzene	0.4307	0.4067	47.21	50	-6
4-Bromofluorobenzene(2)	0.2737	0.2672	48.81	50	-2

Average %Drift 6

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu14c01.d Date Analyzed: 06/14/18

Instrument ID: HP09953 Time Analyzed: 14:41

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	101065	1.930	1000957	3.956	710860	7.156	396941	9.236
UPPER LIMIT	202130	2.430	2001914	4.456	1421720	7.656	793882	9.736
LOWER LIMIT	50532	1.430	500478	3.456	355430	6.656	198470	8.736
LAB SAMPLE ID								
01 VBLKB10	99679	1.930	945871	3.956	682794	7.156	361473	9.236
02 VBLKB11	99679	1.930	945871	3.956	682794	7.156	361473	9.236
03 LCSB10	106559	1.930	989657	3.956	709986	7.156	401228	9.236
04 LCSB11	106559	1.930	989657	3.956	709986	7.156	401228	9.236
05 LCDB10	112823	1.912	977804	3.950	708030	7.156	399545	9.236
06 LCDB11	112823	1.912	977804	3.950	708030	7.156	399545	9.236
07 9644038	117670	1.936	1052152	3.956	755630	7.156	379833	9.236
08 9650982	100867	1.924	978479	3.956	722722	7.156	383905	9.236
09 9657452	110730	1.930	961345	3.956	711276	7.156	389948	9.236
10 9650985	129503	1.924	995819	3.956	755683	7.156	425116	9.236
11 9651117	89741	1.936	1012298	3.962	711841	7.156	374373	9.236
12 9651117MS	88897	1.924	1011356	3.956	709219	7.156	375661	9.236
13 9651118	73433	1.912	1001232	3.950	717152	7.156	347441	9.236
14 9655317	53064	1.930	834864	3.956	485341	7.156	145942 *	9.236
15 9655318	46413 *	1.930	893494	3.956	531841	7.156	164782 *	9.236
16 9656566	75044	1.924	964261	3.950	691038	7.156	362771	9.236
17 9656567	75839	1.930	980627	3.956	701349	7.156	364360	9.236
18 9656569	77574	1.930	968245	3.956	687369	7.156	358066	9.236
19 9656570	73673	1.912	945162	3.950	673683	7.156	339884	9.236
20 9656571	70954	1.912	996324	3.950	706324	7.156	347370	9.236
21 9656572	83473	1.918	965199	3.950	693431	7.156	365615	9.236
22 9656573	73769	1.912	906392	3.950	654613	7.156	333724	9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu14c01.d Date Analyzed: 06/14/18

Instrument ID: HP09953 Time Analyzed: 14:41

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	101065	1.930	1000957	3.956	710860	7.156	396941	9.236
UPPER LIMIT	202130	2.430	2001914	4.456	1421720	7.656	793882	9.736
LOWER LIMIT	50532	1.430	500478	3.456	355430	6.656	198470	8.736
LAB SAMPLE ID								
23 9656574	67890	1.924	922129	3.956	665016	7.156	338477	9.236
24 9656575	74098	1.924	920721	3.956	641944	7.156	285206	9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): ru18c01.d Date Analyzed: 06/18/18

Instrument ID: HP07566 Time Analyzed: 08:32

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	130374	4.006	1024004	7.501	689787	11.043	235447	12.952
UPPER LIMIT	260748	4.506	2048008	8.001	1379574	11.543	470894	13.452
LOWER LIMIT	65187	3.506	512002	7.001	344894	10.543	117724	12.452
LAB SAMPLE ID								
01 LCSR92	134512	4.005	1043091	7.496	666222	11.042	232776	12.951
02 LCDR92	137904	4.006	1047879	7.498	684348	11.043	230348	12.949
03 VBLKR92	118373	3.993	921843	7.497	606328	11.043	202574	12.952
04 9653939	125125	4.007	1017732	7.498	648016	11.044	223692	12.950
05 9653940	126801	4.000	1034977	7.501	673643	11.043	216917	12.953
06 9656568	119709	4.013	1019122	7.501	649406	11.043	218105	12.952
07 9654945	124503	4.007	1072186	7.502	671908	11.044	223966	12.954
08 9650181DL	131746	4.007	1036641	7.501	697672	11.044	242842	12.950
09 9650186DL	110166	4.006	923098	7.501	615310	11.043	218556	12.953
10 9651601	125763	4.004	1035331	7.499	649733	11.041	215671	12.950
11 9651606	125185	4.005	1034940	7.500	674338	11.042	226402	12.951
12 9651608	122149	4.007	1033864	7.501	656612	11.044	224282	12.950
13 9651609	120100	4.001	1024868	7.505	664847	11.044	219753	12.953
14 9651612	125115	4.010	1032994	7.501	667526	11.044	232646	12.953
15 9651614DL	128909	4.010	1033655	7.504	698180	11.043	229501	12.953
16 9651616	107851	4.002	902630	7.497	599801	11.043	190824	12.952
17 9651607	129131	3.997	1153421	7.501	702591	11.044	234742	12.953
18 9651611	154441	4.000	1053242	7.501	702025	11.044	225144	12.953
19 9651611DL	152768	4.002	1063395	7.503	683157	11.042	229894	12.951
20 9651610	154668	4.014	1159957	7.498	796382	11.044	259292	12.954
21 9651610DL	130244	4.003	1101849	7.500	709747	11.043	228755	12.952

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

Preparation and Run Logs

Volatiles by GC/MS

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VOA Prep Summary by SDG: DHR41

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
9656566	150A	07320	18796261	N	06/12/18 09:22	06/13/18 14:18	32.48 g	38.58 g	6.10 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656566	150B	07320	18796262	Y	06/12/18 09:22	06/13/18 14:18	32.52 g	38.57 g	6.05 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656566	169A	07578	18799658	N	06/12/18 09:22	06/13/18 13:25	29.12 g	35.41 g	6.29 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9656567	150A	07320	18796263	N	06/12/18 09:28	06/13/18 14:18	31.93 g	37.63 g	5.70 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656567	150B	07320	18796264	Y	06/12/18 09:28	06/13/18 14:18	32.45 g	38.02 g	5.57 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656567	169A	07578	18799659	N	06/12/18 09:28	06/13/18 13:29	29.02 g	34.95 g	5.93 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9656568	150A	07320	18796265	N	06/12/18 09:45	06/13/18 14:18	32.51 g	38.70 g	6.19 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656568	150B	07320	18796266	N	06/12/18 09:45	06/13/18 14:18	32.57 g	38.27 g	5.70 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656568	169A	07578	18799660	Y	06/12/18 09:45	06/13/18 13:34	29.21 g	35.63 g	6.42 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9656569	150A	07320	18796267	Y	06/12/18 11:34	06/13/18 14:18	32.49 g	38.21 g	5.72 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656569	150B	07320	18796268	N	06/12/18 11:34	06/13/18 14:18	32.44 g	38.42 g	5.98 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656569	169A	07578	18799661	N	06/12/18 11:34	06/13/18 13:37	29.24 g	35.49 g	6.25 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9656570	150A	07320	18796269	Y	06/12/18 11:47	06/13/18 14:18	32.41 g	38.27 g	5.86 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656570	150B	07320	18796270	N	06/12/18 11:47	06/13/18 14:18	32.64 g	38.70 g	6.06 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656570	169A	07578	18799662	N	06/12/18 11:47	06/13/18 13:41	29.24 g	35.12 g	5.88 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9656571	150A	07320	18796271	Y	06/12/18 12:24	06/13/18 14:18	32.52 g	37.62 g	5.10 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9656571	150B	07320	18796272	N	06/12/18 12:24	06/13/18 14:18	32.39 g	37.28 g	4.89 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9656571	169A	07578	18799663	N	06/12/18 12:24	06/13/18 13:44	29.13 g	33.87 g	4.74 g	4.50 g - 5.50 g	Y	18144-1	MeOH w/surrogate (5 mL)	5.000	
9656572	150A	07320	18796273	Y	06/12/18 14:42	06/13/18 14:18	32.41 g	37.94 g	5.53 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656572	150B	07320	18796274	N	06/12/18 14:42	06/13/18 14:18	32.65 g	38.34 g	5.69 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656572	169A	07578	18799664	N	06/12/18 14:42	06/13/18 13:47	29.15 g	34.70 g	5.55 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9656573	150A	07320	18796423	Y	06/12/18 15:06	06/13/18 14:18	32.57 g	38.55 g	5.98 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656573	150B	07320	18796424	N	06/12/18 15:06	06/13/18 14:18	32.67 g	38.73 g	6.06 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656573	169A	07578	18799665	N	06/12/18 15:06	06/13/18 13:50	29.28 g	35.54 g	6.26 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

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VOA Prep Summary by SDG: DHR41

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
9656574	150A	07320	18796425	Y	06/12/18 15:18	06/13/18 14:19	32.58 g	38.03 g	5.45 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9656574	150B	07320	18796426	N	06/12/18 15:18	06/13/18 14:19	32.61 g	38.30 g	5.69 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656574	169A	07578	18799666	N	06/12/18 15:18	06/13/18 13:53	29.16 g	34.71 g	5.55 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9656575	150A	07320	18796427	Y	06/12/18 16:05	06/13/18 14:19	32.49 g	37.90 g	5.41 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9656575	150B	07320	18796428	N	06/12/18 16:05	06/13/18 14:19	32.42 g	38.20 g	5.78 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9656575	169A	07578	18799667	N	06/12/18 16:05	06/13/18 14:11	29.25 g	35.33 g	6.08 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9651117	150A	07320	18796233	Y	06/08/18 16:30	06/09/18 17:11	31.96 g	37.80 g	5.84 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651117	150B	07320	18796234	N	06/08/18 16:30	06/09/18 17:11	32.28 g	38.21 g	5.93 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9651117	169A	07578	18798261	N	06/08/18 16:30	06/09/18 17:00	29.45 g	35.71 g	6.26 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

6-11-18 Prep of VOA1 Jun 11,18 X 7-11-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-1 Danger 1 mL
Lot# A0126988
Expire: 04/2020 Store: 0°C or colder
Custom Revised V #1B Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 572312 Danger 1 mL
Lot# A0131271
Expire: 10/2018 Store: 0°C or colder
Custom V #4C (Rev 3) Standard
This product is photosensitive.
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lou Reilling 2032

6-11-18 Prep of VOA2 Jun 11,18 X 7-11-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lou Reilling 2032

6-11-18 Prep of VOA3 Jun 11,18 X 7-6-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 56736 Danger 1 mL
Lot# A0130926
Expire: 09/2020 Store: 0°C or colder
Custom V # 3B Standard
12500 - 25000 µg/mL each in P&T Methanol/Water (90:10)
Full label information for the chemical is provided on the outside package.

And 1.0 mL of
6-11-18 ③ LLR 2032
~~May 7,18~~
ACR May 7,18

Lou Reilling 2032

③ LLR 2032 6-11-18
X
③ LLR 2032 6-11-18

6-11-18 Prep of 2CEVE ~~May~~ June 11,18 X 7-11-18
Added 1.0 mL of...
to final Volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-2 Danger 1 mL
Lot# A0126036
Expire: 03/2020 Store: 0°C or colder
Custom V # 1B 2-CEVE Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lou Reilling 2032

6-13-18 AR27 SIM 15/55 Jun13-18 x: 8/27/18
1.0 mL at... Diox-d8 Jun07-18
Tol-d8 / Clbenzene-d5 Feb27-18
0.333mL 624 15/55 Lot # A0126691
To a final volume of
~~10 v~~ ③ KAS2648 6-14-18 50 mL MeOH B+J DT140
[signature] 2648

6-14-18 Prep of VOA1 Jun14,18 X 7-14-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-1 Danger 1 mL
Lot# A0126988
Expire: 04/2020 Store: 0°C or colder
Custom Revised V #1B Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 572312 Danger 1 mL
Lot# A0131271
Expire: 10/2018 Store: 0°C or colder
Custom V #4C (Rev 3) Standard
This product is photosensitive.
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Riulling 2032

6-14-18 Prep of 2CEVE Jun14,18 X 7-14-18
③ LLR/2032 6-14-18 Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-2 Danger 1 mL
Lot# A0126036
Expire: 03/2020 Store: 0°C or colder
Custom V # 1B 2-CEVE Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Riulling 2032

6-14-18
LLR 2032

6-14-18 Prep of VOA6 Jun14,18 X7-14-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot# DT140

RESTEK 558268 Danger 1 mL
Lot# A0125171
Expire: 08/2018 Store: 0°C or colder
Custom CS#6 Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-14-18 Prep of QVOA6 Jun14,18 X7-14-18
Added 1.0 mL of...
to final volume of
25 mL MeOH
B+J lot# DT140

RESTEK 558268.SEC Danger 1 mL
Lot# A0136083
Expire: 09/2019 Store: 0°C or colder
Custom QCS #6 Standard
1000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-14-18 Prep of QGASES Jun14,18 X6-21-18
Added 0.5 mL of...
to final volume of
25 mL MeOH
B+J lot# DT140

RESTEK 55669.SEC Danger 1 mL
Lot# A0129532
Expire: 08/2024 Store: 0°C or colder
Custom 502.2 "Q" Gas Mix
2000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-14-18 RV4 Gas 6-14-18 X6-21-18
25uL 502.2 "V" Gas Lot# A0136554
25uL DCFM Lot # 217091197
950uL MeOH B+J DT140

Q Gas 326 6-14-18 x 6-21-18
20uL 502.2 "Q" Gas Lot# A01295320
20uL DCFM Lot # 217091197
20uL BCE Lot # A0134146
940uL MeOH B+J DT140

[signature] 2052

6/14/18 ~~VVTP Jun13-18 x~~ VVTP Jun14-18 x: 6/21/18
100uL of... Custom SIM 8260C V Lot# A0109938
502.2 V Gas Lot # A0136554
To a final volume of 10mL MeOH BJ Lot DT140

QVTP Jun14-18 x: 6/21/18
100uL of... Custom SIM 8260C Q Lot# A019931
502.2 Q Lot# A01295320
To a final volume of 10mL MeOH B+J Lot DT140

[signature] 2648

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18feb22I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jkh09052	BF22T01.D	50NGBFB	02/22/2018	10:34	B180151AA	
JKH09052	BF22X01.D	BLK	02/22/2018	10:55		
JKH09052	BF22I01.D	VSTD300	02/22/2018	11:18		
JKH09052	BF22I02.D	VSTD100	02/22/2018	11:42		
JKH09052	BF22I03.D	VSTD050	02/22/2018	12:06		
JKH09052	BF22I04.D	VSTD020	02/22/2018	12:31		
JKH09052	BF22I05.D	VSTD010	02/22/2018	12:57		
JKH09052	BF22I06.D	VSTD004	02/22/2018	13:29		
JKH09052	BF22M01.D	MDL001	02/22/2018	13:51		
JKH09052	BF22V01.D	LGBICV	02/22/2018	14:16		

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07566 **HP #15**

Data Directory Path is - D:\DATA\18MAY29i\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
scn10072	RY29T10.D	50NGBFB	05/29/2018	11:34	R152031AA	50
scn10072	RY29X10.D	CBLK	05/29/2018	11:57	R152031AA	50
scn10072	RY29I10.D	VSTD004	05/29/2018	12:21		50
scn10072	RY29I11.D	VSTD010	05/29/2018	12:45		50
scn10072	RY29I12.D	VSTD010	05/29/2018	13:09		50
scn10072	RY29I13.D	VSTD050	05/29/2018	13:35		50
scn10072	RY29I14.D	VSTD100	05/29/2018	13:59		50
scn10072	RY29I15.D	VSTD300	05/29/2018	14:23		50
scn10072	RY29X11.D	CBLK	05/29/2018	14:47	R152031AA	50
scn10072	RY29X12.D	CBLK	05/29/2018	15:12	R152031AA	50
scn10072	RY29M10.D	MDL001	05/29/2018	15:37		50
scn10072	RY29V10.D	RICV	05/29/2018	16:02		50
scn10072	RY29X13.D	CBLK	05/29/2018	16:27	R152031AA	50
scn10072	RY29I20.D	VSTD004	05/29/2018	16:51		50
scn10072	RY29I21.D	VSTD010	05/29/2018	17:16		50
scn10072	RY29I22.D	VSTD020	05/29/2018	17:41		50
scn10072	RY29I23.D	VSTD050	05/29/2018	18:06		50
scn10072	RY29I24.D	VSTD100	05/29/2018	18:30		50
scn10072	RY29I25.D	VSTD300	05/29/2018	18:55		50
scn10072	RY29X14.D	CBLK	05/29/2018	19:20	R152031AA	50
scn10072	RY29M20.D	SMDL	05/29/2018	19:44		50
scn10072	RY29V20.D	SMRICV	05/29/2018	20:09		50

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18JUN14a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
pth10165	BU14T01.D	50NGBFB	06/14/2018	13:55	B180151AA	
pth10165	BU14X05.D	VBLKB10	06/14/2018	14:16	B181651AA	
pth10165	BU14C01.D	VSTD050	06/14/2018	14:41	B181651AA	
pth10165	BU14X06.D	VBLKB10	06/14/2018	15:04	B181651AA	
pth10165	BU14B01.D	VBLKB10	06/14/2018	15:36	B181651AA	
pth10165	BU14B05.D	VBLKB10	06/14/2018	15:59	B181651AA	
pth10165	BU14S01.D	LCSB10	06/14/2018	16:29	B181651AA	
pth10165	BU14S02.D	LCDB10	06/14/2018	16:51	B181651AA	
pth10165	BU14S03.D	9644038	06/14/2018	19:00	B181651AA	
pth10165	BU14S04.D	9650982	06/14/2018	19:22	B181651AA	
pth10165	BU14S05.D	9657452	06/14/2018	19:45	B181651AA	
pth10165	BU14S06.D	9650985	06/14/2018	20:08	B181651AA	
pth10165	BU14S33.D	9651117	06/14/2018	20:36	B181652AA	
pth10165	BU14S34.D	9651117MS	06/14/2018	20:59	B181652AA	
pth10165	BU14S35.D	9651118	06/14/2018	21:21	B181652AA	
pth10165	BU14S36.D	9655317	06/14/2018	21:44	B181652AA	
pth10165	BU14S37.D	9655318	06/14/2018	22:07	B181652AA	
pth10165	BU14S38.D	9656566	06/14/2018	22:29	B181652AA	
pth10165	BU14S39.D	9656567	06/14/2018	22:52	B181652AA	
pth10165	BU14S40.D	9656569	06/14/2018	23:15	B181652AA	
pth10165	BU14S41.D	9656570	06/14/2018	23:37	B181652AA	
pth10165	BU14S42.D	9656571	06/14/2018	23:59	B181652AA	
pth10165	BU14S43.D	9656572	06/15/2018	00:22	B181652AA	
pth10165	BU14S44.D	9656573	06/15/2018	00:44	B181652AA	
pth10165	BU14S45.D	9656574	06/15/2018	01:07	B181652AA	
pth10165	BU14S46.D	9656575	06/15/2018	01:29	B181652AA	

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07566 **HP #15**

Data Directory Path is - d:\data\18jun18a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
scn10072	RU18T01.D	50NGBFB	06/18/2018	07:42	R181691AA	
scn10072	RU18X01.D	VBLKR92	06/18/2018	08:08	R181691AA	
scn10072	RU18C01.D	VSTD050	06/18/2018	08:32	R181691AA	
scn10072	RU18L01.D	LCSR92	06/18/2018	09:26	R181691AA	
scn10072	RU18L02.D	LCDR92	06/18/2018	09:51	R181691AA	
scn10072	RU18X02.D	VBLKR92	06/18/2018	10:16	R181691AA	
scn10072	RU18B01.D	VBLKR92	06/18/2018	10:58	R181691AA	
scn10072	RU18S02.D	9653939	06/18/2018	11:39	R181691AA	50
scn10072	RU18S03.D	9653940	06/18/2018	12:03	R181691AA	50
scn10072	RU18S04.D	9656568	06/18/2018	12:26	R181691AA	50
scn10072	RU18S05.D	9654945	06/18/2018	12:50	R181691AA	2500
scn10072	RU18S06.D	9650181DL	06/18/2018	13:15	R181691AA	1000
scn10072	RU18S07.D	9650186DL	06/18/2018	13:39	R181691AA	500
scn10072	RU18S08.D	9651601	06/18/2018	14:04	R181691AA	50
scn10072	RU18S09.D	9651606	06/18/2018	14:29	R181691AA	50
scn10072	RU18S10.D	9651608	06/18/2018	14:53	R181691AA	50
scn10072	RU18S11.D	9651609	06/18/2018	15:18	R181691AA	50
scn10072	RU18S12.D	9651612	06/18/2018	15:42	R181691AA	50
scn10072	RU18S13.D	9651614	06/18/2018	16:07	R181691AA	50
scn10072	RU18S14.D	9651616	06/18/2018	16:31	R181691AA	50
scn10072	RU18S15.D	9651607	06/18/2018	16:55	R181691AA	50
scn10072	RU18S16.D	9651607DL	06/18/2018	17:19	R181691AA	500
scn10072	RU18S17.D	9651611	06/18/2018	17:44	R181691AA	50
scn10072	RU18S18.D	9651611DL	06/18/2018	18:09	R181691AA	500
scn10072	RU18S19.D	9651610	06/18/2018	18:33	R181691AA	100
scn10072	RU18S20.D	9651610DL	06/18/2018	18:57	R181691AA	1000
scn10072	RU18X27.D	VBLKR92	06/18/2018	19:21	R181691AA	
scn10072	RU18X28.D	VBLKR92	06/18/2018	19:46	R181691AA	
scn10072	RU18X29.D	VBLKR92	06/18/2018	20:10	R181691AA	
scn10072	RU18X30.D	VBLKR92	06/18/2018	20:34	R181691AA	

Moisture Data

MOISTURE

SAMPLE NUMBERS:

Sample #	Sample Code
9656566	R4101
9656567	R4102
9656568	R4103
9656569	R4104
9656570	R4105
9656571	R4106
9656572	R4107
9656573	R4108
9656574	R4109
9656575	R4110

COMMENTS:

Method defined actions are taken for any failed matrix QC.

Laboratory Compliance Quality Control

Analysis Name		LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number:	18164820003A	Sample number(s):		9656566-9656575		
Moisture		100		99-101		

Sample Matrix Quality Control

Analysis Name		BKG Conc	DUP Conc	RPD	RPD Max
Batch number:	18164820003A	Sample number(s):		9656566-9656575	
Moisture		23.3	22.4	4	5

* - Outside of specification

(1) - The result for one or both determinations was less than five times the LOQ.

Moisture Data Report

Batch #: 18164820003

Sample ID	Batch ID	Analysis#	Tare Wt	Sample Wt	Dry Wt	%Moisture	Analysis Date (Emp#)	Verified Date (Emp#)
9656566	A	00111	1.1047	8.8833	8.4220	17.63	6/13/18 (1201/SWF)	6/14/18 (236/CW)
9656567	A	00111	1.0919	7.6736	7.4079	17.69	6/13/18 (1201/SWF)	6/14/18 (236/CW)
9656568	A	00111	1.0801	8.4469	9.1713	4.21	6/13/18 (1201/SWF)	6/14/18 (236/CW)
9656569	A	00111	1.0939	7.1509	7.0438	16.80	6/13/18 (1201/SWF)	6/14/18 (236/CW)
9656570	A	00111	1.0793	9.6402	9.1455	16.33	6/13/18 (1201/SWF)	6/14/18 (236/CW)
9656571	A	00111	1.0978	9.2212	9.9163	4.37	6/13/18 (1201/SWF)	6/14/18 (236/CW)
9656572	A	00111	1.0886	8.4700	8.1772	16.31	6/13/18 (1201/SWF)	6/14/18 (236/CW)
9656573	A	00111	1.0953	8.0172	7.6002	18.86	6/13/18 (1201/SWF)	6/14/18 (236/CW)
9656574	A	00111	1.1133	9.9104	9.2079	18.32	6/13/18 (1201/SWF)	6/14/18 (236/CW)
9656575	A	00111	1.0869	7.6214	8.2798	5.62	6/13/18 (1201/SWF)	6/14/18 (236/CW)
P653839BKG	A	00111	1.0916	6.2369	5.8778	23.26	6/13/18 (1201/SWF)	6/14/18 (236/CW)
P653839DUP	A	00111	1.1220	6.6837	6.3068	22.43	6/13/18 (1201/SWF)	6/14/18 (236/CW)
LCS 89.5% Std.		00111	1.0818	5.0221	1.6137	89.41	6/13/18 (1201/SWF)	6/14/18 (236/CW)

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Type I (No Raw Data) Data Package

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Project: Dow Hanging Rock, OH
Groundwater, Soil and Water Samples
Collected on 06/14/18

SDG# DHR42

GROUP	SAMPLE NUMBERS
1955656	9661814-9661830

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date:** **07/03/2018**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Natalie Luciano at (717) 556-7258.

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Sample Reference List for SDG Number DHR42 with a Data Package Type of I-NODATA

11372 - CH2M Hill, Inc.

Project: Dow Hanging Rock, OH

Lab Sample Number	Client Sample ID	Collection Date	Date Received
9661814	S01-GW16-2630-061418	06/14/2018 08:12	06/15/2018 09:50
9661815	S01-GW16-2630-061418MS	06/14/2018 08:12	06/15/2018 09:50
9661816	S01-GW16-2630-061418MSD	06/14/2018 08:12	06/15/2018 09:50
9661817	S01-GW11-2630-061418	06/14/2018 11:41	06/15/2018 09:50
9661818	S01-SS43-0102-061418	06/14/2018 09:35	06/15/2018 09:50
9661819	S01-SS43-0506-061418	06/14/2018 09:41	06/15/2018 09:50
9661820	S01-SS43-2425-061418	06/14/2018 10:00	06/15/2018 09:50
9661821	S01-SS37-0102-061418	06/14/2018 12:48	06/15/2018 09:50
9661822	S01-SS37-0607-061418	06/14/2018 12:58	06/15/2018 09:50
9661823	S01-SS37-2526-061418	06/14/2018 13:14	06/15/2018 09:50
9661824	S01-SS19-0102-061418	06/14/2018 14:49	06/15/2018 09:50
9661825	S01-SS19-0607-061418	06/14/2018 14:55	06/15/2018 09:50
9661826	S01-SS19-2324-061418	06/14/2018 15:16	06/15/2018 09:50
9661827	S01-GW03-2630-061418	06/14/2018 16:14	06/15/2018 09:50
9661828	S01-GW02-2630-061418	06/14/2018 15:44	06/15/2018 09:50
9661829	S01-GW22-2630-061418	06/14/2018 16:40	06/15/2018 09:50
9661830	061418TB	06/14/2018 16:00	06/15/2018 09:50

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Sample pH Log

SDG: DHR42

LLI Sample Number	Bottle Code	Actual pH	Exp. pH	*pH Check Code	Adj. pH	Adjusted Date	Adjusted Time	Preservative Added	Preservative Lot #	LLI Supplied Bottle?	Sulfide Present?	Corrective Substance	CS Lot #	**Chlorine Present?	Corrective Substance	CS Lot #	Record Date	Employee
9661814	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/26/2018 12:13:43PM	895
9661815	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/26/2018 12:13:44PM	895
9661816	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/26/2018 12:13:44PM	895
9661817	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/26/2018 12:13:44PM	895
9661827	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/26/2018 12:13:44PM	895
9661828	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/26/2018 12:13:44PM	895
9661829	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/26/2018 12:13:44PM	895
9661830	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/26/2018 12:13:45PM	895

*pH Check Code Key
PK = Original container checked - pH is within the correct range. (No preservative was added)
PA = Original container checked - pH adjusted to correct range. (Preservative was added)
PV = Volatile container checked
PC = pH checked (unpreserved container)
SPK = Subsampled from an original container. Original container checked - pH is within correct range
SPA = Subsampled from an original container. Subsample container checked - pH adjusted to correct range.
SPC = Subsampled from an original container. pH checked (unpreserved container).
SUP = Subsampled from original container. Unable to be preserved due to the matrix of the sample.
UP = Unable to preserve due to matrix of the sample.
NA = Not applicable

**Chlorine Present Code Key
NA = Chlorine Not Checked
Y = Chlorine Present
N = Chlorine Not Present

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01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030B, December 1996.

10335 VOCs- 5ml Water by 8260B

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996

10237 VOCs- Solid by 8260B

The soil sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996

07320 GC/MS - LL DIH2O Encore Prep

Two EnCore samples are collected per sample. The vials used for preparation are pre-preserved and pre-weighed. Two aliquots are extruded into DI water. The vials are re-weighed and the weight of the sample should be 5-g +/- .5 g. The prepared samples are then delivered to the lab for analysis. DI vials are frozen after they are weighed to complete preservation step.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

07578 GC/MS-HL Encore Prep-NC

The sample is collected in an EnCore sampler and is submitted to the laboratory. A vial containing 5-ml methanol is prepared for each sample and weighed prior to adding the sample. After the sample is added to the vial, the vial is reweighed and the weight of sample is determined by difference. The weight of the sample should be 5-g +/- .5 g. The sample vial is then delivered to the lab for analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

00111 Moisture

A well-mixed sample is heated by reflected infrared in an aluminum pan and dried to a constant weight. The decrease in weight in weight after drying is calculated as the moisture content.

Reference: SM 2540 G-1997 %Moisture Calculation for Dry Weight Determination

Analysis Reports / Field Chain of Custody

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ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Report Date: June 26, 2018 23:37

Project: Dow Hanging Rock, OH

Account #: 11372
Group Number: 1955656
SDG: DHR42
PO Number: 131005094
Release Number: DHR42
State of Sample Origin: OH

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ . To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To	CH2M Hill, Inc.	Attn: Marie Chiller
Electronic Copy To	CH2M Hill, Inc.	Attn: Shane Lowe

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

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SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
S01-GW16-2630-061418 Grab Groundwater	06/14/2018 08:12	9661814
S01-GW16-2630-061418MS Grab Groundwater	06/14/2018 08:12	9661815
S01-GW16-2630-061418MSD Grab Groundwater	06/14/2018 08:12	9661816
S01-GW11-2630-061418 Grab Groundwater	06/14/2018 11:41	9661817
S01-SS43-0102-061418 Grab Soil	06/14/2018 09:35	9661818
S01-SS43-0506-061418 Grab Soil	06/14/2018 09:41	9661819
S01-SS43-2425-061418 Grab Soil	06/14/2018 10:00	9661820
S01-SS37-0102-061418 Grab Soil	06/14/2018 12:48	9661821
S01-SS37-0607-061418 Grab Soil	06/14/2018 12:58	9661822
S01-SS37-2526-061418 Grab Soil	06/14/2018 13:14	9661823
S01-SS19-0102-061418 Grab Soil	06/14/2018 14:49	9661824
S01-SS19-0607-061418 Grab Soil	06/14/2018 14:55	9661825
S01-SS19-2324-061418 Grab Soil	06/14/2018 15:16	9661826
S01-GW03-2630-061418 Grab Groundwater	06/14/2018 16:14	9661827
S01-GW02-2630-061418 Grab Groundwater	06/14/2018 15:44	9661828
S01-GW22-2630-061418 Grab Groundwater	06/14/2018 16:40	9661829
061418TB Water	06/14/2018 16:00	9661830

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: **S01-GW16-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 08:12
SDG#: DHR42-01BKG

CH2M Hill, Inc.
ELLE Sample #: WW 9661814
ELLE Group #: 1955656
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethene	75-35-4	1	U	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	4		1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	1	U	1	0.5	1
10335	Tetrachloroethene	127-18-4	200		1	0.5	1
10335	Trichloroethene	79-01-6	11		1	0.5	1
10335	Vinyl Chloride	75-01-4	1	U	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	W181762AA	06/25/2018 13:14	Angela D Sneeringer	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	W181762AA	06/25/2018 13:14	Angela D Sneeringer	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW16-2630-061418MS Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 08:12
SDG#: DHR42-01MS

CH2M Hill, Inc.
ELLE Sample #: WW 9661815
ELLE Group #: 1955656
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/l	ug/l	ug/l	
10335	1,1-Dichloroethene	75-35-4	25	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	26	1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	22	1	0.5	1
10335	Tetrachloroethene	127-18-4	220	1	0.5	1
10335	Trichloroethene	79-01-6	32	1	0.5	1
10335	Vinyl Chloride	75-01-4	18	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	W181762AA	06/25/2018 13:38	Angela D Sneeringer	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	W181762AA	06/25/2018 13:38	Angela D Sneeringer	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW16-2630-061418MSD Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 08:12
SDG#: DHR42-01MSD

CH2M Hill, Inc.
ELLE Sample #: WW 9661816
ELLE Group #: 1955656
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result	Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		ug/l	ug/l	ug/l	
10335	1,1-Dichloroethene	75-35-4	24	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	26	1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	22	1	0.5	1
10335	Tetrachloroethene	127-18-4	230	1	0.5	1
10335	Trichloroethene	79-01-6	32	1	0.5	1
10335	Vinyl Chloride	75-01-4	18	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	W181762AA	06/25/2018 14:02	Angela D Sneeringer	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	W181762AA	06/25/2018 14:02	Angela D Sneeringer	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW11-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 11:41
SDG#: DHR42-02

CH2M Hill, Inc.
ELLE Sample #: WW 9661817
ELLE Group #: 1955656
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethene	75-35-4	1	U	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	16		1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	1	U	1	0.5	1
10335	Tetrachloroethene	127-18-4	62		1	0.5	1
10335	Trichloroethene	79-01-6	13		1	0.5	1
10335	Vinyl Chloride	75-01-4	1	U	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	W181762AA	06/25/2018 15:14	Angela D Sneeringer	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	W181762AA	06/25/2018 15:14	Angela D Sneeringer	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS43-0102-061418 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 09:35
SDG#: DHR42-03

CH2M Hill, Inc.
ELLE Sample #: **SW 9661818**
ELLE Group #: **1955656**
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.85
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.85
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.85
10237	Tetrachloroethene	127-18-4	3	J	5	1	0.85
10237	Trichloroethene	79-01-6	5	U	5	1	0.85
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.85
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	18.1		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/19/2018 19:35	Kelly Devlin	0.85
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650237	06/15/2018 13:05	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18169820006A	06/18/2018 22:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS43-0506-061418 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 09:41
SDG#: DHR42-04

CH2M Hill, Inc.
ELLE Sample #: SW 9661819
ELLE Group #: 1955656
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	6	U	6	1	0.89
10237	cis-1,2-Dichloroethene	156-59-2	6	U	6	1	0.89
10237	trans-1,2-Dichloroethene	156-60-5	6	U	6	1	0.89
10237	Tetrachloroethene	127-18-4	4	J	6	1	0.89
10237	Trichloroethene	79-01-6	6	U	6	1	0.89
10237	Vinyl Chloride	75-01-4	6	U	6	1	0.89
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	19.8		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/19/2018 19:57	Kelly Devlin	0.89
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650237	06/15/2018 13:09	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18169820006A	06/18/2018 22:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS43-2425-061418 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 10:00
SDG#: DHR42-05

CH2M Hill, Inc.
ELLE Sample #: **SW 9661820**
ELLE Group #: **1955656**
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	1
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	1
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	1
10237	Tetrachloroethene	127-18-4	5	U	5	1	1
10237	Trichloroethene	79-01-6	5	U	5	1	1
10237	Vinyl Chloride	75-01-4	5	U	5	1	1
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	3.4		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/19/2018 20:19	Kelly Devlin	1
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650237	06/15/2018 13:12	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18169820006A	06/18/2018 22:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS37-0102-061418 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 12:48
SDG#: DHR42-06

CH2M Hill, Inc.
ELLE Sample #: **SW 9661821**
ELLE Group #: **1955656**
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.81
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.81
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.81
10237	Tetrachloroethene	127-18-4	25		5	1	0.81
10237	Trichloroethene	79-01-6	5	U	5	1	0.81
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.81
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	16.3		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/19/2018 21:04	Kelly Devlin	0.81
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650237	06/15/2018 13:15	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18169820006A	06/18/2018 22:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS37-0607-061418 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 12:58
SDG#: DHR42-07

CH2M Hill, Inc.
ELLE Sample #: **SW 9661822**
ELLE Group #: **1955656**
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.86
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.86
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.86
10237	Tetrachloroethene	127-18-4	77		5	1	0.86
10237	Trichloroethene	79-01-6	1	J	5	1	0.86
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.86
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	16.4		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/19/2018 21:27	Kelly Devlin	0.86
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650237	06/15/2018 13:19	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18169820006A	06/18/2018 22:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS37-2526-061418 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 13:14
SDG#: DHR42-08

CH2M Hill, Inc.
ELLE Sample #: SW 9661823
ELLE Group #: 1955656
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	300	U	300	61	57.87
10237	cis-1,2-Dichloroethene	156-59-2	300	U	300	61	57.87
10237	trans-1,2-Dichloroethene	156-60-5	300	U	300	61	57.87
10237	Tetrachloroethene	127-18-4	38,000	E	300	61	57.87
10237	Trichloroethene	79-01-6	390		300	61	57.87
10237	Vinyl Chloride	75-01-4	300	U	300	61	57.87
Trial ID: DL							
10237	1,1-Dichloroethene	75-35-4	3,000	U	3,000	610	578.7
10237	cis-1,2-Dichloroethene	156-59-2	3,000	U	3,000	610	578.7
10237	trans-1,2-Dichloroethene	156-60-5	3,000	U	3,000	610	578.7
10237	Tetrachloroethene	127-18-4	35,000		3,000	610	578.7
10237	Trichloroethene	79-01-6	3,000	U	3,000	610	578.7
10237	Vinyl Chloride	75-01-4	3,000	U	3,000	610	578.7
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	5.0		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS37-2526-061418 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 13:14
SDG#: DHR42-08

CH2M Hill, Inc.
ELLE Sample #: SW 9661823
ELLE Group #: 1955656
Matrix: Soil

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	R181711AA	06/20/2018 12:29	Stephen C Nolte	57.87
10237	VOCs- Solid by 8260B	SW-846 8260B	2-DL	R181711AA	06/20/2018 12:54	Stephen C Nolte	578.7
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650237	06/15/2018 13:22	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18169820006A	06/18/2018 22:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS19-0102-061418 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 14:49
SDG#: DHR42-09

CH2M Hill, Inc.
ELLE Sample #: SW 9661824
ELLE Group #: 1955656
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.88
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.88
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.88
10237	Tetrachloroethene	127-18-4	3	J	5	1	0.88
10237	Trichloroethene	79-01-6	5	U	5	1	0.88
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.88
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	19.3		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/19/2018 21:50	Kelly Devlin	0.88
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650237	06/15/2018 13:25	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18169820006A	06/18/2018 22:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS19-0607-061418 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 14:55
SDG#: DHR42-10

CH2M Hill, Inc.
ELLE Sample #: SW 9661825
ELLE Group #: 1955656
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	6	U	6	1	0.92
10237	cis-1,2-Dichloroethene	156-59-2	6	U	6	1	0.92
10237	trans-1,2-Dichloroethene	156-60-5	6	U	6	1	0.92
10237	Tetrachloroethene	127-18-4	10		6	1	0.92
10237	Trichloroethene	79-01-6	6	U	6	1	0.92
10237	Vinyl Chloride	75-01-4	6	U	6	1	0.92
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	19.1		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/19/2018 22:12	Kelly Devlin	0.92
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650237	06/15/2018 13:27	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18169820006A	06/18/2018 22:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-SS19-2324-061418 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 15:16
SDG#: DHR42-11

CH2M Hill, Inc.
ELLE Sample #: SW 9661826
ELLE Group #: 1955656
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	1
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	1
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	1
10237	Tetrachloroethene	127-18-4	2	J	5	1	1
10237	Trichloroethene	79-01-6	5	U	5	1	1
10237	Vinyl Chloride	75-01-4	5	U	5	1	1
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	4.9		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/19/2018 22:35	Kelly Devlin	1
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650237	06/15/2018 13:30	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650237	06/15/2018 14:09	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18169820006A	06/18/2018 22:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW03-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 16:14
SDG#: DHR42-12

CH2M Hill, Inc.
ELLE Sample #: WW 9661827
ELLE Group #: 1955656
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethene	75-35-4	1	U	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	4		1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	1	U	1	0.5	1
10335	Tetrachloroethene	127-18-4	100		1	0.5	1
10335	Trichloroethene	79-01-6	4		1	0.5	1
10335	Vinyl Chloride	75-01-4	1	U	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	W181762AA	06/25/2018 15:38	Angela D Sneeringer	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	W181762AA	06/25/2018 15:38	Angela D Sneeringer	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW02-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 15:44
SDG#: DHR42-13

CH2M Hill, Inc.
ELLE Sample #: WW 9661828
ELLE Group #: 1955656
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethene	75-35-4	1	U	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	0.6	J	1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	1	U	1	0.5	1
10335	Tetrachloroethene	127-18-4	37		1	0.5	1
10335	Trichloroethene	79-01-6	3		1	0.5	1
10335	Vinyl Chloride	75-01-4	1	U	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	W181762AA	06/25/2018 16:02	Angela D Sneeringer	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	W181762AA	06/25/2018 16:02	Angela D Sneeringer	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW22-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 16:40
SDG#: DHR42-14

CH2M Hill, Inc.
ELLE Sample #: WW 9661829
ELLE Group #: 1955656
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethene	75-35-4	1	U	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	5		1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	1	U	1	0.5	1
10335	Tetrachloroethene	127-18-4	36		1	0.5	1
10335	Trichloroethene	79-01-6	9		1	0.5	1
10335	Vinyl Chloride	75-01-4	1	U	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	W181762AA	06/25/2018 16:25	Angela D Sneeringer	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	W181762AA	06/25/2018 16:25	Angela D Sneeringer	1

*=This limit was used in the evaluation of the final result

Sample Description: **061418TB Water**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/14/2018 16:00
SDG#: DHR42-15TB

CH2M Hill, Inc.
ELLE Sample #: WW 9661830
ELLE Group #: 1955656
Matrix: Water

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/l**		**ug/l**	**ug/l**	
10335	1,1-Dichloroethene	75-35-4	1	U	1	0.5	1
10335	cis-1,2-Dichloroethene	156-59-2	1	U	1	0.5	1
10335	trans-1,2-Dichloroethene	156-60-5	1	U	1	0.5	1
10335	Tetrachloroethene	127-18-4	1	U	1	0.5	1
10335	Trichloroethene	79-01-6	1	U	1	0.5	1
10335	Vinyl Chloride	75-01-4	1	U	1	0.5	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	VOCs- 5ml Water by 8260B	SW-846 8260B	1	W181762AA	06/25/2018 16:49	Angela D Sneeringer	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	W181762AA	06/25/2018 16:49	Angela D Sneeringer	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1955656
Reported: 06/26/2018 23:37

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result		LOQ**	MDL
	ug/kg		ug/kg	ug/kg
Batch number: B181701AA	Sample number(s): 9661818-9661822,9661824-9661826			
1,1-Dichloroethene	5	U	5	1
cis-1,2-Dichloroethene	5	U	5	1
trans-1,2-Dichloroethene	5	U	5	1
Tetrachloroethene	5	U	5	1
Trichloroethene	5	U	5	1
Vinyl Chloride	5	U	5	1
Batch number: R181711AA	Sample number(s): 9661823			
1,1-Dichloroethene	250	U	250	50
cis-1,2-Dichloroethene	250	U	250	50
trans-1,2-Dichloroethene	250	U	250	50
Tetrachloroethene	250	U	250	50
Trichloroethene	250	U	250	50
Vinyl Chloride	250	U	250	50
	ug/l		ug/l	ug/l
Batch number: W181762AA	Sample number(s): 9661814-9661817,9661827-9661830			
1,1-Dichloroethene	1	U	1	0.5
cis-1,2-Dichloroethene	1	U	1	0.5
trans-1,2-Dichloroethene	1	U	1	0.5
Tetrachloroethene	1	U	1	0.5
Trichloroethene	1	U	1	0.5
Vinyl Chloride	1	U	1	0.5

LCS/LCSD

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: B181701AA	Sample number(s): 9661818-9661822,9661824-9661826								
1,1-Dichloroethene	20	20.22	20	17.17	101	86	73-129	16	30
cis-1,2-Dichloroethene	20	20.73	20	17.26	104	86	80-120	18	30
trans-1,2-Dichloroethene	20	19.72	20	16.56	99	83	80-125	17	30
Tetrachloroethene	20	19.73	20	16.55	99	83	73-120	18	30
Trichloroethene	20	20.04	20	16.87	100	84	80-120	17	30
Vinyl Chloride	20	15.39	20	13.67	77	68	59-120	12	30

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/26/2018 23:37

Group Number: 1955656

LCS/LCSD (continued)

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: R181711AA	Sample number(s): 9661823								
1,1-Dichloroethene	1000	1136.22	1000	974.54	114	97	73-129	15	30
cis-1,2-Dichloroethene	1000	1101.18	1000	1001.96	110	100	80-120	9	30
trans-1,2-Dichloroethene	1000	1098.17	1000	990.09	110	99	80-125	10	30
Tetrachloroethene	1000	1119.34	1000	954.46	112	95	73-120	16	30
Trichloroethene	1000	1040.64	1000	947.65	104	95	80-120	9	30
Vinyl Chloride	1000	871.45	1000	721.72	87	72	59-120	19	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: W181762AA	Sample number(s): 9661814-9661817,9661827-9661830								
1,1-Dichloroethene	20	20.48			102		80-131		
cis-1,2-Dichloroethene	20	19.43			97		80-120		
trans-1,2-Dichloroethene	20	19.53			98		80-120		
Tetrachloroethene	20	19.04			95		80-120		
Trichloroethene	20	18.45			92		80-120		
Vinyl Chloride	20	15.69			78		68-120		
	%	%	%	%					
Batch number: 18169820006A	Sample number(s): 9661818-9661826								
Moisture	89.5	89.33			100		99-101		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/kg	MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: B181701AA	Sample number(s): 9661818-9661822,9661824-9661826 UNSPK: 9661820									
1,1-Dichloroethene	5 U	18.52	16.52			89		73-129		
cis-1,2-Dichloroethene	5 U	18.52	15.99			86		80-120		
trans-1,2-Dichloroethene	5 U	18.52	15.39			83		80-125		
Tetrachloroethene	5 U	18.52	14.78			80		73-120		
Trichloroethene	5 U	18.52	14.94			81		80-120		
Vinyl Chloride	5 U	18.52	13.84			75		59-120		
	ug/l	ug/l	ug/l	ug/l	ug/l					
Batch number: W181762AA	Sample number(s): 9661814-9661817,9661827-9661830 UNSPK: 9661814									
1,1-Dichloroethene	1 U	20	24.62	20	23.92	123	120	80-131	3	30
cis-1,2-Dichloroethene	4.22	20	26.03	20	25.71	109	107	80-120	1	30
trans-1,2-Dichloroethene	1 U	20	22.29	20	21.7	111	108	80-120	3	30

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/26/2018 23:37

Group Number: 1955656

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Tetrachloroethene	204.56	20	221.22	20	232.16	83 (2)	138 (2)	80-120	5	30
Trichloroethene	11.18	20	32.24	20	32.2	105	105	80-120	0	30
Vinyl Chloride	1 U	20	17.76	20	17.56	89	88	68-120	1	30

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc %	DUP Conc %	DUP RPD	DUP RPD Max
Batch number: 18169820006A	Sample number(s): 9661818-9661826 BKG: 9661823			
Moisture	5.02	5.33	6*	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- Solid by 8260B
Batch number: B181701AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9661818	104	99	102	98
9661819	105	100	102	97
9661820	105	103	100	97
9661821	103	98	103	93
9661822	105	102	101	96
9661824	104	97	103	95
9661825	104	96	103	95
9661826	105	101	100	96
Blank	105	102	102	96
LCS	105	105	105	107
LCSD	104	107	105	106
MS	104	103	104	105
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- Solid by 8260B
Batch number: R181711AA

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1955656
Reported: 06/26/2018 23:37

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- Solid by 8260B
Batch number: R181711AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9661823	99	105	98	90
9661823DL	83	88	85	83
Blank	99	103	99	96
LCS	110	111	107	108
LCSD	100	100	99	94
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- 5ml Water by 8260B
Batch number: W181762AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9661814	99	100	96	96
9661815	98	102	98	100
9661816	101	100	98	100
9661817	101	100	97	98
9661827	102	103	96	98
9661828	100	101	96	96
9661829	101	103	96	97
9661830	101	100	96	97
Blank	100	102	97	98
LCS	101	102	98	102
MS	98	102	98	100
MSD	101	100	98	100
Limits:	80-120	80-120	80-120	80-120

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody

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For Eurofins Lancaster Laboratories Environmental use only

Acct. # 11372 Group # 1955656 Sample # 9661814-30

COC # 562618

Client Information

Client: Dow c/o Jacobs	Acct. #:
Project Name/#: DOW Hanging Rock, OH	PWSID #:
Project Manager: Chiller/Shane Lowe	P.O. #:
Sampler: Billy Irish	Quote #:
State where samples were collected: Ohio	For Compliance: Yes ☐ No ☒

Matrix: ☐ Tissue ☐ Sediment ☒ Soil ☒ Ground ☐ Surface ☐ Potable ☐ NPDES ☐ Water ☐ Other:

Analysis Requested — Preservation and Filtration Codes

For Lab Use Only
FSC:
SCR#:

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Sample Identification	Collected Date	Collected Time	Grab	Composite	Soil	Water	Other	Total # of Containers	VOCs	% moisture	Remarks
S01-GW16-2630-061418	6/14/18	0812	X			X		3	X		
S01-GW16-2630-061418MS	6/14/18	0812	X			X		3	X		matrix spike
S01-GW16-2630-061418MSD	6/14/18	0812	X			X		3	X		matrix spike duplicate
S01-GW11-2630-061418	6/14/18	1141	X			X		3	X		
S01-SS43-0102-061418	6/14/18	0935	X		X			4	X	X	
S01-SS43-0506-061418	6/14/18	0941	X		X			4	X	X	
S01-SS43-2425-061418	6/14/18	1000	X		X			4	X	X	
S01-SS37-0102-061418	6/14/18	1248	X		X			4	X	X	
S01-SS37-0607-061418	6/14/18	1258	X		X			4	X	X	
S01-SS37-2526-061418	6/14/18	1314	X		X			4	X	X	

Turnaround Time (TAT) Requested (please circle)
Standard Rush
(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: Standard

E-mail address:

Relinquished by	Date	Time	Received by	Date	Time
Dan Robert	6/14/18	1800			
			[signature]	6/15/18	0950

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)
Type III (Reduced non-CLP) NJ DKQP TX TRRP-13
NYSDEC Category A or B MA MCP CT RCP

EDD Required? Yes No
If yes, format: as per contract

Site-Specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:
UPS ____ FedEx X Other ____

Temperature upon receipt 0.7 °C

Environmental Analysis Request/Chain of Custody

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Acct. # 11372 Group # 1955656 Sample # 9661814-30

COC # 562622

Client Information

Client: DOW c/o Jacobs

Acct. #:

Project Name/#: Dow Hanging Rock, OH

PWSID #:

Project Manager: Chiller | Shane Lowe

P.O. #:

Sampler: Billy Irish

Quote #:

State where samples were collected: Ohio

For Compliance: Yes ☐ No ☒

Matrix

Soil ☒ Sediment ☐ Tissue ☐ | Water ☒ Potable ☐ Ground ☐ NPDES ☐ Surface ☐ | Other: ____

Analysis Requested

Preservation and Filtration Codes

VOCs | % moisture

For Lab Use Only

FSC: ____

SCR#: ____

Preservation Codes

H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Remarks

Sample Identification	Collected Date	Collected Time	Grab	Composite	Soil	Water	Other	Total # of Containers	VOCs	% moisture	Remarks
SØ1-SS19-ØIØ2-Ø61418	6/14/18	1449	X		X			4	X	X	
SØ1-SS19-Ø6Ø7-Ø61418	6/14/18	1455	X		X			4	X	X	
SØ1-SS19-2324-Ø61418	6/14/18	1516	X		X			4	X	X	
SØ1-GWØ3-26ØØ-Ø61418	6/14/18	1614	X		DF	X		3	X	DF	
SØ1-GWØ2-26ØØ-Ø61418	6/14/18	1544	X			X		3	X		
SØ1-GW22-26ØØ-Ø61418	6/14/18	1640	X			X		3	X		
Ø61418TB	6/14/18	1600	X			X		2	X		Trip blank

Turnaround Time (TAT) Requested (please circle)

Standard · Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: Standard

E-mail address: ____

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) | Type VI (Raw Data Only)

Type III (Reduced non-CLP) | NJ DKQP | TX TRRP-13

NYSDEC Category A or B | MA MCP | CT RCP

Relinquished by	Date	Time	Received by	Date	Time
Dan Kalber	6/14/18	1800			
				6/15/18	950

EDD Required? (Yes) No

If yes, format: as per contract

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS ____ FedEx X Other ____

Temperature upon receipt 0.7 °C

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Sample Administration Receipt Documentation Log

Doc Log ID: 219253

Group Number(s): 1955656

Client: Dow

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	06/15/2018 9:50
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OH		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	No
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCl
Samples Intact:	No	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Raysa Perez (14020) at 10:47 on 06/15/2018

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT131	0.7	DT	Wet	Y	Bagged	N

Samples Not Intact Details

Sample ID on Label	Bottle Code	Bottle Quantity	Container Salvageable?	Comments
S01-SS19-0102-061418	4.5 oz.plastic cup w/screw lid - None	1	N	We will use 3rd encore for moisture determination.

Sample Date/Time Discrepancy Details

Sample ID on COC	Date/Time on Label	Comments
S01-SS43-2425-061418	6/14/2018 10:00	Says 100 not 1000

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mL**	milliliter(s)
C	degrees Celsius	**MPN**	Most Probable Number
cfu	colony forming units	**N.D.**	non-detect
CP Units	cobalt-chloroplatinate units	**ng**	nanogram(s)
F	degrees Fahrenheit	**NTU**	nephelometric turbidity units
g	gram(s)	**pg/L**	picogram/liter
IU	International Units	**RL**	Reporting Limit
kg	kilogram(s)	**TNTC**	Too Numerous To Count
L	liter(s)	**µg**	microgram(s)
lb.	pound(s)	**µL**	microliter(s)
m3	cubic meter(s)	**umhos/cm**	micromhos/cm
meq	milliequivalents	**MCL**	Maximum Contamination Limit
mg	milligram(s)		

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Volatiles by GC/MS Data

Case Narrative/Conformance Summary

Volatiles by GC/MS

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR42

GC/MS Volatiles

Fraction: Volatiles by GC/MS

VOCs- 5ml Water by 8260B

		Matrix			
Sample #	Client ID	Liquid	Solid	DF	Comments
9661814	S01-GW16-2630-061418	X		1	Unspiked
9661815	S01-GW16-2630-061418MS	X		1	Matrix Spike
9661816	S01-GW16-2630-061418MSD	X		1	Matrix Spike Duplicate
9661817	S01-GW11-2630-061418	X		1	
9661818	S01-SS43-0102-061418		X	0.85	
9661819	S01-SS43-0506-061418		X	0.89	
9661820	S01-SS43-2425-061418		X	0.93; 1	
9661821	S01-SS37-0102-061418		X	0.81	
9661822	S01-SS37-0607-061418		X	0.86	
9661823	S01-SS37-2526-061418		X	578.7; 57.87	
9661824	S01-SS19-0102-061418		X	0.88	
9661825	S01-SS19-0607-061418		X	0.92	
9661826	S01-SS19-2324-061418		X	1	
9661827	S01-GW03-2630-061418	X		1	
9661828	S01-GW02-2630-061418	X		1	
9661829	S01-GW22-2630-061418	X		1	
9661830	061418TB	X		1	Trip Blank

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

(Sample number(s): 9661818-9661819, 9661821-9661824: Analysis: 10237)
The VOA soil weight is outside the acceptable weight range.
See the VOA Prep Summary Sheet for the affected sample(s).

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR42

GC/MS Volatiles

Fraction: Volatiles by GC/MS

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

MS/MSD

Batch#: W181762AA (Sample number(s): 9661814-9661817, 9661827-9661830, UNSPK: 9661814)
The recovery(ies) for the following analyte(s) in the MSD exceeded the acceptance window indicating a positive bias:Tetrachloroethene.

SAMPLE ANALYSIS:

No problems were encountered with the analysis of the samples.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Volatiles by GC/MS

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Quality Control Reference List
GC/MS Volatiles

CLIENT: CH2M Hill, Inc.
SDG: DHR42

Fraction: Volatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
VOCs- 5ml Water by 8260B	W181762AA	VBLKW96	06/25/2018 11:05
		LCSW96	06/25/2018 10:17
		9661814 UNSPK	06/25/2018 13:14
		9661815 MS	06/25/2018 13:38
		9661816 MSD	06/25/2018 14:02
		9661817	06/25/2018 15:14
		9661827	06/25/2018 15:38
		9661828	06/25/2018 16:02
		9661829	06/25/2018 16:25
		9661830	06/25/2018 16:49
VOCs- Solid by 8260B	B181701AA	VBLKB15	06/19/2018 16:39
		LCSB15	06/19/2018 17:01
		LCDB15	06/19/2018 17:24
		9661818	06/19/2018 19:35
		9661819	06/19/2018 19:57
		9661820 UNSPK	06/19/2018 20:19
		9661820 MS	06/19/2018 20:42
		9661821	06/19/2018 21:04
		9661822	06/19/2018 21:27
		9661824	06/19/2018 21:50
		9661825	06/19/2018 22:12
		9661826	06/19/2018 22:35
VOCs- Solid by 8260B	R181711AA	VBLKR95	06/20/2018 10:23
		LCSR95	06/20/2018 09:06
		LCDR95	06/20/2018 09:30
		9661823	06/20/2018 12:29
		9661823DL	06/20/2018 12:54

Fraction: Volatiles by GC/MS

B181701AA / VBLKB15 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/19/18	N.D.	ug/kg	1	5
1,1-Dichloroethene	06/19/18	N.D.	ug/kg	1	5
cis-1,2-Dichloroethene	06/19/18	N.D.	ug/kg	1	5
trans-1,2-Dichloroethene	06/19/18	N.D.	ug/kg	1	5
Trichloroethene	06/19/18	N.D.	ug/kg	1	5
Tetrachloroethene	06/19/18	N.D.	ug/kg	1	5

R181711AA / VBLKR95 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/20/18	N.D.	ug/kg	50	250
1,1-Dichloroethene	06/20/18	N.D.	ug/kg	50	250
cis-1,2-Dichloroethene	06/20/18	N.D.	ug/kg	50	250
trans-1,2-Dichloroethene	06/20/18	N.D.	ug/kg	50	250
Trichloroethene	06/20/18	N.D.	ug/kg	50	250
Tetrachloroethene	06/20/18	N.D.	ug/kg	50	250

Quality Control Summary
Method Blank
GC/MS Volatiles
SDG: DHR42
Matrix: LIQUID

Fraction: Volatiles by GC/MS

W181762AA / VBLKW96 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/25/18	N.D.	ug/l	0.5	1
1,1-Dichloroethene	06/25/18	N.D.	ug/l	0.5	1
trans-1,2-Dichloroethene	06/25/18	N.D.	ug/l	0.5	1
cis-1,2-Dichloroethene	06/25/18	N.D.	ug/l	0.5	1
Trichloroethene	06/25/18	N.D.	ug/l	0.5	1
Tetrachloroethene	06/25/18	N.D.	ug/l	0.5	1

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DHR42
Matrix: SOLID

Fraction: Volatiles by GC/MS

B181701AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKB15	102	54 - 135	96	50 - 131	105	50 - 141	102	52 - 141
LCSB15	105	54 - 135	107	50 - 131	105	50 - 141	105	52 - 141
LCDB15	107	54 - 135	106	50 - 131	104	50 - 141	105	52 - 141
9661818	99	54 - 135	98	50 - 131	104	50 - 141	102	52 - 141
9661819	100	54 - 135	97	50 - 131	105	50 - 141	102	52 - 141
9661820 UNSPK	103	54 - 135	97	50 - 131	105	50 - 141	100	52 - 141
9661820 MS	103	54 - 135	105	50 - 131	104	50 - 141	104	52 - 141
9661821	98	54 - 135	93	50 - 131	103	50 - 141	103	52 - 141
9661822	102	54 - 135	96	50 - 131	105	50 - 141	101	52 - 141
9661824	97	54 - 135	95	50 - 131	104	50 - 141	103	52 - 141
9661825	96	54 - 135	95	50 - 131	104	50 - 141	103	52 - 141
9661826	101	54 - 135	96	50 - 131	105	50 - 141	100	52 - 141

R181711AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKR95	103	54 - 135	96	50 - 131	99	50 - 141	99	52 - 141
LCSR95	111	54 - 135	108	50 - 131	110	50 - 141	107	52 - 141
LCDR95	100	54 - 135	94	50 - 131	100	50 - 141	99	52 - 141
9661823	105	54 - 135	90	50 - 131	99	50 - 141	98	52 - 141
9661823DL	88	54 - 135	83	50 - 131	83	50 - 141	85	52 - 141

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DHR42
Matrix: LIQUID

Fraction: Volatiles by GC/MS

W181762AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKW96	102	80 - 120	98	80 - 120	100	80 - 120	97	80 - 120
LCSW96	102	80 - 120	102	80 - 120	101	80 - 120	98	80 - 120
9661814 UNSPK	100	80 - 120	96	80 - 120	99	80 - 120	96	80 - 120
9661815 MS	102	80 - 120	100	80 - 120	98	80 - 120	98	80 - 120
9661816 MSD	100	80 - 120	100	80 - 120	101	80 - 120	98	80 - 120
9661817	100	80 - 120	98	80 - 120	101	80 - 120	97	80 - 120
9661827	103	80 - 120	98	80 - 120	102	80 - 120	96	80 - 120
9661828	101	80 - 120	96	80 - 120	100	80 - 120	96	80 - 120
9661829	103	80 - 120	97	80 - 120	101	80 - 120	96	80 - 120
9661830	100	80 - 120	97	80 - 120	101	80 - 120	96	80 - 120

GC/MS Volatiles

Fraction: Volatiles by GC/MS

UNSPK: 9661820 MS: 9661820 **Analyte**	Batch: **B181701AA** (Sample number(s): 9661818-9661822, 9661824-9661826)								
	Spike Added ug/kg	**Unspiked Conc ug/kg**	**MS Conc ug/kg**	**MSD Conc ug/kg**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	18.52	N.D.	13.84	NA	75	NA	59-120	NA	NA
1,1-Dichloroethene	18.52	N.D.	16.52	NA	89	NA	73-129	NA	NA
cis-1,2-Dichloroethene	18.52	N.D.	15.99	NA	86	NA	80-120	NA	NA
trans-1,2-Dichloroethene	18.52	N.D.	15.39	NA	83	NA	80-125	NA	NA
Trichloroethene	18.52	N.D.	14.94	NA	81	NA	80-120	NA	NA
Tetrachloroethene	18.52	N.D.	14.78	NA	80	NA	73-120	NA	NA

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

GC/MS Volatiles

Fraction: Volatiles by GC/MS

UNSPK: 9661814 MS: 9661815 MSD: 9661816 **Analyte**	Batch: **W181762AA** (Sample number(s): 9661814-9661817, 9661827-9661830)								
	Spike Added ug/l	**Unspiked Conc ug/l**	**MS Conc ug/l**	**MSD Conc ug/l**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	N.D.	17.76	17.56	89	88	68-120	1	30
1,1-Dichloroethene	20	N.D.	24.62	23.92	123	120	80-131	3	30
trans-1,2-Dichloroethene	20	N.D.	22.29	21.7	111	108	80-120	3	30
cis-1,2-Dichloroethene	20	4.22	26.03	25.71	109	107	80-120	1	30
Trichloroethene	20	11.18	32.24	32.2	105	105	80-120	0	30
Tetrachloroethene	20	204.56	221.22	232.16	83 (2)	138 (2)	80-120	5	30

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSB15 LCSD: LCDB15 **Analyte**	Batch: **B181701AA** (Sample number(s): 9661818-9661822, 9661824-9661826)							
	Spike Added ug/kg	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	15.39	13.67	77	68	59-120	12	30
1,1-Dichloroethene	20	20.22	17.17	101	86	73-129	16	30
cis-1,2-Dichloroethene	20	20.73	17.26	104	86	80-120	18	30
trans-1,2-Dichloroethene	20	19.72	16.56	99	83	80-125	17	30
Trichloroethene	20	20.04	16.87	100	84	80-120	17	30
Tetrachloroethene	20	19.73	16.55	99	83	73-120	18	30

LCS: LCSR95 LCSD: LCDR95 **Analyte**	Batch: **R181711AA** (Sample number(s): 9661823)							
	Spike Added ug/kg	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	1000	871.45	721.72	87	72	59-120	19	30
1,1-Dichloroethene	1000	1136.22	974.54	114	97	73-129	15	30
cis-1,2-Dichloroethene	1000	1101.18	1001.96	110	100	80-120	9	30
trans-1,2-Dichloroethene	1000	1098.17	990.09	110	99	80-125	10	30
Trichloroethene	1000	1040.64	947.65	104	95	80-120	9	30
Tetrachloroethene	1000	1119.34	954.46	112	95	73-120	16	30

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DHR42
Matrix: LIQUID

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSW96	Batch: **W181762AA** (Sample number(s): 9661814-9661817, 9661827-9661830)							
Analyte	**Spike Added ug/l**	**LCS Conc ug/l**	**LCSD Conc ug/l**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	15.69	NA	78	NA	68-120	NA	NA
1,1-Dichloroethene	20	20.48	NA	102	NA	80-131	NA	NA
trans-1,2-Dichloroethene	20	19.53	NA	98	NA	80-120	NA	NA
cis-1,2-Dichloroethene	20	19.43	NA	97	NA	80-120	NA	NA
Trichloroethene	20	18.45	NA	92	NA	80-120	NA	NA
Tetrachloroethene	20	19.04	NA	95	NA	80-120	NA	NA

Fraction: Volatiles by GC/MS

10335: VOCs- 5ml Water by 8260B Analyte Name	Default MDL	Default LOQ	Units
Vinyl Chloride	0.5	1	ug/l
1,1-Dichloroethene	0.5	1	ug/l
trans-1,2-Dichloroethene	0.5	1	ug/l
cis-1,2-Dichloroethene	0.5	1	ug/l
Trichloroethene	0.5	1	ug/l
Tetrachloroethene	0.5	1	ug/l

10237: VOCs- Solid by 8260B Analyte Name	Default MDL	Default LOQ	Units
Vinyl Chloride	1	5	ug/kg
1,1-Dichloroethene	1	5	ug/kg
trans-1,2-Dichloroethene	1	5	ug/kg
cis-1,2-Dichloroethene	1	5	ug/kg
Trichloroethene	1	5	ug/kg
Tetrachloroethene	1	5	ug/kg

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: bf22t01.d BFB Injection Date: 02/22/18

Instrument ID: HP09953 BFB Injection Time: 10:34

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.36
75	30.0 - 60.0% of mass 95	49.53
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.95
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	81.80
175	5.0 - 9.0% of mass 174	6.09 (7.45)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.92 (96.48)1
177	5.0 - 9.0% of mass 176	5.35 (6.77)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	bf22i01.d	02/22/18	11:18
02	VSTD100	bf22i02.d	02/22/18	11:42
03	VSTD50	bf22i03.d	02/22/18	12:06
04	VSTD20	bf22i04.d	02/22/18	12:31
05	VSTD10	bf22i05.d	02/22/18	12:57
06	VSTD4	bf22i06.d	02/22/18	13:29
07	MDL001 - MDL001	bf22m01.d	02/22/18	13:51
08	LGBICV	bf22v01.d	02/22/18	14:16

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu19t01.d BFB Injection Date: 06/19/18

Instrument ID: HP09953 BFB Injection Time: 15:19

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.12
75	30.0 - 60.0% of mass 95	51.92
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.73
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	86.94
175	5.0 - 9.0% of mass 174	6.53 (7.52)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.16 (96.80)1
177	5.0 - 9.0% of mass 176	5.55 (6.60)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	bu19c01.d	06/19/18	15:54
02	VBLKB15	bu19b01.d	06/19/18	16:39
03	LCSB15	bu19s01.d	06/19/18	17:01
04	LCDB15	bu19s02.d	06/19/18	17:24
05	9661818	bu19s03.d	06/19/18	19:35
06	9661819	bu19s04.d	06/19/18	19:57
07	9661820	bu19s05.d	06/19/18	20:19
08	9661820MS	bu19s23.d	06/19/18	20:42
09	9661821	bu19s06.d	06/19/18	21:04
10	9661822	bu19s07.d	06/19/18	21:27
11	9661824	bu19s08.d	06/19/18	21:50
12	9661825	bu19s09.d	06/19/18	22:12
13	9661826	bu19s10.d	06/19/18	22:35
14	9661876	bu19s11.d	06/19/18	22:58
15	9661877	bu19s12.d	06/19/18	23:20
16	9661878	bu19s13.d	06/19/18	23:43
17	9661879	bu19s14.d	06/20/18	00:05
18	9661880	bu19s15.d	06/20/18	00:28
19	9661881	bu19s16.d	06/20/18	00:51
20	9661882	bu19s17.d	06/20/18	01:13
21	9661883	bu19s18.d	06/20/18	01:35
22	9661885	bu19s19.d	06/20/18	01:58

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu19t01.d BFB Injection Date: 06/19/18

Instrument ID: HP09953 BFB Injection Time: 15:19

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.12
75	30.0 - 60.0% of mass 95	51.92
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.73
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	86.94
175	5.0 - 9.0% of mass 174	6.53 (7.52)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.16 (96.80)1
177	5.0 - 9.0% of mass 176	5.55 (6.60)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9661886	bu19s20.d	06/20/18	02:21
24	9661887	bu19s21.d	06/20/18	02:43
25	9661888	bu19s22.d	06/20/18	03:06

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: ry29t10.d BFB Injection Date: 05/29/18

Instrument ID: HP07566 BFB Injection Time: 11:34

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.97
75	30.0 - 60.0% of mass 95	51.05
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.91
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	65.09
175	5.0 - 9.0% of mass 174	5.04 (7.75)1
176	Greater than 95.0%, but less than 101.0% of mass 174	63.23 (97.14)1
177	5.0 - 9.0% of mass 176	4.00 (6.33)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD4	ry29i10.d	05/29/18	12:21
02	VSTD10	ry29i11.d	05/29/18	12:45
03	VSTD20	ry29i12.d	05/29/18	13:09
04	VSTD50	ry29i13.d	05/29/18	13:35
05	VSTD100	ry29i14.d	05/29/18	13:59
06	VSTD300	ry29i15.d	05/29/18	14:23
07	MDL001 - MDL001	ry29m10.d	05/29/18	15:37
08	RICV	ry29v10.d	05/29/18	16:02
09	VSTD4	ry29i20.d	05/29/18	16:51
10	VSTD10	ry29i21.d	05/29/18	17:16
11	VSTD20	ry29i22.d	05/29/18	17:41
12	VSTD50	ry29i23.d	05/29/18	18:06
13	VSTD100	ry29i24.d	05/29/18	18:30
14	VSTD300	ry29i25.d	05/29/18	18:55
15	SMDL - SMDL	ry29m20.d	05/29/18	19:44
16	SMRICV	ry29v20.d	05/29/18	20:09

FORM V VOA

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: ru20t01.d BFB Injection Date: 06/20/18

Instrument ID: HP07566 BFB Injection Time: 07:43

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.19
75	30.0 - 60.0% of mass 95	47.41
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.83
173	Less than 2.0% of mass 174	0.30 (0.40)1
174	Greater than 50.0% of mass 95	73.43
175	5.0 - 9.0% of mass 174	5.19 (7.06)1
176	Greater than 95.0%, but less than 101.0% of mass 174	70.09 (95.44)1
177	5.0 - 9.0% of mass 176	4.66 (6.65)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	ru20c01.d	06/20/18	08:31
02	LCSR95	ru20l01.d	06/20/18	09:06
03	LCDR95	ru20l02.d	06/20/18	09:30
04	VBLKR95	ru20b01.d	06/20/18	10:23
05	9661884	ru20s02.d	06/20/18	11:36
06	9661893	ru20s03.d	06/20/18	12:05
07	9661823	ru20s04.d	06/20/18	12:29
08	9661823DL	ru20s05.d	06/20/18	12:54
09	9658287	ru20s06.d	06/20/18	13:18
10	9658287DL	ru20s07.d	06/20/18	13:42
11	9651064RE	ru20s08.d	06/20/18	14:06
12	9660719	ru20s09.d	06/20/18	14:30
13	9654474RE	ru20s10.d	06/20/18	14:54
14	9654476RE	ru20s11.d	06/20/18	15:19
15	9654478RE	ru20s12.d	06/20/18	15:43
16	9660504	ru20s14.d	06/20/18	16:31
17	9660504DL	ru20s15.d	06/20/18	16:56
18	9660505	ru20s16.d	06/20/18	17:20
19	9660505DL	ru20s17.d	06/20/18	17:44
20	9660506	ru20s18.d	06/20/18	18:08
21	9660506DL	ru20s19.d	06/20/18	18:32
22	9658112	ru20s20.d	06/20/18	18:56

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: ru20t01.d BFB Injection Date: 06/20/18

Instrument ID: HP07566 BFB Injection Time: 07:43

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.19
75	30.0 - 60.0% of mass 95	47.41
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.83
173	Less than 2.0% of mass 174	0.30 (0.40)1
174	Greater than 50.0% of mass 95	73.43
175	5.0 - 9.0% of mass 174	5.19 (7.06)1
176	Greater than 95.0%, but less than 101.0% of mass 174	70.09 (95.44)1
177	5.0 - 9.0% of mass 176	4.66 (6.65)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9660719RE	ru20s21.d	06/20/18	19:20

FORM V VOA

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: wy23t04.d BFB Injection Date: 05/23/18

Instrument ID: HP09137 BFB Injection Time: 13:51

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.07
75	30.0 - 60.0% of mass 95	47.30
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.73
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	76.76
175	5.0 - 9.0% of mass 174	5.72 (7.46)1
176	Greater than 95.0%, but less than 101.0% of mass 174	74.07 (96.49)1
177	5.0 - 9.0% of mass 176	5.04 (6.80)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	wy23i01.d	05/23/18	14:38
02	VSTD100	wy23i02.d	05/23/18	15:02
03	VSTD50	wy23i03.d	05/23/18	15:26
04	VSTD20	wy23i04.d	05/23/18	15:50
05	VSTD10	wy23i05.d	05/23/18	16:14
06	VSTD4	wy23i06.d	05/23/18	16:37
07	VSTD1	wy23i07.d	05/23/18	17:01
08	VSTD0.5	wy23m01.d	05/23/18	17:25
09	LCSWICV	wy23v01.d	05/23/18	17:49

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: wu25t01.d BFB Injection Date: 06/25/18

Instrument ID: HP09137 BFB Injection Time: 09:05

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.19
75	30.0 - 60.0% of mass 95	46.54
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.80
173	Less than 2.0% of mass 174	0.22 (0.28)1
174	Greater than 50.0% of mass 95	80.91
175	5.0 - 9.0% of mass 174	5.80 (7.17)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.77 (97.35)1
177	5.0 - 9.0% of mass 176	5.13 (6.51)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	wu25c01.d	06/25/18	09:53
02	LCSW95	wu25s01.d	06/25/18	10:17
03	LCSW96	wu25s31.d	06/25/18	10:17
04	LCDW95	wu25s02.d	06/25/18	10:40
05	VBLKW95	wu25b01.d	06/25/18	11:05
06	VBLKW96	wu25b05.d	06/25/18	11:05
07	9657733	wu25s03.d	06/25/18	11:39
08	9657735	wu25s04.d	06/25/18	12:03
09	9657736	wu25s05.d	06/25/18	12:27
10	9661680	wu25s32.d	06/25/18	12:50
11	9661814	wu25s33.d	06/25/18	13:14
12	9661815MS	wu25s34.d	06/25/18	13:38
13	9661816MSD	wu25s35.d	06/25/18	14:02
14	9659886DL	wu25s37.d	06/25/18	14:50
15	9661817	wu25s38.d	06/25/18	15:14
16	9661827	wu25s39.d	06/25/18	15:38
17	9661828	wu25s40.d	06/25/18	16:02
18	9661829	wu25s41.d	06/25/18	16:25
19	9661830	wu25s42.d	06/25/18	16:49
20	9662245	wu25s43.d	06/25/18	17:13
21	9662247	wu25s44.d	06/25/18	17:37
22	9662249	wu25s45.d	06/25/18	18:01

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: wu25t01.d BFB Injection Date: 06/25/18

Instrument ID: HP09137 BFB Injection Time: 09:05

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.19
75	30.0 - 60.0% of mass 95	46.54
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.80
173	Less than 2.0% of mass 174	0.22 (0.28)1
174	Greater than 50.0% of mass 95	80.91
175	5.0 - 9.0% of mass 174	5.80 (7.17)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.77 (97.35)1
177	5.0 - 9.0% of mass 176	5.13 (6.51)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9662251	wu25s46.d	06/25/18	18:24
24	9662253	wu25s47.d	06/25/18	18:48
25	9662255	wu25s48.d	06/25/18	19:12
26	9662257	wu25s49.d	06/25/18	19:36
27	9662259	wu25s50.d	06/25/18	20:00
28	9662261	wu25s51.d	06/25/18	20:24
29	9662263	wu25s52.d	06/25/18	20:48

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND		RRF	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane		0.4937	0.4887	0.4857	0.5026	0.5070	0.4719	0.4916	3	AVG	
Chloromethane	#	0.6250	0.6026	0.5854	0.5711	0.5965	0.5428	0.5872	5	AVG	#
Vinyl Chloride	*	0.4665	0.4310	0.4182	0.4099	0.4171	0.3607	0.4173	8	AVG	*
Bromomethane		0.3081	0.3006	0.2984	0.2909	0.2897	0.2518	0.2899	7	AVG	
Chloroethane		0.2404	0.2467	0.2409	0.2386	0.2372	0.1969	0.2334	8	AVG	
Dichlorofluoromethane		0.6106	0.5949	0.6079	0.5949	0.6009	0.5439	0.5922	4	AVG	
Trichlorofluoromethane		0.5424	0.5392	0.5339	0.5359	0.5516	0.5187	0.5369	2	AVG	
Ethanol		0.1197	0.1143	0.1250	0.1279	0.1217	0.1180	0.1211	4	AVG	
Freon 123a		0.3516	0.3561	0.3631	0.3465	0.3545	0.3389	0.3518	2	AVG	
Acrolein		2.4157	2.4240	2.5462	2.7115	2.3801	2.0909	2.4281	8	AVG	
1,1-Dichloroethene	*	0.2378	0.2477	0.2501	0.2415	0.2560	0.2425	0.2459	3	AVG	*
Acetone		0.0301	0.0281	0.0238	0.0230	0.0225	0.0213	0.0248	14	AVG	
Freon 113		0.2790	0.3085	0.2946	0.2882	0.3071	0.2988	0.2960	4	AVG	
2-Propanol		0.9378	1.0859	1.0919	1.3247	1.0802	1.1772	1.1163	11	AVG	
Methyl Iodide		0.5059	0.5333	0.5541	0.5338	0.5578	0.5474	0.5387	4	AVG	
Carbon Disulfide		0.7997	0.8330	0.8463	0.8407	0.8843	0.8505	0.8424	3	AVG	
Methyl Acetate		0.2282	0.2378	0.2011	0.1925	0.1997	0.1949	0.2090	9	AVG	
Allyl Chloride		0.5013	0.4898	0.4880	0.4877	0.5031	0.4654	0.4892	3	AVG	
Methylene Chloride		0.2909	0.2986	0.2904	0.2831	0.2903	0.2778	0.2885	2	AVG	
t-Butyl alcohol		1.3811	1.2450	1.2102	1.2677	1.2127	1.1339	1.2418	7	AVG	
Acrylonitrile		0.1032	0.1110	0.0959	0.0970	0.0961	0.0911	0.0991	7	AVG	
Methyl Tertiary Butyl Ether		0.7860	0.8352	0.7923	0.7915	0.7973	0.7826	0.7975	2	AVG	
trans-1,2-Dichloroethene		0.2776	0.2905	0.2964	0.2871	0.2971	0.2819	0.2884	3	AVG	
n-Hexane		0.4644	0.5057	0.5030	0.5210	0.5427	0.5389	0.5126	6	AVG	
1,1-Dichloroethane	#	0.5504	0.5699	0.5871	0.5681	0.5881	0.5753	0.5731	2	AVG	#
di-Isopropyl ether		1.1120	1.1762	1.1817	1.1544	1.1878	1.1492	1.1602	2	AVG	
2-Chloro-1,3-butadiene		0.4692	0.5100	0.5339	0.5218	0.5510	0.5383	0.5207	6	AVG	
Ethyl t-butyl ether		0.8945	0.9546	0.9853	0.9854	1.0111	1.0051	0.9727	4	AVG	
2-Butanone		7.1353	7.2724	7.4916	7.9621	7.1791	6.8822	7.3204	5	AVG	
cis-1,2-Dichloroethene		0.3111	0.3303	0.3397	0.3333	0.3451	0.3458	0.3342	4	AVG	
2,2-Dichloropropane		0.3625	0.4052	0.4224	0.4310	0.4616	0.4679	0.4251	9	AVG	
Propionitrile		1.8864	1.9537	2.0773	2.2150	2.0246	1.9793	2.0227	6	AVG	
Methacrylonitrile		0.1142	0.1249	0.1114	0.1153	0.1164	0.1201	0.1170	4	AVG	
Bromochloromethane		0.1557	0.1642	0.1602	0.1628	0.1669	0.1713	0.1635	3	AVG	
Tetrahydrofuran		1.3912	1.5533	1.5880	1.7875	1.6127	1.5810	1.5856	8	AVG	
Chloroform	*	0.5030	0.5322	0.5455	0.5356	0.5526	0.5494	0.5364	3	AVG	*
1,1,1-Trichloroethane		0.5352	0.5079	0.5223	0.4905	0.5246	0.5285	0.5181	3	AVG	
Cyclohexane		0.5629	0.6493	0.6177	0.6222	0.6647	0.6642	0.6302	6	AVG	
Cyclohexane(2)		0.5006	0.4943	0.4711	0.5565	0.5111	0.5144	0.5080	6	AVG	
Cyclohexane(3)		0.1594	0.1839	0.1769	0.1801	0.1918	0.1929	0.1808	7	AVG	
1,1-Dichloropropene		0.4023	0.4334	0.4383	0.4280	0.4510	0.4497	0.4338	4	AVG	
Carbon Tetrachloride		0.3244	0.3604	0.3721	0.3810	0.4190	0.4414	0.3830	11	AVG	
Isobutyl Alcohol		0.4628	0.4806	0.5053	0.5387	0.5193	0.5508	0.5096	7	AVG	
Benzene		1.2429	1.2621	1.2830	1.2419	1.2844	1.2513	1.2609	2	AVG	
1,2-Dichloroethane		0.4024	0.4213	0.4097	0.4022	0.4096	0.4129	0.4097	2	AVG	
1,2-Dichloroethane(2)		0.0303	0.0375	0.0352	0.0355	0.0359	0.0376	0.0353	8	AVG	
t-Amyl methyl ether		0.7479	0.8064	0.7995	0.8156	0.8448	0.8723	0.8144	5	AVG	
n-Heptane		0.5526	0.6424	0.5700	0.6187	0.6421	0.6485	0.6124	7	AVG	
n-Butanol		0.3098	0.3268	0.3694	0.4162	0.4027	0.4324	0.3762	13	AVG	
Trichloroethene		0.3036	0.3195	0.3239	0.3175	0.3348	0.3368	0.3227	4	AVG	
Methylcyclohexane		0.5819	0.5773	0.5413	0.6122	0.6392	0.6478	0.6000	7	AVG	
1,2-Dichloropropane	*	0.3067	0.3305	0.3383	0.3336	0.3432	0.3461	0.3331	4	AVG	*

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Methyl Methacrylate			0.1686	0.1881	0.1830	0.1917	0.1998	0.2129	0.1907	8	AVG	
1,4-Dioxane			0.1110	0.1248	0.1466	0.1630	0.1467	0.1540	0.1410	14	AVG	
Dibromomethane			0.1663	0.1816	0.1759	0.1784	0.1836	0.1913	0.1795	5	AVG	
Bromodichloromethane			0.3248	0.3638	0.3817	0.3882	0.4109	0.4303	0.3833	10	AVG	
2-Nitropropane			2.0194	2.2729	2.3607	2.9534	3.0464		2.5306	18	2NDDEG	
2-Chloroethyl Vinyl Ether			0.1410	0.1558	0.1576	0.1696	0.1760	0.1863	0.1644	10	AVG	
cis-1,3-Dichloropropene			0.3779	0.4439	0.4672	0.4804	0.5078	0.5238	0.4668	11	AVG	
4-Methyl-2-pentanone			0.2576	0.3163	0.2933	0.3176	0.3143	0.3227	0.3036	8	AVG	
Toluene		*	0.9247	1.0130	1.0229	0.9901	1.0314	1.0079	0.9983	4	AVG	*
trans-1,3-Dichloropropene			0.3948	0.4659	0.4870	0.5175	0.5510	0.5732	0.4982	13	AVG	
Ethyl Methacrylate			0.3520	0.4298	0.4331	0.4721	0.4944	0.5152	0.4494	13	AVG	
1,1,2-Trichloroethane			0.3012	0.3296	0.3197	0.3250	0.3269	0.3353	0.3230	4	AVG	
Tetrachloroethene			0.4093	0.4669	0.4566	0.4543	0.4871	0.5045	0.4631	7	AVG	
1,3-Dichloropropane			0.5166	0.5690	0.5523	0.5568	0.5651	0.5712	0.5552	4	AVG	
2-Hexanone			0.2486	0.2841	0.2494	0.2778	0.2765	0.2830	0.2699	6	AVG	
Dibromochloromethane			0.2803	0.3263	0.3380	0.3678	0.3910	0.4236	0.3545	14	AVG	
1,2-Dibromoethane			0.2950	0.3284	0.3231	0.3289	0.3375	0.3495	0.3271	6	AVG	
1-Chlorohexane			0.4346	0.5414	0.5133	0.5396	0.5742	0.5820	0.5308	10	AVG	
Chlorobenzene		#	1.0337	1.1318	1.1257	1.0987	1.1318	1.1318	1.1089	4	AVG	#
1,1,1,2-Tetrachloroethane			0.3009	0.3456	0.3573	0.3779	0.4025	0.4298	0.3690	12	AVG	
Ethylbenzene		*	1.6800	1.9699	1.9294	1.9287	2.0003	1.9159	1.9040	6	AVG	*
m+p-Xylene			0.6648	0.7740	0.7603	0.7637	0.8001	0.7814	0.7574	6	AVG	
o-Xylene			0.6360	0.7611	0.7500	0.7650	0.8018	0.8129	0.7545	8	AVG	
Styrene			0.9609	1.1776	1.1925	1.2237	1.2853	1.2873	1.1879	10	AVG	
Bromoform		#	0.1645	0.1961	0.1982	0.2297	0.2506	0.2941	0.2222	21	2NDDEG	#
Isopropylbenzene			1.5872	1.9815	1.9075	1.9702	2.0668	1.9360	1.9082	9	AVG	
Cyclohexanone			0.6812	0.7882	0.8988	1.0192	0.9573	1.0561	0.9002	16	2NDDEG	
1,1,2,2-Tetrachloroethane		#	0.7205	0.8162	0.7382	0.7748	0.7628	0.7200	0.7554	5	AVG	#
Bromobenzene			0.7947	0.8809	0.8693	0.8361	0.8490	0.8151	0.8408	4	AVG	
trans-1,4-Dichloro-2-butene			0.2019	0.2266	0.1995	0.2076	0.2082	0.1977	0.2069	5	AVG	
1,2,3-Trichloropropane			0.2024	0.2234	0.2094	0.2076	0.2048	0.1963	0.2073	4	AVG	
n-Propylbenzene			3.5008	4.3012	4.0233	3.9668	4.0077	3.0592	3.8098	12	AVG	
2-Chlorotoluene			0.7479	0.8267	0.8112	0.7922	0.8147	0.7707	0.7939	4	AVG	
1,3,5-Trimethylbenzene			2.4376	3.0319	2.9345	2.9334	3.0104	2.5475	2.8159	9	AVG	
4-Chlorotoluene			0.7443	0.8644	0.8462	0.8227	0.8504	0.8075	0.8226	5	AVG	
tert-Butylbenzene			0.5308	0.6792	0.6465	0.6746	0.7119	0.6923	0.6559	10	AVG	
Pentachloroethane			0.3802	0.4286	0.4543	0.4969	0.5395	0.5791	0.4798	15	AVG	
1,2,4-Trimethylbenzene			2.5041	3.0952	2.9646	2.9932	3.0647	2.5702	2.8653	9	AVG	
sec-Butylbenzene			3.0756	3.9796	3.7154	3.8596	3.9223	3.0048	3.5929	12	AVG	
1,3-Dichlorobenzene			1.5244	1.7585	1.6901	1.6588	1.6810	1.6010	1.6523	5	AVG	
p-Isopropyltoluene			2.7340	3.5537	3.2781	3.3991	3.5023	2.7884	3.2092	11	AVG	
1,4-Dichlorobenzene			1.6392	1.8361	1.7301	1.7209	1.7376	1.6492	1.7189	4	AVG	
1,2,3-Trimethylbenzene			2.8974	3.0421	2.9914	3.0694	3.0912	2.5581	2.9416	7	AVG	
Benzyl Chloride			0.1500	0.2040	0.2096	0.2587	0.2746	0.3058	0.2338	24	2NDDEG	
1,3-Diethylbenzene			1.7470	1.8875	1.8283	1.9926	2.0187	1.8348	1.8848	6	AVG	
1,4-Diethylbenzene			1.8994	2.0158	1.9508	2.0984	2.1666	1.9375	2.0114	5	AVG	
n-Butylbenzene			1.4152	1.8153	1.6487	1.7385	1.7677	1.5699	1.6592	9	AVG	
1,2-Dichlorobenzene			1.5146	1.7324	1.6363	1.6557	1.7074	1.5992	1.6409	5	AVG	
1,2-Diethylbenzene			1.5329	1.6048	1.5604	1.6668	1.7022	1.5802	1.6079	4	AVG	
1,2-Dibromo-3-chloropropane			0.1139	0.1399	0.1216	0.1398	0.1402	0.1438	0.1332	9	AVG	
1,3,5-Trichlorobenzene			1.1954	1.4441	1.3236	1.3989	1.4374	1.4641	1.3773	7	AVG	
1,2,4-Trichlorobenzene			1.1029	1.3438	1.2359	1.3065	1.3308	1.3382	1.2763	7	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

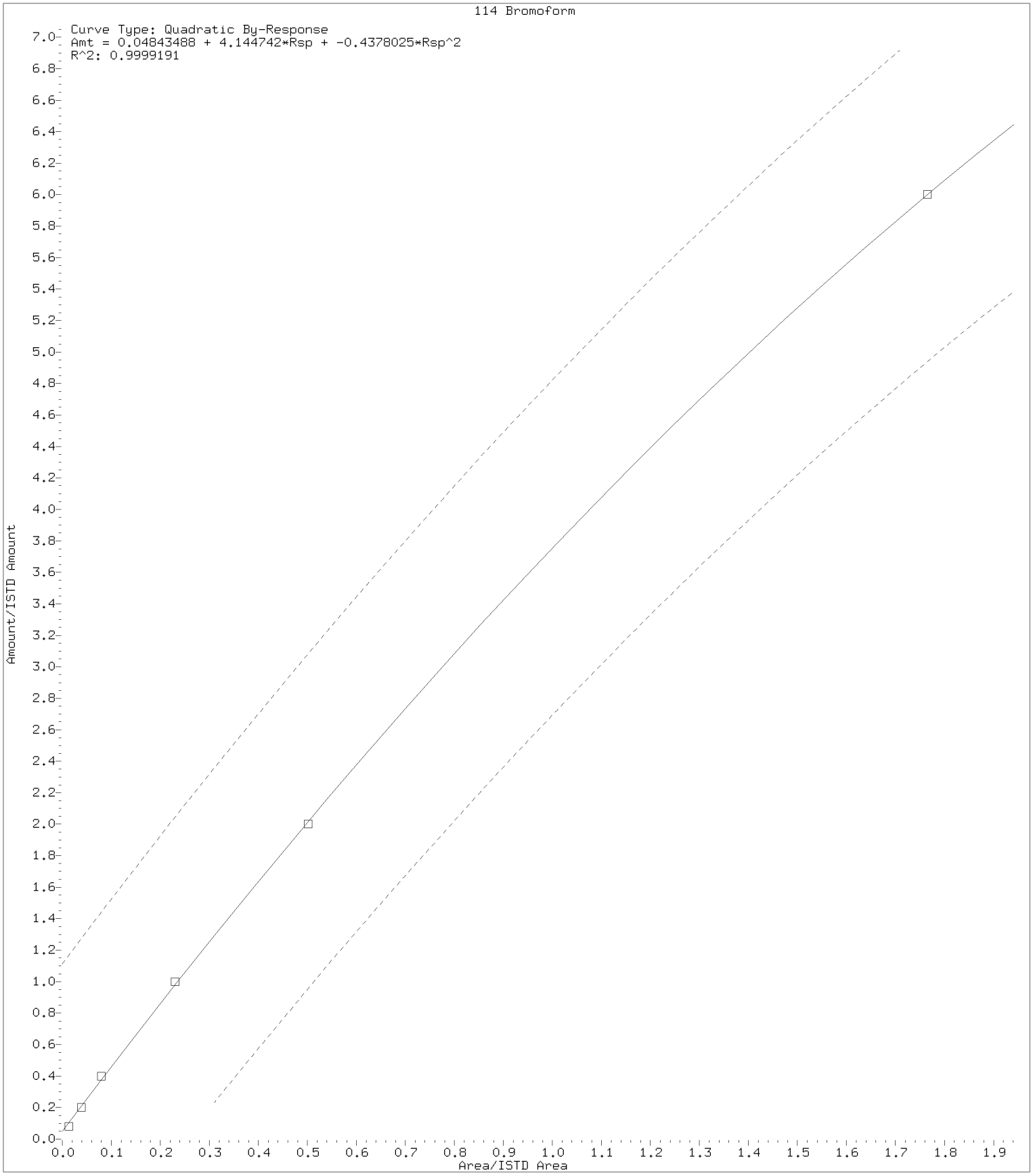
COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Hexachlorobutadiene		0.5066	0.6377	0.5818	0.6845	0.7278	0.8061	0.6574	16	2NDDEG
Naphthalene		2.4406	2.9700	2.6800	2.8364	2.7417	2.3077	2.6627	9	AVG
1,2,3-Trichlorobenzene		1.0742	1.2858	1.1530	1.2084	1.2213	1.1951	1.1896	6	AVG
2-Methylnaphthalene		1.3392	1.6688	1.6220	1.8294	1.8489	1.6210	1.6549	11	AVG
Dibromofluoromethane		0.2519	0.2489	0.2484	0.2517	0.2501	0.2499	0.2502	1	AVG
Dibromofluoromethane(2)		0.2544	0.2544	0.2542	0.2545	0.2579	0.2549	0.2550	1	AVG
1,2-Dichloroethane-d4		0.0560	0.0569	0.0536	0.0548	0.0539	0.0537	0.0548	2	AVG
1,2-Dichloroethane-d4(2)		0.2808	0.2847	0.2806	0.2924	0.2701	0.2713	0.2800	3	AVG
1,2-Dichloroethane-d4(3)		0.0351	0.0356	0.0338	0.0346	0.0342	0.0347	0.0347	2	AVG
Toluene-d8		1.2947	1.3100	1.3184	1.3142	1.3178	1.2772	1.3054	1	AVG
Toluene-d8(2)		0.8344	0.8400	0.8427	0.8577	0.8478	0.8390	0.8436	1	AVG
4-Bromofluorobenzene		0.4965	0.4992	0.4949	0.4976	0.4962	0.5077	0.4987	1	AVG
4-Bromofluorobenzene(2)		0.4326	0.4314	0.4350	0.4356	0.4288	0.4416	0.4342	1	AVG

Average %RSD 7

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



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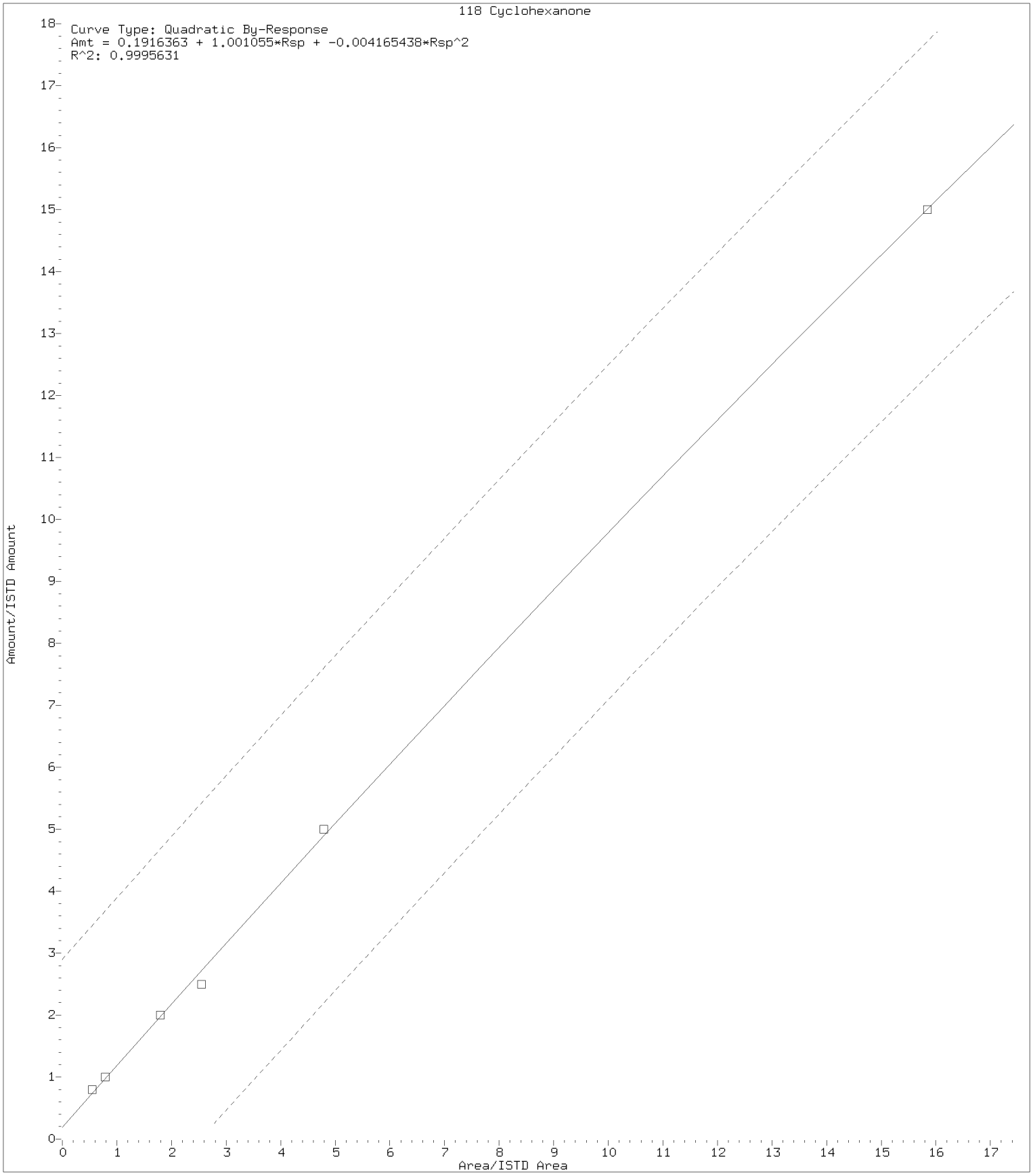
Target 3.5 esignature user ID: jkh09052



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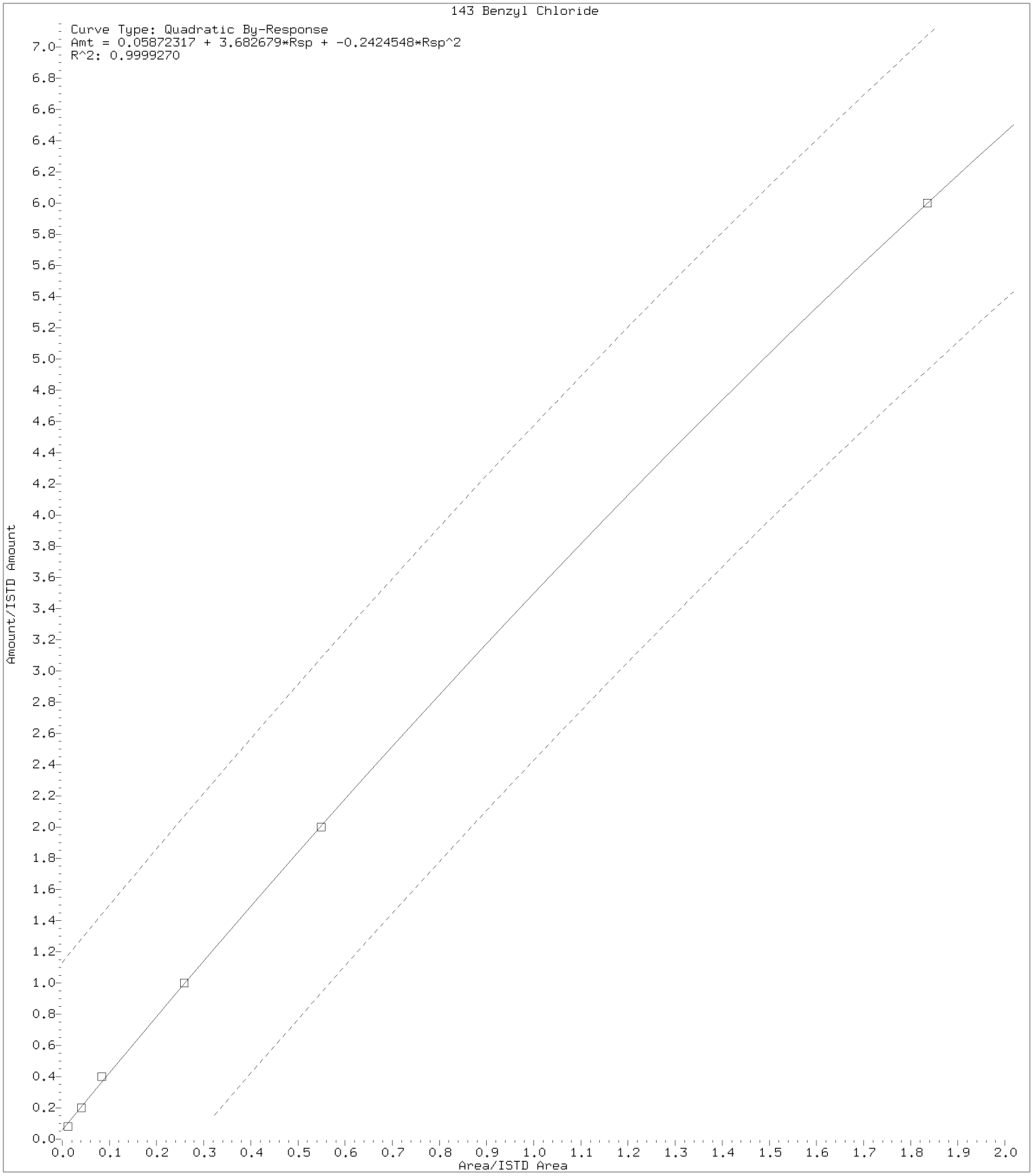
Target 3.5 esignature user ID: jkh09052



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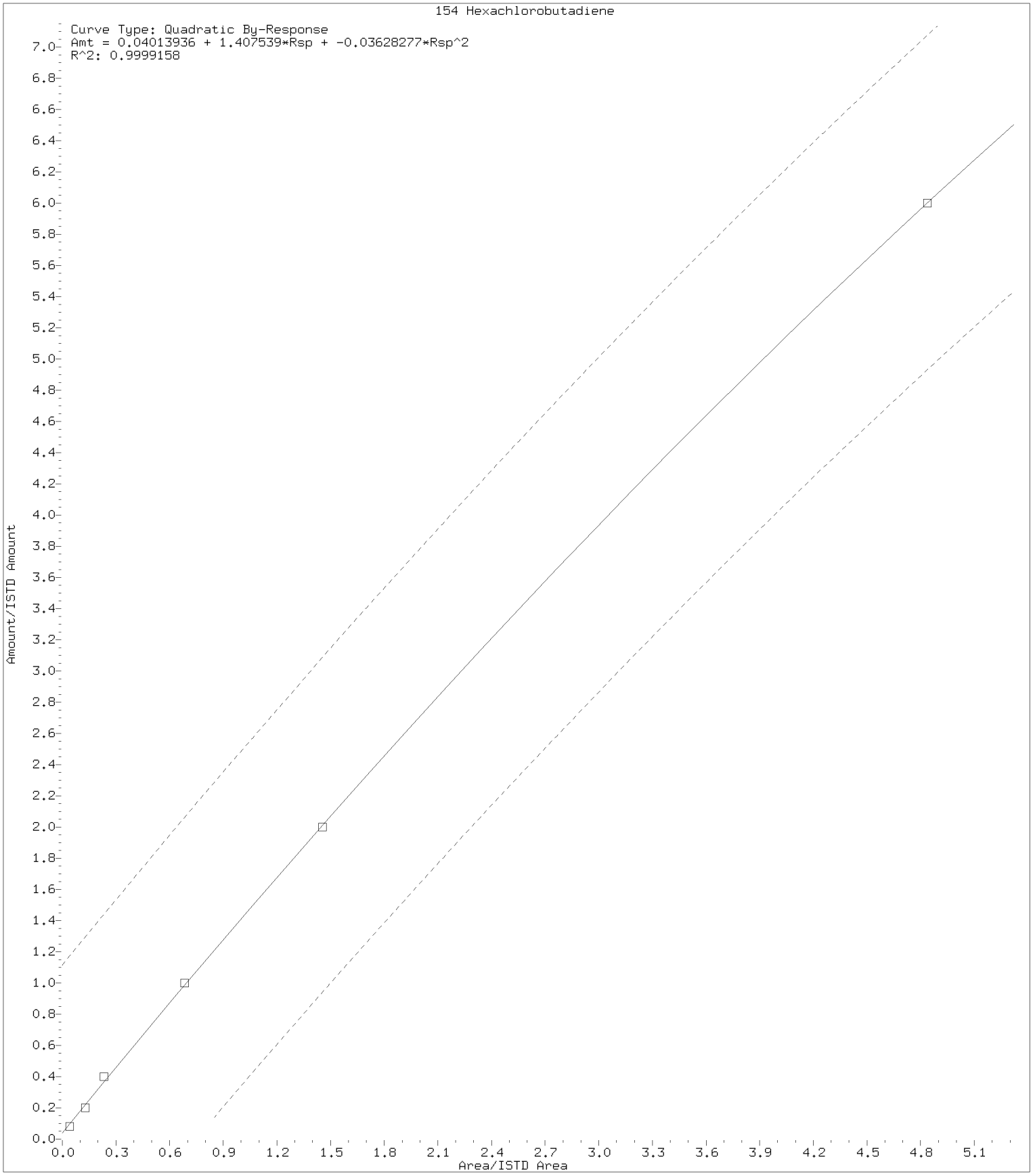
Target 3.5 esignature user ID: jkh09052



Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i01.d	VSTD300
/chem2/HP09953.i/18feb22i.b/bf22i02.d	VSTD100
/chem2/HP09953.i/18feb22i.b/bf22i03.d	VSTD050
/chem2/HP09953.i/18feb22i.b/bf22i04.d	VSTD020
/chem2/HP09953.i/18feb22i.b/bf22i05.d	VSTD010
/chem2/HP09953.i/18feb22i.b/bf22i06.d	VSTD004

Area Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	128217	123900	114201	115639	145100	130640	126283	9	Yes
Fluorobenzene	1184646	1204409	1207816	1194615	1209200	1184260	1197491	1	Yes
Chlorobenzene-d5	942767	935486	931957	925430	939957	919534	932522	1	Yes
1,4-Dichlorobenzene-d4	637692	560922	549119	528429	540311	528167	557440	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. RT
t-Butyl alcohol-d10	1.936	1.936	1.924	1.924	1.936	1.918	1.929
Fluorobenzene	3.956	3.962	3.956	3.950	3.962	3.950	3.956
Chlorobenzene-d5	7.156	7.156	7.156	7.156	7.156	7.156	7.156
1,4-Dichlorobenzene-d4	9.236	9.236	9.236	9.236	9.236	9.236	9.236

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 02/23/2018 at 11:24.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4728	19.24	20	-4	
#	Chloromethane	0.5872	0.6158	20.97	20	5	#
*	Vinyl Chloride	0.4173	0.4340	20.80	20	4	*
	Bromomethane	0.2899	0.3058	21.10	20	5	
	Chloroethane	0.2334	0.2382	20.41	20	2	
	Dichlorofluoromethane	0.5922	0.6121	20.67	20	3	
	Trichlorofluoromethane	0.5369	0.5575	20.77	20	4	
	Ethanol	0.1211	0.1297	1071.13	1000	7	
	Freon 123a	0.3518	0.3682	20.93	20	5	
	Acrolein	2.4281	2.1880	135.17	150	-10	
*	1,1-Dichloroethene	0.2459	0.2825	22.97	20	15	*
	Acetone	0.0248	0.0227	137.36	150	-8	
	Freon 113	0.2960	0.3175	21.45	20	7	
	2-Propanol	1.1163	1.3659	183.55	150	22	
	Methyl Iodide	0.5387	0.5563	20.65	20	3	
	Carbon Disulfide	0.8424	0.8761	20.80	20	4	
	Methyl Acetate	0.2090	0.2095	20.04	20	0	
	Allyl Chloride	0.4892	0.4957	20.27	20	1	
	Methylene Chloride	0.2885	0.3069	21.28	20	6	
	t-Butyl alcohol	1.2418	1.5044	242.30	200	21	
	Acrylonitrile	0.0991	0.0917	92.60	100	-7	
	Methyl Tertiary Butyl Ether	0.7975	0.7924	19.87	20	-1	
	trans-1,2-Dichloroethene	0.2884	0.3151	21.85	20	9	
	n-Hexane	0.5126	0.5289	20.63	20	3	
#	1,1-Dichloroethane	0.5731	0.5832	20.35	20	2	#
	di-Isopropyl ether	1.1602	1.2047	20.77	20	4	
	2-Chloro-1,3-butadiene	0.5207	0.5325	20.45	20	2	
	Ethyl t-butyl ether	0.9727	0.9547	19.63	20	-2	
	2-Butanone	7.3204	7.1037	145.56	150	-3	
	cis-1,2-Dichloroethene	0.3342	0.3513	21.02	20	5	
	2,2-Dichloropropane	0.4251	0.4226	19.88	20	-1	
	Propionitrile	2.0227	2.0620	152.91	150	2	
	Methacrylonitrile	0.1170	0.1114	142.70	150	-5	
	Bromochloromethane	0.1635	0.1615	19.75	20	-1	
	Tetrahydrofuran	1.5856	1.6585	104.60	100	5	
*	Chloroform	0.5364	0.5469	20.39	20	2	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1-Trichloroethane	0.5181	0.5094	19.66	20	-2	
	Cyclohexane	0.6302	0.6474	20.55	20	3	
	1,1-Dichloropropene	0.4338	0.4369	20.14	20	1	
	Carbon Tetrachloride	0.3830	0.3742	19.54	20	-2	
	Isobutyl Alcohol	0.5096	0.4746	465.70	500	-7	
	Benzene	1.2609	1.3047	20.69	20	3	
	1,2-Dichloroethane	0.4097	0.4020	19.62	20	-2	
	t-Amyl methyl ether	0.8144	0.7876	19.34	20	-3	
	n-Heptane	0.6124	0.6228	20.34	20	2	
	n-Butanol	0.3762	0.3592	954.90	1000	-5	
	Trichloroethene	0.3227	0.3246	20.12	20	1	
	Methylcyclohexane	0.6000	0.6140	20.47	20	2	
*	1,2-Dichloropropane	0.3331	0.3398	20.41	20	2	*
	Methyl Methacrylate	0.1907	0.1801	18.89	20	-6	
	1,4-Dioxane	0.1410	0.1584	561.79	500	12	
	Dibromomethane	0.1795	0.1764	19.65	20	-2	
	Bromodichloromethane	0.3833	0.3650	19.05	20	-5	
	2-Nitropropane	2.5306	2.1572	19.28	20	-4	
	2-Chloroethyl Vinyl Ether	0.1644	0.1537	18.70	20	-7	
	cis-1,3-Dichloropropene	0.4668	0.4466	19.13	20	-4	
	4-Methyl-2-pentanone	0.3036	0.2994	98.59	100	-1	
*	Toluene	0.9983	1.0240	20.52	20	3	*
	trans-1,3-Dichloropropene	0.4982	0.4608	18.50	20	-8	
	Ethyl Methacrylate	0.4494	0.4318	19.22	20	-4	
	1,1,2-Trichloroethane	0.3230	0.3247	20.11	20	1	
	Tetrachloroethene	0.4631	0.4617	19.94	20	0	
	1,3-Dichloropropane	0.5552	0.5421	19.53	20	-2	
	2-Hexanone	0.2699	0.2611	96.73	100	-3	
	Dibromochloromethane	0.3545	0.3274	18.47	20	-8	
	1,2-Dibromoethane	0.3271	0.3166	19.36	20	-3	
	1-Chlorohexane	0.5308	0.5369	20.23	20	1	
#	Chlorobenzene	1.1089	1.1099	20.02	20	0	#
	1,1,1,2-Tetrachloroethane	0.3690	0.3553	19.26	20	-4	
*	Ethylbenzene	1.9040	1.9461	20.44	20	2	*
	m+p-Xylene	0.7574	0.7692	40.62	40	2	
	o-Xylene	0.7545	0.7566	20.06	20	0	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Styrene	1.1879	1.1988	20.18	20	1	
#	Bromoform	0.2222	0.1877	17.86	20	-11	#
	Isopropylbenzene	1.9082	1.9760	20.71	20	4	
	Cyclohexanone	0.9002	0.8915	490.81	500	-2	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7363	19.49	20	-3	#
	Bromobenzene	0.8408	0.8515	20.25	20	1	
	trans-1,4-Dichloro-2-butene	0.2069	0.2084	100.71	100	1	
	1,2,3-Trichloropropane	0.2073	0.2109	20.35	20	2	
	n-Propylbenzene	3.8098	4.1293	21.68	20	8	
	2-Chlorotoluene	0.7939	0.8210	20.68	20	3	
	1,3,5-Trimethylbenzene	2.8159	2.9502	20.95	20	5	
	4-Chlorotoluene	0.8226	0.8362	20.33	20	2	
	tert-Butylbenzene	0.6559	0.6739	20.55	20	3	
	Pentachloroethane	0.4798	0.4633	19.31	20	-3	
	1,2,4-Trimethylbenzene	2.8653	3.0214	21.09	20	5	
	sec-Butylbenzene	3.5929	3.8830	21.61	20	8	
	1,3-Dichlorobenzene	1.6523	1.6406	19.86	20	-1	
	p-Isopropyltoluene	3.2092	3.4609	21.57	20	8	
	1,4-Dichlorobenzene	1.7189	1.7343	20.18	20	1	
	1,2,3-Trimethylbenzene	2.9416	3.1660	21.53	20	8	
	Benzyl Chloride	0.2338	0.2057	18.01	20	-10	
	1,3-Diethylbenzene	1.8848	1.9794	21.00	20	5	
	1,4-Diethylbenzene	2.0114	2.1215	21.09	20	5	
	n-Butylbenzene	1.6592	1.7527	21.13	20	6	
	1,2-Dichlorobenzene	1.6409	1.6525	20.14	20	1	
	1,2-Diethylbenzene	1.6079	1.6918	21.04	20	5	
	1,2-Dibromo-3-chloropropane	0.1332	0.1254	18.83	20	-6	
	1,3,5-Trichlorobenzene	1.3773	1.3816	20.06	20	0	
	1,2,4-Trichlorobenzene	1.2763	1.2697	19.90	20	-1	
	Hexachlorobutadiene	0.6574	0.6829	21.09	20	5	
	Naphthalene	2.6627	2.6918	20.22	20	1	
	1,2,3-Trichlorobenzene	1.1896	1.1979	20.14	20	1	
	2-Methylnaphthalene	1.6549	1.5945	19.27	20	-4	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date(s): 05/29/18 05/29/18

Heated Purge: (Y/N) N Calibration Times: 12:21 14:23

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

LAB FILE ID: RRF = RRF 4 = ry29i10.d RRF 10= ry29i11.d
RRF 20= ry29i12.d RRF 50= ry29i13.d RRF100= ry29i14.d RRF300= ry29i15.d

COMPOUND		RRF	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane		0.3752	0.3149	0.3318	0.2950	0.3055	0.3492	0.3286	9	AVG	
Chloromethane	#	0.4591	0.4235	0.4022	0.3622	0.3838	0.4101	0.4068	8	AVG	#
Vinyl Chloride	*	0.3889	0.3395	0.3235	0.2996	0.3079	0.3251	0.3307	10	AVG	*
Bromomethane		7.9238	6.1006	5.3334	5.4232	5.4518	5.4872	5.9534	17	2NDDEG	
Chloroethane		6.5466	5.2422	5.0143	4.8158	4.9120	5.0688	5.2666	12	AVG	
Dichlorofluoromethane		0.5496	0.4557	0.4238	0.3800	0.3972	0.4281	0.4391	14	AVG	
Trichlorofluoromethane		0.3868	0.3420	0.3612	0.3139	0.3307	0.3706	0.3509	8	AVG	
Ethanol		0.1797	0.1408	0.1397	0.1255	0.1236	0.1302	0.1399	15	AVG	
Freon 123a		0.4030	0.3292	0.3316	0.2828	0.2976	0.3187	0.3271	13	AVG	
Acrolein		3.2340	2.9193	2.8494	2.6750	2.7308	2.9720	2.8968	7	AVG	
1,1-Dichloroethene	*	0.2532	0.2041	0.2217	0.1861	0.2011	0.2149	0.2135	11	AVG	*
1,1-Dichloroethene(2)	*	0.1488	0.1198	0.1303	0.1071	0.1156	0.1239	0.1243	12	AVG	*
Acetone		0.0346	0.0305	0.0311	0.0279	0.0290	0.0317	0.0308	8	AVG	
Freon 113		0.1932	0.1560	0.1765	0.1493	0.1609	0.1778	0.1690	10	AVG	
2-Propanol		0.9724	0.8147	0.7451	0.6991	0.7147	0.7514	0.7829	13	AVG	
Methyl Iodide		0.4465	0.3607	0.3850	0.3410	0.3693	0.3877	0.3817	9	AVG	
Carbon Disulfide		0.7517	0.5721	0.6786	0.5460	0.5935	0.6791	0.6368	12	AVG	
Methyl Acetate		0.3175	0.2595	0.2730	0.2518	0.2652	0.2844	0.2752	9	AVG	
Allyl Chloride		0.6282	0.4984	0.5470	0.4771	0.5103	0.5533	0.5357	10	AVG	
Methylene Chloride		0.3270	0.2739	0.2817	0.2601	0.2662	0.2861	0.2825	8	AVG	
t-Butyl alcohol		1.4052	1.2435	1.2190	1.1581	1.1631	1.2453	1.2390	7	AVG	
Acrylonitrile		0.1429	0.1450	0.1403	0.1306	0.1341	0.1495	0.1404	5	AVG	
Methyl Tertiary Butyl Ether		1.0221	0.8829	0.8791	0.8092	0.8465	0.9031	0.8905	8	AVG	
trans-1,2-Dichloroethene		0.2987	0.2534	0.2522	0.2301	0.2411	0.2600	0.2559	9	AVG	
n-Hexane		0.2363	0.1959	0.2115	0.1903	0.2004	0.2221	0.2094	8	AVG	
1,1-Dichloroethane	#	0.6068	0.5266	0.5348	0.4939	0.5131	0.5487	0.5373	7	AVG	#
di-Isopropyl ether		1.2581	1.1061	1.1088	1.0414	1.0581	1.1160	1.1148	7	AVG	
2-Chloro-1,3-butadiene		0.5357	0.4677	0.4666	0.4328	0.4504	0.4785	0.4719	7	AVG	
Ethyl t-butyl ether		1.1151	0.9963	0.9750	0.9015	0.9532	1.0114	0.9921	7	AVG	
2-Butanone		7.7211	7.1356	6.2221	6.2313	6.3192	6.8824	6.7519	9	AVG	
2-Butanone(2)		1.3140	1.4087	1.3665	1.3970	1.4265	1.5793	1.4153	6	AVG	
cis-1,2-Dichloroethene		0.3214	0.2812	0.2762	0.2610	0.2739	0.2839	0.2829	7	AVG	
2,2-Dichloropropane		0.4159	0.3663	0.3679	0.3410	0.3688	0.3916	0.3753	7	AVG	
Propionitrile		0.0544	0.0489	0.0488	0.0459	0.0469	0.0502	0.0492	6	AVG	
Methacrylonitrile		0.1516	0.1367	0.1352	0.1350	0.1353	0.1431	0.1395	5	AVG	
Bromochloromethane		0.1410	0.1235	0.1275	0.1236	0.1271	0.1364	0.1299	6	AVG	
Tetrahydrofuran		1.4765	1.4739	1.3506	1.4670	1.4596	1.5838	1.4686	5	AVG	
Chloroform	*	0.5054	0.4504	0.4487	0.4411	0.4464	0.4779	0.4616	5	AVG	*
1,1,1-Trichloroethane		0.4760	0.3677	0.3813	0.3508	0.3638	0.3896	0.3882	12	AVG	
Cyclohexane		0.3662	0.2924	0.3047	0.2900	0.2964	0.3179	0.3113	9	AVG	
Cyclohexane(2)		0.2644	0.2167	0.2320	0.2189	0.2262	0.2423	0.2334	8	AVG	
Cyclohexane(3)		0.1063	0.0872	0.0889	0.0849	0.0874	0.0947	0.0916	9	AVG	
1,1-Dichloropropene		0.3938	0.3380	0.3465	0.3347	0.3371	0.3623	0.3521	6	AVG	
Carbon Tetrachloride		0.2591	0.2213	0.2343	0.2372	0.2500	0.2804	0.2471	8	AVG	
Isobutyl Alcohol		0.4663	0.4409	0.3970	0.4219	0.4144	0.4500	0.4318	6	AVG	
Benzene		1.2727	1.0907	1.1033	1.0742	1.0697	1.1123	1.1205	7	AVG	
1,2-Dichloroethane		0.4585	0.4038	0.4081	0.4006	0.4027	0.4261	0.4166	5	AVG	
1,2-Dichloroethane(2)		0.0369	0.0320	0.0342	0.0333	0.0339	0.0359	0.0344	5	AVG	
t-Amyl methyl ether		0.9664	0.8503	0.8634	0.8463	0.8464	0.9010	0.8790	5	AVG	
n-Heptane		0.2746	0.2319	0.2247	0.2144	0.2188	0.2321	0.2328	9	AVG	
n-Butanol		0.3387	0.3073	0.3201	0.3182	0.3149	0.3333	0.3221	4	AVG	
Trichloroethene		0.2759	0.2393	0.2455	0.2388	0.2389	0.2532	0.2486	6	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date(s): 05/29/18 05/29/18

Heated Purge: (Y/N) N Calibration Times: 12:21 14:23

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

LAB FILE ID: RRF = RRF 4 = ry29i10.d RRF 10= ry29i11.d
RRF 20= ry29i12.d RRF 50= ry29i13.d RRF100= ry29i14.d RRF300= ry29i15.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Methylcyclohexane			0.2569	0.2051	0.2299	0.2168	0.2194	0.2369	0.2275	8	AVG	
1,2-Dichloropropane	*		0.3494	0.3052	0.3147	0.3083	0.3050	0.3197	0.3171	5	AVG	*
Methyl Methacrylate			0.2544	0.2218	0.2344	0.2449	0.2379	0.2527	0.2410	5	AVG	
1,4-Dioxane			0.1186	0.1136	0.1157	0.1110	0.1053	0.1141	0.1130	4	AVG	
Dibromomethane			0.1805	0.1600	0.1659	0.1694	0.1639	0.1769	0.1694	5	AVG	
Bromodichloromethane			0.3225	0.2921	0.3128	0.3257	0.3301	0.3707	0.3256	8	AVG	
2-Nitropropane			2.6582	2.2288	2.2892	2.8655	3.0744	3.6935	2.8016	19	2NDDEG	
2-Chloroethyl Vinyl Ether			0.2352	0.2073	0.2265	0.2294	0.2172	0.2346	0.2250	5	AVG	
cis-1,3-Dichloropropene			0.4778	0.4363	0.4519	0.4656	0.4700	0.5018	0.4672	5	AVG	
4-Methyl-2-pentanone			0.3767	0.3521	0.3525	0.3527	0.3432	0.3765	0.3589	4	AVG	
Toluene	*		1.0102	0.9147	0.8921	0.8676	0.8897	0.9349	0.9182	6	AVG	*
trans-1,3-Dichloropropene			0.5888	0.5833	0.5829	0.6320	0.6696	0.7079	0.6274	8	AVG	
Ethyl Methacrylate			0.6897	0.6519	0.6294	0.6647	0.6539	0.7014	0.6652	4	AVG	
1,1,2-Trichloroethane			0.3988	0.3530	0.3387	0.3408	0.3508	0.3718	0.3590	6	AVG	
Tetrachloroethene			0.2700	0.2365	0.2273	0.2209	0.2342	0.2477	0.2395	7	AVG	
1,3-Dichloropropane			0.7356	0.6803	0.6608	0.6574	0.6717	0.7068	0.6854	4	AVG	
2-Hexanone			0.3646	0.3704	0.3609	0.3679	0.3718	0.4180	0.3756	6	AVG	
Dibromochloromethane			0.2773	0.2693	0.2892	0.3164	0.3433	0.3904	0.3143	15	AVG	
1,2-Dibromoethane			0.3785	0.3475	0.3502	0.3534	0.3612	0.3867	0.3629	4	AVG	
1-Chlorohexane			0.3767	0.3185	0.3132	0.2996	0.3025	0.3179	0.3214	9	AVG	
Chlorobenzene	#		1.0433	0.9099	0.9063	0.8962	0.8921	0.9252	0.9288	6	AVG	#
1,1,1,2-Tetrachloroethane			0.2874	0.2724	0.2811	0.2896	0.2981	0.3213	0.2916	6	AVG	
Ethylbenzene	*		1.6157	1.4413	1.4098	1.3935	1.3839	1.4249	1.4448	6	AVG	*
m+p-Xylene			0.5884	0.5372	0.5311	0.5191	0.5165	0.5274	0.5366	5	AVG	
o-Xylene			0.6044	0.5445	0.5392	0.5247	0.5259	0.5374	0.5460	5	AVG	
Styrene			1.0580	0.9601	0.9504	0.9429	0.9475	0.9720	0.9718	4	AVG	
Bromoform	#		0.1394	0.1350	0.1467	0.1712	0.1921	0.2300	0.1690	22	2NDDEG	#
Isopropylbenzene			1.2598	1.1417	1.0985	1.0840	1.0902	1.1512	1.1376	6	AVG	
Cyclohexanone			0.4187	0.3477	0.3707	0.3997	0.3954	0.4403	0.3954	8	AVG	
1,1,2,2-Tetrachloroethane	#		1.7001	1.2995	1.3871	1.2969	1.2958	1.4037	1.3972	11	AVG	#
Bromobenzene			1.0509	0.8608	0.8868	0.8298	0.8411	0.8500	0.8866	9	AVG	
trans-1,4-Dichloro-2-butene			0.5201	0.4273	0.4606	0.4399	0.4477	0.4716	0.4612	7	AVG	
1,2,3-Trichloropropane			0.4640	0.3729	0.3808	0.3677	0.3595	0.3877	0.3887	10	AVG	
n-Propylbenzene			4.4226	3.6662	3.7284	3.5060	3.5159	3.6994	3.7564	9	AVG	
2-Chlorotoluene			0.9081	0.7430	0.7955	0.7312	0.7324	0.7854	0.7826	9	AVG	
1,3,5-Trimethylbenzene			3.2045	2.6014	2.7301	2.5684	2.5900	2.7432	2.7396	9	AVG	
4-Chlorotoluene			0.9565	0.8035	0.8272	0.7791	0.7789	0.8334	0.8298	8	AVG	
tert-Butylbenzene			0.5907	0.5086	0.5095	0.5025	0.4885	0.5149	0.5191	7	AVG	
Pentachloroethane			0.4188	0.3726	0.4270	0.4325	0.4524	0.4991	0.4337	10	AVG	
1,2,4-Trimethylbenzene			3.3100	2.8954	2.8993	2.7094	2.7023	2.8153	2.8886	8	AVG	
sec-Butylbenzene			3.5623	3.0609	3.0881	2.8731	2.8954	2.9871	3.0778	8	AVG	
1,3-Dichlorobenzene			1.5938	1.3878	1.3926	1.3627	1.3509	1.4179	1.4176	6	AVG	
p-Isopropyltoluene			2.9605	2.6087	2.6521	2.5079	2.5101	2.6177	2.6428	6	AVG	
1,4-Dichlorobenzene			1.6984	1.4651	1.4809	1.4141	1.4079	1.4596	1.4877	7	AVG	
1,2,3-Trimethylbenzene			3.5251	2.8824	2.9661	2.8387	2.8180	2.9556	2.9976	9	AVG	
Benzyl Chloride			0.4177	0.3711	0.4449	0.4812	0.5045	0.5696	0.4648	15	AVG	
1,3-Diethylbenzene			1.7737	1.4750	1.5833	1.4741	1.4996	1.5713	1.5628	7	AVG	
1,4-Diethylbenzene			1.7884	1.5210	1.6281	1.5222	1.4736	1.5606	1.5823	7	AVG	
n-Butylbenzene			1.4584	1.2908	1.3273	1.2587	1.2164	1.2866	1.3064	6	AVG	
1,2-Dichlorobenzene			1.5748	1.3822	1.4262	1.3858	1.3175	1.4156	1.4170	6	AVG	
1,2-Diethylbenzene			1.5166	1.3087	1.3894	1.2797	1.2429	1.3080	1.3409	7	AVG	
1,2-Dibromo-3-chloropropane			0.2216	0.2032	0.2341	0.2497	0.2511	0.2754	0.2392	11	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date(s): 05/29/18 05/29/18

Heated Purge: (Y/N) N Calibration Times: 12:21 14:23

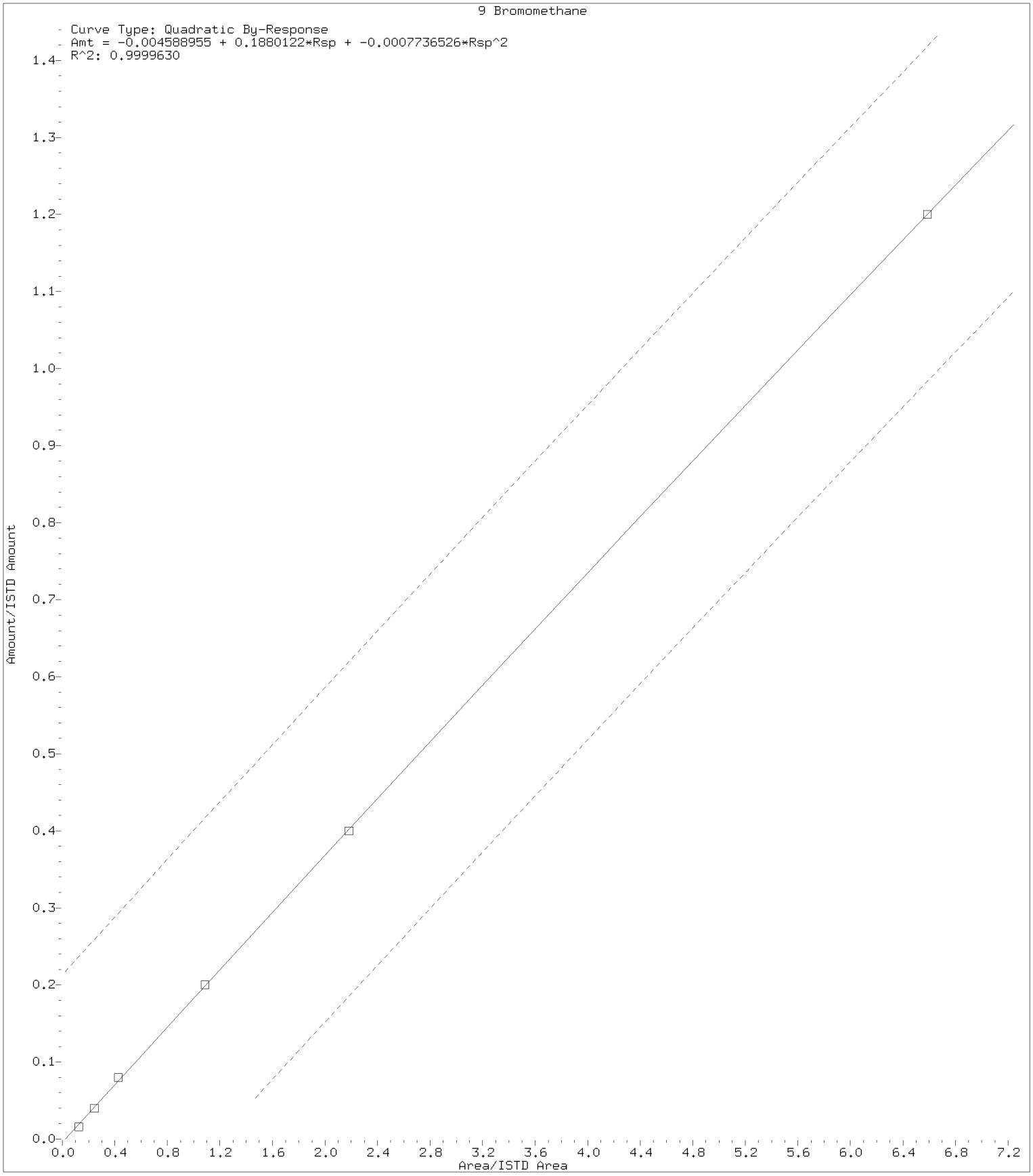
Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

LAB FILE ID: RRF = RRF 4 = ry29i10.d RRF 10= ry29i11.d
RRF 20= ry29i12.d RRF 50= ry29i13.d RRF100= ry29i14.d RRF300= ry29i15.d

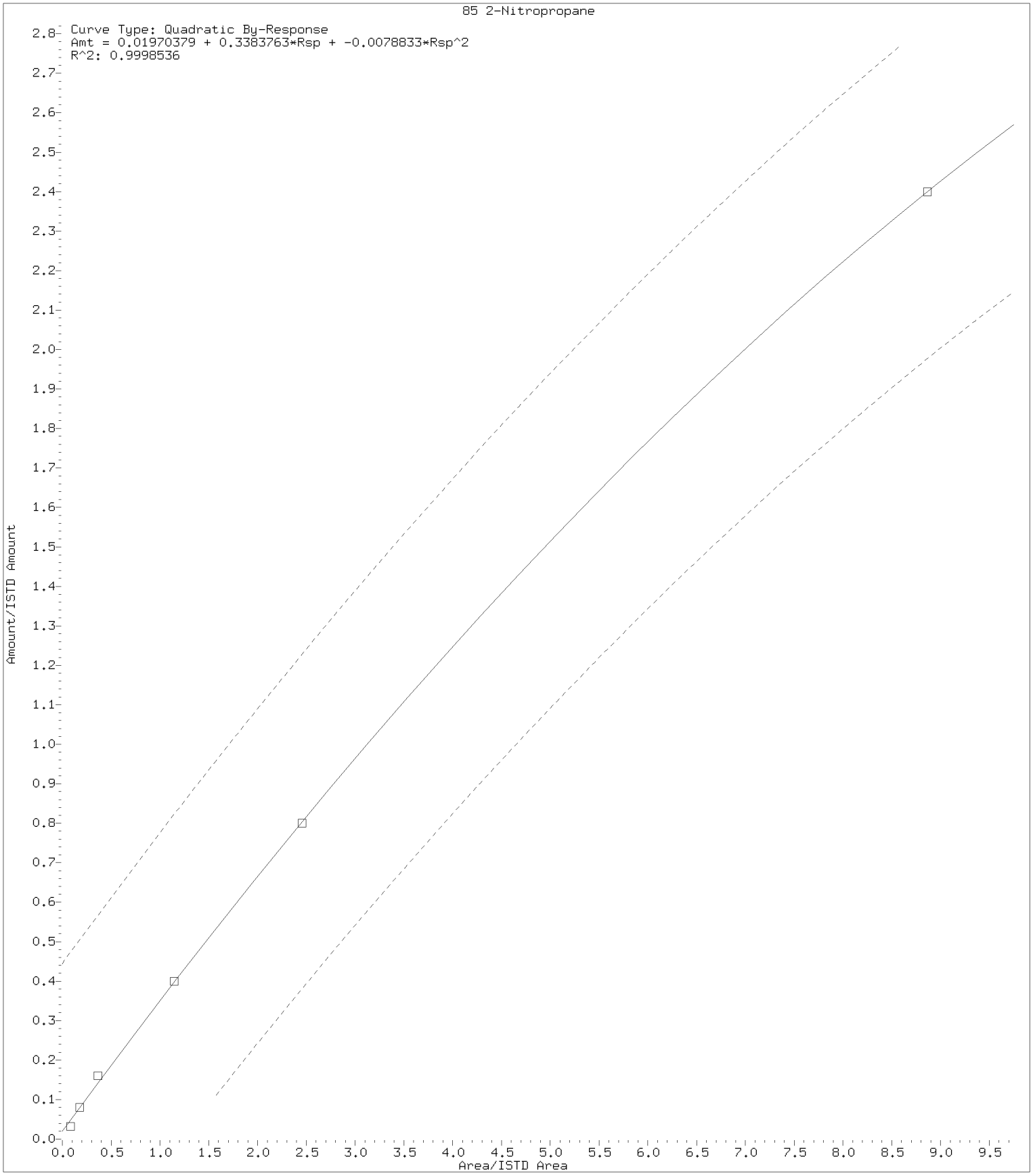
COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,3,5-Trichlorobenzene		0.9132	0.7822	0.8270	0.7846	0.7977	0.8281	0.8221	6	AVG
1,2,4-Trichlorobenzene		0.8727	0.7694	0.8058	0.7638	0.7919	0.8187	0.8037	5	AVG
Hexachlorobutadiene		0.3554	0.3141	0.3380	0.3106	0.3215	0.3372	0.3295	5	AVG
Naphthalene		3.2445	2.7303	2.8996	2.7384	2.8319	2.9076	2.8921	7	AVG
1,2,3-Trichlorobenzene		0.8183	0.7072	0.7566	0.7093	0.7437	0.7711	0.7510	6	AVG
2-Methylnaphthalene		1.4704	1.3696	1.5685	1.5539	1.5215	1.5554	1.5065	5	AVG
Dibromofluoromethane		0.2335	0.2192	0.2133	0.2104	0.2169	0.2363	0.2216	5	AVG
Dibromofluoromethane(2)		0.2395	0.2268	0.2194	0.2174	0.2226	0.2443	0.2283	5	AVG
1,2-Dichloroethane-d4		0.0668	0.0622	0.0575	0.0576	0.0584	0.0632	0.0609	6	AVG
1,2-Dichloroethane-d4(2)		0.3824	0.3537	0.3086	0.3057	0.3085	0.3294	0.3314	9	AVG
1,2-Dichloroethane-d4(3)		0.0420	0.0391	0.0376	0.0364	0.0371	0.0403	0.0387	5	AVG
Toluene-d8		1.4166	1.3645	1.2467	1.2052	1.2484	1.3275	1.3015	6	AVG
Toluene-d8(2)		0.9129	0.8917	0.8139	0.7840	0.8134	0.8612	0.8462	6	AVG
4-Bromofluorobenzene		0.4651	0.4451	0.4152	0.4019	0.4111	0.4458	0.4307	6	AVG
4-Bromofluorobenzene(2)		0.2971	0.2784	0.2609	0.2526	0.2643	0.2889	0.2737	6	AVG

Average %RSD 8

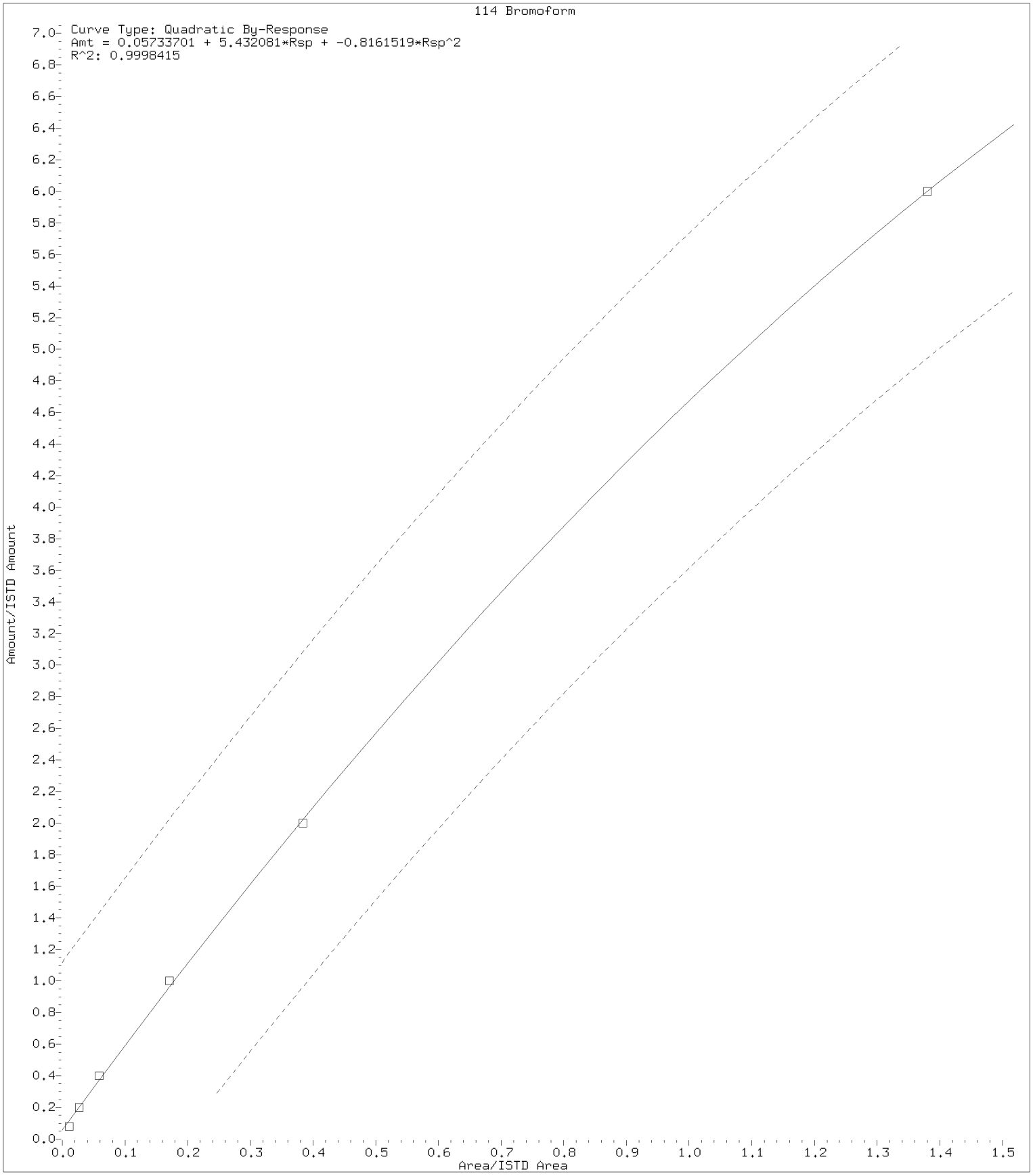
Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%



Digitally signed by Stephen C. Nolte on 05/30/2018 at 07:17.
Target 3.5 esignature user ID: scn10072



Digitally signed by Stephen C. Nolte on 05/30/2018 at 07:17.
Target 3.5 esignature user ID: scn10072



Digitally signed by Stephen C. Nolte on 05/30/2018 at 07:17.
Target 3.5 esignature user ID: scn10072

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP07566.i/18may29i.b/ry29i10.d	VSTD004
/chem/HP07566.i/18may29i.b/ry29i11.d	VSTD010
/chem/HP07566.i/18may29i.b/ry29i12.d	VSTD020
/chem/HP07566.i/18may29i.b/ry29i13.d	VSTD050
/chem/HP07566.i/18may29i.b/ry29i14.d	VSTD100
/chem/HP07566.i/18may29i.b/ry29i15.d	VSTD300

Area Summary

File ID:

Internal Standard Name	ry29i10.d	ry29i11.d	ry29i12.d	ry29i13.d	ry29i14.d	ry29i15.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	129657	143097	139891	139011	137781	129486	136487	4	Yes
Fluorobenzene	928790	1055590	1004186	1067421	1055625	967892	1013251	6	Yes
Chlorobenzene-d5	619201	672073	674573	706361	692315	629164	665614	5	Yes
1,4-Dichlorobenzene-d4	204258	238993	230929	248671	246289	226184	232554	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	ry29i10.d	ry29i11.d	ry29i12.d	ry29i13.d	ry29i14.d	ry29i15.d	Avg. RT
t-Butyl alcohol-d10	4.003	4.007	4.010	4.014	4.003	4.006	4.007
Fluorobenzene	7.498	7.498	7.498	7.495	7.497	7.498	7.497
Chlorobenzene-d5	11.043	11.044	11.044	11.041	11.043	11.043	11.043
1,4-Dichlorobenzene-d4	12.953	12.950	12.950	12.954	12.949	12.949	12.951

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 05/30/2018 at 06:55.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 ICV Date: 05/29/18 Time: 16:02

Lab File ID: ry29v10.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3286	0.2903	17.67	20	-12	
#	Chloromethane	0.4068	0.3939	19.37	20	-3	#
*	Vinyl Chloride	0.3307	0.3367	20.36	20	2	*
	Bromomethane	5.9534	6.2125	22.17	20	11	
	Chloroethane	5.2666	5.1171	19.43	20	-3	
	Dichlorofluoromethane	0.4391	0.4358	19.85	20	-1	
	Trichlorofluoromethane	0.3509	0.3467	19.76	20	-1	
	Ethanol	0.1399	0.1356	969.33	1000	-3	
	Freon 123a	0.3271	0.3206	19.60	20	-2	
	Acrolein	2.8968	2.4196	125.29	150	-16	
*	1,1-Dichloroethene	0.2135	0.2355	22.06	20	10	*
	Acetone	0.0308	0.0301	146.49	150	-2	
	Freon 113	0.1690	0.1638	19.39	20	-3	
	2-Propanol	0.7829	0.8766	167.95	150	12	
	Methyl Iodide	0.3817	0.3844	20.14	20	1	
	Carbon Disulfide	0.6368	0.6322	19.86	20	-1	
	Methyl Acetate	0.2752	0.2693	19.57	20	-2	
	Allyl Chloride	0.5357	0.5229	19.52	20	-2	
	Methylene Chloride	0.2825	0.2843	20.12	20	1	
	t-Butyl alcohol	1.2390	1.1696	188.80	200	-6	
	Acrylonitrile	0.1404	0.1335	95.14	100	-5	
	Methyl Tertiary Butyl Ether	0.8905	0.8533	19.16	20	-4	
	trans-1,2-Dichloroethene	0.2559	0.2580	20.17	20	1	
	n-Hexane	0.2094	0.2021	19.31	20	-3	
#	1,1-Dichloroethane	0.5373	0.5396	20.09	20	0	#
	di-Isopropyl ether	1.1148	1.1304	20.28	20	1	
	2-Chloro-1,3-butadiene	0.4719	0.4592	19.46	20	-3	
	Ethyl t-butyl ether	0.9921	0.9883	19.92	20	0	
	2-Butanone	6.7519	6.3069	140.11	150	-7	
	cis-1,2-Dichloroethene	0.2829	0.2952	20.87	20	4	
	2,2-Dichloropropane	0.3753	0.3695	19.70	20	-2	
	Propionitrile	0.0492	0.0498	151.78	150	1	
	Methacrylonitrile	0.1395	0.1394	149.91	150	0	
	Bromochloromethane	0.1299	0.1274	19.62	20	-2	
	Tetrahydrofuran	1.4686	1.4468	98.51	100	-1	
*	Chloroform	0.4616	0.4601	19.93	20	0	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 ICV Date: 05/29/18 Time: 16:02

Lab File ID: ry29v10.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1-Trichloroethane	0.3882	0.3726	19.19	20	-4	
	Cyclohexane	0.3113	0.2926	18.80	20	-6	
	1,1-Dichloropropene	0.3521	0.3418	19.42	20	-3	
	Carbon Tetrachloride	0.2471	0.2327	18.84	20	-6	
	Isobutyl Alcohol	0.4318	0.3827	443.20	500	-11	
	Benzene	1.1205	1.1215	20.02	20	0	
	1,2-Dichloroethane	0.4166	0.4100	19.68	20	-2	
	t-Amyl methyl ether	0.8790	0.8540	19.43	20	-3	
	n-Heptane	0.2328	0.2163	18.59	20	-7	
	n-Butanol	0.3221	0.3002	932.07	1000	-7	
	Trichloroethene	0.2486	0.2452	19.73	20	-1	
	Methylcyclohexane	0.2275	0.2155	18.95	20	-5	
*	1,2-Dichloropropane	0.3171	0.3142	19.82	20	-1	*
	Methyl Methacrylate	0.2410	0.2285	18.96	20	-5	
	1,4-Dioxane	0.1130	0.1100	486.40	500	-3	
	Dibromomethane	0.1694	0.1696	20.02	20	0	
	Bromodichloromethane	0.3256	0.3141	19.29	20	-4	
	2-Nitropropane	2.8016	2.5098	21.83	20	9	
	2-Chloroethyl Vinyl Ether	0.2250	0.2214	19.68	20	-2	
	cis-1,3-Dichloropropene	0.4672	0.4530	19.39	20	-3	
	4-Methyl-2-pentanone	0.3589	0.3608	100.51	100	1	
*	Toluene	0.9182	0.9154	19.94	20	0	*
	trans-1,3-Dichloropropene	0.6274	0.5877	18.73	20	-6	
	Ethyl Methacrylate	0.6652	0.6406	19.26	20	-4	
	1,1,2-Trichloroethane	0.3590	0.3515	19.58	20	-2	
	Tetrachloroethene	0.2395	0.2268	18.94	20	-5	
	1,3-Dichloropropane	0.6854	0.6513	19.00	20	-5	
	2-Hexanone	0.3756	0.3576	95.20	100	-5	
	Dibromochloromethane	0.3143	0.2886	18.36	20	-8	
	1,2-Dibromoethane	0.3629	0.3519	19.39	20	-3	
	1-Chlorohexane	0.3214	0.3008	18.72	20	-6	
#	Chlorobenzene	0.9288	0.8945	19.26	20	-4	#
	1,1,1,2-Tetrachloroethane	0.2916	0.2747	18.84	20	-6	
*	Ethylbenzene	1.4448	1.3946	19.30	20	-3	*
	m+p-Xylene	0.5366	0.5252	39.15	40	-2	
	o-Xylene	0.5460	0.5189	19.01	20	-5	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 ICV Date: 05/29/18 Time: 16:02

Lab File ID: ry29v10.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Styrene	0.9718	0.9454	19.46	20	-3	
#	Bromoform	0.1690	0.1439	18.36	20	-8	#
	Isopropylbenzene	1.1376	1.1007	19.35	20	-3	
	Cyclohexanone	0.3954	0.3579	452.59	500	-9	
#	1,1,2,2-Tetrachloroethane	1.3972	1.3127	18.79	20	-6	#
	Bromobenzene	0.8866	0.8592	19.38	20	-3	
	trans-1,4-Dichloro-2-butene	0.4612	0.4484	97.23	100	-3	
	1,2,3-Trichloropropane	0.3887	0.3699	19.03	20	-5	
	n-Propylbenzene	3.7564	3.5480	18.89	20	-6	
	2-Chlorotoluene	0.7826	0.7322	18.71	20	-6	
	1,3,5-Trimethylbenzene	2.7396	2.5723	18.78	20	-6	
	4-Chlorotoluene	0.8298	0.7907	19.06	20	-5	
	tert-Butylbenzene	0.5191	0.4716	18.17	20	-9	
	Pentachloroethane	0.4337	0.4124	19.02	20	-5	
	1,2,4-Trimethylbenzene	2.8886	2.6990	18.69	20	-7	
	sec-Butylbenzene	3.0778	2.9210	18.98	20	-5	
	1,3-Dichlorobenzene	1.4176	1.3266	18.72	20	-6	
	p-Isopropyltoluene	2.6428	2.5373	19.20	20	-4	
	1,4-Dichlorobenzene	1.4877	1.4426	19.39	20	-3	
	1,2,3-Trimethylbenzene	2.9976	2.9429	19.63	20	-2	
	Benzyl Chloride	0.4648	0.4148	17.85	20	-11	
	1,3-Diethylbenzene	1.5628	1.4903	19.07	20	-5	
	1,4-Diethylbenzene	1.5823	1.5350	19.40	20	-3	
	n-Butylbenzene	1.3064	1.2659	19.38	20	-3	
	1,2-Dichlorobenzene	1.4170	1.3675	19.30	20	-3	
	1,2-Diethylbenzene	1.3409	1.3099	19.54	20	-2	
	1,2-Dibromo-3-chloropropane	0.2392	0.2230	18.65	20	-7	
	1,3,5-Trichlorobenzene	0.8221	0.8028	19.53	20	-2	
	1,2,4-Trichlorobenzene	0.8037	0.7922	19.71	20	-1	
	Hexachlorobutadiene	0.3295	0.4184	25.40	20	27	
	Naphthalene	2.8921	2.7534	19.04	20	-5	
	1,2,3-Trichlorobenzene	0.7510	0.7710	20.53	20	3	
	2-Methylnaphthalene	1.5065	1.5022	19.94	20	0	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date(s): 05/23/18 05/23/18

Heated Purge: (Y/N) Y Calibration Times: 14:38 17:01

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 1 = wy23i07.d RRF 4 = wy23i06.d RRF 10= wy23i05.d
RRF 20= wy23i04.d RRF 50= wy23i03.d RRF100= wy23i02.d RRF300= wy23i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Dichlorodifluoromethane	0.2731	0.3551	0.3592	0.3423	0.3943	0.3665	0.3326	0.3462	11	AVG	
Chloromethane	#0.3601	0.3602	0.3951	0.3587	0.3972	0.3708	0.3324	0.3678	6	AVG	#
1,3-Butadiene	0.3623	0.3420	0.2497	0.2680	0.2747	0.2659	0.2479	0.2872	16	2NDDEG	
Vinyl Chloride	*0.3953	0.3994	0.3951	0.3678	0.4029	0.3793	0.3374	0.3825	6	AVG	*
Bromomethane	0.2454	0.2617	0.2756	0.2562	0.2762	0.2621	0.2427	0.2600	5	AVG	
Chloroethane	0.2058	0.2327	0.2387	0.2156	0.2347	0.2195	0.1980	0.2207	7	AVG	
Dichlorofluoromethane	0.4789	0.5186	1.0085	0.5008	0.5073	0.5236	0.4660	0.5720	34	AVG	
n-Pentane		0.4704	0.3811	0.3947	0.4140	0.4003	0.3810	0.4069	8	AVG	
Trichlorofluoromethane	0.3311	0.4199	0.4413	0.4159	0.4774	0.4538	0.4212	0.4229	11	AVG	
Ethanol	0.2431	0.1260	0.1303	0.0945	0.1191	0.0997	0.0879	0.1287	41	2NDDEG	
Freon 123a	0.2671	0.3079	0.2598	0.2776	0.2894	0.2856	0.2706	0.2797	6	AVG	
Acrolein	2.5238	2.5905	2.5937	2.5902	2.4935	2.6084	2.0619	2.4946	8	AVG	
1,1-Dichloroethene	*0.1894	0.2187	0.1950	0.2120	0.2267	0.2260	0.2240	0.2131	7	AVG	*
1,1-Dichloroethene(2)	*0.0963	0.1125	0.0939	0.1042	0.1121	0.1114	0.1077	0.1054	7	AVG	*
Acetone	1.1652	1.1639	1.1473	1.1429	1.1109	1.0582	0.9548	1.1062	7	AVG	
Freon 113	0.1869	0.2305	0.1928	0.2134	0.2304	0.2296	0.2207	0.2149	9	AVG	
2-Propanol		0.6559	0.6822	0.6385	0.6748	0.6140	0.4995	0.6275	11	AVG	
Methyl Iodide	0.3575	0.4135	0.3831	0.4100	0.4221	0.4167	0.4050	0.4011	6	AVG	
Carbon Disulfide	0.5945	0.7146	0.6452	0.7143	0.7628	0.7652	0.7416	0.7054	9	AVG	
Allyl Chloride	0.3154	0.3589	0.2872	0.3653	0.3574	0.3599	0.3423	0.3409	9	AVG	
Methyl Acetate	0.3821	0.3334	0.2752	0.3048	0.2951	0.2767	0.2619	0.3042	14	AVG	
Methylene Chloride	0.2564	0.2559	0.2509	0.2642	0.2607	0.2576	0.2515	0.2567	2	AVG	
t-Butyl alcohol	1.3485	1.1727	1.3305	1.2480	1.3069	1.2224	1.0390	1.2383	9	AVG	
Acrylonitrile	0.1252	0.1489	0.1514	0.1529	0.1542	0.1390	0.1531	0.1464	7	AVG	
trans-1,2-Dichloroethene	0.2149	0.2521	0.2329	0.2471	0.2547	0.2508	0.2449	0.2425	6	AVG	
Methyl Tertiary Butyl Ether	0.6870	0.7074	0.7133	0.7301	0.7200	0.7066	0.6613	0.7037	3	AVG	
n-Hexane	0.2925	0.2913	0.2509	0.2692	0.2888	0.2843	0.2788	0.2794	5	AVG	
1,1-Dichloroethane	#0.3971	0.4436	0.4170	0.4373	0.4426	0.4345	0.4156	0.4268	4	AVG	#
di-Isopropyl ether	0.7462	0.8363	0.8194	0.8454	0.8369	0.8321	0.7822	0.8141	4	AVG	
2-Chloro-1,3-butadiene	0.3033	0.3703	0.3381	0.3717	0.3883	0.3911	0.3753	0.3626	9	AVG	
Ethyl t-butyl ether	0.6440	0.6722	0.6811	0.6927	0.6846	0.6654	0.6080	0.6640	4	AVG	
cis-1,2-Dichloroethene	0.2453	0.2850	0.2688	0.2819	0.2861	0.2837	0.2776	0.2755	5	AVG	
2-Butanone	0.1968	0.2066	0.2228	0.2100	0.2137	0.1964	0.2133	0.2085	5	AVG	
2,2-Dichloropropane	0.1849	0.2219	0.1990	0.2239	0.2256	0.2209		0.2127	8	AVG	
Propionitrile	1.6204	1.7426	1.7639	1.7876	1.7596	1.7097	1.5568	1.7058	5	AVG	
Methacrylonitrile	0.1556	0.1657	0.1692	0.1768	0.1729	0.1703	0.1742	0.1692	4	AVG	
Bromochloromethane	0.1206	0.1418	0.1299	0.1486	0.1420	0.1428	0.1405	0.1380	7	AVG	
Tetrahydrofuran	1.8628	1.8462	1.8374	1.8302	1.7290	1.8207	1.4757	1.7717	8	AVG	
Chloroform	*0.3823	0.4407	0.4220	0.4413	0.4486	0.4430	0.4296	0.4296	5	AVG	*
1,1,1-Trichloroethane	0.3386	0.4123	0.3572	0.3765	0.3843	0.3806	0.3670	0.3738	6	AVG	
Cyclohexane	0.3338	0.3980	0.3303	0.3773	0.4102	0.4054	0.3951	0.3786	9	AVG	
Cyclohexane(2)	0.3113	0.3894	0.2912	0.3193	0.3516	0.3483	0.3373	0.3355	10	AVG	
Cyclohexane(3)	0.1073	0.1190	0.1034	0.1138	0.1270	0.1248	0.1213	0.1167	8	AVG	
1,1-Dichloropropene	0.2984	0.3508	0.3143	0.3430	0.3584	0.3552	0.3445	0.3378	7	AVG	
Carbon Tetrachloride	0.1996	0.2323	0.2211	0.2605	0.2826	0.2953	0.3005	0.2560	15	AVG	
Isobutyl Alcohol	0.4436	0.4276	0.4211	0.4278	0.4275	0.4230	0.3877	0.4226	4	AVG	
Benzene	0.9617	1.0813	1.0104	1.0541	1.0786	1.0622	1.0268	1.0393	4	AVG	
1,2-Dichloroethane	0.3798	0.3731	0.3587	0.3626	0.3606	0.3551	0.3484	0.3626	3	AVG	
1,2-Dichloroethane(2)	0.0346	0.0346	0.0335	0.0349	0.0366	0.0356	0.0355	0.0350	3	AVG	
t-Amyl methyl ether	0.6183	0.6884	0.6905	0.7144	0.7047	0.6914	0.6338	0.6774	5	AVG	
n-Heptane		0.2756	0.2261	0.2411	0.2406	0.2398	0.2396	0.2438	7	AVG	
n-Butanol	0.3992	0.3216	0.3560	0.3606	0.3660	0.3985	0.3399	0.3631	8	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date(s): 05/23/18 05/23/18

Heated Purge: (Y/N) Y Calibration Times: 14:38 17:01

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 1 = wy23i07.d RRF 4 = wy23i06.d RRF 10= wy23i05.d
RRF 20= wy23i04.d RRF 50= wy23i03.d RRF100= wy23i02.d RRF300= wy23i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Trichloroethene	0.2547	0.2779	0.2577	0.2779	0.2813	0.2748	0.2675	0.2703	4	AVG
Methylcyclohexane	0.3473	0.3265	0.2078	0.3256	0.3307	0.3322	0.3181	0.3126	15	AVG
Methylcyclohexane(2)	0.1666	0.1506	0.0967	0.1538	0.1546	0.1565	0.1492	0.1469	16	AVG
1,2-Dichloropropane	*0.2329	0.2678	0.2541	0.2742	0.2739	0.2752	0.2701	0.2640	6	AVG *
Dibromomethane	0.1544	0.1762	0.1805	0.1832	0.1822	0.1824	0.1819	0.1773	6	AVG
1,4-Dioxane	0.1437	0.0945	0.1230	0.1056	0.1132	0.1237	0.0996	0.1148	15	AVG
Methyl Methacrylate	0.2206	0.2572	0.2609	0.2804	0.2872	0.2841	0.2931	0.2691	9	AVG
Bromodichloromethane	0.2490	0.3006	0.2978	0.3242	0.3383	0.3408	0.3424	0.3133	11	AVG
2-Nitropropane	0.0536	0.0604	0.0618	0.0645	0.0738	0.0775	0.0913	0.0690	19	2NDDEG
2-Chloroethyl Vinyl Ether	0.1623	0.1793	0.1950	0.2069	0.2055	0.2099	0.2095	0.1955	9	AVG
cis-1,3-Dichloropropene	0.3180	0.3791	0.3875	0.4187	0.4385	0.4481	0.4460	0.4051	12	AVG
4-Methyl-2-pentanone	0.3542	0.3791	0.4278	0.4226	0.4290	0.4227	0.4353	0.4101	8	AVG
Toluene	*0.8671	0.9340	0.8612	0.9132	0.9277	0.9252	0.8823	0.9015	3	AVG *
trans-1,3-Dichloropropene	0.3628	0.4508	0.4553	0.5051	0.5223	0.5465	0.5379	0.4830	13	AVG
Ethyl Methacrylate	0.4465	0.5348	0.5748	0.6087	0.6373	0.6487	0.6346	0.5836	12	AVG
1,1,2-Trichloroethane	0.3183	0.3581	0.3541	0.3677	0.3640	0.3662	0.3556	0.3549	5	AVG
Tetrachloroethene	0.3305	0.3470	0.3155	0.3398	0.3516	0.3520	0.3405	0.3396	4	AVG
1,3-Dichloropropane	0.5586	0.6142	0.5974	0.6197	0.6079	0.6064	0.5843	0.5983	4	AVG
2-Hexanone	0.3601	0.3872	0.4328	0.4423	0.4444	0.4416	0.4367	0.4207	8	AVG
Dibromochloromethane	0.2742	0.2875	0.3104	0.3384	0.3662	0.3825	0.3886	0.3354	14	AVG
1,2-Dibromoethane	0.3349	0.3817	0.3783	0.3938	0.4011	0.4026	0.3928	0.3836	6	AVG
Chlorobenzene	#0.9485	1.0605	0.9764	1.0371	1.0454	1.0511	1.0187	1.0197	4	AVG #
1,1,1,2-Tetrachloroethane	0.2519	0.2896	0.2856	0.3178	0.3259	0.3387	0.3431	0.3075	11	AVG
Ethylbenzene	*1.4677	1.7340	1.5789	1.6779	1.7292	1.7276	1.6087	1.6463	6	AVG *
m+p-Xylene	0.5703	0.6654	0.6246	0.6709	0.7016	0.7099	0.6963	0.6627	8	AVG
o-Xylene	0.5917	0.6605	0.6281	0.6708	0.6992	0.7102	0.7181	0.6683	7	AVG
Styrene	0.8588	1.0124	1.0270	1.1459	1.1829	1.2204	1.2253	1.0961	12	AVG
Bromoform	#0.1663	0.1767	0.1984	0.2219	0.2498	0.2726	0.2964	0.2260	22	2NDDEG #
Isopropylbenzene	1.4454	1.5237	1.4205	1.5540	1.6201	1.6242	1.5234	1.5302	5	AVG
Cyclohexanone	0.4800	0.3670	0.4152	0.4064	0.4465	0.4615	0.3989	0.4251	9	AVG
Bromobenzene	0.7579	0.8005	0.7855	0.8024	0.8104	0.7963	0.7790	0.7903	2	AVG
1,1,2,2-Tetrachloroethane	#1.0813	1.1079	1.1025	1.1354	1.1426	1.1010	1.0696	1.1058	2	AVG #
1,2,3-Trichloropropane	0.3175	0.3427	0.3441	0.3576	0.3515	0.3394	0.3277	0.3401	4	AVG
trans-1,4-Dichloro-2-butene	0.2312	0.2714	0.2920	0.3189	0.3288	0.3336	0.3151	0.2987	12	AVG
n-Propylbenzene	3.4169	3.4336	1.1517	3.3248	3.4037	3.2441	2.7913	3.2523	7	AVG
2-Chlorotoluene	0.7308	0.7578	0.6855	0.7245	0.7421	0.7108	0.6754	0.7181	4	AVG
4-Chlorotoluene	0.7642	0.7775	0.7409	0.7921	0.7972	0.7891	0.7785	0.7770	2	AVG
1,3,5-Trimethylbenzene	2.4034	2.3854	2.2889	2.4457	2.5238	2.4597	2.2737	2.3972	4	AVG
tert-Butylbenzene	0.5708	0.5316	0.4749	0.5218	0.5314	0.5239	0.5149	0.5242	5	AVG
Pentachloroethane	0.3286	0.3551	0.3297	0.4111	0.4226	0.4346	0.4566	0.3912	13	AVG
1,2,4-Trimethylbenzene	2.4733	2.5084	2.4256	2.5575	2.6428	2.5619	2.3243	2.4991	4	AVG
sec-Butylbenzene	3.0707	2.6277	2.4665	2.6388	2.7059	2.6186	2.3243	2.6361	9	AVG
1,3-Dichlorobenzene	1.5830	1.4283	1.4061	1.4907	1.4982	1.4628	1.3905	1.4656	4	AVG
p-Isopropyltoluene	2.6508	2.3015	2.1623	2.3554	2.4399	2.3817	2.1518	2.3491	7	AVG
1,4-Dichlorobenzene	1.7180	1.5925	1.5222	1.5552	1.5651	1.5356	1.4607	1.5642	5	AVG
1,2,3-Trimethylbenzene	2.8224	2.6782	2.3687	2.7992	2.6928	2.6627	2.3464	2.6244	7	AVG
Benzyl Chloride	1.1467	1.3209	1.4765	1.7045	1.9184	2.0382	2.0335	1.6627	21	2NDDEG
1,3-Diethylbenzene	1.5769	1.3901	1.2011	1.4648	1.4483	1.4393	1.3033	1.4034	9	AVG
1,4-Diethylbenzene	1.6486	1.4166	1.2162	1.5024	1.4692	1.4680	1.3409	1.4374	9	AVG
1,2-Dichlorobenzene	1.6262	1.5284	1.4411	1.4985	1.5221	1.5251	1.4797	1.5173	4	AVG
n-Butylbenzene	1.4162	1.1122	1.0334	1.1039	1.1492	1.1376	1.0714	1.1463	11	AVG
1,2-Diethylbenzene	1.3918	1.1779	1.0668	1.2626	1.2365	1.2290	1.1030	1.2097	9	AVG

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date(s): 05/23/18 05/23/18

Heated Purge: (Y/N) Y Calibration Times: 14:38 17:01

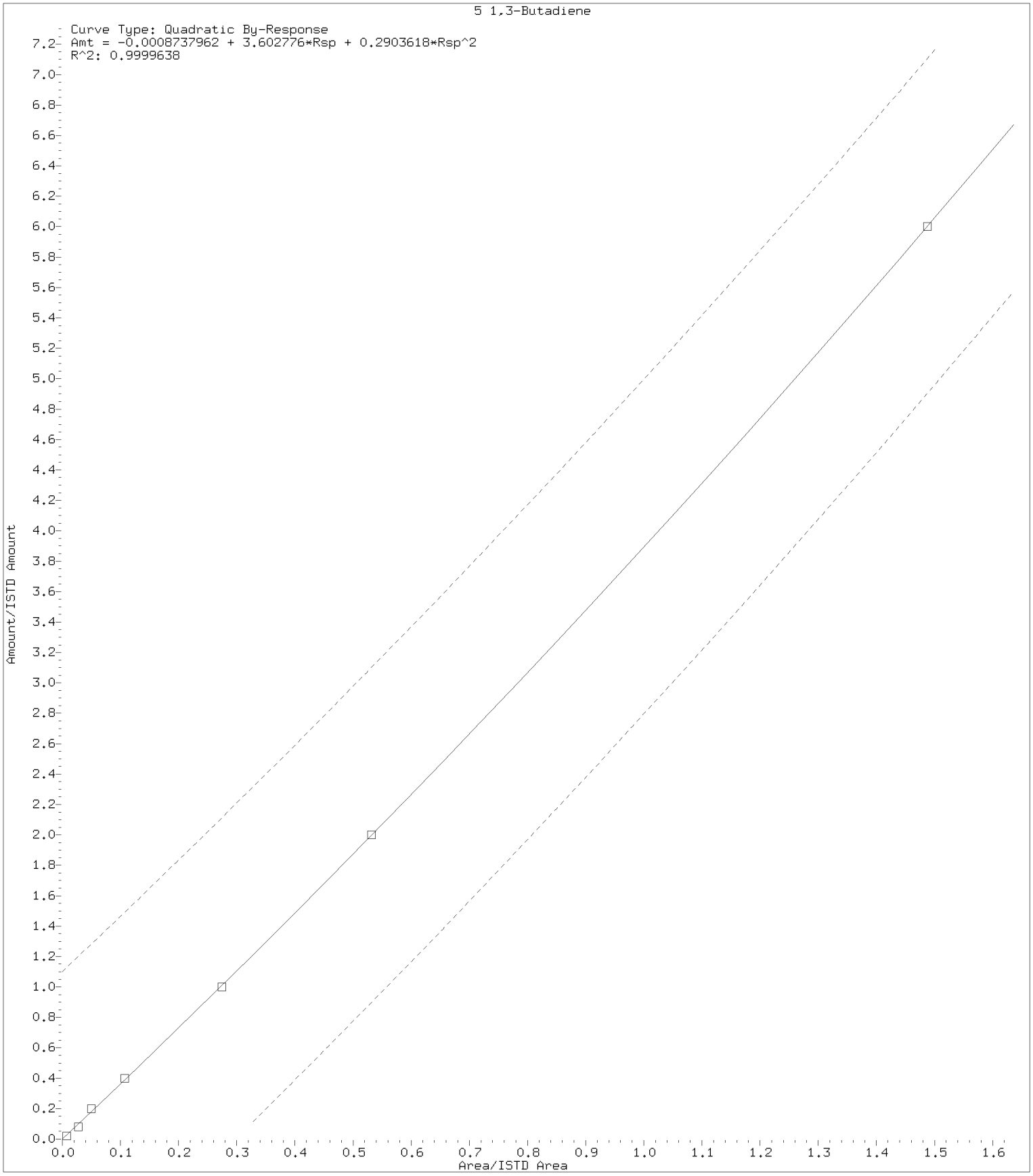
Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF 1 = wy23i07.d RRF 4 = wy23i06.d RRF 10= wy23i05.d
RRF 20= wy23i04.d RRF 50= wy23i03.d RRF100= wy23i02.d RRF300= wy23i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,2-Dibromo-3-chloropropane		0.2209	0.2170	0.2342	0.2461	0.2465	0.2385	0.2339	5	AVG
1,3,5-Trichlorobenzene	1.1558	0.8197	0.7961	0.8411	0.8578	0.8443	0.7621	0.8681	15	AVG
1,2,4-Trichlorobenzene	1.2577	0.8667	0.8356	0.8478	0.8753	0.8640	0.7575	0.9007	18	2NDDEG
Hexachlorobutadiene		0.2801	0.2558	0.2792	0.2831	0.2816	0.2272	0.2678	8	AVG
Naphthalene	3.9443	3.2930	3.4728	3.5567	3.7234	3.6295	2.9138	3.5048	9	AVG
1,2,3-Trichlorobenzene	1.3071	0.8368	0.8024	0.8178	0.8588	0.8309	0.7177	0.8817	22	2NDDEG
2-Methylnaphthalene		1.5078	1.5667	1.8018	1.9181	1.8346	1.4643	1.6822	11	AVG
Dibromofluoromethane	0.2224	0.2250	0.2330	0.2296	0.2324	0.2298	0.2297	0.2288	2	AVG
Dibromofluoromethane(2)	0.2290	0.2304	0.2366	0.2348	0.2356	0.2337	0.2377	0.2340	1	AVG
1,2-Dichloroethane-d4	0.0633	0.0636	0.0649	0.0631	0.0624	0.0615	0.0595	0.0626	3	AVG
1,2-Dichloroethane-d4(2)	0.2810	0.2834	0.2889	0.2855	0.2767	0.2731	0.2721	0.2801	2	AVG
1,2-Dichloroethane-d4(3)	0.0393	0.0391	0.0407	0.0398	0.0405	0.0394	0.0402	0.0398	2	AVG
Toluene-d8	1.3203	1.3442	1.3248	1.3484	1.3229	1.3371	1.3054	1.3290	1	AVG
Toluene-d8(2)	0.8568	0.8645	0.8622	0.8652	0.8635	0.8671	0.8775	0.8653	1	AVG
4-Bromofluorobenzene	0.4723	0.4823	0.4804	0.4866	0.4901	0.4960	0.5025	0.4872	2	AVG
4-Bromofluorobenzene(2)	0.3729	0.3756	0.3795	0.3819	0.3824	0.3934	0.3957	0.3830	2	AVG

Average %RSD 8

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%



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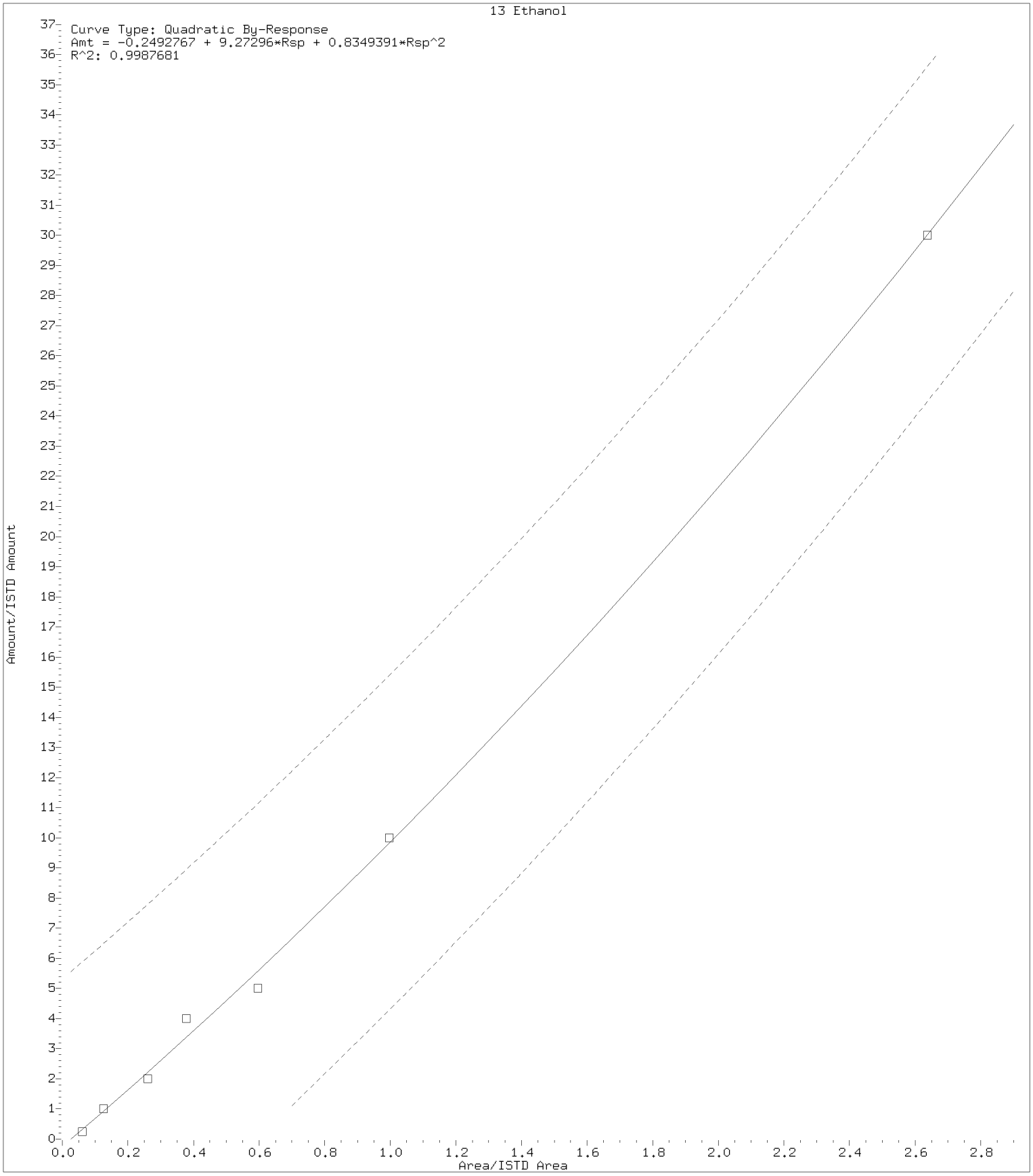

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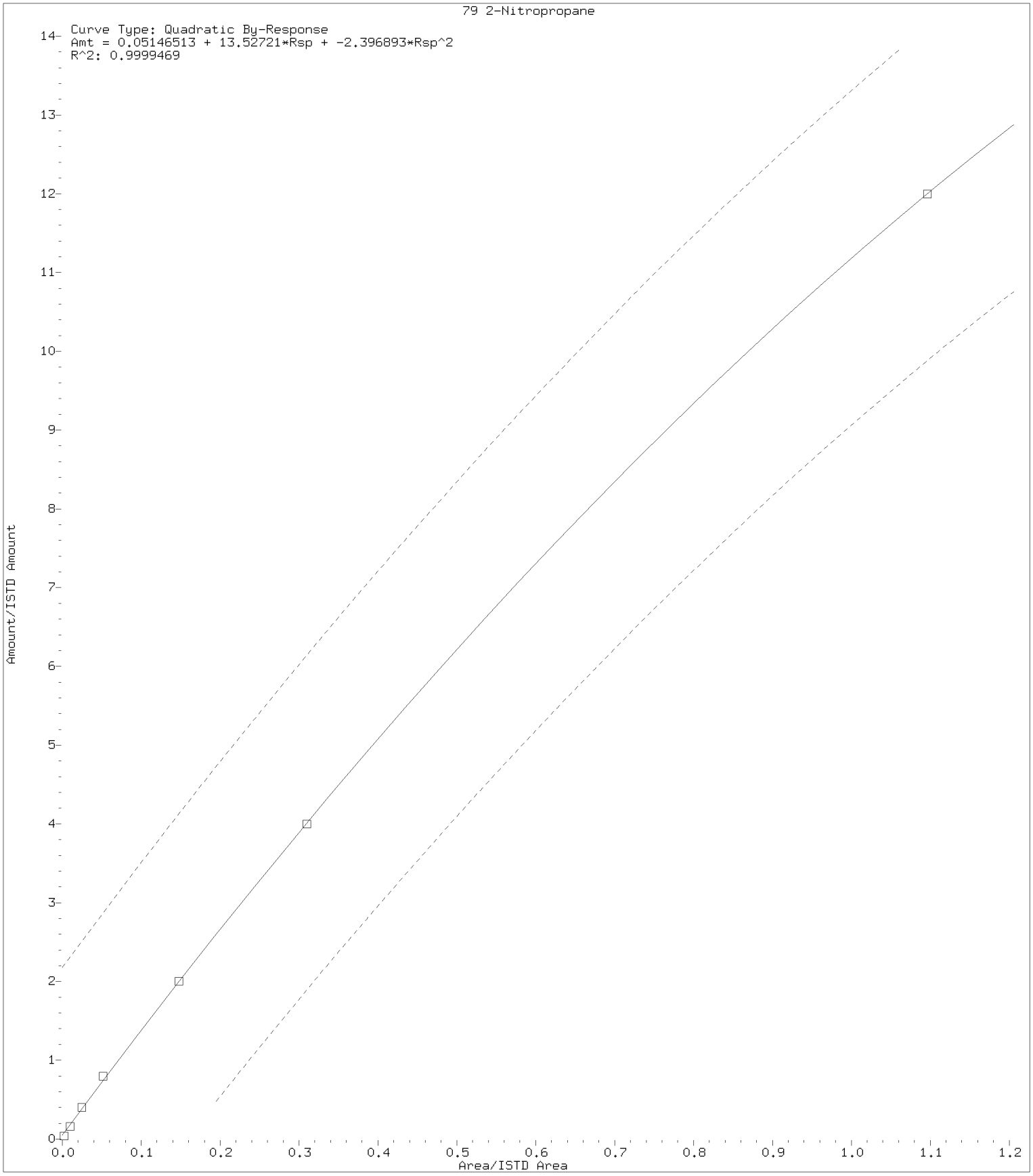

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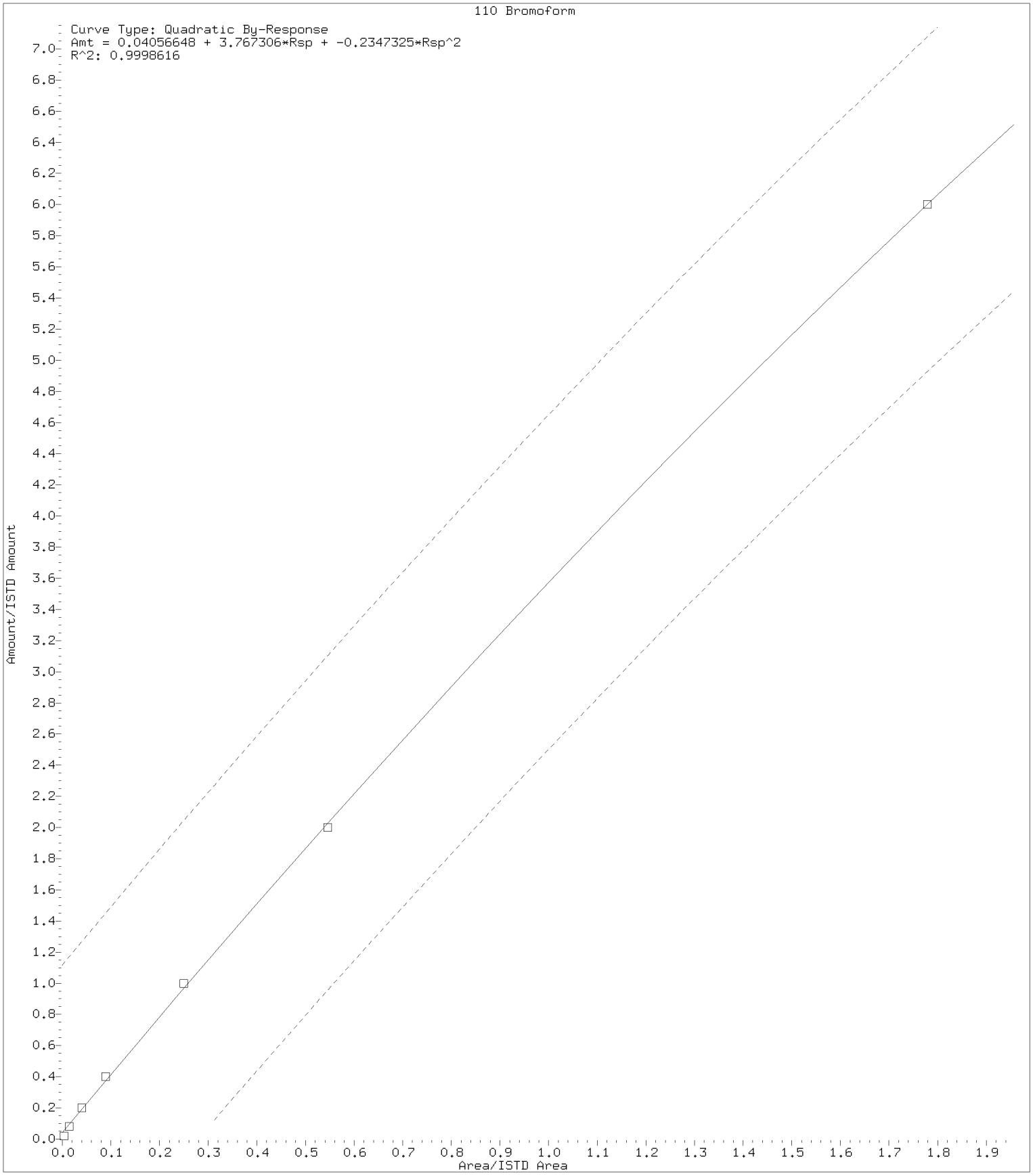

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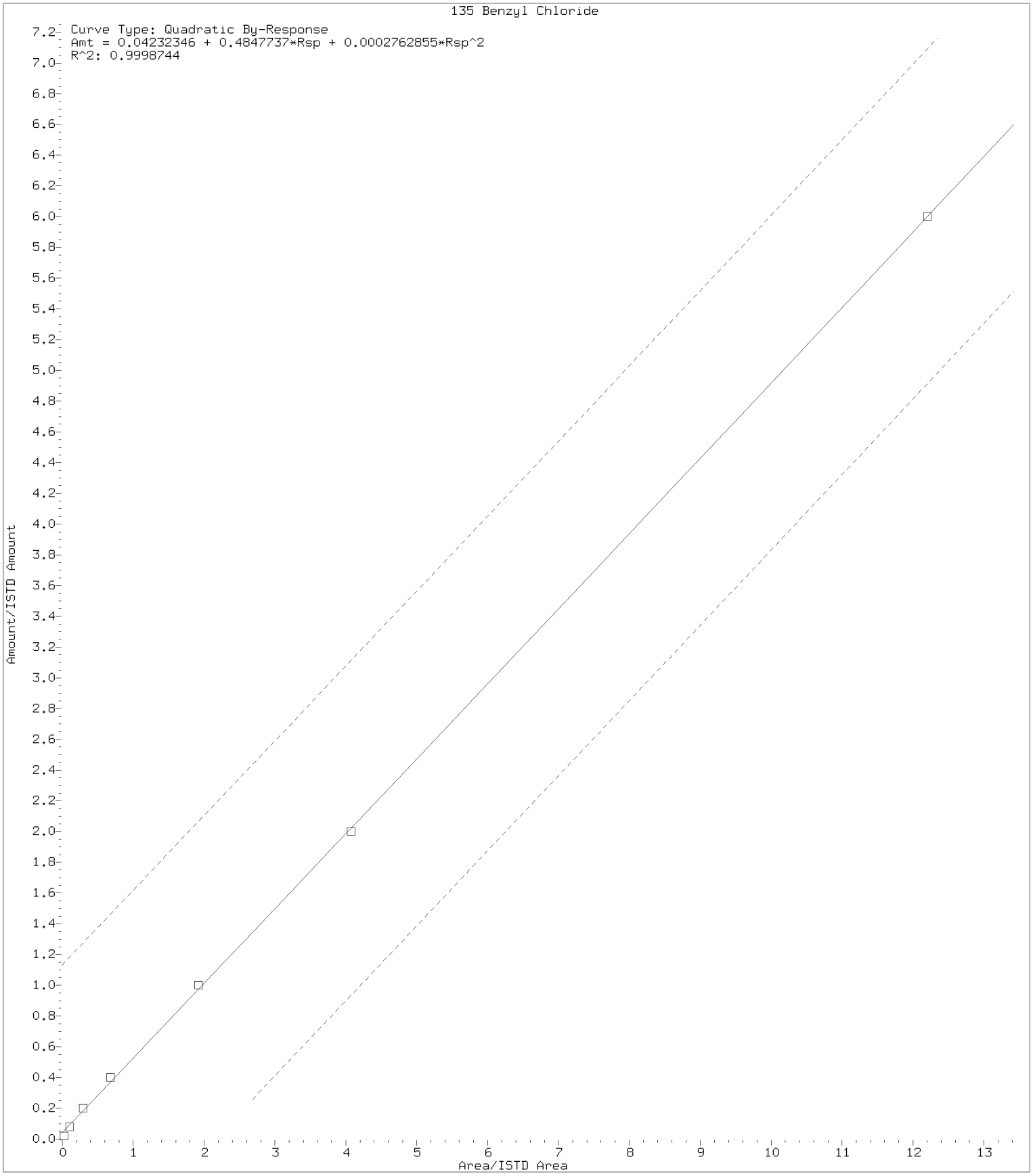

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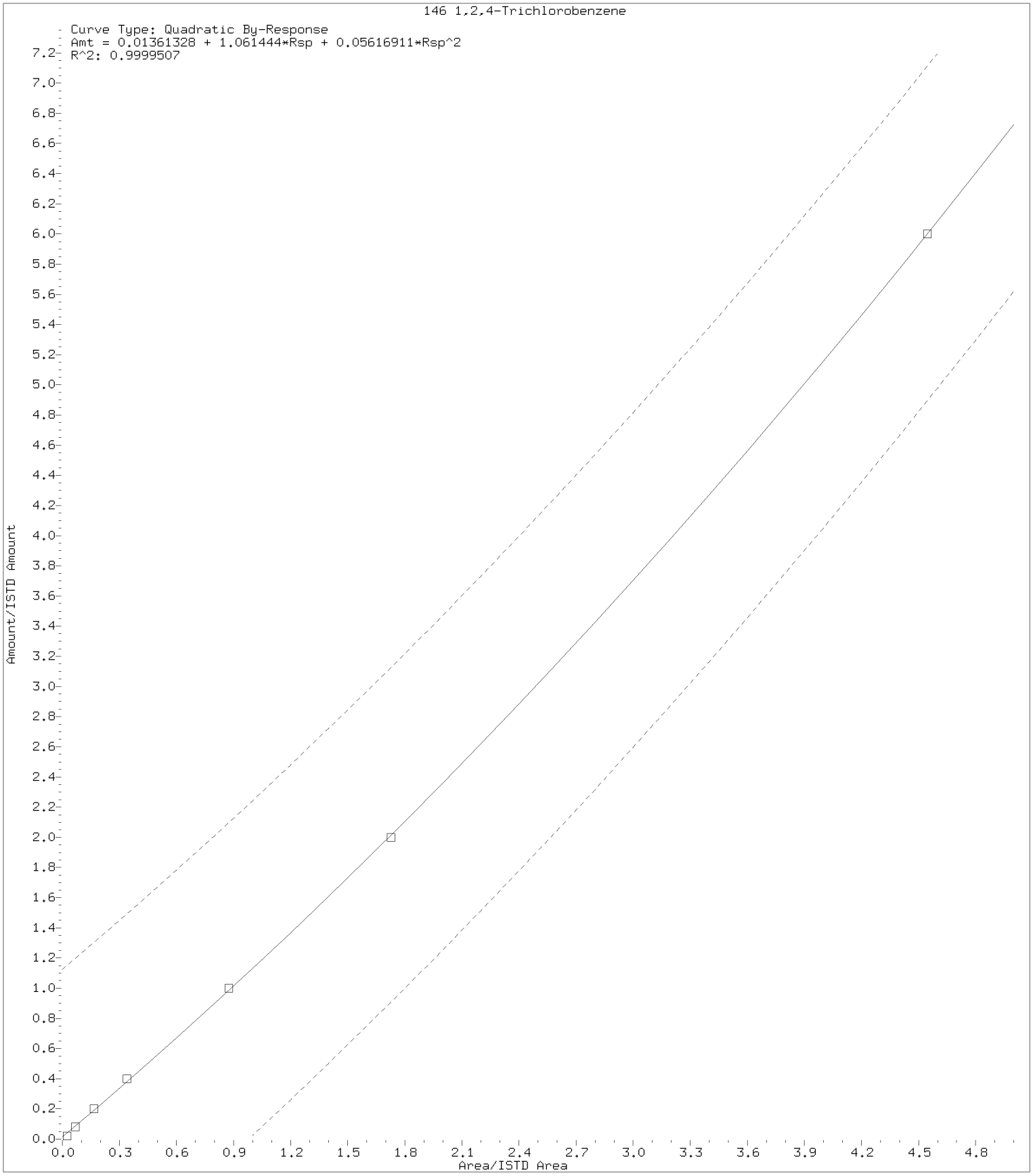
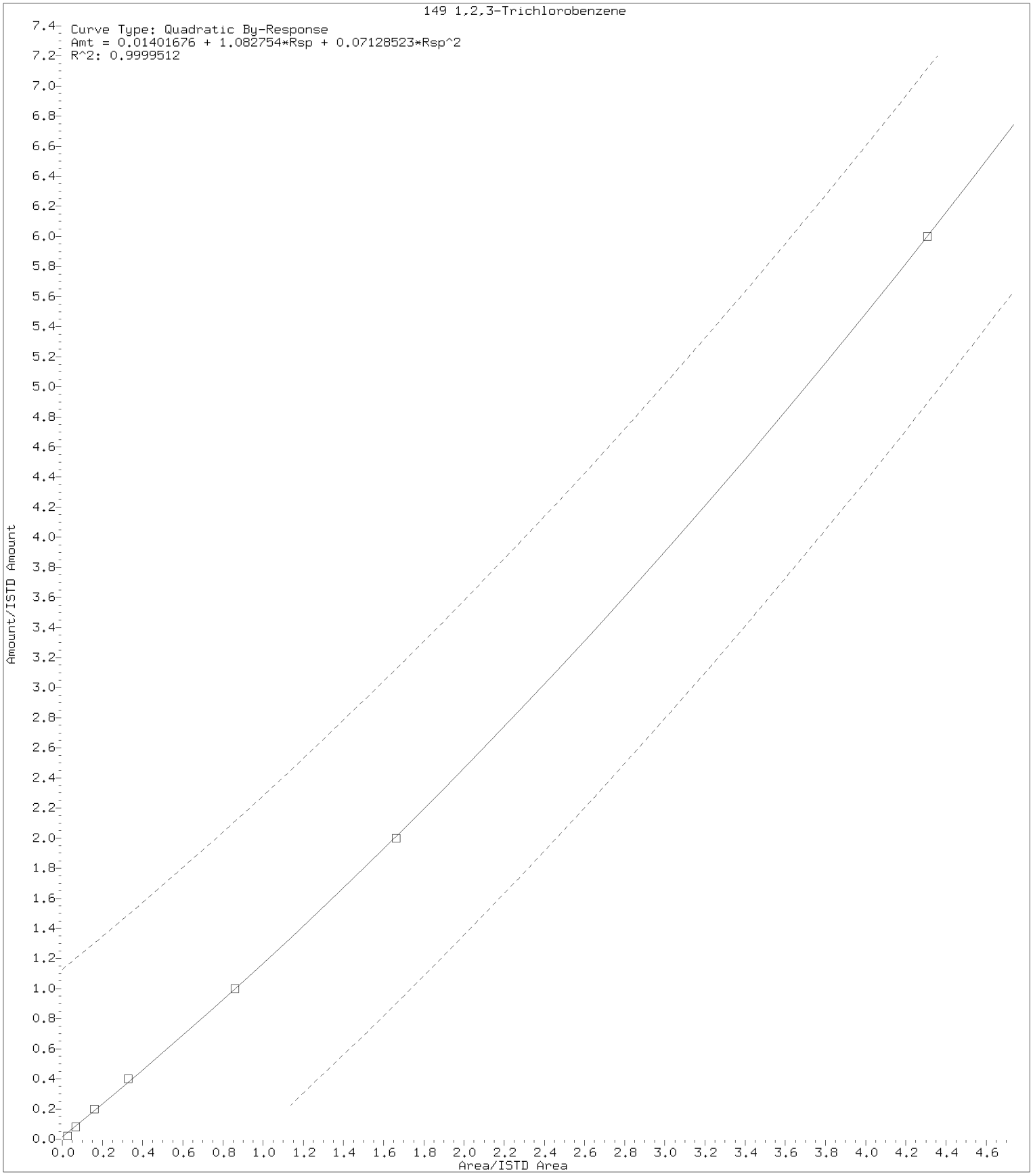
Target 3.5 esignature user ID: dvv10203



Digitally signed by Don V. Viray on 05/24/2018 at 21:35.
Target 3.5 esignature user ID: dvv10203



Digitally signed by Don V. Viray on 05/24/2018 at 21:35.
Target 3.5 esignature user ID: dvv10203

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem2/HP09137.i/18may23i.b/wy23i01.d	VSTD300
/chem2/HP09137.i/18may23i.b/wy23i02.d	VSTD100
/chem2/HP09137.i/18may23i.b/wy23i03.d	VSTD050
/chem2/HP09137.i/18may23i.b/wy23i04.d	VSTD020
/chem2/HP09137.i/18may23i.b/wy23i05.d	VSTD010
/chem2/HP09137.i/18may23i.b/wy23i06.d	VSTD004
/chem2/HP09137.i/18may23i.b/wy23i07.d	VSTD001

Area Summary

File ID:

Internal Standard Name	wy23i01.d	wy23i02.d	wy23i03.d	wy23i04.d	wy23i05.d	wy23i06.d	wy23i07.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	266341	201463	229067	213130	213201	205336	223994	221790	10	Yes
Fluorobenzene	1316934	1326674	1326838	1306371	1277734	1298035	1329676	1311752	1	Yes
Chlorobenzene-d5	1029344	1003924	1006908	987366	980049	974934	994664	996741	2	Yes
1,4-Dichlorobenzene-d4	622856	570496	545836	529032	515325	513537	517272	544908	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	wy23i01.d	wy23i02.d	wy23i03.d	wy23i04.d	wy23i05.d	wy23i06.d	wy23i07.d	Avg. RT
t-Butyl alcohol-d10	2.767	2.763	2.763	2.763	2.767	2.770	2.767	2.766
Fluorobenzene	5.071	5.071	5.067	5.067	5.071	5.070	5.067	5.069
Chlorobenzene-d5	8.196	8.196	8.196	8.196	8.196	8.193	8.193	8.195
1,4-Dichlorobenzene-d4	10.073	10.070	10.070	10.070	10.070	10.070	10.070	10.070

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 05/23/2018 at 22:41.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 ICV Date: 05/23/18 Time: 17:49

Lab File ID: wy23v01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3462	0.3324	19.20	20	-4	
#	Chloromethane	0.3678	0.3509	19.08	20	-5	#
	1,3-Butadiene	0.2872	0.2962	21.50	20	8	
*	Vinyl Chloride	0.3825	0.3686	19.28	20	-4	*
	Bromomethane	0.2600	0.2584	19.88	20	-1	
	Chloroethane	0.2207	0.2178	19.74	20	-1	
	Dichlorofluoromethane	0.5720	0.5294	18.51	20	-7	
	n-Pentane	0.4069	0.4248	20.88	20	4	
	Trichlorofluoromethane	0.4229	0.4386	20.74	20	4	
	Ethanol	0.1287	0.0970	395.09	500	-21	
	Freon 123a	0.2797	0.2954	21.12	20	6	
	Acrolein	2.4946	2.2103	132.90	150	-11	
*	1,1-Dichloroethene	0.2131	0.2388	22.41	20	12	*
	Acetone	1.1062	1.0909	147.93	150	-1	
	Freon 113	0.2149	0.2241	20.86	20	4	
	2-Propanol	0.6275	0.6292	150.42	150	0	
	Methyl Iodide	0.4011	0.4026	20.07	20	0	
	Carbon Disulfide	0.7054	0.7040	19.96	20	0	
	Allyl Chloride	0.3409	0.3626	21.27	20	6	
	Methyl Acetate	0.3042	0.2837	18.65	20	-7	
	Methylene Chloride	0.2567	0.2680	20.88	20	4	
	t-Butyl alcohol	1.2383	1.2478	201.54	200	1	
	Acrylonitrile	0.1464	0.1485	101.45	100	1	
	trans-1,2-Dichloroethene	0.2425	0.2638	21.76	20	9	
	Methyl Tertiary Butyl Ether	0.7037	0.6861	19.50	20	-3	
	n-Hexane	0.2794	0.2742	19.63	20	-2	
#	1,1-Dichloroethane	0.4268	0.4360	20.43	20	2	#
	di-Isopropyl ether	0.8141	0.8238	20.24	20	1	
	2-Chloro-1,3-butadiene	0.3626	0.3739	20.62	20	3	
	Ethyl t-butyl ether	0.6640	0.6572	19.80	20	-1	
	cis-1,2-Dichloroethene	0.2755	0.2962	21.50	20	8	
	2-Butanone	0.2085	0.2155	155.03	150	3	
	2,2-Dichloropropane	0.2127	0.2198	20.67	20	3	
	Propionitrile	1.7058	1.8122	159.35	150	6	
	Methacrylonitrile	0.1692	0.1733	153.58	150	2	
	Bromochloromethane	0.1380	0.1356	19.65	20	-2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 ICV Date: 05/23/18 Time: 17:49

Lab File ID: wy23v01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Tetrahydrofuran	1.7717	1.7652	99.63	100	0	
*	Chloroform	0.4296	0.4461	20.77	20	4	*
	1,1,1-Trichloroethane	0.3738	0.3787	20.27	20	1	
	Cyclohexane	0.3786	0.3963	20.94	20	5	
	1,1-Dichloropropene	0.3378	0.3487	20.65	20	3	
	Carbon Tetrachloride	0.2560	0.2541	19.85	20	-1	
	Isobutyl Alcohol	0.4226	0.4300	508.70	500	2	
	Benzene	1.0393	1.0683	20.56	20	3	
	1,2-Dichloroethane	0.3626	0.3596	19.84	20	-1	
	t-Amyl methyl ether	0.6774	0.6836	20.18	20	1	
	n-Heptane	0.2438	0.2415	19.81	20	-1	
	n-Butanol	0.3631	0.3138	864.09	1000	-14	
	Trichloroethene	0.2703	0.2744	20.31	20	2	
	Methylcyclohexane	0.3126	0.3217	20.58	20	3	
*	1,2-Dichloropropane	0.2640	0.2749	20.83	20	4	*
	Dibromomethane	0.1773	0.1793	20.23	20	1	
	1,4-Dioxane	0.1148	0.0807	351.52	500	-30	
	Methyl Methacrylate	0.2691	0.2643	19.65	20	-2	
	Bromodichloromethane	0.3133	0.3047	19.45	20	-3	
	2-Nitropropane	0.0690	0.0597	18.66	20	-7	
	2-Chloroethyl Vinyl Ether	0.1955	0.1880	19.24	20	-4	
	cis-1,3-Dichloropropene	0.4051	0.4054	20.01	20	0	
	4-Methyl-2-pentanone	0.4101	0.4332	105.64	100	6	
*	Toluene	0.9015	0.9332	20.70	20	4	*
	trans-1,3-Dichloropropene	0.4830	0.4849	20.08	20	0	
	Ethyl Methacrylate	0.5836	0.5797	19.86	20	-1	
	1,1,2-Trichloroethane	0.3549	0.3662	20.64	20	3	
	Tetrachloroethene	0.3396	0.3492	20.57	20	3	
	1,3-Dichloropropane	0.5983	0.6047	20.21	20	1	
	2-Hexanone	0.4207	0.4491	106.75	100	7	
	Dibromochloromethane	0.3354	0.3237	19.30	20	-3	
	1,2-Dibromoethane	0.3836	0.3917	20.42	20	2	
#	Chlorobenzene	1.0197	1.0316	20.23	20	1	#
	1,1,1,2-Tetrachloroethane	0.3075	0.3008	19.56	20	-2	
*	Ethylbenzene	1.6463	1.6877	20.50	20	3	*
	m+p-Xylene	0.6627	0.6818	41.16	40	3	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 ICV Date: 05/23/18 Time: 17:49

Lab File ID: wy23v01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	o-Xylene	0.6683	0.6657	19.92	20	0	
	Styrene	1.0961	1.1276	20.57	20	3	
#	Bromoform	0.2260	0.2070	17.54	20	-12	#
	Isopropylbenzene	1.5302	1.5942	20.84	20	4	
	Cyclohexanone	0.4251	0.3744	440.43	500	-12	
	Bromobenzene	0.7903	0.8027	20.31	20	2	
#	1,1,2,2-Tetrachloroethane	1.1058	1.1067	20.02	20	0	#
	1,2,3-Trichloropropane	0.3401	0.3662	21.53	20	8	
	trans-1,4-Dichloro-2-butene	0.2987	0.3288	110.06	100	10	
	n-Propylbenzene	3.2523	3.3932	20.87	20	4	
	2-Chlorotoluene	0.7181	0.7408	20.63	20	3	
	4-Chlorotoluene	0.7770	0.7709	19.84	20	-1	
	1,3,5-Trimethylbenzene	2.3972	2.4200	20.19	20	1	
	tert-Butylbenzene	0.5242	0.5098	19.45	20	-3	
	Pentachloroethane	0.3912	0.3684	18.84	20	-6	
	1,2,4-Trimethylbenzene	2.4991	2.5381	20.31	20	2	
	sec-Butylbenzene	2.6361	2.6463	20.08	20	0	
	1,3-Dichlorobenzene	1.4656	1.4243	19.44	20	-3	
	p-Isopropyltoluene	2.3491	2.3687	20.17	20	1	
	1,4-Dichlorobenzene	1.5642	1.5375	19.66	20	-2	
	1,2,3-Trimethylbenzene	2.6244	2.6469	20.17	20	1	
	Benzyl Chloride	1.6627	1.6108	17.74	20	-11	
	1,3-Diethylbenzene	1.4034	1.3603	19.39	20	-3	
	1,4-Diethylbenzene	1.4374	1.3750	19.13	20	-4	
	1,2-Dichlorobenzene	1.5173	1.4663	19.33	20	-3	
	n-Butylbenzene	1.1463	1.0837	18.91	20	-5	
	1,2-Diethylbenzene	1.2097	1.1640	19.24	20	-4	
	1,2-Dibromo-3-chloropropane	0.2339	0.2253	19.27	20	-4	
	1,3,5-Trichlorobenzene	0.8681	0.8053	18.55	20	-7	
	1,2,4-Trichlorobenzene	0.9007	0.7877	17.68	20	-12	
	Hexachlorobutadiene	0.2678	0.2479	18.51	20	-7	
	Naphthalene	3.5048	3.4054	19.43	20	-3	
	1,2,3-Trichlorobenzene	0.8817	0.7729	17.78	20	-11	
	2-Methylnaphthalene	1.6822	1.4622	17.38	20	-13	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i06.d
/chem2/HP09953.i/18feb22i.b/bf22i05.d
/chem2/HP09953.i/18feb22i.b/bf22i04.d
/chem2/HP09953.i/18feb22i.b/bf22i03.d
/chem2/HP09953.i/18feb22i.b/bf22i02.d
/chem2/HP09953.i/18feb22i.b/bf22i01.d

File /chem2/HP09953.i/18feb22i.b/bf22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09953.i/18jun19a.b/bu19c01.d

RT Summary

Internal Standard Name	File ID: bu19c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	1.930	1.924	Yes
Fluorobenzene	3.956	3.956	Yes
Chlorobenzene-d5	7.156	7.156	Yes
1,4-Dichlorobenzene-d4	9.236	9.236	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: bu19c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	98683	114201	57100	228402	Yes
Fluorobenzene	985350	1207816	603908	2415632	Yes
Chlorobenzene-d5	729820	931957	465978	1863914	Yes
1,4-Dichlorobenzene-d4	418657	549119	274560	1098238	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/19/2018 at 17:06

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/19/18 Time: 15:54

Lab File ID: bu19c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4887	49.70	50	-1	
#	Chloromethane	0.5872	0.5544	47.21	50	-6	#
*	Vinyl Chloride	0.4173	0.3989	47.79	50	-4	*
	Bromomethane	0.2899	0.3158	54.47	50	9	
	Chloroethane	0.2334	0.2339	50.11	50	0	
	Trichlorofluoromethane	0.5369	0.5857	54.54	50	9	
	Ethanol	0.1211	0.1101	2273.12	2500	-9	
	Freon 123a	0.3518	0.3480	49.47	50	-1	
	Acrolein	2.4281	2.3300	479.80	500	-4	
*	1,1-Dichloroethene	0.2459	0.2452	49.85	50	0	*
	Acetone	0.0248	0.0213	86.03	100	-14	
	Freon 113	0.2960	0.2850	48.14	50	-4	
	2-Propanol	1.1163	1.1226	251.41	250	1	
	Methyl Iodide	0.5387	0.5289	49.09	50	-2	
	Carbon Disulfide	0.8424	0.8984	53.32	50	7	
	Methyl Acetate	0.2090	0.1882	45.03	50	-10	
	Allyl Chloride	0.4892	0.5024	51.35	50	3	
	Methylene Chloride	0.2885	0.2731	47.32	50	-5	
	t-Butyl alcohol	1.2418	1.2466	250.98	250	0	
	Acrylonitrile	0.0991	0.0966	48.74	50	-3	
	Methyl Tertiary Butyl Ether	0.7975	0.8860	55.55	50	11	
	trans-1,2-Dichloroethene	0.2884	0.3099	53.71	50	7	
	n-Hexane	0.5126	0.4471	43.61	50	-13	
#	1,1-Dichloroethane	0.5731	0.6264	54.65	50	9	#
	di-Isopropyl ether	1.1602	1.2193	52.54	50	5	
	2-Chloro-1,3-butadiene	0.5207	0.6114	58.71	50	17	
	Ethyl t-butyl ether	0.9727	1.0249	52.69	50	5	
	2-Butanone	7.3204	6.5259	89.15	100	-11	
	cis-1,2-Dichloroethene	0.3342	0.3347	50.07	50	0	
	2,2-Dichloropropane	0.4251	0.5237	61.60	50	23	
	Propionitrile	2.0227	1.9680	243.24	250	-3	
	Methacrylonitrile	0.1170	0.1063	113.53	125	-9	
	Bromochloromethane	0.1635	0.1513	46.26	50	-7	
	Tetrahydrofuran	1.5856	1.4316	90.29	100	-10	
*	Chloroform	0.5364	0.5934	55.31	50	11	*
	1,1,1-Trichloroethane	0.5181	0.5760	55.58	50	11	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/19/18 Time: 15:54

Lab File ID: bu19c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Cyclohexane	0.6302	0.5724	45.42	50	-9	
	Cyclohexane(2)	0.5080	0.4320	42.52	50	-15	
	Cyclohexane(3)	0.1808	0.1644	45.46	50	-9	
	1,1-Dichloropropene	0.4338	0.4658	53.69	50	7	
	Carbon Tetrachloride	0.3830	0.4561	59.53	50	19	
	Isobutyl Alcohol	0.5096	0.5459	669.52	625	7	
	Benzene	1.2609	1.2817	50.82	50	2	
	1,2-Dichloroethane	0.4097	0.4794	58.51	50	17	
	1,2-Dichloroethane(2)	0.0353	0.0340	48.11	50	-4	
	t-Amyl methyl ether	0.8144	0.8245	50.62	50	1	
	n-Heptane	0.6124	0.4274	34.90	50	-30	
	n-Butanol	0.3762	0.3839	1275.53	1250	2	
	Trichloroethene	0.3227	0.3273	50.72	50	1	
	Methylcyclohexane	0.6000	0.5571	46.43	50	-7	
*	1,2-Dichloropropane	0.3331	0.3381	50.76	50	2	*
	Methyl Methacrylate	0.1907	0.1808	47.41	50	-5	
	1,4-Dioxane	0.1410	0.1351	598.69	625	-4	
	Dibromomethane	0.1795	0.1800	50.13	50	0	
	Bromodichloromethane	0.3833	0.4394	57.33	50	15	
	2-Nitropropane	2.5306	3.6375	123.48	100	23	
	2-Chloroethyl Vinyl Ether	0.1644	0.1458	44.35	50	-11	
	cis-1,3-Dichloropropene	0.4668	0.5137	55.02	50	10	
	4-Methyl-2-pentanone	0.3036	0.2700	88.91	100	-11	
*	Toluene	0.9983	1.0247	51.32	50	3	*
	trans-1,3-Dichloropropene	0.4982	0.5979	60.00	50	20	
	Ethyl Methacrylate	0.4494	0.4823	53.66	50	7	
	1,1,2-Trichloroethane	0.3230	0.3308	51.22	50	2	
	Tetrachloroethene	0.4631	0.4405	47.55	50	-5	
	1,3-Dichloropropane	0.5552	0.5890	53.04	50	6	
	2-Hexanone	0.2699	0.2499	92.59	100	-7	
	Dibromochloromethane	0.3545	0.4042	57.01	50	14	
	1,2-Dibromoethane	0.3271	0.3327	50.86	50	2	
	1-Chlorohexane	0.5308	0.5053	47.59	50	-5	
#	Chlorobenzene	1.1089	1.1081	49.96	50	0	#
	1,1,1,2-Tetrachloroethane	0.3690	0.4143	56.14	50	12	
*	Ethylbenzene	1.9040	1.9873	52.19	50	4	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/19/18 Time: 15:54

Lab File ID: bu19c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	m+p-Xylene	0.7574	0.7509	99.14	100	-1	
	o-Xylene	0.7545	0.7356	48.75	50	-3	
	Styrene	1.1879	1.2120	51.01	50	2	
#	Bromoform	0.2222	0.2529	53.44	50	7	#
	Isopropylbenzene	1.9082	1.9194	50.29	50	1	
	Cyclohexanone	0.9002	0.6279	438.18	625	-30	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7902	52.30	50	5	#
	Bromobenzene	0.8408	0.8448	50.23	50	0	
	trans-1,4-Dichloro-2-butene	0.2069	0.2723	164.52	125	32	
	1,2,3-Trichloropropane	0.2073	0.2213	53.37	50	7	
	n-Propylbenzene	3.8098	4.0287	52.87	50	6	
	2-Chlorotoluene	0.7939	0.7849	49.43	50	-1	
	1,3,5-Trimethylbenzene	2.8159	2.9318	52.06	50	4	
	4-Chlorotoluene	0.8226	0.8122	49.37	50	-1	
	tert-Butylbenzene	0.6559	0.6187	47.16	50	-6	
	Pentachloroethane	0.4798	0.5561	57.96	50	16	
	1,2,4-Trimethylbenzene	2.8653	3.0286	52.85	50	6	
	sec-Butylbenzene	3.5929	3.5166	48.94	50	-2	
	1,3-Dichlorobenzene	1.6523	1.6018	48.47	50	-3	
	p-Isopropyltoluene	3.2092	3.1267	48.71	50	-3	
	1,4-Dichlorobenzene	1.7189	1.6475	47.92	50	-4	
	1,2,3-Trimethylbenzene	2.9416	3.1603	53.72	50	7	
	Benzyl Chloride	0.2338	0.2941	56.04	50	12	
	1,3-Diethylbenzene	1.8848	1.9740	52.37	50	5	
	1,4-Diethylbenzene	2.0114	2.0919	52.00	50	4	
	n-Butylbenzene	1.6592	1.5706	47.33	50	-5	
	1,2-Dichlorobenzene	1.6409	1.5990	48.72	50	-3	
	1,2-Diethylbenzene	1.6079	1.6642	51.75	50	4	
	1,2-Dibromo-3-chloropropane	0.1332	0.1583	59.44	50	19	
	1,3,5-Trichlorobenzene	1.3773	1.2519	45.45	50	-9	
	1,2,4-Trichlorobenzene	1.2763	1.1700	45.84	50	-8	
	Hexachlorobutadiene	0.6574	0.4965	36.50	50	-27	
	Naphthalene	2.6627	2.5346	47.59	50	-5	
	1,2,3-Trichlorobenzene	1.1896	1.1081	46.57	50	-7	
	2-Methylnaphthalene	1.6549	1.7246	52.11	50	4	
	Dibromofluoromethane	0.2502	0.2590	51.77	50	4	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/19/18 Time: 15:54

Lab File ID: bu19c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Dibromofluoromethane(2)	0.2550	0.2637	51.70	50	3
1,2-Dichloroethane-d4	0.0548	0.0546	49.79	50	0
1,2-Dichloroethane-d4(2)	0.2800	0.3240	57.87	50	16
1,2-Dichloroethane-d4(3)	0.0347	0.0333	48.09	50	-4
Toluene-d8	1.3054	1.3573	51.99	50	4
Toluene-d8(2)	0.8436	0.8688	51.49	50	3
4-Bromofluorobenzene	0.4987	0.5220	52.34	50	5
4-Bromofluorobenzene(2)	0.4342	0.4347	50.06	50	0

Average %Drift 7

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem/HP07566.i/18may29i.b/ry29i10.d
/chem/HP07566.i/18may29i.b/ry29i11.d
/chem/HP07566.i/18may29i.b/ry29i12.d
/chem/HP07566.i/18may29i.b/ry29i13.d
/chem/HP07566.i/18may29i.b/ry29i14.d
/chem/HP07566.i/18may29i.b/ry29i15.d

File /chem/HP07566.i/18may29i.b/ry29i13.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem/HP07566.i/18jun20a.b/ru20c01.d

RT Summary

Internal Standard Name	File ID: ru20c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	4.006	4.014	Yes
Fluorobenzene	7.498	7.495	Yes
Chlorobenzene-d5	11.043	11.041	Yes
1,4-Dichlorobenzene-d4	12.949	12.954	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: ru20c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	151430	139011	69506	278022	Yes
Fluorobenzene	1083081	1067421	533710	2134842	Yes
Chlorobenzene-d5	771972	706361	353180	1412722	Yes
1,4-Dichlorobenzene-d4	253434	248671	124336	497342	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/20/2018 at 08:58

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/20/18 Time: 08:31

Lab File ID: ru20c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3286	0.3328	50.64	50	1	
#	Chloromethane	0.4068	0.3806	46.78	50	-6	#
*	Vinyl Chloride	0.3307	0.2976	44.99	50	-10	*
	Bromomethane	5.9534	5.6912	52.10	50	4	
	Chloroethane	5.2666	4.4595	42.34	50	-15	
	Trichlorofluoromethane	0.3509	0.3566	50.81	50	2	
	Ethanol	0.1399	0.1516	2708.90	2500	8	
	Freon 123a	0.3271	0.3020	46.16	50	-8	
	Acrolein	2.8968	2.6083	450.20	500	-10	
*	1,1-Dichloroethene	0.2135	0.2051	48.03	50	-4	*
*	1,1-Dichloroethene(2)	0.1243	0.1178	47.40	50	-5	*
	Acetone	0.0308	0.0319	103.59	100	4	
	Freon 113	0.1690	0.1584	46.87	50	-6	
	2-Propanol	0.7829	0.7995	255.30	250	2	
	Methyl Iodide	0.3817	0.3634	47.60	50	-5	
	Carbon Disulfide	0.6368	0.6503	51.06	50	2	
	Methyl Acetate	0.2752	0.2814	51.12	50	2	
	Allyl Chloride	0.5357	0.5096	47.57	50	-5	
	Methylene Chloride	0.2825	0.2641	46.73	50	-7	
	t-Butyl alcohol	1.2390	1.2524	252.70	250	1	
	Acrylonitrile	0.1404	0.1321	47.05	50	-6	
	Methyl Tertiary Butyl Ether	0.8905	0.8297	46.59	50	-7	
	trans-1,2-Dichloroethene	0.2559	0.2358	46.08	50	-8	
	n-Hexane	0.2094	0.1880	44.88	50	-10	
#	1,1-Dichloroethane	0.5373	0.4897	45.57	50	-9	#
	di-Isopropyl ether	1.1148	1.0450	46.87	50	-6	
	2-Chloro-1,3-butadiene	0.4719	0.4214	44.65	50	-11	
	Ethyl t-butyl ether	0.9921	0.9006	45.39	50	-9	
	2-Butanone	6.7519	6.0072	88.97	100	-11	
	2-Butanone(2)	1.4153	1.3287	93.88	100	-6	
	cis-1,2-Dichloroethene	0.2829	0.2715	47.98	50	-4	
	2,2-Dichloropropane	0.3753	0.3549	47.29	50	-5	
	Propionitrile	0.0492	0.0489	248.48	250	-1	
	Methacrylonitrile	0.1395	0.1366	122.40	125	-2	
	Bromochloromethane	0.1299	0.1297	49.94	50	0	
	Tetrahydrofuran	1.4686	1.3545	92.23	100	-8	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/20/18 Time: 08:31

Lab File ID: ru20c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.4616	0.4409	47.76	50	-4	*
	1,1,1-Trichloroethane	0.3882	0.3452	44.46	50	-11	
	Cyclohexane	0.3113	0.2775	44.57	50	-11	
	Cyclohexane(2)	0.2334	0.2091	44.79	50	-10	
	Cyclohexane(3)	0.0916	0.0829	45.25	50	-9	
	1,1-Dichloropropene	0.3521	0.3276	46.53	50	-7	
	Carbon Tetrachloride	0.2471	0.2436	49.30	50	-1	
	Isobutyl Alcohol	0.4318	0.4627	669.80	625	7	
	Benzene	1.1205	1.0745	47.95	50	-4	
	1,2-Dichloroethane	0.4166	0.4126	49.52	50	-1	
	1,2-Dichloroethane(2)	0.0344	0.0341	49.59	50	-1	
	t-Amyl methyl ether	0.8790	0.8196	46.62	50	-7	
	n-Heptane	0.2328	0.2091	44.92	50	-10	
	n-Butanol	0.3221	0.3314	1286.32	1250	3	
	Trichloroethene	0.2486	0.2388	48.03	50	-4	
	Methylcyclohexane	0.2275	0.2163	47.54	50	-5	
*	1,2-Dichloropropane	0.3171	0.2997	47.26	50	-5	*
	Methyl Methacrylate	0.2410	0.2405	49.90	50	0	
	1,4-Dioxane	0.1130	0.1210	668.93	625	7	
	Dibromomethane	0.1694	0.1748	51.57	50	3	
	Bromodichloromethane	0.3256	0.3489	53.58	50	7	
	2-Nitropropane	2.8016	3.2248	110.77	100	11	
	2-Chloroethyl Vinyl Ether	0.2250	0.1948	43.28	50	-13	
	cis-1,3-Dichloropropene	0.4672	0.4840	51.79	50	4	
	4-Methyl-2-pentanone	0.3589	0.3632	101.18	100	1	
*	Toluene	0.9182	0.8409	45.79	50	-8	*
	trans-1,3-Dichloropropene	0.6274	0.6512	51.90	50	4	
	Ethyl Methacrylate	0.6652	0.6500	48.86	50	-2	
	1,1,2-Trichloroethane	0.3590	0.3461	48.20	50	-4	
	Tetrachloroethene	0.2395	0.2247	46.92	50	-6	
	1,3-Dichloropropane	0.6854	0.6759	49.31	50	-1	
	2-Hexanone	0.3756	0.3756	100.01	100	0	
	Dibromochloromethane	0.3143	0.3411	54.26	50	9	
	1,2-Dibromoethane	0.3629	0.3647	50.24	50	0	
	1-Chlorohexane	0.3214	0.2941	45.76	50	-8	
#	Chlorobenzene	0.9288	0.8786	47.30	50	-5	#

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/20/18 Time: 08:31

Lab File ID: ru20c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1,2-Tetrachloroethane	0.2916	0.2891	49.56	50	-1	
*	Ethylbenzene	1.4448	1.3318	46.09	50	-8	*
	m+p-Xylene	0.5366	0.4919	91.67	100	-8	
	o-Xylene	0.5460	0.5114	46.83	50	-6	
	Styrene	0.9718	0.8953	46.07	50	-8	
#	Bromoform	0.1690	0.1853	51.79	50	4	#
	Isopropylbenzene	1.1376	1.0262	45.10	50	-10	
	Cyclohexanone	0.3954	0.4104	648.71	625	4	
#	1,1,2,2-Tetrachloroethane	1.3972	1.3818	49.45	50	-1	#
	Bromobenzene	0.8866	0.8778	49.51	50	-1	
	trans-1,4-Dichloro-2-butene	0.4612	0.4888	132.47	125	6	
	1,2,3-Trichloropropane	0.3887	0.3891	50.05	50	0	
	n-Propylbenzene	3.7564	3.5641	47.44	50	-5	
	2-Chlorotoluene	0.7826	0.7437	47.51	50	-5	
	1,3,5-Trimethylbenzene	2.7396	2.5783	47.06	50	-6	
	4-Chlorotoluene	0.8298	0.7998	48.19	50	-4	
	tert-Butylbenzene	0.5191	0.4778	46.02	50	-8	
	Pentachloroethane	0.4337	0.4663	53.76	50	8	
	1,2,4-Trimethylbenzene	2.8886	2.7530	47.65	50	-5	
	sec-Butylbenzene	3.0778	2.8202	45.82	50	-8	
	1,3-Dichlorobenzene	1.4176	1.3482	47.55	50	-5	
	p-Isopropyltoluene	2.6428	2.4410	46.18	50	-8	
	1,4-Dichlorobenzene	1.4877	1.4260	47.93	50	-4	
	1,2,3-Trimethylbenzene	2.9976	2.8625	47.75	50	-5	
	Benzyl Chloride	0.4648	0.5105	54.91	50	10	
	1,3-Diethylbenzene	1.5628	1.4557	46.57	50	-7	
	1,4-Diethylbenzene	1.5823	1.4999	47.40	50	-5	
	n-Butylbenzene	1.3064	1.1934	45.68	50	-9	
	1,2-Dichlorobenzene	1.4170	1.3522	47.71	50	-5	
	1,2-Diethylbenzene	1.3409	1.2468	46.49	50	-7	
	1,2-Dibromo-3-chloropropane	0.2392	0.2530	52.89	50	6	
	1,3,5-Trichlorobenzene	0.8221	0.7836	47.65	50	-5	
	1,2,4-Trichlorobenzene	0.8037	0.7669	47.71	50	-5	
	Hexachlorobutadiene	0.3295	0.3159	47.95	50	-4	
	Naphthalene	2.8921	2.8328	48.97	50	-2	
	1,2,3-Trichlorobenzene	0.7510	0.7286	48.51	50	-3	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/20/18 Time: 08:31

Lab File ID: ru20c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Methylnaphthalene	1.5065	1.5553	51.62	50	3
Dibromofluoromethane	0.2216	0.2194	49.52	50	-1
Dibromofluoromethane(2)	0.2283	0.2235	48.95	50	-2
1,2-Dichloroethane-d4	0.0609	0.0616	50.57	50	1
1,2-Dichloroethane-d4(2)	0.3314	0.3260	49.19	50	-2
1,2-Dichloroethane-d4(3)	0.0387	0.0389	50.21	50	0
Toluene-d8	1.3015	1.2397	47.63	50	-5
Toluene-d8(2)	0.8462	0.8019	47.38	50	-5
4-Bromofluorobenzene	0.4307	0.4061	47.14	50	-6
4-Bromofluorobenzene(2)	0.2737	0.2654	48.48	50	-3

Average %Drift 5

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09137.i/18may23i.b/wy23i07.d
/chem2/HP09137.i/18may23i.b/wy23i06.d
/chem2/HP09137.i/18may23i.b/wy23i05.d
/chem2/HP09137.i/18may23i.b/wy23i04.d
/chem2/HP09137.i/18may23i.b/wy23i03.d
/chem2/HP09137.i/18may23i.b/wy23i02.d
/chem2/HP09137.i/18may23i.b/wy23i01.d

File /chem2/HP09137.i/18may23i.b/wy23i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09137.i/18jun25a.b/wu25c01.d

RT Summary

Internal Standard Name	File ID: wu25c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	2.767	2.763	Yes
Fluorobenzene	5.071	5.067	Yes
Chlorobenzene-d5	8.196	8.196	Yes
1,4-Dichlorobenzene-d4	10.070	10.070	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: wu25c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	321312	229067	114534	458134	Yes
Fluorobenzene	1360227	1326838	663419	2653676	Yes
Chlorobenzene-d5	1074874	1006908	503454	2013816	Yes
1,4-Dichlorobenzene-d4	592463	545836	272918	1091672	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/25/2018 at 10:52

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date: 06/25/18 Time: 09:53

Lab File ID: wu25c01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3462	0.3939	56.90	50	14	
#	Chloromethane	0.3678	0.3513	47.75	50	-4	#
	1,3-Butadiene	0.2872	0.2826	52.02	50	4	
*	Vinyl Chloride	0.3825	0.3409	44.57	50	-11	*
	Bromomethane	0.2600	0.2786	53.57	50	7	
	Chloroethane	0.2207	0.2121	48.05	50	-4	
	n-Pentane	0.4069	0.3576	43.94	50	-12	
	Trichlorofluoromethane	0.4229	0.4767	56.35	50	13	
	Ethanol	0.1287	0.1381	1638.52	1250	31	
	Freon 123a	0.2797	0.2715	48.53	50	-3	
	Acrolein	2.4946	1.8040	361.58	500	-28	
*	1,1-Dichloroethene	0.2131	0.2248	52.75	50	6	*
*	1,1-Dichloroethene(2)	0.1054	0.1118	53.01	50	6	*
	Acetone	1.1062	1.0012	90.51	100	-9	
	Freon 113	0.2149	0.2272	52.85	50	6	
	2-Propanol	0.6275	0.6133	244.33	250	-2	
	Methyl Iodide	0.4011	0.4227	52.69	50	5	
	Carbon Disulfide	0.7054	0.7652	54.23	50	8	
	Allyl Chloride	0.3409	0.3602	52.83	50	6	
	Methyl Acetate	0.3042	0.3039	49.95	50	0	
	Methylene Chloride	0.2567	0.2716	52.89	50	6	
	t-Butyl alcohol	1.2383	1.0937	220.81	250	-12	
	Acrylonitrile	0.1464	0.1761	60.13	50	20	
	trans-1,2-Dichloroethene	0.2425	0.2445	50.42	50	1	
	Methyl Tertiary Butyl Ether	0.7037	0.6807	48.37	50	-3	
	n-Hexane	0.2794	0.3179	56.89	50	14	
#	1,1-Dichloroethane	0.4268	0.4408	51.64	50	3	#
	di-Isopropyl ether	0.8141	0.8208	50.41	50	1	
	2-Chloro-1,3-butadiene	0.3626	0.3777	52.09	50	4	
	Ethyl t-butyl ether	0.6640	0.6718	50.59	50	1	
	cis-1,2-Dichloroethene	0.2755	0.2776	50.39	50	1	
	2-Butanone	0.2085	0.2401	115.12	100	15	
	2,2-Dichloropropane	0.2127	0.1802	42.36	50	-15	
	Propionitrile	1.7058	1.4521	212.82	250	-15	
	Methacrylonitrile	0.1692	0.1738	128.36	125	3	
	Bromochloromethane	0.1380	0.1403	50.82	50	2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date: 06/25/18 Time: 09:53

Lab File ID: wu25c01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Tetrahydrofuran	1.7717	1.4108	79.63	100	-20	
*	Chloroform	0.4296	0.4345	50.56	50	1	*
	1,1,1-Trichloroethane	0.3738	0.3603	48.20	50	-4	
	Cyclohexane	0.3786	0.4114	54.33	50	9	
	Cyclohexane(2)	0.3355	0.3485	51.95	50	4	
	Cyclohexane(3)	0.1167	0.1242	53.21	50	6	
	1,1-Dichloropropene	0.3378	0.3437	50.87	50	2	
	Carbon Tetrachloride	0.2560	0.2999	58.59	50	17	
	Isobutyl Alcohol	0.4226	0.3917	579.26	625	-7	
	Benzene	1.0393	1.0525	50.63	50	1	
	1,2-Dichloroethane	0.3626	0.3526	48.62	50	-3	
	1,2-Dichloroethane(2)	0.0350	0.0357	51.01	50	2	
	t-Amyl methyl ether	0.6774	0.7143	52.73	50	5	
	n-Heptane	0.2438	0.2705	55.48	50	11	
	n-Butanol	0.3631	0.3375	1161.69	1250	-7	
	Trichloroethene	0.2703	0.2656	49.13	50	-2	
	Methylcyclohexane	0.3126	0.3589	57.40	50	15	
	Methylcyclohexane(2)	0.1469	0.1650	56.18	50	12	
*	1,2-Dichloropropane	0.2640	0.2730	51.71	50	3	*
	Dibromomethane	0.1773	0.1827	51.54	50	3	
	1,4-Dioxane	0.1148	0.1079	587.81	625	-6	
	Methyl Methacrylate	0.2691	0.2842	52.82	50	6	
	Bromodichloromethane	0.3133	0.3349	53.44	50	7	
	2-Nitropropane	0.0690	0.1003	133.37	100	33	
	2-Chloroethyl Vinyl Ether	0.1955	0.1938	49.58	50	-1	
	cis-1,3-Dichloropropene	0.4051	0.4338	53.54	50	7	
	4-Methyl-2-pentanone	0.4101	0.4754	115.93	100	16	
*	Toluene	0.9015	0.8599	47.69	50	-5	*
	trans-1,3-Dichloropropene	0.4830	0.5033	52.10	50	4	
	Ethyl Methacrylate	0.5836	0.5971	51.15	50	2	
	1,1,2-Trichloroethane	0.3549	0.3451	48.63	50	-3	
	Tetrachloroethene	0.3396	0.3371	49.63	50	-1	
	1,3-Dichloropropane	0.5983	0.5817	48.60	50	-3	
	2-Hexanone	0.4207	0.4611	109.61	100	10	
	Dibromochloromethane	0.3354	0.3510	52.32	50	5	
	1,2-Dibromoethane	0.3836	0.3771	49.16	50	-2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date: 06/25/18 Time: 09:53

Lab File ID: wu25c01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
#	Chlorobenzene	1.0197	0.9706	47.59	50	-5	#
	1,1,1,2-Tetrachloroethane	0.3075	0.3152	51.24	50	2	
*	Ethylbenzene	1.6463	1.6194	49.18	50	-2	*
	m+p-Xylene	0.6627	0.6481	97.80	100	-2	
	o-Xylene	0.6683	0.6416	48.00	50	-4	
	Styrene	1.0961	1.0917	49.80	50	0	
#	Bromoform	0.2260	0.2446	47.40	50	-5	#
	Isopropylbenzene	1.5302	1.5131	49.44	50	-1	
	Cyclohexanone	0.4251	0.3472	510.48	625	-18	
	Bromobenzene	0.7903	0.7592	48.03	50	-4	
#	1,1,2,2-Tetrachloroethane	1.1058	1.0511	47.53	50	-5	#
	1,2,3-Trichloropropane	0.3401	0.3268	48.05	50	-4	
	trans-1,4-Dichloro-2-butene	0.2987	0.2479	103.71	125	-17	
	n-Propylbenzene	3.2523	3.1744	48.80	50	-2	
	2-Chlorotoluene	0.7181	0.6770	47.14	50	-6	
	4-Chlorotoluene	0.7770	0.7317	47.08	50	-6	
	1,3,5-Trimethylbenzene	2.3972	2.3334	48.67	50	-3	
	tert-Butylbenzene	0.5242	0.5054	48.21	50	-4	
	Pentachloroethane	0.3912	0.4047	51.72	50	3	
	1,2,4-Trimethylbenzene	2.4991	2.4569	49.15	50	-2	
	sec-Butylbenzene	2.6361	2.6277	49.84	50	0	
	1,3-Dichlorobenzene	1.4656	1.3935	47.54	50	-5	
	p-Isopropyltoluene	2.3491	2.3865	50.80	50	2	
	1,4-Dichlorobenzene	1.5642	1.4612	46.71	50	-7	
	1,2,3-Trimethylbenzene	2.6244	2.5166	47.95	50	-4	
	Benzyl Chloride	1.6627	1.9663	49.83	50	0	
	1,3-Diethylbenzene	1.4034	1.3600	48.45	50	-3	
	1,4-Diethylbenzene	1.4374	1.4256	49.59	50	-1	
	1,2-Dichlorobenzene	1.5173	1.4139	46.59	50	-7	
	n-Butylbenzene	1.1463	1.1288	49.24	50	-2	
	1,2-Diethylbenzene	1.2097	1.1631	48.08	50	-4	
	1,2-Dibromo-3-chloropropane	0.2339	0.2400	51.31	50	3	
	1,3,5-Trichlorobenzene	0.8681	0.8781	50.57	50	1	
	1,2,4-Trichlorobenzene	0.9007	0.8832	49.75	50	-1	
	Hexachlorobutadiene	0.2678	0.3035	56.65	50	13	
	Naphthalene	3.5048	3.4889	49.77	50	0	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09137 Calibration Date: 06/25/18 Time: 09:53

Lab File ID: wu25c01.d Init. Calib. Date(s): 05/23/18 05/23/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,2,3-Trichlorobenzene	0.8817	0.8612	49.97	50	0
2-Methylnaphthalene	1.6822	1.6375	48.67	50	-3
Dibromofluoromethane	0.2288	0.2310	50.48	50	1
Dibromofluoromethane(2)	0.2340	0.2365	50.54	50	1
1,2-Dichloroethane-d4	0.0626	0.0603	48.16	50	-4
1,2-Dichloroethane-d4(2)	0.2801	0.2782	49.67	50	-1
1,2-Dichloroethane-d4(3)	0.0398	0.0392	49.19	50	-2
Toluene-d8	1.3290	1.2908	48.56	50	-3
Toluene-d8(2)	0.8653	0.8336	48.17	50	-4
4-Bromofluorobenzene	0.4872	0.4919	50.48	50	1
4-Bromofluorobenzene(2)	0.3830	0.4027	52.57	50	5

Average %Drift 6

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu19c01.d Date Analyzed: 06/19/18

Instrument ID: HP09953 Time Analyzed: 15:54

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	98683	1.930	985350	3.956	729820	7.156	418657	9.236
UPPER LIMIT	197366	2.430	1970700	4.456	1459640	7.656	837314	9.736
LOWER LIMIT	49342	1.430	492675	3.456	364910	6.656	209328	8.736
LAB SAMPLE ID								
01 VBLKB15	101601	1.918	915411	3.950	672740	7.156	362813	9.236
02 LCSB15	115774	1.936	952991	3.962	699996	7.156	403216	9.236
03 LCDB15	131051	1.924	977971	3.950	714758	7.150	411315	9.236
04 9661818	71080	1.930	939549	3.956	698244	7.156	375792	9.236
05 9661819	74333	1.924	893567	3.956	659384	7.156	349148	9.236
06 9661820	85838	1.918	876379	3.950	662127	7.156	354644	9.236
07 9661820MS	84599	1.924	941638	3.950	709055	7.156	402635	9.236
08 9661821	65830	1.918	858047	3.950	631207	7.156	323589	9.236
09 9661822	80118	1.924	882882	3.956	669247	7.156	351196	9.236
10 9661824	60780	1.930	847617	3.956	634021	7.156	325242	9.236
11 9661825	67638	1.930	860399	3.956	635326	7.156	330848	9.236
12 9661826	73968	1.918	889009	3.950	673724	7.156	357075	9.236
13 9661876	64779	1.930	831529	3.956	629567	7.156	329862	9.236
14 9661877	65140	1.924	837319	3.950	619116	7.156	324992	9.236
15 9661878	82132	1.924	864240	3.956	623283	7.156	303799	9.236
16 9661879	62545	1.924	822661	3.956	621318	7.156	318298	9.236
17 9661880	61654	1.912	855671	3.950	654164	7.156	342302	9.236
18 9661881	70155	1.912	855740	3.956	637200	7.156	335912	9.236
19 9661882	72592	1.924	820833	3.956	612995	7.156	318120	9.236
20 9661883	68315	1.924	821656	3.956	625661	7.156	319223	9.236
21 9661885	69740	1.924	830863	3.956	606886	7.156	315342	9.236
22 9661886	63452	1.918	816093	3.956	620446	7.156	320981	9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu19c01.d Date Analyzed: 06/19/18

Instrument ID: HP09953 Time Analyzed: 15:54

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	98683	1.930	985350	3.956	729820	7.156	418657	9.236
UPPER LIMIT	197366	2.430	1970700	4.456	1459640	7.656	837314	9.736
LOWER LIMIT	49342	1.430	492675	3.456	364910	6.656	209328	8.736
LAB SAMPLE ID								
23 9661887	75418	1.924	848988	3.956	633593	7.156	336776	9.236
24 9661888	71607	1.924	802960	3.950	608776	7.156	315453	9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): ru20c01.d Date Analyzed: 06/20/18

Instrument ID: HP07566 Time Analyzed: 08:31

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	151430	4.006	1083081	7.498	771972	11.043	253434	12.949
UPPER LIMIT	302860	4.506	2166162	7.998	1543944	11.543	506868	13.449
LOWER LIMIT	75715	3.506	541540	6.998	385986	10.543	126717	12.449
LAB SAMPLE ID								
01 LCSR95	143797	4.009	984111	7.494	627243	11.043	219575	12.952
02 LCDR95	154764	4.005	1101328	7.500	744992	11.042	254539	12.951
03 VBLKR95	139681	4.008	1079778	7.502	731222	11.044	257163	12.950
04 9661884	138553	4.003	1062194	7.494	699148	11.043	257100	12.952
05 9661893	144701	4.014	1081494	7.499	772555	11.041	267680	12.950
06 9661823	128284	4.014	1045714	7.502	677861	11.044	224439	12.950
07 9661823DL	145442	4.005	1076907	7.500	712512	11.042	229699	12.952
08 9658287	152375	4.020	1057489	7.498	746881	11.044	281991	12.953
09 9658287DL	147271	4.006	1002072	7.501	695052	11.043	241286	12.953
10 9651064RE	145969	4.009	1032085	7.500	693676	11.043	240878	12.952
11 9660719	145428	4.004	1041294	7.504	666814	11.044	241447	12.953
12 9654474RE	125258	4.000	905633	7.501	634171	11.044	224474	12.953
13 9654476RE	169213	4.000	1289889	7.501	867588	11.044	280318	12.953
14 9654478RE	153835	4.002	1076159	7.500	729193	11.045	247379	12.951
15 9660504	157990	4.007	1039533	7.501	715693	11.044	236374	12.953
16 9660504DL	155334	4.010	1028703	7.498	691264	11.044	236642	12.953
17 9660505	166134	4.009	1081882	7.500	710271	11.043	277409	12.952
18 9660505DL	139205	4.009	946479	7.501	666528	11.043	226973	12.952
19 9660506	156576	4.016	1043356	7.503	691986	11.046	243801	12.952
20 9660506DL	148407	4.007	1064240	7.502	687486	11.044	238925	12.953
21 9658112	145354	4.009	1012355	7.500	683343	11.043	290013	12.952
22 9660719RE	142871	4.000	1029532	7.501	677395	11.043	243661	12.952

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): wu25c01.d Date Analyzed: 06/25/18

Instrument ID: HP09137 Time Analyzed: 09:53

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	321312	2.766	1360227	5.070	1074874	8.196	592463	10.070
UPPER LIMIT	642624	3.266	2720454	5.570	2149748	8.696	1184926	10.570
LOWER LIMIT	160656	2.266	680114	4.570	537437	7.696	296232	9.570
LAB SAMPLE ID								
01 LCSW95	301748	2.770	1346359	5.067	1056029	8.193	569850	10.070
02 LCSW96	301748	2.770	1346359	5.067	1056029	8.193	569850	10.070
03 LCDW95	301881	2.770	1357300	5.067	1060907	8.193	569194	10.070
04 VBLKW95	295145	2.770	1316659	5.070	1040311	8.193	545248	10.070
05 VBLKW96	295145	2.770	1316659	5.070	1040311	8.193	545248	10.070
06 9657733	165688	2.766	1323617	5.070	1031985	8.196	537763	10.070
07 9657735	211936	2.766	1245931	5.070	979224	8.193	492558	10.070
08 9657736	164524	2.773	1276638	5.071	1001816	8.193	519125	10.070
09 9661680	233507	2.763	1285436	5.070	1009753	8.196	523136	10.070
10 9661814	298740	2.763	1305239	5.067	1029144	8.193	527523	10.070
11 9661815MS	334793	2.767	1334166	5.067	1044078	8.193	550266	10.070
12 9661816MSD	337682	2.763	1339730	5.067	1053689	8.193	562524	10.070
13 9659886DL	243674	2.763	1266033	5.067	1007146	8.193	537266	10.070
14 9661817	260968	2.763	1300127	5.070	1039996	8.193	568408	10.070
15 9661827	317029	2.766	1308588	5.067	1043445	8.193	551300	10.070
16 9661828	295002	2.766	1282445	5.067	1015539	8.193	527245	10.070
17 9661829	304169	2.766	1287610	5.067	1025081	8.193	538949	10.070
18 9661830	295253	2.766	1276336	5.067	1005133	8.193	525531	10.070
19 9662245	269180	2.766	1286223	5.067	1008371	8.193	519118	10.070
20 9662247	297618	2.766	1263154	5.070	993838	8.193	515272	10.070
21 9662249	288530	2.767	1254403	5.067	997598	8.193	510580	10.070
22 9662251	296341	2.766	1246728	5.071	983304	8.193	512388	10.070

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): wu25c01.d Date Analyzed: 06/25/18

Instrument ID: HP09137 Time Analyzed: 09:53

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	321312	2.766	1360227	5.070	1074874	8.196	592463	10.070
UPPER LIMIT	642624	3.266	2720454	5.570	2149748	8.696	1184926	10.570
LOWER LIMIT	160656	2.266	680114	4.570	537437	7.696	296232	9.570
LAB SAMPLE ID								
23 9662253	298849	2.763	1247224	5.067	988240	8.193	515360	10.070
24 9662255	307726	2.767	1253778	5.068	988021	8.193	519589	10.070
25 9662257	307440	2.766	1241227	5.071	977602	8.193	516167	10.070
26 9662259	307929	2.773	1226130	5.071	969032	8.193	510097	10.070
27 9662261	215343	2.770	1222560	5.067	968157	8.193	508932	10.070
28 9662263	284695	2.766	1224107	5.070	961403	8.193	508731	10.070

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

Preparation and Run Logs

Volatiles by GC/MS

eurofins | Lancaster Laboratories Environmental

VOA Prep Summary by SDG: DHR42

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
9661818	150A	07320	18796429	N	06/14/18 09:35	06/15/18 14:09	32.41 g	38.44 g	6.03 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661818	150B	07320	18796430	Y	06/14/18 09:35	06/15/18 14:09	32.46 g	38.37 g	5.91 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661818	169A	07578	18799684	N	06/14/18 09:35	06/15/18 13:05	29.26 g	35.13 g	5.87 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9661819	150A	07320	18796431	N	06/14/18 09:41	06/15/18 14:09	32.66 g	38.45 g	5.79 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661819	150B	07320	18796432	Y	06/14/18 09:41	06/15/18 14:09	32.68 g	38.31 g	5.63 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661819	169A	07578	18799685	N	06/14/18 09:41	06/15/18 13:09	29.22 g	34.89 g	5.67 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9661820	150A	07320	18796433	Y	06/14/18 10:00	06/15/18 14:09	32.66 g	37.67 g	5.01 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661820	150B	07320	18796434	N	06/14/18 10:00	06/15/18 14:09	32.54 g	37.94 g	5.40 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661820	169A	07578	18799686	N	06/14/18 10:00	06/15/18 13:12	29.25 g	34.51 g	5.26 g	4.50 g - 5.50 g	Y	18144-1	MeOH w/surrogate (5 mL)	5.000	
9661821	150A	07320	18796453	Y	06/14/18 12:48	06/15/18 14:09	32.28 g	38.44 g	6.16 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661821	150B	07320	18796454	N	06/14/18 12:48	06/15/18 14:09	32.52 g	38.70 g	6.18 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661821	169A	07578	18799696	N	06/14/18 12:48	06/15/18 13:15	29.32 g	35.27 g	5.95 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A
9661822	150A	07320	18796455	N	06/14/18 12:58	06/15/18 14:09	32.47 g	38.35 g	5.88 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661822	150B	07320	18796456	Y	06/14/18 12:58	06/15/18 14:09	32.40 g	38.22 g	5.82 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661822	169A	07578	18799697	N	06/14/18 12:58	06/15/18 13:19	29.30 g	34.27 g	4.97 g	4.50 g - 5.50 g	Y	18144-2	MeOH w/surrogate (5 mL)	5.000	
9661823	150A	07320	18796457	N	06/14/18 13:14	06/15/18 14:09	32.59 g	37.33 g	4.74 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661823	150B	07320	18796458	N	06/14/18 13:14	06/15/18 14:09	32.22 g	37.49 g	5.27 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661823	169A	07578	18799698	Y	06/14/18 13:14	06/15/18 13:22	29.43 g	33.75 g	4.32 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A
9661824	150A	07320	18796435	Y	06/14/18 14:49	06/15/18 14:09	32.65 g	38.33 g	5.68 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661824	169A	07578	18799687	N	06/14/18 14:49	06/15/18 13:25	29.05 g	35.01 g	5.96 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9661825	150A	07320	18796436	N	06/14/18 14:55	06/15/18 14:09	32.62 g	38.22 g	5.60 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661825	150B	07320	18796437	Y	06/14/18 14:55	06/15/18 14:09	32.42 g	37.88 g	5.46 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661825	169A	07578	18799688	N	06/14/18 14:55	06/15/18 13:27	29.21 g	35.05 g	5.84 g	4.50 g - 5.50 g	N	18144-1	MeOH w/surrogate (5 mL)	5.000	A
9661826	150A	07320	18796438	N	06/14/18 15:16	06/15/18 14:09	32.52 g	37.55 g	5.03 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

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VOA Prep Summary by SDG: DHR42

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
9661826	150B	07320	18796439	Y	06/14/18 15:16	06/15/18 14:09	32.70 g	37.68 g	4.98 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661826	169A	07578	18799689	N	06/14/18 15:16	06/15/18 13:30	29.20 g	34.19 g	4.99 g	4.50 g - 5.50 g	Y	18144-1	MeOH w/surrogate (5 mL)	5.000	

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

6-14-18 Prep of VOA6 Jun14,18 X7-14-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot# DT140

RESTEK 558268 Danger 1 mL
Lot# A0125171
Expire: 08/2018 Store: 0°C or colder
Custom CS#6 Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-14-18 Prep of QVOA6 Jun14,18 X7-14-18
Added 1.0 mL of...
to final volume of
25 mL MeOH
B+J lot# DT140

RESTEK 558268.SEC Danger 1 mL
Lot# A0136083
Expire: 09/2019 Store: 0°C or colder
Custom QCS #6 Standard
1000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-14-18 Prep of QGASES Jun14,18 X6-21-18
Added 0.5 mL of...
to final volume of
25 mL MeOH
B+J lot# DT140

RESTEK 55669.SEC Danger 1 mL
Lot# A0129532
Expire: 08/2024 Store: 0°C or colder
Custom 502.2 "Q" Gas Mix
2000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-14-18 RV4 Gas 6-14-18 X6-21-18
25uL 502.2 "V" Gas Lot# A0136554
25uL DCFM Lot # 217091197
950uL MeOH B+J DT140

Q Gas 326 6-14-18 x 6-21-18
20uL 502.2 "Q" Gas Lot# A01295320
20uL DCFM Lot # 217091197
20uL BCE Lot # A0134146
940uL MeOH B+J DT140

[signature] 2052

6/14/18 ~~VVTP Jun13-18 x~~ VVTP Jun14-18 x: 6/21/18
100uL of... Custom SIM 8260C V Lot# A0109938
502.2 V Gas Lot # A0136554
To a final volume of 10mL MeOH BJ Lot DT140
[signature] 2648

QVTP Jun14-18 x: 6/21/18
100uL of... Custom SIM 8260C Q Lot# A019931
502.2 Q Lot# A01295320
To a final volume of 10mL MeOH BJ Lot DT140

6-18-18 Prep of VOA1 Jun 18.18 X 7-18-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-1 Danger 1 mL
Lot# A0126988
Expire: 04/2020 Store: 0°C or colder
Custom Revised V #1B Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 572312 Danger 1 mL
Lot# A0131271
Expire: 10/2018 Store: 0°C or colder
Custom V #4C (Rev 3) Standard
This product is photosensitive.
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-18-18 Prep of 2CEVE Jun 18.18 X 7-18-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-2 Danger 1 mL
Lot# A0126036
Expire: 03/2020 Store: 0°C or colder
Custom V # 1B 2-CEVE Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-18-18 Prep of VOA2 Jun 18.18 X 7-18-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Ruilling 2032

6-18-18 Prep of VOA3 Jun 18.18 X 7-6-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 56736 Danger 1 mL
Lot# A0130926
Expire: 09/2020 Store: 0°C or colder
Custom V # 3B Standard
12500 - 25000 µg/mL each in P&T Methanol/Water (90:10)
Full label information for the chemical is provided on the outside package

And 1.0 mL of
ACR May 7.18

Lori Ruilling 2032

6-20-18 Prep t-AmOH Jun 20, 18 (A+B) X 12-20-18

Compound	Stk prep	[Stk] ug/mL	mL/50mL MeOH	[Final] ug/mL
tert-Amyl Alcohol (V)	6-20-18	108,710	2,300	5,000

using B+J lot # DT140

Lori Ruilling 2032

6-20-18 Prep of Qt-AmOH Jun 20, 18 (A+B) X 12-20-18

Compound	Stk prep	[Stk] ug/mL	mL/50mL MeOH	[Final] ug/mL
tert-Amyl Alcohol	6-20-18	15,600	1,282	400

using B+J lot # DT140

Lori Ruilling 2032

6-20-18 Prep of AR 2s 825 IVSS Jun 20-18 X 12-20-18

Added 1.0 mL of...

to a final volume B+J DT140

10 mL MeOH

RESTEK 558267 Danger 1 mL
110 Benner Circle Bellefonte, PA 16823 814-353-1300
Lot# A0117424
Custom 8260A IS Mix
Expire: 02/2019 Store: 0°C or colder
Full label information for the chemical is provided on the outside package.
For Laboratory Use Only
Made in USA

RESTEK 55671 Danger 1 mL
110 Benner Circle Bellefonte, PA 16823 814-353-1300
Made in USA For Laboratory Use Only
Lot# A0125172
Expire: 02/2020 Store: 0°C or colder
8260A Surrogate Mix
2500 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

6-21-18 Prep of VOA1 Jun 21, 18 X 7-21-18

Added 1.0 mL of...

to final volume of

5 mL MeOH

B+J lot # DT140

RESTEK 569936-1 Danger 1 mL
110 Benner Circle Bellefonte, PA 16823 814-353-1300
Made in USA For Laboratory Use Only
Lot# A0126988
Expire: 04/2020 Store: 0°C or colder
Custom Revised V #1B Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 56734 Danger 1 mL
110 Benner Circle Bellefonte, PA 16823 814-353-1300
Made in USA For Laboratory Use Only
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 572312 Danger 1 mL
110 Benner Circle Bellefonte, PA 16823 814-353-1300
Made in USA For Laboratory Use Only
Lot# A0131271
Expire: 10/2018 Store: 0°C or colder
Custom V #4C (Rev 3) Standard
This product is photosensitive.
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-21-18 Prep of 2CEVE Jun 21.18 X 7-21-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-2 Danger 1 mL
Lot# A0136400
Expire: 03/2021 Store: 0°C or colder
Custom V # 1B 2-CEVE Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-21-18 Prep of VOA6 Jun 21.18 X 7-21-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 558268 Danger 1 mL
Lot# A0135910
Expire: 09/2019 Store: 0°C or colder
Custom CS#6 Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Ruilling 2032

6-21-18 Prep of QVOA6 Jun 21.18 X 7-21-18
Added 1.0 mL of...
to final volume of
25 mL MeOH
B+J lot # DT140

RESTEK 558268.SEC Danger 1 mL
Lot# A0136083
Expire: 09/2019 Store: 0°C or colder
Custom QCS #6 Standard
1000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Ruilling 2032

6-21-18 Prep of QGASES Jun 21.18 X 7-28-18
Added 0.5 mL of...
to final volume of
25 mL MeOH
B+J lot # DT140

RESTEK 55669.SEC Danger 1 mL
Lot# A0129532
Expire: 08/2024 Store: 0°C or colder
Custom 502.2 "Q" Gas Mix
2000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Ruilling 2032

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18feb22I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jkh09052	BF22T01.D	50NGBFB	02/22/2018	10:34	B180151AA	
JKH09052	BF22X01.D	BLK	02/22/2018	10:55		
JKH09052	BF22I01.D	VSTD300	02/22/2018	11:18		
JKH09052	BF22I02.D	VSTD100	02/22/2018	11:42		
JKH09052	BF22I03.D	VSTD050	02/22/2018	12:06		
JKH09052	BF22I04.D	VSTD020	02/22/2018	12:31		
JKH09052	BF22I05.D	VSTD010	02/22/2018	12:57		
JKH09052	BF22I06.D	VSTD004	02/22/2018	13:29		
JKH09052	BF22M01.D	MDL001	02/22/2018	13:51		
JKH09052	BF22V01.D	LGBICV	02/22/2018	14:16		

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07566 **HP #15**

Data Directory Path is - D:\DATA\18MAY29i\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
scn10072	RY29T10.D	50NGBFB	05/29/2018	11:34	R152031AA	50
scn10072	RY29X10.D	CBLK	05/29/2018	11:57	R152031AA	50
scn10072	RY29I10.D	VSTD004	05/29/2018	12:21		50
scn10072	RY29I11.D	VSTD010	05/29/2018	12:45		50
scn10072	RY29I12.D	VSTD010	05/29/2018	13:09		50
scn10072	RY29I13.D	VSTD050	05/29/2018	13:35		50
scn10072	RY29I14.D	VSTD100	05/29/2018	13:59		50
scn10072	RY29I15.D	VSTD300	05/29/2018	14:23		50
scn10072	RY29X11.D	CBLK	05/29/2018	14:47	R152031AA	50
scn10072	RY29X12.D	CBLK	05/29/2018	15:12	R152031AA	50
scn10072	RY29M10.D	MDL001	05/29/2018	15:37		50
scn10072	RY29V10.D	RICV	05/29/2018	16:02		50
scn10072	RY29X13.D	CBLK	05/29/2018	16:27	R152031AA	50
scn10072	RY29I20.D	VSTD004	05/29/2018	16:51		50
scn10072	RY29I21.D	VSTD010	05/29/2018	17:16		50
scn10072	RY29I22.D	VSTD020	05/29/2018	17:41		50
scn10072	RY29I23.D	VSTD050	05/29/2018	18:06		50
scn10072	RY29I24.D	VSTD100	05/29/2018	18:30		50
scn10072	RY29I25.D	VSTD300	05/29/2018	18:55		50
scn10072	RY29X14.D	CBLK	05/29/2018	19:20	R152031AA	50
scn10072	RY29M20.D	SMDL	05/29/2018	19:44		50
scn10072	RY29V20.D	SMRICV	05/29/2018	20:09		50

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09137 **HP #18**

Data Directory Path is - D:\DATA\18MAY23I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
NSL01327	WY23T01.D	50NGBFB	05/23/2018	12:34		
NSL01327	WY23T02.D	50NGBFB	05/23/2018	12:54		
NSL01327	WY23T03.D	50NGBFB	05/23/2018	13:07		
NSL01327	WY23T04.D	50NGBFB	05/23/2018	13:51		
nsl01327	WY23X05.D	CLNBLK	05/23/2018	14:14		
nsl01327	WY23I01.D	VSTD300	05/23/2018	14:38		
nsl01327	WY23I02.D	VSTD100	05/23/2018	15:02		
nsl01327	WY23I03.D	VSTD050	05/23/2018	15:26		
nsl01327	WY23I04.D	VSTD020	05/23/2018	15:50		
nsl01327	WY23I05.D	VSTD010	05/23/2018	16:14		
nsl01327	WY23I06.D	VSTD004	05/23/2018	16:37		
nsl01327	WY23I07.D	VSTD001	05/23/2018	17:01		
nsl01327	WY23M01.D	VSTD0.5	05/23/2018	17:25		
nsl01327	WY23V01.D	LCSWICV	05/23/2018	17:49	W1814311AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18jun19a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
ANYBODY	BU19X05.D	CBLK	06/19/2018	14:33		
ANYBODY	BU19X06.D	CBLK	06/19/2018	14:56		
LCP00895	BU19T01.D	50NGBFB	06/19/2018	15:19		
KD14068	BU19C01.D	VSTD050	06/19/2018	15:54	B181701AA	
KD14068	BU19X01.D	VBLKB15	06/19/2018	16:16	B181701AA	
KD14068	BU19B01.D	VBLKB15	06/19/2018	16:39	B181701AA	
KD14068	BU19S01.D	LCSB15	06/19/2018	17:01	B181701AA	
KD14068	BU19S02.D	LCDB15	06/19/2018	17:24	B181701AA	
KD14068	BU19S03.D	9661818	06/19/2018	19:35	B181701AA	
KD14068	BU19S04.D	9661819	06/19/2018	19:57	B181701AA	
KD14068	BU19S05.D	9661820	06/19/2018	20:19	B181701AA	
KD14068	BU19S23.D	9661820MS	06/19/2018	20:42	B181701AA	
KD14068	BU19S06.D	9661821	06/19/2018	21:04	B181701AA	
KD14068	BU19S07.D	9661822	06/19/2018	21:27	B181701AA	
KD14068	BU19S08.D	9661824	06/19/2018	21:50	B181701AA	
KD14068	BU19S09.D	9661825	06/19/2018	22:12	B181701AA	
KD14068	BU19S10.D	9661826	06/19/2018	22:35	B181701AA	
KD14068	BU19S11.D	9661876	06/19/2018	22:58	B181701AA	
KD14068	BU19S12.D	9661877	06/19/2018	23:20	B181701AA	
KD14068	BU19S13.D	9661878	06/19/2018	23:43	B181701AA	
KD14068	BU19S14.D	9661879	06/20/2018	00:05	B181701AA	
KD14068	BU19S15.D	9661880	06/20/2018	00:28	B181701AA	
KD14068	BU19S16.D	9661881	06/20/2018	00:51	B181701AA	
KD14068	BU19S17.D	9661882	06/20/2018	01:13	B181701AA	
KD14068	BU19S18.D	9661883	06/20/2018	01:35	B181701AA	
KD14068	BU19S19.D	9661885	06/20/2018	01:58	B181701AA	
KD14068	BU19S20.D	9661886	06/20/2018	02:21	B181701AA	
KD14068	BU19S21.D	9661887	06/20/2018	02:43	B181701AA	
KD14068	BU19S22.D	9661888	06/20/2018	03:06	B181701AA	
ANYBODY	BU21X01.D	CBLK	06/21/2018	06:30		

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07566 **HP #15**

Data Directory Path is - d:\data\18jun20a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
scn10072	RU20T01.D	50NGBFB	06/20/2018	07:43	R181711AA	
scn10072	RU20X01.D	VBLKR95	06/20/2018	08:07	R181711AA	
scn10072	RU20C01.D	VSTD050	06/20/2018	08:31	R181711AA	
scn10072	RU20L01.D	LCSR95	06/20/2018	09:06	R181711AA	
scn10072	RU20L02.D	LCDR95	06/20/2018	09:30	R181711AA	
scn10072	RU20X02.D	VBLKR95	06/20/2018	09:54	R181711AA	
scn10072	RU20B01.D	VBLKR95	06/20/2018	10:23	R181711AA	
scn10072	RU20S02.D	9661884	06/20/2018	11:36	R181711AA	50
scn10072	RU20S03.D	9661893	06/20/2018	12:05	R181711AA	50
scn10072	RU20S04.D	9661823	06/20/2018	12:29	R181711AA	50
scn10072	RU20S05.D	9661823DL	06/20/2018	12:54	R181711AA	500
scn10072	RU20S06.D	9658287	06/20/2018	13:18	R181711AA	1000
scn10072	RU20S07.D	9658287DL	06/20/2018	13:42	R181711AA	10000
scn10072	RU20S08.D	9651064RE	06/20/2018	14:06	R181711AA	50
scn10072	RU20S09.D	9660719	06/20/2018	14:30	R181711AA	50
scn10072	RU20S10.D	9654474RE	06/20/2018	14:54	R181711AA	500
scn10072	RU20S11.D	9654476RE	06/20/2018	15:19	R181711AA	200
scn10072	RU20S12.D	9654478RE	06/20/2018	15:43	R181711AA	200
scn10072	RU20S13.D	9663513	06/20/2018	16:06	R181711AA	1000
scn10072	RU20S14.D	9660504	06/20/2018	16:31	R181711AA	50
scn10072	RU20S15.D	9660504DL	06/20/2018	16:56	R181711AA	500
scn10072	RU20S16.D	9660505	06/20/2018	17:20	R181711AA	200
scn10072	RU20S17.D	9660505DL	06/20/2018	17:44	R181711AA	2000
scn10072	RU20S18.D	9660506	06/20/2018	18:08	R181711AA	100
scn10072	RU20S19.D	9660506DL	06/20/2018	18:32	R181711AA	1000
scn10072	RU20S20.D	9658112	06/20/2018	18:56	R181711AA	50
scn10072	RU20S21.D	9660719RE	06/20/2018	19:20	R181711AA	50
scn10072	RU20X51.D	VBLKR95	06/20/2018	19:44	R181711AA	
scn10072	RU20X52.D	VBLKR95	06/20/2018	20:09	R181711AA	
scn10072	RU20X53.D	VBLKR95	06/20/2018	20:33	R181711AA	
scn10072	RU20X54.D	VBLKR95	06/20/2018	20:57	R181711AA	
scn10072	RU20X55.D	VBLKR95	06/20/2018	21:22	R181711AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09137 **HP #18**

Data Directory Path is - D:\DATA\18JUN25A\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
ADS01731	WU25T01.D	NG50-BFB	06/25/2018	09:05		
ADS01731	WU25X01.D	VBLKW95	06/25/2018	09:29	W181761AA	
ADS01731	WU25C01.D	VSTD050	06/25/2018	09:53	W181761AA	
ADS01731	WU25S01.D	LCSW95	06/25/2018	10:17	W181761AA	
ADS01731	WU25S02.D	LCDW95	06/25/2018	10:40	W181761AA	
ADS01731	WU25B01.D	VBLKW95	06/25/2018	11:05	W181761AA	
ADS01731	WU25S03.D	9657733	06/25/2018	11:39	W181761AA	
ADS01731	WU25S04.D	9657735	06/25/2018	12:03	W181761AA	
ADS01731	WU25S05.D	9657736	06/25/2018	12:27	W181761AA	
ADS01731	WU25S32.D	9661680	06/25/2018	12:50	W181762AA	
ADS01731	WU25S33.D	9661814	06/25/2018	13:14	W181762AA	
ADS01731	WU25S34.D	9661815MS	06/25/2018	13:38	W181762AA	
ADS01731	WU25S35.D	9661816MSD	06/25/2018	14:02	W181762AA	
ADS01731	WU25S36.D	9661814DL	06/25/2018	14:26	W181762AA	10
ADS01731	WU25S37.D	9659886DL	06/25/2018	14:50	W181762AA	10
ADS01731	WU25S38.D	9661817	06/25/2018	15:14	W181762AA	
ADS01731	WU25S39.D	9661827	06/25/2018	15:38	W181762AA	
ADS01731	WU25S40.D	9661828	06/25/2018	16:02	W181762AA	
ADS01731	WU25S41.D	9661829	06/25/2018	16:25	W181762AA	
ADS01731	WU25S42.D	9661830	06/25/2018	16:49	W181762AA	
ADS01731	WU25S43.D	9662245	06/25/2018	17:13	W181762AA	
ADS01731	WU25S44.D	9662247	06/25/2018	17:37	W181762AA	
ADS01731	WU25S45.D	9662249	06/25/2018	18:01	W181762AA	
ADS01731	WU25S46.D	9662251	06/25/2018	18:24	W181762AA	
ADS01731	WU25S47.D	9662253	06/25/2018	18:48	W181762AA	
ADS01731	WU25S48.D	9662255	06/25/2018	19:12	W181762AA	
ADS01731	WU25S49.D	9662257	06/25/2018	19:36	W181762AA	
ADS01731	WU25S50.D	9662259	06/25/2018	20:00	W181762AA	
ADS01731	WU25S51.D	9662261	06/25/2018	20:24	W181762AA	
ADS01731	WU25S52.D	9662263	06/25/2018	20:48	W181762AA	

Moisture Data

MOISTURE

SAMPLE NUMBERS:

Sample #	Sample Code
9661818	R4203
9661819	R4204
9661820	R4205
9661821	R4206
9661822	R4207
9661823	R4208
9661824	R4209
9661825	R4210
9661826	R4211

COMMENTS:

Method defined actions are taken for any failed matrix QC.

Laboratory Compliance Quality Control

Analysis Name		LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number:	18169820006A	Sample number(s):	9661818-9661826			
Moisture		100		99-101		

Sample Matrix Quality Control

Analysis Name		BKG Conc	DUP Conc	RPD	RPD Max
Batch number:	18169820006A	Sample number(s):	9661818-9661826		
Moisture		5.0	5.3	6*	5

* - Outside of specification

(1) - The result for one or both determinations was less than five times the LOQ.

Moisture Data Report

Batch #: **18169820006**

Sample ID	Batch ID	Analysis#	Tare Wt	Sample Wt	Dry Wt	%Moisture	Analysis Date (Emp#)	Verified Date (Emp#)
9661818	A	00111	1.0959	8.9531	8.4329	18.05	6/18/18 (1201/SWF)	6/19/18 (236/CW)
9661819	A	00111	1.0852	9.1829	8.4530	19.77	6/18/18 (1201/SWF)	6/19/18 (236/CW)
9661820	A	00111	1.0845	9.1240	9.8961	3.42	6/18/18 (1201/SWF)	6/19/18 (236/CW)
9661821	A	00111	1.0454	9.6338	9.1044	16.35	6/18/18 (1201/SWF)	6/19/18 (236/CW)
9661822	A	00111	1.0662	7.8982	7.6683	16.41	6/18/18 (1201/SWF)	6/19/18 (236/CW)
9661823BKG	A	00111	1.0756	8.7321	9.3697	5.02	6/18/18 (1201/SWF)	6/19/18 (236/CW)
9661823DUP	A	00111	1.0687	8.1285	8.7638	5.33	6/18/18 (1201/SWF)	6/19/18 (236/CW)
9661824	A	00111	1.0863	5.7605	5.7353	19.30	6/18/18 (1201/SWF)	6/19/18 (236/CW)
9661825	A	00111	1.0489	8.6166	8.0239	19.05	6/18/18 (1201/SWF)	6/19/18 (236/CW)
9661826	A	00111	1.0878	9.1470	9.7909	4.85	6/18/18 (1201/SWF)	6/19/18 (236/CW)
LCS 89.5% Std.		00111	1.0963	5.0327	1.6335	89.33	6/18/18 (1201/SWF)	6/19/18 (236/CW)

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Type I (No Raw Data) Data Package

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Project: Dow Hanging Rock, OH
Soil Samples
Collected on 06/13/18

SDG# DHR43

GROUP	SAMPLE NUMBERS
1955666	9661876-9661893

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M. Kauffman **Date:** **07/09/2018**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Natalie Luciano at (717) 556-7258.

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Sample Reference List for SDG Number DHR43 with a Data Package Type of I-NODATA

11372 - CH2M Hill, Inc.

Project: Dow Hanging Rock, OH

Lab Sample Number	Client Sample ID	Collection Date	Date Received
9661876	S01-SS35-0102-061318	06/13/2018 08:57	06/15/2018 09:50
9661877	S01-SS35-0506-061318	06/13/2018 09:10	06/15/2018 09:50
9661878	S01-SS35-2324-061318	06/13/2018 09:45	06/15/2018 09:50
9661879	S01-SS39-0102-061318	06/13/2018 10:44	06/15/2018 09:50
9661880	S01-SS39-0506-061318	06/13/2018 10:50	06/15/2018 09:50
9661881	S01-SS39-2425-061318	06/13/2018 11:06	06/15/2018 09:50
9661882	S01-SS40-0102-061318	06/13/2018 11:41	06/15/2018 09:50
9661883	S01-SS40-0607-061318	06/13/2018 11:49	06/15/2018 09:50
9661884	S01-SS40-2425-061318	06/13/2018 12:04	06/15/2018 09:50
9661885	S01-SS41-0102-061318	06/13/2018 14:19	06/15/2018 09:50
9661886	S01-SS41-0607-061318	06/13/2018 14:26	06/15/2018 09:50
9661887	S01-SS41-2526-061318	06/13/2018 14:40	06/15/2018 09:50
9661888	S01-SS32-0102-061318	06/13/2018 15:55	06/15/2018 09:50
9661889	S01-SS32-0607-061318	06/13/2018 16:00	06/15/2018 09:50
9661890	S01-SS32-2324-061318	06/13/2018 16:15	06/15/2018 09:50
9661891	S01-SS31-0102-061318	06/13/2018 17:28	06/15/2018 09:50
9661892	S01-SS31-0607-061318	06/13/2018 17:32	06/15/2018 09:50
9661893	S01-SS31-2526-061318	06/13/2018 17:47	06/15/2018 09:50

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10237 VOCs- Solid by 8260B

The soil sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996

07320 GC/MS - LL DIH2O Encore Prep

Two EnCore samples are collected per sample. The vials used for preparation are pre-preserved and pre-weighed. Two aliquots are extruded into DI water. The vials are re-weighed and the weight of the sample should be 5-g +/- .5 g. The prepared samples are then delivered to the lab for analysis. DI vials are frozen after they are weighed to complete preservation step.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

07578 GC/MS-HL Encore Prep-NC

The sample is collected in an EnCore sampler and is submitted to the laboratory. A vial containing 5-ml methanol is prepared for each sample and weighed prior to adding the sample. After the sample is added to the vial, the vial is reweighed and the weight of sample is determined by difference. The weight of the sample should be 5-g +/- .5 g. The sample vial is then delivered to the lab for analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

00111 Moisture

A well-mixed sample is heated by reflected infrared in an aluminum pan and dried to a constant weight. The decrease in weight in weight after drying is calculated as the moisture content.

Reference: SM 2540 G-1997 %Moisture Calculation for Dry Weight Determination

Analysis Reports / Field Chain of Custody

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ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Report Date: June 29, 2018 18:19

Project: Dow Hanging Rock, OH

Account #: 11372
Group Number: 1955666
SDG: DHR43
PO Number: 131005094
Release Number: DHR43
State of Sample Origin: OH

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ . To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To	CH2M Hill, Inc.	Attn: Marie Chiller
Electronic Copy To	CH2M Hill, Inc.	Attn: Shane Lowe

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

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SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
S01-SS35-0102-061318 Grab Soil	06/13/2018 08:57	9661876
S01-SS35-0506-061318 Grab Soil	06/13/2018 09:10	9661877
S01-SS35-2324-061318 Grab Soil	06/13/2018 09:45	9661878
S01-SS39-0102-061318 Grab Soil	06/13/2018 10:44	9661879
S01-SS39-0506-061318 Grab Soil	06/13/2018 10:50	9661880
S01-SS39-2425-061318 Grab Soil	06/13/2018 11:06	9661881
S01-SS40-0102-061318 Grab Soil	06/13/2018 11:41	9661882
S01-SS40-0607-061318 Grab Soil	06/13/2018 11:49	9661883
S01-SS40-2425-061318 Grab Soil	06/13/2018 12:04	9661884
S01-SS41-0102-061318 Grab Soil	06/13/2018 14:19	9661885
S01-SS41-0607-061318 Grab Soil	06/13/2018 14:26	9661886
S01-SS41-2526-061318 Grab Soil	06/13/2018 14:40	9661887
S01-SS32-0102-061318 Grab Soil	06/13/2018 15:55	9661888
S01-SS32-0607-061318 Grab Soil	06/13/2018 16:00	9661889
S01-SS32-2324-061318 Grab Soil	06/13/2018 16:15	9661890
S01-SS31-0102-061318 Grab Soil	06/13/2018 17:28	9661891
S01-SS31-0607-061318 Grab Soil	06/13/2018 17:32	9661892
S01-SS31-2526-061318 Grab Soil	06/13/2018 17:47	9661893

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

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Analysis Report

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Sample Description: **S01-SS35-0102-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 08:57
SDG#: DHR43-01

CH2M Hill, Inc.
ELLE Sample #: SW 9661876
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	6 U	6	1	0.87
10237	cis-1,2-Dichloroethene	156-59-2	6 U	6	1	0.87
10237	trans-1,2-Dichloroethene	156-60-5	6 U	6	1	0.87
10237	Tetrachloroethene	127-18-4	6 U	6	1	0.87
10237	Trichloroethene	79-01-6	6 U	6	1	0.87
10237	Vinyl Chloride	75-01-4	6 U	6	1	0.87
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	23.0	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/19/2018 22:58	Kelly Devlin	0.87
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 14:50	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:02	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:02	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003A	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

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Sample Description: **S01-SS35-0506-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 09:10
SDG#: DHR43-02

CH2M Hill, Inc.
ELLE Sample #: SW 9661877
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	6 U	6	1	0.91
10237	cis-1,2-Dichloroethene	156-59-2	6 U	6	1	0.91
10237	trans-1,2-Dichloroethene	156-60-5	6 U	6	1	0.91
10237	Tetrachloroethene	127-18-4	6 U	6	1	0.91
10237	Trichloroethene	79-01-6	6 U	6	1	0.91
10237	Vinyl Chloride	75-01-4	6 U	6	1	0.91
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	19.4	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/19/2018 23:20	Kelly Devlin	0.91
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 14:54	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:02	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:02	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003A	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: **S01-SS35-2324-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 09:45
SDG#: DHR43-03

CH2M Hill, Inc.
ELLE Sample #: SW 9661878
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.95
10237	cis-1,2-Dichloroethene	156-59-2	1	J	5	1	0.95
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.95
10237	Tetrachloroethene	127-18-4	2	J	5	1	0.95
10237	Trichloroethene	79-01-6	5	U	5	1	0.95
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.95
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	5.6		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/19/2018 23:43	Kelly Devlin	0.95
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 14:57	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:02	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:02	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003A	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: **S01-SS39-0102-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 10:44
SDG#: DHR43-04

CH2M Hill, Inc.
ELLE Sample #: SW 9661879
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.92
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.92
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.92
10237	Tetrachloroethene	127-18-4	16	5	1	0.92
10237	Trichloroethene	79-01-6	5 U	5	1	0.92
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.92
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	15.9	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/20/2018 00:05	Kelly Devlin	0.92
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:01	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:02	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:02	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003A	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: **S01-SS39-0506-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 10:50
SDG#: DHR43-05

CH2M Hill, Inc.
ELLE Sample #: SW 9661880
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	6 U	6	1	0.95
10237	cis-1,2-Dichloroethene	156-59-2	6 U	6	1	0.95
10237	trans-1,2-Dichloroethene	156-60-5	6 U	6	1	0.95
10237	Tetrachloroethene	127-18-4	6	6	1	0.95
10237	Trichloroethene	79-01-6	6 U	6	1	0.95
10237	Vinyl Chloride	75-01-4	6 U	6	1	0.95
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	20.5	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/20/2018 00:28	Kelly Devlin	0.95
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:04	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:02	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:02	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003A	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: **S01-SS39-2425-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 11:06
SDG#: DHR43-06

CH2M Hill, Inc.
ELLE Sample #: SW 9661881
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	1.02
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	1.02
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	1.02
10237	Tetrachloroethene	127-18-4	23		5	1	1.02
10237	Trichloroethene	79-01-6	5	U	5	1	1.02
10237	Vinyl Chloride	75-01-4	5	U	5	1	1.02
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	4.3		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/20/2018 00:51	Kelly Devlin	1.02
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:08	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:02	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:02	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003A	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: **S01-SS40-0102-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 11:41
SDG#: DHR43-07

CH2M Hill, Inc.
ELLE Sample #: SW 9661882
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.87
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.87
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.87
10237	Tetrachloroethene	127-18-4	5 U	5	1	0.87
10237	Trichloroethene	79-01-6	5 U	5	1	0.87
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.87
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	17.1	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/20/2018 01:13	Kelly Devlin	0.87
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:11	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:02	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003A	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: **S01-SS40-0607-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 11:49
SDG#: DHR43-08

CH2M Hill, Inc.
ELLE Sample #: SW 9661883
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.88
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.88
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.88
10237	Tetrachloroethene	127-18-4	39	5	1	0.88
10237	Trichloroethene	79-01-6	5 U	5	1	0.88
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.88
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	18.3	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/20/2018 01:35	Kelly Devlin	0.88
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:15	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003A	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: **S01-SS40-2425-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 12:04
SDG#: DHR43-09

CH2M Hill, Inc.
ELLE Sample #: SW 9661884
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	260 U	260	53	49.9
10237	cis-1,2-Dichloroethene	156-59-2	260 U	260	53	49.9
10237	trans-1,2-Dichloroethene	156-60-5	260 U	260	53	49.9
10237	Tetrachloroethene	127-18-4	8,900	260	53	49.9
10237	Trichloroethene	79-01-6	65 J	260	53	49.9
10237	Vinyl Chloride	75-01-4	260 U	260	53	49.9
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	5.0	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	R181711AA	06/20/2018 11:36	Stephen C Nolte	49.9
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:18	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003A	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: **S01-SS41-0102-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 14:19
SDG#: DHR43-10

CH2M Hill, Inc.
ELLE Sample #: SW 9661885
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.86
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.86
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.86
10237	Tetrachloroethene	127-18-4	20	5	1	0.86
10237	Trichloroethene	79-01-6	5 U	5	1	0.86
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.86
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	17.7	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/20/2018 01:58	Kelly Devlin	0.86
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:22	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003A	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: **S01-SS41-0607-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 14:26
SDG#: DHR43-11

CH2M Hill, Inc.
ELLE Sample #: SW 9661886
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.87
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.87
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.87
10237	Tetrachloroethene	127-18-4	40	5	1	0.87
10237	Trichloroethene	79-01-6	5 U	5	1	0.87
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.87
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	17.3	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/20/2018 02:21	Kelly Devlin	0.87
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:25	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003B	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: **S01-SS41-2526-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 14:40
SDG#: DHR43-12

CH2M Hill, Inc.
ELLE Sample #: SW 9661887
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.95
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.95
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.95
10237	Tetrachloroethene	127-18-4	3	J	5	1	0.95
10237	Trichloroethene	79-01-6	5	U	5	1	0.95
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.95
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	5.0		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/20/2018 02:43	Kelly Devlin	0.95
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:30	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003B	06/19/2018 23:21	Scott W Freisher	1

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Analysis Report

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Sample Description: **S01-SS32-0102-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 15:55
SDG#: DHR43-13

CH2M Hill, Inc.
ELLE Sample #: SW 9661888
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.85
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.85
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.85
10237	Tetrachloroethene	127-18-4	12	5	1	0.85
10237	Trichloroethene	79-01-6	5 U	5	1	0.85
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.85
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	17.7	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181701AA	06/20/2018 03:06	Kelly Devlin	0.85
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:34	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003B	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

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Sample Description: **S01-SS32-0607-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 16:00
SDG#: DHR43-14

CH2M Hill, Inc.
ELLE Sample #: SW 9661889
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.88
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.88
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.88
10237	Tetrachloroethene	127-18-4	13	5	1	0.88
10237	Trichloroethene	79-01-6	5 U	5	1	0.88
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.88
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	15.5	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181731AA	06/22/2018 23:54	Kelly Devlin	0.88
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:37	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003B	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: **S01-SS32-2324-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 16:15
SDG#: DHR43-15

CH2M Hill, Inc.
ELLE Sample #: SW 9661890
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5	U	5	1	0.99
10237	cis-1,2-Dichloroethene	156-59-2	5	U	5	1	0.99
10237	trans-1,2-Dichloroethene	156-60-5	5	U	5	1	0.99
10237	Tetrachloroethene	127-18-4	1,500	E	5	1	0.99
10237	Trichloroethene	79-01-6	8		5	1	0.99
10237	Vinyl Chloride	75-01-4	5	U	5	1	0.99
Trial ID: DL							
10237	1,1-Dichloroethene	75-35-4	250	U	250	50	48.73
10237	cis-1,2-Dichloroethene	156-59-2	250	U	250	50	48.73
10237	trans-1,2-Dichloroethene	156-60-5	250	U	250	50	48.73
10237	Tetrachloroethene	127-18-4	250	U	250	50	48.73
10237	Trichloroethene	79-01-6	250	U	250	50	48.73
10237	Vinyl Chloride	75-01-4	250	U	250	50	48.73

The holding time was not met. The client was notified and the data reported.

The concentration reported for tetrachloroethene is estimated since it exceeds the calibration range of the instrument when determined by the low level method, but is less than the quantitation limit when determined by the high level method.

Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	3.2		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181711AA	06/21/2018 01:21	Patrick T Herres	0.99
10237	VOCs- Solid by 8260B	SW-846 8260B	2-DL	R181721AA	06/21/2018 14:56	Stephen C Nolte	48.73
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:40	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003B	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: **S01-SS31-0102-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 17:28
SDG#: DHR43-16

CH2M Hill, Inc.
ELLE Sample #: SW 9661891
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**	**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	5 U	5	1	0.87
10237	cis-1,2-Dichloroethene	156-59-2	5 U	5	1	0.87
10237	trans-1,2-Dichloroethene	156-60-5	5 U	5	1	0.87
10237	Tetrachloroethene	127-18-4	9	5	1	0.87
10237	Trichloroethene	79-01-6	5 U	5	1	0.87
10237	Vinyl Chloride	75-01-4	5 U	5	1	0.87
	The holding time was not met. The client was notified and the data reported.					
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**	**%**	**%**	
00111	Moisture	n.a.	18.3	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.					

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181711AA	06/21/2018 01:44	Patrick T Herres	0.87
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:46	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003B	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: **S01-SS31-0607-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 17:32
SDG#: DHR43-17

CH2M Hill, Inc.
ELLE Sample #: SW 9661892
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	6	U	6	1	0.91
10237	cis-1,2-Dichloroethene	156-59-2	6		6	1	0.91
10237	trans-1,2-Dichloroethene	156-60-5	6	U	6	1	0.91
10237	Tetrachloroethene	127-18-4	50		6	1	0.91
10237	Trichloroethene	79-01-6	5	J	6	1	0.91
10237	Vinyl Chloride	75-01-4	6	U	6	1	0.91
	The holding time was not met. The client was notified and the data reported.						
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	18.6		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	B181711AA	06/21/2018 02:07	Patrick T Herres	0.91
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:49	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003B	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: **S01-SS31-2526-061318 Grab Soil**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/15/2018 09:50
Collection Date/Time: 06/13/2018 17:47
SDG#: DHR43-18

CH2M Hill, Inc.
ELLE Sample #: SW 9661893
ELLE Group #: 1955666
Matrix: Soil

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation*	Dry Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B**		**ug/kg**		**ug/kg**	**ug/kg**	
10237	1,1-Dichloroethene	75-35-4	270	U	270	54	51.65
10237	cis-1,2-Dichloroethene	156-59-2	190	J	270	54	51.65
10237	trans-1,2-Dichloroethene	156-60-5	270	U	270	54	51.65
10237	Tetrachloroethene	127-18-4	6,700		270	54	51.65
10237	Trichloroethene	79-01-6	340		270	54	51.65
10237	Vinyl Chloride	75-01-4	270	U	270	54	51.65
Wet Chemistry	**SM 2540 G-1997 %Moisture Calc**		**%**		**%**	**%**	
00111	Moisture	n.a.	5.0		0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10237	VOCs- Solid by 8260B	SW-846 8260B	1	R181711AA	06/20/2018 12:05	Stephen C Nolte	51.65
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201816650238	06/15/2018 15:54	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	1	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
07320	Low Level EnCore Prep	SW-846 5035A	2	201816650238	06/15/2018 16:03	Rebecca Williams	n.a.
00111	Moisture	SM 2540 G-1997 %Moisture Calc	1	18170820003B	06/19/2018 23:21	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1955666
Reported: 06/29/2018 18:19

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result		LOQ**	MDL
	ug/kg		ug/kg	ug/kg
Batch number: B181701AA	Sample number(s): 9661876-9661883,9661885-9661888			
1,1-Dichloroethene	5	U	5	1
cis-1,2-Dichloroethene	5	U	5	1
trans-1,2-Dichloroethene	5	U	5	1
Tetrachloroethene	5	U	5	1
Trichloroethene	5	U	5	1
Vinyl Chloride	5	U	5	1
Batch number: B181711AA	Sample number(s): 9661890-9661892			
1,1-Dichloroethene	5	U	5	1
cis-1,2-Dichloroethene	5	U	5	1
trans-1,2-Dichloroethene	5	U	5	1
Tetrachloroethene	5	U	5	1
Trichloroethene	5	U	5	1
Vinyl Chloride	5	U	5	1
Batch number: B181731AA	Sample number(s): 9661889			
1,1-Dichloroethene	5	U	5	1
cis-1,2-Dichloroethene	5	U	5	1
trans-1,2-Dichloroethene	5	U	5	1
Tetrachloroethene	5	U	5	1
Trichloroethene	5	U	5	1
Vinyl Chloride	5	U	5	1
Batch number: R181711AA	Sample number(s): 9661884,9661893			
1,1-Dichloroethene	250	U	250	50
cis-1,2-Dichloroethene	250	U	250	50
trans-1,2-Dichloroethene	250	U	250	50
Tetrachloroethene	250	U	250	50
Trichloroethene	250	U	250	50
Vinyl Chloride	250	U	250	50
Batch number: R181721AA	Sample number(s): 9661890			
1,1-Dichloroethene	250	U	250	50
cis-1,2-Dichloroethene	250	U	250	50
trans-1,2-Dichloroethene	250	U	250	50
Tetrachloroethene	250	U	250	50
Trichloroethene	250	U	250	50
Vinyl Chloride	250	U	250	50

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

REVISED

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/29/2018 18:19

Group Number: 1955666

LCS/LCSD

Analysis Name	LCS Spike Added ug/kg	LCS Conc ug/kg	LCSD Spike Added ug/kg	LCSD Conc ug/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: B181701AA	Sample number(s): 9661876-9661883,9661885-9661888								
1,1-Dichloroethene	20	20.22	20	17.17	101	86	73-129	16	30
cis-1,2-Dichloroethene	20	20.73	20	17.26	104	86	80-120	18	30
trans-1,2-Dichloroethene	20	19.72	20	16.56	99	83	80-125	17	30
Tetrachloroethene	20	19.73	20	16.55	99	83	73-120	18	30
Trichloroethene	20	20.04	20	16.87	100	84	80-120	17	30
Vinyl Chloride	20	15.39	20	13.67	77	68	59-120	12	30
Batch number: B181711AA	Sample number(s): 9661890-9661892								
1,1-Dichloroethene	20	21.12	20	21.38	106	107	73-129	1	30
cis-1,2-Dichloroethene	20	20.71	20	21.2	104	106	80-120	2	30
trans-1,2-Dichloroethene	20	19.84	20	20.59	99	103	80-125	4	30
Tetrachloroethene	20	19.86	20	19.8	99	99	73-120	0	30
Trichloroethene	20	20.26	20	20.63	101	103	80-120	2	30
Vinyl Chloride	20	13.34	20	13.68	67	68	59-120	3	30
Batch number: B181731AA	Sample number(s): 9661889								
1,1-Dichloroethene	20	17.61	20	17.63	88	88	73-129	0	30
cis-1,2-Dichloroethene	20	17.85	20	18.41	89	92	80-120	3	30
trans-1,2-Dichloroethene	20	17.38	20	17.53	87	88	80-125	1	30
Tetrachloroethene	20	17.92	20	18.05	90	90	73-120	1	30
Trichloroethene	20	17.87	20	18.07	89	90	80-120	1	30
Vinyl Chloride	20	17.71	20	16.84	89	84	59-120	5	30
Batch number: R181711AA	Sample number(s): 9661884,9661893								
1,1-Dichloroethene	1000	1136.22	1000	974.54	114	97	73-129	15	30
cis-1,2-Dichloroethene	1000	1101.18	1000	1001.96	110	100	80-120	9	30
trans-1,2-Dichloroethene	1000	1098.17	1000	990.09	110	99	80-125	10	30
Tetrachloroethene	1000	1119.34	1000	954.46	112	95	73-120	16	30
Trichloroethene	1000	1040.64	1000	947.65	104	95	80-120	9	30
Vinyl Chloride	1000	871.45	1000	721.72	87	72	59-120	19	30
Batch number: R181721AA	Sample number(s): 9661890								
1,1-Dichloroethene	1000	1031.89	1000	1039.23	103	104	73-129	1	30
cis-1,2-Dichloroethene	1000	1008.45	1000	1031.19	101	103	80-120	2	30
trans-1,2-Dichloroethene	1000	1024.5	1000	1001.2	102	100	80-125	2	30
Tetrachloroethene	1000	986.76	1000	948.02	99	95	73-120	4	30
Trichloroethene	1000	973.62	1000	979.16	97	98	80-120	1	30
Vinyl Chloride	1000	849.55	1000	921.97	85	92	59-120	8	30
	%	%	%	%					
Batch number: 18170820003A	Sample number(s): 9661876-9661885								
Moisture	89.5	89.44			100		99-101		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

REVISED

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/29/2018 18:19

Group Number: 1955666

LCS/LCSD (continued)

Analysis Name	LCS Spike Added %	LCS Conc %	LCSD Spike Added %	LCSD Conc %	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 18170820003B	Sample number(s): 9661886-9661893								
Moisture	89.5	89.44			100		99-101		

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/kg		MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: B181701AA	Sample number(s): 9661876-9661883,9661885-9661888 UNSPK: P661820										
1,1-Dichloroethene	5	U	18.52	16.52			89		73-129		
cis-1,2-Dichloroethene	5	U	18.52	15.99			86		80-120		
trans-1,2-Dichloroethene	5	U	18.52	15.39			83		80-125		
Tetrachloroethene	5	U	18.52	14.78			80		73-120		
Trichloroethene	5	U	18.52	14.94			81		80-120		
Vinyl Chloride	5	U	18.52	13.84			75		59-120		
Batch number: B181711AA	Sample number(s): 9661890-9661892 UNSPK: P665021										
1,1-Dichloroethene	5	U	20.08	21.63	19.8	21.32	108	108	73-129	1	30
cis-1,2-Dichloroethene	5	U	20.08	19.96	19.8	19.8	99	100	80-120	1	30
trans-1,2-Dichloroethene	5	U	20.08	19.68	19.8	19.42	98	98	80-125	1	30
Tetrachloroethene	5	U	20.08	17.24	19.8	19.65	86	99	73-120	13	30
Trichloroethene	5	U	20.08	18.44	19.8	19.16	92	97	80-120	4	30
Vinyl Chloride	5	U	20.08	12.22	19.8	12.35	61	62	59-120	1	30

Laboratory Duplicate

Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	BKG Conc %	DUP Conc %	DUP RPD	DUP RPD Max
Batch number: 18170820003A	Sample number(s): 9661876-9661885 BKG: 9661878			
Moisture	5.58	6.02	8*	5
Batch number: 18170820003B	Sample number(s): 9661886-9661893 BKG: 9661889			
Moisture	15.55	15.68	1	5

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

REVISED

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/29/2018 18:19

Group Number: 1955666

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- Solid by 8260B
Batch number: B181701AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9661876	106	101	102	95
9661877	106	101	102	97
9661878	104	104	104	92
9661879	104	96	102	94
9661880	105	99	100	94
9661881	106	101	102	96
9661882	106	99	101	94
9661883	106	98	101	93
9661885	104	111	101	94
9661886	107	98	100	94
9661887	106	133	100	98
9661888	106	102	100	93
Blank	105	102	102	96
LCS	105	105	105	107
LCSD	104	107	105	106
MS	104	103	104	105
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- Solid by 8260B
Batch number: B181711AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9661890	113	109	114	71
9661891	106	97	102	94
9661892	107	101	99	95
Blank	107	104	102	96
LCS	105	101	105	105
LCSD	105	105	105	106
MS	106	102	105	105
MSD	104	102	105	105
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- Solid by 8260B
Batch number: B181731AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9661889	100	100	104	94
Blank	104	103	102	97
LCS	102	100	105	105
LCSD	103	103	105	105

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

REVISED

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/29/2018 18:19

Group Number: 1955666

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- Solid by 8260B
Batch number: B181731AA

Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- Solid by 8260B
Batch number: R181711AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9661884	107	114	108	105
9661893	89	91	87	79
Blank	99	103	99	96
LCS	110	111	107	108
LCSD	100	100	99	94
Limits:	50-141	54-135	52-141	50-131

Analysis Name: VOCs- Solid by 8260B
Batch number: R181721AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9661890DL	93	100	89	84
Blank	100	104	98	94
LCS	99	102	95	98
LCSD	102	99	94	95
Limits:	50-141	54-135	52-141	50-131

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody

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Acct. # 11372 Group # 1955666 Sample # 9661876-93

COC # 562626

pg 1 of 2

Client Information

Client: DOW c/o Jacobs	Acct. #:
Project Name/#: DOW Hanging Rock, OH	PWSID #:
Project Manager: Chiller/ Shane Lowe	P.O. #:
Sampler: Billy Irish	Quote #:
State where samples were collected: Ohio	For Compliance: Yes ☐ No ☒

Matrix: Soil ☒ Sediment ☐ Tissue ☐ Water: Potable ☐ Ground ☐ NPDES ☐ Surface ☐ Other:

Analysis Requested — Preservation and Filtration Codes

For Lab Use Only
FSC:
SCR#: 226575

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Sample Identification	Collected Date	Collected Time	Grab	Composite	Soil	Water	Other	Total # of Containers	VOCs (Soil)	% moisture	Remarks
✓ S01-SS35-0102-061318	6/13/18	0857	X		X			4	X	X	
✓ S01-SS35-0506-061318	6/13/18	0910	X		X			4	X	X	
✓ S01-SS35-2324-061318	6/13/18	0945	X		X			4	X	X	
✓ S01-SS39-0102-061318	6/13/18	1044	X		X			4	X	X	
✓ S01-SS39-0506-061318	6/13/18	1050	X		X			4	X	X	
✓ S01-SS39-2425-061318	6/13/18	1106	X		X			4	X	X	
✓ S01-SS40-0102-061318	6/13/18	1141	X		X			4	X	X	
✓ S01-SS40-0607-061318	6/13/18	1149	X		X			4	X	X	
✓ S01-SS40-2425-061318	6/13/18	1204	X		X			4	X	X	
✓ S01-SS41-0102-061318	6/13/18	1419	X		X			4	X	X	

Turnaround Time (TAT) Requested (please circle)
Standard Rush
(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: Standard

E-mail address:

Relinquished by	Date	Time	Received by	Date	Time
Dru Roberts	6/13/18	1800			
			[signature]	6/15/18	0950

Data Package Options (circle if required)
Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)
Type III (Reduced non-CLP) NJ DKQP TX TRRP-13
NYSDEC Category A or B MA MCP CT RCP

EDD Required? Yes No
If yes, format: As per contract

Site-Specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:
UPS ____ FedEx X Other ____

Temperature upon receipt 1-3 °C

Environmental Analysis Request/Chain of Custody

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For Eurofins Lancaster Laboratories Environmental use only

Acct. # 11372 Group # 1955666 Sample # 9661876-93

COC # 562616

pg. 2 of 2

Client Information

Client: DOW c/o Jacobs	Acct. #:
Project Name/#: DOW Hanging Rock, OH	PWSID #:
Project Manager: Chiller/Shane Lowe	P.O. #:
Sampler: Billy Irish	Quote #:
State where samples were collected: Ohio	For Compliance: Yes ☐ No ☒

Matrix: Soil ☒ Sediment ☐ Tissue ☐ Water: Potable ☐ Ground ☐ NPDES ☐ Surface ☐ Other: ____

Analysis Requested — Preservation and Filtration Codes

For Lab Use Only
FSC: ____
SCR#: ____

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Sample Identification	Collected Date	Collected Time	Grab	Composite	Soil	Water	Other	Total # of Containers	VOCs (Soil)	% Moisture	Remarks
✓ S01-SS41-0607-061318	6/13/18	1426	X	~~X~~ DR	X			4	X	X	
✓ S01-SS41-2526-061318	6/13/18	1440	X		X			4	X	X	
✓ S01-SS32-0102-061318	6/13/18	1555	X		X			4	X	X	
✓ S01-SS32-0607-061318	6/13/18	1600	X		X			4	X	X	
✓ S01-SS32-2324-061318	6/13/18	1615	X		X			4	X	X	
✓ S01-SS31-0102-061318	6/13/18	1728	X		X			4	X	X	
✓ S01-SS31-0607-061318	6/13/18	1732	X		X			4	X	X	
✓ S01-SS31-2526-061318	6/13/18	1747	X		X			4	X	X	

Turnaround Time (TAT) Requested (please circle)
Standard Rush
(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: Standard

E-mail address: ____

Relinquished by	Date	Time	Received by	Date	Time
Dan Roberts	6/13/18	1800			
			[signature]	6/15/18	0950

Data Package Options (circle if required)
Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)
Type III (Reduced non-CLP) NJ DKQP TX TRRP-13
NYSDEC Category A or B MA MCP CT RCP

EDD Required? Yes No
If yes, format: As per contract

Site-Specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS ____ FedEx X Other ____

Temperature upon receipt 1.3 °C

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Sample Administration Receipt Documentation Log

Doc Log ID: 219257

Group Number(s): 1955666

Client: Dow

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	06/15/2018 9:50
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OH		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Raysa Perez (14020) at 11:02 on 06/15/2018

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT131	1.3	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17601-5125
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mL**	milliliter(s)
C	degrees Celsius	**MPN**	Most Probable Number
cfu	colony forming units	**N.D.**	non-detect
CP Units	cobalt-chloroplatinate units	**ng**	nanogram(s)
F	degrees Fahrenheit	**NTU**	nephelometric turbidity units
g	gram(s)	**pg/L**	picogram/liter
IU	International Units	**RL**	Reporting Limit
kg	kilogram(s)	**TNTC**	Too Numerous To Count
L	liter(s)	**µg**	microgram(s)
lb.	pound(s)	**µL**	microliter(s)
m3	cubic meter(s)	**umhos/cm**	micromhos/cm
meq	milliequivalents	**MCL**	Maximum Contamination Limit
mg	milligram(s)		

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

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Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Volatiles by GC/MS Data

Case Narrative/Conformance Summary

Volatiles by GC/MS

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR43

GC/MS Volatiles

Fraction: Volatiles by GC/MS

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
9661876	S01-SS35-0102-061318		X	0.87	
9661877	S01-SS35-0506-061318		X	0.91	
9661878	S01-SS35-2324-061318		X	0.95	
9661879	S01-SS39-0102-061318		X	0.92	
9661880	S01-SS39-0506-061318		X	0.95	
9661881	S01-SS39-2425-061318		X	1.02	
9661882	S01-SS40-0102-061318		X	0.87	
9661883	S01-SS40-0607-061318		X	0.88	
9661884	S01-SS40-2425-061318		X	49.9	
9661885	S01-SS41-0102-061318		X	0.86	
9661886	S01-SS41-0607-061318		X	0.87	
9661887	S01-SS41-2526-061318		X	0.95	
9661888	S01-SS32-0102-061318		X	0.85	
9661889	S01-SS32-0607-061318		X	0.88	
9661890	S01-SS32-2324-061318		X	48.73; 0.99	
9661891	S01-SS31-0102-061318		X	0.87	
9661892	S01-SS31-0607-061318		X	0.91	
9661893	S01-SS31-2526-061318		X	51.65	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

(Sample number(s): 9661876-9661877, 9661883, 9661885-9661886, 9661888-9661889, 9661891-9661892: Analysis: 10237)
The VOA soil weight is outside the acceptable weight range.
See the VOA Prep Summary Sheet for the affected sample(s).

HOLDING TIME:

(Sample number(s): 9661890: Analysis: 10237)
The holding time was not met. The client was notified and the data reported.

(Sample number(s): 9661891-9661892: Analysis: 10237)
The holding time was not met. The client was notified and the data reported.

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR43

GC/MS Volatiles

Fraction: Volatiles by GC/MS

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

MS/MSD

Matrix QC may not be included if site-specific QC were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, laboratory spike data (LCS) are provided.

SAMPLE ANALYSIS:

(Sample number(s): 9661890DL: Analysis: 10237)
The recovery for the sample internal standard is outside the QC acceptance limits. The following action was taken: since this internal standard was not used to quantitate any
target analytes, the data is reported.

(Sample number(s): 9661890: Analysis: 10237)
The concentration reported for tetrachloroethene is estimated since it exceeds the calibration range of the instrument when determined by the low level method, but is less than the quantitation limit when determined by the high level method.

No additional problems were encountered with the analysis of the samples.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Volatiles by GC/MS

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Quality Control Reference List
GC/MS Volatiles

CLIENT: CH2M Hill, Inc.
SDG: DHR43

Fraction: Volatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
VOCs- Solid by 8260B	B181701AA	VBLKB15	06/19/2018 16:39
		LCSB15	06/19/2018 17:01
		LCDB15	06/19/2018 17:24
		9661876	06/19/2018 22:58
		9661877	06/19/2018 23:20
		9661878	06/19/2018 23:43
		9661879	06/20/2018 00:05
		9661880	06/20/2018 00:28
		9661881	06/20/2018 00:51
		9661882	06/20/2018 01:13
		9661883	06/20/2018 01:35
		9661885	06/20/2018 01:58
		9661886	06/20/2018 02:21
		9661887	06/20/2018 02:43
		9661888	06/20/2018 03:06
VOCs- Solid by 8260B	B181711AA	VBLKB16	06/20/2018 17:17
		LCSB16	06/20/2018 17:39
		LCDB16	06/20/2018 18:02
		9661890	06/21/2018 01:21
		9661891	06/21/2018 01:44
		9661892	06/21/2018 02:07
VOCs- Solid by 8260B	B181731AA	VBLKB20	06/22/2018 17:17
		LCSB20	06/22/2018 18:13
		LCDB20	06/22/2018 18:36
		9661889	06/22/2018 23:54
VOCs- Solid by 8260B	R181711AA	VBLKR95	06/20/2018 10:23
		LCSR95	06/20/2018 09:06
		LCDR95	06/20/2018 09:30
		9661884	06/20/2018 11:36
		9661893	06/20/2018 12:05
VOCs- Solid by 8260B	R181721AA	VBLKR96	06/21/2018 10:40
		LCSR96	06/21/2018 08:43
		LCDR96	06/21/2018 09:10
		9661890DL	06/21/2018 14:56

Fraction: Volatiles by GC/MS

B181701AA / VBLKB15 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/19/18	N.D.	ug/kg	1	5
1,1-Dichloroethene	06/19/18	N.D.	ug/kg	1	5
cis-1,2-Dichloroethene	06/19/18	N.D.	ug/kg	1	5
trans-1,2-Dichloroethene	06/19/18	N.D.	ug/kg	1	5
Trichloroethene	06/19/18	N.D.	ug/kg	1	5
Tetrachloroethene	06/19/18	N.D.	ug/kg	1	5

B181711AA / VBLKB16 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/20/18	N.D.	ug/kg	1	5
1,1-Dichloroethene	06/20/18	N.D.	ug/kg	1	5
cis-1,2-Dichloroethene	06/20/18	N.D.	ug/kg	1	5
trans-1,2-Dichloroethene	06/20/18	N.D.	ug/kg	1	5
Trichloroethene	06/20/18	N.D.	ug/kg	1	5
Tetrachloroethene	06/20/18	N.D.	ug/kg	1	5

B181731AA / VBLKB20 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/22/18	N.D.	ug/kg	1	5
1,1-Dichloroethene	06/22/18	N.D.	ug/kg	1	5
cis-1,2-Dichloroethene	06/22/18	N.D.	ug/kg	1	5
trans-1,2-Dichloroethene	06/22/18	N.D.	ug/kg	1	5
Trichloroethene	06/22/18	N.D.	ug/kg	1	5
Tetrachloroethene	06/22/18	N.D.	ug/kg	1	5

R181711AA / VBLKR95 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/20/18	N.D.	ug/kg	50	250
1,1-Dichloroethene	06/20/18	N.D.	ug/kg	50	250
cis-1,2-Dichloroethene	06/20/18	N.D.	ug/kg	50	250
trans-1,2-Dichloroethene	06/20/18	N.D.	ug/kg	50	250
Trichloroethene	06/20/18	N.D.	ug/kg	50	250
Tetrachloroethene	06/20/18	N.D.	ug/kg	50	250

R181721AA / VBLKR96 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/21/18	N.D.	ug/kg	50	250
1,1-Dichloroethene	06/21/18	N.D.	ug/kg	50	250
cis-1,2-Dichloroethene	06/21/18	N.D.	ug/kg	50	250
trans-1,2-Dichloroethene	06/21/18	N.D.	ug/kg	50	250
Trichloroethene	06/21/18	N.D.	ug/kg	50	250
Tetrachloroethene	06/21/18	N.D.	ug/kg	50	250

Fraction: Volatiles by GC/MS

B181701AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKB15	102	54 - 135	96	50 - 131	105	50 - 141	102	52 - 141
LCSB15	105	54 - 135	107	50 - 131	105	50 - 141	105	52 - 141
LCDB15	107	54 - 135	106	50 - 131	104	50 - 141	105	52 - 141
9661876	101	54 - 135	95	50 - 131	106	50 - 141	102	52 - 141
9661877	101	54 - 135	97	50 - 131	106	50 - 141	102	52 - 141
9661878	104	54 - 135	92	50 - 131	104	50 - 141	104	52 - 141
9661879	96	54 - 135	94	50 - 131	104	50 - 141	102	52 - 141
9661880	99	54 - 135	94	50 - 131	105	50 - 141	100	52 - 141
9661881	101	54 - 135	96	50 - 131	106	50 - 141	102	52 - 141
9661882	99	54 - 135	94	50 - 131	106	50 - 141	101	52 - 141
9661883	98	54 - 135	93	50 - 131	106	50 - 141	101	52 - 141
9661885	111	54 - 135	94	50 - 131	104	50 - 141	101	52 - 141
9661886	98	54 - 135	94	50 - 131	107	50 - 141	100	52 - 141
9661887	133	54 - 135	98	50 - 131	106	50 - 141	100	52 - 141
9661888	102	54 - 135	93	50 - 131	106	50 - 141	100	52 - 141

B181711AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKB16	104	54 - 135	96	50 - 131	107	50 - 141	102	52 - 141
LCSB16	101	54 - 135	105	50 - 131	105	50 - 141	105	52 - 141
LCDB16	105	54 - 135	106	50 - 131	105	50 - 141	105	52 - 141
9661890	109	54 - 135	71	50 - 131	113	50 - 141	114	52 - 141
9661891	97	54 - 135	94	50 - 131	106	50 - 141	102	52 - 141
9661892	101	54 - 135	95	50 - 131	107	50 - 141	99	52 - 141

B181731AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKB20	103	54 - 135	97	50 - 131	104	50 - 141	102	52 - 141
LCSB20	100	54 - 135	105	50 - 131	102	50 - 141	105	52 - 141
LCDB20	103	54 - 135	105	50 - 131	103	50 - 141	105	52 - 141
9661889	100	54 - 135	94	50 - 131	100	50 - 141	104	52 - 141

R181711AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKR95	103	54 - 135	96	50 - 131	99	50 - 141	99	52 - 141
LCSR95	111	54 - 135	108	50 - 131	110	50 - 141	107	52 - 141
LCDR95	100	54 - 135	94	50 - 131	100	50 - 141	99	52 - 141

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DHR43
Matrix: SOLID

Fraction: Volatiles by GC/MS

R181711AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
9661884	114	54 - 135	105	50 - 131	107	50 - 141	108	52 - 141
9661893	91	54 - 135	79	50 - 131	89	50 - 141	87	52 - 141

R181721AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKR96	104	54 - 135	94	50 - 131	100	50 - 141	98	52 - 141
LCSR96	102	54 - 135	98	50 - 131	99	50 - 141	95	52 - 141
LCDR96	99	54 - 135	95	50 - 131	102	50 - 141	94	52 - 141
9661890DL	100	54 - 135	84	50 - 131	93	50 - 141	89	52 - 141

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSB15 LCSD: LCDB15	Batch: **B181701AA** (Sample number(s): 9661876-9661883, 9661885-9661888)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	15.39	13.67	77	68	59-120	12	30
1,1-Dichloroethene	20	20.22	17.17	101	86	73-129	16	30
cis-1,2-Dichloroethene	20	20.73	17.26	104	86	80-120	18	30
trans-1,2-Dichloroethene	20	19.72	16.56	99	83	80-125	17	30
Trichloroethene	20	20.04	16.87	100	84	80-120	17	30
Tetrachloroethene	20	19.73	16.55	99	83	73-120	18	30

LCS: LCSB16 LCSD: LCDB16	Batch: **B181711AA** (Sample number(s): 9661890-9661892)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	13.34	13.68	67	68	59-120	3	30
1,1-Dichloroethene	20	21.12	21.38	106	107	73-129	1	30
cis-1,2-Dichloroethene	20	20.71	21.2	104	106	80-120	2	30
trans-1,2-Dichloroethene	20	19.84	20.59	99	103	80-125	4	30
Trichloroethene	20	20.26	20.63	101	103	80-120	2	30
Tetrachloroethene	20	19.86	19.8	99	99	73-120	0	30

LCS: LCSB20 LCSD: LCDB20	Batch: **B181731AA** (Sample number(s): 9661889)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	20	17.71	16.84	89	84	59-120	5	30
1,1-Dichloroethene	20	17.61	17.63	88	88	73-129	0	30
cis-1,2-Dichloroethene	20	17.85	18.41	89	92	80-120	3	30
trans-1,2-Dichloroethene	20	17.38	17.53	87	88	80-125	1	30
Trichloroethene	20	17.87	18.07	89	90	80-120	1	30
Tetrachloroethene	20	17.92	18.05	90	90	73-120	1	30

LCS: LCSR95 LCSD: LCDR95	Batch: **R181711AA** (Sample number(s): 9661884, 9661893)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	1000	871.45	721.72	87	72	59-120	19	30
1,1-Dichloroethene	1000	1136.22	974.54	114	97	73-129	15	30
cis-1,2-Dichloroethene	1000	1101.18	1001.96	110	100	80-120	9	30
trans-1,2-Dichloroethene	1000	1098.17	990.09	110	99	80-125	10	30
Trichloroethene	1000	1040.64	947.65	104	95	80-120	9	30
Tetrachloroethene	1000	1119.34	954.46	112	95	73-120	16	30

LCS: LCSR96	Batch: **R181721AA** (Sample number(s): 9661890)

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DHR43
Matrix: SOLID

GC/MS Volatiles

Fraction: Volatiles by GC/MS

	Spike Added ug/kg	LCS Conc ug/kg	LCSD Conc ug/kg	LCS %Rec	LCSD %Rec	%Rec Limits	%RPD	%RPD Limits
Vinyl Chloride	1000	849.55	921.97	85	92	59-120	8	30
1,1-Dichloroethene	1000	1031.89	1039.23	103	104	73-129	1	30
cis-1,2-Dichloroethene	1000	1008.45	1031.19	101	103	80-120	2	30
trans-1,2-Dichloroethene	1000	1024.5	1001.2	102	100	80-125	2	30
Trichloroethene	1000	973.62	979.16	97	98	80-120	1	30
Tetrachloroethene	1000	986.76	948.02	99	95	73-120	4	30

Fraction: Volatiles by GC/MS

10237: VOCs- Solid by 8260B Analyte Name	Default MDL	Default LOQ	Units
Vinyl Chloride	1	5	ug/kg
1,1-Dichloroethene	1	5	ug/kg
trans-1,2-Dichloroethene	1	5	ug/kg
cis-1,2-Dichloroethene	1	5	ug/kg
Trichloroethene	1	5	ug/kg
Tetrachloroethene	1	5	ug/kg

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: bf22t01.d BFB Injection Date: 02/22/18

Instrument ID: HP09953 BFB Injection Time: 10:34

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.36
75	30.0 - 60.0% of mass 95	49.53
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.95
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	81.80
175	5.0 - 9.0% of mass 174	6.09 (7.45)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.92 (96.48)1
177	5.0 - 9.0% of mass 176	5.35 (6.77)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	bf22i01.d	02/22/18	11:18
02	VSTD100	bf22i02.d	02/22/18	11:42
03	VSTD50	bf22i03.d	02/22/18	12:06
04	VSTD20	bf22i04.d	02/22/18	12:31
05	VSTD10	bf22i05.d	02/22/18	12:57
06	VSTD4	bf22i06.d	02/22/18	13:29
07	MDL001 - MDL001	bf22m01.d	02/22/18	13:51
08	LGBICV	bf22v01.d	02/22/18	14:16

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu19t01.d BFB Injection Date: 06/19/18

Instrument ID: HP09953 BFB Injection Time: 15:19

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.12
75	30.0 - 60.0% of mass 95	51.92
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.73
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	86.94
175	5.0 - 9.0% of mass 174	6.53 (7.52)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.16 (96.80)1
177	5.0 - 9.0% of mass 176	5.55 (6.60)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	bu19c01.d	06/19/18	15:54
02	VBLKB15	bu19b01.d	06/19/18	16:39
03	LCSB15	bu19s01.d	06/19/18	17:01
04	LCDB15	bu19s02.d	06/19/18	17:24
05	9661818	bu19s03.d	06/19/18	19:35
06	9661819	bu19s04.d	06/19/18	19:57
07	9661820	bu19s05.d	06/19/18	20:19
08	9661820MS	bu19s23.d	06/19/18	20:42
09	9661821	bu19s06.d	06/19/18	21:04
10	9661822	bu19s07.d	06/19/18	21:27
11	9661824	bu19s08.d	06/19/18	21:50
12	9661825	bu19s09.d	06/19/18	22:12
13	9661826	bu19s10.d	06/19/18	22:35
14	9661876	bu19s11.d	06/19/18	22:58
15	9661877	bu19s12.d	06/19/18	23:20
16	9661878	bu19s13.d	06/19/18	23:43
17	9661879	bu19s14.d	06/20/18	00:05
18	9661880	bu19s15.d	06/20/18	00:28
19	9661881	bu19s16.d	06/20/18	00:51
20	9661882	bu19s17.d	06/20/18	01:13
21	9661883	bu19s18.d	06/20/18	01:35
22	9661885	bu19s19.d	06/20/18	01:58

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu19t01.d BFB Injection Date: 06/19/18

Instrument ID: HP09953 BFB Injection Time: 15:19

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.12
75	30.0 - 60.0% of mass 95	51.92
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.73
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	86.94
175	5.0 - 9.0% of mass 174	6.53 (7.52)1
176	Greater than 95.0%, but less than 101.0% of mass 174	84.16 (96.80)1
177	5.0 - 9.0% of mass 176	5.55 (6.60)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9661886	bu19s20.d	06/20/18	02:21
24	9661887	bu19s21.d	06/20/18	02:43
25	9661888	bu19s22.d	06/20/18	03:06

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu20t01.d BFB Injection Date: 06/20/18

Instrument ID: HP09953 BFB Injection Time: 16:04

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.17
75	30.0 - 60.0% of mass 95	53.23
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.74
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	82.54
175	5.0 - 9.0% of mass 174	6.33 (7.67)1
176	Greater than 95.0%, but less than 101.0% of mass 174	80.29 (97.28)1
177	5.0 - 9.0% of mass 176	5.29 (6.58)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	bu20c01.d	06/20/18	16:31
02	VBLKB16	bu20b01.d	06/20/18	17:17
03	LCSB16	bu20s01.d	06/20/18	17:39
04	LCDB16	bu20s02.d	06/20/18	18:02
05	9660951	bu20s03.d	06/20/18	19:41
06	9660952	bu20s04.d	06/20/18	20:04
07	9660953	bu20s05.d	06/20/18	20:26
08	9660954	bu20s06.d	06/20/18	20:49
09	9665005	bu20s07.d	06/20/18	21:12
10	9665006	bu20s08.d	06/20/18	21:35
11	9665007	bu20s09.d	06/20/18	21:57
12	9665011	bu20s10.d	06/20/18	22:20
13	9665013	bu20s12.d	06/20/18	23:06
14	9665017	bu20s13.d	06/20/18	23:28
15	9665021	bu20s14.d	06/20/18	23:51
16	9665021MS	bu20s15.d	06/21/18	00:13
17	9665021MSD	bu20s16.d	06/21/18	00:36
18	9661890	bu20s18.d	06/21/18	01:21
19	9661891	bu20s19.d	06/21/18	01:44
20	9661892	bu20s20.d	06/21/18	02:07
21	9659913	bu20s21.d	06/21/18	02:30
22	9659447RE	bu20s22.d	06/21/18	02:52

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu20t01.d BFB Injection Date: 06/20/18

Instrument ID: HP09953 BFB Injection Time: 16:04

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.17
75	30.0 - 60.0% of mass 95	53.23
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.74
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	82.54
175	5.0 - 9.0% of mass 174	6.33 (7.67)1
176	Greater than 95.0%, but less than 101.0% of mass 174	80.29 (97.28)1
177	5.0 - 9.0% of mass 176	5.29 (6.58)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9659446RE	bu20s23.d	06/21/18	03:15
24	9658111	bu20s24.d	06/21/18	03:37

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: bu22t01.d BFB Injection Date: 06/22/18

Instrument ID: HP09953 BFB Injection Time: 15:58

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.97
75	30.0 - 60.0% of mass 95	51.34
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.60
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	89.71
175	5.0 - 9.0% of mass 174	6.72 (7.49)1
176	Greater than 95.0%, but less than 101.0% of mass 174	87.31 (97.32)1
177	5.0 - 9.0% of mass 176	5.68 (6.50)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	bu22c01.d	06/22/18	16:32
02	VBLKB20	bu22b01.d	06/22/18	17:17
03	VBLKB21	bu22b05.d	06/22/18	17:17
04	LCSB20	bu22s01.d	06/22/18	18:13
05	LCSB21	bu22s31.d	06/22/18	18:13
06	LCDB20	bu22s02.d	06/22/18	18:36
07	LCDB21	bu22s32.d	06/22/18	18:36
08	9652947	bu22s03.d	06/22/18	22:02
09	9652948	bu22s04.d	06/22/18	22:24
10	9660952RE	bu22s05.d	06/22/18	22:47
11	9660953RE	bu22s06.d	06/22/18	23:09
12	9660954RE	bu22s07.d	06/22/18	23:32
13	9661889	bu22s08.d	06/22/18	23:54
14	9662418	bu22s09.d	06/23/18	00:17
15	9664626	bu22s10.d	06/23/18	00:40
16	9665012	bu22s11.d	06/23/18	01:02
17	9665022	bu22s12.d	06/23/18	01:24
18	9665027	bu22s14.d	06/23/18	02:09
19	9665028	bu22s15.d	06/23/18	02:32
20	9665029	bu22s16.d	06/23/18	02:54
21	9665033	bu22s17.d	06/23/18	03:17

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: ry29t10.d BFB Injection Date: 05/29/18

Instrument ID: HP07566 BFB Injection Time: 11:34

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.97
75	30.0 - 60.0% of mass 95	51.05
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.91
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	65.09
175	5.0 - 9.0% of mass 174	5.04 (7.75)1
176	Greater than 95.0%, but less than 101.0% of mass 174	63.23 (97.14)1
177	5.0 - 9.0% of mass 176	4.00 (6.33)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD4	ry29i10.d	05/29/18	12:21
02	VSTD10	ry29i11.d	05/29/18	12:45
03	VSTD20	ry29i12.d	05/29/18	13:09
04	VSTD50	ry29i13.d	05/29/18	13:35
05	VSTD100	ry29i14.d	05/29/18	13:59
06	VSTD300	ry29i15.d	05/29/18	14:23
07	MDL001 - MDL001	ry29m10.d	05/29/18	15:37
08	RICV	ry29v10.d	05/29/18	16:02
09	VSTD4	ry29i20.d	05/29/18	16:51
10	VSTD10	ry29i21.d	05/29/18	17:16
11	VSTD20	ry29i22.d	05/29/18	17:41
12	VSTD50	ry29i23.d	05/29/18	18:06
13	VSTD100	ry29i24.d	05/29/18	18:30
14	VSTD300	ry29i25.d	05/29/18	18:55
15	SMDL - SMDL	ry29m20.d	05/29/18	19:44
16	SMRICV	ry29v20.d	05/29/18	20:09

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: ru20t01.d BFB Injection Date: 06/20/18

Instrument ID: HP07566 BFB Injection Time: 07:43

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.19
75	30.0 - 60.0% of mass 95	47.41
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.83
173	Less than 2.0% of mass 174	0.30 (0.40)1
174	Greater than 50.0% of mass 95	73.43
175	5.0 - 9.0% of mass 174	5.19 (7.06)1
176	Greater than 95.0%, but less than 101.0% of mass 174	70.09 (95.44)1
177	5.0 - 9.0% of mass 176	4.66 (6.65)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	ru20c01.d	06/20/18	08:31
02	LCSR95	ru20l01.d	06/20/18	09:06
03	LCDR95	ru20l02.d	06/20/18	09:30
04	VBLKR95	ru20b01.d	06/20/18	10:23
05	9661884	ru20s02.d	06/20/18	11:36
06	9661893	ru20s03.d	06/20/18	12:05
07	9661823	ru20s04.d	06/20/18	12:29
08	9661823DL	ru20s05.d	06/20/18	12:54
09	9658287	ru20s06.d	06/20/18	13:18
10	9658287DL	ru20s07.d	06/20/18	13:42
11	9651064RE	ru20s08.d	06/20/18	14:06
12	9660719	ru20s09.d	06/20/18	14:30
13	9654474RE	ru20s10.d	06/20/18	14:54
14	9654476RE	ru20s11.d	06/20/18	15:19
15	9654478RE	ru20s12.d	06/20/18	15:43
16	9660504	ru20s14.d	06/20/18	16:31
17	9660504DL	ru20s15.d	06/20/18	16:56
18	9660505	ru20s16.d	06/20/18	17:20
19	9660505DL	ru20s17.d	06/20/18	17:44
20	9660506	ru20s18.d	06/20/18	18:08
21	9660506DL	ru20s19.d	06/20/18	18:32
22	9658112	ru20s20.d	06/20/18	18:56

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: ru20t01.d BFB Injection Date: 06/20/18

Instrument ID: HP07566 BFB Injection Time: 07:43

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.19
75	30.0 - 60.0% of mass 95	47.41
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.83
173	Less than 2.0% of mass 174	0.30 (0.40)1
174	Greater than 50.0% of mass 95	73.43
175	5.0 - 9.0% of mass 174	5.19 (7.06)1
176	Greater than 95.0%, but less than 101.0% of mass 174	70.09 (95.44)1
177	5.0 - 9.0% of mass 176	4.66 (6.65)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9660719RE	ru20s21.d	06/20/18	19:20

FORM V VOA

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: ru21t01.d BFB Injection Date: 06/21/18

Instrument ID: HP07566 BFB Injection Time: 07:00

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.95
75	30.0 - 60.0% of mass 95	48.65
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.63
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	66.54
175	5.0 - 9.0% of mass 174	4.50 (6.77)1
176	Greater than 95.0%, but less than 101.0% of mass 174	63.94 (96.09)1
177	5.0 - 9.0% of mass 176	3.92 (6.14)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	ru21c01.d	06/21/18	07:50
02	LCSR96	ru21l01.d	06/21/18	08:43
03	LCSR97	ru21l05.d	06/21/18	08:43
04	LCDR96	ru21l02.d	06/21/18	09:10
05	LCDR97	ru21l06.d	06/21/18	09:10
06	VBLKR96	ru21b02.d	06/21/18	10:40
07	VBLKR97	ru21b05.d	06/21/18	10:40
08	9664514	ru21s33.d	06/21/18	11:16
09	9668607	ru21s34.d	06/21/18	11:40
10	9668608	ru21s35.d	06/21/18	12:05
11	9669593	ru21s03.d	06/21/18	12:29
12	9669594	ru21s04.d	06/21/18	12:54
13	9669595	ru21s05.d	06/21/18	13:18
14	9669596	ru21s06.d	06/21/18	13:43
15	9669597	ru21s07.d	06/21/18	14:07
16	9660842DL	ru21s08.d	06/21/18	14:31
17	9661890DL	ru21s09.d	06/21/18	14:56
18	9658591	ru21s10.d	06/21/18	15:20
19	9658598	ru21s11.d	06/21/18	15:45
20	9658599	ru21s12.d	06/21/18	16:09
21	9658601	ru21s13.d	06/21/18	16:34
22	9658604	ru21s14.d	06/21/18	16:58

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: ru21t01.d BFB Injection Date: 06/21/18

Instrument ID: HP07566 BFB Injection Time: 07:00

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.95
75	30.0 - 60.0% of mass 95	48.65
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.63
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	66.54
175	5.0 - 9.0% of mass 174	4.50 (6.77)1
176	Greater than 95.0%, but less than 101.0% of mass 174	63.94 (96.09)1
177	5.0 - 9.0% of mass 176	3.92 (6.14)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9658607	ru21s15.d	06/21/18	17:23
24	9660507	ru21s18.d	06/21/18	17:47
25	9660507DL	ru21s19.d	06/21/18	18:12

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND		RRF	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane		0.4937	0.4887	0.4857	0.5026	0.5070	0.4719	0.4916	3	AVG	
Chloromethane	#	0.6250	0.6026	0.5854	0.5711	0.5965	0.5428	0.5872	5	AVG	#
Vinyl Chloride	*	0.4665	0.4310	0.4182	0.4099	0.4171	0.3607	0.4173	8	AVG	*
Bromomethane		0.3081	0.3006	0.2984	0.2909	0.2897	0.2518	0.2899	7	AVG	
Chloroethane		0.2404	0.2467	0.2409	0.2386	0.2372	0.1969	0.2334	8	AVG	
Dichlorofluoromethane		0.6106	0.5949	0.6079	0.5949	0.6009	0.5439	0.5922	4	AVG	
Trichlorofluoromethane		0.5424	0.5392	0.5339	0.5359	0.5516	0.5187	0.5369	2	AVG	
Ethanol		0.1197	0.1143	0.1250	0.1279	0.1217	0.1180	0.1211	4	AVG	
Freon 123a		0.3516	0.3561	0.3631	0.3465	0.3545	0.3389	0.3518	2	AVG	
Acrolein		2.4157	2.4240	2.5462	2.7115	2.3801	2.0909	2.4281	8	AVG	
1,1-Dichloroethene	*	0.2378	0.2477	0.2501	0.2415	0.2560	0.2425	0.2459	3	AVG	*
Acetone		0.0301	0.0281	0.0238	0.0230	0.0225	0.0213	0.0248	14	AVG	
Freon 113		0.2790	0.3085	0.2946	0.2882	0.3071	0.2988	0.2960	4	AVG	
2-Propanol		0.9378	1.0859	1.0919	1.3247	1.0802	1.1772	1.1163	11	AVG	
Methyl Iodide		0.5059	0.5333	0.5541	0.5338	0.5578	0.5474	0.5387	4	AVG	
Carbon Disulfide		0.7997	0.8330	0.8463	0.8407	0.8843	0.8505	0.8424	3	AVG	
Methyl Acetate		0.2282	0.2378	0.2011	0.1925	0.1997	0.1949	0.2090	9	AVG	
Allyl Chloride		0.5013	0.4898	0.4880	0.4877	0.5031	0.4654	0.4892	3	AVG	
Methylene Chloride		0.2909	0.2986	0.2904	0.2831	0.2903	0.2778	0.2885	2	AVG	
t-Butyl alcohol		1.3811	1.2450	1.2102	1.2677	1.2127	1.1339	1.2418	7	AVG	
Acrylonitrile		0.1032	0.1110	0.0959	0.0970	0.0961	0.0911	0.0991	7	AVG	
Methyl Tertiary Butyl Ether		0.7860	0.8352	0.7923	0.7915	0.7973	0.7826	0.7975	2	AVG	
trans-1,2-Dichloroethene		0.2776	0.2905	0.2964	0.2871	0.2971	0.2819	0.2884	3	AVG	
n-Hexane		0.4644	0.5057	0.5030	0.5210	0.5427	0.5389	0.5126	6	AVG	
1,1-Dichloroethane	#	0.5504	0.5699	0.5871	0.5681	0.5881	0.5753	0.5731	2	AVG	#
di-Isopropyl ether		1.1120	1.1762	1.1817	1.1544	1.1878	1.1492	1.1602	2	AVG	
2-Chloro-1,3-butadiene		0.4692	0.5100	0.5339	0.5218	0.5510	0.5383	0.5207	6	AVG	
Ethyl t-butyl ether		0.8945	0.9546	0.9853	0.9854	1.0111	1.0051	0.9727	4	AVG	
2-Butanone		7.1353	7.2724	7.4916	7.9621	7.1791	6.8822	7.3204	5	AVG	
cis-1,2-Dichloroethene		0.3111	0.3303	0.3397	0.3333	0.3451	0.3458	0.3342	4	AVG	
2,2-Dichloropropane		0.3625	0.4052	0.4224	0.4310	0.4616	0.4679	0.4251	9	AVG	
Propionitrile		1.8864	1.9537	2.0773	2.2150	2.0246	1.9793	2.0227	6	AVG	
Methacrylonitrile		0.1142	0.1249	0.1114	0.1153	0.1164	0.1201	0.1170	4	AVG	
Bromochloromethane		0.1557	0.1642	0.1602	0.1628	0.1669	0.1713	0.1635	3	AVG	
Tetrahydrofuran		1.3912	1.5533	1.5880	1.7875	1.6127	1.5810	1.5856	8	AVG	
Chloroform	*	0.5030	0.5322	0.5455	0.5356	0.5526	0.5494	0.5364	3	AVG	*
1,1,1-Trichloroethane		0.5352	0.5079	0.5223	0.4905	0.5246	0.5285	0.5181	3	AVG	
Cyclohexane		0.5629	0.6493	0.6177	0.6222	0.6647	0.6642	0.6302	6	AVG	
Cyclohexane(2)		0.5006	0.4943	0.4711	0.5565	0.5111	0.5144	0.5080	6	AVG	
Cyclohexane(3)		0.1594	0.1839	0.1769	0.1801	0.1918	0.1929	0.1808	7	AVG	
1,1-Dichloropropene		0.4023	0.4334	0.4383	0.4280	0.4510	0.4497	0.4338	4	AVG	
Carbon Tetrachloride		0.3244	0.3604	0.3721	0.3810	0.4190	0.4414	0.3830	11	AVG	
Isobutyl Alcohol		0.4628	0.4806	0.5053	0.5387	0.5193	0.5508	0.5096	7	AVG	
Benzene		1.2429	1.2621	1.2830	1.2419	1.2844	1.2513	1.2609	2	AVG	
1,2-Dichloroethane		0.4024	0.4213	0.4097	0.4022	0.4096	0.4129	0.4097	2	AVG	
1,2-Dichloroethane(2)		0.0303	0.0375	0.0352	0.0355	0.0359	0.0376	0.0353	8	AVG	
t-Amyl methyl ether		0.7479	0.8064	0.7995	0.8156	0.8448	0.8723	0.8144	5	AVG	
n-Heptane		0.5526	0.6424	0.5700	0.6187	0.6421	0.6485	0.6124	7	AVG	
n-Butanol		0.3098	0.3268	0.3694	0.4162	0.4027	0.4324	0.3762	13	AVG	
Trichloroethene		0.3036	0.3195	0.3239	0.3175	0.3348	0.3368	0.3227	4	AVG	
Methylcyclohexane		0.5819	0.5773	0.5413	0.6122	0.6392	0.6478	0.6000	7	AVG	
1,2-Dichloropropane	*	0.3067	0.3305	0.3383	0.3336	0.3432	0.3461	0.3331	4	AVG	*

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Methyl Methacrylate			0.1686	0.1881	0.1830	0.1917	0.1998	0.2129	0.1907	8	AVG	
1,4-Dioxane			0.1110	0.1248	0.1466	0.1630	0.1467	0.1540	0.1410	14	AVG	
Dibromomethane			0.1663	0.1816	0.1759	0.1784	0.1836	0.1913	0.1795	5	AVG	
Bromodichloromethane			0.3248	0.3638	0.3817	0.3882	0.4109	0.4303	0.3833	10	AVG	
2-Nitropropane			2.0194	2.2729	2.3607	2.9534	3.0464		2.5306	18	2NDDEG	
2-Chloroethyl Vinyl Ether			0.1410	0.1558	0.1576	0.1696	0.1760	0.1863	0.1644	10	AVG	
cis-1,3-Dichloropropene			0.3779	0.4439	0.4672	0.4804	0.5078	0.5238	0.4668	11	AVG	
4-Methyl-2-pentanone			0.2576	0.3163	0.2933	0.3176	0.3143	0.3227	0.3036	8	AVG	
Toluene		*	0.9247	1.0130	1.0229	0.9901	1.0314	1.0079	0.9983	4	AVG	*
trans-1,3-Dichloropropene			0.3948	0.4659	0.4870	0.5175	0.5510	0.5732	0.4982	13	AVG	
Ethyl Methacrylate			0.3520	0.4298	0.4331	0.4721	0.4944	0.5152	0.4494	13	AVG	
1,1,2-Trichloroethane			0.3012	0.3296	0.3197	0.3250	0.3269	0.3353	0.3230	4	AVG	
Tetrachloroethene			0.4093	0.4669	0.4566	0.4543	0.4871	0.5045	0.4631	7	AVG	
1,3-Dichloropropane			0.5166	0.5690	0.5523	0.5568	0.5651	0.5712	0.5552	4	AVG	
2-Hexanone			0.2486	0.2841	0.2494	0.2778	0.2765	0.2830	0.2699	6	AVG	
Dibromochloromethane			0.2803	0.3263	0.3380	0.3678	0.3910	0.4236	0.3545	14	AVG	
1,2-Dibromoethane			0.2950	0.3284	0.3231	0.3289	0.3375	0.3495	0.3271	6	AVG	
1-Chlorohexane			0.4346	0.5414	0.5133	0.5396	0.5742	0.5820	0.5308	10	AVG	
Chlorobenzene		#	1.0337	1.1318	1.1257	1.0987	1.1318	1.1318	1.1089	4	AVG	#
1,1,1,2-Tetrachloroethane			0.3009	0.3456	0.3573	0.3779	0.4025	0.4298	0.3690	12	AVG	
Ethylbenzene		*	1.6800	1.9699	1.9294	1.9287	2.0003	1.9159	1.9040	6	AVG	*
m+p-Xylene			0.6648	0.7740	0.7603	0.7637	0.8001	0.7814	0.7574	6	AVG	
o-Xylene			0.6360	0.7611	0.7500	0.7650	0.8018	0.8129	0.7545	8	AVG	
Styrene			0.9609	1.1776	1.1925	1.2237	1.2853	1.2873	1.1879	10	AVG	
Bromoform		#	0.1645	0.1961	0.1982	0.2297	0.2506	0.2941	0.2222	21	2NDDEG	#
Isopropylbenzene			1.5872	1.9815	1.9075	1.9702	2.0668	1.9360	1.9082	9	AVG	
Cyclohexanone			0.6812	0.7882	0.8988	1.0192	0.9573	1.0561	0.9002	16	2NDDEG	
1,1,2,2-Tetrachloroethane		#	0.7205	0.8162	0.7382	0.7748	0.7628	0.7200	0.7554	5	AVG	#
Bromobenzene			0.7947	0.8809	0.8693	0.8361	0.8490	0.8151	0.8408	4	AVG	
trans-1,4-Dichloro-2-butene			0.2019	0.2266	0.1995	0.2076	0.2082	0.1977	0.2069	5	AVG	
1,2,3-Trichloropropane			0.2024	0.2234	0.2094	0.2076	0.2048	0.1963	0.2073	4	AVG	
n-Propylbenzene			3.5008	4.3012	4.0233	3.9668	4.0077	3.0592	3.8098	12	AVG	
2-Chlorotoluene			0.7479	0.8267	0.8112	0.7922	0.8147	0.7707	0.7939	4	AVG	
1,3,5-Trimethylbenzene			2.4376	3.0319	2.9345	2.9334	3.0104	2.5475	2.8159	9	AVG	
4-Chlorotoluene			0.7443	0.8644	0.8462	0.8227	0.8504	0.8075	0.8226	5	AVG	
tert-Butylbenzene			0.5308	0.6792	0.6465	0.6746	0.7119	0.6923	0.6559	10	AVG	
Pentachloroethane			0.3802	0.4286	0.4543	0.4969	0.5395	0.5791	0.4798	15	AVG	
1,2,4-Trimethylbenzene			2.5041	3.0952	2.9646	2.9932	3.0647	2.5702	2.8653	9	AVG	
sec-Butylbenzene			3.0756	3.9796	3.7154	3.8596	3.9223	3.0048	3.5929	12	AVG	
1,3-Dichlorobenzene			1.5244	1.7585	1.6901	1.6588	1.6810	1.6010	1.6523	5	AVG	
p-Isopropyltoluene			2.7340	3.5537	3.2781	3.3991	3.5023	2.7884	3.2092	11	AVG	
1,4-Dichlorobenzene			1.6392	1.8361	1.7301	1.7209	1.7376	1.6492	1.7189	4	AVG	
1,2,3-Trimethylbenzene			2.8974	3.0421	2.9914	3.0694	3.0912	2.5581	2.9416	7	AVG	
Benzyl Chloride			0.1500	0.2040	0.2096	0.2587	0.2746	0.3058	0.2338	24	2NDDEG	
1,3-Diethylbenzene			1.7470	1.8875	1.8283	1.9926	2.0187	1.8348	1.8848	6	AVG	
1,4-Diethylbenzene			1.8994	2.0158	1.9508	2.0984	2.1666	1.9375	2.0114	5	AVG	
n-Butylbenzene			1.4152	1.8153	1.6487	1.7385	1.7677	1.5699	1.6592	9	AVG	
1,2-Dichlorobenzene			1.5146	1.7324	1.6363	1.6557	1.7074	1.5992	1.6409	5	AVG	
1,2-Diethylbenzene			1.5329	1.6048	1.5604	1.6668	1.7022	1.5802	1.6079	4	AVG	
1,2-Dibromo-3-chloropropane			0.1139	0.1399	0.1216	0.1398	0.1402	0.1438	0.1332	9	AVG	
1,3,5-Trichlorobenzene			1.1954	1.4441	1.3236	1.3989	1.4374	1.4641	1.3773	7	AVG	
1,2,4-Trichlorobenzene			1.1029	1.3438	1.2359	1.3065	1.3308	1.3382	1.2763	7	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date(s): 02/22/18 02/22/18

Heated Purge: (Y/N) Y Calibration Times: 11:18 13:29

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

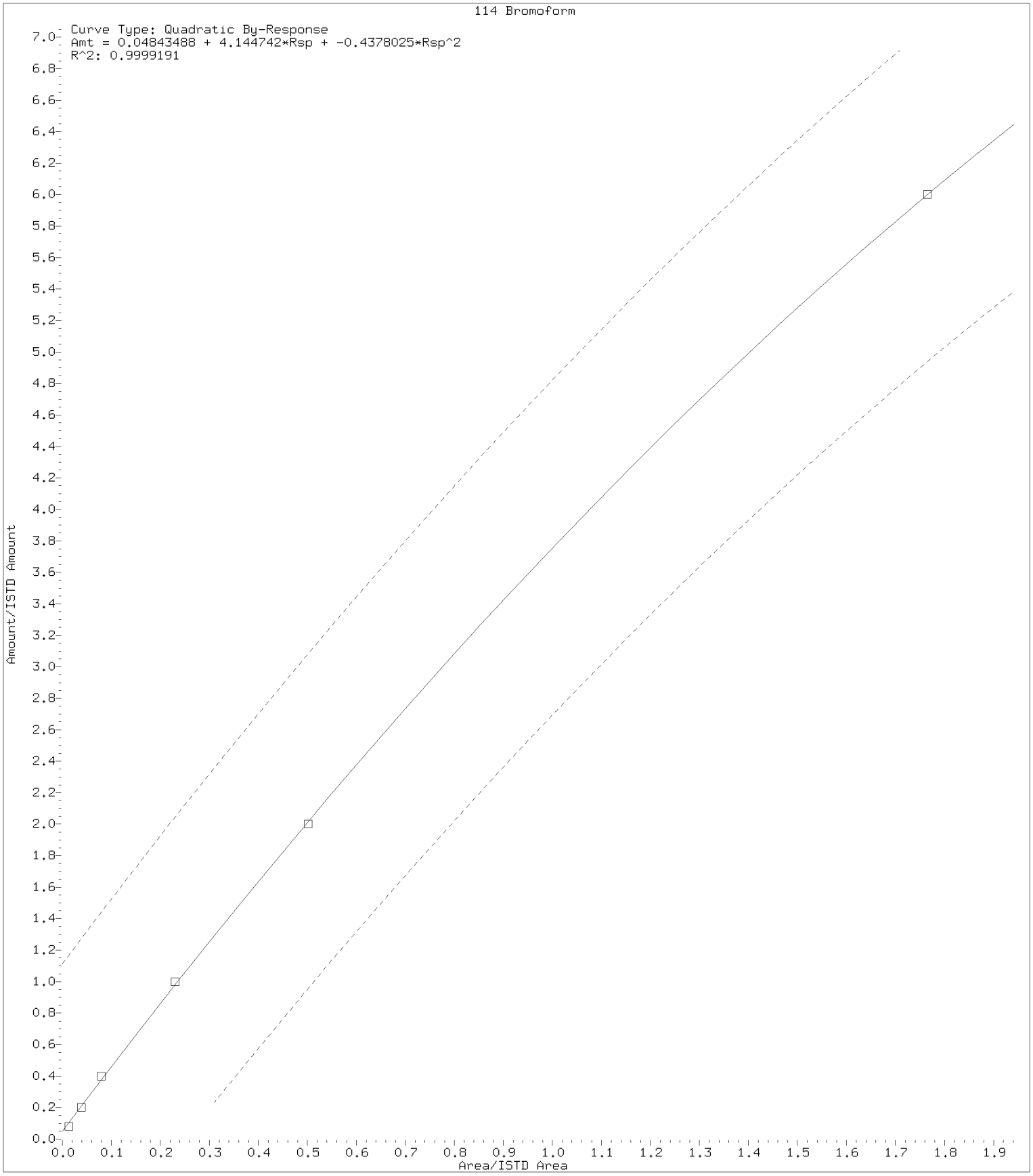
LAB FILE ID: RRF = RRF 4 = bf22i06.d RRF 10= bf22i05.d
RRF 20= bf22i04.d RRF 50= bf22i03.d RRF100= bf22i02.d RRF300= bf22i01.d

COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Hexachlorobutadiene		0.5066	0.6377	0.5818	0.6845	0.7278	0.8061	0.6574	16	2NDDEG
Naphthalene		2.4406	2.9700	2.6800	2.8364	2.7417	2.3077	2.6627	9	AVG
1,2,3-Trichlorobenzene		1.0742	1.2858	1.1530	1.2084	1.2213	1.1951	1.1896	6	AVG
2-Methylnaphthalene		1.3392	1.6688	1.6220	1.8294	1.8489	1.6210	1.6549	11	AVG
Dibromofluoromethane		0.2519	0.2489	0.2484	0.2517	0.2501	0.2499	0.2502	1	AVG
Dibromofluoromethane(2)		0.2544	0.2544	0.2542	0.2545	0.2579	0.2549	0.2550	1	AVG
1,2-Dichloroethane-d4		0.0560	0.0569	0.0536	0.0548	0.0539	0.0537	0.0548	2	AVG
1,2-Dichloroethane-d4(2)		0.2808	0.2847	0.2806	0.2924	0.2701	0.2713	0.2800	3	AVG
1,2-Dichloroethane-d4(3)		0.0351	0.0356	0.0338	0.0346	0.0342	0.0347	0.0347	2	AVG
Toluene-d8		1.2947	1.3100	1.3184	1.3142	1.3178	1.2772	1.3054	1	AVG
Toluene-d8(2)		0.8344	0.8400	0.8427	0.8577	0.8478	0.8390	0.8436	1	AVG
4-Bromofluorobenzene		0.4965	0.4992	0.4949	0.4976	0.4962	0.5077	0.4987	1	AVG
4-Bromofluorobenzene(2)		0.4326	0.4314	0.4350	0.4356	0.4288	0.4416	0.4342	1	AVG

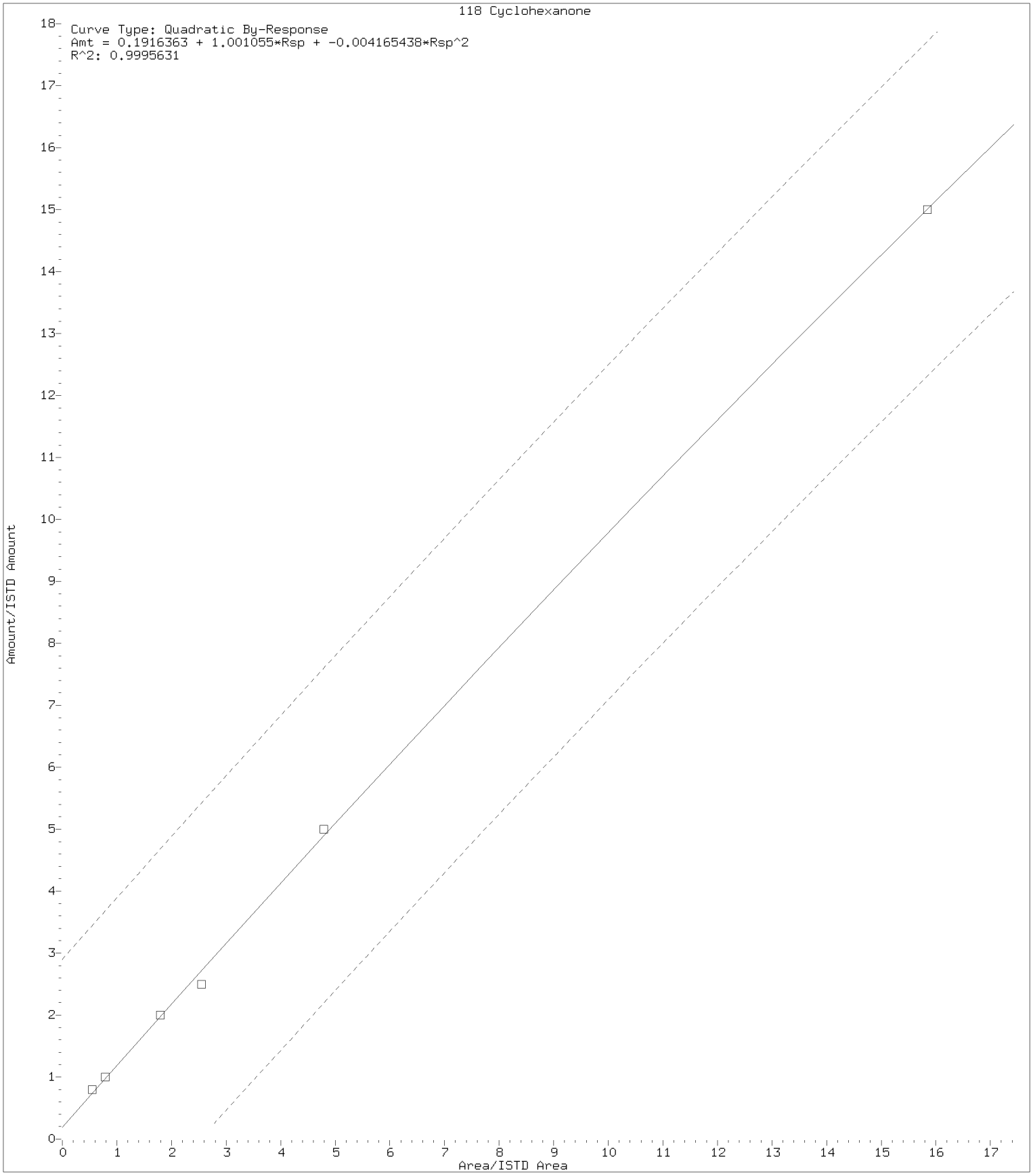
Average %RSD 7

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

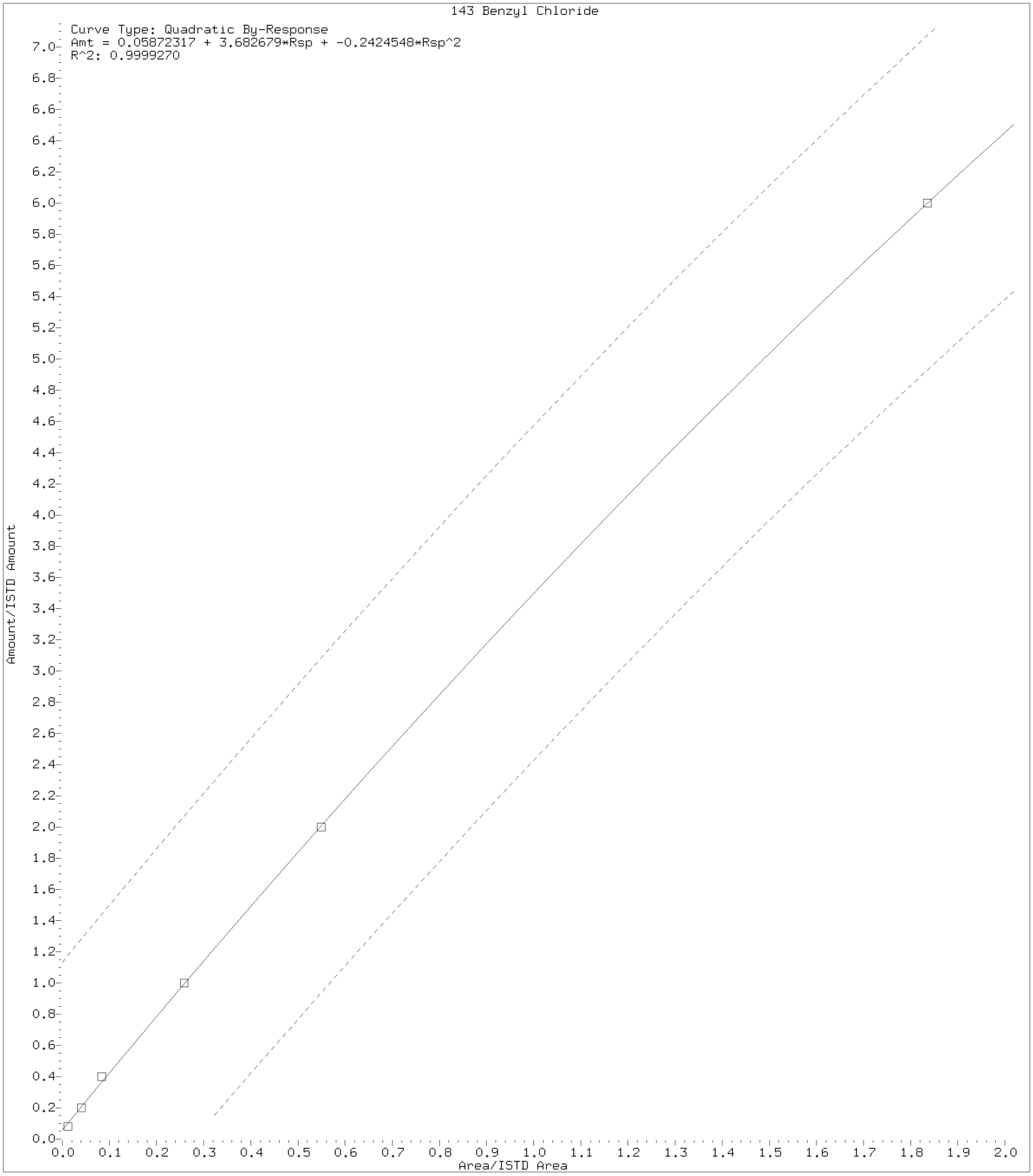
Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



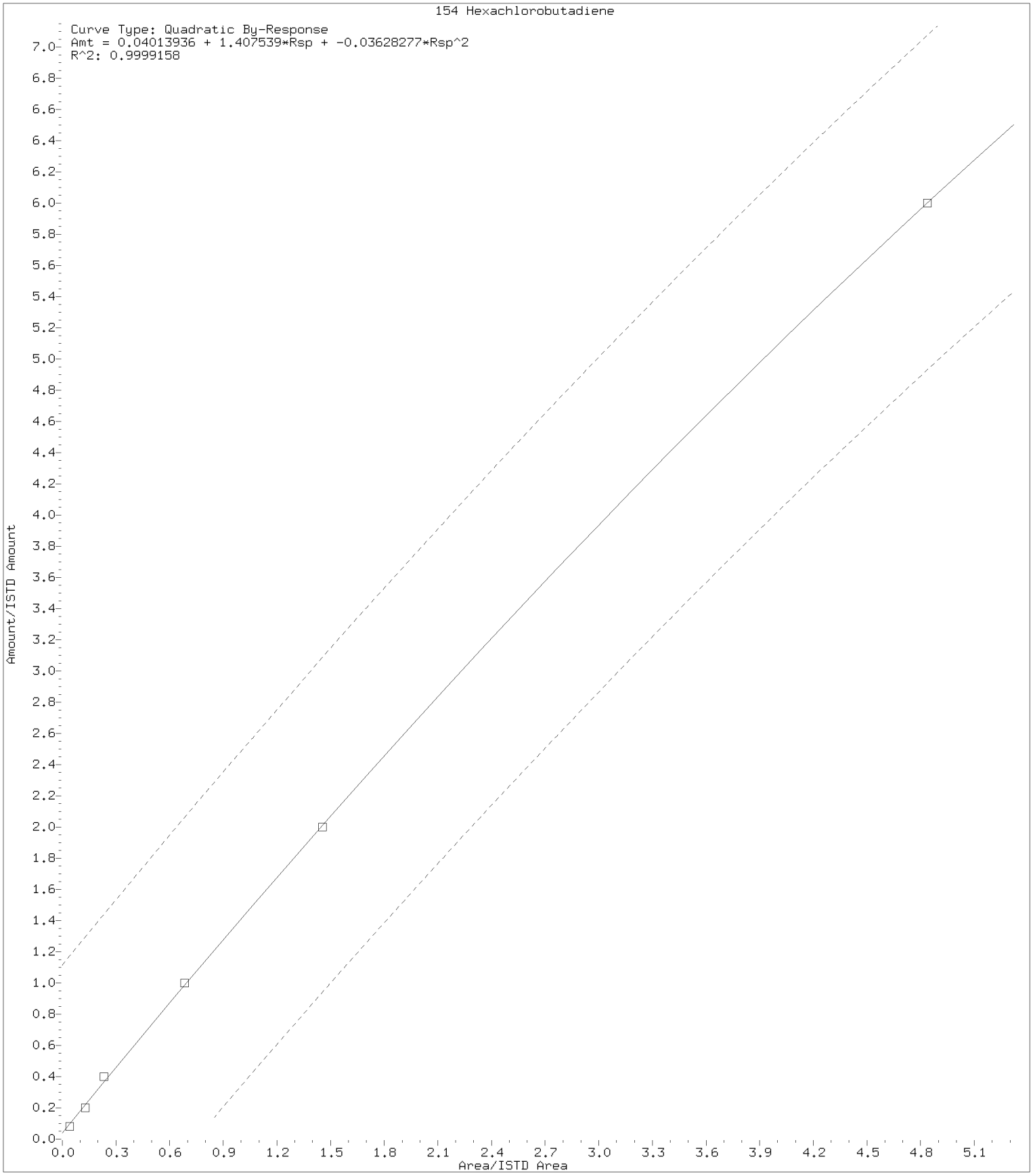
Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052



Digitally signed by Jennifer K. Howe on 02/23/2018 at 11:24.
Target 3.5 esignature user ID: jkh09052

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i01.d	VSTD300
/chem2/HP09953.i/18feb22i.b/bf22i02.d	VSTD100
/chem2/HP09953.i/18feb22i.b/bf22i03.d	VSTD050
/chem2/HP09953.i/18feb22i.b/bf22i04.d	VSTD020
/chem2/HP09953.i/18feb22i.b/bf22i05.d	VSTD010
/chem2/HP09953.i/18feb22i.b/bf22i06.d	VSTD004

Area Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	128217	123900	114201	115639	145100	130640	126283	9	Yes
Fluorobenzene	1184646	1204409	1207816	1194615	1209200	1184260	1197491	1	Yes
Chlorobenzene-d5	942767	935486	931957	925430	939957	919534	932522	1	Yes
1,4-Dichlorobenzene-d4	637692	560922	549119	528429	540311	528167	557440	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	bf22i01.d	bf22i02.d	bf22i03.d	bf22i04.d	bf22i05.d	bf22i06.d	Avg. RT
t-Butyl alcohol-d10	1.936	1.936	1.924	1.924	1.936	1.918	1.929
Fluorobenzene	3.956	3.962	3.956	3.950	3.962	3.950	3.956
Chlorobenzene-d5	7.156	7.156	7.156	7.156	7.156	7.156	7.156
1,4-Dichlorobenzene-d4	9.236	9.236	9.236	9.236	9.236	9.236	9.236

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 02/23/2018 at 11:24.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4728	19.24	20	-4	
#	Chloromethane	0.5872	0.6158	20.97	20	5	#
*	Vinyl Chloride	0.4173	0.4340	20.80	20	4	*
	Bromomethane	0.2899	0.3058	21.10	20	5	
	Chloroethane	0.2334	0.2382	20.41	20	2	
	Dichlorofluoromethane	0.5922	0.6121	20.67	20	3	
	Trichlorofluoromethane	0.5369	0.5575	20.77	20	4	
	Ethanol	0.1211	0.1297	1071.13	1000	7	
	Freon 123a	0.3518	0.3682	20.93	20	5	
	Acrolein	2.4281	2.1880	135.17	150	-10	
*	1,1-Dichloroethene	0.2459	0.2825	22.97	20	15	*
	Acetone	0.0248	0.0227	137.36	150	-8	
	Freon 113	0.2960	0.3175	21.45	20	7	
	2-Propanol	1.1163	1.3659	183.55	150	22	
	Methyl Iodide	0.5387	0.5563	20.65	20	3	
	Carbon Disulfide	0.8424	0.8761	20.80	20	4	
	Methyl Acetate	0.2090	0.2095	20.04	20	0	
	Allyl Chloride	0.4892	0.4957	20.27	20	1	
	Methylene Chloride	0.2885	0.3069	21.28	20	6	
	t-Butyl alcohol	1.2418	1.5044	242.30	200	21	
	Acrylonitrile	0.0991	0.0917	92.60	100	-7	
	Methyl Tertiary Butyl Ether	0.7975	0.7924	19.87	20	-1	
	trans-1,2-Dichloroethene	0.2884	0.3151	21.85	20	9	
	n-Hexane	0.5126	0.5289	20.63	20	3	
#	1,1-Dichloroethane	0.5731	0.5832	20.35	20	2	#
	di-Isopropyl ether	1.1602	1.2047	20.77	20	4	
	2-Chloro-1,3-butadiene	0.5207	0.5325	20.45	20	2	
	Ethyl t-butyl ether	0.9727	0.9547	19.63	20	-2	
	2-Butanone	7.3204	7.1037	145.56	150	-3	
	cis-1,2-Dichloroethene	0.3342	0.3513	21.02	20	5	
	2,2-Dichloropropane	0.4251	0.4226	19.88	20	-1	
	Propionitrile	2.0227	2.0620	152.91	150	2	
	Methacrylonitrile	0.1170	0.1114	142.70	150	-5	
	Bromochloromethane	0.1635	0.1615	19.75	20	-1	
	Tetrahydrofuran	1.5856	1.6585	104.60	100	5	
*	Chloroform	0.5364	0.5469	20.39	20	2	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1-Trichloroethane	0.5181	0.5094	19.66	20	-2	
	Cyclohexane	0.6302	0.6474	20.55	20	3	
	1,1-Dichloropropene	0.4338	0.4369	20.14	20	1	
	Carbon Tetrachloride	0.3830	0.3742	19.54	20	-2	
	Isobutyl Alcohol	0.5096	0.4746	465.70	500	-7	
	Benzene	1.2609	1.3047	20.69	20	3	
	1,2-Dichloroethane	0.4097	0.4020	19.62	20	-2	
	t-Amyl methyl ether	0.8144	0.7876	19.34	20	-3	
	n-Heptane	0.6124	0.6228	20.34	20	2	
	n-Butanol	0.3762	0.3592	954.90	1000	-5	
	Trichloroethene	0.3227	0.3246	20.12	20	1	
	Methylcyclohexane	0.6000	0.6140	20.47	20	2	
*	1,2-Dichloropropane	0.3331	0.3398	20.41	20	2	*
	Methyl Methacrylate	0.1907	0.1801	18.89	20	-6	
	1,4-Dioxane	0.1410	0.1584	561.79	500	12	
	Dibromomethane	0.1795	0.1764	19.65	20	-2	
	Bromodichloromethane	0.3833	0.3650	19.05	20	-5	
	2-Nitropropane	2.5306	2.1572	19.28	20	-4	
	2-Chloroethyl Vinyl Ether	0.1644	0.1537	18.70	20	-7	
	cis-1,3-Dichloropropene	0.4668	0.4466	19.13	20	-4	
	4-Methyl-2-pentanone	0.3036	0.2994	98.59	100	-1	
*	Toluene	0.9983	1.0240	20.52	20	3	*
	trans-1,3-Dichloropropene	0.4982	0.4608	18.50	20	-8	
	Ethyl Methacrylate	0.4494	0.4318	19.22	20	-4	
	1,1,2-Trichloroethane	0.3230	0.3247	20.11	20	1	
	Tetrachloroethene	0.4631	0.4617	19.94	20	0	
	1,3-Dichloropropane	0.5552	0.5421	19.53	20	-2	
	2-Hexanone	0.2699	0.2611	96.73	100	-3	
	Dibromochloromethane	0.3545	0.3274	18.47	20	-8	
	1,2-Dibromoethane	0.3271	0.3166	19.36	20	-3	
	1-Chlorohexane	0.5308	0.5369	20.23	20	1	
#	Chlorobenzene	1.1089	1.1099	20.02	20	0	#
	1,1,1,2-Tetrachloroethane	0.3690	0.3553	19.26	20	-4	
*	Ethylbenzene	1.9040	1.9461	20.44	20	2	*
	m+p-Xylene	0.7574	0.7692	40.62	40	2	
	o-Xylene	0.7545	0.7566	20.06	20	0	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 ICV Date: 02/22/18 Time: 14:16

Lab File ID: bf22v01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Styrene	1.1879	1.1988	20.18	20	1	
#	Bromoform	0.2222	0.1877	17.86	20	-11	#
	Isopropylbenzene	1.9082	1.9760	20.71	20	4	
	Cyclohexanone	0.9002	0.8915	490.81	500	-2	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7363	19.49	20	-3	#
	Bromobenzene	0.8408	0.8515	20.25	20	1	
	trans-1,4-Dichloro-2-butene	0.2069	0.2084	100.71	100	1	
	1,2,3-Trichloropropane	0.2073	0.2109	20.35	20	2	
	n-Propylbenzene	3.8098	4.1293	21.68	20	8	
	2-Chlorotoluene	0.7939	0.8210	20.68	20	3	
	1,3,5-Trimethylbenzene	2.8159	2.9502	20.95	20	5	
	4-Chlorotoluene	0.8226	0.8362	20.33	20	2	
	tert-Butylbenzene	0.6559	0.6739	20.55	20	3	
	Pentachloroethane	0.4798	0.4633	19.31	20	-3	
	1,2,4-Trimethylbenzene	2.8653	3.0214	21.09	20	5	
	sec-Butylbenzene	3.5929	3.8830	21.61	20	8	
	1,3-Dichlorobenzene	1.6523	1.6406	19.86	20	-1	
	p-Isopropyltoluene	3.2092	3.4609	21.57	20	8	
	1,4-Dichlorobenzene	1.7189	1.7343	20.18	20	1	
	1,2,3-Trimethylbenzene	2.9416	3.1660	21.53	20	8	
	Benzyl Chloride	0.2338	0.2057	18.01	20	-10	
	1,3-Diethylbenzene	1.8848	1.9794	21.00	20	5	
	1,4-Diethylbenzene	2.0114	2.1215	21.09	20	5	
	n-Butylbenzene	1.6592	1.7527	21.13	20	6	
	1,2-Dichlorobenzene	1.6409	1.6525	20.14	20	1	
	1,2-Diethylbenzene	1.6079	1.6918	21.04	20	5	
	1,2-Dibromo-3-chloropropane	0.1332	0.1254	18.83	20	-6	
	1,3,5-Trichlorobenzene	1.3773	1.3816	20.06	20	0	
	1,2,4-Trichlorobenzene	1.2763	1.2697	19.90	20	-1	
	Hexachlorobutadiene	0.6574	0.6829	21.09	20	5	
	Naphthalene	2.6627	2.6918	20.22	20	1	
	1,2,3-Trichlorobenzene	1.1896	1.1979	20.14	20	1	
	2-Methylnaphthalene	1.6549	1.5945	19.27	20	-4	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date(s): 05/29/18 05/29/18

Heated Purge: (Y/N) N Calibration Times: 12:21 14:23

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

LAB FILE ID: RRF = RRF 4 = ry29i10.d RRF 10= ry29i11.d
RRF 20= ry29i12.d RRF 50= ry29i13.d RRF100= ry29i14.d RRF300= ry29i15.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane			0.3752	0.3149	0.3318	0.2950	0.3055	0.3492	0.3286	9	AVG	
Chloromethane	#		0.4591	0.4235	0.4022	0.3622	0.3838	0.4101	0.4068	8	AVG	#
Vinyl Chloride	*		0.3889	0.3395	0.3235	0.2996	0.3079	0.3251	0.3307	10	AVG	*
Bromomethane			7.9238	6.1006	5.3334	5.4232	5.4518	5.4872	5.9534	17	2NDDEG	
Chloroethane			6.5466	5.2422	5.0143	4.8158	4.9120	5.0688	5.2666	12	AVG	
Dichlorofluoromethane			0.5496	0.4557	0.4238	0.3800	0.3972	0.4281	0.4391	14	AVG	
Trichlorofluoromethane			0.3868	0.3420	0.3612	0.3139	0.3307	0.3706	0.3509	8	AVG	
Ethanol			0.1797	0.1408	0.1397	0.1255	0.1236	0.1302	0.1399	15	AVG	
Freon 123a			0.4030	0.3292	0.3316	0.2828	0.2976	0.3187	0.3271	13	AVG	
Acrolein			3.2340	2.9193	2.8494	2.6750	2.7308	2.9720	2.8968	7	AVG	
1,1-Dichloroethene	*		0.2532	0.2041	0.2217	0.1861	0.2011	0.2149	0.2135	11	AVG	*
1,1-Dichloroethene(2)	*		0.1488	0.1198	0.1303	0.1071	0.1156	0.1239	0.1243	12	AVG	*
Acetone			0.0346	0.0305	0.0311	0.0279	0.0290	0.0317	0.0308	8	AVG	
Freon 113			0.1932	0.1560	0.1765	0.1493	0.1609	0.1778	0.1690	10	AVG	
2-Propanol			0.9724	0.8147	0.7451	0.6991	0.7147	0.7514	0.7829	13	AVG	
Methyl Iodide			0.4465	0.3607	0.3850	0.3410	0.3693	0.3877	0.3817	9	AVG	
Carbon Disulfide			0.7517	0.5721	0.6786	0.5460	0.5935	0.6791	0.6368	12	AVG	
Methyl Acetate			0.3175	0.2595	0.2730	0.2518	0.2652	0.2844	0.2752	9	AVG	
Allyl Chloride			0.6282	0.4984	0.5470	0.4771	0.5103	0.5533	0.5357	10	AVG	
Methylene Chloride			0.3270	0.2739	0.2817	0.2601	0.2662	0.2861	0.2825	8	AVG	
t-Butyl alcohol			1.4052	1.2435	1.2190	1.1581	1.1631	1.2453	1.2390	7	AVG	
Acrylonitrile			0.1429	0.1450	0.1403	0.1306	0.1341	0.1495	0.1404	5	AVG	
Methyl Tertiary Butyl Ether			1.0221	0.8829	0.8791	0.8092	0.8465	0.9031	0.8905	8	AVG	
trans-1,2-Dichloroethene			0.2987	0.2534	0.2522	0.2301	0.2411	0.2600	0.2559	9	AVG	
n-Hexane			0.2363	0.1959	0.2115	0.1903	0.2004	0.2221	0.2094	8	AVG	
1,1-Dichloroethane	#		0.6068	0.5266	0.5348	0.4939	0.5131	0.5487	0.5373	7	AVG	#
di-Isopropyl ether			1.2581	1.1061	1.1088	1.0414	1.0581	1.1160	1.1148	7	AVG	
2-Chloro-1,3-butadiene			0.5357	0.4677	0.4666	0.4328	0.4504	0.4785	0.4719	7	AVG	
Ethyl t-butyl ether			1.1151	0.9963	0.9750	0.9015	0.9532	1.0114	0.9921	7	AVG	
2-Butanone			7.7211	7.1356	6.2221	6.2313	6.3192	6.8824	6.7519	9	AVG	
2-Butanone(2)			1.3140	1.4087	1.3665	1.3970	1.4265	1.5793	1.4153	6	AVG	
cis-1,2-Dichloroethene			0.3214	0.2812	0.2762	0.2610	0.2739	0.2839	0.2829	7	AVG	
2,2-Dichloropropane			0.4159	0.3663	0.3679	0.3410	0.3688	0.3916	0.3753	7	AVG	
Propionitrile			0.0544	0.0489	0.0488	0.0459	0.0469	0.0502	0.0492	6	AVG	
Methacrylonitrile			0.1516	0.1367	0.1352	0.1350	0.1353	0.1431	0.1395	5	AVG	
Bromochloromethane			0.1410	0.1235	0.1275	0.1236	0.1271	0.1364	0.1299	6	AVG	
Tetrahydrofuran			1.4765	1.4739	1.3506	1.4670	1.4596	1.5838	1.4686	5	AVG	
Chloroform	*		0.5054	0.4504	0.4487	0.4411	0.4464	0.4779	0.4616	5	AVG	*
1,1,1-Trichloroethane			0.4760	0.3677	0.3813	0.3508	0.3638	0.3896	0.3882	12	AVG	
Cyclohexane			0.3662	0.2924	0.3047	0.2900	0.2964	0.3179	0.3113	9	AVG	
Cyclohexane(2)			0.2644	0.2167	0.2320	0.2189	0.2262	0.2423	0.2334	8	AVG	
Cyclohexane(3)			0.1063	0.0872	0.0889	0.0849	0.0874	0.0947	0.0916	9	AVG	
1,1-Dichloropropene			0.3938	0.3380	0.3465	0.3347	0.3371	0.3623	0.3521	6	AVG	
Carbon Tetrachloride			0.2591	0.2213	0.2343	0.2372	0.2500	0.2804	0.2471	8	AVG	
Isobutyl Alcohol			0.4663	0.4409	0.3970	0.4219	0.4144	0.4500	0.4318	6	AVG	
Benzene			1.2727	1.0907	1.1033	1.0742	1.0697	1.1123	1.1205	7	AVG	
1,2-Dichloroethane			0.4585	0.4038	0.4081	0.4006	0.4027	0.4261	0.4166	5	AVG	
1,2-Dichloroethane(2)			0.0369	0.0320	0.0342	0.0333	0.0339	0.0359	0.0344	5	AVG	
t-Amyl methyl ether			0.9664	0.8503	0.8634	0.8463	0.8464	0.9010	0.8790	5	AVG	
n-Heptane			0.2746	0.2319	0.2247	0.2144	0.2188	0.2321	0.2328	9	AVG	
n-Butanol			0.3387	0.3073	0.3201	0.3182	0.3149	0.3333	0.3221	4	AVG	
Trichloroethene			0.2759	0.2393	0.2455	0.2388	0.2389	0.2532	0.2486	6	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date(s): 05/29/18 05/29/18

Heated Purge: (Y/N) N Calibration Times: 12:21 14:23

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

LAB FILE ID: RRF = RRF 4 = ry29i10.d RRF 10= ry29i11.d
RRF 20= ry29i12.d RRF 50= ry29i13.d RRF100= ry29i14.d RRF300= ry29i15.d

COMPOUND		RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Methylcyclohexane			0.2569	0.2051	0.2299	0.2168	0.2194	0.2369	0.2275	8	AVG	
1,2-Dichloropropane	*		0.3494	0.3052	0.3147	0.3083	0.3050	0.3197	0.3171	5	AVG	*
Methyl Methacrylate			0.2544	0.2218	0.2344	0.2449	0.2379	0.2527	0.2410	5	AVG	
1,4-Dioxane			0.1186	0.1136	0.1157	0.1110	0.1053	0.1141	0.1130	4	AVG	
Dibromomethane			0.1805	0.1600	0.1659	0.1694	0.1639	0.1769	0.1694	5	AVG	
Bromodichloromethane			0.3225	0.2921	0.3128	0.3257	0.3301	0.3707	0.3256	8	AVG	
2-Nitropropane			2.6582	2.2288	2.2892	2.8655	3.0744	3.6935	2.8016	19	2NDDEG	
2-Chloroethyl Vinyl Ether			0.2352	0.2073	0.2265	0.2294	0.2172	0.2346	0.2250	5	AVG	
cis-1,3-Dichloropropene			0.4778	0.4363	0.4519	0.4656	0.4700	0.5018	0.4672	5	AVG	
4-Methyl-2-pentanone			0.3767	0.3521	0.3525	0.3527	0.3432	0.3765	0.3589	4	AVG	
Toluene	*		1.0102	0.9147	0.8921	0.8676	0.8897	0.9349	0.9182	6	AVG	*
trans-1,3-Dichloropropene			0.5888	0.5833	0.5829	0.6320	0.6696	0.7079	0.6274	8	AVG	
Ethyl Methacrylate			0.6897	0.6519	0.6294	0.6647	0.6539	0.7014	0.6652	4	AVG	
1,1,2-Trichloroethane			0.3988	0.3530	0.3387	0.3408	0.3508	0.3718	0.3590	6	AVG	
Tetrachloroethene			0.2700	0.2365	0.2273	0.2209	0.2342	0.2477	0.2395	7	AVG	
1,3-Dichloropropane			0.7356	0.6803	0.6608	0.6574	0.6717	0.7068	0.6854	4	AVG	
2-Hexanone			0.3646	0.3704	0.3609	0.3679	0.3718	0.4180	0.3756	6	AVG	
Dibromochloromethane			0.2773	0.2693	0.2892	0.3164	0.3433	0.3904	0.3143	15	AVG	
1,2-Dibromoethane			0.3785	0.3475	0.3502	0.3534	0.3612	0.3867	0.3629	4	AVG	
1-Chlorohexane			0.3767	0.3185	0.3132	0.2996	0.3025	0.3179	0.3214	9	AVG	
Chlorobenzene	#		1.0433	0.9099	0.9063	0.8962	0.8921	0.9252	0.9288	6	AVG	#
1,1,1,2-Tetrachloroethane			0.2874	0.2724	0.2811	0.2896	0.2981	0.3213	0.2916	6	AVG	
Ethylbenzene	*		1.6157	1.4413	1.4098	1.3935	1.3839	1.4249	1.4448	6	AVG	*
m+p-Xylene			0.5884	0.5372	0.5311	0.5191	0.5165	0.5274	0.5366	5	AVG	
o-Xylene			0.6044	0.5445	0.5392	0.5247	0.5259	0.5374	0.5460	5	AVG	
Styrene			1.0580	0.9601	0.9504	0.9429	0.9475	0.9720	0.9718	4	AVG	
Bromoform	#		0.1394	0.1350	0.1467	0.1712	0.1921	0.2300	0.1690	22	2NDDEG	#
Isopropylbenzene			1.2598	1.1417	1.0985	1.0840	1.0902	1.1512	1.1376	6	AVG	
Cyclohexanone			0.4187	0.3477	0.3707	0.3997	0.3954	0.4403	0.3954	8	AVG	
1,1,2,2-Tetrachloroethane	#		1.7001	1.2995	1.3871	1.2969	1.2958	1.4037	1.3972	11	AVG	#
Bromobenzene			1.0509	0.8608	0.8868	0.8298	0.8411	0.8500	0.8866	9	AVG	
trans-1,4-Dichloro-2-butene			0.5201	0.4273	0.4606	0.4399	0.4477	0.4716	0.4612	7	AVG	
1,2,3-Trichloropropane			0.4640	0.3729	0.3808	0.3677	0.3595	0.3877	0.3887	10	AVG	
n-Propylbenzene			4.4226	3.6662	3.7284	3.5060	3.5159	3.6994	3.7564	9	AVG	
2-Chlorotoluene			0.9081	0.7430	0.7955	0.7312	0.7324	0.7854	0.7826	9	AVG	
1,3,5-Trimethylbenzene			3.2045	2.6014	2.7301	2.5684	2.5900	2.7432	2.7396	9	AVG	
4-Chlorotoluene			0.9565	0.8035	0.8272	0.7791	0.7789	0.8334	0.8298	8	AVG	
tert-Butylbenzene			0.5907	0.5086	0.5095	0.5025	0.4885	0.5149	0.5191	7	AVG	
Pentachloroethane			0.4188	0.3726	0.4270	0.4325	0.4524	0.4991	0.4337	10	AVG	
1,2,4-Trimethylbenzene			3.3100	2.8954	2.8993	2.7094	2.7023	2.8153	2.8886	8	AVG	
sec-Butylbenzene			3.5623	3.0609	3.0881	2.8731	2.8954	2.9871	3.0778	8	AVG	
1,3-Dichlorobenzene			1.5938	1.3878	1.3926	1.3627	1.3509	1.4179	1.4176	6	AVG	
p-Isopropyltoluene			2.9605	2.6087	2.6521	2.5079	2.5101	2.6177	2.6428	6	AVG	
1,4-Dichlorobenzene			1.6984	1.4651	1.4809	1.4141	1.4079	1.4596	1.4877	7	AVG	
1,2,3-Trimethylbenzene			3.5251	2.8824	2.9661	2.8387	2.8180	2.9556	2.9976	9	AVG	
Benzyl Chloride			0.4177	0.3711	0.4449	0.4812	0.5045	0.5696	0.4648	15	AVG	
1,3-Diethylbenzene			1.7737	1.4750	1.5833	1.4741	1.4996	1.5713	1.5628	7	AVG	
1,4-Diethylbenzene			1.7884	1.5210	1.6281	1.5222	1.4736	1.5606	1.5823	7	AVG	
n-Butylbenzene			1.4584	1.2908	1.3273	1.2587	1.2164	1.2866	1.3064	6	AVG	
1,2-Dichlorobenzene			1.5748	1.3822	1.4262	1.3858	1.3175	1.4156	1.4170	6	AVG	
1,2-Diethylbenzene			1.5166	1.3087	1.3894	1.2797	1.2429	1.3080	1.3409	7	AVG	
1,2-Dibromo-3-chloropropane			0.2216	0.2032	0.2341	0.2497	0.2511	0.2754	0.2392	11	AVG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date(s): 05/29/18 05/29/18

Heated Purge: (Y/N) N Calibration Times: 12:21 14:23

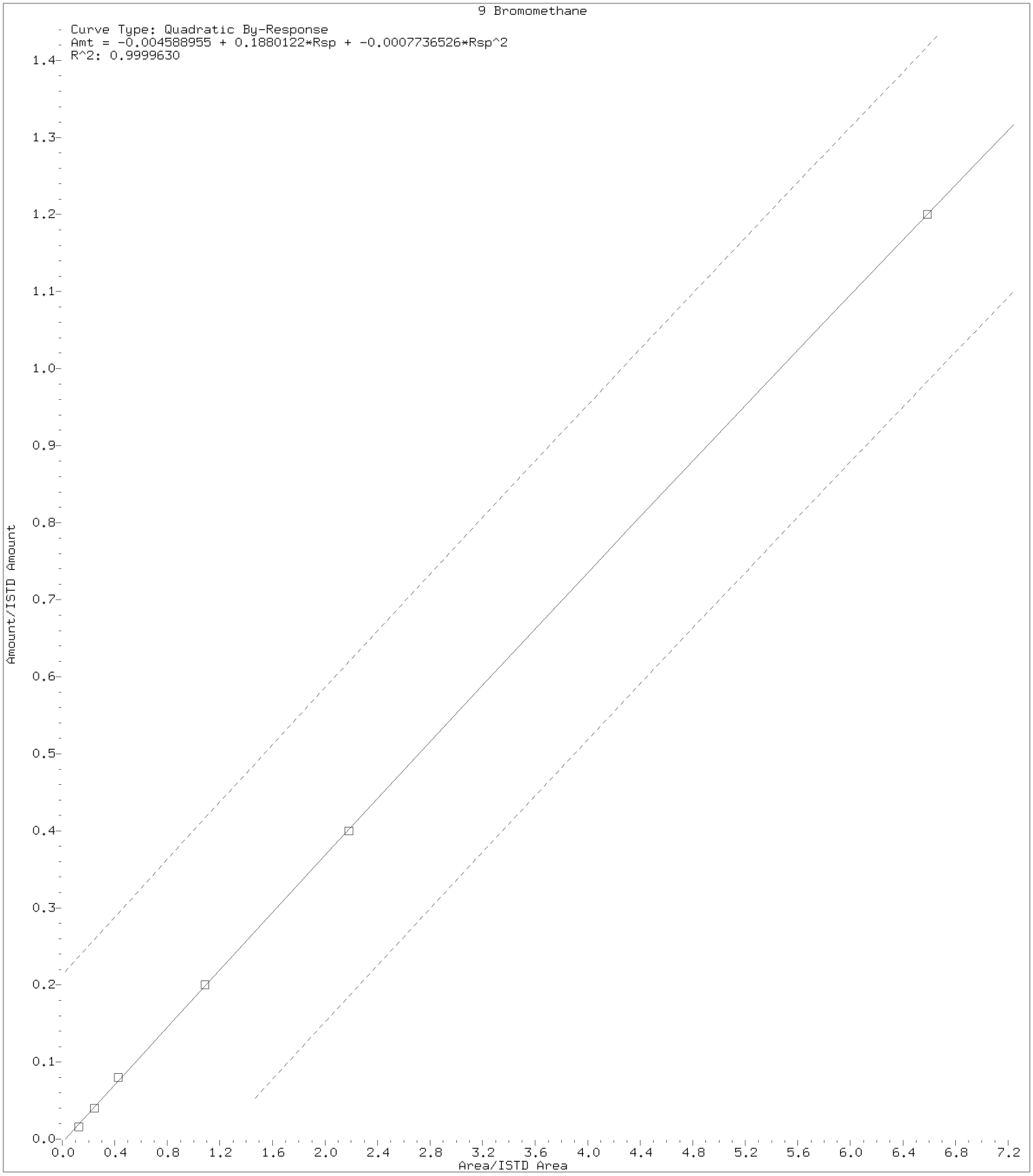
Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

LAB FILE ID: RRF = RRF 4 = ry29i10.d RRF 10= ry29i11.d
RRF 20= ry29i12.d RRF 50= ry29i13.d RRF100= ry29i14.d RRF300= ry29i15.d

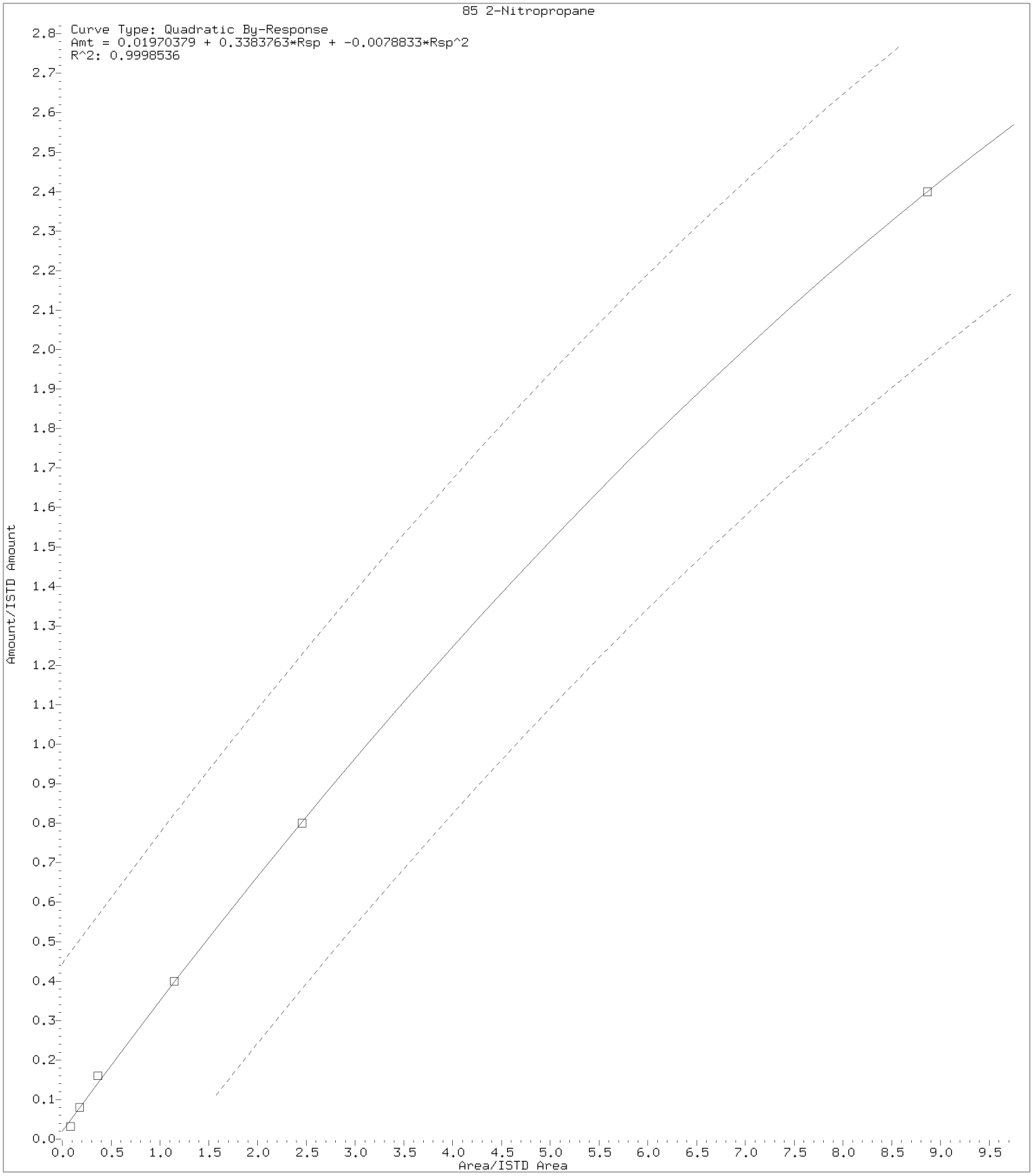
COMPOUND	RRF	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,3,5-Trichlorobenzene		0.9132	0.7822	0.8270	0.7846	0.7977	0.8281	0.8221	6	AVG
1,2,4-Trichlorobenzene		0.8727	0.7694	0.8058	0.7638	0.7919	0.8187	0.8037	5	AVG
Hexachlorobutadiene		0.3554	0.3141	0.3380	0.3106	0.3215	0.3372	0.3295	5	AVG
Naphthalene		3.2445	2.7303	2.8996	2.7384	2.8319	2.9076	2.8921	7	AVG
1,2,3-Trichlorobenzene		0.8183	0.7072	0.7566	0.7093	0.7437	0.7711	0.7510	6	AVG
2-Methylnaphthalene		1.4704	1.3696	1.5685	1.5539	1.5215	1.5554	1.5065	5	AVG
Dibromofluoromethane		0.2335	0.2192	0.2133	0.2104	0.2169	0.2363	0.2216	5	AVG
Dibromofluoromethane(2)		0.2395	0.2268	0.2194	0.2174	0.2226	0.2443	0.2283	5	AVG
1,2-Dichloroethane-d4		0.0668	0.0622	0.0575	0.0576	0.0584	0.0632	0.0609	6	AVG
1,2-Dichloroethane-d4(2)		0.3824	0.3537	0.3086	0.3057	0.3085	0.3294	0.3314	9	AVG
1,2-Dichloroethane-d4(3)		0.0420	0.0391	0.0376	0.0364	0.0371	0.0403	0.0387	5	AVG
Toluene-d8		1.4166	1.3645	1.2467	1.2052	1.2484	1.3275	1.3015	6	AVG
Toluene-d8(2)		0.9129	0.8917	0.8139	0.7840	0.8134	0.8612	0.8462	6	AVG
4-Bromofluorobenzene		0.4651	0.4451	0.4152	0.4019	0.4111	0.4458	0.4307	6	AVG
4-Bromofluorobenzene(2)		0.2971	0.2784	0.2609	0.2526	0.2643	0.2889	0.2737	6	AVG

Average %RSD 8

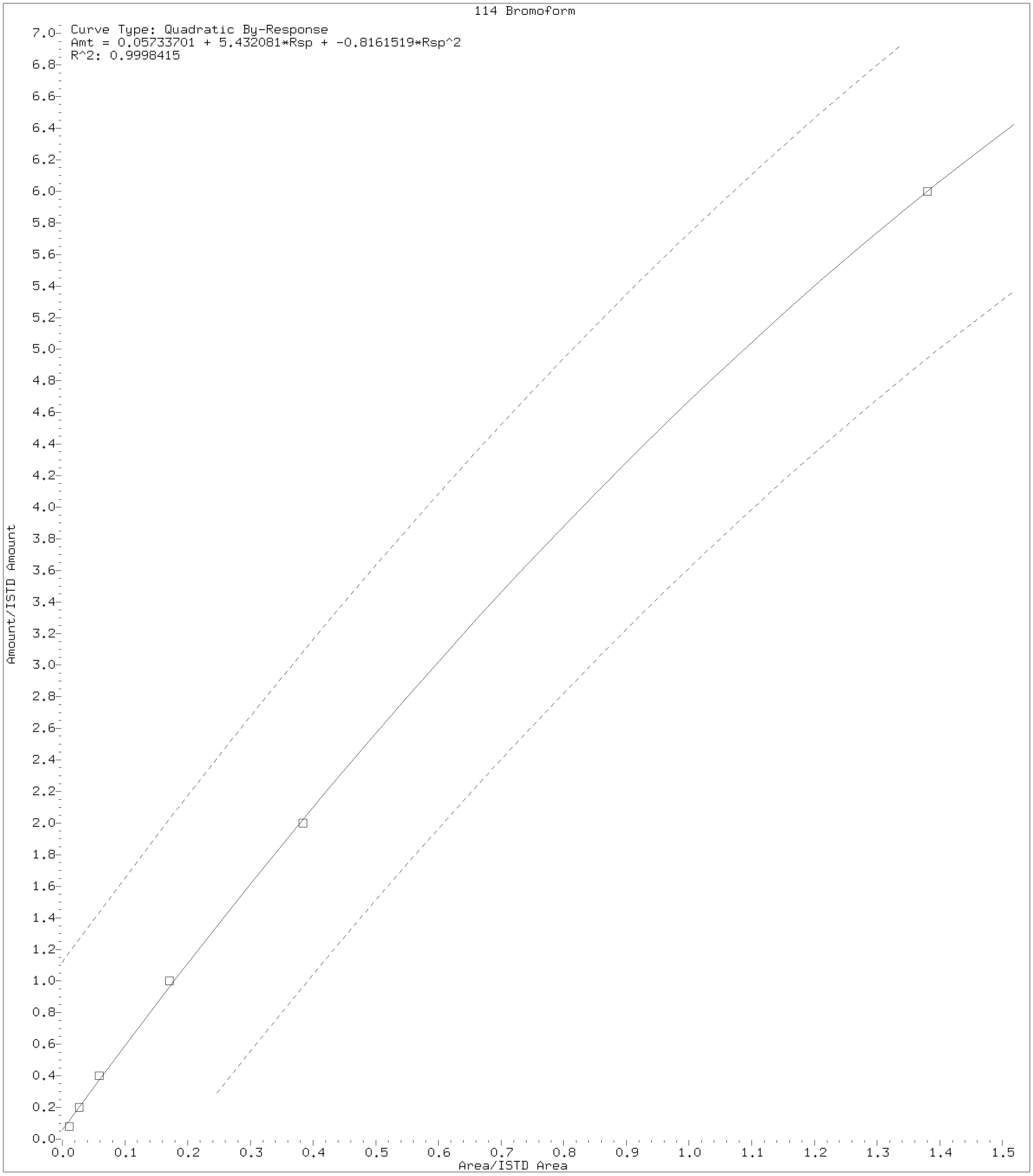
Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%



Digitally signed by Stephen C. Nolte on 05/30/2018 at 07:17.
Target 3.5 esignature user ID: scn10072



Digitally signed by Stephen C. Nolte on 05/30/2018 at 07:17.
Target 3.5 esignature user ID: scn10072



Digitally signed by Stephen C. Nolte on 05/30/2018 at 07:17.
Target 3.5 esignature user ID: scn10072

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP07566.i/18may29i.b/ry29i10.d	VSTD004
/chem/HP07566.i/18may29i.b/ry29i11.d	VSTD010
/chem/HP07566.i/18may29i.b/ry29i12.d	VSTD020
/chem/HP07566.i/18may29i.b/ry29i13.d	VSTD050
/chem/HP07566.i/18may29i.b/ry29i14.d	VSTD100
/chem/HP07566.i/18may29i.b/ry29i15.d	VSTD300

Area Summary

File ID:

Internal Standard Name	ry29i10.d	ry29i11.d	ry29i12.d	ry29i13.d	ry29i14.d	ry29i15.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	129657	143097	139891	139011	137781	129486	136487	4	Yes
Fluorobenzene	928790	1055590	1004186	1067421	1055625	967892	1013251	6	Yes
Chlorobenzene-d5	619201	672073	674573	706361	692315	629164	665614	5	Yes
1,4-Dichlorobenzene-d4	204258	238993	230929	248671	246289	226184	232554	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	ry29i10.d	ry29i11.d	ry29i12.d	ry29i13.d	ry29i14.d	ry29i15.d	Avg. RT
t-Butyl alcohol-d10	4.003	4.007	4.010	4.014	4.003	4.006	4.007
Fluorobenzene	7.498	7.498	7.498	7.495	7.497	7.498	7.497
Chlorobenzene-d5	11.043	11.044	11.044	11.041	11.043	11.043	11.043
1,4-Dichlorobenzene-d4	12.953	12.950	12.950	12.954	12.949	12.949	12.951

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 05/30/2018 at 06:55.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 ICV Date: 05/29/18 Time: 16:02

Lab File ID: ry29v10.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3286	0.2903	17.67	20	-12	
#	Chloromethane	0.4068	0.3939	19.37	20	-3	#
*	Vinyl Chloride	0.3307	0.3367	20.36	20	2	*
	Bromomethane	5.9534	6.2125	22.17	20	11	
	Chloroethane	5.2666	5.1171	19.43	20	-3	
	Dichlorofluoromethane	0.4391	0.4358	19.85	20	-1	
	Trichlorofluoromethane	0.3509	0.3467	19.76	20	-1	
	Ethanol	0.1399	0.1356	969.33	1000	-3	
	Freon 123a	0.3271	0.3206	19.60	20	-2	
	Acrolein	2.8968	2.4196	125.29	150	-16	
*	1,1-Dichloroethene	0.2135	0.2355	22.06	20	10	*
	Acetone	0.0308	0.0301	146.49	150	-2	
	Freon 113	0.1690	0.1638	19.39	20	-3	
	2-Propanol	0.7829	0.8766	167.95	150	12	
	Methyl Iodide	0.3817	0.3844	20.14	20	1	
	Carbon Disulfide	0.6368	0.6322	19.86	20	-1	
	Methyl Acetate	0.2752	0.2693	19.57	20	-2	
	Allyl Chloride	0.5357	0.5229	19.52	20	-2	
	Methylene Chloride	0.2825	0.2843	20.12	20	1	
	t-Butyl alcohol	1.2390	1.1696	188.80	200	-6	
	Acrylonitrile	0.1404	0.1335	95.14	100	-5	
	Methyl Tertiary Butyl Ether	0.8905	0.8533	19.16	20	-4	
	trans-1,2-Dichloroethene	0.2559	0.2580	20.17	20	1	
	n-Hexane	0.2094	0.2021	19.31	20	-3	
#	1,1-Dichloroethane	0.5373	0.5396	20.09	20	0	#
	di-Isopropyl ether	1.1148	1.1304	20.28	20	1	
	2-Chloro-1,3-butadiene	0.4719	0.4592	19.46	20	-3	
	Ethyl t-butyl ether	0.9921	0.9883	19.92	20	0	
	2-Butanone	6.7519	6.3069	140.11	150	-7	
	cis-1,2-Dichloroethene	0.2829	0.2952	20.87	20	4	
	2,2-Dichloropropane	0.3753	0.3695	19.70	20	-2	
	Propionitrile	0.0492	0.0498	151.78	150	1	
	Methacrylonitrile	0.1395	0.1394	149.91	150	0	
	Bromochloromethane	0.1299	0.1274	19.62	20	-2	
	Tetrahydrofuran	1.4686	1.4468	98.51	100	-1	
*	Chloroform	0.4616	0.4601	19.93	20	0	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 ICV Date: 05/29/18 Time: 16:02

Lab File ID: ry29v10.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1-Trichloroethane	0.3882	0.3726	19.19	20	-4	
	Cyclohexane	0.3113	0.2926	18.80	20	-6	
	1,1-Dichloropropene	0.3521	0.3418	19.42	20	-3	
	Carbon Tetrachloride	0.2471	0.2327	18.84	20	-6	
	Isobutyl Alcohol	0.4318	0.3827	443.20	500	-11	
	Benzene	1.1205	1.1215	20.02	20	0	
	1,2-Dichloroethane	0.4166	0.4100	19.68	20	-2	
	t-Amyl methyl ether	0.8790	0.8540	19.43	20	-3	
	n-Heptane	0.2328	0.2163	18.59	20	-7	
	n-Butanol	0.3221	0.3002	932.07	1000	-7	
	Trichloroethene	0.2486	0.2452	19.73	20	-1	
	Methylcyclohexane	0.2275	0.2155	18.95	20	-5	
*	1,2-Dichloropropane	0.3171	0.3142	19.82	20	-1	*
	Methyl Methacrylate	0.2410	0.2285	18.96	20	-5	
	1,4-Dioxane	0.1130	0.1100	486.40	500	-3	
	Dibromomethane	0.1694	0.1696	20.02	20	0	
	Bromodichloromethane	0.3256	0.3141	19.29	20	-4	
	2-Nitropropane	2.8016	2.5098	21.83	20	9	
	2-Chloroethyl Vinyl Ether	0.2250	0.2214	19.68	20	-2	
	cis-1,3-Dichloropropene	0.4672	0.4530	19.39	20	-3	
	4-Methyl-2-pentanone	0.3589	0.3608	100.51	100	1	
*	Toluene	0.9182	0.9154	19.94	20	0	*
	trans-1,3-Dichloropropene	0.6274	0.5877	18.73	20	-6	
	Ethyl Methacrylate	0.6652	0.6406	19.26	20	-4	
	1,1,2-Trichloroethane	0.3590	0.3515	19.58	20	-2	
	Tetrachloroethene	0.2395	0.2268	18.94	20	-5	
	1,3-Dichloropropane	0.6854	0.6513	19.00	20	-5	
	2-Hexanone	0.3756	0.3576	95.20	100	-5	
	Dibromochloromethane	0.3143	0.2886	18.36	20	-8	
	1,2-Dibromoethane	0.3629	0.3519	19.39	20	-3	
	1-Chlorohexane	0.3214	0.3008	18.72	20	-6	
#	Chlorobenzene	0.9288	0.8945	19.26	20	-4	#
	1,1,1,2-Tetrachloroethane	0.2916	0.2747	18.84	20	-6	
*	Ethylbenzene	1.4448	1.3946	19.30	20	-3	*
	m+p-Xylene	0.5366	0.5252	39.15	40	-2	
	o-Xylene	0.5460	0.5189	19.01	20	-5	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 ICV Date: 05/29/18 Time: 16:02

Lab File ID: ry29v10.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Styrene	0.9718	0.9454	19.46	20	-3	
#	Bromoform	0.1690	0.1439	18.36	20	-8	#
	Isopropylbenzene	1.1376	1.1007	19.35	20	-3	
	Cyclohexanone	0.3954	0.3579	452.59	500	-9	
#	1,1,2,2-Tetrachloroethane	1.3972	1.3127	18.79	20	-6	#
	Bromobenzene	0.8866	0.8592	19.38	20	-3	
	trans-1,4-Dichloro-2-butene	0.4612	0.4484	97.23	100	-3	
	1,2,3-Trichloropropane	0.3887	0.3699	19.03	20	-5	
	n-Propylbenzene	3.7564	3.5480	18.89	20	-6	
	2-Chlorotoluene	0.7826	0.7322	18.71	20	-6	
	1,3,5-Trimethylbenzene	2.7396	2.5723	18.78	20	-6	
	4-Chlorotoluene	0.8298	0.7907	19.06	20	-5	
	tert-Butylbenzene	0.5191	0.4716	18.17	20	-9	
	Pentachloroethane	0.4337	0.4124	19.02	20	-5	
	1,2,4-Trimethylbenzene	2.8886	2.6990	18.69	20	-7	
	sec-Butylbenzene	3.0778	2.9210	18.98	20	-5	
	1,3-Dichlorobenzene	1.4176	1.3266	18.72	20	-6	
	p-Isopropyltoluene	2.6428	2.5373	19.20	20	-4	
	1,4-Dichlorobenzene	1.4877	1.4426	19.39	20	-3	
	1,2,3-Trimethylbenzene	2.9976	2.9429	19.63	20	-2	
	Benzyl Chloride	0.4648	0.4148	17.85	20	-11	
	1,3-Diethylbenzene	1.5628	1.4903	19.07	20	-5	
	1,4-Diethylbenzene	1.5823	1.5350	19.40	20	-3	
	n-Butylbenzene	1.3064	1.2659	19.38	20	-3	
	1,2-Dichlorobenzene	1.4170	1.3675	19.30	20	-3	
	1,2-Diethylbenzene	1.3409	1.3099	19.54	20	-2	
	1,2-Dibromo-3-chloropropane	0.2392	0.2230	18.65	20	-7	
	1,3,5-Trichlorobenzene	0.8221	0.8028	19.53	20	-2	
	1,2,4-Trichlorobenzene	0.8037	0.7922	19.71	20	-1	
	Hexachlorobutadiene	0.3295	0.4184	25.40	20	27	
	Naphthalene	2.8921	2.7534	19.04	20	-5	
	1,2,3-Trichlorobenzene	0.7510	0.7710	20.53	20	3	
	2-Methylnaphthalene	1.5065	1.5022	19.94	20	0	

Average %Drift 4

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i06.d
/chem2/HP09953.i/18feb22i.b/bf22i05.d
/chem2/HP09953.i/18feb22i.b/bf22i04.d
/chem2/HP09953.i/18feb22i.b/bf22i03.d
/chem2/HP09953.i/18feb22i.b/bf22i02.d
/chem2/HP09953.i/18feb22i.b/bf22i01.d

File /chem2/HP09953.i/18feb22i.b/bf22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09953.i/18jun19a.b/bu19c01.d

RT Summary

Internal Standard Name	File ID: bu19c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	1.930	1.924	Yes
Fluorobenzene	3.956	3.956	Yes
Chlorobenzene-d5	7.156	7.156	Yes
1,4-Dichlorobenzene-d4	9.236	9.236	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: bu19c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	98683	114201	57100	228402	Yes
Fluorobenzene	985350	1207816	603908	2415632	Yes
Chlorobenzene-d5	729820	931957	465978	1863914	Yes
1,4-Dichlorobenzene-d4	418657	549119	274560	1098238	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/19/2018 at 17:06

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/19/18 Time: 15:54

Lab File ID: bu19c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4887	49.70	50	-1	
#	Chloromethane	0.5872	0.5544	47.21	50	-6	#
*	Vinyl Chloride	0.4173	0.3989	47.79	50	-4	*
	Bromomethane	0.2899	0.3158	54.47	50	9	
	Chloroethane	0.2334	0.2339	50.11	50	0	
	Trichlorofluoromethane	0.5369	0.5857	54.54	50	9	
	Ethanol	0.1211	0.1101	2273.12	2500	-9	
	Freon 123a	0.3518	0.3480	49.47	50	-1	
	Acrolein	2.4281	2.3300	479.80	500	-4	
*	1,1-Dichloroethene	0.2459	0.2452	49.85	50	0	*
	Acetone	0.0248	0.0213	86.03	100	-14	
	Freon 113	0.2960	0.2850	48.14	50	-4	
	2-Propanol	1.1163	1.1226	251.41	250	1	
	Methyl Iodide	0.5387	0.5289	49.09	50	-2	
	Carbon Disulfide	0.8424	0.8984	53.32	50	7	
	Methyl Acetate	0.2090	0.1882	45.03	50	-10	
	Allyl Chloride	0.4892	0.5024	51.35	50	3	
	Methylene Chloride	0.2885	0.2731	47.32	50	-5	
	t-Butyl alcohol	1.2418	1.2466	250.98	250	0	
	Acrylonitrile	0.0991	0.0966	48.74	50	-3	
	Methyl Tertiary Butyl Ether	0.7975	0.8860	55.55	50	11	
	trans-1,2-Dichloroethene	0.2884	0.3099	53.71	50	7	
	n-Hexane	0.5126	0.4471	43.61	50	-13	
#	1,1-Dichloroethane	0.5731	0.6264	54.65	50	9	#
	di-Isopropyl ether	1.1602	1.2193	52.54	50	5	
	2-Chloro-1,3-butadiene	0.5207	0.6114	58.71	50	17	
	Ethyl t-butyl ether	0.9727	1.0249	52.69	50	5	
	2-Butanone	7.3204	6.5259	89.15	100	-11	
	cis-1,2-Dichloroethene	0.3342	0.3347	50.07	50	0	
	2,2-Dichloropropane	0.4251	0.5237	61.60	50	23	
	Propionitrile	2.0227	1.9680	243.24	250	-3	
	Methacrylonitrile	0.1170	0.1063	113.53	125	-9	
	Bromochloromethane	0.1635	0.1513	46.26	50	-7	
	Tetrahydrofuran	1.5856	1.4316	90.29	100	-10	
*	Chloroform	0.5364	0.5934	55.31	50	11	*
	1,1,1-Trichloroethane	0.5181	0.5760	55.58	50	11	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/19/18 Time: 15:54

Lab File ID: bu19c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Cyclohexane	0.6302	0.5724	45.42	50	-9	
	Cyclohexane(2)	0.5080	0.4320	42.52	50	-15	
	Cyclohexane(3)	0.1808	0.1644	45.46	50	-9	
	1,1-Dichloropropene	0.4338	0.4658	53.69	50	7	
	Carbon Tetrachloride	0.3830	0.4561	59.53	50	19	
	Isobutyl Alcohol	0.5096	0.5459	669.52	625	7	
	Benzene	1.2609	1.2817	50.82	50	2	
	1,2-Dichloroethane	0.4097	0.4794	58.51	50	17	
	1,2-Dichloroethane(2)	0.0353	0.0340	48.11	50	-4	
	t-Amyl methyl ether	0.8144	0.8245	50.62	50	1	
	n-Heptane	0.6124	0.4274	34.90	50	-30	
	n-Butanol	0.3762	0.3839	1275.53	1250	2	
	Trichloroethene	0.3227	0.3273	50.72	50	1	
	Methylcyclohexane	0.6000	0.5571	46.43	50	-7	
*	1,2-Dichloropropane	0.3331	0.3381	50.76	50	2	*
	Methyl Methacrylate	0.1907	0.1808	47.41	50	-5	
	1,4-Dioxane	0.1410	0.1351	598.69	625	-4	
	Dibromomethane	0.1795	0.1800	50.13	50	0	
	Bromodichloromethane	0.3833	0.4394	57.33	50	15	
	2-Nitropropane	2.5306	3.6375	123.48	100	23	
	2-Chloroethyl Vinyl Ether	0.1644	0.1458	44.35	50	-11	
	cis-1,3-Dichloropropene	0.4668	0.5137	55.02	50	10	
	4-Methyl-2-pentanone	0.3036	0.2700	88.91	100	-11	
*	Toluene	0.9983	1.0247	51.32	50	3	*
	trans-1,3-Dichloropropene	0.4982	0.5979	60.00	50	20	
	Ethyl Methacrylate	0.4494	0.4823	53.66	50	7	
	1,1,2-Trichloroethane	0.3230	0.3308	51.22	50	2	
	Tetrachloroethene	0.4631	0.4405	47.55	50	-5	
	1,3-Dichloropropane	0.5552	0.5890	53.04	50	6	
	2-Hexanone	0.2699	0.2499	92.59	100	-7	
	Dibromochloromethane	0.3545	0.4042	57.01	50	14	
	1,2-Dibromoethane	0.3271	0.3327	50.86	50	2	
	1-Chlorohexane	0.5308	0.5053	47.59	50	-5	
#	Chlorobenzene	1.1089	1.1081	49.96	50	0	#
	1,1,1,2-Tetrachloroethane	0.3690	0.4143	56.14	50	12	
*	Ethylbenzene	1.9040	1.9873	52.19	50	4	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/19/18 Time: 15:54

Lab File ID: bu19c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	m+p-Xylene	0.7574	0.7509	99.14	100	-1	
	o-Xylene	0.7545	0.7356	48.75	50	-3	
	Styrene	1.1879	1.2120	51.01	50	2	
#	Bromoform	0.2222	0.2529	53.44	50	7	#
	Isopropylbenzene	1.9082	1.9194	50.29	50	1	
	Cyclohexanone	0.9002	0.6279	438.18	625	-30	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7902	52.30	50	5	#
	Bromobenzene	0.8408	0.8448	50.23	50	0	
	trans-1,4-Dichloro-2-butene	0.2069	0.2723	164.52	125	32	
	1,2,3-Trichloropropane	0.2073	0.2213	53.37	50	7	
	n-Propylbenzene	3.8098	4.0287	52.87	50	6	
	2-Chlorotoluene	0.7939	0.7849	49.43	50	-1	
	1,3,5-Trimethylbenzene	2.8159	2.9318	52.06	50	4	
	4-Chlorotoluene	0.8226	0.8122	49.37	50	-1	
	tert-Butylbenzene	0.6559	0.6187	47.16	50	-6	
	Pentachloroethane	0.4798	0.5561	57.96	50	16	
	1,2,4-Trimethylbenzene	2.8653	3.0286	52.85	50	6	
	sec-Butylbenzene	3.5929	3.5166	48.94	50	-2	
	1,3-Dichlorobenzene	1.6523	1.6018	48.47	50	-3	
	p-Isopropyltoluene	3.2092	3.1267	48.71	50	-3	
	1,4-Dichlorobenzene	1.7189	1.6475	47.92	50	-4	
	1,2,3-Trimethylbenzene	2.9416	3.1603	53.72	50	7	
	Benzyl Chloride	0.2338	0.2941	56.04	50	12	
	1,3-Diethylbenzene	1.8848	1.9740	52.37	50	5	
	1,4-Diethylbenzene	2.0114	2.0919	52.00	50	4	
	n-Butylbenzene	1.6592	1.5706	47.33	50	-5	
	1,2-Dichlorobenzene	1.6409	1.5990	48.72	50	-3	
	1,2-Diethylbenzene	1.6079	1.6642	51.75	50	4	
	1,2-Dibromo-3-chloropropane	0.1332	0.1583	59.44	50	19	
	1,3,5-Trichlorobenzene	1.3773	1.2519	45.45	50	-9	
	1,2,4-Trichlorobenzene	1.2763	1.1700	45.84	50	-8	
	Hexachlorobutadiene	0.6574	0.4965	36.50	50	-27	
	Naphthalene	2.6627	2.5346	47.59	50	-5	
	1,2,3-Trichlorobenzene	1.1896	1.1081	46.57	50	-7	
	2-Methylnaphthalene	1.6549	1.7246	52.11	50	4	
	Dibromofluoromethane	0.2502	0.2590	51.77	50	4	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/19/18 Time: 15:54

Lab File ID: bu19c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Dibromofluoromethane(2)	0.2550	0.2637	51.70	50	3
1,2-Dichloroethane-d4	0.0548	0.0546	49.79	50	0
1,2-Dichloroethane-d4(2)	0.2800	0.3240	57.87	50	16
1,2-Dichloroethane-d4(3)	0.0347	0.0333	48.09	50	-4
Toluene-d8	1.3054	1.3573	51.99	50	4
Toluene-d8(2)	0.8436	0.8688	51.49	50	3
4-Bromofluorobenzene	0.4987	0.5220	52.34	50	5
4-Bromofluorobenzene(2)	0.4342	0.4347	50.06	50	0

Average %Drift 7

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i06.d
/chem2/HP09953.i/18feb22i.b/bf22i05.d
/chem2/HP09953.i/18feb22i.b/bf22i04.d
/chem2/HP09953.i/18feb22i.b/bf22i03.d
/chem2/HP09953.i/18feb22i.b/bf22i02.d
/chem2/HP09953.i/18feb22i.b/bf22i01.d

File /chem2/HP09953.i/18feb22i.b/bf22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09953.i/18jun20a.b/bu20c01.d

RT Summary

Internal Standard Name	File ID: bu20c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	1.936	1.924	Yes
Fluorobenzene	3.956	3.956	Yes
Chlorobenzene-d5	7.156	7.156	Yes
1,4-Dichlorobenzene-d4	9.236	9.236	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: bu20c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	91218	114201	57100	228402	Yes
Fluorobenzene	891397	1207816	603908	2415632	Yes
Chlorobenzene-d5	654368	931957	465978	1863914	Yes
1,4-Dichlorobenzene-d4	378494	549119	274560	1098238	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments:

report generated on 06/20/2018 at 17:40

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/20/18 Time: 16:31

Lab File ID: bu20c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4379	44.53	50	-11	
#	Chloromethane	0.5872	0.5064	43.12	50	-14	#
*	Vinyl Chloride	0.4173	0.3599	43.13	50	-14	*
	Bromomethane	0.2899	0.2935	50.62	50	1	
	Chloroethane	0.2334	0.2149	46.03	50	-8	
	Trichlorofluoromethane	0.5369	0.5704	53.11	50	6	
	Ethanol	0.1211	0.1121	2314.51	2500	-7	
	Freon 123a	0.3518	0.3297	46.85	50	-6	
	Acrolein	2.4281	2.3289	479.57	500	-4	
*	1,1-Dichloroethene	0.2459	0.2266	46.06	50	-8	*
	Acetone	0.0248	0.0221	89.10	100	-11	
	Freon 113	0.2960	0.2898	48.95	50	-2	
	2-Propanol	1.1163	1.0618	237.80	250	-5	
	Methyl Iodide	0.5387	0.4983	46.25	50	-7	
	Carbon Disulfide	0.8424	0.8251	48.97	50	-2	
	Methyl Acetate	0.2090	0.1842	44.05	50	-12	
	Allyl Chloride	0.4892	0.4728	48.33	50	-3	
	Methylene Chloride	0.2885	0.2631	45.60	50	-9	
	t-Butyl alcohol	1.2418	1.2479	251.23	250	0	
	Acrylonitrile	0.0991	0.0885	44.69	50	-11	
	Methyl Tertiary Butyl Ether	0.7975	0.8016	50.26	50	1	
	trans-1,2-Dichloroethene	0.2884	0.2631	45.62	50	-9	
	n-Hexane	0.5126	0.4849	47.30	50	-5	
#	1,1-Dichloroethane	0.5731	0.5905	51.52	50	3	#
	di-Isopropyl ether	1.1602	1.1490	49.52	50	-1	
	2-Chloro-1,3-butadiene	0.5207	0.5844	56.12	50	12	
	Ethyl t-butyl ether	0.9727	0.9646	49.59	50	-1	
	2-Butanone	7.3204	6.6961	91.47	100	-9	
	cis-1,2-Dichloroethene	0.3342	0.3127	46.78	50	-6	
	2,2-Dichloropropane	0.4251	0.5011	58.94	50	18	
	Propionitrile	2.0227	1.8794	232.29	250	-7	
	Methacrylonitrile	0.1170	0.1026	109.54	125	-12	
	Bromochloromethane	0.1635	0.1420	43.41	50	-13	
	Tetrahydrofuran	1.5856	1.4248	89.86	100	-10	
*	Chloroform	0.5364	0.5661	52.77	50	6	*
	1,1,1-Trichloroethane	0.5181	0.5611	54.14	50	8	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/20/18 Time: 16:31

Lab File ID: bu20c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Cyclohexane	0.6302	0.5974	47.40	50	-5	
	Cyclohexane(2)	0.5080	0.4458	43.88	50	-12	
	Cyclohexane(3)	0.1808	0.1722	47.62	50	-5	
	1,1-Dichloropropene	0.4338	0.4501	51.87	50	4	
	Carbon Tetrachloride	0.3830	0.4565	59.59	50	19	
	Isobutyl Alcohol	0.5096	0.5453	668.82	625	7	
	Benzene	1.2609	1.2093	47.95	50	-4	
	1,2-Dichloroethane	0.4097	0.4744	57.89	50	16	
	1,2-Dichloroethane(2)	0.0353	0.0329	46.59	50	-7	
	t-Amyl methyl ether	0.8144	0.7807	47.93	50	-4	
	n-Heptane	0.6124	0.5370	43.85	50	-12	
	n-Butanol	0.3762	0.3606	1198.20	1250	-4	
	Trichloroethene	0.3227	0.3178	49.24	50	-2	
	Methylcyclohexane	0.6000	0.5119	42.66	50	-15	
*	1,2-Dichloropropane	0.3331	0.3280	49.24	50	-2	*
	Methyl Methacrylate	0.1907	0.1761	46.17	50	-8	
	1,4-Dioxane	0.1410	0.1223	542.02	625	-13	
	Dibromomethane	0.1795	0.1756	48.92	50	-2	
	Bromodichloromethane	0.3833	0.4266	55.65	50	11	
	2-Nitropropane	2.5306	3.7817	128.04	100	28	
	2-Chloroethyl Vinyl Ether	0.1644	0.1130	34.37	50	-31	
	cis-1,3-Dichloropropene	0.4668	0.4876	52.22	50	4	
	4-Methyl-2-pentanone	0.3036	0.2878	94.78	100	-5	
*	Toluene	0.9983	1.0262	51.40	50	3	*
	trans-1,3-Dichloropropene	0.4982	0.5811	58.31	50	17	
	Ethyl Methacrylate	0.4494	0.4594	51.11	50	2	
	1,1,2-Trichloroethane	0.3230	0.3232	50.03	50	0	
	Tetrachloroethene	0.4631	0.4539	49.01	50	-2	
	1,3-Dichloropropane	0.5552	0.5787	52.11	50	4	
	2-Hexanone	0.2699	0.2631	97.48	100	-3	
	Dibromochloromethane	0.3545	0.3980	56.14	50	12	
	1,2-Dibromoethane	0.3271	0.3241	49.55	50	-1	
	1-Chlorohexane	0.5308	0.5313	50.04	50	0	
#	Chlorobenzene	1.1089	1.1204	50.52	50	1	#
	1,1,1,2-Tetrachloroethane	0.3690	0.4167	56.47	50	13	
*	Ethylbenzene	1.9040	2.0542	53.94	50	8	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/20/18 Time: 16:31

Lab File ID: bu20c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	m+p-Xylene	0.7574	0.7798	102.96	100	3	
	o-Xylene	0.7545	0.7612	50.45	50	1	
	Styrene	1.1879	1.2464	52.46	50	5	
#	Bromoform	0.2222	0.2504	52.95	50	6	#
	Isopropylbenzene	1.9082	1.9905	52.16	50	4	
	Cyclohexanone	0.9002	0.5574	394.60	625	-37	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7744	51.26	50	3	#
	Bromobenzene	0.8408	0.8617	51.24	50	2	
	trans-1,4-Dichloro-2-butene	0.2069	0.2690	162.51	125	30	
	1,2,3-Trichloropropane	0.2073	0.2265	54.62	50	9	
	n-Propylbenzene	3.8098	4.2255	55.46	50	11	
	2-Chlorotoluene	0.7939	0.8136	51.24	50	2	
	1,3,5-Trimethylbenzene	2.8159	3.1061	55.15	50	10	
	4-Chlorotoluene	0.8226	0.8401	51.07	50	2	
	tert-Butylbenzene	0.6559	0.6527	49.76	50	0	
	Pentachloroethane	0.4798	0.5180	53.98	50	8	
	1,2,4-Trimethylbenzene	2.8653	3.1665	55.25	50	11	
	sec-Butylbenzene	3.5929	3.7176	51.74	50	3	
	1,3-Dichlorobenzene	1.6523	1.6773	50.76	50	2	
	p-Isopropyltoluene	3.2092	3.3117	51.60	50	3	
	1,4-Dichlorobenzene	1.7189	1.7084	49.70	50	-1	
	1,2,3-Trimethylbenzene	2.9416	2.8954	49.21	50	-2	
	Benzyl Chloride	0.2338	0.2874	54.85	50	10	
	1,3-Diethylbenzene	1.8848	1.7607	46.71	50	-7	
	1,4-Diethylbenzene	2.0114	1.8735	46.57	50	-7	
	n-Butylbenzene	1.6592	1.6974	51.15	50	2	
	1,2-Dichlorobenzene	1.6409	1.6290	49.64	50	-1	
	1,2-Diethylbenzene	1.6079	1.4862	46.22	50	-8	
	1,2-Dibromo-3-chloropropane	0.1332	0.1537	57.71	50	15	
	1,3,5-Trichlorobenzene	1.3773	1.3047	47.36	50	-5	
	1,2,4-Trichlorobenzene	1.2763	1.1563	45.30	50	-9	
	Hexachlorobutadiene	0.6574	0.5809	42.28	50	-15	
	Naphthalene	2.6627	2.4329	45.68	50	-9	
	1,2,3-Trichlorobenzene	1.1896	1.0909	45.85	50	-8	
	2-Methylnaphthalene	1.6549	1.4656	44.28	50	-11	
	Dibromofluoromethane	0.2502	0.2614	52.24	50	4	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/20/18 Time: 16:31

Lab File ID: bu20c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Dibromofluoromethane(2)	0.2550	0.2711	53.16	50	6
1,2-Dichloroethane-d4	0.0548	0.0553	50.45	50	1
1,2-Dichloroethane-d4(2)	0.2800	0.3353	59.88	50	20
1,2-Dichloroethane-d4(3)	0.0347	0.0347	50.10	50	0
Toluene-d8	1.3054	1.3750	52.67	50	5
Toluene-d8(2)	0.8436	0.8821	52.28	50	5
4-Bromofluorobenzene	0.4987	0.5367	53.81	50	8
4-Bromofluorobenzene(2)	0.4342	0.4479	51.58	50	3

Average %Drift 7

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09953.i/18feb22i.b/bf22i06.d
/chem2/HP09953.i/18feb22i.b/bf22i05.d
/chem2/HP09953.i/18feb22i.b/bf22i04.d
/chem2/HP09953.i/18feb22i.b/bf22i03.d
/chem2/HP09953.i/18feb22i.b/bf22i02.d
/chem2/HP09953.i/18feb22i.b/bf22i01.d

File /chem2/HP09953.i/18feb22i.b/bf22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09953.i/18jun22a.b/bu22c01.d

RT Summary

Internal Standard Name	File ID: bu22c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	1.924	1.924	Yes
Fluorobenzene	3.956	3.956	Yes
Chlorobenzene-d5	7.156	7.156	Yes
1,4-Dichlorobenzene-d4	9.236	9.236	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: bu22c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	90604	114201	57100	228402	Yes
Fluorobenzene	1018228	1207816	603908	2415632	Yes
Chlorobenzene-d5	729723	931957	465978	1863914	Yes
1,4-Dichlorobenzene-d4	425445	549119	274560	1098238	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/22/2018 at 17:44

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/22/18 Time: 16:32

Lab File ID: bu22c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4916	0.4450	45.26	50	-9	
#	Chloromethane	0.5872	0.5267	44.85	50	-10	#
*	Vinyl Chloride	0.4173	0.3608	43.24	50	-14	*
	Bromomethane	0.2899	0.2949	50.86	50	2	
	Chloroethane	0.2334	0.2222	47.60	50	-5	
	Trichlorofluoromethane	0.5369	0.5407	50.35	50	1	
	Ethanol	0.1211	0.1207	2491.64	2500	0	
	Freon 123a	0.3518	0.3187	45.30	50	-9	
	Acrolein	2.4281	1.9333	398.11	500	-20	
*	1,1-Dichloroethene	0.2459	0.2251	45.77	50	-8	*
	Acetone	0.0248	0.0157	63.18	100	-37	
	Freon 113	0.2960	0.2323	39.24	50	-22	
	2-Propanol	1.1163	1.1307	253.23	250	1	
	Methyl Iodide	0.5387	0.4843	44.95	50	-10	
	Carbon Disulfide	0.8424	0.8158	48.42	50	-3	
	Methyl Acetate	0.2090	0.1640	39.22	50	-22	
	Allyl Chloride	0.4892	0.5116	52.29	50	5	
	Methylene Chloride	0.2885	0.2549	44.18	50	-12	
	t-Butyl alcohol	1.2418	1.3496	271.71	250	9	
	Acrylonitrile	0.0991	0.0604	30.48	50	-39	
	Methyl Tertiary Butyl Ether	0.7975	0.7127	44.69	50	-11	
	trans-1,2-Dichloroethene	0.2884	0.2597	45.02	50	-10	
	n-Hexane	0.5126	0.3090	30.14	50	-40	
#	1,1-Dichloroethane	0.5731	0.5700	49.73	50	-1	#
	di-Isopropyl ether	1.1602	1.1137	48.00	50	-4	
	2-Chloro-1,3-butadiene	0.5207	0.5549	53.29	50	7	
	Ethyl t-butyl ether	0.9727	0.9250	47.55	50	-5	
	2-Butanone	7.3204	5.1771	70.72	100	-29	
	cis-1,2-Dichloroethene	0.3342	0.3039	45.47	50	-9	
	2,2-Dichloropropane	0.4251	0.4743	55.79	50	12	
	Propionitrile	2.0227	1.9381	239.54	250	-4	
	Methacrylonitrile	0.1170	0.0938	100.15	125	-20	
	Bromochloromethane	0.1635	0.1466	44.83	50	-10	
	Tetrahydrofuran	1.5856	1.0284	64.86	100	-35	
*	Chloroform	0.5364	0.5371	50.07	50	0	*
	1,1,1-Trichloroethane	0.5181	0.5160	49.79	50	0	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/22/18 Time: 16:32

Lab File ID: bu22c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Cyclohexane	0.6302	0.4396	34.88	50	-30	
	Cyclohexane(2)	0.5080	0.3281	32.29	50	-35	
	Cyclohexane(3)	0.1808	0.1271	35.15	50	-30	
	1,1-Dichloropropene	0.4338	0.4130	47.60	50	-5	
	Carbon Tetrachloride	0.3830	0.3997	52.17	50	4	
	Isobutyl Alcohol	0.5096	0.5851	717.65	625	15	
	Benzene	1.2609	1.1675	46.30	50	-7	
	1,2-Dichloroethane	0.4097	0.4320	52.72	50	5	
	1,2-Dichloroethane(2)	0.0353	0.0315	44.55	50	-11	
	t-Amyl methyl ether	0.8144	0.7315	44.91	50	-10	
	n-Heptane	0.6124	0.2947	24.06	50	-52	
	n-Butanol	0.3762	0.4079	1355.20	1250	8	
	Trichloroethene	0.3227	0.2943	45.60	50	-9	
	Methylcyclohexane	0.6000	0.5581	46.51	50	-7	
*	1,2-Dichloropropane	0.3331	0.3103	46.57	50	-7	*
	Methyl Methacrylate	0.1907	0.1650	43.28	50	-13	
	1,4-Dioxane	0.1410	0.1434	635.35	625	2	
	Dibromomethane	0.1795	0.1613	44.94	50	-10	
	Bromodichloromethane	0.3833	0.3934	51.32	50	3	
	2-Nitropropane	2.5306	2.8072	97.00	100	-3	
	2-Chloroethyl Vinyl Ether	0.1644	0.1252	38.08	50	-24	
	cis-1,3-Dichloropropene	0.4668	0.4614	49.42	50	-1	
	4-Methyl-2-pentanone	0.3036	0.1990	65.54	100	-34	
*	Toluene	0.9983	0.9604	48.10	50	-4	*
	trans-1,3-Dichloropropene	0.4982	0.5600	56.20	50	12	
	Ethyl Methacrylate	0.4494	0.4478	49.82	50	0	
	1,1,2-Trichloroethane	0.3230	0.3108	48.12	50	-4	
	Tetrachloroethene	0.4631	0.3866	41.74	50	-17	
	1,3-Dichloropropane	0.5552	0.5506	49.58	50	-1	
	2-Hexanone	0.2699	0.2074	76.86	100	-23	
	Dibromochloromethane	0.3545	0.3809	53.73	50	7	
	1,2-Dibromoethane	0.3271	0.3146	48.09	50	-4	
	1-Chlorohexane	0.5308	0.4180	39.37	50	-21	
#	Chlorobenzene	1.1089	1.0444	47.09	50	-6	#
	1,1,1,2-Tetrachloroethane	0.3690	0.3822	51.78	50	4	
*	Ethylbenzene	1.9040	1.8060	47.42	50	-5	*

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/22/18 Time: 16:32

Lab File ID: bu22c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	m+p-Xylene	0.7574	0.6812	89.93	100	-10	
	o-Xylene	0.7545	0.6720	44.54	50	-11	
	Styrene	1.1879	1.1370	47.86	50	-4	
#	Bromoform	0.2222	0.2438	51.64	50	3	#
	Isopropylbenzene	1.9082	1.6508	43.26	50	-13	
	Cyclohexanone	0.9002	0.5440	386.36	625	-38	
#	1,1,2,2-Tetrachloroethane	0.7554	0.7520	49.77	50	0	#
	Bromobenzene	0.8408	0.7868	46.79	50	-6	
	trans-1,4-Dichloro-2-butene	0.2069	0.2561	154.73	125	24	
	1,2,3-Trichloropropane	0.2073	0.2078	50.12	50	0	
	n-Propylbenzene	3.8098	3.5005	45.94	50	-8	
	2-Chlorotoluene	0.7939	0.7122	44.86	50	-10	
	1,3,5-Trimethylbenzene	2.8159	2.5338	44.99	50	-10	
	4-Chlorotoluene	0.8226	0.7428	45.15	50	-10	
	tert-Butylbenzene	0.6559	0.5244	39.97	50	-20	
	Pentachloroethane	0.4798	0.5487	57.19	50	14	
	1,2,4-Trimethylbenzene	2.8653	2.6524	46.28	50	-7	
	sec-Butylbenzene	3.5929	2.9151	40.57	50	-19	
	1,3-Dichlorobenzene	1.6523	1.4829	44.87	50	-10	
	p-Isopropyltoluene	3.2092	2.6583	41.42	50	-17	
	1,4-Dichlorobenzene	1.7189	1.5296	44.50	50	-11	
	1,2,3-Trimethylbenzene	2.9416	3.1429	53.42	50	7	
	Benzyl Chloride	0.2338	0.2744	52.55	50	5	
	1,3-Diethylbenzene	1.8848	1.9836	52.62	50	5	
	1,4-Diethylbenzene	2.0114	2.1109	52.47	50	5	
	n-Butylbenzene	1.6592	1.3524	40.75	50	-18	
	1,2-Dichlorobenzene	1.6409	1.4647	44.63	50	-11	
	1,2-Diethylbenzene	1.6079	1.6415	51.05	50	2	
	1,2-Dibromo-3-chloropropane	0.1332	0.1460	54.83	50	10	
	1,3,5-Trichlorobenzene	1.3773	1.0881	39.50	50	-21	
	1,2,4-Trichlorobenzene	1.2763	1.0220	40.04	50	-20	
	Hexachlorobutadiene	0.6574	0.4312	32.02	50	-36	
	Naphthalene	2.6627	2.3033	43.25	50	-13	
	1,2,3-Trichlorobenzene	1.1896	0.9860	41.44	50	-17	
	2-Methylnaphthalene	1.6549	1.5375	46.45	50	-7	
	Dibromofluoromethane	0.2502	0.2551	50.98	50	2	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09953 Calibration Date: 06/22/18 Time: 16:32

Lab File ID: bu22c01.d Init. Calib. Date(s): 02/22/18 02/22/18

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: DB-624 ID: .18

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Dibromofluoromethane(2)	0.2550	0.2606	51.09	50	2
1,2-Dichloroethane-d4	0.0548	0.0525	47.91	50	-4
1,2-Dichloroethane-d4(2)	0.2800	0.3157	56.38	50	13
1,2-Dichloroethane-d4(3)	0.0347	0.0335	48.31	50	-3
Toluene-d8	1.3054	1.3905	53.26	50	7
Toluene-d8(2)	0.8436	0.8831	52.34	50	5
4-Bromofluorobenzene	0.4987	0.5262	52.76	50	6
4-Bromofluorobenzene(2)	0.4342	0.4458	51.33	50	3

Average %Drift 12

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem/HP07566.i/18may29i.b/ry29i10.d
/chem/HP07566.i/18may29i.b/ry29i11.d
/chem/HP07566.i/18may29i.b/ry29i12.d
/chem/HP07566.i/18may29i.b/ry29i13.d
/chem/HP07566.i/18may29i.b/ry29i14.d
/chem/HP07566.i/18may29i.b/ry29i15.d

File /chem/HP07566.i/18may29i.b/ry29i13.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem/HP07566.i/18jun20a.b/ru20c01.d

RT Summary

Internal Standard Name	File ID: ru20c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	4.006	4.014	Yes
Fluorobenzene	7.498	7.495	Yes
Chlorobenzene-d5	11.043	11.041	Yes
1,4-Dichlorobenzene-d4	12.949	12.954	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: ru20c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	151430	139011	69506	278022	Yes
Fluorobenzene	1083081	1067421	533710	2134842	Yes
Chlorobenzene-d5	771972	706361	353180	1412722	Yes
1,4-Dichlorobenzene-d4	253434	248671	124336	497342	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/20/2018 at 08:58

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/20/18 Time: 08:31

Lab File ID: ru20c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3286	0.3328	50.64	50	1	
#	Chloromethane	0.4068	0.3806	46.78	50	-6	#
*	Vinyl Chloride	0.3307	0.2976	44.99	50	-10	*
	Bromomethane	5.9534	5.6912	52.10	50	4	
	Chloroethane	5.2666	4.4595	42.34	50	-15	
	Trichlorofluoromethane	0.3509	0.3566	50.81	50	2	
	Ethanol	0.1399	0.1516	2708.90	2500	8	
	Freon 123a	0.3271	0.3020	46.16	50	-8	
	Acrolein	2.8968	2.6083	450.20	500	-10	
*	1,1-Dichloroethene	0.2135	0.2051	48.03	50	-4	*
*	1,1-Dichloroethene(2)	0.1243	0.1178	47.40	50	-5	*
	Acetone	0.0308	0.0319	103.59	100	4	
	Freon 113	0.1690	0.1584	46.87	50	-6	
	2-Propanol	0.7829	0.7995	255.30	250	2	
	Methyl Iodide	0.3817	0.3634	47.60	50	-5	
	Carbon Disulfide	0.6368	0.6503	51.06	50	2	
	Methyl Acetate	0.2752	0.2814	51.12	50	2	
	Allyl Chloride	0.5357	0.5096	47.57	50	-5	
	Methylene Chloride	0.2825	0.2641	46.73	50	-7	
	t-Butyl alcohol	1.2390	1.2524	252.70	250	1	
	Acrylonitrile	0.1404	0.1321	47.05	50	-6	
	Methyl Tertiary Butyl Ether	0.8905	0.8297	46.59	50	-7	
	trans-1,2-Dichloroethene	0.2559	0.2358	46.08	50	-8	
	n-Hexane	0.2094	0.1880	44.88	50	-10	
#	1,1-Dichloroethane	0.5373	0.4897	45.57	50	-9	#
	di-Isopropyl ether	1.1148	1.0450	46.87	50	-6	
	2-Chloro-1,3-butadiene	0.4719	0.4214	44.65	50	-11	
	Ethyl t-butyl ether	0.9921	0.9006	45.39	50	-9	
	2-Butanone	6.7519	6.0072	88.97	100	-11	
	2-Butanone(2)	1.4153	1.3287	93.88	100	-6	
	cis-1,2-Dichloroethene	0.2829	0.2715	47.98	50	-4	
	2,2-Dichloropropane	0.3753	0.3549	47.29	50	-5	
	Propionitrile	0.0492	0.0489	248.48	250	-1	
	Methacrylonitrile	0.1395	0.1366	122.40	125	-2	
	Bromochloromethane	0.1299	0.1297	49.94	50	0	
	Tetrahydrofuran	1.4686	1.3545	92.23	100	-8	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/20/18 Time: 08:31

Lab File ID: ru20c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.4616	0.4409	47.76	50	-4	*
	1,1,1-Trichloroethane	0.3882	0.3452	44.46	50	-11	
	Cyclohexane	0.3113	0.2775	44.57	50	-11	
	Cyclohexane(2)	0.2334	0.2091	44.79	50	-10	
	Cyclohexane(3)	0.0916	0.0829	45.25	50	-9	
	1,1-Dichloropropene	0.3521	0.3276	46.53	50	-7	
	Carbon Tetrachloride	0.2471	0.2436	49.30	50	-1	
	Isobutyl Alcohol	0.4318	0.4627	669.80	625	7	
	Benzene	1.1205	1.0745	47.95	50	-4	
	1,2-Dichloroethane	0.4166	0.4126	49.52	50	-1	
	1,2-Dichloroethane(2)	0.0344	0.0341	49.59	50	-1	
	t-Amyl methyl ether	0.8790	0.8196	46.62	50	-7	
	n-Heptane	0.2328	0.2091	44.92	50	-10	
	n-Butanol	0.3221	0.3314	1286.32	1250	3	
	Trichloroethene	0.2486	0.2388	48.03	50	-4	
	Methylcyclohexane	0.2275	0.2163	47.54	50	-5	
*	1,2-Dichloropropane	0.3171	0.2997	47.26	50	-5	*
	Methyl Methacrylate	0.2410	0.2405	49.90	50	0	
	1,4-Dioxane	0.1130	0.1210	668.93	625	7	
	Dibromomethane	0.1694	0.1748	51.57	50	3	
	Bromodichloromethane	0.3256	0.3489	53.58	50	7	
	2-Nitropropane	2.8016	3.2248	110.77	100	11	
	2-Chloroethyl Vinyl Ether	0.2250	0.1948	43.28	50	-13	
	cis-1,3-Dichloropropene	0.4672	0.4840	51.79	50	4	
	4-Methyl-2-pentanone	0.3589	0.3632	101.18	100	1	
*	Toluene	0.9182	0.8409	45.79	50	-8	*
	trans-1,3-Dichloropropene	0.6274	0.6512	51.90	50	4	
	Ethyl Methacrylate	0.6652	0.6500	48.86	50	-2	
	1,1,2-Trichloroethane	0.3590	0.3461	48.20	50	-4	
	Tetrachloroethene	0.2395	0.2247	46.92	50	-6	
	1,3-Dichloropropane	0.6854	0.6759	49.31	50	-1	
	2-Hexanone	0.3756	0.3756	100.01	100	0	
	Dibromochloromethane	0.3143	0.3411	54.26	50	9	
	1,2-Dibromoethane	0.3629	0.3647	50.24	50	0	
	1-Chlorohexane	0.3214	0.2941	45.76	50	-8	
#	Chlorobenzene	0.9288	0.8786	47.30	50	-5	#

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/20/18 Time: 08:31

Lab File ID: ru20c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1,2-Tetrachloroethane	0.2916	0.2891	49.56	50	-1	
*	Ethylbenzene	1.4448	1.3318	46.09	50	-8	*
	m+p-Xylene	0.5366	0.4919	91.67	100	-8	
	o-Xylene	0.5460	0.5114	46.83	50	-6	
	Styrene	0.9718	0.8953	46.07	50	-8	
#	Bromoform	0.1690	0.1853	51.79	50	4	#
	Isopropylbenzene	1.1376	1.0262	45.10	50	-10	
	Cyclohexanone	0.3954	0.4104	648.71	625	4	
#	1,1,2,2-Tetrachloroethane	1.3972	1.3818	49.45	50	-1	#
	Bromobenzene	0.8866	0.8778	49.51	50	-1	
	trans-1,4-Dichloro-2-butene	0.4612	0.4888	132.47	125	6	
	1,2,3-Trichloropropane	0.3887	0.3891	50.05	50	0	
	n-Propylbenzene	3.7564	3.5641	47.44	50	-5	
	2-Chlorotoluene	0.7826	0.7437	47.51	50	-5	
	1,3,5-Trimethylbenzene	2.7396	2.5783	47.06	50	-6	
	4-Chlorotoluene	0.8298	0.7998	48.19	50	-4	
	tert-Butylbenzene	0.5191	0.4778	46.02	50	-8	
	Pentachloroethane	0.4337	0.4663	53.76	50	8	
	1,2,4-Trimethylbenzene	2.8886	2.7530	47.65	50	-5	
	sec-Butylbenzene	3.0778	2.8202	45.82	50	-8	
	1,3-Dichlorobenzene	1.4176	1.3482	47.55	50	-5	
	p-Isopropyltoluene	2.6428	2.4410	46.18	50	-8	
	1,4-Dichlorobenzene	1.4877	1.4260	47.93	50	-4	
	1,2,3-Trimethylbenzene	2.9976	2.8625	47.75	50	-5	
	Benzyl Chloride	0.4648	0.5105	54.91	50	10	
	1,3-Diethylbenzene	1.5628	1.4557	46.57	50	-7	
	1,4-Diethylbenzene	1.5823	1.4999	47.40	50	-5	
	n-Butylbenzene	1.3064	1.1934	45.68	50	-9	
	1,2-Dichlorobenzene	1.4170	1.3522	47.71	50	-5	
	1,2-Diethylbenzene	1.3409	1.2468	46.49	50	-7	
	1,2-Dibromo-3-chloropropane	0.2392	0.2530	52.89	50	6	
	1,3,5-Trichlorobenzene	0.8221	0.7836	47.65	50	-5	
	1,2,4-Trichlorobenzene	0.8037	0.7669	47.71	50	-5	
	Hexachlorobutadiene	0.3295	0.3159	47.95	50	-4	
	Naphthalene	2.8921	2.8328	48.97	50	-2	
	1,2,3-Trichlorobenzene	0.7510	0.7286	48.51	50	-3	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/20/18 Time: 08:31

Lab File ID: ru20c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Methylnaphthalene	1.5065	1.5553	51.62	50	3
Dibromofluoromethane	0.2216	0.2194	49.52	50	-1
Dibromofluoromethane(2)	0.2283	0.2235	48.95	50	-2
1,2-Dichloroethane-d4	0.0609	0.0616	50.57	50	1
1,2-Dichloroethane-d4(2)	0.3314	0.3260	49.19	50	-2
1,2-Dichloroethane-d4(3)	0.0387	0.0389	50.21	50	0
Toluene-d8	1.3015	1.2397	47.63	50	-5
Toluene-d8(2)	0.8462	0.8019	47.38	50	-5
4-Bromofluorobenzene	0.4307	0.4061	47.14	50	-6
4-Bromofluorobenzene(2)	0.2737	0.2654	48.48	50	-3

Average %Drift 5

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem/HP07566.i/18may29i.b/ry29i10.d
/chem/HP07566.i/18may29i.b/ry29i11.d
/chem/HP07566.i/18may29i.b/ry29i12.d
/chem/HP07566.i/18may29i.b/ry29i13.d
/chem/HP07566.i/18may29i.b/ry29i14.d
/chem/HP07566.i/18may29i.b/ry29i15.d

File /chem/HP07566.i/18may29i.b/ry29i13.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem/HP07566.i/18jun21a.b/ru21c01.d

RT Summary

Internal Standard Name	File ID: ru21c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	4.013	4.014	Yes
Fluorobenzene	7.498	7.495	Yes
Chlorobenzene-d5	11.044	11.041	Yes
1,4-Dichlorobenzene-d4	12.950	12.954	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: ru21c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	146873	139011	69506	278022	Yes
Fluorobenzene	968356	1067421	533710	2134842	Yes
Chlorobenzene-d5	670057	706361	353180	1412722	Yes
1,4-Dichlorobenzene-d4	243401	248671	124336	497342	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/21/2018 at 08:14

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/21/18 Time: 07:50

Lab File ID: ru21c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.3286	0.3536	53.81	50	8	
#	Chloromethane	0.4068	0.4030	49.54	50	-1	#
*	Vinyl Chloride	0.3307	0.3227	48.79	50	-2	*
	Bromomethane	5.9534	5.7992	53.11	50	6	
	Chloroethane	5.2666	4.4058	41.83	50	-16	
	Trichlorofluoromethane	0.3509	0.3691	52.60	50	5	
	Ethanol	0.1399	0.1532	2737.83	2500	10	
	Freon 123a	0.3271	0.3238	49.49	50	-1	
	Acrolein	2.8968	2.6021	449.13	500	-10	
*	1,1-Dichloroethene	0.2135	0.2186	51.18	50	2	*
*	1,1-Dichloroethene(2)	0.1243	0.1260	50.69	50	1	*
	Acetone	0.0308	0.0349	113.39	100	13	
	Freon 113	0.1690	0.1684	49.83	50	0	
	2-Propanol	0.7829	0.9153	292.29	250	17	
	Methyl Iodide	0.3817	0.3962	51.89	50	4	
	Carbon Disulfide	0.6368	0.6741	52.93	50	6	
	Methyl Acetate	0.2752	0.2967	53.90	50	8	
	Allyl Chloride	0.5357	0.5638	52.62	50	5	
	Methylene Chloride	0.2825	0.2935	51.94	50	4	
	t-Butyl alcohol	1.2390	1.2363	249.46	250	0	
	Acrylonitrile	0.1404	0.1270	45.25	50	-10	
	Methyl Tertiary Butyl Ether	0.8905	0.8906	50.01	50	0	
	trans-1,2-Dichloroethene	0.2559	0.2609	50.98	50	2	
	n-Hexane	0.2094	0.1979	47.25	50	-6	
#	1,1-Dichloroethane	0.5373	0.5461	50.82	50	2	#
	di-Isopropyl ether	1.1148	1.1417	51.21	50	2	
	2-Chloro-1,3-butadiene	0.4719	0.4641	49.17	50	-2	
	Ethyl t-butyl ether	0.9921	0.9528	48.02	50	-4	
	2-Butanone	6.7519	6.0225	89.20	100	-11	
	2-Butanone(2)	1.4153	1.3325	94.15	100	-6	
	cis-1,2-Dichloroethene	0.2829	0.2940	51.96	50	4	
	2,2-Dichloropropane	0.3753	0.3838	51.14	50	2	
	Propionitrile	0.0492	0.0524	266.36	250	7	
	Methacrylonitrile	0.1395	0.1414	126.74	125	1	
	Bromochloromethane	0.1299	0.1348	51.91	50	4	
	Tetrahydrofuran	1.4686	1.3138	89.46	100	-11	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/21/18 Time: 07:50

Lab File ID: ru21c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.4616	0.4550	49.28	50	-1	*
	1,1,1-Trichloroethane	0.3882	0.3651	47.02	50	-6	
	Cyclohexane	0.3113	0.2765	44.42	50	-11	
	Cyclohexane(2)	0.2334	0.2123	45.47	50	-9	
	Cyclohexane(3)	0.0916	0.0806	44.03	50	-12	
	1,1-Dichloropropene	0.3521	0.3371	47.87	50	-4	
	Carbon Tetrachloride	0.2471	0.2537	51.35	50	3	
	Isobutyl Alcohol	0.4318	0.4128	597.49	625	-4	
	Benzene	1.1205	1.1179	49.88	50	0	
	1,2-Dichloroethane	0.4166	0.4239	50.87	50	2	
	1,2-Dichloroethane(2)	0.0344	0.0348	50.68	50	1	
	t-Amyl methyl ether	0.8790	0.8266	47.02	50	-6	
	n-Heptane	0.2328	0.2046	43.94	50	-12	
	n-Butanol	0.3221	0.3065	1189.51	1250	-5	
	Trichloroethene	0.2486	0.2491	50.10	50	0	
	Methylcyclohexane	0.2275	0.2256	49.59	50	-1	
*	1,2-Dichloropropane	0.3171	0.3146	49.61	50	-1	*
	Methyl Methacrylate	0.2410	0.2408	49.96	50	0	
	1,4-Dioxane	0.1130	0.1213	670.64	625	7	
	Dibromomethane	0.1694	0.1773	52.34	50	5	
	Bromodichloromethane	0.3256	0.3577	54.93	50	10	
	2-Nitropropane	2.8016	3.0705	105.85	100	6	
	2-Chloroethyl Vinyl Ether	0.2250	0.1968	43.72	50	-13	
	cis-1,3-Dichloropropene	0.4672	0.4965	53.13	50	6	
	4-Methyl-2-pentanone	0.3589	0.3715	103.50	100	4	
*	Toluene	0.9182	0.9002	49.02	50	-2	*
	trans-1,3-Dichloropropene	0.6274	0.6553	52.23	50	4	
	Ethyl Methacrylate	0.6652	0.6601	49.62	50	-1	
	1,1,2-Trichloroethane	0.3590	0.3608	50.25	50	0	
	Tetrachloroethene	0.2395	0.2332	48.69	50	-3	
	1,3-Dichloropropane	0.6854	0.6792	49.54	50	-1	
	2-Hexanone	0.3756	0.3700	98.52	100	-1	
	Dibromochloromethane	0.3143	0.3442	54.76	50	10	
	1,2-Dibromoethane	0.3629	0.3675	50.62	50	1	
	1-Chlorohexane	0.3214	0.2912	45.30	50	-9	
#	Chlorobenzene	0.9288	0.9031	48.61	50	-3	#

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/21/18 Time: 07:50

Lab File ID: ru21c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1,2-Tetrachloroethane	0.2916	0.2995	51.35	50	3	
*	Ethylbenzene	1.4448	1.3579	46.99	50	-6	*
	m+p-Xylene	0.5366	0.5155	96.06	100	-4	
	o-Xylene	0.5460	0.5290	48.44	50	-3	
	Styrene	0.9718	0.9204	47.35	50	-5	
#	Bromoform	0.1690	0.1984	55.16	50	10	#
	Isopropylbenzene	1.1376	1.0691	46.99	50	-6	
	Cyclohexanone	0.3954	0.3845	607.78	625	-3	
#	1,1,2,2-Tetrachloroethane	1.3972	1.3387	47.91	50	-4	#
	Bromobenzene	0.8866	0.8616	48.59	50	-3	
	trans-1,4-Dichloro-2-butene	0.4612	0.4675	126.69	125	1	
	1,2,3-Trichloropropane	0.3887	0.3784	48.67	50	-3	
	n-Propylbenzene	3.7564	3.4961	46.54	50	-7	
	2-Chlorotoluene	0.7826	0.7252	46.33	50	-7	
	1,3,5-Trimethylbenzene	2.7396	2.5041	45.70	50	-9	
	4-Chlorotoluene	0.8298	0.7794	46.97	50	-6	
	tert-Butylbenzene	0.5191	0.4637	44.66	50	-11	
	Pentachloroethane	0.4337	0.4541	52.34	50	5	
	1,2,4-Trimethylbenzene	2.8886	2.6825	46.43	50	-7	
	sec-Butylbenzene	3.0778	2.8012	45.51	50	-9	
	1,3-Dichlorobenzene	1.4176	1.3680	48.25	50	-3	
	p-Isopropyltoluene	2.6428	2.4970	47.24	50	-6	
	1,4-Dichlorobenzene	1.4877	1.4596	49.06	50	-2	
	1,2,3-Trimethylbenzene	2.9976	2.8425	47.41	50	-5	
	Benzyl Chloride	0.4648	0.5266	56.65	50	13	
	1,3-Diethylbenzene	1.5628	1.4660	46.90	50	-6	
	1,4-Diethylbenzene	1.5823	1.5399	48.66	50	-3	
	n-Butylbenzene	1.3064	1.2268	46.96	50	-6	
	1,2-Dichlorobenzene	1.4170	1.4040	49.54	50	-1	
	1,2-Diethylbenzene	1.3409	1.2487	46.56	50	-7	
	1,2-Dibromo-3-chloropropane	0.2392	0.2612	54.61	50	9	
	1,3,5-Trichlorobenzene	0.8221	0.8016	48.75	50	-2	
	1,2,4-Trichlorobenzene	0.8037	0.7808	48.58	50	-3	
	Hexachlorobutadiene	0.3295	0.3165	48.04	50	-4	
	Naphthalene	2.8921	2.8955	50.06	50	0	
	1,2,3-Trichlorobenzene	0.7510	0.7308	48.66	50	-3	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP07566 Calibration Date: 06/21/18 Time: 07:50

Lab File ID: ru21c01.d Init. Calib. Date(s): 05/29/18 05/29/18

Matrix: (soil/water) SOIL Level: (low/med) MED GC Column: DB-624 ID: .25

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Methylnaphthalene	1.5065	1.3181	43.74	50	-13
Dibromofluoromethane	0.2216	0.2295	51.77	50	4
Dibromofluoromethane(2)	0.2283	0.2394	52.44	50	5
1,2-Dichloroethane-d4	0.0609	0.0641	52.57	50	5
1,2-Dichloroethane-d4(2)	0.3314	0.3369	50.83	50	2
1,2-Dichloroethane-d4(3)	0.0387	0.0411	53.01	50	6
Toluene-d8	1.3015	1.3263	50.95	50	2
Toluene-d8(2)	0.8462	0.8696	51.38	50	3
4-Bromofluorobenzene	0.4307	0.4377	50.81	50	2
4-Bromofluorobenzene(2)	0.2737	0.2876	52.53	50	5

Average %Drift 5

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu19c01.d Date Analyzed: 06/19/18

Instrument ID: HP09953 Time Analyzed: 15:54

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	98683	1.930	985350	3.956	729820	7.156	418657	9.236
UPPER LIMIT	197366	2.430	1970700	4.456	1459640	7.656	837314	9.736
LOWER LIMIT	49342	1.430	492675	3.456	364910	6.656	209328	8.736
LAB SAMPLE ID								
01 VBLKB15	101601	1.918	915411	3.950	672740	7.156	362813	9.236
02 LCSB15	115774	1.936	952991	3.962	699996	7.156	403216	9.236
03 LCDB15	131051	1.924	977971	3.950	714758	7.150	411315	9.236
04 9661818	71080	1.930	939549	3.956	698244	7.156	375792	9.236
05 9661819	74333	1.924	893567	3.956	659384	7.156	349148	9.236
06 9661820	85838	1.918	876379	3.950	662127	7.156	354644	9.236
07 9661820MS	84599	1.924	941638	3.950	709055	7.156	402635	9.236
08 9661821	65830	1.918	858047	3.950	631207	7.156	323589	9.236
09 9661822	80118	1.924	882882	3.956	669247	7.156	351196	9.236
10 9661824	60780	1.930	847617	3.956	634021	7.156	325242	9.236
11 9661825	67638	1.930	860399	3.956	635326	7.156	330848	9.236
12 9661826	73968	1.918	889009	3.950	673724	7.156	357075	9.236
13 9661876	64779	1.930	831529	3.956	629567	7.156	329862	9.236
14 9661877	65140	1.924	837319	3.950	619116	7.156	324992	9.236
15 9661878	82132	1.924	864240	3.956	623283	7.156	303799	9.236
16 9661879	62545	1.924	822661	3.956	621318	7.156	318298	9.236
17 9661880	61654	1.912	855671	3.950	654164	7.156	342302	9.236
18 9661881	70155	1.912	855740	3.956	637200	7.156	335912	9.236
19 9661882	72592	1.924	820833	3.956	612995	7.156	318120	9.236
20 9661883	68315	1.924	821656	3.956	625661	7.156	319223	9.236
21 9661885	69740	1.924	830863	3.956	606886	7.156	315342	9.236
22 9661886	63452	1.918	816093	3.956	620446	7.156	320981	9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu19c01.d Date Analyzed: 06/19/18

Instrument ID: HP09953 Time Analyzed: 15:54

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	98683	1.930	985350	3.956	729820	7.156	418657	9.236
UPPER LIMIT	197366	2.430	1970700	4.456	1459640	7.656	837314	9.736
LOWER LIMIT	49342	1.430	492675	3.456	364910	6.656	209328	8.736
LAB SAMPLE ID								
23 9661887	75418	1.924	848988	3.956	633593	7.156	336776	9.236
24 9661888	71607	1.924	802960	3.950	608776	7.156	315453	9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu20c01.d Date Analyzed: 06/20/18

Instrument ID: HP09953 Time Analyzed: 16:31

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	91218	1.936	891397	3.956	654368	7.156	378494	9.236
UPPER LIMIT	182436	2.436	1782794	4.456	1308736	7.656	756988	9.736
LOWER LIMIT	45609	1.436	445698	3.456	327184	6.656	189247	8.736
LAB SAMPLE ID								
01 VBLKB16	96379	1.930	822070	3.956	608151	7.156	325496	9.236
02 LCSB16	101082	1.918	888552	3.950	650621	7.156	367734	9.236
03 LCDB16	111360	1.924	894226	3.950	662661	7.156	374814	9.236
04 9660951	57257	1.930	848436	3.956	585303	7.156	233857	9.236
05 9660952	36438 *	1.918	588960	3.956	433881	7.156	224850	9.236
06 9660953	115589	1.930	859339	3.956	672642	7.156	363437	9.236
07 9660954	89295	1.924	848907	3.956	662668	7.156	363304	9.236
08 9665005	117767	1.918	868940	3.950	663380	7.156	358492	9.236
09 9665006	105979	1.924	855169	3.950	665721	7.156	355691	9.236
10 9665007	99125	1.912	848572	3.950	655817	7.156	356135	9.236
11 9665011	99050	1.924	843844	3.956	649438	7.156	349750	9.236
12 9665013	92468	1.930	806898	3.956	614339	7.156	329523	9.236
13 9665017	91326	1.924	826537	3.956	639769	7.156	345087	9.236
14 9665021	83183	1.930	808557	3.956	603157	7.156	299376	9.236
15 9665021MS	95540	1.924	867479	3.956	649227	7.156	353883	9.236
16 9665021MSD	88905	1.918	879650	3.956	650156	7.156	352801	9.236
17 9661890	76693	1.924	727306	3.956	446373	7.156	130787 *	9.242
18 9661891	69047	1.924	762685	3.956	570130	7.156	299597	9.236
19 9661892	70960	1.924	822425	3.956	625696	7.156	328223	9.236
20 9659913	85989	1.924	802941	3.956	619452	7.156	331738	9.236
21 9659447RE	21110 *	1.930	768054	3.956	549471	7.156	215445	9.236
22 9659446RE	29400 *	1.924	779155	3.956	530664	7.156	191303	9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu20c01.d Date Analyzed: 06/20/18

Instrument ID: HP09953 Time Analyzed: 16:31

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	91218	1.936	891397	3.956	654368	7.156	378494	9.236
UPPER LIMIT	182436	2.436	1782794	4.456	1308736	7.656	756988	9.736
LOWER LIMIT	45609	1.436	445698	3.456	327184	6.656	189247	8.736
LAB SAMPLE ID								
23 9658111	88416	1.924	816171	3.950	633823	7.156	331075	9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): bu22c01.d Date Analyzed: 06/22/18

Instrument ID: HP09953 Time Analyzed: 16:32

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	90604	1.924	1018228	3.956	729723	7.156	425445	9.236
UPPER LIMIT	181208	2.424	2036456	4.456	1459446	7.656	850890	9.736
LOWER LIMIT	45302	1.424	509114	3.456	364862	6.656	212722	8.736
LAB SAMPLE ID								
01 VBLKB20	109531	1.912	937741	3.950	681813	7.156	365490	9.236
02 VBLKB21	109531	1.912	937741	3.950	681813	7.156	365490	9.236
03 LCSB20	118601	1.918	1010193	3.950	736946	7.156	419559	9.236
04 LCSB21	118601	1.918	1010193	3.950	736946	7.156	419559	9.236
05 LCDB20	110217	1.924	994560	3.956	727050	7.156	404608	9.236
06 LCDB21	110217	1.924	994560	3.956	727050	7.156	404608	9.236
07 9652947	83826	1.918	990800	3.950	731678	7.156	403138	9.236
08 9652948	103572	1.912	863337	3.950	636014	7.156	332241	9.236
09 9660952RE	45149 *	1.918	682339	3.956	497026	7.156	265422	9.236
10 9660953RE	88328	1.918	928041	3.956	687275	7.156	361483	9.236
11 9660954RE	85010	1.912	951570	3.950	707407	7.156	377849	9.236
12 9661889	75385	1.924	964386	3.956	686698	7.156	350193	9.236
13 9662418	75517	1.924	909712	3.950	631810	7.156	285798	9.236
14 9664626	106789	1.912	951415	3.950	721086	7.156	379235	9.236
15 9665012	107745	1.918	945918	3.956	694732	7.156	367659	9.236
16 9665022	104581	1.924	936289	3.956	677333	7.156	353980	9.236
17 9665027	92597	1.912	894880	3.950	630031	7.156	296917	9.236
18 9665028	90784	1.918	780099	3.950	571600	7.156	300926	9.236
19 9665029	106271	1.924	913985	3.956	681561	7.156	369374	9.236
20 9665033	109525	1.930	878122	3.956	643099	7.156	334291	9.236

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): ru20c01.d Date Analyzed: 06/20/18

Instrument ID: HP07566 Time Analyzed: 08:31

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	151430	4.006	1083081	7.498	771972	11.043	253434	12.949
UPPER LIMIT	302860	4.506	2166162	7.998	1543944	11.543	506868	13.449
LOWER LIMIT	75715	3.506	541540	6.998	385986	10.543	126717	12.449
LAB SAMPLE ID								
01 LCSR95	143797	4.009	984111	7.494	627243	11.043	219575	12.952
02 LCDR95	154764	4.005	1101328	7.500	744992	11.042	254539	12.951
03 VBLKR95	139681	4.008	1079778	7.502	731222	11.044	257163	12.950
04 9661884	138553	4.003	1062194	7.494	699148	11.043	257100	12.952
05 9661893	144701	4.014	1081494	7.499	772555	11.041	267680	12.950
06 9661823	128284	4.014	1045714	7.502	677861	11.044	224439	12.950
07 9661823DL	145442	4.005	1076907	7.500	712512	11.042	229699	12.952
08 9658287	152375	4.020	1057489	7.498	746881	11.044	281991	12.953
09 9658287DL	147271	4.006	1002072	7.501	695052	11.043	241286	12.953
10 9651064RE	145969	4.009	1032085	7.500	693676	11.043	240878	12.952
11 9660719	145428	4.004	1041294	7.504	666814	11.044	241447	12.953
12 9654474RE	125258	4.000	905633	7.501	634171	11.044	224474	12.953
13 9654476RE	169213	4.000	1289889	7.501	867588	11.044	280318	12.953
14 9654478RE	153835	4.002	1076159	7.500	729193	11.045	247379	12.951
15 9660504	157990	4.007	1039533	7.501	715693	11.044	236374	12.953
16 9660504DL	155334	4.010	1028703	7.498	691264	11.044	236642	12.953
17 9660505	166134	4.009	1081882	7.500	710271	11.043	277409	12.952
18 9660505DL	139205	4.009	946479	7.501	666528	11.043	226973	12.952
19 9660506	156576	4.016	1043356	7.503	691986	11.046	243801	12.952
20 9660506DL	148407	4.007	1064240	7.502	687486	11.044	238925	12.953
21 9658112	145354	4.009	1012355	7.500	683343	11.043	290013	12.952
22 9660719RE	142871	4.000	1029532	7.501	677395	11.043	243661	12.952

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): ru21c01.d Date Analyzed: 06/21/18

Instrument ID: HP07566 Time Analyzed: 07:50

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	146873	4.013	968356	7.498	670057	11.044	243401	12.950
UPPER LIMIT	293746	4.513	1936712	7.998	1340114	11.544	486802	13.450
LOWER LIMIT	73436	3.513	484178	6.998	335028	10.544	121700	12.450
LAB SAMPLE ID								
01 LCSR96	153004	4.013	1024533	7.498	705177	11.040	247756	12.950
02 LCSR97	153004	4.013	1024533	7.498	705177	11.040	247756	12.950
03 LCDR96	136965	4.003	977545	7.498	681974	11.043	232776	12.952
04 LCDR97	136965	4.003	977545	7.498	681974	11.043	232776	12.952
05 VBLKR96	133421	4.017	987158	7.495	665108	11.044	229092	12.950
06 VBLKR97	133421	4.017	987158	7.495	665108	11.044	229092	12.950
07 9664514	135058	4.004	986210	7.495	653255	11.040	225853	12.953
08 9668607	129633	4.015	925455	7.496	626169	11.042	211571	12.951
09 9668608	124789	4.000	936618	7.501	624078	11.044	215600	12.953
10 9669593	123846	4.010	948557	7.501	648321	11.044	273349	12.953
11 9669594	137165	4.003	990020	7.501	673598	11.043	289609	12.952
12 9669595	116919	4.009	846942	7.500	586973	11.046	237075	12.952
13 9669596	128275	4.005	963790	7.500	665270	11.042	268744	12.951
14 9669597	130479	4.006	1016526	7.501	655912	11.043	268634	12.949
15 9660842DL	138625	4.003	1016019	7.501	681607	11.043	217126	12.953
16 9661890DL	131546	3.999	986610	7.503	658164	11.043	212720	12.952
17 9658591	118908	4.013	825441	7.501	574039	11.044	229704	12.953
18 9658598	142178	4.007	980465	7.501	649090	11.044	228755	12.953
19 9658599	125466	4.013	884198	7.501	630383	11.044	291309	12.953
20 9658601	143758	4.017	1002187	7.498	688809	11.044	283901	12.950
21 9658604	146318	4.016	1007351	7.500	653557	11.043	325495	12.952
22 9658607	142257	4.013	1018180	7.498	736590	11.044	262770	12.953

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): ru21c01.d Date Analyzed: 06/21/18

Instrument ID: HP07566 Time Analyzed: 07:50

Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	146873	4.013	968356	7.498	670057	11.044	243401	12.950
UPPER LIMIT	293746	4.513	1936712	7.998	1340114	11.544	486802	13.450
LOWER LIMIT	73436	3.513	484178	6.998	335028	10.544	121700	12.450
	LAB SAMPLE ID							
23	9660507	144779	4.013	1000653	7.501	690849	11.046	242572	12.952
24	9660507DL	121350	4.012	854501	7.504	571081	11.043	194426	12.952

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

Preparation and Run Logs

Volatiles by GC/MS

6-14-18 Prep of VOA6 Jun14,18 X7-14-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot# DT140

RESTEK 558268 Danger 1 mL
Lot# A0125171
Expire: 08/2018 Store: 0°C or colder
Custom CS#6 Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-14-18 Prep of QVOA6 Jun14,18 X7-14-18
Added 1.0 mL of...
to final volume of
25 mL MeOH
B+J lot# DT140

RESTEK 558268.SEC Danger 1 mL
Lot# A0136083
Expire: 09/2019 Store: 0°C or colder
Custom QCS #6 Standard
1000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-14-18 Prep of QGASES Jun14,18 X6-21-18
Added 0.5 mL of...
to final volume of
25 mL MeOH
B+J lot# DT140

RESTEK 55669.SEC Danger 1 mL
Lot# A0129532
Expire: 08/2024 Store: 0°C or colder
Custom 502.2 "Q" Gas Mix
2000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-14-18 RV4 Gas 6-14-18 X6-21-18
25uL 502.2 "V" Gas Lot# A0136554
25uL DCFM Lot # 217091197
950uL MeOH B+J DT140

Q Gas 326 6-14-18 x 6-21-18
20uL 502.2 "Q" Gas Lot# A01295320
20uL DCFM Lot # 217091197
20uL BCE Lot # A0134146
940uL MeOH B+J DT140

[signature] 2052

6/14/18 ~~VVTP Jun13-18 x~~ VVTP Jun14-18 x: 6/21/18
100uL of... Custom SIM 8260C V Lot# A0109938
502.2 V Gas Lot # A0136554
To a final volume of 10mL MeOH BJ Lot DT140
[signature] 2648

QVTP Jun14-18 x: 6/21/18
100uL of... Custom SIM 8260C Q Lot# A019931
502.2 Q Lot# A01295320
To a final volume of 10mL MeOH BJ Lot DT140

6-18-18 Prep of VOA1 Sun 18-18 x 7-18-18
Added 10 mL of...
to Final Volume of
5 mL MeOH
BFB Lot # DT140

RESTEK 110 Benner Circle Bellefonte, PA 16823 814-353-1300 Made in USA For Laboratory Use Only
569936-1 Danger 1 mL
Lot# A0126988
Expire: 04/2020 Store: 0°C or colder
Custom Revised V #1B Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 110 Benner Circle Bellefonte, PA 16823 814-353-1300 Made in USA For Laboratory Use Only
572312 Danger 1 mL
Lot# A0131271
Expire: 10/2018 Store: 0°C or colder
Custom V #4C (Rev 3) Standard
This product is photosensitive.
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

RESTEK 110 Benner Circle Bellefonte, PA 16823 814-353-1300 Made in USA For Laboratory Use Only
56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Rulling 2032

6-18-18 Prep of 2CEVE Sun 18-18 x 7-18-18
Added 1.0 mL of...
to Final Volume of
5 mL MeOH
BFB Lot # DT140

RESTEK 110 Benner Circle Bellefonte, PA 16823 814-353-1300 Made in USA For Laboratory Use Only
569936-2 Danger 1 mL
Lot# A0126036
Expire: 03/2020 Store: 0°C or colder
Custom V # 1B 2-CEVE Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Rulling 2032

6-18-18 Prep of VOA2 Sun 18-18 x 7-18-18
Added 1.0 mL of...
to Final Volume of
5 mL MeOH
BFB Lot # DT140

RESTEK 110 Benner Circle Bellefonte, PA 16823 814-353-1300 Made in USA For Laboratory Use Only
56734 Danger 1 mL
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Rulling 2032

6-18-18 Prep of VOA3 Sun 18-18 x 7-6-18
Added 1.0 mL of...
to Final Volume of
5 mL MeOH
BFB Lot # DT140

RESTEK 110 Benner Circle Bellefonte, PA 16823 814-353-1300 Made in USA For Laboratory Use Only
56736 Danger 1 mL
Lot# A0130926
Expire: 09/2020 Store: 0°C or colder
Custom V # 3B Standard
12500 - 25000 µg/mL each in P&T Methanol/Water (80:10)
Full label information for the chemical is provided on the outside package

And 1.0 mL of
for May 18

Lori Rulling 2032

6-20-18 Prep t-AmOH Jun 20, 18 (A+B) X 12-20-18

Compound	Stk prep	[Stk] ug/mL	mL/50mL MeOH	[Final] ug/mL
tert-Amyl Alcohol (V)	6-20-18	108,710	2,300	5,000

using B+J lot # DT140

Lori Ruilling 2032

6-20-18 Prep of Qt-AmOH Jun 20, 18 (A+B) X 12-20-18

Compound	Stk prep	[Stk] ug/mL	mL/50mL MeOH	[Final] ug/mL
tert-Amyl Alcohol	6-20-18	15,600	1,282	400

using B+J lot # DT140

Lori Ruilling 2032

6-20-18 Prep of AR 2s 825 IVSS Jun 20-18 X 12-20-18

Added 1.0 mL of...

to a final volume B+J DT140

10 mL MeOH

RESTEK 558267 Danger 1 mL
110 Benner Circle Bellefonte, PA 16823 814-353-1300
Lot# A0117424
Custom 8260A IS Mix
Expire: 02/2019 Store: 0°C or colder
Full label information for the chemical is provided on the outside package.
For Laboratory Use Only
Made in USA

RESTEK 55671 Danger 1 mL
110 Benner Circle Bellefonte, PA 16823 814-353-1300
Made in USA For Laboratory Use Only
Lot# A0125172
Expire: 02/2020 Store: 0°C or colder
8260A Surrogate Mix
2500 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

6-21-18 Prep of VOA1 Jun 21, 18 X 7-21-18

Added 1.0 mL of...

to final volume of

5 mL MeOH

B+J lot # DT140

RESTEK 569936-1 Danger 1 mL
110 Benner Circle Bellefonte, PA 16823 814-353-1300
Made in USA For Laboratory Use Only
Lot# A0126988
Expire: 04/2020 Store: 0°C or colder
Custom Revised V #1B Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 56734 Danger 1 mL
110 Benner Circle Bellefonte, PA 16823 814-353-1300
Made in USA For Laboratory Use Only
Lot# A0136429
Expire: 03/2020 Store: 0°C or colder
Custom V # 2B Standard
12,500-125,000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

RESTEK 572312 Danger 1 mL
110 Benner Circle Bellefonte, PA 16823 814-353-1300
Made in USA For Laboratory Use Only
Lot# A0131271
Expire: 10/2018 Store: 0°C or colder
Custom V #4C (Rev 3) Standard
This product is photosensitive.
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-21-18 Prep of 2CEVE Jun 21.18 X 7-21-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 569936-2 Danger 1 mL
Lot# A0136400
Expire: 03/2021 Store: 0°C or colder
Custom V # 1B 2-CEVE Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package.

Lori Ruilling 2032

6-21-18 Prep of VOA6 Jun 21.18 X 7-21-18
Added 1.0 mL of...
to final volume of
5 mL MeOH
B+J lot # DT140

RESTEK 558268 Danger 1 mL
Lot# A0135910
Expire: 09/2019 Store: 0°C or colder
Custom CS#6 Standard
5000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Ruilling 2032

6-21-18 Prep of QVOA6 Jun 21.18 X 7-21-18
Added 1.0 mL of...
to final volume of
25 mL MeOH
B+J lot # DT140

RESTEK 558268.SEC Danger 1 mL
Lot# A0136083
Expire: 09/2019 Store: 0°C or colder
Custom QCS #6 Standard
1000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Ruilling 2032

6-21-18 Prep of QGASES Jun 21.18 X 7-28-18
Added 0.5 mL of...
to final volume of
25 mL MeOH
B+J lot # DT140

RESTEK 55669.SEC Danger 1 mL
Lot# A0129532
Expire: 08/2024 Store: 0°C or colder
Custom 502.2 "Q" Gas Mix
2000 µg/mL each in P&T Methanol
Full label information for the chemical is provided on the outside package

Lori Ruilling 2032

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18feb22I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jkh09052	BF22T01.D	50NGBFB	02/22/2018	10:34	B180151AA	
JKH09052	BF22X01.D	BLK	02/22/2018	10:55		
JKH09052	BF22I01.D	VSTD300	02/22/2018	11:18		
JKH09052	BF22I02.D	VSTD100	02/22/2018	11:42		
JKH09052	BF22I03.D	VSTD050	02/22/2018	12:06		
JKH09052	BF22I04.D	VSTD020	02/22/2018	12:31		
JKH09052	BF22I05.D	VSTD010	02/22/2018	12:57		
JKH09052	BF22I06.D	VSTD004	02/22/2018	13:29		
JKH09052	BF22M01.D	MDL001	02/22/2018	13:51		
JKH09052	BF22V01.D	LGBICV	02/22/2018	14:16		

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07566 **HP #15**

Data Directory Path is - D:\DATA\18MAY29i\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
scn10072	RY29T10.D	50NGBFB	05/29/2018	11:34	R152031AA	50
scn10072	RY29X10.D	CBLK	05/29/2018	11:57	R152031AA	50
scn10072	RY29I10.D	VSTD004	05/29/2018	12:21		50
scn10072	RY29I11.D	VSTD010	05/29/2018	12:45		50
scn10072	RY29I12.D	VSTD010	05/29/2018	13:09		50
scn10072	RY29I13.D	VSTD050	05/29/2018	13:35		50
scn10072	RY29I14.D	VSTD100	05/29/2018	13:59		50
scn10072	RY29I15.D	VSTD300	05/29/2018	14:23		50
scn10072	RY29X11.D	CBLK	05/29/2018	14:47	R152031AA	50
scn10072	RY29X12.D	CBLK	05/29/2018	15:12	R152031AA	50
scn10072	RY29M10.D	MDL001	05/29/2018	15:37		50
scn10072	RY29V10.D	RICV	05/29/2018	16:02		50
scn10072	RY29X13.D	CBLK	05/29/2018	16:27	R152031AA	50
scn10072	RY29I20.D	VSTD004	05/29/2018	16:51		50
scn10072	RY29I21.D	VSTD010	05/29/2018	17:16		50
scn10072	RY29I22.D	VSTD020	05/29/2018	17:41		50
scn10072	RY29I23.D	VSTD050	05/29/2018	18:06		50
scn10072	RY29I24.D	VSTD100	05/29/2018	18:30		50
scn10072	RY29I25.D	VSTD300	05/29/2018	18:55		50
scn10072	RY29X14.D	CBLK	05/29/2018	19:20	R152031AA	50
scn10072	RY29M20.D	SMDL	05/29/2018	19:44		50
scn10072	RY29V20.D	SMRICV	05/29/2018	20:09		50

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18jun19a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
ANYBODY	BU19X05.D	CBLK	06/19/2018	14:33		
ANYBODY	BU19X06.D	CBLK	06/19/2018	14:56		
LCP00895	BU19T01.D	50NGBFB	06/19/2018	15:19		
KD14068	BU19C01.D	VSTD050	06/19/2018	15:54	B181701AA	
KD14068	BU19X01.D	VBLKB15	06/19/2018	16:16	B181701AA	
KD14068	BU19B01.D	VBLKB15	06/19/2018	16:39	B181701AA	
KD14068	BU19S01.D	LCSB15	06/19/2018	17:01	B181701AA	
KD14068	BU19S02.D	LCDB15	06/19/2018	17:24	B181701AA	
KD14068	BU19S03.D	9661818	06/19/2018	19:35	B181701AA	
KD14068	BU19S04.D	9661819	06/19/2018	19:57	B181701AA	
KD14068	BU19S05.D	9661820	06/19/2018	20:19	B181701AA	
KD14068	BU19S23.D	9661820MS	06/19/2018	20:42	B181701AA	
KD14068	BU19S06.D	9661821	06/19/2018	21:04	B181701AA	
KD14068	BU19S07.D	9661822	06/19/2018	21:27	B181701AA	
KD14068	BU19S08.D	9661824	06/19/2018	21:50	B181701AA	
KD14068	BU19S09.D	9661825	06/19/2018	22:12	B181701AA	
KD14068	BU19S10.D	9661826	06/19/2018	22:35	B181701AA	
KD14068	BU19S11.D	9661876	06/19/2018	22:58	B181701AA	
KD14068	BU19S12.D	9661877	06/19/2018	23:20	B181701AA	
KD14068	BU19S13.D	9661878	06/19/2018	23:43	B181701AA	
KD14068	BU19S14.D	9661879	06/20/2018	00:05	B181701AA	
KD14068	BU19S15.D	9661880	06/20/2018	00:28	B181701AA	
KD14068	BU19S16.D	9661881	06/20/2018	00:51	B181701AA	
KD14068	BU19S17.D	9661882	06/20/2018	01:13	B181701AA	
KD14068	BU19S18.D	9661883	06/20/2018	01:35	B181701AA	
KD14068	BU19S19.D	9661885	06/20/2018	01:58	B181701AA	
KD14068	BU19S20.D	9661886	06/20/2018	02:21	B181701AA	
KD14068	BU19S21.D	9661887	06/20/2018	02:43	B181701AA	
KD14068	BU19S22.D	9661888	06/20/2018	03:06	B181701AA	
ANYBODY	BU21X01.D	CBLK	06/21/2018	06:30		

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18jun20a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
ANYBODY	BU20X05.D	CBLK	06/20/2018	15:08		
ANYBODY	BU20X06.D	CBLK	06/20/2018	15:31		
KD14068	BU20T01.D	50NGBFB	06/20/2018	16:04		
KD14068	BU20C01.D	VSTD050	06/20/2018	16:31	B181711AA	
KD14068	BU20X01.D	VBLKB16	06/20/2018	16:54	B181711AA	
KD14068	BU20B01.D	VBLKB16	06/20/2018	17:17	B181711AA	
KD14068	BU20S01.D	LCSB16	06/20/2018	17:39	B181711AA	
KD14068	BU20S02.D	LCDB16	06/20/2018	18:02	B181711AA	
pth10165	BU20X10.D	VBLKB16	06/20/2018	18:52	B181711AA	
pth10165	BU20S00.D	9636445	06/20/2018	19:15	B181711AA	
pth10165	BU20S03.D	9660951	06/20/2018	19:41	B181711AA	
pth10165	BU20S04.D	9660952	06/20/2018	20:04	B181711AA	
pth10165	BU20S05.D	9660953	06/20/2018	20:26	B181711AA	
pth10165	BU20S06.D	9660954	06/20/2018	20:49	B181711AA	
pth10165	BU20S07.D	9665005	06/20/2018	21:12	B181711AA	
pth10165	BU20S08.D	9665006	06/20/2018	21:35	B181711AA	
pth10165	BU20S09.D	9665007	06/20/2018	21:57	B181711AA	
pth10165	BU20S10.D	9665011	06/20/2018	22:20	B181711AA	
pth10165	BU20S11.D	9665012	06/20/2018	22:43	B181711AA	
pth10165	BU20S12.D	9665013	06/20/2018	23:06	B181711AA	
pth10165	BU20S13.D	9665017	06/20/2018	23:28	B181711AA	
pth10165	BU20S14.D	9665021	06/20/2018	23:51	B181711AA	
pth10165	BU20S15.D	9665021MS	06/21/2018	00:13	B181711AA	
pth10165	BU20S16.D	9665021MSD	06/21/2018	00:36	B181711AA	
pth10165	BU20S17.D	9661889	06/21/2018	00:59	B181711AA	
pth10165	BU20S18.D	9661890	06/21/2018	01:21	B181711AA	
pth10165	BU20S19.D	9661891	06/21/2018	01:44	B181711AA	
pth10165	BU20S20.D	9661892	06/21/2018	02:07	B181711AA	
pth10165	BU20S21.D	9659913	06/21/2018	02:30	B181711AA	
pth10165	BU20S22.D	9659447RE	06/21/2018	02:52	B181711AA	
pth10165	BU20S23.D	9659446RE	06/21/2018	03:15	B181711AA	
pth10165	BU20S24.D	9658111RE	06/21/2018	03:37	B181711AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09953 **HP #24**

Data Directory Path is - c:\msdchem\1\data\18jun22a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
KD14068	BU22X05.D	CBLK	06/22/2018	14:41		
KD14068	BU19X06.D	CBLK	06/22/2018	15:04		
KD14068	BU22T01.D	50NGBFB	06/22/2018	15:58		
KD14068	BU22C01.D	VSTD050	06/22/2018	16:32	B181731AA	
KD14068	BU22X01.D	VBLKB20	06/22/2018	16:54	B181731AA	
KD14068	BU22B01.D	VBLKB20	06/22/2018	17:17	B181731AA	
KD14068	BU22S01.D	LCSB20	06/22/2018	18:13	B181731AA	
KD14068	BU22S02.D	LCDB20	06/22/2018	18:36	B181731AA	
KD14068	BU22S03.D	9652947	06/22/2018	22:02	B181731AA	
KD14068	BU22S04.D	9652948	06/22/2018	22:24	B181731AA	
KD14068	BU22S05.D	9660952RE	06/22/2018	22:47	B181731AA	
KD14068	BU22S06.D	9660953RE	06/22/2018	23:09	B181731AA	
KD14068	BU22S07.D	9660954RE	06/22/2018	23:32	B181731AA	
KD14068	BU22S08.D	9661889RE	06/22/2018	23:54	B181731AA	
KD14068	BU22S09.D	9662418	06/23/2018	00:17	B181731AA	
KD14068	BU22S10.D	9664626	06/23/2018	00:40	B181731AA	
KD14068	BU22S11.D	9665012	06/23/2018	01:02	B181731AA	
KD14068	BU22S12.D	9665022	06/23/2018	01:24	B181731AA	
KD14068	BU22S13.D	9665023	06/23/2018	01:47	B181731AA	
KD14068	BU22S14.D	9665027	06/23/2018	02:09	B181731AA	
KD14068	BU22S15.D	9665028	06/23/2018	02:32	B181731AA	
KD14068	BU22S16.D	9665029	06/23/2018	02:54	B181731AA	
KD14068	BU22S17.D	9665033	06/23/2018	03:17	B181731AA	
pth10165	BU25X01.D	CBLK	06/25/2018	16:30		
pth10165	BU25X02.D	CBLK	06/25/2018	16:52		

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07566 **HP #15**

Data Directory Path is - d:\data\18jun20a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
scn10072	RU20T01.D	50NGBFB	06/20/2018	07:43	R181711AA	
scn10072	RU20X01.D	VBLKR95	06/20/2018	08:07	R181711AA	
scn10072	RU20C01.D	VSTD050	06/20/2018	08:31	R181711AA	
scn10072	RU20L01.D	LCSR95	06/20/2018	09:06	R181711AA	
scn10072	RU20L02.D	LCDR95	06/20/2018	09:30	R181711AA	
scn10072	RU20X02.D	VBLKR95	06/20/2018	09:54	R181711AA	
scn10072	RU20B01.D	VBLKR95	06/20/2018	10:23	R181711AA	
scn10072	RU20S02.D	9661884	06/20/2018	11:36	R181711AA	50
scn10072	RU20S03.D	9661893	06/20/2018	12:05	R181711AA	50
scn10072	RU20S04.D	9661823	06/20/2018	12:29	R181711AA	50
scn10072	RU20S05.D	9661823DL	06/20/2018	12:54	R181711AA	500
scn10072	RU20S06.D	9658287	06/20/2018	13:18	R181711AA	1000
scn10072	RU20S07.D	9658287DL	06/20/2018	13:42	R181711AA	10000
scn10072	RU20S08.D	9651064RE	06/20/2018	14:06	R181711AA	50
scn10072	RU20S09.D	9660719	06/20/2018	14:30	R181711AA	50
scn10072	RU20S10.D	9654474RE	06/20/2018	14:54	R181711AA	500
scn10072	RU20S11.D	9654476RE	06/20/2018	15:19	R181711AA	200
scn10072	RU20S12.D	9654478RE	06/20/2018	15:43	R181711AA	200
scn10072	RU20S13.D	9663513	06/20/2018	16:06	R181711AA	1000
scn10072	RU20S14.D	9660504	06/20/2018	16:31	R181711AA	50
scn10072	RU20S15.D	9660504DL	06/20/2018	16:56	R181711AA	500
scn10072	RU20S16.D	9660505	06/20/2018	17:20	R181711AA	200
scn10072	RU20S17.D	9660505DL	06/20/2018	17:44	R181711AA	2000
scn10072	RU20S18.D	9660506	06/20/2018	18:08	R181711AA	100
scn10072	RU20S19.D	9660506DL	06/20/2018	18:32	R181711AA	1000
scn10072	RU20S20.D	9658112	06/20/2018	18:56	R181711AA	50
scn10072	RU20S21.D	9660719RE	06/20/2018	19:20	R181711AA	50
scn10072	RU20X51.D	VBLKR95	06/20/2018	19:44	R181711AA	
scn10072	RU20X52.D	VBLKR95	06/20/2018	20:09	R181711AA	
scn10072	RU20X53.D	VBLKR95	06/20/2018	20:33	R181711AA	
scn10072	RU20X54.D	VBLKR95	06/20/2018	20:57	R181711AA	
scn10072	RU20X55.D	VBLKR95	06/20/2018	21:22	R181711AA	

Lancaster Laboratories
Volatiles
Runlog for Hewlett Packard GC/MS System HP07566 **HP #15**

Data Directory Path is - d:\data\18jun21a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
scn10072	RU21T01.D	50NGBFB	06/21/2018	07:00	R181721AA	
scn10072	RU21X01.D	VBLKR96	06/21/2018	07:25	R181721AA	
scn10072	RU21C01.D	VSTD050	06/21/2018	07:50	R181721AA	
scn10072	RU21L01.D	LCSR96	06/21/2018	08:43	R181721AA	
scn10072	RU21L02.D	LCDR96	06/21/2018	09:10	R181721AA	
scn10072	RU21X02.D	VBLKR96	06/21/2018	09:35	R181721AA	
scn10072	RU21B01.D	VBLKR96	06/21/2018	09:59	R181721AA	
scn10072	RU21B02.D	VBLKR96	06/21/2018	10:40	R181721AA	
scn10072	RU21S33.D	9664514	06/21/2018	11:16	R181722AA	50
scn10072	RU21S34.D	9668607	06/21/2018	11:40	R181722AA	50
scn10072	RU21S35.D	9668608	06/21/2018	12:05	R181722AA	50
scn10072	RU21S03.D	9669593	06/21/2018	12:29	R181721AA	50
scn10072	RU21S04.D	9669594	06/21/2018	12:54	R181721AA	50
scn10072	RU21S05.D	9669595	06/21/2018	13:18	R181721AA	50
scn10072	RU21S06.D	9669596	06/21/2018	13:43	R181721AA	50
scn10072	RU21S07.D	9669597	06/21/2018	14:07	R181721AA	50
scn10072	RU21S08.D	9660842DL	06/21/2018	14:31	R181721AA	50
scn10072	RU21S09.D	9661890DL	06/21/2018	14:56	R181721AA	50
scn10072	RU21S10.D	9658591RE	06/21/2018	15:20	R181721AA	50
scn10072	RU21S11.D	9658598	06/21/2018	15:45	R181721AA	50
scn10072	RU21S12.D	9658599	06/21/2018	16:09	R181721AA	100
scn10072	RU21S13.D	9658601	06/21/2018	16:34	R181721AA	100
scn10072	RU21S14.D	9658604	06/21/2018	16:58	R181721AA	100
scn10072	RU21S15.D	9658607	06/21/2018	17:23	R181721AA	50
scn10072	RU21S18.D	9660507	06/21/2018	17:47	R181721AA	250
scn10072	RU21S19.D	9660507DL	06/21/2018	18:12	R181721AA	2500
scn10072	RU21X26.D	VBLKR97	06/21/2018	18:36	R181722AA	
scn10072	RU21X27.D	VBLKR97	06/21/2018	19:00	R181722AA	
scn10072	RU21X28.D	VBLKR97	06/21/2018	19:25	R181722AA	
scn10072	RU21X29.D	VBLKR97	06/21/2018	19:49	R181722AA	
scn10072	RU21X30.D	VBLKR97	06/21/2018	20:14	R181722AA	

Preparation Logs

Volatiles by GC/MS

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VOA Prep Summary by SDG: DHR43

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
9661876	150A	07320	18796459	Y	06/13/18 08:57	06/15/18 16:02	32.67 g	38.45 g	5.78 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661876	150B	07320	18796460	N	06/13/18 08:57	06/15/18 16:02	32.48 g	38.44 g	5.96 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661876	169A	07578	18799699	N	06/13/18 08:57	06/15/18 14:50	29.34 g	35.18 g	5.84 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A
9661877	150A	07320	18796461	Y	06/13/18 09:10	06/15/18 16:02	32.52 g	38.03 g	5.51 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661877	150B	07320	18796462	N	06/13/18 09:10	06/15/18 16:02	32.44 g	38.17 g	5.73 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661877	169A	07578	18799700	N	06/13/18 09:10	06/15/18 14:54	29.31 g	35.16 g	5.85 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A
9661878	150A	07320	18796440	N	06/13/18 09:45	06/15/18 16:02	32.49 g	37.77 g	5.28 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661878	150B	07320	18796441	Y	06/13/18 09:45	06/15/18 16:02	32.62 g	37.87 g	5.25 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661878	169A	07578	18799690	N	06/13/18 09:45	06/15/18 14:57	29.23 g	34.24 g	5.01 g	4.50 g - 5.50 g	Y	18144-2	MeOH w/surrogate (5 mL)	5.000	
9661879	150A	07320	18796463	N	06/13/18 10:44	06/15/18 16:02	32.45 g	38.72 g	6.27 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661879	150B	07320	18796464	Y	06/13/18 10:44	06/15/18 16:02	32.46 g	37.87 g	5.41 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661879	169A	07578	18799701	N	06/13/18 10:44	06/15/18 15:01	29.50 g	35.34 g	5.84 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A
9661880	150A	07320	18796465	N	06/13/18 10:50	06/15/18 16:02	32.59 g	38.48 g	5.89 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661880	150B	07320	18796466	Y	06/13/18 10:50	06/15/18 16:02	32.42 g	37.67 g	5.25 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661880	169A	07578	18799702	N	06/13/18 10:50	06/15/18 15:04	29.41 g	35.26 g	5.85 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A
9661881	150A	07320	18796442	N	06/13/18 11:06	06/15/18 16:02	32.57 g	37.36 g	4.79 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661881	150B	07320	18796443	Y	06/13/18 11:06	06/15/18 16:02	32.50 g	37.42 g	4.92 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661881	169A	07578	18799691	N	06/13/18 11:06	06/15/18 15:08	29.39 g	34.44 g	5.05 g	4.50 g - 5.50 g	Y	18144-2	MeOH w/surrogate (5 mL)	5.000	
9661882	150A	07320	18796467	Y	06/13/18 11:41	06/15/18 16:02	32.35 g	38.07 g	5.72 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661882	150B	07320	18796468	N	06/13/18 11:41	06/15/18 16:03	32.58 g	38.41 g	5.83 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661882	169A	07578	18799703	N	06/13/18 11:41	06/15/18 15:11	29.40 g	35.21 g	5.81 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A
9661883	150A	07320	18796444	Y	06/13/18 11:49	06/15/18 16:03	32.42 g	38.11 g	5.69 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661883	150B	07320	18796445	N	06/13/18 11:49	06/15/18 16:03	32.49 g	38.30 g	5.81 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661883	169A	07578	18799692	N	06/13/18 11:49	06/15/18 15:15	29.31 g	34.89 g	5.58 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

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VOA Prep Summary by SDG: DHR43

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
9661884	150A	07320	18796447	N	06/13/18 12:04	06/15/18 16:03	32.66 g	38.16 g	5.50 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661884	150B	07320	18796446	N	06/13/18 12:04	06/15/18 16:03	32.36 g	35.51 g	3.15 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661884	169A	07578	18799693	Y	06/13/18 12:04	06/15/18 15:18	29.43 g	34.44 g	5.01 g	4.50 g - 5.50 g	Y	18144-2	MeOH w/surrogate (5 mL)	5.000	
9661885	150A	07320	18796469	N	06/13/18 14:19	06/15/18 16:03	32.41 g	38.31 g	5.90 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661885	150B	07320	18796470	Y	06/13/18 14:19	06/15/18 16:03	32.45 g	38.29 g	5.84 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661885	169A	07578	18799704	N	06/13/18 14:19	06/15/18 15:22	29.40 g	35.29 g	5.89 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A
9661886	150A	07320	18796471	Y	06/13/18 14:26	06/15/18 16:03	32.48 g	38.24 g	5.76 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661886	150B	07320	18796472	N	06/13/18 14:26	06/15/18 16:03	32.37 g	38.43 g	6.06 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661886	169A	07578	18799705	N	06/13/18 14:26	06/15/18 15:25	29.39 g	35.21 g	5.82 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A
9661887	150A	07320	18796448	N	06/13/18 14:40	06/15/18 16:03	32.67 g	38.12 g	5.45 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661887	150B	07320	18796449	Y	06/13/18 14:40	06/15/18 16:03	32.44 g	37.70 g	5.26 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661887	169A	07578	18799694	N	06/13/18 14:40	06/15/18 15:30	29.45 g	35.72 g	6.27 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A
9661888	150A	07320	18796473	N	06/13/18 15:55	06/15/18 16:03	32.58 g	38.57 g	5.99 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661888	150B	07320	18796474	Y	06/13/18 15:55	06/15/18 16:03	32.64 g	38.55 g	5.91 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661888	169A	07578	18799706	N	06/13/18 15:55	06/15/18 15:34	29.51 g	35.26 g	5.75 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A
9661889	150A	07320	18796450	N	06/13/18 16:00	06/15/18 16:03	32.45 g	38.12 g	5.67 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661889	150B	07320	18796451	Y	06/13/18 16:00	06/15/18 16:03	32.18 g	37.87 g	5.69 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661889	169A	07578	18799695	N	06/13/18 16:00	06/15/18 15:37	29.43 g	34.90 g	5.47 g	4.50 g - 5.50 g	Y	18144-2	MeOH w/surrogate (5 mL)	5.000	
9661890	150A	07320	18796475	N	06/13/18 16:15	06/15/18 16:03	32.51 g	37.66 g	5.15 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661890	150B	07320	18796476	Y	06/13/18 16:15	06/15/18 16:03	32.71 g	37.76 g	5.05 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661890	169A	07578	18799707	Y	06/13/18 16:15	06/15/18 15:40	29.44 g	34.57 g	5.13 g	4.50 g - 5.50 g	Y	18144-2	MeOH w/surrogate (5 mL)	5.000	
9661891	150A	07320	18796452	N	06/13/18 17:28	06/15/18 16:03	32.55 g	38.66 g	6.11 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661891	150B	07320	18796477	Y	06/13/18 17:28	06/15/18 16:03	32.62 g	38.40 g	5.78 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661891	169A	07578	18799708	N	06/13/18 17:28	06/15/18 15:46	29.41 g	35.30 g	5.89 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

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VOA Prep Summary by SDG: DHR43

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
9661892	150A	07320	18796478	Y	06/13/18 17:32	06/15/18 16:03	32.48 g	37.99 g	5.51 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661892	150B	07320	18796479	N	06/13/18 17:32	06/15/18 16:03	32.49 g	38.11 g	5.62 g	4.50 g - 5.50 g	N	3-27-17	DI Water (5 mL)	5.000	A
9661892	169A	07578	18799709	N	06/13/18 17:32	06/15/18 15:49	29.42 g	35.24 g	5.82 g	4.50 g - 5.50 g	N	18144-2	MeOH w/surrogate (5 mL)	5.000	A
9661893	150A	07320	18796480	N	06/13/18 17:47	06/15/18 16:03	32.57 g	37.36 g	4.79 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661893	150B	07320	18796481	N	06/13/18 17:47	06/15/18 16:03	32.67 g	37.71 g	5.04 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661893	169A	07578	18799710	Y	06/13/18 17:47	06/15/18 15:54	29.31 g	34.15 g	4.84 g	4.50 g - 5.50 g	Y	18144-2	MeOH w/surrogate (5 mL)	5.000	
9661820	150A	07320	18796433	Y	06/14/18 10:00	06/15/18 14:09	32.66 g	37.67 g	5.01 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661820	150B	07320	18796434	N	06/14/18 10:00	06/15/18 14:09	32.54 g	37.94 g	5.40 g	4.50 g - 5.50 g	Y	3-27-17	DI Water (5 mL)	5.000	
9661820	169A	07578	18799686	N	06/14/18 10:00	06/15/18 13:12	29.25 g	34.51 g	5.26 g	4.50 g - 5.50 g	Y	18144-1	MeOH w/surrogate (5 mL)	5.000	
9665021	150A	00374	18801003	N	06/14/18 11:30	06/19/18 12:40	0.00 g	4.80 g	4.80 g	4.50 g - 5.50 g	Y	1814201-3	DI Water (5 mL)	5.000	
9665021	150B	00374	18801004	N	06/14/18 11:30	06/19/18 12:40	0.00 g	5.08 g	5.08 g	4.50 g - 5.50 g	Y	1814201-3	DI Water (5 mL)	5.000	
9665021	150C	00374	18801005	N	06/14/18 11:30	06/19/18 12:41	0.00 g	4.98 g	4.98 g	4.50 g - 5.50 g	Y	1814201-3	DI Water (5 mL)	5.000	
9665021	150D	00374	18801006	N	06/14/18 11:30	06/19/18 12:41	0.00 g	5.05 g	5.05 g	4.50 g - 5.50 g	Y	1814201-3	DI Water (5 mL)	5.000	
9665021	150E	00374	18801007	Y	06/14/18 11:30	06/19/18 12:41	0.00 g	5.03 g	5.03 g	4.50 g - 5.50 g	Y	1814201-3	DI Water (5 mL)	5.000	
9665021	150F	00374	18801008	N	06/14/18 11:30	06/19/18 12:41	0.00 g	4.94 g	4.94 g	4.50 g - 5.50 g	Y	1814201-3	DI Water (5 mL)	5.000	
9665021	169A	06646	18801009	N	06/14/18 11:30	06/19/18 12:00	0.00 g	5.35 g	5.35 g	4.50 g - 5.50 g	Y	18144-2	MeOH w/surrogate (5 mL)	5.000	
9665021	169B	06646	18801010	N	06/14/18 11:30	06/19/18 12:01	0.00 g	5.01 g	5.01 g	4.50 g - 5.50 g	Y	18144-2	MeOH w/surrogate (5 mL)	5.000	
9665021	169C	06646	18801011	N	06/14/18 11:30	06/19/18 12:01	0.00 g	5.30 g	5.30 g	4.50 g - 5.50 g	Y	18144-2	MeOH w/surrogate (5 mL)	5.000	

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

Moisture Data

MOISTURE

SAMPLE NUMBERS:

Sample #	Sample Code
9661876	R4301
9661877	R4302
9661878	R4303
9661879	R4304
9661880	R4305
9661881	R4306
9661882	R4307
9661883	R4308
9661884	R4309
9661885	R4310
9661886	R4311
9661887	R4312
9661888	R4313
9661889	R4314
9661890	R4315
9661891	R4316
9661892	R4317
9661893	R4318

COMMENTS:

Method defined actions are taken for any failed matrix QC.

Laboratory Compliance Quality Control

Analysis Name		LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number:	18170820003A	Sample number(s):		9661876-9661885		
Moisture		100		99-101		
Batch number:	18170820003B	Sample number(s):		9661886-9661893		
Moisture		100		99-101		

Sample Matrix Quality Control

Analysis Name		BKG Conc	DUP Conc	RPD	RPD Max
Batch number:	18170820003A	Sample number(s):		9661876-9661885	
Moisture		5.6	6.0	8*	5
Batch number:	18170820003B	Sample number(s):		9661886-9661893	
Moisture		15.5	15.7	1	5

* - Outside of specification

(1) - The result for one or both determinations was less than five times the LOQ.

Moisture Data Report

Batch #: 18170820003

Sample ID	Batch ID	Analysis#	Tare Wt	Sample Wt	Dry Wt	%Moisture	Analysis Date (Emp#)	Verified Date (Emp#)
9661876	A	00111	1.1313	9.0865	8.1256	23.03	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661877	A	00111	1.1088	8.8271	8.2210	19.43	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661878BKG	A	00111	1.1034	7.9295	8.5902	5.58	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661878DUP	A	00111	1.0974	7.9089	8.5302	6.02	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661879	A	00111	1.0989	7.1522	7.1136	15.90	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661880	A	00111	1.1009	9.3749	8.5560	20.48	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661881	A	00111	1.1178	8.4497	9.2075	4.26	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661882	A	00111	1.0843	9.7009	9.1248	17.12	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661883	A	00111	1.1109	8.5681	8.1135	18.27	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661884	A	00111	1.0973	6.6757	7.4365	5.04	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661885	A	00111	1.1089	7.5539	7.3254	17.70	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661886	B	00111	1.1173	9.0236	8.5814	17.28	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661887	B	00111	1.0897	6.9646	7.7027	5.05	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661888	B	00111	1.1199	7.3359	7.1568	17.71	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661889BKG	B	00111	1.0918	9.5555	9.1616	15.55	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661889DUP	B	00111	1.1124	9.0764	8.7658	15.68	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661890	B	00111	1.0935	7.2107	8.0749	3.18	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661891	B	00111	1.1133	7.7290	7.4299	18.27	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661892	B	00111	1.0904	6.0839	6.0449	18.56	6/19/18 (1201/SWF)	6/20/18 (236/CW)
9661893	B	00111	1.0521	7.4437	8.1271	4.95	6/19/18 (1201/SWF)	6/20/18 (236/CW)
LCS 89.5% Std.		00111	1.1320	5.0175	1.6619	89.44	6/19/18 (1201/SWF)	6/20/18 (236/CW)

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Type I (No Raw Data) Data Package

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Project: Dow Hanging Rock, OH
Groundwater and Water Samples
Collected on 06/14/18

SDG# DHR44

GROUP	SAMPLE NUMBERS
1957998	9672156-9672168

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date:** **07/09/2018**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Natalie Luciano at (717) 556-7258.

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Sample Reference List for SDG Number DHR44 with a Data Package Type of I-NODATA

11372 - CH2M Hill, Inc.

Project: Dow Hanging Rock, OH

Lab Sample Number	Client Sample ID	Collection Date	Date Received
9672156	S01-GW04-2630-061418	06/14/2018 20:04	06/21/2018 10:00
9672157	S01-GW07-2630-061418	06/14/2018 19:43	06/21/2018 10:00
9672158	S01-GWFD02-061418	06/14/2018 19:17	06/21/2018 10:00
9672159	S01-GW10-2630-061418	06/14/2018 19:14	06/21/2018 10:00
9672160	S01-GW13-2630-061418	06/14/2018 17:56	06/21/2018 10:00
9672161	S01-GW15-2630-061418	06/14/2018 20:39	06/21/2018 10:00
9672162	S01-GW17-2630-061418	06/14/2018 18:29	06/21/2018 10:00
9672163	S01-GW18-2630-061418	06/14/2018 18:46	06/21/2018 10:00
9672164	S01-GW20-2630-061418	06/14/2018 17:29	06/21/2018 10:00
9672165	S01-GW21-2630-061418	06/14/2018 17:07	06/21/2018 10:00
9672166	S01-GWFD01-061418	06/14/2018 17:11	06/21/2018 10:00
9672167	S01-GW12-2630-061418	06/14/2018 21:06	06/21/2018 10:00
9672168	061918TB	06/19/2018 15:00	06/21/2018 10:00

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Sample pH Log

SDG: DHR44

LLI Sample Number	Bottle Code	Actual pH	Exp. pH	*pH Check Code	Adj. pH	Adjusted Date	Adjusted Time	Preservative Added	Preservative Lot #	LLI Supplied Bottle?	Sulfide Present?	Corrective Substance	CS Lot #	**Chlorine Present?	Corrective Substance	CS Lot #	Record Date	Employee
9672156	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:23PM	14951
9672157	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:13PM	14951
9672157	038B	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:13PM	14951
9672158	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:13PM	14951
9672158	038B	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/29/2018 10:15:42AM	14951
9672159	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:14PM	14951
9672160	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:14PM	14951
9672161	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:14PM	14951
9672161	038B	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/29/2018 10:15:43AM	14951
9672162	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:14PM	14951
9672163	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:14PM	14951
9672164	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:14PM	14951
9672164	038B	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:14PM	14951
9672165	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:14PM	14951
9672165	038B	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:15PM	14951
9672166	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:15PM	14951
9672166	038B	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:15PM	14951
9672167	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:15PM	14951
9672167	038B	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/29/2018 10:15:43AM	14951
9672168	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	N	NA	NA	6/28/2018 12:16:15PM	14951

*pH Check Code Key
PK = Original container checked - pH is within the correct range. (No preservative was added)
PA = Original container checked - pH adjusted to correct range. (Preservative was added)
PV = Volatile container checked
PC = pH checked (unpreserved container)
SPK = Subsampled from an original container. Original container checked - pH is within correct range
SPA = Subsampled from an original container. Subsample container checked - pH adjusted to correct range.
SPC = Subsampled from an original container. pH checked (unpreserved container).
SUP = Subsampled from original container. Unable to be preserved due to the matrix of the sample.
UP = Unable to preserve due to matrix of the sample.
NA = Not applicable

**Chlorine Present Code Key
NA = Chlorine Not Checked
Y = Chlorine Present
N = Chlorine Not Present

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01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030B, December 1996.

02898 VOCs- 25ml Water by 8260B

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8260B, December 1996.

Analysis Reports / Field Chain of Custody

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ANALYSIS REPORT

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Report Date: June 30, 2018 16:27

Project: Dow Hanging Rock, OH

Account #: 11372
Group Number: 1957998
SDG: DHR44
PO Number: 131005094
Release Number: DHR44
State of Sample Origin: OH

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ . To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To	CH2M Hill, Inc.	Attn: Marie Chiller
Electronic Copy To	CH2M Hill, Inc.	Attn: Shane Lowe

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

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SAMPLE INFORMATION

Client Sample Description	Sample Collection Date/Time	ELLE#
S01-GW04-2630-061418 Grab Groundwater	06/14/2018 20:04	9672156
S01-GW07-2630-061418 Grab Groundwater	06/14/2018 19:43	9672157
S01-GWFD02-061418 Grab Groundwater	06/14/2018 19:17	9672158
S01-GW10-2630-061418 Grab Groundwater	06/14/2018 19:14	9672159
S01-GW13-2630-061418 Grab Groundwater	06/14/2018 17:56	9672160
S01-GW15-2630-061418 Grab Groundwater	06/14/2018 20:39	9672161
S01-GW17-2630-061418 Grab Groundwater	06/14/2018 18:29	9672162
S01-GW18-2630-061418 Grab Groundwater	06/14/2018 18:46	9672163
S01-GW20-2630-061418 Grab Groundwater	06/14/2018 17:29	9672164
S01-GW21-2630-061418 Grab Groundwater	06/14/2018 17:07	9672165
S01-GWFD01-061418 Grab Groundwater	06/14/2018 17:11	9672166
S01-GW12-2630-061418 Grab Groundwater	06/14/2018 21:06	9672167
061918TB Water	06/19/2018 15:00	9672168

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Sample Description: **S01-GW04-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/21/2018 10:00
Collection Date/Time: 06/14/2018 20:04
SDG#: DHR44-01

CH2M Hill, Inc.
ELLE Sample #: WW 9672156
ELLE Group #: 1957998
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	0.5	U	0.5	0.1	1
02898	cis-1,2-Dichloroethene	156-59-2	0.5		0.5	0.1	1
02898	trans-1,2-Dichloroethene	156-60-5	0.5	U	0.5	0.1	1
02898	Tetrachloroethene	127-18-4	14		0.5	0.1	1
02898	Trichloroethene	79-01-6	1.3		0.5	0.1	1
02898	Vinyl Chloride	75-01-4	0.5	U	0.5	0.1	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181781AA	06/27/2018 15:33	Joel Chachapoya	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181781AA	06/27/2018 15:33	Joel Chachapoya	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW07-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/21/2018 10:00
Collection Date/Time: 06/14/2018 19:43
SDG#: DHR44-02

CH2M Hill, Inc.
ELLE Sample #: WW 9672157
ELLE Group #: 1957998
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	2.5	U	2.5	0.5	5
02898	cis-1,2-Dichloroethene	156-59-2	55		2.5	0.5	5
02898	trans-1,2-Dichloroethene	156-60-5	2.5	U	2.5	0.5	5
02898	Tetrachloroethene	127-18-4	250	E	2.5	0.5	5
02898	Trichloroethene	79-01-6	51		2.5	0.5	5
02898	Vinyl Chloride	75-01-4	2.5	U	2.5	0.5	5
Trial ID: DL							
02898	1,1-Dichloroethene	75-35-4	25	U	25	5.0	50
02898	cis-1,2-Dichloroethene	156-59-2	52		25	5.0	50
02898	trans-1,2-Dichloroethene	156-60-5	25	U	25	5.0	50
02898	Tetrachloroethene	127-18-4	280		25	5.0	50
02898	Trichloroethene	79-01-6	52		25	5.0	50
02898	Vinyl Chloride	75-01-4	25	U	25	5.0	50

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181781AA	06/27/2018 14:28	Joel Chachapoya	5
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	2-DL	I181781AA	06/27/2018 14:49	Joel Chachapoya	50
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181781AA	06/27/2018 14:28	Joel Chachapoya	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	I181781AA	06/27/2018 14:49	Joel Chachapoya	50

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GWFD02-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/21/2018 10:00
Collection Date/Time: 06/14/2018 19:17
SDG#: DHR44-03FD

CH2M Hill, Inc.
ELLE Sample #: WW 9672158
ELLE Group #: 1957998
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	1.0	U	1.0	0.2	2
02898	cis-1,2-Dichloroethene	156-59-2	35		1.0	0.2	2
02898	trans-1,2-Dichloroethene	156-60-5	0.4	J	1.0	0.2	2
02898	Tetrachloroethene	127-18-4	230	E	1.0	0.2	2
02898	Trichloroethene	79-01-6	38		1.0	0.2	2
02898	Vinyl Chloride	75-01-4	1.0	U	1.0	0.2	2
Trial ID: DL							
02898	1,1-Dichloroethene	75-35-4	10	U	10	2.0	20
02898	cis-1,2-Dichloroethene	156-59-2	26		10	2.0	20
02898	trans-1,2-Dichloroethene	156-60-5	10	U	10	2.0	20
02898	Tetrachloroethene	127-18-4	210		10	2.0	20
02898	Trichloroethene	79-01-6	33		10	2.0	20
02898	Vinyl Chloride	75-01-4	10	U	10	2.0	20

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181781AA	06/27/2018 16:15	Joel Chachapoya	2
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	2-DL	I181792AA	06/28/2018 16:02	Joel Chachapoya	20
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181781AA	06/27/2018 16:15	Joel Chachapoya	2
01163	GC/MS VOA Water Prep	SW-846 5030B	2	I181792AA	06/28/2018 16:02	Joel Chachapoya	20

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW10-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/21/2018 10:00
Collection Date/Time: 06/14/2018 19:14
SDG#: DHR44-04

CH2M Hill, Inc.
ELLE Sample #: WW 9672159
ELLE Group #: 1957998
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	1.0	U	1.0	0.2	2
02898	cis-1,2-Dichloroethene	156-59-2	35		1.0	0.2	2
02898	trans-1,2-Dichloroethene	156-60-5	0.4	J	1.0	0.2	2
02898	Tetrachloroethene	127-18-4	200	E	1.0	0.2	2
02898	Trichloroethene	79-01-6	34		1.0	0.2	2
02898	Vinyl Chloride	75-01-4	1.0	U	1.0	0.2	2
Trial ID: DL							
02898	1,1-Dichloroethene	75-35-4	10	U	10	2.0	20
02898	cis-1,2-Dichloroethene	156-59-2	28		10	2.0	20
02898	trans-1,2-Dichloroethene	156-60-5	10	U	10	2.0	20
02898	Tetrachloroethene	127-18-4	200		10	2.0	20
02898	Trichloroethene	79-01-6	33		10	2.0	20
02898	Vinyl Chloride	75-01-4	10	U	10	2.0	20

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181781AA	06/27/2018 17:40	Joel Chachapoya	2
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	2-DL	I181781AA	06/27/2018 18:01	Joel Chachapoya	20
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181781AA	06/27/2018 17:40	Joel Chachapoya	2
01163	GC/MS VOA Water Prep	SW-846 5030B	2	I181781AA	06/27/2018 18:01	Joel Chachapoya	20

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW13-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/21/2018 10:00
Collection Date/Time: 06/14/2018 17:56
SDG#: DHR44-05

CH2M Hill, Inc.
ELLE Sample #: WW 9672160
ELLE Group #: 1957998
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	0.5	U	0.5	0.1	1
02898	cis-1,2-Dichloroethene	156-59-2	24		0.5	0.1	1
02898	trans-1,2-Dichloroethene	156-60-5	0.1	J	0.5	0.1	1
02898	Tetrachloroethene	127-18-4	0.5	U	0.5	0.1	1
02898	Trichloroethene	79-01-6	1.8		0.5	0.1	1
02898	Vinyl Chloride	75-01-4	0.5	U	0.5	0.1	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181781AA	06/27/2018 15:54	Joel Chachapoya	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181781AA	06/27/2018 15:54	Joel Chachapoya	1

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW15-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/21/2018 10:00
Collection Date/Time: 06/14/2018 20:39
SDG#: DHR44-06

CH2M Hill, Inc.
ELLE Sample #: WW 9672161
ELLE Group #: 1957998
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	2.5	U	2.5	0.5	5
02898	cis-1,2-Dichloroethene	156-59-2	6.1		2.5	0.5	5
02898	trans-1,2-Dichloroethene	156-60-5	2.5	U	2.5	0.5	5
02898	Tetrachloroethene	127-18-4	250	E	2.5	0.5	5
02898	Trichloroethene	79-01-6	10		2.5	0.5	5
02898	Vinyl Chloride	75-01-4	2.5	U	2.5	0.5	5
Trial ID: DL							
02898	1,1-Dichloroethene	75-35-4	50	U	50	10	100
02898	cis-1,2-Dichloroethene	156-59-2	50	U	50	10	100
02898	trans-1,2-Dichloroethene	156-60-5	50	U	50	10	100
02898	Tetrachloroethene	127-18-4	220		50	10	100
02898	Trichloroethene	79-01-6	10	J	50	10	100
02898	Vinyl Chloride	75-01-4	50	U	50	10	100

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181792AA	06/28/2018 16:23	Joel Chachapoya	5
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	2-DL	I181781AA	06/27/2018 18:44	Joel Chachapoya	100
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181792AA	06/28/2018 16:23	Joel Chachapoya	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	I181781AA	06/27/2018 18:44	Joel Chachapoya	100

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW17-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/21/2018 10:00
Collection Date/Time: 06/14/2018 18:29
SDG#: DHR44-07

CH2M Hill, Inc.
ELLE Sample #: WW 9672162
ELLE Group #: 1957998
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	2.5	U	2.5	0.5	5
02898	cis-1,2-Dichloroethene	156-59-2	0.6	J	2.5	0.5	5
02898	trans-1,2-Dichloroethene	156-60-5	2.5	U	2.5	0.5	5
02898	Tetrachloroethene	127-18-4	220	E	2.5	0.5	5
02898	Trichloroethene	79-01-6	6.1		2.5	0.5	5
02898	Vinyl Chloride	75-01-4	2.5	U	2.5	0.5	5
Trial ID: DL							
02898	1,1-Dichloroethene	75-35-4	25	U	25	5.0	50
02898	cis-1,2-Dichloroethene	156-59-2	25	U	25	5.0	50
02898	trans-1,2-Dichloroethene	156-60-5	25	U	25	5.0	50
02898	Tetrachloroethene	127-18-4	200		25	5.0	50
02898	Trichloroethene	79-01-6	6.2	J	25	5.0	50
02898	Vinyl Chloride	75-01-4	25	U	25	5.0	50

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181781AA	06/27/2018 19:05	Joel Chachapoya	5
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	2-DL	I181781AA	06/27/2018 19:27	Joel Chachapoya	50
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181781AA	06/27/2018 19:05	Joel Chachapoya	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	I181781AA	06/27/2018 19:27	Joel Chachapoya	50

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW18-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/21/2018 10:00
Collection Date/Time: 06/14/2018 18:46
SDG#: DHR44-08

CH2M Hill, Inc.
ELLE Sample #: WW 9672163
ELLE Group #: 1957998
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	2.5	U	2.5	0.5	5
02898	cis-1,2-Dichloroethene	156-59-2	2.5	U	2.5	0.5	5
02898	trans-1,2-Dichloroethene	156-60-5	2.5	U	2.5	0.5	5
02898	Tetrachloroethene	127-18-4	300	E	2.5	0.5	5
02898	Trichloroethene	79-01-6	3.4		2.5	0.5	5
02898	Vinyl Chloride	75-01-4	2.5	U	2.5	0.5	5
Trial ID: DL							
02898	1,1-Dichloroethene	75-35-4	25	U	25	5.0	50
02898	cis-1,2-Dichloroethene	156-59-2	25	U	25	5.0	50
02898	trans-1,2-Dichloroethene	156-60-5	25	U	25	5.0	50
02898	Tetrachloroethene	127-18-4	270		25	5.0	50
02898	Trichloroethene	79-01-6	25	U	25	5.0	50
02898	Vinyl Chloride	75-01-4	25	U	25	5.0	50

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181781AA	06/27/2018 19:48	Joel Chachapoya	5
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	2-DL	I181781AA	06/27/2018 20:09	Joel Chachapoya	50
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181781AA	06/27/2018 19:48	Joel Chachapoya	5
01163	GC/MS VOA Water Prep	SW-846 5030B	2	I181781AA	06/27/2018 20:09	Joel Chachapoya	50

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW20-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/21/2018 10:00
Collection Date/Time: 06/14/2018 17:29
SDG#: DHR44-09

CH2M Hill, Inc.
ELLE Sample #: WW 9672164
ELLE Group #: 1957998
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	0.5	U	0.5	0.1	1
02898	cis-1,2-Dichloroethene	156-59-2	23		0.5	0.1	1
02898	trans-1,2-Dichloroethene	156-60-5	0.5	U	0.5	0.1	1
02898	Tetrachloroethene	127-18-4	14		0.5	0.1	1
02898	Trichloroethene	79-01-6	30	E	0.5	0.1	1
02898	Vinyl Chloride	75-01-4	0.5	U	0.5	0.1	1
Trial ID: DL							
02898	1,1-Dichloroethene	75-35-4	5.0	U	5.0	1.0	10
02898	cis-1,2-Dichloroethene	156-59-2	16		5.0	1.0	10
02898	trans-1,2-Dichloroethene	156-60-5	5.0	U	5.0	1.0	10
02898	Tetrachloroethene	127-18-4	11		5.0	1.0	10
02898	Trichloroethene	79-01-6	23		5.0	1.0	10
02898	Vinyl Chloride	75-01-4	5.0	U	5.0	1.0	10

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181781AA	06/27/2018 20:31	Joel Chachapoya	1
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	2-DL	I181781AA	06/27/2018 20:52	Joel Chachapoya	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181781AA	06/27/2018 20:31	Joel Chachapoya	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	I181781AA	06/27/2018 20:52	Joel Chachapoya	10

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW21-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/21/2018 10:00
Collection Date/Time: 06/14/2018 17:07
SDG#: DHR44-10

CH2M Hill, Inc.
ELLE Sample #: WW 9672165
ELLE Group #: 1957998
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	0.5	U	0.5	0.1	1
02898	cis-1,2-Dichloroethene	156-59-2	2.1		0.5	0.1	1
02898	trans-1,2-Dichloroethene	156-60-5	0.5	U	0.5	0.1	1
02898	Tetrachloroethene	127-18-4	78	E	0.5	0.1	1
02898	Trichloroethene	79-01-6	16		0.5	0.1	1
02898	Vinyl Chloride	75-01-4	0.5	U	0.5	0.1	1
Trial ID: DL							
02898	1,1-Dichloroethene	75-35-4	10	U	10	2.0	20
02898	cis-1,2-Dichloroethene	156-59-2	10	U	10	2.0	20
02898	trans-1,2-Dichloroethene	156-60-5	10	U	10	2.0	20
02898	Tetrachloroethene	127-18-4	57		10	2.0	20
02898	Trichloroethene	79-01-6	13		10	2.0	20
02898	Vinyl Chloride	75-01-4	10	U	10	2.0	20

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181781AA	06/27/2018 21:13	Joel Chachapoya	1
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	2-DL	I181781AA	06/27/2018 21:34	Joel Chachapoya	20
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181781AA	06/27/2018 21:13	Joel Chachapoya	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	I181781AA	06/27/2018 21:34	Joel Chachapoya	20

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GWFD01-061418 Grab Groundwater Dow Hanging Rock, OH**

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/21/2018 10:00
Collection Date/Time: 06/14/2018 17:11
SDG#: DHR44-11FD

CH2M Hill, Inc.
ELLE Sample #: WW 9672166
ELLE Group #: 1957998
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	0.5	U	0.5	0.1	1
02898	cis-1,2-Dichloroethene	156-59-2	2.0		0.5	0.1	1
02898	trans-1,2-Dichloroethene	156-60-5	0.5	U	0.5	0.1	1
02898	Tetrachloroethene	127-18-4	73	E	0.5	0.1	1
02898	Trichloroethene	79-01-6	16		0.5	0.1	1
02898	Vinyl Chloride	75-01-4	0.5	U	0.5	0.1	1
Trial ID: DL							
02898	1,1-Dichloroethene	75-35-4	10	U	10	2.0	20
02898	cis-1,2-Dichloroethene	156-59-2	10	U	10	2.0	20
02898	trans-1,2-Dichloroethene	156-60-5	10	U	10	2.0	20
02898	Tetrachloroethene	127-18-4	56		10	2.0	20
02898	Trichloroethene	79-01-6	13		10	2.0	20
02898	Vinyl Chloride	75-01-4	10	U	10	2.0	20

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181781AA	06/27/2018 21:55	Joel Chachapoya	1
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	2-DL	I181781AA	06/27/2018 22:17	Joel Chachapoya	20
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181781AA	06/27/2018 21:55	Joel Chachapoya	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	I181781AA	06/27/2018 22:17	Joel Chachapoya	20

*=This limit was used in the evaluation of the final result

Sample Description: **S01-GW12-2630-061418 Grab Groundwater**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/21/2018 10:00
Collection Date/Time: 06/14/2018 21:06
SDG#: DHR44-12

CH2M Hill, Inc.
ELLE Sample #: WW 9672167
ELLE Group #: 1957998
Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	1.0	U	1.0	0.2	2
02898	cis-1,2-Dichloroethene	156-59-2	1.0	U	1.0	0.2	2
02898	trans-1,2-Dichloroethene	156-60-5	1.0	U	1.0	0.2	2
02898	Tetrachloroethene	127-18-4	210	E	1.0	0.2	2
02898	Trichloroethene	79-01-6	2.4		1.0	0.2	2
02898	Vinyl Chloride	75-01-4	1.0	U	1.0	0.2	2
Trial ID: DL							
02898	1,1-Dichloroethene	75-35-4	10	U	10	2.0	20
02898	cis-1,2-Dichloroethene	156-59-2	10	U	10	2.0	20
02898	trans-1,2-Dichloroethene	156-60-5	10	U	10	2.0	20
02898	Tetrachloroethene	127-18-4	200		10	2.0	20
02898	Trichloroethene	79-01-6	2.3	J	10	2.0	20
02898	Vinyl Chloride	75-01-4	10	U	10	2.0	20

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181792AA	06/28/2018 16:44	Joel Chachapoya	2
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	2-DL	I181781AA	06/27/2018 22:59	Joel Chachapoya	20
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181792AA	06/28/2018 16:44	Joel Chachapoya	2
01163	GC/MS VOA Water Prep	SW-846 5030B	2	I181781AA	06/27/2018 22:59	Joel Chachapoya	20

*=This limit was used in the evaluation of the final result

Sample Description: **061918TB Water**
Dow Hanging Rock, OH

Project Name: **Dow Hanging Rock, OH**

Submittal Date/Time: 06/21/2018 10:00
Collection Date/Time: 06/19/2018 15:00
SDG#: DHR44-13TB

CH2M Hill, Inc.
ELLE Sample #: WW 9672168
ELLE Group #: 1957998
Matrix: Water

CAT No.	Analysis Name	CAS Number	Result		Limit of Quantitation*	Method Detection Limit	Dilution Factor
GC/MS Volatiles	**SW-846 8260B 25mL purge**		**ug/l**		**ug/l**	**ug/l**	
02898	1,1-Dichloroethene	75-35-4	0.5	U	0.5	0.1	1
02898	cis-1,2-Dichloroethene	156-59-2	0.5	U	0.5	0.1	1
02898	trans-1,2-Dichloroethene	156-60-5	0.5	U	0.5	0.1	1
02898	Tetrachloroethene	127-18-4	0.5	U	0.5	0.1	1
02898	Trichloroethene	79-01-6	0.5	U	0.5	0.1	1
02898	Vinyl Chloride	75-01-4	0.5	U	0.5	0.1	1

Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02898	VOCs- 25ml Water by 8260B	SW-846 8260B 25mL purge	1	I181781AA	06/27/2018 15:11	Joel Chachapoya	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	I181781AA	06/27/2018 15:11	Joel Chachapoya	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/30/2018 16:27

Group Number: 1957998

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result		LOQ**	MDL
	ug/l		ug/l	ug/l
Batch number: I181781AA	Sample number(s): 9672156-9672168			
1,1-Dichloroethene	0.5	U	0.5	0.1
cis-1,2-Dichloroethene	0.5	U	0.5	0.1
trans-1,2-Dichloroethene	0.5	U	0.5	0.1
Tetrachloroethene	0.5	U	0.5	0.1
Trichloroethene	0.5	U	0.5	0.1
Vinyl Chloride	0.5	U	0.5	0.1
Batch number: I181792AA	Sample number(s): 9672158,9672161,9672167			
1,1-Dichloroethene	0.5	U	0.5	0.1
cis-1,2-Dichloroethene	0.5	U	0.5	0.1
trans-1,2-Dichloroethene	0.5	U	0.5	0.1
Tetrachloroethene	0.5	U	0.5	0.1
Trichloroethene	0.5	U	0.5	0.1
Vinyl Chloride	0.5	U	0.5	0.1

LCS/LCSD

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: I181781AA	Sample number(s): 9672156-9672168								
1,1-Dichloroethene	5.00	5.17			103		80-124		
cis-1,2-Dichloroethene	5.00	5.22			104		80-120		
trans-1,2-Dichloroethene	5.00	5.12			102		80-120		
Tetrachloroethene	5.00	5.43			109		80-120		
Trichloroethene	5.00	5.35			107		80-120		
Vinyl Chloride	5.00	4.79			96		56-120		
Batch number: I181792AA	Sample number(s): 9672158,9672161,9672167								
1,1-Dichloroethene	5.00	4.97	5.00	5.08	99	102	80-124	2	30
cis-1,2-Dichloroethene	5.00	5.13	5.00	5.22	103	104	80-120	2	30
trans-1,2-Dichloroethene	5.00	4.91	5.00	5.03	98	101	80-120	2	30
Tetrachloroethene	5.00	5.11	5.00	4.91	102	98	80-120	4	30
Trichloroethene	5.00	5.10	5.00	5.15	102	103	80-120	1	30
Vinyl Chloride	5.00	4.91	5.00	4.86	98	97	56-120	1	30

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 06/30/2018 16:27

Group Number: 1957998

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: I181781AA	Sample number(s): 9672156-9672168 UNSPK: 9672157									
1,1-Dichloroethene	2.5 U	25	27.89	25	28.25	112	113	80-124	1	30
cis-1,2-Dichloroethene	54.72	25	86.33	25	87.25	126*	130*	80-120	1	30
trans-1,2-Dichloroethene	2.5 U	25	27.01	25	27.66	108	111	80-120	2	30
Tetrachloroethene	249.51	25	298.53	25	298.93	196 (2)	198 (2)	80-120	0	30
Trichloroethene	51.35	25	85.23	25	84.19	136*	131*	80-120	1	30
Vinyl Chloride	2.5 U	25	26.25	25	27.14	105	109	56-120	3	30
Batch number: I181792AA	Sample number(s): 9672158,9672161,9672167 UNSPK: P674186									
1,1-Dichloroethene	0.5 U	5.00	4.75	5.00	5.50	95	110	80-124	15	30
cis-1,2-Dichloroethene	0.5 U	5.00	5.40	5.00	5.33	108	107	80-120	1	30
trans-1,2-Dichloroethene	0.5 U	5.00	4.63	5.00	5.28	93	106	80-120	13	30
Tetrachloroethene	0.5 U	5.00	5.29	5.00	5.20	106	104	80-120	2	30
Trichloroethene	0.5 U	5.00	5.61	5.00	5.42	112	108	80-120	3	30
Vinyl Chloride	0.5 U	5.00	5.11	5.00	5.67	102	113	56-120	10	30

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- 25ml Water by 8260B
Batch number: I181781AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9672156	117	107	99	97
9672157	116	109	96	93
9672157DL	117	109	101	93
9672158	117	108	107	96
9672159	119	110	97	97
9672159DL	115	105	94	97
9672160	118	108	101	95
9672161DL	117	106	96	97
9672162	117	108	94	97
9672162DL	118	107	95	96
9672163	119	109	93	94
9672163DL	118	107	95	95
9672164	119	109	97	96
9672164DL	119	107	97	92
9672165	119	108	95	94
9672165DL	119	110	97	92

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1957998
Reported: 06/30/2018 16:27

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs- 25ml Water by 8260B
Batch number: I181781AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9672166	119	108	93	99
9672166DL	120	109	97	96
9672167DL	120	108	95	88
9672168	118	107	103	96
Blank	113	106	101	98
LCS	107	102	104	101
MS	109	102	98	104
MSD	108	100	98	105
Limits:	80-120	80-120	80-120	80-120

Analysis Name: VOCs- 25ml Water by 8260B
Batch number: I181792AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
9672158DL	107	106	110	104
9672161	114	107	98	96
9672167	112	108	98	96
Blank	104	105	101	86
LCS	100	100	103	100
LCSD	100	101	102	91
MS	102	100	102	106
MSD	102	102	102	106
Limits:	80-120	80-120	80-120	80-120

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody

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Acct. # 11372 Group # 1957998 Sample # 9672156-68

COC # 562617

Client Information

Client: DOW c/o Jacobs	Acct. #:
Project Name/#: DOW Hanging Rock RFI	PWSID #:
Project Manager: M. Chiller / Shane Lowe	P.O. #:
Sampler: Billy Irish	Quote #:
State where samples were collected: Ohio	For Compliance: Yes ☐ No ☒

Matrix: Soil ☐ Sediment ☐ Tissue ☐ | Water: Potable ☐ Ground ☒ NPDES ☐ Surface ☐ | Other: ____

Analysis Requested — Preservation and Filtration Codes

For Lab Use Only: FSC: ____ SCR#: ____

Preservation Codes: H=HCl, T=Thiosulfate, N=HNO_3, B=NaOH, S=H_2SO_4, P=H_3PO_4, F=Field Filtered, O=Other

Sample Identification	Collected Date	Collected Time	Grab	Composite	Soil	Water	Other	Total # of Containers	VOC's	Remarks
~~S01-GW02-2630-061418~~	~~6-14-18~~	~~1544~~	~~X~~			~~X~~		~~3~~	~~X~~	
~~S01-GW03-2630-061418~~	~~6-14-18~~	~~1614~~	~~X~~			~~X~~		~~3~~	~~X~~	
S01-GW04-2630-061418	6-14-18	2004	X			X		3	X	
S01-GW07-2630-061418	6-14-18	1943	X			X		3	X	
S01-GWFD02-061418	6-14-18	1917	X			X		3	X	
S01-GW10-2630-061418	6-14-18	1914	X			X		3	X	
S01-GW13-2630-061418	6-14-18	1756	X			X		3	X	
S01-GW15-2630-061418	6-14-18	2039	X			X		3	X	
S01-GW17-2630-061418	6-14-18	1829	X			X		3	X	
S01-GW18-2630-061418	6-14-18	1846	X			X		3	X	

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: ____

E-mail address: ____

Relinquished by	Date	Time	Received by	Date	Time
Billy Irish	6-20-18	1500			
			Edorcher	6-21-18	1000

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) As per contract

Type VI (Raw Data Only)

Type III (Reduced non-CLP) NJ DKQP TX TRRP-13

NYSDEC Category A or B MA MCP CT RCP

EDD Required? Yes No

If yes, format: As per Contract

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS ____ FedEx X Other ____

Temperature upon receipt 1.3 °C

Page 1 of 2

Environmental Analysis Request/Chain of Custody

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Acct. # 11372 Group # 1957998 Sample # 967215C-68

COC # 562619

Client Information

Client: DOW % Jacobs
Acct. #:
Project Name/#: DOW Hanging Rock RFI
PWSID #:
Project Manager: M. Chiller / Shane Lowe
P.O. #:
Sampler: Billy Irish
Quote #:
State where samples were collected: OHIO
For Compliance: Yes ☐ No ☒

Matrix

Soil ☐ Sediment ☐ Tissue ☐ Water ☒ Potable ☐ Ground ☐ NPDES ☐ Surface ☐ Other: ____

Analysis Requested

Preservation and Filtration Codes

For Lab Use Only
FSC:
SCR#:

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	VOCs	Remarks
SD1-GW20-2630-061418	6-14-18	1729	X		3	X	
SD1-GW21-2630-061418	6-14-18	1707	X		3	X	
SD1-GWFD01-061418	6-14-18	1711	X		3	X	
~~SD1-GW22-2630-061418~~	~~6-14-18~~	~~1640~~	~~X~~		~~3~~	~~X~~	
SD1-GW12-2630-061418	6-14-18	2106	X		3	X	
061918TB	6-19-18	15:00	X		2	X	Trip Blank

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 P=H_3PO_4
F=Field Filtered O=Other

Remarks

Turnaround Time (TAT) Requested (please circle)
~~Standard~~ Rush
(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: _____

E-mail address: _____

Data Package Options (circle if required)
Type I (EPA Level 3 Equivalent/non-CLP)
Type VI (Raw Data Only)
As per contract
Type III (Reduced non-CLP)
NJ DKQP
TX TRRP-13
NYSDEC Category A or B
MA MCP
CT RCP

Relinquished by	Date	Time	Received by	Date	Time
Billy Irish	6-20-18	1500			
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by	Date	Time
			E Shoben	6-21-18	1000

EDD Required? (Yes) No
If yes, format: As per Contract

Site-Specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier:
UPS _____ FedEx X Other _____

Temperature upon receipt 1.3 °C

Page 2 of 2

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Sample Administration Receipt Documentation Log

Doc Log ID: 219791

Group Number(s): 1957998

Client: Dow c/o Jacobs

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	06/21/2018 10:00
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	OH		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	Yes
Samples Chilled:	Yes	VOA IDs (≥ 6mm):	See Below
Paperwork Enclosed:	Yes	Total Trip Blank Qty:	2
Samples Intact:	Yes	Trip Blank Type:	HCl
Missing Samples:	No	Air Quality Samples Present:	No
Extra Samples:	Yes		
Discrepancy in Container Qty on COC:	No		

VOA Vial IDs (Headspace ≥ 6mm): 061818TB (1 of 2)

Unpacked by Melvin Sanchez (8943) at 15:40 on 06/21/2018

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT131	1.3	DT	Wet	Y	Bagged	N

Extra Sample Details

Sample ID on Label	Number of Extra Containers	Date on Label	Comments
061918TB	2	6/19/2018 15:00	

2425 New Holland Pike
Lancaster, PA 17601-2465
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mL**	milliliter(s)
C	degrees Celsius	**MPN**	Most Probable Number
cfu	colony forming units	**N.D.**	non-detect
CP Units	cobalt-chloroplatinate units	**ng**	nanogram(s)
F	degrees Fahrenheit	**NTU**	nephelometric turbidity units
g	gram(s)	**pg/L**	picogram/liter
IU	International Units	**RL**	Reporting Limit
kg	kilogram(s)	**TNTC**	Too Numerous To Count
L	liter(s)	**µg**	microgram(s)
lb.	pound(s)	**µL**	microliter(s)
m3	cubic meter(s)	**umhos/cm**	micromhos/cm
meq	milliequivalents	**MCL**	Maximum Contamination Limit
mg	milligram(s)		

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Data Qualifiers

Qualifier	Definition
C	Result confirmed by reanalysis
D1	Indicates for dual column analyses that the result is reported from column 1
D2	Indicates for dual column analyses that the result is reported from column 2
E	Concentration exceeds the calibration range
K1	Initial Calibration Blank is above the QC limit and the sample result is ND
K2	Continuing Calibration Blank is above the QC limit and the sample result is ND
K3	Initial Calibration Verification is above the QC limit and the sample result is ND
K4	Continuing Calibration Verification is above the QC limit and the sample result is ND
J (or G, I, X)	Estimated value >= the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P	Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U	Analyte was not detected at the value indicated
V	Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference.
W	The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.
Z	Laboratory Defined - see analysis report

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Volatiles by GC/MS Data

Case Narrative/Conformance Summary

Volatiles by GC/MS

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR44

GC/MS Volatiles

Fraction: Volatiles by GC/MS

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
9672156	S01-GW04-2630-061418	X		1	
9672157	S01-GW07-2630-061418	X		50; 5	
9672158	S01-GWFD02-061418	X		20; 2	Field Duplicate Sample
9672159	S01-GW10-2630-061418	X		20; 2	
9672160	S01-GW13-2630-061418	X		1	
9672161	S01-GW15-2630-061418	X		100; 5	
9672162	S01-GW17-2630-061418	X		50; 5	
9672163	S01-GW18-2630-061418	X		50; 5	
9672164	S01-GW20-2630-061418	X		10; 1	
9672165	S01-GW21-2630-061418	X		20; 1	
9672166	S01-GWFD01-061418	X		20; 1	Field Duplicate Sample
9672167	S01-GW12-2630-061418	X		20; 2	
9672168	061918TB	X		1	Trip Blank

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

MS/MSD

Batch#: I181781AA (Sample number(s): 9672156-9672168, UNSPK: 9672157)
The recovery(ies) for the following analyte(s) in the MS and MSD exceeded the acceptance window indicating a positive bias: cis-1,2-Dichloroethene, Tetrachloroethene, Trichloroethene

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DHR44

GC/MS Volatiles

Fraction: Volatiles by GC/MS

SAMPLE ANALYSIS:

No problems were encountered with the analysis of the samples.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Volatiles by GC/MS

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Quality Control Reference List
GC/MS Volatiles

CLIENT: CH2M Hill, Inc.
SDG: DHR44

Fraction: Volatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
VOCs- 25ml Water by 8260B	I181781AA	VBLKI30	06/27/2018 13:19
		LCSI30	06/27/2018 12:37
		9672156	06/27/2018 15:33
		9672157 UNSPK	06/27/2018 14:28
		9672157 MS	06/27/2018 16:58
		9672157 MSD	06/27/2018 17:19
		9672157DL	06/27/2018 14:49
		9672158	06/27/2018 16:15
		9672159	06/27/2018 17:40
		9672159DL	06/27/2018 18:01
		9672160	06/27/2018 15:54
		9672161DL	06/27/2018 18:44
		9672162	06/27/2018 19:05
		9672162DL	06/27/2018 19:27
		9672163	06/27/2018 19:48
		9672163DL	06/27/2018 20:09
		9672164	06/27/2018 20:31
		9672164DL	06/27/2018 20:52
		9672165	06/27/2018 21:13
		9672165DL	06/27/2018 21:34
		9672166	06/27/2018 21:55
		9672166DL	06/27/2018 22:17
		9672167DL	06/27/2018 22:59
		9672168	06/27/2018 15:11
VOCs- 25ml Water by 8260B	I181792AA	VBLKI32	06/28/2018 13:50
		LCSI32	06/28/2018 12:46
		LCDI32	06/28/2018 13:07
		9672158DL	06/28/2018 16:02
		9672161	06/28/2018 16:23
		9672167	06/28/2018 16:44

Quality Control Summary
Method Blank
GC/MS Volatiles
SDG: DHR44
Matrix: LIQUID

Fraction: Volatiles by GC/MS

I181781AA / VBLKI30 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/27/18	N.D.	ug/l	0.1	0.5
1,1-Dichloroethene	06/27/18	N.D.	ug/l	0.1	0.5
trans-1,2-Dichloroethene	06/27/18	N.D.	ug/l	0.1	0.5
cis-1,2-Dichloroethene	06/27/18	N.D.	ug/l	0.1	0.5
Trichloroethene	06/27/18	N.D.	ug/l	0.1	0.5
Tetrachloroethene	06/27/18	N.D.	ug/l	0.1	0.5

I181792AA / VBLKI32 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Vinyl Chloride	06/28/18	N.D.	ug/l	0.1	0.5
1,1-Dichloroethene	06/28/18	N.D.	ug/l	0.1	0.5
trans-1,2-Dichloroethene	06/28/18	N.D.	ug/l	0.1	0.5
cis-1,2-Dichloroethene	06/28/18	N.D.	ug/l	0.1	0.5
Trichloroethene	06/28/18	N.D.	ug/l	0.1	0.5
Tetrachloroethene	06/28/18	N.D.	ug/l	0.1	0.5

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DHR44
Matrix: LIQUID

Fraction: Volatiles by GC/MS

I181781AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	10 ug/l	Spike Added	10 ug/l	Spike Added	10 ug/l	Spike Added	10 ug/l
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKI30	106	80 - 120	98	80 - 120	113	80 - 120	101	80 - 120
LCSI30	102	80 - 120	101	80 - 120	107	80 - 120	104	80 - 120
9672156	107	80 - 120	97	80 - 120	117	80 - 120	99	80 - 120
9672157 UNSPK	109	80 - 120	93	80 - 120	116	80 - 120	96	80 - 120
9672157 MS	102	80 - 120	104	80 - 120	109	80 - 120	98	80 - 120
9672157 MSD	100	80 - 120	105	80 - 120	108	80 - 120	98	80 - 120
9672157DL	109	80 - 120	93	80 - 120	117	80 - 120	101	80 - 120
9672158	108	80 - 120	96	80 - 120	117	80 - 120	107	80 - 120
9672159	110	80 - 120	97	80 - 120	119	80 - 120	97	80 - 120
9672159DL	105	80 - 120	97	80 - 120	115	80 - 120	94	80 - 120
9672160	108	80 - 120	95	80 - 120	118	80 - 120	101	80 - 120
9672161DL	106	80 - 120	97	80 - 120	117	80 - 120	96	80 - 120
9672162	108	80 - 120	97	80 - 120	117	80 - 120	94	80 - 120
9672162DL	107	80 - 120	96	80 - 120	118	80 - 120	95	80 - 120
9672163	109	80 - 120	94	80 - 120	119	80 - 120	93	80 - 120
9672163DL	107	80 - 120	95	80 - 120	118	80 - 120	95	80 - 120
9672164	109	80 - 120	96	80 - 120	119	80 - 120	97	80 - 120
9672164DL	107	80 - 120	92	80 - 120	119	80 - 120	97	80 - 120
9672165	108	80 - 120	94	80 - 120	119	80 - 120	95	80 - 120
9672165DL	110	80 - 120	92	80 - 120	119	80 - 120	97	80 - 120
9672166	108	80 - 120	99	80 - 120	119	80 - 120	93	80 - 120
9672166DL	109	80 - 120	96	80 - 120	120	80 - 120	97	80 - 120
9672167DL	108	80 - 120	88	80 - 120	120	80 - 120	95	80 - 120
9672168	107	80 - 120	96	80 - 120	118	80 - 120	103	80 - 120

I181792AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	10 ug/l	Spike Added	10 ug/l	Spike Added	10 ug/l	Spike Added	10 ug/l
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKI32	105	80 - 120	86	80 - 120	104	80 - 120	101	80 - 120
LCSI32	100	80 - 120	100	80 - 120	100	80 - 120	103	80 - 120
LCDI32	101	80 - 120	91	80 - 120	100	80 - 120	102	80 - 120
9672158DL	106	80 - 120	104	80 - 120	107	80 - 120	110	80 - 120
9672161	107	80 - 120	96	80 - 120	114	80 - 120	98	80 - 120
9672167	108	80 - 120	96	80 - 120	112	80 - 120	98	80 - 120

GC/MS Volatiles

Fraction: Volatiles by GC/MS

UNSPK: 9672157 MS: 9672157 MSD: 9672157 **Analyte**	Batch: **I181781AA** (Sample number(s): 9672156-9672168)								
	Spike Added ug/l	**Unspiked Conc ug/l**	**MS Conc ug/l**	**MSD Conc ug/l**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	25	N.D.	26.25	27.14	105	109	56-120	3	30
1,1-Dichloroethene	25	N.D.	27.89	28.25	112	113	80-124	1	30
trans-1,2-Dichloroethene	25	N.D.	27.01	27.66	108	111	80-120	2	30
cis-1,2-Dichloroethene	25	54.72	86.33	87.25	126 *	130 *	80-120	1	30
Trichloroethene	25	51.35	85.23	84.19	136 *	131 *	80-120	1	30
Tetrachloroethene	25	249.51	298.53	298.93	196 (2)	198 (2)	80-120	0	30

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSI30	Batch: **I181781AA** (Sample number(s): 9672156-9672168)							
Analyte	**Spike Added ug/l**	**LCS Conc ug/l**	**LCSD Conc ug/l**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	5.00	4.79	NA	96	NA	56-120	NA	NA
1,1-Dichloroethene	5.00	5.17	NA	103	NA	80-124	NA	NA
trans-1,2-Dichloroethene	5.00	5.12	NA	102	NA	80-120	NA	NA
cis-1,2-Dichloroethene	5.00	5.22	NA	104	NA	80-120	NA	NA
Trichloroethene	5.00	5.35	NA	107	NA	80-120	NA	NA
Tetrachloroethene	5.00	5.43	NA	109	NA	80-120	NA	NA

LCS: LCSI32 LCSD: LCDI32	Batch: **I181792AA** (Sample number(s): 9672158, 9672161, 9672167)							
Analyte	**Spike Added ug/l**	**LCS Conc ug/l**	**LCSD Conc ug/l**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Vinyl Chloride	5.00	4.91	4.86	98	97	56-120	1	30
1,1-Dichloroethene	5.00	4.97	5.08	99	102	80-124	2	30
trans-1,2-Dichloroethene	5.00	4.91	5.03	98	101	80-120	2	30
cis-1,2-Dichloroethene	5.00	5.13	5.22	103	104	80-120	2	30
Trichloroethene	5.00	5.10	5.15	102	103	80-120	1	30
Tetrachloroethene	5.00	5.11	4.91	102	98	80-120	4	30

Fraction: Volatiles by GC/MS

02898: VOCs- 25ml Water by 8260B Analyte Name	Default MDL	Default LOQ	Units
Vinyl Chloride	0.1	0.5	ug/l
1,1-Dichloroethene	0.1	0.5	ug/l
trans-1,2-Dichloroethene	0.1	0.5	ug/l
cis-1,2-Dichloroethene	0.1	0.5	ug/l
Trichloroethene	0.1	0.5	ug/l
Tetrachloroethene	0.1	0.5	ug/l

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: iu04t01.d BFB Injection Date: 06/04/18

Instrument ID: HP19930 BFB Injection Time: 10:45

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.70
75	30.0 - 60.0% of mass 95	47.38
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.64
173	Less than 2.0% of mass 174	0.67 (0.78)1
174	Greater than 50.0% of mass 95	85.68
175	5.0 - 9.0% of mass 174	6.26 (7.30)1
176	Greater than 95.0%, but less than 101.0% of mass 174	82.01 (95.71)1
177	5.0 - 9.0% of mass 176	5.59 (6.81)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD25	iu04i01.d	06/04/18	12:33
02	VSTD10	iu04i02.d	06/04/18	12:54
03	VSTD5	iu04i03.d	06/04/18	13:15
04	VSTD2	iu04i04.d	06/04/18	13:36
05	VSTD1	iu04i05.d	06/04/18	13:57
06	VSTD.5	iu04i06.d	06/04/18	14:19
07	VSTD.2	iu04i07.d	06/04/18	14:40
08	MDL0.1 - MDL0.1	iu04m01.d	06/04/18	15:02
09	LCSILG	iu04v01.d	06/04/18	15:23

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: iu27t02.d BFB Injection Date: 06/27/18

Instrument ID: HP19930 BFB Injection Time: 11:32

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.10
75	30.0 - 60.0% of mass 95	52.47
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.58
173	Less than 2.0% of mass 174	0.71 (0.77)1
174	Greater than 50.0% of mass 95	92.17
175	5.0 - 9.0% of mass 174	6.90 (7.48)1
176	Greater than 95.0%, but less than 101.0% of mass 174	89.10 (96.68)1
177	5.0 - 9.0% of mass 176	5.94 (6.67)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD10	iu27c02.d	06/27/18	12:15
02	LCSI30	iu27l01.d	06/27/18	12:37
03	VBLKI30	iu27b01.d	06/27/18	13:19
04	9672157	iu27s05.d	06/27/18	14:28
05	9672157DL	iu27s06.d	06/27/18	14:49
06	9672168	iu27s02.d	06/27/18	15:11
07	9672156	iu27s03.d	06/27/18	15:33
08	9672160	iu27s04.d	06/27/18	15:54
09	9672158	iu27s07.d	06/27/18	16:15
10	9672157MS	iu27s25.d	06/27/18	16:58
11	9672157MSD	iu27s26.d	06/27/18	17:19
12	9672159	iu27s09.d	06/27/18	17:40
13	9672159DL	iu27s10.d	06/27/18	18:01
14	9672161DL	iu27s12.d	06/27/18	18:44
15	9672162	iu27s13.d	06/27/18	19:05
16	9672162DL	iu27s14.d	06/27/18	19:27
17	9672163	iu27s15.d	06/27/18	19:48
18	9672163DL	iu27s16.d	06/27/18	20:09
19	9672164	iu27s17.d	06/27/18	20:31
20	9672164DL	iu27s18.d	06/27/18	20:52
21	9672165	iu27s19.d	06/27/18	21:13
22	9672165DL	iu27s20.d	06/27/18	21:34

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: iu27t02.d BFB Injection Date: 06/27/18

Instrument ID: HP19930 BFB Injection Time: 11:32

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.10
75	30.0 - 60.0% of mass 95	52.47
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.58
173	Less than 2.0% of mass 174	0.71 (0.77)1
174	Greater than 50.0% of mass 95	92.17
175	5.0 - 9.0% of mass 174	6.90 (7.48)1
176	Greater than 95.0%, but less than 101.0% of mass 174	89.10 (96.68)1
177	5.0 - 9.0% of mass 176	5.94 (6.67)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9672166	iu27s21.d	06/27/18	21:55
24	9672166DL	iu27s22.d	06/27/18	22:17
25	9672167DL	iu27s24.d	06/27/18	22:59

FORM V VOA

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: iu28t02.d BFB Injection Date: 06/28/18

Instrument ID: HP19930 BFB Injection Time: 11:39

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.89
75	30.0 - 60.0% of mass 95	48.96
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.71
173	Less than 2.0% of mass 174	0.67 (0.76)1
174	Greater than 50.0% of mass 95	87.39
175	5.0 - 9.0% of mass 174	6.37 (7.29)1
176	Greater than 95.0%, but less than 101.0% of mass 174	86.46 (98.92)1
177	5.0 - 9.0% of mass 176	5.43 (6.29)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD10	iu28c01.d	06/28/18	12:25
02	LCSI31	iu28s01.d	06/28/18	12:46
03	LCSI32	iu28s31.d	06/28/18	12:46
04	LCDI31	iu28s02.d	06/28/18	13:07
05	LCDI32	iu28s32.d	06/28/18	13:07
06	VBLKI31	iu28b01.d	06/28/18	13:50
07	VBLKI32	iu28b31.d	06/28/18	13:50
08	9662932DL	iu28s03.d	06/28/18	14:36
09	9674178	iu28s33.d	06/28/18	14:57
10	9674179	iu28s34.d	06/28/18	15:19
11	9674180	iu28s35.d	06/28/18	15:40
12	9672158DL	iu28s36.d	06/28/18	16:02
13	9672161	iu28s37.d	06/28/18	16:23
14	9672167	iu28s38.d	06/28/18	16:44
15	9671555	iu28s39.d	06/28/18	17:05
16	9671561	iu28s40.d	06/28/18	17:27
17	9671564	iu28s41.d	06/28/18	17:48
18	9674186	iu28s42.d	06/28/18	18:09
19	9674187MS	iu28s43.d	06/28/18	18:30
20	9674188MSD	iu28s44.d	06/28/18	18:52
21	9674189	iu28s45.d	06/28/18	19:13
22	9674190	iu28s46.d	06/28/18	19:34

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID: iu28t02.d BFB Injection Date: 06/28/18

Instrument ID: HP19930 BFB Injection Time: 11:39

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.89
75	30.0 - 60.0% of mass 95	48.96
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.71
173	Less than 2.0% of mass 174	0.67 (0.76)1
174	Greater than 50.0% of mass 95	87.39
175	5.0 - 9.0% of mass 174	6.37 (7.29)1
176	Greater than 95.0%, but less than 101.0% of mass 174	86.46 (98.92)1
177	5.0 - 9.0% of mass 176	5.43 (6.29)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	9674181	iu28s47.d	06/28/18	19:56
24	9674182	iu28s48.d	06/28/18	20:17
25	9674184	iu28s50.d	06/28/18	20:59
26	9674185	iu28s51.d	06/28/18	21:21
27	9674191	iu28s52.d	06/28/18	21:42
28	9674191DL	iu28s53.d	06/28/18	22:03
29	9674192	iu28s54.d	06/28/18	22:24
30	9674192DL	iu28s55.d	06/28/18	22:46
31	9674193	iu28s56.d	06/28/18	23:07
32	9674193DL	iu28s57.d	06/28/18	23:29

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date(s): 06/04/18 06/04/18

Heated Purge: (Y/N) Y Calibration Times: 12:33 14:40

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF0.2= iu04i07.d RRF0.5= iu04i06.d RRF 1 = iu04i05.d
RRF 2 = iu04i04.d RRF 5 = iu04i03.d RRF 10= iu04i02.d RRF 25= iu04i01.d

COMPOUND	RRF0.2	RRF0.5	RRF 1	RRF 2	RRF 5	RRF 10	RRF 25	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane	0.3727	0.3897	0.4372	0.4212	0.4078	0.4278	0.4540	0.4158	7	AVG	
Chloromethane	#0.3625	0.3489	0.3457	0.3309	0.3158	0.3189	0.3174	0.3343	5	AVG	#
Vinyl Chloride	*0.3833	0.3695	0.3802	0.3669	0.3476	0.3434	0.3492	0.3629	4	AVG	*
1,3-Butadiene	0.2381	0.2322	0.2626	0.2544	0.2481	0.2450	0.2508	0.2473	4	AVG	
Bromomethane	0.3242	0.3150	0.2979	0.2832	0.2654	0.2609	0.2545	0.2859	10	AVG	
Chloroethane	0.2554	0.2480	0.2392	0.2331	0.2177	0.2183	0.1989	0.2301	9	AVG	
Dichlorofluoromethane	0.6348	0.6332	0.6278	0.6147	0.5653	0.5691	0.5629	0.6011	6	AVG	
Trichlorofluoromethane	0.5183	0.5211	0.5737	0.5514	0.5272	0.5480	0.5639	0.5434	4	AVG	
Ethyl ether	0.2174	0.2275	0.2381	0.2379	0.2262	0.2235	0.2215	0.2274	3	AVG	
Freon 123a	0.3377	0.3374	0.3642	0.3633	0.3508	0.3445	0.3371	0.3478	3	AVG	
Acrolein	2.5707	2.5496	2.7803	2.3861	2.7178	2.3449	2.5201	2.5528	6	AVG	
1,1-Dichloroethene	*0.2540	0.2503	0.2718	0.2653	0.2585	0.2584	0.2574	0.2594	3	AVG	*
Freon 113	0.2556	0.2583	0.3122	0.3145	0.3044	0.3047	0.3064	0.2937	9	AVG	
Acetone	4.1991	3.3796	3.3785	3.1160	2.9253	2.8895	2.9709	3.2656	14	AVG	
Methyl Iodide	0.4806	0.4818	0.4974	0.5064	0.5005	0.5104	0.5086	0.4979	2	AVG	
Bromoethane	0.2014	0.2221	0.2351	0.2303	0.2214	0.2227	0.2251	0.2226	5	AVG	
Carbon Disulfide	0.7237	0.7350	0.7577	0.7659	0.7518	0.7616	0.7625	0.7512	2	AVG	
Allyl Chloride	0.3981	0.4269	0.4603	0.4469	0.4439	0.4564	0.4648	0.4425	5	AVG	
Methyl Acetate		0.0985	0.1063	0.1018	0.1070	0.1160	0.1186	0.1080	7	AVG	
Methylene Chloride	0.3371	0.2988	0.2984	0.3038	0.2884	0.2893	0.2855	0.3002	6	AVG	
t-Butyl Alcohol	1.2586	1.1274	1.1405	1.2589	1.0792	1.2246	1.1125	1.1717	6	AVG	
Acrylonitrile	3.5919	3.8517	4.1968	3.8625	4.2914	3.9867	4.4211	4.0289	7	AVG	
trans-1,2-Dichloroethene	0.2850	0.2863	0.2935	0.2992	0.2929	0.2919	0.2915	0.2915	2	AVG	
Methyl Tertiary Butyl Ether	0.5603	0.5746	0.6182	0.6781	0.6799	0.7061	0.6858	0.6433	9	AVG	
n-Hexane	0.2679	0.2988	0.4052	0.4415	0.4624	0.4702	0.4820	0.4040	21	2NDDEG	
1,1-Dichloroethane	#0.5319	0.5281	0.5357	0.5491	0.5380	0.5449	0.5388	0.5380	1	AVG	#
di-Isopropyl Ether	0.6819	0.7302	0.8208	0.8929	0.9071	0.9237	0.9029	0.8371	11	AVG	
2-Chloro-1,3-Butadiene	0.3090	0.3537	0.4132	0.4397	0.4510	0.4621	0.4756	0.4149	15	AVG	
Ethyl t-butyl ether	0.5857	0.6187	0.7038	0.7731	0.7984	0.8360	0.8220	0.7339	14	AVG	
cis-1,2-Dichloroethene	0.3039	0.3104	0.3212	0.3353	0.3319	0.3340	0.3267	0.3234	4	AVG	
2,2-Dichloropropane	0.3843	0.3856	0.4181	0.4258	0.4200	0.4278	0.4301	0.4131	5	AVG	
2-Butanone	4.4992	4.8736	5.6359	5.0670	5.7323	5.2532	5.7780	5.2628	9	AVG	
Propionitrile	1.2894	1.3150	1.5145	1.4825	1.4983	1.3992	1.4897	1.4269	7	AVG	
Methacrylonitrile	4.2770	4.8841	5.9198	4.9785	6.0295	5.2263	5.9541	5.3242	13	AVG	
Bromochloromethane	0.1406	0.1395	0.1530	0.1502	0.1434	0.1466	0.1462	0.1456	3	AVG	
Tetrahydrofuran		1.5246	1.7433	1.5127	1.7925	1.5535	1.7588	1.6476	8	AVG	
Chloroform	*0.5281	0.5134	0.5302	0.5424	0.5283	0.5322	0.5325	0.5296	2	AVG	*
1,1,1-Trichloroethane	0.4495	0.4434	0.4664	0.4778	0.4658	0.4781	0.4856	0.4667	3	AVG	
Cyclohexane	0.3601	0.3993	0.5110	0.5417	0.5513	0.5582	0.5605	0.4974	17	2NDDEG	
Cyclohexane(2)	0.3076	0.3428	0.4355	0.4684	0.4752	0.4758	0.4802	0.4265	17	2NDDEG	
Cyclohexane(3)	0.1029	0.1215	0.1524	0.1656	0.1712	0.1708	0.1734	0.1511	19	2NDDEG	
1,1-Dichloropropene	0.3409	0.3675	0.4098	0.4244	0.4206	0.4262	0.4276	0.4024	9	AVG	
Carbon Tetrachloride	0.3898	0.3795	0.4180	0.4227	0.4195	0.4293	0.4395	0.4140	5	AVG	
Isobutyl Alcohol	0.4196	0.3831	0.4123	0.4165	0.4010	0.4093	0.3918	0.4048	3	AVG	
Benzene	1.2188	1.2256	1.2473	1.2819	1.2514	1.2460	1.2238	1.2421	2	AVG	
1,2-Dichloroethane	0.3553	0.3245	0.3351	0.3352	0.3199	0.3260	0.3284	0.3320	4	AVG	
1,2-Dichloroethane(2)	0.0296	0.0300	0.0315	0.0323	0.0318	0.0319	0.0322	0.0313	3	AVG	
t-Amyl methyl ether	0.5372	0.5597	0.6431	0.7055	0.7219	0.7566	0.7424	0.6666	13	AVG	
n-Heptane	0.3788	0.3658	0.4666	0.4711	0.4765	0.4794	0.4869	0.4464	11	AVG	
n-Butanol	0.2160	0.2344	0.2716	0.3187	0.3492	0.3540	0.3551	0.2998	20	1STDEG	
Trichloroethene	0.2934	0.2995	0.3225	0.3313	0.3294	0.3346	0.3351	0.3208	5	AVG	
Methylcyclohexane	0.3123	0.4213	0.5433	0.5786	0.5684	0.5989	0.6085	0.5188	21	2NDDEG	

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

FORM VI VOA

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date(s): 06/04/18 06/04/18

Heated Purge: (Y/N) Y Calibration Times: 12:33 14:40

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF0.2= iu04i07.d RRF0.5= iu04i06.d RRF 1 = iu04i05.d
RRF 2 = iu04i04.d RRF 5 = iu04i03.d RRF 10= iu04i02.d RRF 25= iu04i01.d

COMPOUND	RRF0.2	RRF0.5	RRF 1	RRF 2	RRF 5	RRF 10	RRF 25	RRF	% RSD	CAL. METHOD
1,2-Dichloropropane	*0.2767	0.2924	0.3045	0.3164	0.3079	0.3070	0.2969	0.3003	4	AVG *
Methyl Methacrylate	6.1886	8.1431	10.131	8.8774	11.745	10.190	12.255	9.6472	22	2NDDEG
Dibromomethane	0.1306	0.1316	0.1425	0.1471	0.1408	0.1463	0.1465	0.1408	5	AVG
1,4-Dioxane		0.0604	0.0732	0.0794	0.0844	0.0763		0.0747	12	AVG
Bromodichloromethane	0.3273	0.3232	0.3465	0.3686	0.3710	0.3847	0.3983	0.3600	8	AVG
2-Nitropropane	2.6227	2.6819	3.1055	2.6425	3.2583	2.9524	3.5061	2.9671	12	AVG
1-Bromo-2-chloroethane	0.2753	0.2871	0.3179	0.3182	0.3077	0.3234	0.3240	0.3076	6	AVG
cis-1,3-Dichloropropene	0.3215	0.3465	0.3914	0.4287	0.4497	0.4730	0.4822	0.4133	15	AVG
4-Methyl-2-Pentanone	0.1307	0.1427	0.1663	0.1944	0.1854	0.1959	0.1773	0.1704	15	AVG
Toluene	*0.9803	0.9867	1.0227	1.0477	1.0382	1.0321	1.0156	1.0176	3	AVG *
trans-1,3-Dichloropropene	0.3733	0.3792	0.4094	0.4548	0.4693	0.4990	0.5143	0.4427	13	AVG
Ethyl Methacrylate		0.2601	0.3005	0.3592	0.3878	0.4223	0.4282	0.3597	19	2NDDEG
1,1,2-Trichloroethane	0.2678	0.2717	0.2842	0.2903	0.2821	0.2865	0.2834	0.2808	3	AVG
Tetrachloroethene	0.4515	0.4666	0.4948	0.5036	0.4964	0.5011	0.5043	0.4883	4	AVG
1,3-Dichloropropane	0.4271	0.4307	0.4633	0.4922	0.4839	0.4873	0.4807	0.4665	6	AVG
2-Hexanone	0.1297	0.1381	0.1574	0.1788	0.1711	0.1787	0.1625	0.1595	12	AVG
Dibromochloromethane	0.2775	0.2916	0.3115	0.3367	0.3404	0.3579	0.3691	0.3264	10	AVG
1,2-Dibromoethane	0.2322	0.2349	0.2520	0.2712	0.2645	0.2722	0.2743	0.2573	7	AVG
1-Chlorohexane	0.5039	0.4866	0.5274	0.5524	0.5627	0.5773	0.5777	0.5411	7	AVG
Chlorobenzene	#1.1431	1.1243	1.1671	1.1850	1.1399	1.1469	1.1076	1.1449	2	AVG #
1,1,1,2-Tetrachloroethane	0.3734	0.3539	0.3774	0.3971	0.3946	0.4017	0.3973	0.3850	5	AVG
Ethylbenzene	*1.6509	1.7308	1.8931	1.9807	1.9819	1.9746	1.8671	1.8684	7	AVG *
m+p-Xylene	0.6197	0.6930	0.7548	0.8002	0.7914	0.7923	0.7618	0.7448	9	AVG
o-Xylene	0.5549	0.6157	0.7013	0.7613	0.7723	0.7907	0.7771	0.7105	13	AVG
Styrene	0.7575	0.9121	1.0686	1.1889	1.2257	1.2442	1.2161	1.0876	17	1STDEG
Bromoform	#0.1490	0.1573	0.1686	0.1907	0.1970	0.2178	0.2281	0.1869	16	2NDDEG #
Isopropylbenzene	1.3330	1.5622	1.8154	1.9913	2.0450	2.0732	1.9218	1.8203	15	2NDDEG
1,1,2,2-Tetrachloroethane	#0.6129	0.5886	0.6114	0.6454	0.6346	0.6625	0.6284	0.6263	4	AVG #
Bromobenzene	0.7926	0.7836	0.8509	0.8771	0.8873	0.8905	0.8846	0.8524	5	AVG
trans-1,4-Dichloro-2-butene		4.0502	4.9137	4.2384	5.3103	4.4278	4.9866	4.6545	11	AVG
1,2,3-Trichloropropane	0.1653	0.1596	0.1680	0.1796	0.1709	0.1747	0.1679	0.1694	4	AVG
n-Propylbenzene	3.3586	3.7210	4.0868	4.3079	4.3454	4.2865	3.5984	3.9578	10	AVG
2-Chlorotoluene	0.7105	0.7568	0.8163	0.8441	0.8666	0.8669	0.8547	0.8165	7	AVG
1,3,5-Trimethylbenzene	2.1710	2.4977	2.8001	3.0278	3.1006	3.1180	2.9636	2.8112	13	AVG
4-Chlorotoluene	0.7073	0.7855	0.8309	0.8817	0.8836	0.8819	0.8715	0.8346	8	AVG
tert-Butylbenzene	0.4231	0.4899	0.5897	0.6325	0.6585	0.6765	0.6819	0.5932	17	2NDDEG
Pentachloroethane	0.4305	0.4644	0.5355	0.5299	0.5391	0.5695	0.5793	0.5212	10	AVG
1,2,4-Trimethylbenzene	1.9849	2.4221	2.7709	3.0735	3.1105	3.1058	2.9185	2.7694	15	AVG
sec-Butylbenzene	2.6732	3.1164	3.5992	3.9000	4.0644	4.0702	3.4826	3.5580	15	AVG
1,3-Dichlorobenzene	1.4802	1.5511	1.6642	1.7536	1.7777	1.7745	1.7425	1.6777	7	AVG
p-Isopropyltoluene	2.0081	2.5204	2.9966	3.2958	3.4111	3.4747	3.1390	2.9780	18	2NDDEG
1,4-Dichlorobenzene	1.7700	1.6729	1.7342	1.7721	1.7598	1.7674	1.7175	1.7420	2	AVG
1,2,3-Trimethylbenzene	1.2091	1.2744	1.3516	1.3583	1.3325	1.3750	1.3328	1.3191	4	AVG
Benzyl Chloride	0.1430	0.1582	0.1862	0.2149	0.2320	0.2612	0.2684	0.2091	23	2NDDEG
n-Butylbenzene	1.0886	1.2935	1.5159	1.6296	1.6616	1.6966	1.6500	1.5051	15	AVG
1,2-Dichlorobenzene	1.4929	1.4963	1.5964	1.6383	1.6009	1.6317	1.5673	1.5748	4	AVG
1,2-Dibromo-3-chloropropane		2.1319	2.4843	2.3720	2.6734	2.6813	3.1233	2.5777	13	AVG
1,3,5-Trichlorobenzene	1.0894	1.0397	1.1524	1.2356	1.2361	1.3651	1.3176	1.2051	10	AVG
1,2,4-Trichlorobenzene	0.9038	0.8394	0.9321	1.0576	1.0350	1.2220	1.1288	1.0170	13	AVG
Hexachlorobutadiene	0.3523	0.3630	0.3989	0.4371	0.4419	0.4862	0.4851	0.4235	13	AVG
Naphthalene	1.4001	1.3109	1.4881	1.9322	1.8329	2.1909	1.8910	1.7209	19	1STDEG
1,2,3-Trichlorobenzene	0.8076	0.7647	0.8317	0.9852	0.8886	1.0685	0.9293	0.8965	12	AVG

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date(s): 06/04/18 06/04/18

Heated Purge: (Y/N) Y Calibration Times: 12:33 14:40

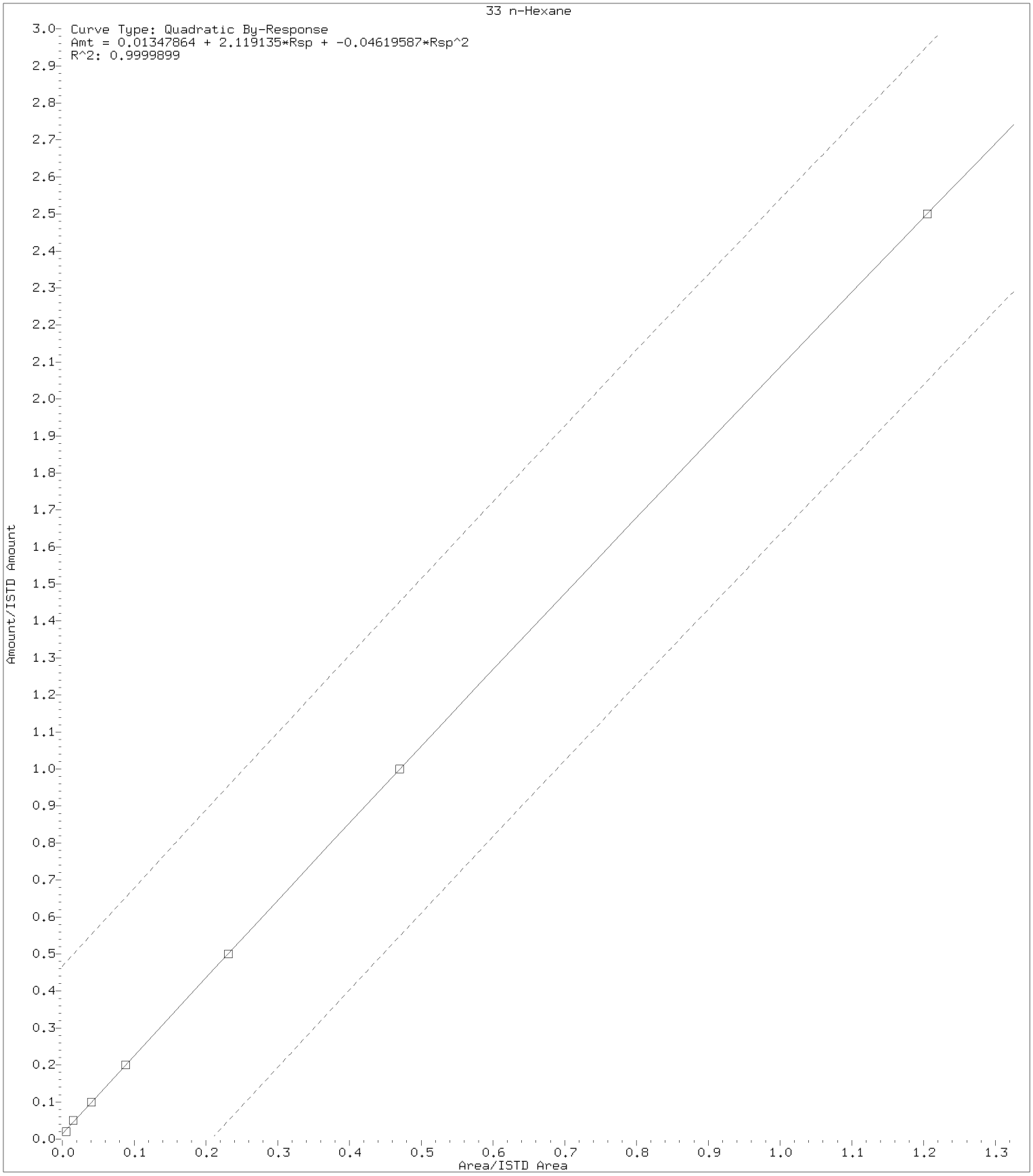
Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF0.2= iu04i07.d RRF0.5= iu04i06.d RRF 1 = iu04i05.d
RRF 2 = iu04i04.d RRF 5 = iu04i03.d RRF 10= iu04i02.d RRF 25= iu04i01.d

COMPOUND	RRF0.2	RRF0.5	RRF 1	RRF 2	RRF 5	RRF 10	RRF 25	RRF	% RSD	CAL. METHOD
Dibromofluoromethane	0.2479	0.2447	0.2445	0.2428	0.2405	0.2437	0.2449	0.2441	1	AVG
Dibromofluoromethane(2)	0.2527	0.2508	0.2499	0.2487	0.2462	0.2482	0.2511	0.2497	1	AVG
1,2-Dichloroethane-d4	0.0518	0.0515	0.0522	0.0511	0.0499	0.0507	0.0509	0.0511	2	AVG
1,2-Dichloroethane-d4(2)	0.2396	0.2396	0.2391	0.2375	0.2371	0.2471	0.2342	0.2392	2	AVG
1,2-Dichloroethane-d4(3)	0.0334	0.0326	0.0328	0.0327	0.0323	0.0331	0.0325	0.0328	1	AVG
Toluene-d8	1.2790	1.3075	1.3001	1.2989	1.2907	1.2757	1.2840	1.2908	1	AVG
Toluene-d8(2)	0.8293	0.8490	0.8475	0.8425	0.8418	0.8263	0.8585	0.8421	1	AVG
4-Bromofluorobenzene	0.4635	0.4718	0.4779	0.4779	0.4747	0.4759	0.4832	0.4750	1	AVG
4-Bromofluorobenzene(2)	0.4239	0.4322	0.4314	0.4326	0.4282	0.4251	0.4307	0.4292	1	AVG

Average %RSD 8

Minimum RRF for SPCC(#) = 0.10
(0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %RSD for CCC(*) = 30%



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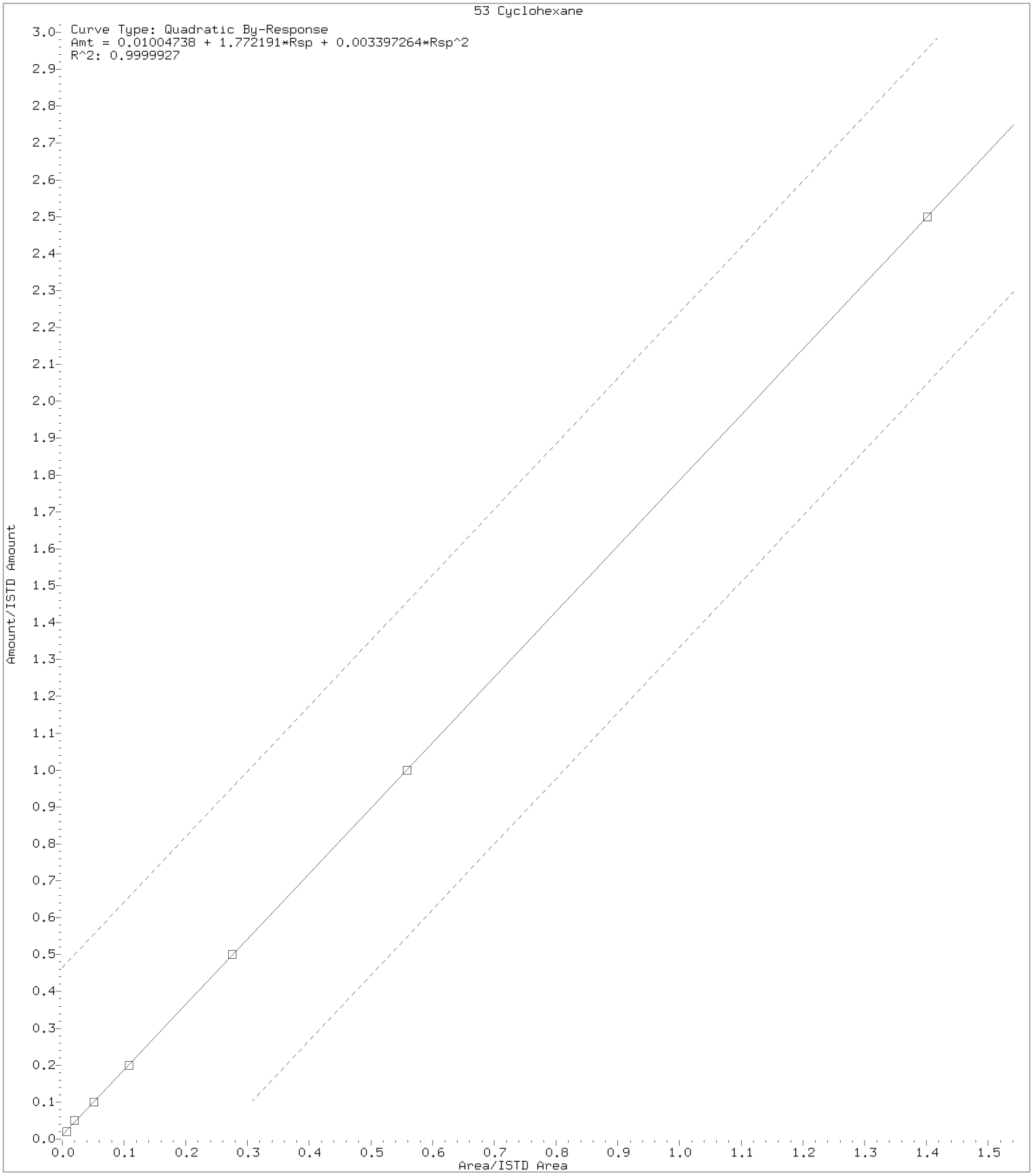

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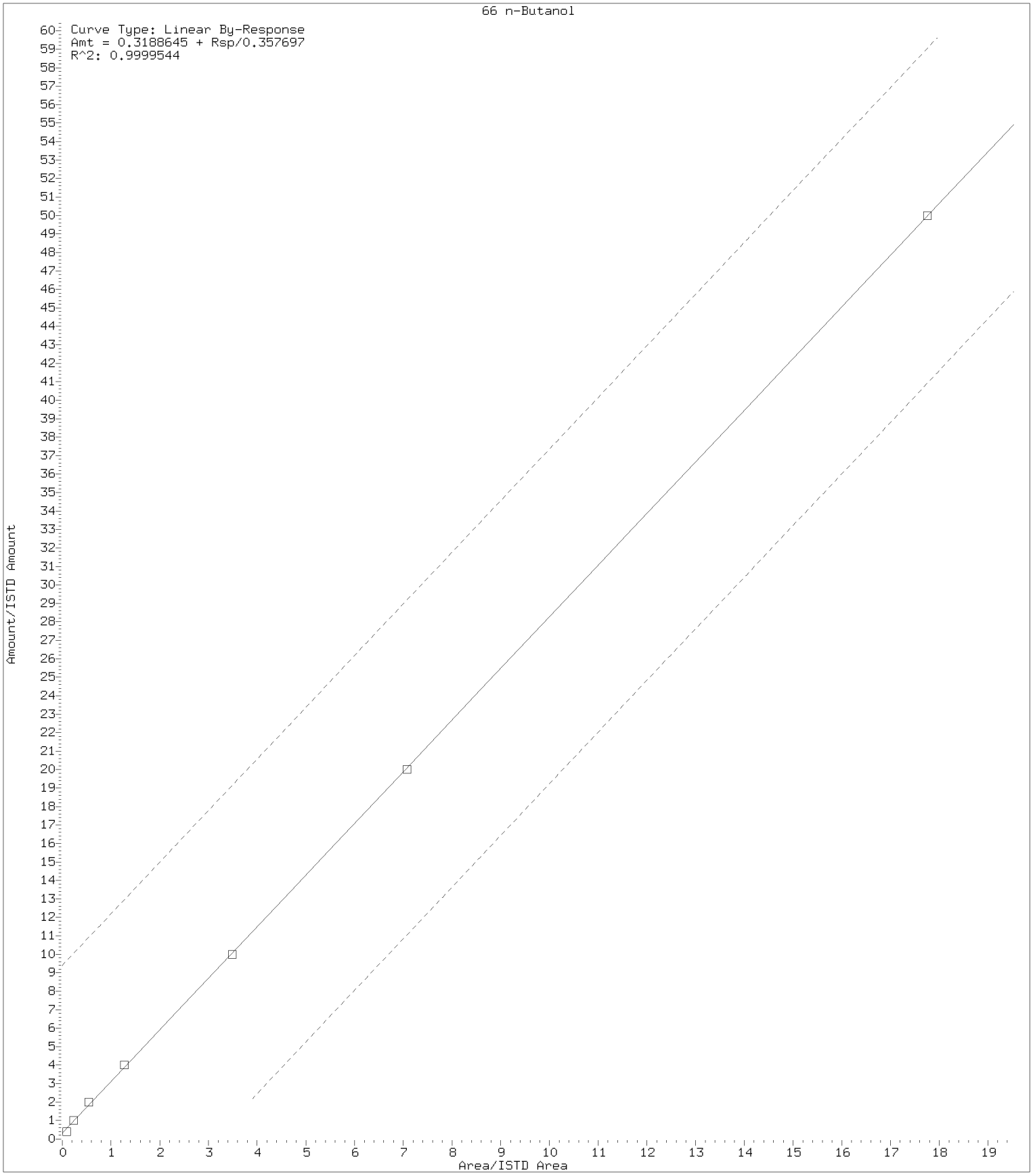

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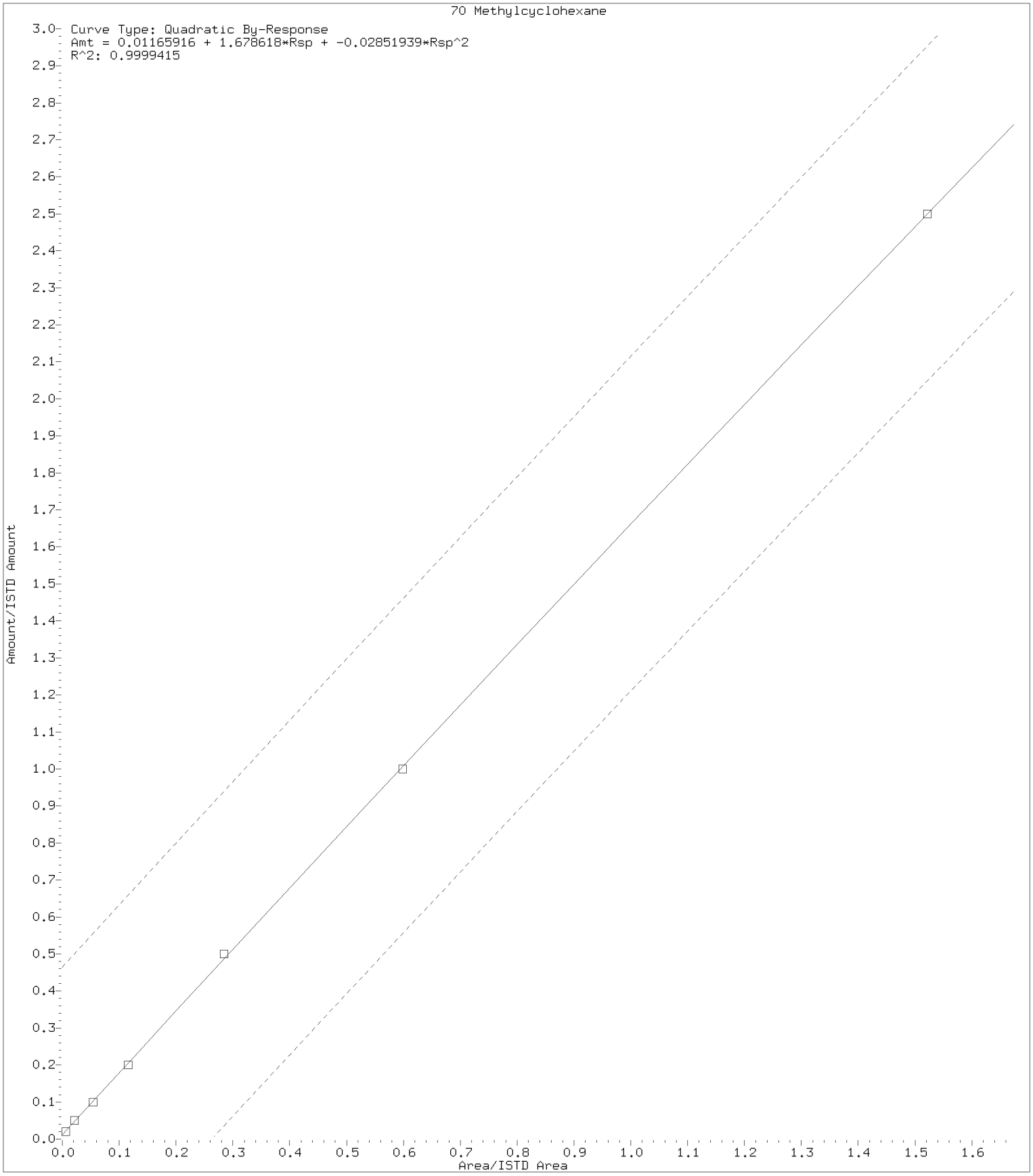

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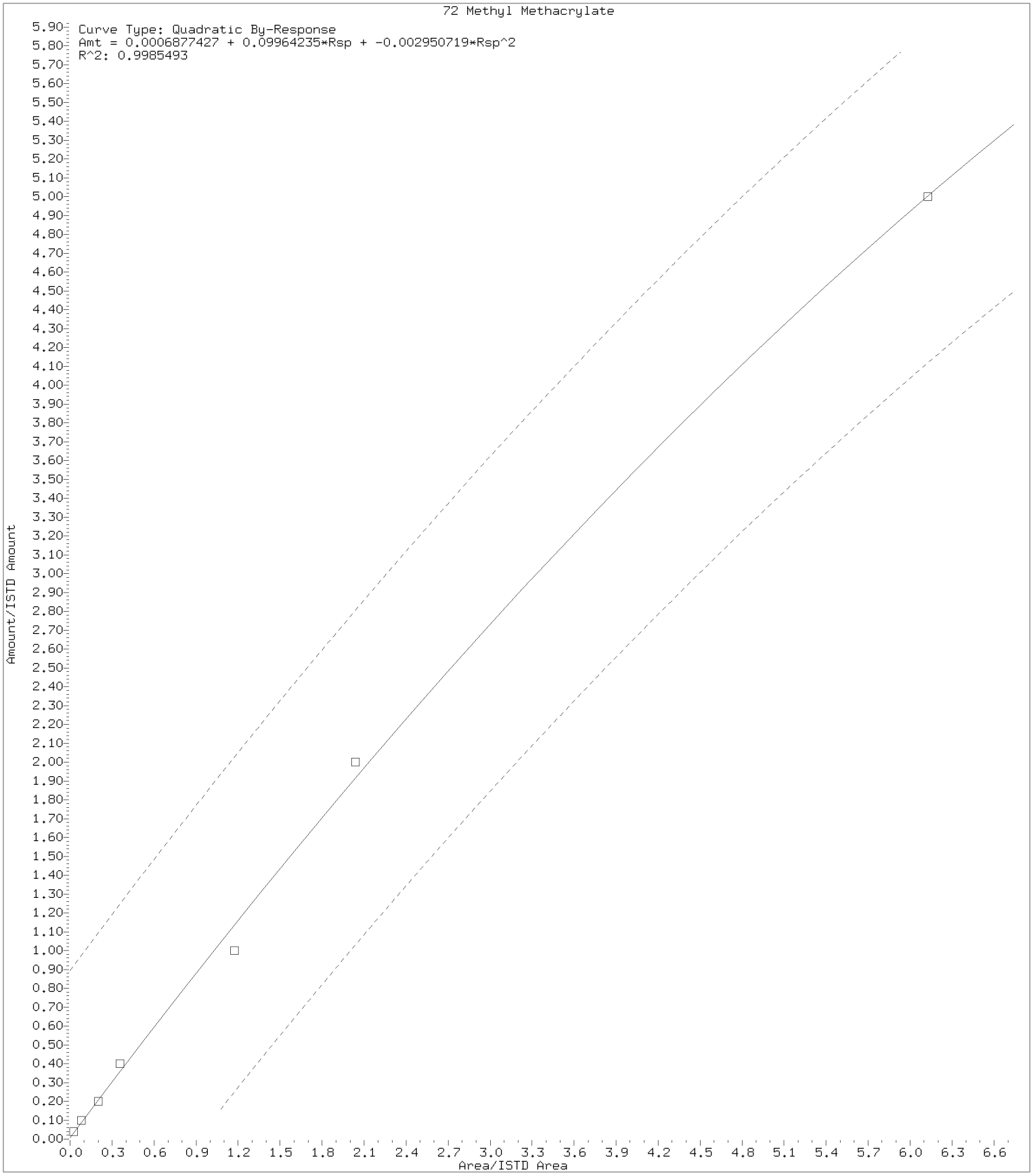

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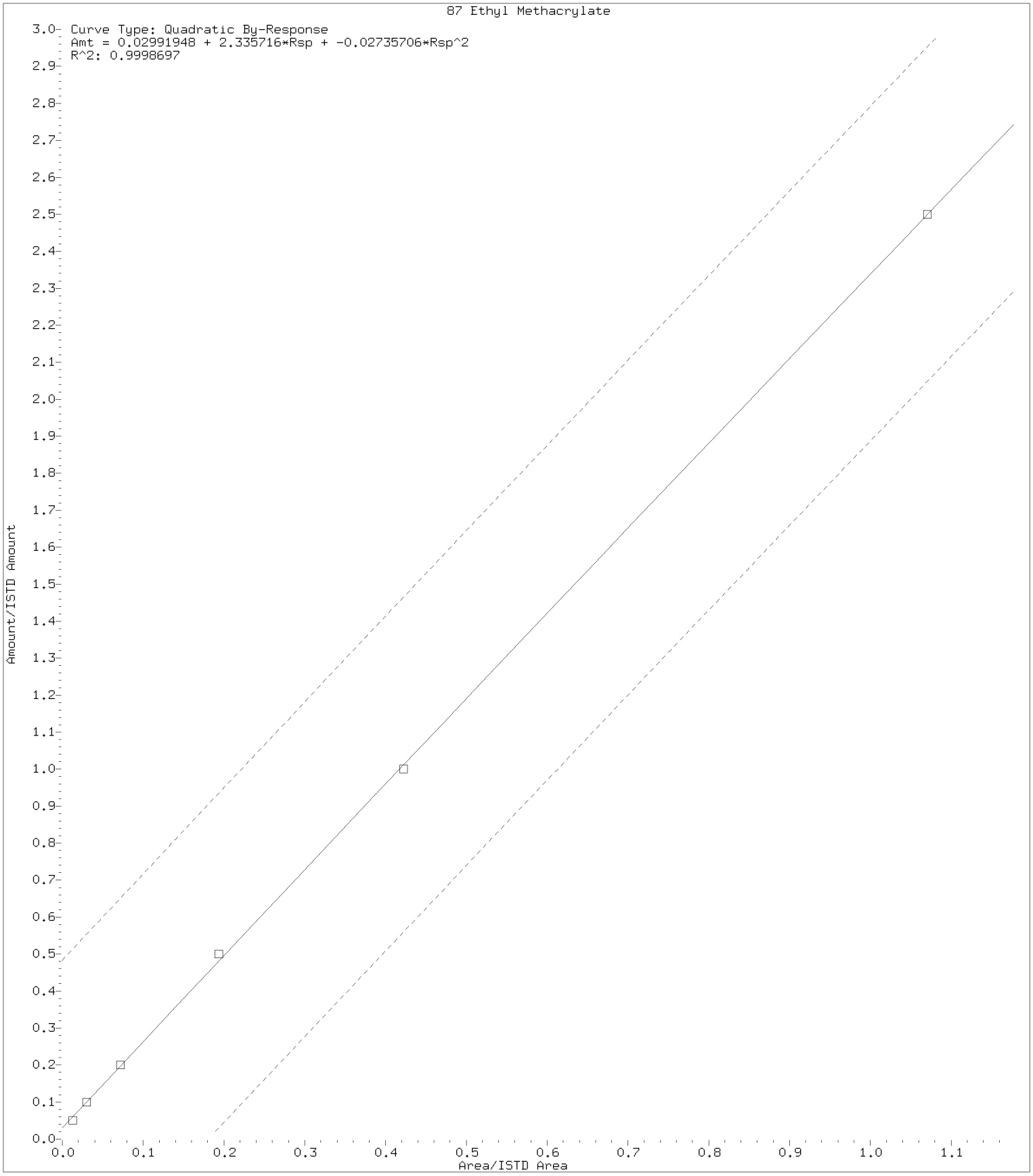

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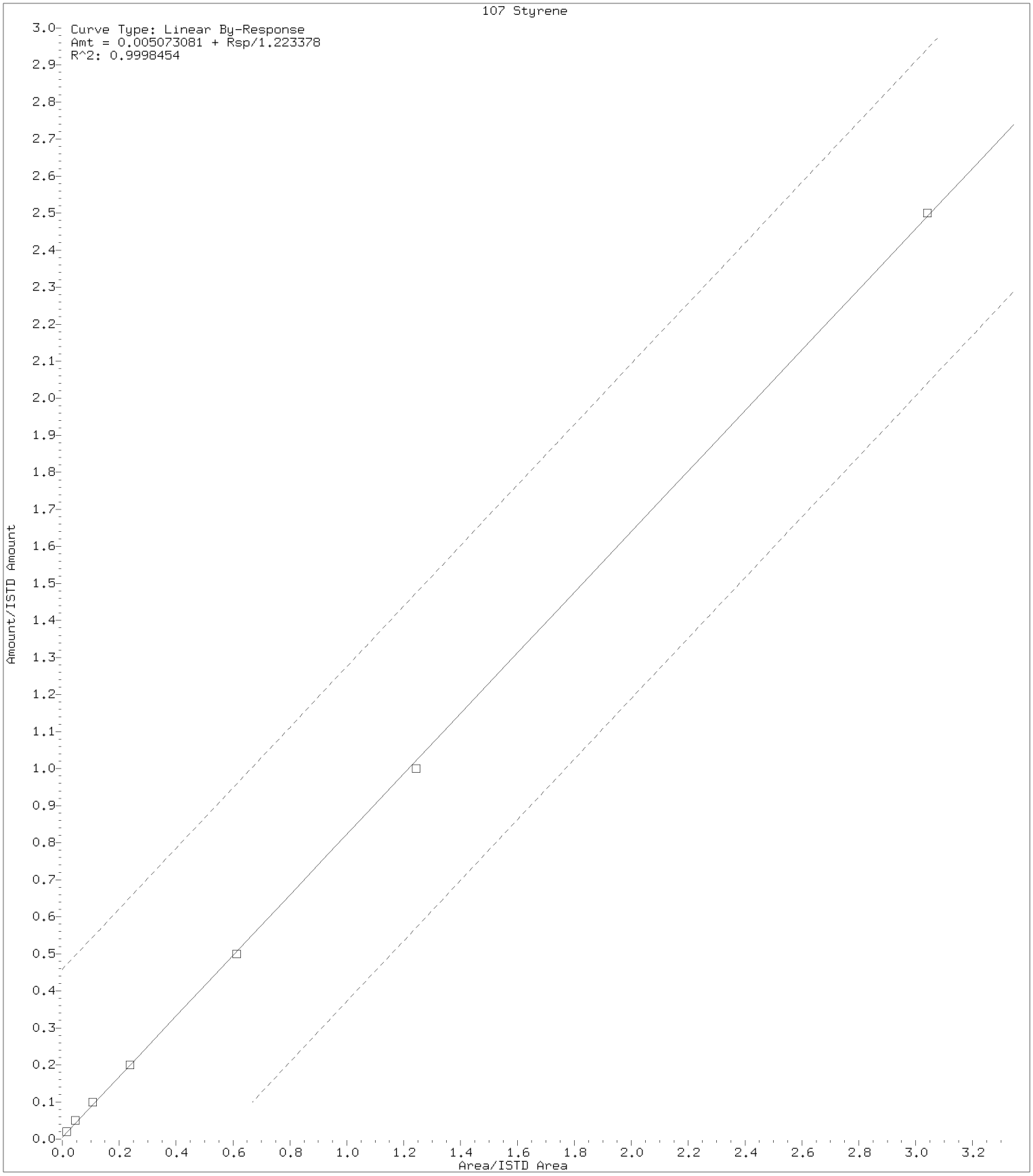

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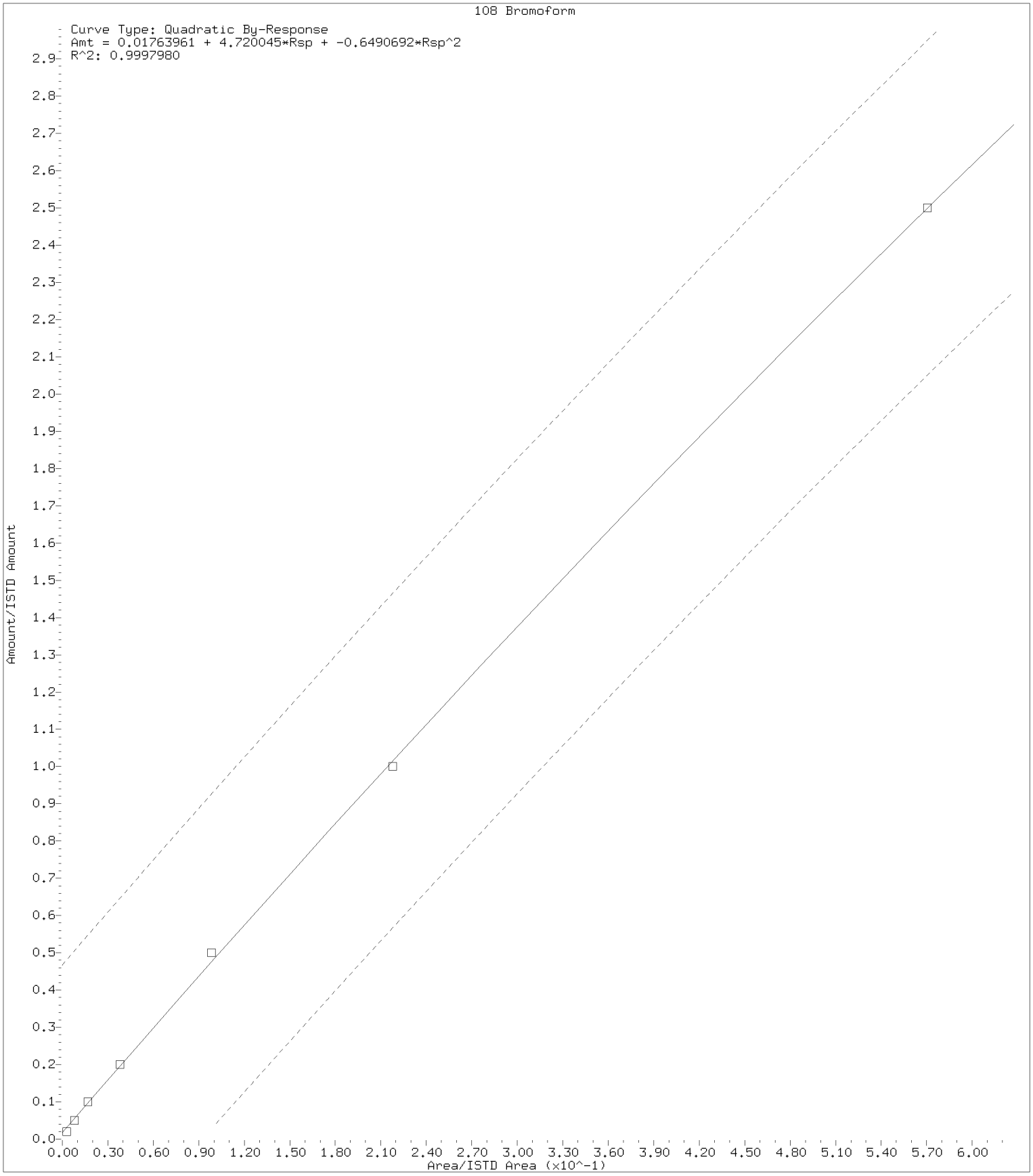

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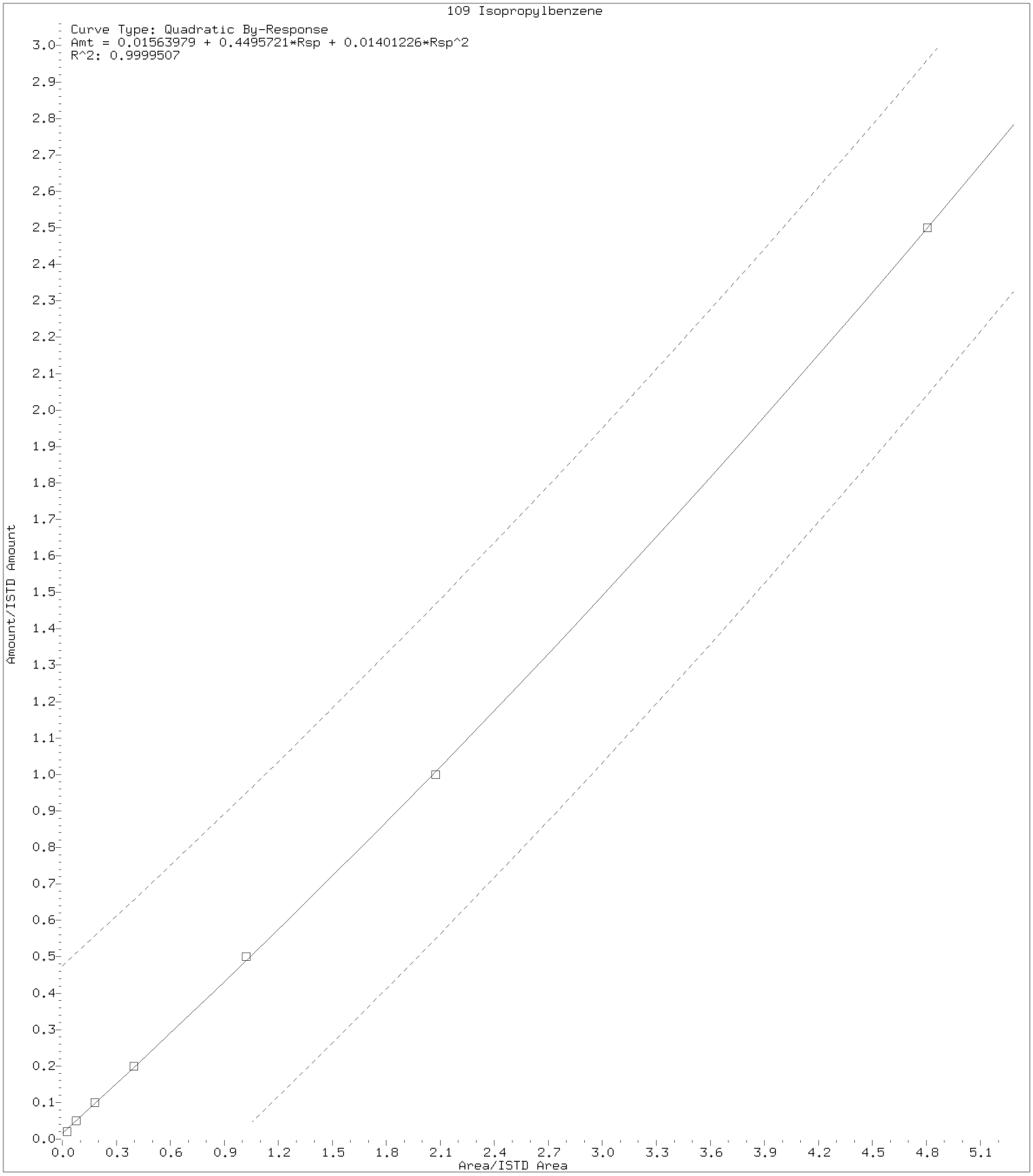

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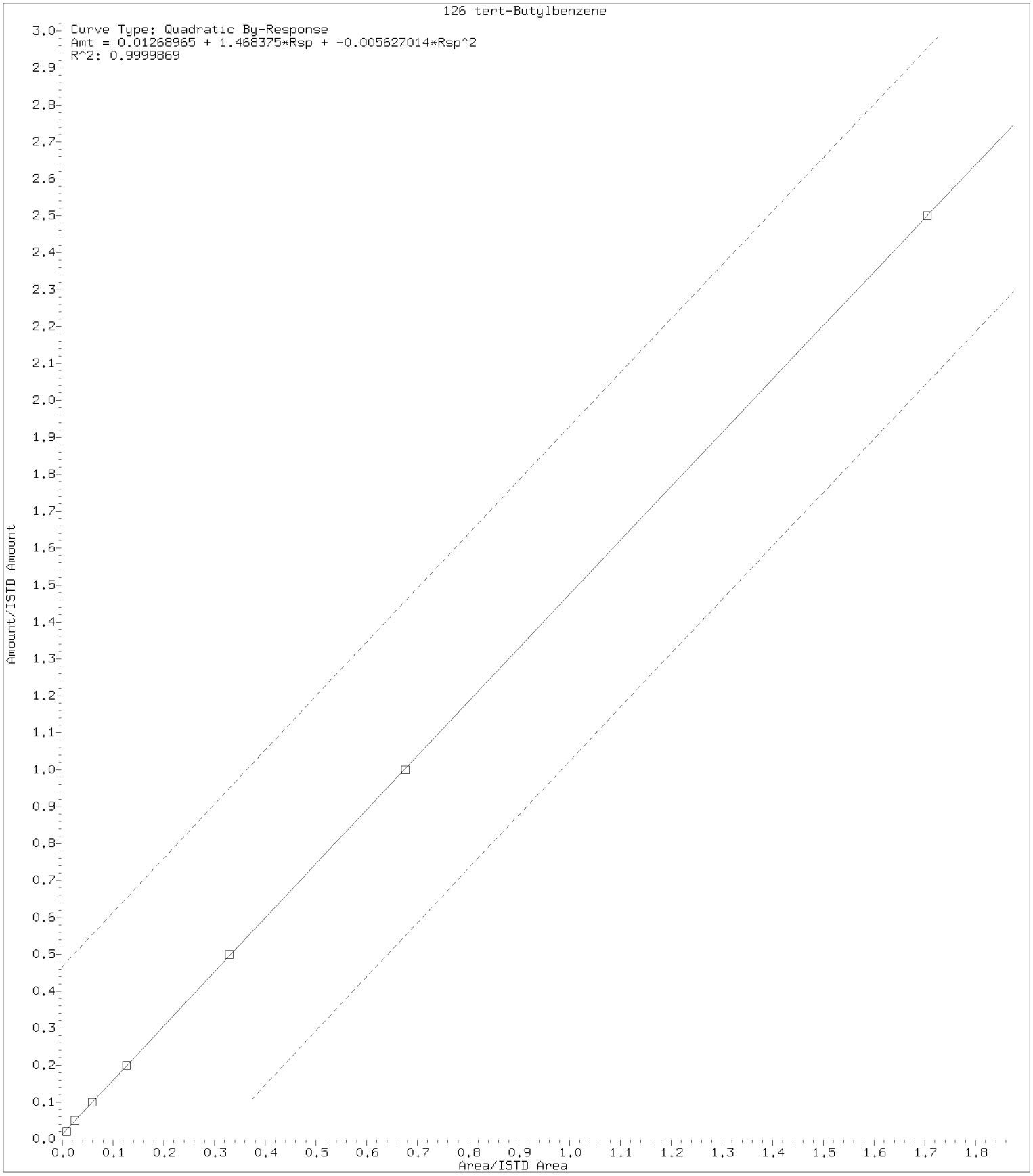

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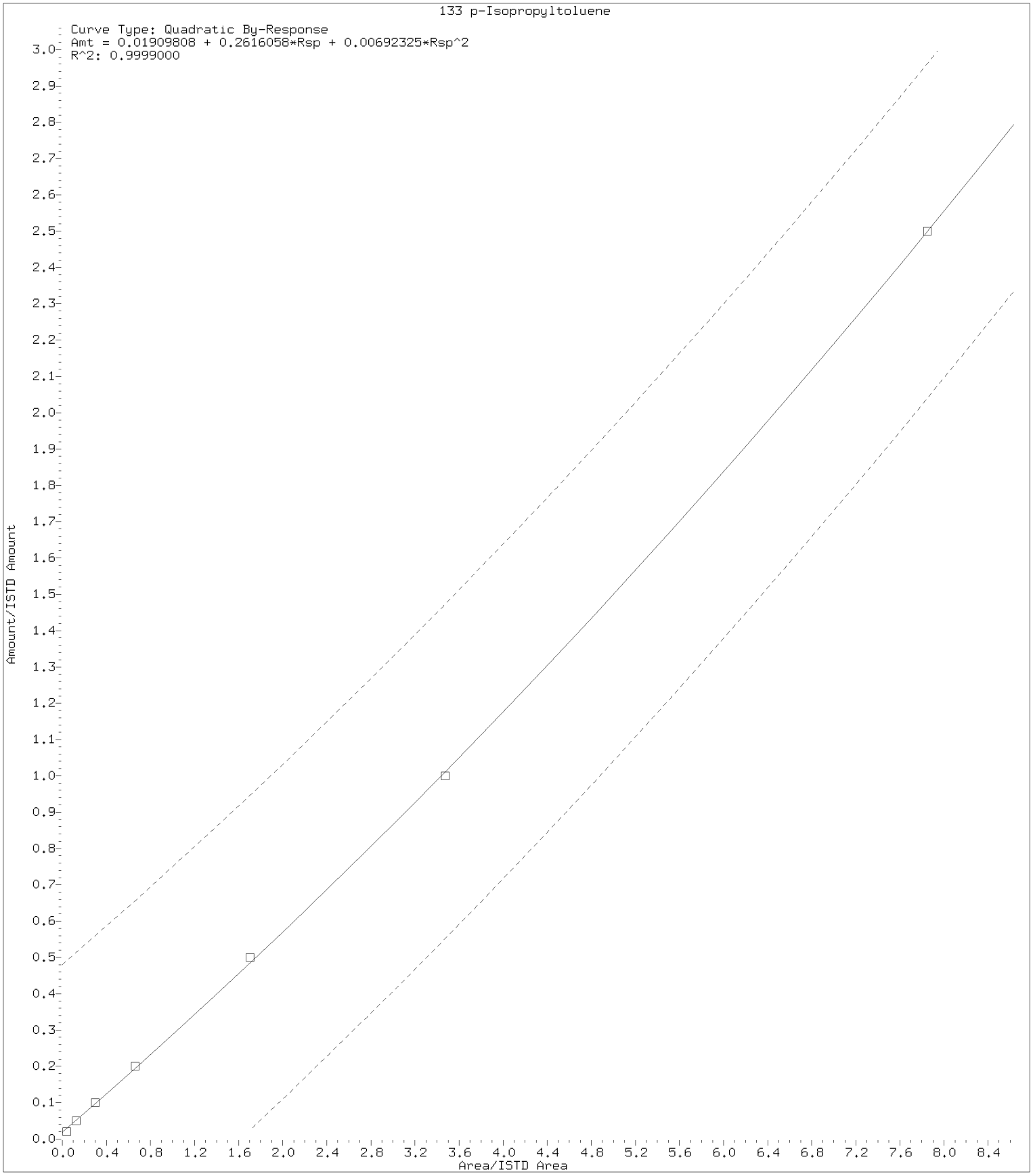

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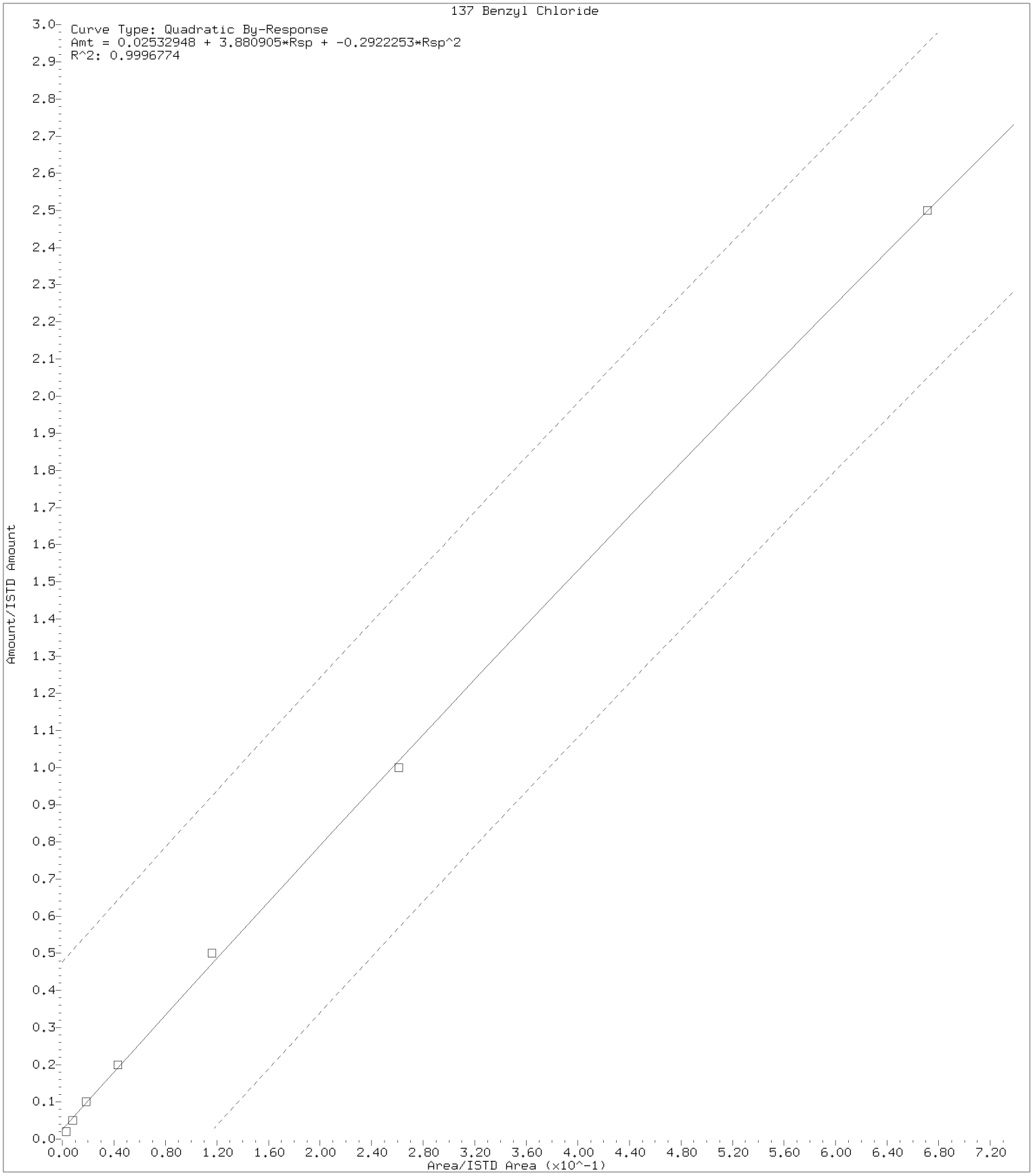

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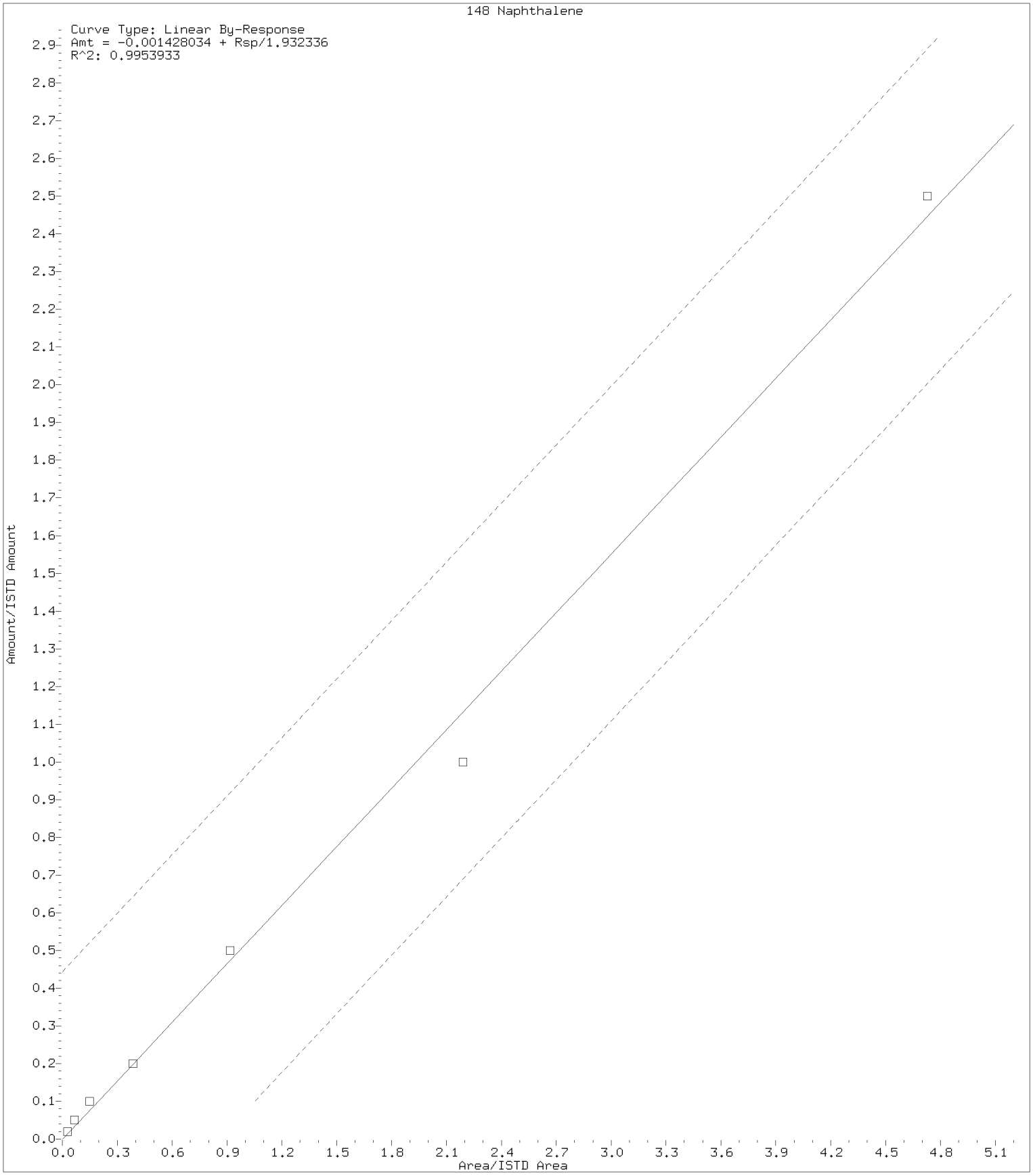
Target 3.5 esignature user ID: jkh09052



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Target 3.5 esignature user ID: jkh09052

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

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/chem2/HP19930.i/18jun04i.b/iu04i02.d	VSTD010
/chem2/HP19930.i/18jun04i.b/iu04i03.d	VSTD005
/chem2/HP19930.i/18jun04i.b/iu04i04.d	VSTD002
/chem2/HP19930.i/18jun04i.b/iu04i05.d	VSTD001
/chem2/HP19930.i/18jun04i.b/iu04i06.d	VSTD0.5
/chem2/HP19930.i/18jun04i.b/iu04i07.d	VSTD0.2

Area Summary

File ID:

Internal Standard Name	iu04i01.d	iu04i02.d	iu04i03.d	iu04i04.d	iu04i05.d	iu04i06.d	iu04i07.d	Avg. Area	%RSD	In Spec
t-Butyl Alcohol-d10	222888	286510	227147	287116	218434	238141	235514	245107	12	Yes
Fluorobenzene	3579782	3860980	3794784	3753514	3677146	3729143	3565613	3708709	3	Yes
Chlorobenzene-d5	2815387	3007894	2922964	2879087	2821924	2848533	2759494	2865040	3	Yes
1,4-Dichlorobenzene-d4	1573743	1683997	1621273	1648071	1607823	1636575	1570859	1620334	3	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	iu04i01.d	iu04i02.d	iu04i03.d	iu04i04.d	iu04i05.d	iu04i06.d	iu04i07.d	Avg. RT
t-Butyl Alcohol-d10	4.141	4.159	4.160	4.147	4.196	4.178	4.190	4.167
Fluorobenzene	7.659	7.671	7.671	7.671	7.677	7.671	7.671	7.670
Chlorobenzene-d5	11.140	11.146	11.146	11.146	11.146	11.146	11.146	11.145
1,4-Dichlorobenzene-d4	13.017	13.017	13.018	13.017	13.018	13.017	13.018	13.017

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 06/04/2018 at 15:33.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 ICV Date: 06/04/18 Time: 15:23

Lab File ID: iu04v01.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4158	0.3977	4.78	5	-4	
#	Chloromethane	0.3343	0.3088	4.62	5	-8	#
*	Vinyl Chloride	0.3629	0.3497	4.82	5	-4	*
	1,3-Butadiene	0.2473	0.2587	5.23	5	5	
	Bromomethane	0.2859	0.2708	4.74	5	-5	
	Chloroethane	0.2301	0.2067	4.49	5	-10	
	Dichlorofluoromethane	0.6011	0.5731	4.77	5	-5	
	Trichlorofluoromethane	0.5434	0.5492	5.05	5	1	
	Ethyl ether	0.2274	0.2251	4.95	5	-1	
	Freon 123a	0.3478	0.3528	5.07	5	1	
	Acrolein	2.5528	2.6725	39.26	37.5	5	
*	1,1-Dichloroethene	0.2594	0.2731	5.26	5	5	*
	Freon 113	0.2937	0.2946	5.02	5	0	
	Acetone	3.2656	3.0388	34.90	37.5	-7	
	Methyl Iodide	0.4979	0.4790	4.81	5	-4	
	Bromoethane	0.2226	0.2355	5.29	5	6	
	Carbon Disulfide	0.7512	0.7046	4.69	5	-6	
	Allyl Chloride	0.4425	0.4036	4.56	5	-9	
	Methyl Acetate	0.1080	0.0956	4.42	5	-12	
	Methylene Chloride	0.3002	0.2936	4.89	5	-2	
	t-Butyl Alcohol	1.1717	1.0452	44.60	50	-11	
	Acrylonitrile	4.0289	4.4920	27.87	25	11	
	trans-1,2-Dichloroethene	0.2915	0.2999	5.15	5	3	
	Methyl Tertiary Butyl Ether	0.6433	0.6427	5.00	5	0	
	n-Hexane	0.4040	0.4165	4.53	5	-9	
#	1,1-Dichloroethane	0.5380	0.5344	4.97	5	-1	#
	di-Isopropyl Ether	0.8371	0.8875	5.30	5	6	
	2-Chloro-1,3-Butadiene	0.4149	0.4504	5.43	5	9	
	Ethyl t-butyl ether	0.7339	0.7524	5.13	5	3	
	cis-1,2-Dichloroethene	0.3234	0.3354	5.19	5	4	
	2,2-Dichloropropane	0.4131	0.4188	5.07	5	1	
	2-Butanone	5.2628	6.0184	42.88	37.5	14	
	Propionitrile	1.4269	1.6138	42.41	37.5	13	
	Methacrylonitrile	5.3242	6.7463	47.52	37.5	27	
	Bromochloromethane	0.1456	0.1374	4.72	5	-6	
	Tetrahydrofuran	1.6476	1.8649	28.30	25	13	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 ICV Date: 06/04/18 Time: 15:23

Lab File ID: iu04v01.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.5296	0.5322	5.02	5	0	*
	1,1,1-Trichloroethane	0.4667	0.4680	5.01	5	0	
	Cyclohexane	0.4974	0.5251	4.76	5	-5	
	1,1-Dichloropropene	0.4024	0.4090	5.08	5	2	
	Carbon Tetrachloride	0.4140	0.4202	5.08	5	2	
	Isobutyl Alcohol	0.4048	0.3927	121.27	125	-3	
	Benzene	1.2421	1.2409	5.00	5	0	
	1,2-Dichloroethane	0.3320	0.3216	4.84	5	-3	
	t-Amyl methyl ether	0.6666	0.7016	5.26	5	5	
	n-Heptane	0.4464	0.4404	4.93	5	-1	
	n-Butanol	0.2998	0.2951	222.20	250	-11	
	Trichloroethene	0.3208	0.3240	5.05	5	1	
	Methylcyclohexane	0.5188	0.5411	4.64	5	-7	
*	1,2-Dichloropropane	0.3003	0.3056	5.09	5	2	*
	Methyl Methacrylate	9.6472	12.2438	5.91	5	18	
	Dibromomethane	0.1408	0.1434	5.09	5	2	
	1,4-Dioxane	0.0747	0.0723	120.95	125	-3	
	Bromodichloromethane	0.3600	0.3629	5.04	5	1	
	2-Nitropropane	2.9671	3.1066	5.24	5	5	
	1-Bromo-2-chloroethane	0.3076	0.3024	4.92	5	-2	
	cis-1,3-Dichloropropene	0.4133	0.4205	5.09	5	2	
	4-Methyl-2-Pentanone	0.1704	0.1714	25.15	25	1	
*	Toluene	1.0176	1.0256	5.04	5	1	*
	trans-1,3-Dichloropropene	0.4427	0.4431	5.00	5	0	
	Ethyl Methacrylate	0.3597	0.3660	4.56	5	-9	
	1,1,2-Trichloroethane	0.2808	0.2822	5.02	5	0	
	Tetrachloroethene	0.4883	0.4903	5.02	5	0	
	1,3-Dichloropropane	0.4665	0.4679	5.02	5	0	
	2-Hexanone	0.1595	0.1642	25.75	25	3	
	Dibromochloromethane	0.3264	0.3335	5.11	5	2	
	1,2-Dibromoethane	0.2573	0.2567	4.99	5	0	
	1-Chlorohexane	0.5411	0.5375	4.97	5	-1	
#	Chlorobenzene	1.1449	1.1303	4.94	5	-1	#
	1,1,1,2-Tetrachloroethane	0.3850	0.3824	4.97	5	-1	
*	Ethylbenzene	1.8684	1.9527	5.23	5	5	*
	m+p-Xylene	0.7448	0.7809	10.49	10	5	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 ICV Date: 06/04/18 Time: 15:23

Lab File ID: iu04v01.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	o-Xylene	0.7105	0.7489	5.27	5	5	
	Styrene	1.0876	1.2075	4.99	5	0	
#	Bromoform	0.1869	0.1848	4.48	5	-10	#
	Isopropylbenzene	1.8203	1.9998	4.79	5	-4	
#	1,1,2,2-Tetrachloroethane	0.6263	0.6068	4.84	5	-3	#
	Bromobenzene	0.8524	0.8665	5.08	5	2	
	trans-1,4-Dichloro-2-butene	4.6545	6.0556	32.53	25	30	
	1,2,3-Trichloropropane	0.1694	0.1706	5.03	5	1	
	n-Propylbenzene	3.9578	4.2845	5.41	5	8	
	2-Chlorotoluene	0.8165	0.8468	5.18	5	4	
	1,3,5-Trimethylbenzene	2.8112	3.0405	5.41	5	8	
	4-Chlorotoluene	0.8346	0.8602	5.15	5	3	
	tert-Butylbenzene	0.5932	0.6388	4.81	5	-4	
	Pentachloroethane	0.5212	0.5288	5.07	5	1	
	1,2,4-Trimethylbenzene	2.7694	3.0528	5.51	5	10	
	sec-Butylbenzene	3.5580	3.9933	5.61	5	12	
	1,3-Dichlorobenzene	1.6777	1.7028	5.07	5	1	
	p-Isopropyltoluene	2.9780	3.3890	4.82	5	-4	
	1,4-Dichlorobenzene	1.7420	1.7264	4.96	5	-1	
	1,2,3-Trimethylbenzene	1.3191	1.3477	5.11	5	2	
	Benzyl Chloride	0.2091	0.2197	4.48	5	-10	
	n-Butylbenzene	1.5051	1.6288	5.41	5	8	
	1,2-Dichlorobenzene	1.5748	1.5630	4.96	5	-1	
	1,2-Dibromo-3-chloropropane	2.5777	2.8200	5.47	5	9	
	1,3,5-Trichlorobenzene	1.2051	1.1830	4.91	5	-2	
	1,2,4-Trichlorobenzene	1.0170	0.9390	4.62	5	-8	
	Hexachlorobutadiene	0.4235	0.4254	5.02	5	0	
	Naphthalene	1.7209	1.6104	4.15	5	-17	
	1,2,3-Trichlorobenzene	0.8965	0.8198	4.57	5	-9	

Average %Drift 5

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP19930.i/18jun04i.b/iu04i07.d
/chem2/HP19930.i/18jun04i.b/iu04i06.d
/chem2/HP19930.i/18jun04i.b/iu04i05.d
/chem2/HP19930.i/18jun04i.b/iu04i04.d
/chem2/HP19930.i/18jun04i.b/iu04i03.d
/chem2/HP19930.i/18jun04i.b/iu04i02.d
/chem2/HP19930.i/18jun04i.b/iu04i01.d

File /chem2/HP19930.i/18jun04i.b/iu04i02.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP19930.i/18jun27b.b/iu27c02.d

RT Summary

Internal Standard Name	File ID: iu27c02.d	ICAL RT	In Spec
t-Butyl Alcohol-d10	4.147	4.159	Yes
Fluorobenzene	7.671	7.671	Yes
Chlorobenzene-d5	11.140	11.146	Yes
1,4-Dichlorobenzene-d4	13.017	13.017	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: iu27c02.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl Alcohol-d10	244364	286510	143255	573020	Yes
Fluorobenzene	3280314	3860980	1930490	7721960	Yes
Chlorobenzene-d5	2657402	3007894	1503947	6015788	Yes
1,4-Dichlorobenzene-d4	1549721	1683997	841998	3367994	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/27/2018 at 13:10

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date: 06/27/18 Time: 12:15

Lab File ID: iu27c02.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF10	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4158	0.5006	12.04	10	20	
#	Chloromethane	0.3343	0.3562	10.66	10	7	#
*	Vinyl Chloride	0.3629	0.3379	9.31	10	-7	*
	1,3-Butadiene	0.2473	0.6598	26.68	10	167	
	Bromomethane	0.2859	0.3170	11.09	10	11	
	Chloroethane	0.2301	0.2067	8.98	10	-10	
	Dichlorofluoromethane	0.6011	0.5872	9.77	10	-2	
	Trichlorofluoromethane	0.5434	0.6791	12.50	10	25	
	Ethyl ether	0.2274	0.1836	8.07	10	-19	
	Freon 123a	0.3478	0.3225	9.27	10	-7	
	Acrolein	2.5528	1.8801	368.25	500	-26	
*	1,1-Dichloroethene	0.2594	0.2362	9.11	10	-9	*
	Freon 113	0.2937	0.2846	9.69	10	-3	
	Acetone	3.2656	3.2722	100.20	100	0	
	Methyl Iodide	0.4979	0.4903	9.85	10	-2	
	Bromoethane	0.2226	0.1621	7.28	10	-27	
	Carbon Disulfide	0.7512	0.6589	8.77	10	-12	
	Allyl Chloride	0.4425	0.3071	6.94	10	-31	
	Methyl Acetate	0.1080	0.1056	9.78	10	-2	
	Methylene Chloride	0.3002	0.2608	8.69	10	-13	
	t-Butyl Alcohol	1.1717	1.3005	221.99	200	11	
	Acrylonitrile	4.0289	3.4578	42.91	50	-14	
	trans-1,2-Dichloroethene	0.2915	0.2706	9.28	10	-7	
	Methyl Tertiary Butyl Ether	0.6433	0.6937	10.78	10	8	
	n-Hexane	0.4040	0.3542	7.58	10	-24	
#	1,1-Dichloroethane	0.5380	0.5045	9.38	10	-6	#
	di-Isopropyl Ether	0.8371	0.7875	9.41	10	-6	
	2-Chloro-1,3-Butadiene	0.4149	0.4658	11.23	10	12	
	Etnyl t-butyl ether	0.7339	0.8517	11.60	10	16	
	cis-1,2-Dichloroethene	0.3234	0.3349	10.36	10	4	
	2,2-Dichloropropane	0.4131	0.5225	12.65	10	26	
	2-Butanone	5.2628	5.8401	110.97	100	11	
	Propionitrile	1.4269	1.5810	221.59	200	11	
	Methacrylonitrile	5.3242	5.6486	106.09	100	6	
	Bromochloromethane	0.1456	0.1391	9.55	10	-4	
	Tetrahydrofuran	1.6476	1.6534	100.35	100	0	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date: 06/27/18 Time: 12:15

Lab File ID: iu27c02.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

			ACTUAL	TRUE	%	
COMPOUND	RRF	RRF10	CONC.	CONC.	DRIFT	
* Chloroform	0.5296	0.6129	11.57	10	16	*
1,1,1-Trichloroethane	0.4667	0.5773	12.37	10	24	
Cyclohexane	0.4974	0.5062	9.08	10	-9	
Cyclohexane(2)	0.4265	0.4331	9.09	10	-9	
Cyclohexane(3)	0.1511	0.1570	9.17	10	-8	
1,1-Dichloropropene	0.4024	0.4462	11.09	10	11	
Carbon Tetrachloride	0.4140	0.5231	12.64	10	26	
Isobutyl Alcohol	0.4048	0.5127	633.34	500	27	
Benzene	1.2421	1.2501	10.06	10	1	
1,2-Dichloroethane	0.3320	0.4275	12.87	10	29	
1,2-Dichloroethane(2)	0.0313	0.0322	10.27	10	3	
t-Amyl methyl ether	0.6666	0.7927	11.89	10	19	
n-Heptane	0.4464	0.4607	10.32	10	3	
n-Butanol	0.2998	0.4173	1182.66	1000	18	
Trichloroethene	0.3208	0.3543	11.04	10	10	
Methylcyclohexane	0.5188	0.4669	7.89	10	-21	
* 1,2-Dichloropropane	0.3003	0.3133	10.43	10	4	*
Methyl Methacrylate	9.6472	10.4853	9.83	10	-2	
Dibromomethane	0.1408	0.1651	11.73	10	17	
1,4-Dioxane	0.0747	0.0915	612.12	500	22	
Bromodichloromethane	0.3600	0.4437	12.33	10	23	
2-Nitropropane	2.9671	4.0965	138.06	100	38	
1-Bromo-2-chloroethane	0.3076	0.3085	10.03	10	0	
cis-1,3-Dichloropropene	0.4133	0.4575	11.07	10	11	
4-Methyl-2-Pentanone	0.1704	0.2248	131.92	100	32	
* Toluene	1.0176	1.0050	9.88	10	-1	*
trans-1,3-Dichloropropene	0.4427	0.4980	11.25	10	12	
Ethyl Methacrylate	0.3597	0.4204	10.07	10	1	
1,1,2-Trichloroethane	0.2808	0.2909	10.36	10	4	
Tetrachloroethene	0.4883	0.5003	10.25	10	2	
1,3-Dichloropropane	0.4665	0.5008	10.74	10	7	
2-Hexanone	0.1595	0.2013	126.21	100	26	
Dibromochloromethane	0.3264	0.3759	11.52	10	15	
1,2-Dibromoethane	0.2573	0.2798	10.87	10	9	
1-Chlorohexane	0.5411	0.5448	10.07	10	1	
# Chlorobenzene	1.1449	1.1420	9.97	10	0	#

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date: 06/27/18 Time: 12:15

Lab File ID: iu27c02.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF10	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	1,1,1,2-Tetrachloroethane	0.3850	0.4396	11.42	10	14	
*	Ethylbenzene	1.8684	2.0390	10.91	10	9	*
	m+p-Xylene	0.7448	0.7928	21.29	20	6	
	o-Xylene	0.7105	0.7827	11.02	10	10	
	Styrene	1.0876	1.2585	10.34	10	3	
#	Bromoform	0.1869	0.2196	10.23	10	2	#
	Isopropylbenzene	1.8203	2.0965	10.20	10	2	
#	1,1,2,2-Tetrachloroethane	0.6263	0.6574	10.50	10	5	#
	Bromobenzene	0.8524	0.8962	10.51	10	5	
	trans-1,4-Dichloro-2-butene	4.6545	3.5756	76.82	100	-23	
	1,2,3-Trichloropropane	0.1694	0.1942	11.46	10	15	
	n-Propylbenzene	3.9578	4.2542	10.75	10	7	
	2-Chlorotoluene	0.8165	0.8483	10.39	10	4	
	1,3,5-Trimethylbenzene	2.8112	3.1579	11.23	10	12	
	4-Chlorotoluene	0.8346	0.8665	10.38	10	4	
	tert-Butylbenzene	0.5932	0.6555	9.73	10	-3	
	Pentachloroethane	0.5212	0.5568	10.68	10	7	
	1,2,4-Trimethylbenzene	2.7694	3.1823	11.49	10	15	
	sec-Butylbenzene	3.5580	3.9805	11.19	10	12	
	1,3-Dichlorobenzene	1.6777	1.7742	10.58	10	6	
	p-Isopropyltoluene	2.9780	3.5734	10.42	10	4	
	1,4-Dichlorobenzene	1.7420	1.7655	10.14	10	1	
	1,2,3-Trimethylbenzene	1.3191	1.2857	9.75	10	-3	
	Benzyl Chloride	0.2091	0.2746	10.69	10	7	
	n-Butylbenzene	1.5051	1.7315	11.50	10	15	
	1,2-Dichlorobenzene	1.5748	1.6624	10.56	10	6	
	1,2-Dibromo-3-chloropropane	2.5777	2.9421	11.41	10	14	
	1,3,5-Trichlorobenzene	1.2051	1.3023	10.81	10	8	
	1,2,4-Trichlorobenzene	1.0170	1.1037	10.85	10	9	
	Hexachlorobutadiene	0.4235	0.5129	12.11	10	21	
	Naphthalene	1.7209	1.9710	10.19	10	2	
	1,2,3-Trichlorobenzene	0.8965	0.9322	10.40	10	4	
	Dibromofluoromethane	0.2441	0.2614	10.71	10	7	
	Dibromofluoromethane(2)	0.2497	0.2683	10.75	10	7	
	1,2-Dichloroethane-d4	0.0511	0.0506	9.89	10	-1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date: 06/27/18 Time: 12:15

Lab File ID: iu27c02.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	RRF	RRF10	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,2-Dichloroethane-d4(2)	0.2392	0.3185	13.32	10	33
1,2-Dichloroethane-d4(3)	0.0328	0.0331	10.11	10	1
Toluene-d8	1.2908	1.2496	9.68	10	-3
Toluene-d8(2)	0.8421	0.7899	9.38	10	-6
4-Bromofluorobenzene	0.4750	0.4909	10.34	10	3
4-Bromofluorobenzene(2)	0.4292	0.4404	10.26	10	3

Average %Drift 12

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP19930.i/18jun04i.b/iu04i07.d
/chem2/HP19930.i/18jun04i.b/iu04i06.d
/chem2/HP19930.i/18jun04i.b/iu04i05.d
/chem2/HP19930.i/18jun04i.b/iu04i04.d
/chem2/HP19930.i/18jun04i.b/iu04i03.d
/chem2/HP19930.i/18jun04i.b/iu04i02.d
/chem2/HP19930.i/18jun04i.b/iu04i01.d

File /chem2/HP19930.i/18jun04i.b/iu04i02.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP19930.i/18jun28b.b/iu28c01.d

RT Summary

Internal Standard Name	File ID: iu28c01.d	ICAL RT	In Spec
t-Butyl Alcohol-d10	4.159	4.159	Yes
Fluorobenzene	7.671	7.671	Yes
Chlorobenzene-d5	11.140	11.146	Yes
1,4-Dichlorobenzene-d4	13.017	13.017	Yes

A "No" indicates the retention time is greater than 10 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: iu28c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl Alcohol-d10	336181	286510	143255	573020	Yes
Fluorobenzene	4279931	3860980	1930490	7721960	Yes
Chlorobenzene-d5	3284831	3007894	1503947	6015788	Yes
1,4-Dichlorobenzene-d4	1807076	1683997	841998	3367994	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 06/28/2018 at 13:16

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date: 06/28/18 Time: 12:25

Lab File ID: iu28c01.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF10	ACTUAL CONC.	TRUE CONC.	% DRIFT	
	Dichlorodifluoromethane	0.4158	0.5393	12.97	10	30	
#	Chloromethane	0.3343	0.3986	11.93	10	19	#
*	Vinyl Chloride	0.3629	0.3875	10.68	10	7	*
	1,3-Butadiene	0.2473	0.5054	20.43	10	104	
	Bromomethane	0.2859	0.3291	11.51	10	15	
	Chloroethane	0.2301	0.2285	9.93	10	-1	
	Dichlorofluoromethane	0.6011	0.5734	9.54	10	-5	
	Trichlorofluoromethane	0.5434	0.6405	11.79	10	18	
	Ethyl ether	0.2274	0.2612	11.48	10	15	
	Freon 123a	0.3478	0.3834	11.02	10	10	
	Acrolein	2.5528	2.2201	434.85	500	-13	
*	1,1-Dichloroethene	0.2594	0.2634	10.15	10	2	*
	Freon 113	0.2937	0.3112	10.59	10	6	
	Acetone	3.2656	3.5531	108.81	100	9	
	Methyl Iodide	0.4979	0.4972	9.98	10	0	
	Bromoethane	0.2226	0.2223	9.99	10	0	
	Carbon Disulfide	0.7512	0.7895	10.51	10	5	
	Allyl Chloride	0.4425	0.4933	11.15	10	11	
	Methyl Acetate	0.1080	0.1472	13.63	10	36	
	Methylene Chloride	0.3002	0.2986	9.95	10	-1	
	t-Butyl Alcohol	1.1717	1.2913	220.42	200	10	
	Acrylonitrile	4.0289	3.9557	49.09	50	-2	
	trans-1,2-Dichloroethene	0.2915	0.2940	10.09	10	1	
	Methyl Tertiary Butyl Ether	0.6433	0.7601	11.82	10	18	
	n-Hexane	0.4040	0.4843	10.29	10	3	
#	1,1-Dichloroethane	0.5380	0.5872	10.91	10	9	#
	di-Isopropyl Ether	0.8371	1.0111	12.08	10	21	
	2-Chloro-1,3-Butadiene	0.4149	0.5231	12.61	10	26	
	Ethyl t-butyl ether	0.7339	0.8711	11.87	10	19	
	cis-1,2-Dichloroethene	0.3234	0.3350	10.36	10	4	
	2,2-Dichloropropane	0.4131	0.4554	11.03	10	10	
	2-Butanone	5.2628	5.7185	108.66	100	9	
	Propionitrile	1.4269	1.4578	204.33	200	2	
	Methacrylonitrile	5.3242	5.4815	102.96	100	3	
	Bromochloromethane	0.1456	0.1472	10.11	10	1	
	Tetrahydrofuran	1.6476	1.6295	98.90	100	-1	

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date: 06/28/18 Time: 12:25

Lab File ID: iu28c01.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF10	ACTUAL CONC.	TRUE CONC.	% DRIFT	
*	Chloroform	0.5296	0.5871	11.09	10	11	*
	1,1,1-Trichloroethane	0.4667	0.5181	11.10	10	11	
	Cyclohexane	0.4974	0.5772	10.34	10	3	
	Cyclohexane(2)	0.4265	0.4700	9.85	10	-1	
	Cyclohexane(3)	0.1511	0.1748	10.19	10	2	
	1,1-Dichloropropene	0.4024	0.4552	11.31	10	13	
	Carbon Tetrachloride	0.4140	0.4733	11.43	10	14	
	Isobutyl Alcohol	0.4048	0.5051	623.86	500	25	
	Benzene	1.2421	1.2915	10.40	10	4	
	1,2-Dichloroethane	0.3320	0.4090	12.32	10	23	
	1,2-Dichloroethane(2)	0.0313	0.0330	10.55	10	6	
	t-Amyl methyl ether	0.6666	0.7766	11.65	10	16	
	n-Heptane	0.4464	0.5262	11.79	10	18	
	n-Butanol	0.2998	0.4257	1206.07	1000	21	
	Trichloroethene	0.3208	0.3485	10.86	10	9	
	Methylcyclohexane	0.5188	0.5339	9.00	10	-10	
*	1,2-Dichloropropane	0.3003	0.2790	9.29	10	-7	*
	Methyl Methacrylate	9.6472	9.0598	8.58	10	-14	
	Dibromomethane	0.1408	0.1409	10.01	10	0	
	1,4-Dioxane	0.0747	0.0763	510.53	500	2	
	Bromodichloromethane	0.3600	0.3773	10.48	10	5	
	2-Nitropropane	2.9671	3.2192	108.50	100	8	
	1-Bromo-2-chloroethane	0.3076	0.2976	9.67	10	-3	
	cis-1,3-Dichloropropene	0.4133	0.4284	10.37	10	4	
	4-Methyl-2-Pentanone	0.1704	0.2012	118.10	100	18	
*	Toluene	1.0176	1.0120	9.95	10	-1	*
	trans-1,3-Dichloropropene	0.4427	0.5148	11.63	10	16	
	Ethyl Methacrylate	0.3597	0.4524	10.81	10	8	
	1,1,2-Trichloroethane	0.2808	0.2989	10.64	10	6	
	Tetrachloroethene	0.4883	0.4885	10.00	10	0	
	1,3-Dichloropropane	0.4665	0.5370	11.51	10	15	
	2-Hexanone	0.1595	0.2201	138.00	100	38	
	Dibromochloromethane	0.3264	0.3768	11.54	10	15	
	1,2-Dibromoethane	0.2573	0.2883	11.20	10	12	
	1-Chlorohexane	0.5411	0.5890	10.88	10	9	
#	Chlorobenzene	1.1449	1.1680	10.20	10	2	#

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date: 06/28/18 Time: 12:25

Lab File ID: iu28c01.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	RRF	RRF10	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,1,1,2-Tetrachloroethane	0.3850	0.4265	11.08	10	11
* Ethylbenzene	1.8684	2.1096	11.29	10	13 *
m+p-Xylene	0.7448	0.8224	22.09	20	10
o-Xylene	0.7105	0.8146	11.47	10	15
Styrene	1.0876	1.2975	10.66	10	7
# Bromoform	0.1869	0.2145	10.00	10	0 #
Isopropylbenzene	1.8203	2.1547	10.49	10	5
# 1,1,2,2-Tetrachloroethane	0.6263	0.7312	11.68	10	17 #
Bromobenzene	0.8524	0.9146	10.73	10	7
trans-1,4-Dichloro-2-butene	4.6545	4.5044	96.78	100	-3
1,2,3-Trichloropropane	0.1694	0.2032	11.99	10	20
n-Propylbenzene	3.9578	4.6769	11.82	10	18
2-Chlorotoluene	0.8165	0.8992	11.01	10	10
1,3,5-Trimethylbenzene	2.8112	3.3681	11.98	10	20
4-Chlorotoluene	0.8346	0.9144	10.96	10	10
tert-Butylbenzene	0.5932	0.6890	10.22	10	2
Pentachloroethane	0.5212	0.5907	11.33	10	13
1,2,4-Trimethylbenzene	2.7694	3.3774	12.20	10	22
sec-Butylbenzene	3.5580	4.3798	12.31	10	23
1,3-Dichlorobenzene	1.6777	1.8210	10.85	10	9
p-Isopropyltoluene	2.9780	3.7646	11.02	10	10
1,4-Dichlorobenzene	1.7420	1.8162	10.43	10	4
1,2,3-Trimethylbenzene	1.3191	1.4729	11.17	10	12
Benzyl Chloride	0.2091	0.2840	11.04	10	10
n-Butylbenzene	1.5051	1.8940	12.58	10	26
1,2-Dichlorobenzene	1.5748	1.6958	10.77	10	8
1,2-Dibromo-3-chloropropane	2.5777	2.6720	10.37	10	4
1,3,5-Trichlorobenzene	1.2051	1.3110	10.88	10	9
1,2,4-Trichlorobenzene	1.0170	1.1253	11.06	10	11
Hexachlorobutadiene	0.4235	0.4888	11.54	10	15
Naphthalene	1.7209	2.1799	11.27	10	13
1,2,3-Trichlorobenzene	0.8965	0.9668	10.78	10	8
Dibromofluoromethane	0.2441	0.2460	10.08	10	1
Dibromofluoromethane(2)	0.2497	0.2538	10.17	10	2
1,2-Dichloroethane-d4	0.0511	0.0515	10.06	10	1

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP19930 Calibration Date: 06/28/18 Time: 12:25

Lab File ID: iu28c01.d Init. Calib. Date(s): 06/04/18 06/04/18

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	RRF	RRF10	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,2-Dichloroethane-d4(2)	0.2392	0.2790	11.67	10	17
1,2-Dichloroethane-d4(3)	0.0328	0.0336	10.26	10	3
Toluene-d8	1.2908	1.1994	9.29	10	-7
Toluene-d8(2)	0.8421	0.7727	9.18	10	-8
4-Bromofluorobenzene	0.4750	0.4908	10.33	10	3
4-Bromofluorobenzene(2)	0.4292	0.4097	9.55	10	-5

Average %Drift 11

Minimum RRF for SPCC(#)=0.10 (0.30 for Chlorobenzene, 1,1,2,2-Tetrachloroethane)
Maximum %Drift for CCC(*)=20%

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): iu27c02.d Date Analyzed: 06/27/18

Instrument ID: HP19930 Time Analyzed: 12:15

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	244364	4.147	3280314	7.671	2657402	11.140	1549721	13.017
UPPER LIMIT	488728	4.647	6560628	8.171	5314804	11.640	3099442	13.517
LOWER LIMIT	122182	3.647	1640157	7.171	1328701	10.640	774860	12.517
LAB SAMPLE ID								
01 LCSI30	312701	4.172	3376098	7.677	2542238	11.146	1465815	13.018
02 VBLKI30	245906	4.159	2910766	7.677	2178479	11.146	1230031	13.024
03 9672157	307824	4.153	3134562	7.659	2575293	11.140	1367103	13.017
04 9672157DL	226055	4.153	2825536	7.671	2164048	11.140	1254264	13.017
05 9672168	223811	4.165	2815909	7.677	2132866	11.146	1207086	13.024
06 9672156	265023	4.160	3014357	7.671	2297745	11.146	1358090	13.018
07 9672160	219683	4.153	2799851	7.677	2107045	11.146	1266183	13.018
08 9672158	212916	4.166	2747015	7.677	2113439	11.146	1323877	13.018
09 9672157MS	213530	4.166	3068453	7.671	2475599	11.146	1474093	13.017
10 9672157MSD	305089	4.160	3174678	7.671	2530681	11.146	1508491	13.018
11 9672159	196898	4.172	2823999	7.677	2455417	11.146	1383738	13.017
12 9672159DL	224133	4.160	2822298	7.677	2122855	11.146	1237208	13.024
13 9672161DL	207774	4.160	2756913	7.677	2179053	11.146	1206957	13.024
14 9672162	239922	4.153	2735566	7.671	2235248	11.146	1217591	13.024
15 9672162DL	228748	4.166	2703803	7.677	2179821	11.146	1186265	13.024
16 9672163	223773	4.153	2608811	7.677	2178465	11.146	1162987	13.024
17 9672163DL	194423	4.166	2544429	7.671	2060360	11.146	1108445	13.024
18 9672164	177298	4.165	2595855	7.677	2094507	11.146	1139525	13.024
19 9672164DL	158086	4.166	2564103	7.677	2044469	11.146	1115146	13.024
20 9672165	187531	4.166	2582807	7.677	2133152	11.146	1131202	13.018
21 9672165DL	190582	4.153	2560119	7.671	2055891	11.146	1041614	13.017
22 9672166	177224	4.153	2635323	7.671	1893139	11.146	1168657	13.024

IS1 (TBA)=t-Butyl Alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): iu27c02.d Date Analyzed: 06/27/18

Instrument ID: HP19930 Time Analyzed: 12:15

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	244364	4.147	3280314	7.671	2657402	11.140	1549721	13.017
UPPER LIMIT	488728	4.647	6560628	8.171	5314804	11.640	3099442	13.517
LOWER LIMIT	122182	3.647	1640157	7.171	1328701	10.640	774860	12.517
LAB SAMPLE ID								
23 9672166DL	177262	4.166	2556805	7.671	2066846	11.146	1139397	13.024
24 9672167DL	186841	4.160	2589469	7.677	2088454	11.146	1136079	13.024

IS1 (TBA)=t-Butyl Alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): iu28c01.d Date Analyzed: 06/28/18

Instrument ID: HP19930 Time Analyzed: 12:25

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	336181	4.159	4279931	7.671	3284831	11.140	1807076	13.017
UPPER LIMIT	672362	4.659	8559862	8.171	6569662	11.640	3614152	13.517
LOWER LIMIT	168090	3.659	2139966	7.171	1642416	10.640	903538	12.517
LAB SAMPLE ID								
01 LCSI31	392371	4.153	4416974	7.671	3098473	11.146	1718924	13.017
02 LCSI32	392371	4.153	4416974	7.671	3098473	11.146	1718924	13.017
03 LCDI31	431038	4.172	4531321	7.677	3411037	11.146	1760084	13.018
04 LCDI32	431038	4.172	4531321	7.677	3411037	11.146	1760084	13.018
05 VBLKI31	353474	4.178	4045010	7.677	3015335	11.146	1458557	13.024
06 VBLKI32	353474	4.178	4045010	7.677	3015335	11.146	1458557	13.024
07 9662932DL	383389	4.153	3610787	7.659	2789198	11.140	1519306	13.018
08 9674178	277620	4.172	3257856	7.671	2513538	11.146	1373087	13.017
09 9674179	270321	4.172	3164568	7.671	2458757	11.146	1333443	13.018
10 9674180	265050	4.172	3088007	7.677	2384037	11.146	1310546	13.024
11 9672158DL	266340	4.172	3233692	7.677	2338643	11.146	1346175	13.018
12 9672161	257146	4.178	2880883	7.677	2466052	11.146	1264978	13.024
13 9672167	235983	4.172	3144349	7.671	2469189	11.146	1258643	13.023
14 9671555	258953	4.160	3267215	7.671	2195035	11.146	1294817	13.018
15 9671561	259948	4.159	3126737	7.677	2376688	11.146	1239842	13.023
16 9671564	265803	4.159	2666970	7.677	2327106	11.146	1233341	13.024
17 9674186	256726	4.159	3203444	7.671	2150460	11.146	1491296	13.017
18 9674187MS	239084	4.153	3646196	7.671	2771177	11.146	1615453	13.017
19 9674188MSD	343704	4.184	3999915	7.677	3016377	11.146	1663282	13.017
20 9674189	213381	4.172	2941100	7.671	2301775	11.146	1357794	13.024
21 9674190	196449	4.178	3663492	7.671	2817513	11.146	1587642	13.018
22 9674181	370465	4.166	3882239	7.677	2871866	11.146	1656806	13.017

IS1 (TBA)=t-Butyl Alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____

Lab File ID (Standard): iu28c01.d Date Analyzed: 06/28/18

Instrument ID: HP19930 Time Analyzed: 12:25

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	336181	4.159	4279931	7.671	3284831	11.140	1807076	13.017
UPPER LIMIT	672362	4.659	8559862	8.171	6569662	11.640	3614152	13.517
LOWER LIMIT	168090	3.659	2139966	7.171	1642416	10.640	903538	12.517
LAB SAMPLE ID								
23 9674182	344810	4.172	3363089	7.677	2956157	11.146	1752662	13.024
24 9674184	431828	4.172	3992180	7.671	2994212	11.146	1723385	13.018
25 9674185	364396	4.165	4032975	7.671	3004108	11.146	1737229	13.017
26 9674191	364927	4.165	4048959	7.677	2958282	11.146	1659901	13.017
27 9674191DL	351987	4.159	3888688	7.671	2878806	11.146	1552427	13.023
28 9674192	334742	4.178	3792385	7.677	2810349	11.146	1615454	13.018
29 9674192DL	313943	4.172	3726312	7.677	2756790	11.146	1508740	13.018
30 9674193	260832	4.178	3566526	7.677	2634813	11.146	1491049	13.018
31 9674193DL	221197	4.172	2719524	7.677	2114072	11.146	1257796	13.024

IS1 (TBA)=t-Butyl Alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

Preparation and Run Logs

Volatiles by GC/MS

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP19930 **HP #31**

Data Directory Path is - D:\DATA\18jun04i\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jkh09052	Iu04T01.D	50NGBFB	06/04/2018	10:45	I181063AB	
jkh09052	Iu04X01.D	blk	06/04/2018	12:11		
jkh09052	Iu04I01.D	VSTD025	06/04/2018	12:33		
jkh09052	Iu04I02.D	VSTD010	06/04/2018	12:54		
jkh09052	Iu04I03.D	VSTD005	06/04/2018	13:15		
jkh09052	Iu04I04.D	VSTD002	06/04/2018	13:36		
jkh09052	Iu04I05.D	VSTD001	06/04/2018	13:57		
jkh09052	Iu04I06.D	VSTD0.5	06/04/2018	14:19		
jkh09052	Iu04I07.D	VSTD0.2	06/04/2018	14:40		
jkh09052	Iu04M01.D	MDL0.1	06/04/2018	15:02		
jkh09052	Iu04V01.D	LCSILG	06/04/2018	15:23		

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP19930 **HP #31**

Data Directory Path is - d:\data\18jun27b\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jgc14951	IU27T02.D	50NGBFB	06/27/2018	11:32	I181781AA	
jgc14951	IU27X11.D	VBLKI30	06/27/2018	11:54	I181781AA	
jgc14951	IU27C02.D	VSTD010	06/27/2018	12:15	I181781AA	
jgc14951	IU27L01.D	LCSI30	06/27/2018	12:37	I181781AA	
jgc14951	IU27X12.D	VBLKI30	06/27/2018	12:58	I181781AA	
jgc14951	IU27B01.D	VBLKI30	06/27/2018	13:19	I181781AA	
jgc14951	IU27S05.D	9672157	06/27/2018	14:28	I181781AA	5
jgc14951	IU27S06.D	9672157DL	06/27/2018	14:49	I181781AA	50
jgc14951	IU27S02.D	9672168	06/27/2018	15:11	I181781AA	
jgc14951	IU27S03.D	9672156	06/27/2018	15:33	I181781AA	
jgc14951	IU27S04.D	9672160	06/27/2018	15:54	I181781AA	
jgc14951	IU27S07.D	9672158	06/27/2018	16:15	I181781AA	2
jgc14951	IU27S08.D	9672158DL	06/27/2018	16:36	I181781AA	20
jgc14951	IU27S25.D	9672157MS	06/27/2018	16:58	I181781AA	5
jgc14951	IU27S26.D	9672157MSD	06/27/2018	17:19	I181781AA	5
jgc14951	IU27S09.D	9672159	06/27/2018	17:40	I181781AA	2
jgc14951	IU27S10.D	9672159DL	06/27/2018	18:01	I181781AA	20
jgc14951	IU27S11.D	9672161	06/27/2018	18:22	I181781AA	10
jgc14951	IU27S12.D	9672161DL	06/27/2018	18:44	I181781AA	100
jgc14951	IU27S13.D	9672162	06/27/2018	19:05	I181781AA	5
jgc14951	IU27S14.D	9672162DL	06/27/2018	19:27	I181781AA	50
jgc14951	IU27S15.D	9672163	06/27/2018	19:48	I181781AA	5
jgc14951	IU27S16.D	9672163DL	06/27/2018	20:09	I181781AA	50
jgc14951	IU27S17.D	9672164	06/27/2018	20:31	I181781AA	
jgc14951	IU27S18.D	9672164DL	06/27/2018	20:52	I181781AA	10
jgc14951	IU27S19.D	9672165	06/27/2018	21:13	I181781AA	
jgc14951	IU27S20.D	9672165DL	06/27/2018	21:34	I181781AA	20
jgc14951	IU27S21.D	9672166	06/27/2018	21:55	I181781AA	
jgc14951	IU27S22.D	9672166DL	06/27/2018	22:17	I181781AA	20
jgc14951	IU27S23.D	9672167	06/27/2018	22:38	I181781AA	2
jgc14951	IU27S24.D	9672167DL	06/27/2018	22:59	I181781AA	20

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP19930 **HP #31**

Data Directory Path is - d:\data\18jun28b\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jgc14951	IU28T02.D	50NGBFB	06/28/2018	11:39	I181791AA	
jgc14951	IU28X01.D	VBLKI31	06/28/2018	12:03	I181791AA	
jgc14951	IU28C01.D	VSTD010	06/28/2018	12:25	I181791AA	
jgc14951	IU28S01.D	LCSI31	06/28/2018	12:46	I181791AA	
jgc14951	IU28S02.D	LCDI31	06/28/2018	13:07	I181791AA	
jgc14951	IU28X02.D	VBLKI31	06/28/2018	13:28	I181791AA	
jgc14951	IU28B01.D	VBLKI31	06/28/2018	13:50	I181791AA	
jgc14951	IU28S03.D	9662932DL	06/28/2018	14:36	I181791AA	10
jgc14951	IU28S33.D	9674178	06/28/2018	14:57	I181792AA	
jgc14951	IU28S34.D	9674179	06/28/2018	15:19	I181792AA	
jgc14951	IU28S35.D	9674180	06/28/2018	15:40	I181792AA	
jgc14951	IU28S36.D	9672158DL	06/28/2018	16:02	I181792AA	20
jgc14951	IU28S37.D	9672161	06/28/2018	16:23	I181792AA	5
jgc14951	IU28S38.D	9672167	06/28/2018	16:44	I181792AA	2
jgc14951	IU28S39.D	9671555	06/28/2018	17:05	I181792AA	
jgc14951	IU28S40.D	9671561	06/28/2018	17:27	I181792AA	
jgc14951	IU28S41.D	9671564	06/28/2018	17:48	I181792AA	
jgc14951	IU28S42.D	9674186	06/28/2018	18:09	I181792AA	
jgc14951	IU28S43.D	9674187MS	06/28/2018	18:30	I181792AA	
jgc14951	IU28S44.D	9674188MSD	06/28/2018	18:52	I181792AA	
jgc14951	IU28S45.D	9674189	06/28/2018	19:13	I181792AA	
jgc14951	IU28S46.D	9674190	06/28/2018	19:34	I181792AA	
jgc14951	IU28S47.D	9674181	06/28/2018	19:56	I181792AA	10
jgc14951	IU28S48.D	9674182	06/28/2018	20:17	I181792AA	10
jgc14951	IU28S49.D	9674183	06/28/2018	20:38	I181792AA	5
jgc14951	IU28S50.D	9674184	06/28/2018	20:59	I181792AA	2
jgc14951	IU28S51.D	9674185	06/28/2018	21:21	I181792AA	2
jgc14951	IU28S52.D	9674191	06/28/2018	21:42	I181792AA	500
jgc14951	IU28S53.D	9674191DL	06/28/2018	22:03	I181792AA	5000
jgc14951	IU28S54.D	9674192	06/28/2018	22:24	I181792AA	100
jgc14951	IU28S55.D	9674192DL	06/28/2018	22:46	I181792AA	1000
jgc14951	IU28S56.D	9674193	06/28/2018	23:07	I181792AA	100
jgc14951	IU28S57.D	9674193DL	06/28/2018	23:29	I181792AA	1000

ALPHA ANALYTICAL

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Lab Number: L1820859

Client: CH2M

ATTN: Shane Lowe

Project Name: DOW HANGING ROCK

Project Number:

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Data Deliverable Revision Narrative
Alpha SDG: L1820859
Client: CH2M
Site: DOW HANGING ROCK

July 31, 2018: The report has been included.

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Organics

GC/MS 8260
Analysis

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-01	Date Collected	: 06/05/18 10:15
Client ID	: S01-SS28-0102-060518	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/06/18 21:33
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: AD
Lab File ID	: V00180606N07	Instrument ID	: VOA100
Sample Amount	: 5.8 g	GC Column	: RTX-VMS
Level	: HIGH	%Solids	: 82
Extract Volume (MeOH)	: 5 ml	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	ND	63	--	U
75-01-4	Vinyl chloride	ND	130	--	U
75-35-4	1,1-Dichloroethene	ND	63	--	U
156-60-5	trans-1,2-Dichloroethene	ND	95	--	U
79-01-6	Trichloroethene	ND	63	--	U
156-59-2	cis-1,2-Dichloroethene	ND	63	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-02	Date Collected	: 06/05/18 10:30
Client ID	: S01-SS28-0607-060518	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/06/18 21:59
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: AD
Lab File ID	: V00180606N08	Instrument ID	: VOA100
Sample Amount	: 5.6 g	GC Column	: RTX-VMS
Level	: HIGH	%Solids	: 83
Extract Volume (MeOH)	: 5 ml	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	240	64	--	
75-01-4	Vinyl chloride	ND	130	--	U
75-35-4	1,1-Dichloroethene	ND	64	--	U
156-60-5	trans-1,2-Dichloroethene	ND	95	--	U
79-01-6	Trichloroethene	ND	64	--	U
156-59-2	cis-1,2-Dichloroethene	ND	64	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-03	Date Collected	: 06/05/18 10:55
Client ID	: S01-SS28-2223-060518	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/06/18 22:25
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: MV
Lab File ID	: V00180606N09	Instrument ID	: VOA100
Sample Amount	: 3.5 g	GC Column	: RTX-VMS
Level	: LOW	%Solids	: 85
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	3.4	1.7	--	
75-01-4	Vinyl chloride	ND	3.4	--	U
75-35-4	1,1-Dichloroethene	ND	1.7	--	U
156-60-5	trans-1,2-Dichloroethene	ND	2.5	--	U
79-01-6	Trichloroethene	ND	1.7	--	U
156-59-2	cis-1,2-Dichloroethene	ND	1.7	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-04	Date Collected	: 06/05/18 12:05
Client ID	: 060518TB	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/06/18 21:40
Sample Matrix	: WATER	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: NLK
Lab File ID	: V05180606N08	Instrument ID	: VOA105
Sample Amount	: 10 ml	GC Column	: RTX-502.2
Level	: LOW	%Solids	: N/A
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/L			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	ND	0.50	--	U
75-01-4	Vinyl chloride	ND	1.0	--	U
75-35-4	1,1-Dichloroethene	ND	0.50	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.75	--	U
79-01-6	Trichloroethene	ND	0.50	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.50	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-05	Date Collected	: 06/05/18 13:45
Client ID	: S01-SS17-0102-060518	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/06/18 22:50
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: MV
Lab File ID	: V00180606N10	Instrument ID	: VOA100
Sample Amount	: 5.4 g	GC Column	: RTX-VMS
Level	: LOW	%Solids	: 84
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	6.1	1.1	--	
75-01-4	Vinyl chloride	ND	2.2	--	U
75-35-4	1,1-Dichloroethene	ND	1.1	--	U
156-60-5	trans-1,2-Dichloroethene	ND	1.7	--	U
79-01-6	Trichloroethene	ND	1.1	--	U
156-59-2	cis-1,2-Dichloroethene	ND	1.1	--	U

Form 1
VOA

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1820859-06	**Date Collected**	: 06/05/18 14:05
Client ID	: S01-SS17-0809-060518	**Date Received**	: 06/06/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/06/18 23:16
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 1,8260C	**Analyst**	: MV
Lab File ID	: V00180606N11	**Instrument ID**	: VOA100
Sample Amount	: 5.3 g	**GC Column**	: RTX-VMS
Level	: LOW	**%Solids**	: 96
Extract Volume (MeOH)	: N/A	**Injection Volume**	: N/A

		ug/Kg			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
127-18-4	Tetrachloroethene	ND	0.99	--	U
75-01-4	Vinyl chloride	ND	2.0	--	U
75-35-4	1,1-Dichloroethene	ND	0.99	--	U
156-60-5	trans-1,2-Dichloroethene	ND	1.5	--	U
79-01-6	Trichloroethene	ND	0.99	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.99	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-07	Date Collected	: 06/05/18 14:15
Client ID	: S01-SS17-2526-060518	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/06/18 23:42
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: MV
Lab File ID	: V00180606N12	Instrument ID	: VOA100
Sample Amount	: 5.1 g	GC Column	: RTX-VMS
Level	: LOW	%Solids	: 95
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	12	1.0	--	
75-01-4	Vinyl chloride	ND	2.0	--	U
75-35-4	1,1-Dichloroethene	ND	1.0	--	U
156-60-5	trans-1,2-Dichloroethene	ND	1.5	--	U
79-01-6	Trichloroethene	ND	1.0	--	U
156-59-2	cis-1,2-Dichloroethene	ND	1.0	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-08	Date Collected	: 06/05/18 15:50
Client ID	: S01-SS27-0102-060518	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/07/18 00:08
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: MV
Lab File ID	: V00180606N13	Instrument ID	: VOA100
Sample Amount	: 5.7 g	GC Column	: RTX-VMS
Level	: LOW	%Solids	: 85
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	1.8	1.0	--	
75-01-4	Vinyl chloride	ND	2.1	--	U
75-35-4	1,1-Dichloroethene	ND	1.0	--	U
156-60-5	trans-1,2-Dichloroethene	ND	1.5	--	U
79-01-6	Trichloroethene	3.0	1.0	--	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-09	Date Collected	: 06/05/18 16:20
Client ID	: S01-SS27-0708-060518	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/07/18 00:34
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: MV
Lab File ID	: V00180606N14	Instrument ID	: VOA100
Sample Amount	: 5.1 g	GC Column	: RTX-VMS
Level	: LOW	%Solids	: 84
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	72	1.2	--	
75-01-4	Vinyl chloride	ND	2.3	--	U
75-35-4	1,1-Dichloroethene	ND	1.2	--	U
156-60-5	trans-1,2-Dichloroethene	ND	1.8	--	U
79-01-6	Trichloroethene	ND	1.2	--	U
156-59-2	cis-1,2-Dichloroethene	ND	1.2	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-10	Date Collected	: 06/05/18 16:25
Client ID	: S01-SSFD01-060518	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/07/18 01:00
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: MV
Lab File ID	: V00180606N15	Instrument ID	: VOA100
Sample Amount	: 5.9 g	GC Column	: RTX-VMS
Level	: LOW	%Solids	: 84
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	58	1.0	--	
75-01-4	Vinyl chloride	ND	2.0	--	U
75-35-4	1,1-Dichloroethene	ND	1.0	--	U
156-60-5	trans-1,2-Dichloroethene	ND	1.5	--	U
79-01-6	Trichloroethene	ND	1.0	--	U
156-59-2	cis-1,2-Dichloroethene	ND	1.0	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-11	Date Collected	: 06/05/18 16:45
Client ID	: S01-SS27-2122-060518	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/07/18 01:26
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: MV
Lab File ID	: V00180606N16	Instrument ID	: VOA100
Sample Amount	: 5.1 g	GC Column	: RTX-VMS
Level	: LOW	%Solids	: 95
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	2.0	1.0	--	
75-01-4	Vinyl chloride	ND	2.1	--	U
75-35-4	1,1-Dichloroethene	ND	1.0	--	U
156-60-5	trans-1,2-Dichloroethene	ND	1.6	--	U
79-01-6	Trichloroethene	ND	1.0	--	U
156-59-2	cis-1,2-Dichloroethene	ND	1.0	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-12	Date Collected	: 06/05/18 17:20
Client ID	: S01-GW08-1828-060518	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/06/18 22:05
Sample Matrix	: WATER	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: NLK
Lab File ID	: V05180606N09	Instrument ID	: VOA105
Sample Amount	: 10 ml	GC Column	: RTX-502.2
Level	: LOW	%Solids	: N/A
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/L			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	61	0.50	--	
75-01-4	Vinyl chloride	ND	1.0	--	U
75-35-4	1,1-Dichloroethene	ND	0.50	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.75	--	U
79-01-6	Trichloroethene	4.1	0.50	--	
156-59-2	cis-1,2-Dichloroethene	1.2	0.50	--	

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-13	Date Collected	: 06/05/18 17:25
Client ID	: S01-GWFD01-060518	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/06/18 22:31
Sample Matrix	: WATER	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: NLK
Lab File ID	: V05180606N10	Instrument ID	: VOA105
Sample Amount	: 10 ml	GC Column	: RTX-502.2
Level	: LOW	%Solids	: N/A
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/L			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	37	0.50	--	
75-01-4	Vinyl chloride	ND	1.0	--	U
75-35-4	1,1-Dichloroethene	ND	0.50	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.75	--	U
79-01-6	Trichloroethene	3.0	0.50	--	
156-59-2	cis-1,2-Dichloroethene	1.0	0.50	--	

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-14	Date Collected	: 06/05/18 11:50
Client ID	: S01-GW09-1828-060518	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/07/18 10:03
Sample Matrix	: WATER	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: NLK
Lab File ID	: V05180607A07	Instrument ID	: VOA105
Sample Amount	: 10 ml	GC Column	: RTX-502.2
Level	: LOW	%Solids	: N/A
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/L			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	56	0.50	--	
75-01-4	Vinyl chloride	ND	1.0	--	U
75-35-4	1,1-Dichloroethene	ND	0.50	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.75	--	U
79-01-6	Trichloroethene	22	0.50	--	
156-59-2	cis-1,2-Dichloroethene	27	0.50	--	

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1820859-15	Date Collected	: 06/05/18 14:55
Client ID	: S01-GW01-1828-060518	Date Received	: 06/06/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/06/18 23:21
Sample Matrix	: WATER	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: NLK
Lab File ID	: V05180606N12	Instrument ID	: VOA105
Sample Amount	: 10 ml	GC Column	: RTX-502.2
Level	: LOW	%Solids	: N/A
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/L			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	5.8	0.50	--	
75-01-4	Vinyl chloride	ND	1.0	--	U
75-35-4	1,1-Dichloroethene	ND	0.50	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.75	--	U
79-01-6	Trichloroethene	ND	0.50	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.50	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: WG1123321-5	Date Collected	: NA
Client ID	: WG1123321-5BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 06/06/18 21:07
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: AD
Lab File ID	: V00180606N06	Instrument ID	: VOA100
Sample Amount	: 15.0 g	GC Column	: RTX-VMS
Level	: HIGH	%Solids	: NA
Extract Volume (MeOH)	: 15 ml	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	ND	50	--	U
75-01-4	Vinyl chloride	ND	100	--	U
75-35-4	1,1-Dichloroethene	ND	50	--	U
156-60-5	trans-1,2-Dichloroethene	ND	75	--	U
79-01-6	Trichloroethene	ND	50	--	U
156-59-2	cis-1,2-Dichloroethene	ND	50	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: WG1123324-5	Date Collected	: NA
Client ID	: WG1123324-5BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 06/06/18 21:07
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: AD
Lab File ID	: V00180606N06	Instrument ID	: VOA100
Sample Amount	: 5.0 g	GC Column	: RTX-VMS
Level	: LOW	%Solids	: NA
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	ND	1.0	--	U
75-01-4	Vinyl chloride	ND	2.0	--	U
75-35-4	1,1-Dichloroethene	ND	1.0	--	U
156-60-5	trans-1,2-Dichloroethene	ND	1.5	--	U
79-01-6	Trichloroethene	ND	1.0	--	U
156-59-2	cis-1,2-Dichloroethene	ND	1.0	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: WG1123363-5	Date Collected	: NA
Client ID	: WG1123363-5BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 06/06/18 20:50
Sample Matrix	: WATER	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: MKS
Lab File ID	: V05180606N06	Instrument ID	: VOA105
Sample Amount	: 10 ml	GC Column	: RTX-502.2
Level	: LOW	%Solids	: N/A
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/L			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	ND	0.50	--	U
75-01-4	Vinyl chloride	ND	1.0	--	U
75-35-4	1,1-Dichloroethene	ND	0.50	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.75	--	U
79-01-6	Trichloroethene	ND	0.50	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.50	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: WG1123506-5	Date Collected	: NA
Client ID	: WG1123506-5BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 06/07/18 09:38
Sample Matrix	: WATER	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: PD
Lab File ID	: V05180607A06	Instrument ID	: VOA105
Sample Amount	: 10 ml	GC Column	: RTX-502.2
Level	: LOW	%Solids	: N/A
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/L			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	ND	0.50	--	U
75-01-4	Vinyl chloride	ND	1.0	--	U
75-35-4	1,1-Dichloroethene	ND	0.50	--	U
156-60-5	trans-1,2-Dichloroethene	ND	0.75	--	U
79-01-6	Trichloroethene	ND	0.50	--	U
156-59-2	cis-1,2-Dichloroethene	ND	0.50	--	U

Form 2
Surrogate Recovery
VOLATILES

Client: CH2MHILL
Project Name: DOW HANGING ROCK

Lab Number: L1820859
Project Number:
Matrix: Water

CLIENT ID (LAB SAMPLE NO.)	SMC1 DCA	SMC2 TOL	SMC3 BFB	SMC4 DBFM	TOT OUT
060518TB (L1820859-04)	95	99	102	95	0
S01-GW08-1828-060518 (L1820859-12)	97	99	101	97	0
S01-GWFD01-060518 (L1820859-13)	97	98	101	97	0
S01-GW09-1828-060518 (L1820859-14)	93	98	103	96	0
S01-GW01-1828-060518 (L1820859-15)	98	98	100	97	0
WG1123363-3LCS	96	101	101	98	0
WG1123363-4LCSD	96	100	101	98	0
WG1123363-5BLANK	95	99	101	96	0
S01-GW01-1828-060518MS	95	99	102	97	0
S01-GW01-1828-060518MSD	92	100	102	96	0
WG1123506-3LCS	93	100	102	96	0
WG1123506-4LCSD	93	99	102	97	0
WG1123506-5BLANK	89	99	103	93	0

QC LIMITS

(70-130) DCA = 1,2-DICHLOROETHANE-D4
(70-130) TOL = TOLUENE-D8
(70-130) BFB = 4-BROMOFLUOROBENZENE
(70-130) DBFM = DIBROMOFLUOROMETHANE

*** Values outside of QC limits**

FORM II 8260

Form 2
Surrogate Recovery
VOLATILES

Client: CH2MHILL
Project Name: DOW HANGING ROCK

Lab Number: L1820859
Project Number:
Matrix: Soil

CLIENT ID (LAB SAMPLE NO.)	SMC1 DCA	SMC2 TOL	SMC3 BFB	SMC4 DBFM	TOT OUT
S01-SS28-0102-060518 (L1820859-01)	105	103	97	104	0
S01-SS28-0607-060518 (L1820859-02)	109	102	99	106	0
S01-SS28-2223-060518 (L1820859-03)	112	101	100	105	0
S01-SS17-0102-060518 (L1820859-05)	113	101	99	106	0
S01-SS17-0809-060518 (L1820859-06)	110	101	100	105	0
S01-SS17-2526-060518 (L1820859-07)	113	100	100	107	0
S01-SS27-0102-060518 (L1820859-08)	121	100	101	109	0
S01-SS27-0708-060518 (L1820859-09)	119	99	101	110	0
S01-SSFD01-060518 (L1820859-10)	115	100	101	108	0
S01-SS27-2122-060518 (L1820859-11)	116	100	101	109	0
WG1123321-3LCS	109	101	97	106	0
WG1123321-4LCSD	114	101	97	108	0
WG1123321-5BLANK	109	101	99	104	0
WG1123324-3LCS	109	101	97	106	0
WG1123324-4LCSD	114	101	97	109	0
WG1123324-5BLANK	109	101	99	104	0
S01-SS27-0102-060518MS	122	100	96	111	0
S01-SS27-0102-060518MSD	121	101	98	111	0

QC LIMITS

(70-130) DCA = 1,2-DICHLOROETHANE-D4
(70-130) TOL = TOLUENE-D8
(70-130) BFB = 4-BROMOFLUOROBENZENE
(70-130) DBFM = DIBROMOFLUOROMETHANE

*** Values outside of QC limits**

FORM II 8260

Laboratory Control Sample
Form 3

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Matrix	: SOIL		
LCS Sample ID	: WG1123321-3	**Analysis Date** : 06/06/18 19:49	**File ID** : V00180606N03
LCSD Sample ID	: WG1123321-4	**Analysis Date** : 06/06/18 20:15	**File ID** : V00180606N04

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ug/kg)	Found (ug/kg)	%R	True (ug/kg)	Found (ug/kg)	%R	RPD	Recovery Limits	RPD Limit
Tetrachloroethene	1000	1100	108	1000	1100	110	2	70-130	30
Vinyl chloride	1000	980	98	1000	970	97	1	67-130	30
1,1-Dichloroethene	1000	1000	100	1000	1000	100	0	65-135	30
trans-1,2-Dichloroethene	1000	1000	102	1000	1000	103	1	70-130	30
Trichloroethene	1000	1000	104	1000	1100	106	2	70-130	30
cis-1,2-Dichloroethene	1000	1000	104	1000	1100	107	3	70-130	30

Laboratory Control Sample
Form 3

Client : CH2MHILL **Lab Number** : L1820859
Project Name : DOW HANGING ROCK **Project Number** :
Matrix : SOIL
LCS Sample ID : WG1123324-3 **Analysis Date** : 06/06/18 19:49 **File ID** : V00180606N03
LCSD Sample ID : WG1123324-4 **Analysis Date** : 06/06/18 20:15 **File ID** : V00180606N04

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ug/kg)	Found (ug/kg)	%R	True (ug/kg)	Found (ug/kg)	%R	RPD	Recovery Limits	RPD Limit
Tetrachloroethene	20	22.	108	20	22.	110	2	70-130	30
Vinyl chloride	20	20.	98	20	19.	97	1	67-130	30
1,1-Dichloroethene	20	20.	100	20	20.	100	0	65-135	30
trans-1,2-Dichloroethene	20	21.	102	20	21.	103	1	70-130	30
Trichloroethene	20	21.	104	20	21.	106	2	70-130	30
cis-1,2-Dichloroethene	20	21.	104	20	21.	107	3	70-130	30

Laboratory Control Sample
Form 3

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Matrix	: WATER		
LCS Sample ID	: WG1123363-3	**Analysis Date** : 06/06/18 19:35	**File ID** : V05180606N03
LCSD Sample ID	: WG1123363-4	**Analysis Date** : 06/06/18 20:00	**File ID** : V05180606N04

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ug/l)	Found (ug/l)	%R	True (ug/l)	Found (ug/l)	%R	RPD	Recovery Limits	RPD Limit
Tetrachloroethene	10	9.9	99	10	10.	100	1	70-130	20
Vinyl chloride	10	9.8	98	10	10.	100	2	55-140	20
1,1-Dichloroethene	10	9.9	99	10	10.	100	1	61-145	25
trans-1,2-Dichloroethene	10	10.	100	10	10.	100	0	70-130	20
Trichloroethene	10	9.4	94	10	10.	100	6	70-130	25
cis-1,2-Dichloroethene	10	9.9	99	10	10.	100	1	70-130	20

Laboratory Control Sample
Form 3

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Matrix	: WATER		
LCS Sample ID	: WG1123506-3	**Analysis Date** : 06/07/18 08:23	**File ID** : V05180607A03
LCSD Sample ID	: WG1123506-4	**Analysis Date** : 06/07/18 08:47	**File ID** : V05180607A04

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ug/l)	Found (ug/l)	%R	True (ug/l)	Found (ug/l)	%R	RPD	Recovery Limits	RPD Limit
Tetrachloroethene	10	9.6	96	10	9.2	92	4	70-130	20
Vinyl chloride	10	9.8	98	10	9.2	92	6	55-140	20
1,1-Dichloroethene	10	9.5	95	10	9.1	91	4	61-145	25
trans-1,2-Dichloroethene	10	10.	100	10	9.8	98	2	70-130	20
Trichloroethene	10	9.6	96	10	9.1	91	5	70-130	25
cis-1,2-Dichloroethene	10	10.	100	10	9.8	98	2	70-130	20

Matrix Spike
Form 3

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Client Sample ID	: S01-SS27-0102-060518	Matrix	: SOIL
Lab Sample ID	: L1820859-08	Analysis Date	: 06/07/18 00:08
Matrix Spike	: WG1123324-6	MS Analysis Date	: 06/07/18 05:18
Matrix Spike Dup	: WG1123324-7	MSD Analysis Date	: 06/07/18 05:44

		Matrix Spike Sample				Matrix Spike Duplicate					
Parameter	Sample Conc. (ug/kg)	Spike Added (ug/kg)	Spike Conc. (ug/kg)	%R		Spike Added (ug/kg)	Spike Conc. (ug/kg)	%R	RPD	Recovery Limits	RPD Limit
Tetrachloroethene	1.8	94.8	62.	64	Q	96.3	71.	72	14	70-130	30
Vinyl chloride	ND	94.8	88.	92		96.3	88.	91	0	67-130	30
1,1-Dichloroethene	ND	94.8	86.	91		96.3	87.	90	1	65-135	30
trans-1,2-Dichloroethene	ND	94.8	78.	82		96.3	79.	82	2	70-130	30
Trichloroethene	3.0	94.8	79.	80		96.3	85.	85	7	70-130	30
cis-1,2-Dichloroethene	ND	94.8	79.	84		96.3	83.	86	4	70-130	30

Matrix Spike
Form 3

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Client Sample ID	: S01-GW01-1828-060518	Matrix	: WATER
Lab Sample ID	: L1820859-15	Analysis Date	: 06/06/18 23:21
Matrix Spike	: WG1123363-6	MS Analysis Date	: 06/07/18 04:21
Matrix Spike Dup	: WG1123363-7	MSD Analysis Date	: 06/07/18 04:46

		Matrix Spike Sample				Matrix Spike Duplicate						
Parameter	Sample Conc. (ug/l)	Spike Added (ug/l)	Spike Conc. (ug/l)	%R		Spike Added (ug/l)	Spike Conc. (ug/l)	%R		RPD	Recovery Limits	RPD Limit
Tetrachloroethene	5.8	10	24.	182	Q	10	24.	182	Q	0	70-130	20
Vinyl chloride	ND	10	11.	110		10	11.	110		0	55-140	20
1,1-Dichloroethene	ND	10	10.	100		10	10.	100		0	61-145	25
trans-1,2-Dichloroethene	ND	10	10.	100		10	10.	100		0	70-130	20
Trichloroethene	ND	10	10.	100		10	9.9	99		1	70-130	25
cis-1,2-Dichloroethene	ND	10	10.	100		10	10.	100		0	70-130	20

Method Blank Summary
Form 4
VOLATILES

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab Sample ID	: WG1123363-5	**Lab File ID**	: V05180606N06
Instrument ID	: VOA105		
Matrix	: WATER	**Analysis Date**	: 06/06/18 20:50

Client Sample No.	Lab Sample ID	Analysis Date
WG1123363-3LCS	WG1123363-3	06/06/18 19:35
WG1123363-4LCSD	WG1123363-4	06/06/18 20:00
060518TB	L1820859-04	06/06/18 21:40
S01-GW08-1828-060518	L1820859-12	06/06/18 22:05
S01-GWFD01-060518	L1820859-13	06/06/18 22:31
S01-GW01-1828-060518	L1820859-15	06/06/18 23:21
S01-GW01-1828-060518MS	WG1123363-6	06/07/18 04:21
S01-GW01-1828-060518MSD	WG1123363-7	06/07/18 04:46

Method Blank Summary
Form 4
VOLATILES

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab Sample ID	: WG1123321-5	**Lab File ID**	: V00180606N06
Instrument ID	: VOA100		
Matrix	: SOIL	**Analysis Date**	: 06/06/18 21:07

Client Sample No.	Lab Sample ID	Analysis Date
WG1123321-3LCS	WG1123321-3	06/06/18 19:49
WG1123321-4LCSD	WG1123321-4	06/06/18 20:15
S01-SS28-0102-060518	L1820859-01	06/06/18 21:33
S01-SS28-0607-060518	L1820859-02	06/06/18 21:59

Method Blank Summary
Form 4
VOLATILES

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab Sample ID	: WG1123324-5	**Lab File ID**	: V00180606N06
Instrument ID	: VOA100		
Matrix	: SOIL	**Analysis Date**	: 06/06/18 21:07

Client Sample No.	Lab Sample ID	Analysis Date
WG1123324-3LCS	WG1123324-3	06/06/18 19:49
WG1123324-4LCSD	WG1123324-4	06/06/18 20:15
S01-SS28-2223-060518	L1820859-03	06/06/18 22:25
S01-SS17-0102-060518	L1820859-05	06/06/18 22:50
S01-SS17-0809-060518	L1820859-06	06/06/18 23:16
S01-SS17-2526-060518	L1820859-07	06/06/18 23:42
S01-SS27-0102-060518	L1820859-08	06/07/18 00:08
S01-SS27-0708-060518	L1820859-09	06/07/18 00:34
S01-SSFD01-060518	L1820859-10	06/07/18 01:00
S01-SS27-2122-060518	L1820859-11	06/07/18 01:26
S01-SS27-0102-060518MS	WG1123324-6	06/07/18 05:18
S01-SS27-0102-060518MSD	WG1123324-7	06/07/18 05:44

Method Blank Summary
Form 4
VOLATILES

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab Sample ID	: WG1123506-5	**Lab File ID**	: V05180607A06
Instrument ID	: VOA105		
Matrix	: WATER	**Analysis Date**	: 06/07/18 09:38

Client Sample No.	Lab Sample ID	Analysis Date
WG1123506-3LCS	WG1123506-3	06/07/18 08:23
WG1123506-4LCSD	WG1123506-4	06/07/18 08:47
S01-GW09-1828-060518	L1820859-14	06/07/18 10:03

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA100	**Analysis Date**	: 05/06/18 06:25
Tune Standard	: BFB	**Tune File ID**	: V00180506BF1_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	15.0 - 40.0% of mass 95	21
75	30.0 - 60.0% of mass 95	49.1
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.9 (1.2)1
174	Greater than 50.0 of mass 95	74.6
175	5.0 - 9.0% of mass 174	5.1 (6.8)1
176	95.0 - 101% of mass 174	71.6 (96)1
177	5.0 - 9.0% of mass 176	4.9 (6.8)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
STDL0	R1069922-1	V00180506A03	05/06/18 07:39
STDL1	R1069922-2	V00180506A04	05/06/18 08:05
STDL1.5	R1069922-3	V00180506A05	05/06/18 08:31
STDL2	R1069922-4	V00180506A06	05/06/18 08:57
STDL3	R1069922-5	V00180506A07	05/06/18 09:23
STDL4	R1069922-6	V00180506A08	05/06/18 09:48
STDL6	R1069922-7	V00180506A09	05/06/18 10:14
STDL7	R1069922-8	V00180506A10	05/06/18 10:40
STDL8	R1069922-9	V00180506A11	05/06/18 11:06
ICV Quant Report	R1069922-10	V00180506A15	05/06/18 12:50
ICV Summary Form	R1069922-10	V00180506A15	05/06/18 12:50

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA100	**Analysis Date**	: 06/06/18 18:22
Tune Standard	: WG1123321-1	**Tune File ID**	: V00180606BF1_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	15.0 - 40.0% of mass 95	20.2
75	30.0 - 60.0% of mass 95	53.9
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.4 (.5)1
174	Greater than 50.0 of mass 95	75.8
175	5.0 - 9.0% of mass 174	5.7 (7.5)1
176	95.0 - 101% of mass 174	72.4 (95.4)1
177	5.0 - 9.0% of mass 176	4.6 (6.4)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
WG1123321-2CCAL	WG1123321-2	V00180606N01	06/06/18 18:42
WG1123321-3LCS	WG1123321-3	V00180606N03	06/06/18 19:49
WG1123321-4LCSD	WG1123321-4	V00180606N04	06/06/18 20:15
WG1123321-5BLANK	WG1123321-5	V00180606N06	06/06/18 21:07
S01-SS28-0102-060518	L1820859-01	V00180606N07	06/06/18 21:33
S01-SS28-0607-060518	L1820859-02	V00180606N08	06/06/18 21:59

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA100	**Analysis Date**	: 06/06/18 18:22
Tune Standard	: WG1123324-1	**Tune File ID**	: V00180606BF1_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	15.0 - 40.0% of mass 95	20.2
75	30.0 - 60.0% of mass 95	53.9
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.4 (.5)1
174	Greater than 50.0 of mass 95	75.8
175	5.0 - 9.0% of mass 174	5.7 (7.5)1
176	95.0 - 101% of mass 174	72.4 (95.4)1
177	5.0 - 9.0% of mass 176	4.6 (6.4)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
WG1123324-2CCAL	WG1123324-2	V00180606N01	06/06/18 18:42
WG1123324-3LCS	WG1123324-3	V00180606N03	06/06/18 19:49
WG1123324-4LCSD	WG1123324-4	V00180606N04	06/06/18 20:15
WG1123324-5BLANK	WG1123324-5	V00180606N06	06/06/18 21:07
S01-SS28-2223-060518	L1820859-03	V00180606N09	06/06/18 22:25
S01-SS17-0102-060518	L1820859-05	V00180606N10	06/06/18 22:50
S01-SS17-0809-060518	L1820859-06	V00180606N11	06/06/18 23:16
S01-SS17-2526-060518	L1820859-07	V00180606N12	06/06/18 23:42
S01-SS27-0102-060518	L1820859-08	V00180606N13	06/07/18 00:08
S01-SS27-0708-060518	L1820859-09	V00180606N14	06/07/18 00:34
S01-SSFD01-060518	L1820859-10	V00180606N15	06/07/18 01:00
S01-SS27-2122-060518	L1820859-11	V00180606N16	06/07/18 01:26
WG1123324-6MS	WG1123324-6	V00180606N25	06/07/18 05:18
WG1123324-7MSD	WG1123324-7	V00180606N26	06/07/18 05:44

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA105	**Analysis Date**	: 05/30/18 21:01
Tune Standard	: WG1121113-1	**Tune File ID**	: V05180530NBF1_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	15.0 - 40.0% of mass 95	21.5
75	30.0 - 60.0% of mass 95	53.8
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.3 (.3)1
174	Greater than 50.0 of mass 95	79.6
175	5.0 - 9.0% of mass 174	5.9 (7.4)1
176	95.0 - 101% of mass 174	78.7 (98.9)1
177	5.0 - 9.0% of mass 176	5.1 (6.5)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
STDL11	R1077309-2	V05180530N03	05/30/18 22:10
STDL1	R1077309-3	V05180530N04	05/30/18 22:35
STDL2	R1077309-4	V05180530N06	05/30/18 23:25
STDL3	R1077309-5	V05180530N08	05/31/18 00:15
STDL4	R1077309-6	V05180530N09	05/31/18 00:40
STDL6	R1077309-7	V05180530N10	05/31/18 01:06
STDL8	R1077309-8	V05180530N11	05/31/18 01:31
STDL10	R1077309-9	V05180530N12	05/31/18 01:56
ICV Quant Report	R1077309-1	V05180530N19	05/31/18 04:51

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA105	**Analysis Date**	: 06/06/18 18:14
Tune Standard	: WG1123363-1	**Tune File ID**	: V05180606NBF1_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	15.0 - 40.0% of mass 95	21
75	30.0 - 60.0% of mass 95	53.3
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.2 (.3)1
174	Greater than 50.0 of mass 95	79
175	5.0 - 9.0% of mass 174	6 (7.6)1
176	95.0 - 101% of mass 174	78.1 (98.9)1
177	5.0 - 9.0% of mass 176	5.2 (6.6)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
WG1123363-2CCAL	WG1123363-2	V05180606N01	06/06/18 18:34
WG1123363-3LCS	WG1123363-3	V05180606N03	06/06/18 19:35
WG1123363-4LCSD	WG1123363-4	V05180606N04	06/06/18 20:00
WG1123363-5BLANK	WG1123363-5	V05180606N06	06/06/18 20:50
060518TB	L1820859-04	V05180606N08	06/06/18 21:40
S01-GW08-1828-060518	L1820859-12	V05180606N09	06/06/18 22:05
S01-GWFD01-060518	L1820859-13	V05180606N10	06/06/18 22:31
S01-GW01-1828-060518	L1820859-15	V05180606N12	06/06/18 23:21
WG1123363-6MS	WG1123363-6	V05180606N24	06/07/18 04:21
WG1123363-7MSD	WG1123363-7	V05180606N25	06/07/18 04:46

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA105	**Analysis Date**	: 06/07/18 07:08
Tune Standard	: WG1123506-1	**Tune File ID**	: V05180607ABF1_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	15.0 - 40.0% of mass 95	20.7
75	30.0 - 60.0% of mass 95	52.5
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	7
173	Less than 2.0% of mass 174	0.6 (.7)1
174	Greater than 50.0 of mass 95	78.8
175	5.0 - 9.0% of mass 174	5.8 (7.4)1
176	95.0 - 101% of mass 174	78.5 (99.6)1
177	5.0 - 9.0% of mass 176	5.1 (6.5)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
WG1123506-2CCAL	WG1123506-2	V05180607A01	06/07/18 07:22
WG1123506-3LCS	WG1123506-3	V05180607A03	06/07/18 08:23
WG1123506-4LCSD	WG1123506-4	V05180607A04	06/07/18 08:47
WG1123506-5BLANK	WG1123506-5	V05180607A06	06/07/18 09:38
S01-GW09-1828-060518	L1820859-14	V05180607A07	06/07/18 10:03

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1820859**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**:**
Instrument ID	**: VOA100**	**Ical Ref**	**: ICAL14692**
Calibration dates	**: 05/06/18 07:39 05/06/18 11:06**		

Calibration Files

L1 =V00180506A04.D L2 =V00180506A06.D L3 =V00180506A07.D L4 =V00180506A08.D L6 =V00180506A09.D

L7 =V00180506A10.D L8 =V00180506A11.D L0 =V00180506A03.D L1.5=V00180506A05.D

		Compound	L1	L2	L3	L4	L6	L7	L8	L0	L1.5	Avg	%RSD
1)	I	Fluorobenzene	----------ISTD----------										
2)	T	Dichlorodifluoromethane	0.195	0.186	0.185	0.189	0.188	0.191	0.201	0.165	0.210	0.190	6.48
3)	T	Chloromethane	0.296	0.314	0.276	0.263	0.260	0.260	0.273	0.314	0.325	0.287	9.10
4)	C	Vinyl chloride	0.215	0.220	0.204	0.205	0.207	0.212	0.237	0.209	0.234	0.216	5.63
5)	T	Bromomethane		0.132	0.115	0.110	0.113	0.113	0.124		0.143	0.122	10.02
6)	T	Chloroethane	0.125	0.134	0.125	0.124	0.119	0.114	0.111	0.116	0.154	0.125	10.47
7)	T	Trichlorofluoromethane	0.265	0.251	0.257	0.261	0.264	0.264	0.277	0.261	0.291	0.266	4.35
8)	T	Ethyl ether	0.091	0.111	0.102	0.103	0.102	0.101	0.106	0.073	0.104	0.099	11.11
10)	C	1,1-Dichloroethene	0.168	0.177	0.168	0.166	0.167	0.165	0.173	0.163	0.192	0.171	5.19
11)	T	Carbon disulfide	0.685	0.611	0.535	0.535	0.539	0.532	0.559		0.683	0.585	11.35
12)	T	Freon-113	0.139	0.157	0.165	0.166	0.168	0.167	0.174	0.128	0.173	0.160	9.90
14)	T	Acrolein		0.031	0.034	0.033	0.033	0.033	0.035		0.035	0.033	4.05
15)	T	Methylene chloride		0.237	0.202	0.195	0.192	0.191	0.199		0.270	0.212	14.04
17)	T	Acetone	0.189	0.078	0.050	0.049	0.046	0.044	0.047	0.407	0.118	*L	0.9977
18)	T	trans-1,2-Dichloroethene	0.184	0.211	0.192	0.192	0.193	0.192	0.199	0.162	0.206	0.192	7.23
19)	T	Methyl acetate	0.162	0.124	0.110	0.112	0.116	0.119	0.126		0.138	0.126	13.60
20)	T	Methyl tert-butyl ether	0.514	0.544	0.515	0.522	0.515	0.512	0.536	0.466	0.551	0.520	4.79
21)	T	tert-Butyl alcohol	0.014	0.017	0.018	0.019	0.019	0.018	0.021	0.023	0.017	0.018	14.42
22)	T	Diisopropyl ether	0.784	0.847	0.815	0.814	0.810	0.799	0.820	0.759	0.849	0.811	3.48
23)	T	1,1-Dichloroethane	0.384	0.425	0.391	0.391	0.388	0.384	0.398	0.347	0.423	0.392	5.85
24)	T	Halothane	0.110	0.141	0.142	0.141	0.144	0.143	0.149	0.099	0.149	0.135	13.35
25)	T	Acrylonitrile		0.043	0.058	0.060	0.060	0.061	0.065			0.058	13.39
26)	T	Ethyl tert-butyl ether	0.656	0.724	0.700	0.703	0.696	0.691	0.716	0.614	0.707	0.690	4.97
27)	T	Vinyl acetate		0.442	0.442	0.467	0.458	0.437	0.470		0.449	0.452	2.87
28)	T	cis-1,2-Dichloroethene	0.197	0.226	0.212	0.211	0.210	0.207	0.216	0.158	0.210	0.205	9.36
29)	T	2,2-Dichloropropane	0.318	0.323	0.307	0.306	0.303	0.300	0.314	0.323	0.340	0.315	3.96
31)	T	Bromochloromethane	0.065	0.085	0.085	0.085	0.084	0.081	0.084		0.088	0.082	8.56
32)	T	Cyclohexane	0.485	0.424	0.403	0.408	0.407	0.401	0.416		0.514	0.432	9.90
33)	C	Chloroform	0.371	0.374	0.372	0.370	0.366	0.364	0.378	0.320	0.392	0.367	5.28
34)	T	Ethyl acetate		0.193	0.183	0.182	0.182	0.180	0.191			0.185	2.94
35)	T	Carbon tetrachloride	0.227	0.262	0.259	0.262	0.269	0.268	0.281	0.234	0.268	0.259	6.70
36)	T	Tetrahydrofuran		0.060	0.057	0.057	0.052	0.052	0.054		0.067	0.057	9.62
37)	S	Dibromofluoromethane	0.226	0.229	0.228	0.230	0.230	0.235	0.233	0.224	0.226	0.229	1.52
38)	T	1,1,1-Trichloroethane	0.290	0.323	0.308	0.307	0.308	0.304	0.320	0.281	0.312	0.306	4.35
40)	T	2-Butanone		0.112	0.070	0.078	0.073	0.075	0.082			*L	0.9961
41)	T	1,1-Dichloropropene	0.248	0.265	0.259	0.260	0.263	0.258	0.269	0.234	0.271	0.259	4.38
42)	T	Benzene	0.798	0.843	0.808	0.796	0.794	0.785	0.813	0.724	0.872	0.804	5.05
43)	T	tert-Amyl methyl ether	0.528	0.563	0.554	0.548	0.549	0.544	0.570	0.498	0.551	0.545	3.90

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1820859**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**:**
Instrument ID	**: VOA100**	**Ical Ref**	**: ICAL14692**
Calibration dates	**: 05/06/18 07:39 05/06/18 11:06**		

Calibration Files

L1 =V00180506A04.D L2 =V00180506A06.D L3 =V00180506A07.D L4 =V00180506A08.D L6 =V00180506A09.D

L7 =V00180506A10.D L8 =V00180506A11.D L0 =V00180506A03.D L1.5=V00180506A05.D

		Compound	L1	L2	L3	L4	L6	L7	L8	L0	L1.5	Avg	%RSD
44)	S	1,2-Dichloroethane-d4	0.240	0.244	0.240	0.242	0.246	0.248	0.253	0.242	0.243	0.244	1.70
45)	T	1,2-Dichloroethane	0.245	0.274	0.256	0.254	0.250	0.251	0.261	0.257	0.266	0.257	3.42
48)	T	Methyl cyclohexane	0.403	0.364	0.334	0.341	0.337	0.332	0.346		0.420	0.360	9.38
49)	T	Trichloroethene	0.188	0.213	0.202	0.200	0.203	0.201	0.207	0.179	0.217	0.201	5.80
51)	T	Dibromomethane	0.093	0.101	0.105	0.105	0.105	0.106	0.111		0.102	0.103	5.13
52)	C	1,2-Dichloropropane	0.221	0.233	0.224	0.221	0.219	0.218	0.226	0.215	0.240	0.224	3.46
54)	T	2-Chloroethyl vinyl ether		0.082	0.092	0.098	0.101	0.104	0.112			0.098	10.47
55)	T	Bromodichloromethane	0.238	0.274	0.273	0.272	0.273	0.275	0.287	0.192	0.278	0.262	11.33
58)	T	1,4-Dioxane	0.000	0.001	0.002	0.002	0.002	0.002	0.002		0.001	*L	0.9981
59)	T	cis-1,3-Dichloropropene	0.270	0.310	0.321	0.320	0.322	0.321	0.335	0.235	0.318	0.306	10.45
60)	I	Chlorobenzene-d5	----------ISTD----------										
61)	S	Toluene-d8	1.343	1.343	1.316	1.332	1.318	1.308	1.315	1.329	1.338	1.327	0.98
62)	C	Toluene	1.312	0.965	0.768	0.740	0.721	0.703	0.736	1.996	1.175	*L	0.9994
63)	T	4-Methyl-2-pentanone		0.101	0.103	0.107	0.104	0.102	0.111		0.086	0.102	7.52
64)	T	Tetrachloroethene	0.268	0.279	0.274	0.280	0.276	0.273	0.287	0.247	0.302	0.276	5.30
66)	T	trans-1,3-Dichloropropene	0.310	0.377	0.402	0.402	0.399	0.399	0.423		0.383	0.387	8.82
68)	T	Ethyl methacrylate	0.226	0.312	0.332	0.334	0.333	0.332	0.355		0.289	0.314	12.84
69)	T	1,1,2-Trichloroethane	0.198	0.201	0.194	0.193	0.185	0.183	0.194	0.240	0.203	0.199	8.39
70)	T	Chlorodibromomethane	0.242	0.258	0.263	0.264	0.262	0.264	0.279	0.160	0.256	0.250	13.99
71)	T	1,3-Dichloropropane	0.351	0.390	0.393	0.390	0.381	0.376	0.400	0.314	0.371	0.374	7.18
72)	T	1,2-Dibromoethane	0.165	0.204	0.214	0.216	0.210	0.210	0.224		0.188	0.204	9.14
73)	T	2-Hexanone		0.172	0.172	0.182	0.182	0.180	0.194		0.134	0.174	10.90
74)	T	Chlorobenzene	0.737	0.793	0.761	0.746	0.734	0.726	0.762	0.679	0.778	0.746	4.47
75)	C	Ethylbenzene	1.398	1.480	1.384	1.358	1.342	1.319	1.387	1.457	1.490	1.402	4.36
76)	T	1,1,1,2-Tetrachloroethane	0.236	0.271	0.281	0.280	0.277	0.275	0.291	0.222	0.281	0.268	8.64
77)	T	p/m Xylene	0.514	0.555	0.526	0.519	0.509	0.497	0.515	0.520	0.573	0.525	4.54
78)	T	o Xylene	0.487	0.544	0.522	0.515	0.501	0.491	0.508	0.451	0.556	0.508	6.17
79)	T	Styrene	0.837	0.899	0.885	0.870	0.854	0.840	0.873	0.807	0.914	0.864	3.86
80)	I	1,4-Dichlorobenzene-d4	----------ISTD----------										
81)	T	Bromoform	0.292	0.319	0.329	0.338	0.338	0.337	0.372	0.254	0.297	0.320	10.70
83)	T	Isopropylbenzene	2.777	2.817	2.706	2.706	2.682	2.607	2.771	2.645	2.969	2.742	3.93
84)	S	4-Bromofluorobenzene	1.067	1.082	1.047	1.048	1.060	1.025	1.083	1.081	1.069	1.062	1.85
85)	T	Bromobenzene	0.594	0.650	0.628	0.619	0.607	0.593	0.631	0.556	0.625	0.611	4.56
86)	T	n-Propylbenzene	3.446	3.545	3.267	3.264	3.222	3.122	3.316	3.517	3.673	3.375	5.32
87)	T	1,4-Dichlorobutane	1.001	1.104	1.021	1.029	0.997	0.978	1.043	1.139	1.072	1.043	5.08
88)	T	1,1,2,2-Tetrachloroethane	0.521	0.597	0.573	0.574	0.560	0.548	0.599	0.465	0.574	0.557	7.53
89)	T	4-Ethyltoluene	2.867	2.987	2.774	2.761	2.728	2.634	2.801	2.959	3.024	2.837	4.62
90)	T	2-Chlorotoluene	2.336	2.128	1.983	2.003	1.981	1.909	2.017	2.325	2.413	2.122	8.84

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1820859**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**:**
Instrument ID	**: VOA100**	**Ical Ref**	**: ICAL14692**
Calibration dates	**: 05/06/18 07:39 05/06/18 11:06**		

Calibration Files

L1 =V00180506A04.D L2 =V00180506A06.D L3 =V00180506A07.D L4 =V00180506A08.D L6 =V00180506A09.D

L7 =V00180506A10.D L8 =V00180506A11.D L0 =V00180506A03.D L1.5=V00180506A05.D

		Compound	L1	L2	L3	L4	L6	L7	L8	L0	L1.5	Avg	%RSD
91)	T	1,3,5-Trimethylbenzene	2.447	2.537	2.340	2.324	2.281	2.218	2.332	2.483	2.619	2.398	5.46
92)	T	1,2,3-Trichloropropane	0.403	0.475	0.448	0.437	0.434	0.423	0.452	0.434	0.492	0.444	6.01
93)	T	trans-1,4-Dichloro-2-b...		0.177	0.188	0.194	0.193	0.191	0.209		0.160	0.188	8.17
94)	T	4-Chlorotoluene	2.073	2.131	2.030	2.016	1.998	1.953	2.054	2.115	2.181	2.061	3.48
95)	T	tert-Butylbenzene	1.986	2.034	1.884	1.881	1.846	1.805	1.910	1.872	2.029	1.916	4.25
98)	T	1,2,4-Trimethylbenzene	2.355	2.490	2.342	2.307	2.286	2.230	2.338	2.476	2.546	2.374	4.45
99)	T	sec-Butylbenzene	2.929	3.132	2.903	2.900	2.838	2.788	2.906	3.059	3.200	2.962	4.66
100)	T	p-Isopropyltoluene	2.438	2.555	2.441	2.425	2.375	2.333	2.419	2.576	2.624	2.465	3.96
101)	T	1,3-Dichlorobenzene	1.137	1.295	1.214	1.202	1.192	1.168	1.218	1.196	1.247	1.208	3.74
102)	T	1,4-Dichlorobenzene	1.254	1.296	1.241	1.196	1.187	1.167	1.210	1.265	1.345	1.240	4.59
103)	T	p-Diethylbenzene	1.528	1.611	1.482	1.466	1.454	1.428	1.473	1.538	1.669	1.516	5.23
104)	T	n-Butylbenzene	2.481	2.520	2.346	2.324	2.298	2.257	2.336	2.525	2.576	2.407	4.89
105)	T	1,2-Dichlorobenzene	1.044	1.144	1.124	1.102	1.086	1.077	1.122	1.097	1.130	1.103	2.83
106)	T	1,2,4,5-Tetramethylben...	2.366	2.536	2.354	2.324	2.313	2.280	2.403	2.385	2.487	2.383	3.47
107)	T	1,2-Dibromo-3-chloropr...		0.070	0.076	0.081	0.080	0.082	0.090		0.065	0.078	10.54
108)	T	1,3,5-Trichlorobenzene	0.887	0.930	0.859	0.851	0.860	0.830	0.872	0.812	0.909	0.868	4.27
109)	T	Hexachlorobutadiene	0.401	0.441	0.407	0.410	0.400	0.398	0.416	0.305	0.471	0.405	11.03
110)	T	1,2,4-Trichlorobenzene	0.675	0.765	0.751	0.748	0.750	0.729	0.757	0.684	0.778	0.737	4.79
111)	T	Naphthalene	1.618	1.635	1.634	1.636	1.635	1.623	1.727	1.568	1.652	1.636	2.53
112)	T	1,2,3-Trichlorobenzene	0.659	0.682	0.668	0.660	0.666	0.651	0.682	0.641	0.689	0.666	2.36

Initial Calibration Summary
Form 6

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Instrument ID	: VOA105	Ical Ref	: ICAL14750
Calibration dates	: 05/30/18 22:10 05/31/18 01:56		

Calibration Files
L11 =V05180530N03.d L1 =V05180530N04.d L2 =V05180530N06.d L3 =V05180530N08.d L4 =V05180530N09.d
L6 =V05180530N10.d L8 =V05180530N11.d L10 =V05180530N12.d

		Compound	L11	L1	L2	L3	L4	L6	L8	L10	Avg	%RSD
1)	I	Fluorobenzene	----------ISTD----------									
2)	TP	Dichlorodifluo		0.128	0.155	0.162	0.160	0.146	0.131	0.134	0.145	9.92
3)	TP	Chloromethane		0.147	0.176	0.159	0.153	0.143	0.141	0.145	0.152	8.02
4)	TC	Vinyl chloride	0.144	0.147	0.176	0.173	0.172	0.162	0.151	0.152	0.159	7.89
5)	TP	Bromomethane		0.059	0.070	0.068	0.062	0.073	0.073	0.077	0.069#	9.26
6)	TP	Chloroethane		0.085	0.091	0.085	0.083	0.078	0.073	0.071	0.081#	8.87
7)	TP	Trichlorofluor		0.225	0.273	0.270	0.272	0.249	0.224	0.225	0.248	9.44
8)	TP	Ethyl ether		0.062	0.060	0.060	0.060	0.059	0.057	0.056	0.059	3.40
10)	TC	1,1-Dichloroet		0.144	0.164	0.160	0.163	0.155	0.146	0.149	0.155	5.37
11)	TP	Carbon disulfide		0.307	0.331	0.364	0.387	0.381	0.374	0.385	0.361	8.47
12)	TP	Freon-113		0.152	0.182	0.189	0.188	0.173	0.156	0.159	0.171	9.15
13)	TP	Iodomethane		0.038	0.040	0.090	0.147	0.177	0.168	0.172	*L	0.9935
14)	TP	Acrolein			0.016	0.018	0.020	0.020	0.020	0.020	0.019#	8.05
15)	TP	Methylene chlo		0.193	0.194	0.184	0.180	0.173	0.166	0.165	0.180	6.56
17)	TP	Acetone		0.100	0.048	0.032	0.032	0.030	0.030	0.030	*L	0.9999
18)	TP	trans-1,2-Dich		0.169	0.186	0.187	0.187	0.182	0.175	0.176	0.180	3.79
19)	TP	Methyl acetate		0.092	0.084	0.078	0.082	0.082	0.081	0.079	0.083#	5.86
20)	TP	Methyl tert butyl ether		0.300	0.317	0.348	0.377	0.380	0.379	0.379	0.354	9.47
21)	TP	tert-Butyl alc		0.004	0.005	0.006	0.006	0.007	0.007	0.007	0.006#	19.71
22)	TP	Diisopropyl ether		0.484	0.571	0.612	0.632	0.630	0.614	0.606	0.593	8.79
23)	TP	1,1-Dichloroet		0.332	0.377	0.362	0.360	0.349	0.335	0.333	0.350	5.04
24)	TP	Halothane		0.122	0.144	0.148	0.150	0.147	0.141	0.145	0.142	6.71
25)	TP	Acrylonitrile		0.037	0.032	0.036	0.037	0.037	0.037	0.037	0.036#	5.06
26)	TP	Ethyl tert-but		0.352	0.402	0.456	0.490	0.497	0.488	0.484	0.453	12.17
27)	TP	Vinyl acetate		0.267	0.311	0.360	0.389	0.391	0.389	0.383	0.355	13.65
28)	TP	cis-1,2-Dichlo		0.182	0.207	0.203	0.208	0.204	0.197	0.198	0.200	4.48
29)	TP	2,2-Dichloropr		0.194	0.248	0.264	0.276	0.281	0.266	0.273	0.257	11.62
30)	TP	Bromochloromet		0.080	0.096	0.097	0.096	0.095	0.093	0.090	0.092	6.65
31)	TP	Cyclohexane		0.202	0.261	0.297	0.306	0.286	0.260	0.265	0.268	12.87
32)	TC	Chloroform		0.330	0.375	0.367	0.363	0.352	0.333	0.335	0.351	5.17
33)	TP	Ethyl acetate		0.102	0.106	0.108	0.117	0.117	0.118	0.117	0.112	5.93
34)	TP	Carbon tetrachloride	0.195	0.218	0.263	0.289	0.306	0.300	0.284	0.290	0.268	15.04
35)	TP	Tetrahydrofuran		0.039	0.034	0.031	0.033	0.032	0.031	0.031	0.033#	8.35
36)	S	Dibromofluoromethane	0.268	0.267	0.273	0.270	0.272	0.271	0.265	0.262	0.269	1.41
37)	TP	1,1,1-Trichlor		0.273	0.335	0.337	0.344	0.332	0.315	0.317	0.322	7.51
39)	TP	2-Butanone		0.044	0.049	0.045	0.047	0.047	0.047	0.046	0.046#	3.15
40)	TP	1,1-Dichloropr		0.212	0.262	0.280	0.282	0.270	0.256	0.257	0.260	9.06
41)	TP	Benzene	0.672	0.673	0.789	0.779	0.774	0.756	0.726	0.728	0.737	6.23

Initial Calibration Summary
Form 6

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Instrument ID	: VOA105	Ical Ref	: ICAL14750
Calibration dates	: 05/30/18 22:10 05/31/18 01:56		

Calibration Files
L11 =V05180530N03.d L1 =V05180530N04.d L2 =V05180530N06.d L3 =V05180530N08.d L4 =V05180530N09.d
L6 =V05180530N10.d L8 =V05180530N11.d L10 =V05180530N12.d

		Compound	L11	L1	L2	L3	L4	L6	L8	L10	Avg	%RSD
42)	TP	Tertiary-Amyl Methyl Ether		0.270	0.307	0.354	0.393	0.408	0.408	0.413	0.365	15.57
43)	S	1,2-Dichloroethane-d4	0.324	0.321	0.325	0.327	0.313	0.314	0.316	0.309	0.319	2.02
44)	TP	1,2-Dichloroet		0.290	0.281	0.274	0.273	0.260	0.251	0.245	0.268	6.10
47)	TP	Methyl cyclohe		0.172	0.215	0.239	0.246	0.234	0.216	0.222	0.221	11.09
48)	TP	Trichloroethene	0.218	0.207	0.221	0.210	0.209	0.202	0.193	0.192	0.207	5.05
50)	TP	Dibromomethane		0.090	0.104	0.101	0.106	0.104	0.102	0.102	0.101	5.12
51)	TC	1,2-Dichloropr		0.165	0.188	0.189	0.194	0.192	0.184	0.184	0.185	5.23
53)	TP	2-Chloroethyl			0.057	0.072	0.082	0.081	0.081	0.081	0.076	12.88
54)	TP	Bromodichlorom		0.196	0.230	0.251	0.267	0.268	0.262	0.262	0.248	10.63
57)	TP	1,4-Dioxane		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001#	16.77
58)	TP	cis-1,3-Dichlo		0.173	0.228	0.280	0.306	0.311	0.305	0.305	0.273	19.29
59)	I	Chlorobenzene-d5	----------ISTD----------									
60)	S	Toluene-d8	1.289	1.289	1.317	1.310	1.303	1.294	1.293	1.298	1.299	0.78
61)	TC	Toluene		0.573	0.658	0.656	0.648	0.629	0.612	0.616	0.627	4.84
62)	TP	4-Methyl-2-pen			0.029	0.039	0.045	0.047	0.048	0.049	0.043#	17.82
63)	TP	Tetrachloroethene		0.232	0.277	0.282	0.282	0.271	0.263	0.267	0.268	6.39
65)	TP	trans-1,3-Dich		0.199	0.246	0.306	0.345	0.352	0.353	0.355	*L	0.9996
67)	TP	Ethyl methacry			0.159	0.208	0.241	0.245	0.247	0.245	0.224	15.63
68)	TP	1,1,2-Trichlor		0.133	0.151	0.173	0.172	0.165	0.163	0.161	0.160	8.81
69)	TP	Chlorodibromom		0.138	0.173	0.207	0.232	0.240	0.241	0.265	*L	0.9969
70)	TP	1,3-Dichloropr		0.274	0.308	0.327	0.331	0.319	0.317	0.314	0.313	5.94
71)	TP	1,2-Dibromoethane		0.133	0.164	0.177	0.184	0.182	0.182	0.183	0.172	10.91
72)	TP	2-Hexanone			0.054	0.075	0.088	0.093	0.095	0.097	0.083#	19.75
73)	TP	Chlorobenzene		0.688	0.737	0.729	0.717	0.703	0.683	0.676	0.705	3.35
74)	TC	Ethylbenzene		1.060	1.219	1.258	1.251	1.220	1.181	1.171	1.194	5.66
75)	TP	1,1,1,2-Tetrac		0.187	0.231	0.255	0.266	0.267	0.264	0.267	0.248	11.93
76)	TP	p/m Xylene		0.352	0.463	0.490	0.490	0.477	0.455	0.436	0.452	10.64
77)	TP	o Xylene		0.324	0.421	0.458	0.464	0.447	0.427	0.410	0.422	11.22
78)	TP	Styrene		0.473	0.674	0.749	0.754	0.734	0.701	0.668	0.679	14.33
79)	I	1,4-Dichlorobenzene-d4	----------ISTD----------									
80)	TP	Bromoform		0.130	0.159	0.196	0.231	0.252	0.257	0.268	*L	0.9975
82)	TP	Isopropylbenzene		1.575	2.047	2.257	2.234	2.197	2.157	2.187	2.093	11.38
83)	S	4-Bromofluorobenzene	0.949	0.941	0.944	0.938	0.931	0.946	0.953	0.972	0.947	1.32
84)	TP	Bromobenzene		0.557	0.595	0.595	0.590	0.586	0.579	0.584	0.584	2.24
85)	TP	n-Propylbenzene		1.987	2.407	2.553	2.493	2.430	2.376	2.379	2.375	7.70
86)	TP	1,4-Dichlorobu		0.499	0.544	0.574	0.576	0.562	0.557	0.559	0.553	4.72
87)	TP	1,1,2,2-Tetrac		0.317	0.342	0.351	0.355	0.348	0.349	0.350	0.345	3.71
88)	TP	4-Ethyltoluene		1.493	1.956	2.109	2.094	2.083	2.043	2.056	1.976	11.07

Initial Calibration Summary
Form 6

Client	: CH2MHILL	Lab Number	: L1820859
Project Name	: DOW HANGING ROCK	Project Number	:
Instrument ID	: VOA105	Ical Ref	: ICAL14750
Calibration dates	: 05/30/18 22:10 05/31/18 01:56		

Calibration Files
L11 =V05180530N03.d L1 =V05180530N04.d L2 =V05180530N06.d L3 =V05180530N08.d L4 =V05180530N09.d
L6 =V05180530N10.d L8 =V05180530N11.d L10 =V05180530N12.d

	Compound	L11	L1	L2	L3	L4	L6	L8	L10	Avg	%RSD
89) TP	2-Chlorotoluene		1.436	1.652	1.670	1.620	1.605	1.558	1.557	1.586	4.96
90) TP	1,3,5-Trimethy		1.309	1.767	1.872	1.823	1.808	1.774	1.774	1.733	10.99
91) TP	1,2,3-Trichlor		0.326	0.310	0.313	0.309	0.298	0.299	0.300	0.308	3.29
92) TP	trans-1,4-Dich			0.071	0.085	0.097	0.102	0.105	0.108	0.095	14.75
93) TP	4-Chlorotoluene		1.396	1.631	1.734	1.688	1.671	1.631	1.648	1.628	6.68
94) TP	tert-Butylbenzene		0.985	1.246	1.409	1.401	1.382	1.353	1.382	1.308	11.66
97) TP	1,2,4-Trimethy		1.253	1.692	1.886	1.871	1.869	1.818	1.824	1.745	12.97
98) TP	sec-Butylbenzene		1.240	1.685	1.833	1.820	1.779	1.749	1.805	1.702	12.31
99) TP	p-Isopropyltol		1.018	1.437	1.649	1.670	1.643	1.615	1.645	1.525	15.56
100) TP	1,3-Dichlorobe		0.917	1.045	1.074	1.061	1.043	1.026	1.039	1.029	5.03
101) TP	1,4-Dichlorobe		1.054	1.098	1.097	1.086	1.071	1.053	1.053	1.073	1.92
102) TP	p-Diethylbenzene		0.579	0.804	0.922	0.928	0.932	0.922	0.941	0.861	15.44
103) TP	n-Butylbenzene		0.962	1.282	1.388	1.351	1.330	1.307	1.350	1.281	11.32
104) TP	1,2-Dichlorobe		0.802	0.913	0.927	0.943	0.925	0.915	0.921	0.906	5.19
105) TP	1,2,4,5-Tetram			1.025	1.384	1.468	1.485	1.465	1.487	1.385	13.05
106) TP	1,2-Dibromo-3-		0.020	0.030	0.034	0.041	0.045	0.048	0.050	*L	0.9955
107) TP	1,3,5-Trichlor		0.472	0.545	0.567	0.562	0.562	0.558	0.567	0.548	6.23
108) TP	Hexachlorobuta		0.181	0.188	0.189	0.187	0.184	0.190	0.202	0.189	3.47
109) TP	1,2,4-Trichlor		0.348	0.388	0.424	0.445	0.448	0.458	0.468	0.426	10.13
110) TP	Naphthalene		0.405	0.485	0.663	0.762	0.773	0.812	0.833	*L	0.9983
111) TP	1,2,3-Trichlor		0.233	0.262	0.285	0.297	0.292	0.309	0.311	0.284	9.86

Continuing Calibration
Form 7

Client	: CH2MHILL	**Lab Number**	: L1820859		
Project Name	: DOW HANGING ROCK	**Project Number**	:		
Instrument ID	: VOA105	**Calibration Date**	: 06/06/18 18:34		
Lab File ID	: V05180606N01	**Init. Calib. Date(s)**	: 05/30/18	05/31/18	
Sample No	: WG1123363-2	**Init. Calib. Times**	: 22:10	01:56	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	96	0
Vinyl chloride	0.159	0.149	-	6.3	20	89	0
1,1-Dichloroethene	0.155	0.145	-	6.5	20	89	0
trans-1,2-Dichloroethene	0.18	0.169	-	6.1	20	89	0
1,1-Dichloroethane	0.35	0.321	-	8.3	20	88	0
cis-1,2-Dichloroethene	0.2	0.186	-	7	20	87	0
Dibromofluoromethane	0.269	0.27	-	-0.4	20	95	0
1,1,1-Trichloroethane	0.322	0.306	-	5	20	89	0
1,2-Dichloroethane-d4	0.319	0.305	-	4.4	20	93	0
1,2-Dichloroethane	0.268	0.236	-	11.9	20	87	0
Trichloroethene	0.207	0.188*	-	9.2	20	89	0
Chlorobenzene-d5	1	1	-	0	20	98	0
Toluene-d8	1.299	1.274	-	1.9	20	96	0
Tetrachloroethene	0.268	0.249	-	7.1	20	90	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	97	0
4-Bromofluorobenzene	0.947	0.939	-	0.8	20	97	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: CH2MHILL	**Lab Number**	: L1820859		
Project Name	: DOW HANGING ROCK	**Project Number**	:		
Instrument ID	: VOA100	**Calibration Date**	: 06/06/18 18:42		
Lab File ID	: V00180606N01	**Init. Calib. Date(s)**	: 05/06/18	05/06/18	
Sample No	: WG1123321-2	**Init. Calib. Times**	: 07:39	11:06	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	82	0
Vinyl chloride	0.216	0.228	-	-5.6	20	90	0
1,1-Dichloroethene	0.171	0.185	-	-8.2	20	90	0
trans-1,2-Dichloroethene	0.192	0.219	-	-14.1	20	93	-.01
1,1-Dichloroethane	0.392	0.431	-	-9.9	20	91	0
cis-1,2-Dichloroethene	0.205	0.237	-	-15.6	20	92	0
Dibromofluoromethane	0.229	0.248	-	-8.3	20	88	-.01
1,1,1-Trichloroethane	0.306	0.368	-	-20.3*	20	98	0
1,2-Dichloroethane-d4	0.244	0.269	-	-10.2	20	89	0
1,2-Dichloroethane	0.257	0.289	-	-12.5	20	94	0
Trichloroethene	0.201	0.229	-	-13.9	20	92	0
Chlorobenzene-d5	1	1	-	0	20	84	0
Toluene-d8	1.327	1.316	-	0.8	20	84	0
Tetrachloroethene	0.276	0.32	-	-15.9	20	97	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	85	0
4-Bromofluorobenzene	1.062	1.027	-	3.3	20	83	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: CH2MHILL	**Lab Number**	: L1820859		
Project Name	: DOW HANGING ROCK	**Project Number**	:		
Instrument ID	: VOA100	**Calibration Date**	: 06/06/18 18:42		
Lab File ID	: V00180606N01	**Init. Calib. Date(s)**	: 05/06/18	05/06/18	
Sample No	: WG1123324-2	**Init. Calib. Times**	: 07:39	11:06	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	82	0
Vinyl chloride	0.216	0.228	-	-5.6	20	90	0
1,1-Dichloroethene	0.171	0.185	-	-8.2	20	90	0
trans-1,2-Dichloroethene	0.192	0.219	-	-14.1	20	93	-.01
1,1-Dichloroethane	0.392	0.431	-	-9.9	20	91	0
cis-1,2-Dichloroethene	0.205	0.237	-	-15.6	20	92	0
Dibromofluoromethane	0.229	0.248	-	-8.3	20	88	-.01
1,1,1-Trichloroethane	0.306	0.368	-	-20.3*	20	98	0
1,2-Dichloroethane-d4	0.244	0.269	-	-10.2	20	89	0
1,2-Dichloroethane	0.257	0.289	-	-12.5	20	94	0
Trichloroethene	0.201	0.229	-	-13.9	20	92	0
Chlorobenzene-d5	1	1	-	0	20	84	0
Toluene-d8	1.327	1.316	-	0.8	20	84	0
Tetrachloroethene	0.276	0.32	-	-15.9	20	97	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	85	0
4-Bromofluorobenzene	1.062	1.027	-	3.3	20	83	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: CH2MHILL	**Lab Number**	: L1820859		
Project Name	: DOW HANGING ROCK	**Project Number**	:		
Instrument ID	: VOA105	**Calibration Date**	: 06/07/18 07:22		
Lab File ID	: V05180607A01	**Init. Calib. Date(s)**	: 05/30/18	05/31/18	
Sample No	: WG1123506-2	**Init. Calib. Times**	: 22:10	01:56	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	103	0
Vinyl chloride	0.159	0.156	-	1.9	20	100	0
1,1-Dichloroethene	0.155	0.15	-	3.2	20	100	0
trans-1,2-Dichloroethene	0.18	0.177	-	1.7	20	101	0
1,1-Dichloroethane	0.35	0.335	-	4.3	20	99	0
cis-1,2-Dichloroethene	0.2	0.197	-	1.5	20	100	0
Dibromofluoromethane	0.269	0.263	-	2.2	20	100	0
1,1,1-Trichloroethane	0.322	0.321	-	0.3	20	100	0
1,2-Dichloroethane-d4	0.319	0.284	-	11	20	94	0
1,2-Dichloroethane	0.268	0.234	-	12.7	20	93	0
Trichloroethene	0.207	0.195*	-	5.8	20	100	0
Chlorobenzene-d5	1	1	-	0	20	106	0
Toluene-d8	1.299	1.26	-	3	20	103	0
Tetrachloroethene	0.268	0.263	-	1.9	20	103	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	103	0
4-Bromofluorobenzene	0.947	0.947	-	0	20	103	0

* Value outside of QC limits.

Internal Standard Area and RT Summary
Form 8

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA105	**Analysis Date**	: 06/06/18 18:34
Sample No	: WG1123363-2	**Lab File ID**	: V05180606N01

	Fluorobenzene (IS)		Chlorobenzene-d5		1,4-Dichlorobenzene-D4	
	Area	RT	Area	RT	Area	RT
WG1123363-2	703353	6.15	552790	9.69	285687	12.36
Upper Limit	1406706	6.65	1105580	10.19	571374	12.86
Lower Limit	351677	5.65	276395	9.19	142844	11.86
Sample ID						
WG1123363-3 LCS	679758	6.15	516809	9.69	263653	12.36
WG1123363-4 LCSD	685358	6.15	523318	9.69	267120	12.36
WG1123363-5 BLANK	651263	6.15	495144	9.69	240189	12.36
060518TB	635344	6.15	483130	9.69	232288	12.36
S01-GW08-1828-060518	629036	6.15	482307	9.69	233004	12.36
S01-GWFD01-060518	624285	6.15	484001	9.69	228906	12.36
S01-GW01-1828-060518	610714	6.15	470164	9.69	226436	12.36
S01-GW01-1828-060518 MS	699185	6.15	539591	9.69	271290	12.36
S01-GW01-1828-060518 MSD	714572	6.15	549810	9.69	272972	12.36

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area

RT Upper Limit = +0.50 minutes of internal standard RT
RT Lower Limit = -0.50 minutes of internal standard RT

* Values outside of QC limits

Internal Standard Area and RT Summary
Form 8

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA100	**Analysis Date**	: 06/06/18 18:42
Sample No	: WG1123321-2	**Lab File ID**	: V00180606N01

	Fluorobenzene (IS)		Chlorobenzene-d5		1,4-Dichlorobenzene-D4	
	Area	RT	Area	RT	Area	RT
WG1123321-2	182456	6.44	129871	10.02	63890	12.62
Upper Limit	364912	6.94	259742	10.52	127780	13.12
Lower Limit	91228	5.94	64936	9.52	31945	12.12
Sample ID						
WG1123321-3 LCS	176539	6.44	121609	10.02	60960	12.62
WG1123321-4 LCSD	171576	6.44	119403	10.02	60142	12.63
WG1123321-5 BLANK	153445	6.44	104449	10.02	52023	12.62
S01-SS28-0102-060518	151896	6.44	101800	10.02	51293	12.62
S01-SS28-0607-060518	154243	6.44	105579	10.02	51686	12.63

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area

RT Upper Limit = +0.50 minutes of internal standard RT
RT Lower Limit = -0.50 minutes of internal standard RT

* Values outside of QC limits

Internal Standard Area and RT Summary
Form 8

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA100	**Analysis Date**	: 06/06/18 18:42
Sample No	: WG1123324-2	**Lab File ID**	: V00180606N01

	Fluorobenzene (IS)		Chlorobenzene-d5		1,4-Dichlorobenzene-D4	
	Area	RT	Area	RT	Area	RT
WG1123324-2	182456	6.44	129871	10.02	63890	12.62
Upper Limit	364912	6.94	259742	10.52	127780	13.12
Lower Limit	91228	5.94	64936	9.52	31945	12.12
Sample ID						
WG1123324-3 LCS	176539	6.44	121609	10.02	60960	12.62
WG1123324-4 LCSD	171576	6.44	119403	10.02	60142	12.63
WG1123324-5 BLANK	153445	6.44	104449	10.02	52023	12.62
S01-SS28-2223-060518	148716	6.44	103314	10.02	49234	12.62
S01-SS17-0102-060518	144516	6.44	100873	10.02	49189	12.63
S01-SS17-0809-060518	143087	6.44	99719	10.02	47761	12.63
S01-SS17-2526-060518	135993	6.44	94188	10.02	45857	12.62
S01-SS27-0102-060518	135204	6.44	94986	10.02	46233	12.63
S01-SS27-0708-060518	137277	6.44	98452	10.02	47470	12.62
S01-SSFD01-060518	135492	6.44	94858	10.02	45584	12.63
S01-SS27-2122-060518	132199	6.44	92459	10.02	44610	12.63
S01-SS27-0102-060518 MS	150537	6.44	105412	10.02	52352	12.63
S01-SS27-0102-060518 MSD	145764	6.44	103010	10.02	51147	12.62

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area

RT Upper Limit = +0.50 minutes of internal standard RT
RT Lower Limit = -0.50 minutes of internal standard RT

* Values outside of QC limits

Internal Standard Area and RT Summary
Form 8

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA105	**Analysis Date**	: 06/07/18 07:22
Sample No	: WG1123506-2	**Lab File ID**	: V05180607A01

	Fluorobenzene (IS)		Chlorobenzene-d5		1,4-Dichlorobenzene-D4	
	Area	RT	Area	RT	Area	RT
WG1123506-2	758623	6.15	597721	9.69	301279	12.36
Upper Limit	1517246	6.65	1195442	10.19	602558	12.86
Lower Limit	379312	5.65	298861	9.19	150640	11.86
Sample ID						
WG1123506-3 LCS	724419	6.15	555967	9.69	277930	12.36
WG1123506-4 LCSD	721754	6.15	558483	9.69	280664	12.36
WG1123506-5 BLANK	694389	6.15	533378	9.69	256145	12.36
S01-GW09-1828-060518	699233	6.15	540336	9.69	260616	12.36

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area

RT Upper Limit = +0.50 minutes of internal standard RT
RT Lower Limit = -0.50 minutes of internal standard RT

* Values outside of QC limits

Wet Chemistry

Total Solids / Percent Moisture Analysis

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1820859-01	**Date Collected**	: 06/05/18 10:15
Client ID	: S01-SS28-0102-060518	**Date Received**	: 06/06/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/06/18 15:19
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1123115.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 82
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	82.2	0.100	NA	
NONE	Moisture	17.8	0.100	NA	

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1820859-02	**Date Collected**	: 06/05/18 10:30
Client ID	: S01-SS28-0607-060518	**Date Received**	: 06/06/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/06/18 15:19
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1123115.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 83
Digestion Method	:	**Date Digested**	:

			%		
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	83.3	0.100	NA	
NONE	Moisture	16.7	0.100	NA	

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1820859-03	**Date Collected**	: 06/05/18 10:55
Client ID	: S01-SS28-2223-060518	**Date Received**	: 06/06/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/06/18 15:19
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1123115.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 85
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	84.9	0.100	NA	
NONE	Moisture	15.1	0.100	NA	

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1820859-05	**Date Collected**	: 06/05/18 13:45
Client ID	: S01-SS17-0102-060518	**Date Received**	: 06/06/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/06/18 15:19
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1123115.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 84
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	83.5	0.100	NA	
NONE	Moisture	16.5	0.100	NA	

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1820859-06	**Date Collected**	: 06/05/18 14:05
Client ID	: S01-SS17-0809-060518	**Date Received**	: 06/06/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/06/18 15:19
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1123115.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 96
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	95.5	0.100	NA	
NONE	Moisture	4.50	0.100	NA	

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1820859-07	**Date Collected**	: 06/05/18 14:15
Client ID	: S01-SS17-2526-060518	**Date Received**	: 06/06/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/06/18 15:19
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1123115.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 95
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	95.3	0.100	NA	
NONE	Moisture	4.70	0.100	NA	

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1820859-08	**Date Collected**	: 06/05/18 15:50
Client ID	: S01-SS27-0102-060518	**Date Received**	: 06/06/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/06/18 15:19
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1123115.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 85
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	85.1	0.100	NA	
NONE	Moisture	14.9	0.100	NA	

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1820859-09	**Date Collected**	: 06/05/18 16:20
Client ID	: S01-SS27-0708-060518	**Date Received**	: 06/06/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/06/18 15:19
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1123115.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 84
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	83.7	0.100	NA	
NONE	Moisture	16.3	0.100	NA	

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1820859-10	**Date Collected**	: 06/05/18 16:25
Client ID	: S01-SSFD01-060518	**Date Received**	: 06/06/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/06/18 15:19
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1123115.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 84
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	83.5	0.100	NA	
NONE	Moisture	16.5	0.100	NA	

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1820859-11	**Date Collected**	: 06/05/18 16:45
Client ID	: S01-SS27-2122-060518	**Date Received**	: 06/06/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/06/18 15:19
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1123115.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 95
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	94.5	0.100	NA	
NONE	Moisture	5.50	0.100	NA	

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1820859
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: WG1123115-1	**Date Collected**	: 06/05/18 15:50
Client ID	: S01-SS27-0102-060518DUP	**Date Received**	: 06/06/18
Sample Location	:	**Date Analyzed**	: 06/06/18 15:19
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1123115.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 85
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	84.7	0.100	NA	
NONE	Moisture	15.3	0.100	NA	

Alpha Report

ANALYTICAL REPORT

Lab Number:	L1820859
Client:	CH2MHILL 1100 NE Circle Blvd. Suite 300 Corvallis, OR 97330
ATTN:	Shane Lowe
Phone:	(314) 335-3024
Project Name:	DOW HANGING ROCK
Project Number:	Not Specified
Report Date:	06/07/18

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1820859-01	S01-SS28-0102-060518	SOIL	IRONTON, OH	06/05/18 10:15	06/06/18
L1820859-02	S01-SS28-0607-060518	SOIL	IRONTON, OH	06/05/18 10:30	06/06/18
L1820859-03	S01-SS28-2223-060518	SOIL	IRONTON, OH	06/05/18 10:55	06/06/18
L1820859-04	060518TB	WATER	IRONTON, OH	06/05/18 12:05	06/06/18
L1820859-05	S01-SS17-0102-060518	SOIL	IRONTON, OH	06/05/18 13:45	06/06/18
L1820859-06	S01-SS17-0809-060518	SOIL	IRONTON, OH	06/05/18 14:05	06/06/18
L1820859-07	S01-SS17-2526-060518	SOIL	IRONTON, OH	06/05/18 14:15	06/06/18
L1820859-08	S01-SS27-0102-060518	SOIL	IRONTON, OH	06/05/18 15:50	06/06/18
L1820859-09	S01-SS27-0708-060518	SOIL	IRONTON, OH	06/05/18 16:20	06/06/18
L1820859-10	S01-SSFD01-060518	SOIL	IRONTON, OH	06/05/18 16:25	06/06/18
L1820859-11	S01-SS27-2122-060518	SOIL	IRONTON, OH	06/05/18 16:45	06/06/18
L1820859-12	S01-GW08-1828-060518	WATER	IRONTON, OH	06/05/18 17:20	06/06/18
L1820859-13	S01-GWFD01-060518	WATER	IRONTON, OH	06/05/18 17:25	06/06/18
L1820859-14	S01-GW09-1828-060518	WATER	IRONTON, OH	06/05/18 11:50	06/06/18
L1820859-15	S01-GW01-1828-060518	WATER	IRONTON, OH	06/05/18 14:55	06/06/18

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: DOW HANGING ROCK
Project Number: Not Specified
Lab Number: L1820859
Report Date: 06/07/18

Case Narrative (continued)

Volatile Organics

L1820859-01 and -02: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

The WG1123324-6 MS recovery, performed on L1820859-08, is below the acceptance criteria for tetrachloroethene (64%); however, the associated LCS/LCSD recoveries are within overall method allowances.

The WG1123363-6/-7 MS/MSD recoveries, performed on L1820859-15, are above the acceptance criteria for tetrachloroethene (182%/182%); however, the associated LCS/LCSD recoveries are within overall method allowances.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 06/07/18

ORGANICS

VOLATILES

Project Name: DOW HANGING ROCK
Lab Number: L1820859
Project Number: Not Specified
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-01
Client ID: S01-SS28-0102-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 10:15
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/06/18 21:33
Analyst: AD
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Tetrachloroethene	ND		ug/kg	63	--	1
Vinyl chloride	ND		ug/kg	130	--	1
1,1-Dichloroethene	ND		ug/kg	63	--	1
trans-1,2-Dichloroethene	ND		ug/kg	95	--	1
Trichloroethene	ND		ug/kg	63	--	1
cis-1,2-Dichloroethene	ND		ug/kg	63	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	104		70-130

Project Name: DOW HANGING ROCK
Project Number: Not Specified
Lab Number: L1820859
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-02
Client ID: S01-SS28-0607-060518
Sample Location: IRONTON, OH
Date Collected: 06/05/18 10:30
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/06/18 21:59
Analyst: AD
Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Tetrachloroethene	240		ug/kg	64	--	1
Vinyl chloride	ND		ug/kg	130	--	1
1,1-Dichloroethene	ND		ug/kg	64	--	1
trans-1,2-Dichloroethene	ND		ug/kg	95	--	1
Trichloroethene	ND		ug/kg	64	--	1
cis-1,2-Dichloroethene	ND		ug/kg	64	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	106		70-130

Project Name: DOW HANGING ROCK
Lab Number: L1820859
Project Number: Not Specified
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-03
Client ID: S01-SS28-2223-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 10:55
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/06/18 22:25
Analyst: MV
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Tetrachloroethene	3.4		ug/kg	1.7	--	1
Vinyl chloride	ND		ug/kg	3.4	--	1
1,1-Dichloroethene	ND		ug/kg	1.7	--	1
trans-1,2-Dichloroethene	ND		ug/kg	2.5	--	1
Trichloroethene	ND		ug/kg	1.7	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.7	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	105		70-130

Project Name: DOW HANGING ROCK
Project Number: Not Specified
Lab Number: L1820859
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-04
Client ID: 060518TB
Sample Location: IRONTON, OH
Date Collected: 06/05/18 12:05
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 06/06/18 21:40
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Tetrachloroethene	ND		ug/l	0.50	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1
Trichloroethene	ND		ug/l	0.50	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	95		70-130

Project Name: DOW HANGING ROCK
Lab Number: L1820859
Project Number: Not Specified
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-05
Client ID: S01-SS17-0102-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 13:45
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/06/18 22:50
Analyst: MV
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Tetrachloroethene	6.1		ug/kg	1.1	--	1
Vinyl chloride	ND		ug/kg	2.2	--	1
1,1-Dichloroethene	ND		ug/kg	1.1	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.7	--	1
Trichloroethene	ND		ug/kg	1.1	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.1	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	106		70-130

Project Name: DOW HANGING ROCK
Lab Number: L1820859
Project Number: Not Specified
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-06
Client ID: S01-SS17-0809-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 14:05
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/06/18 23:16
Analyst: MV
Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Tetrachloroethene	ND		ug/kg	0.99	--	1
Vinyl chloride	ND		ug/kg	2.0	--	1
1,1-Dichloroethene	ND		ug/kg	0.99	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--	1
Trichloroethene	ND		ug/kg	0.99	--	1
cis-1,2-Dichloroethene	ND		ug/kg	0.99	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	105		70-130

Project Name: DOW HANGING ROCK
Lab Number: L1820859
Project Number: Not Specified
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-07
Client ID: S01-SS17-2526-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 14:15
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/06/18 23:42
Analyst: MV
Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Tetrachloroethene	12		ug/kg	1.0	--	1
Vinyl chloride	ND		ug/kg	2.0	--	1
1,1-Dichloroethene	ND		ug/kg	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--	1
Trichloroethene	ND		ug/kg	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	107		70-130

Project Name: DOW HANGING ROCK
Lab Number: L1820859
Project Number: Not Specified
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-08
Client ID: S01-SS27-0102-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 15:50
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/07/18 00:08
Analyst: MV
Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Tetrachloroethene	1.8		ug/kg	1.0	--	1
Vinyl chloride	ND		ug/kg	2.1	--	1
1,1-Dichloroethene	ND		ug/kg	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--	1
Trichloroethene	3.0		ug/kg	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	109		70-130

Project Name: DOW HANGING ROCK
Lab Number: L1820859
Project Number: Not Specified
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-09
Client ID: S01-SS27-0708-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 16:20
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/07/18 00:34
Analyst: MV
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Tetrachloroethene	72		ug/kg	1.2	--	1
Vinyl chloride	ND		ug/kg	2.3	--	1
1,1-Dichloroethene	ND		ug/kg	1.2	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.8	--	1
Trichloroethene	ND		ug/kg	1.2	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.2	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	110		70-130

Project Name: DOW HANGING ROCK
Lab Number: L1820859
Project Number: Not Specified
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-10
Client ID: S01-SSFD01-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 16:25
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/07/18 01:00
Analyst: MV
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Tetrachloroethene	58		ug/kg	1.0	--	1
Vinyl chloride	ND		ug/kg	2.0	--	1
1,1-Dichloroethene	ND		ug/kg	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--	1
Trichloroethene	ND		ug/kg	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	108		70-130

Project Name: DOW HANGING ROCK
Lab Number: L1820859
Project Number: Not Specified
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-11
Client ID: S01-SS27-2122-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 16:45
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/07/18 01:26
Analyst: MV
Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Tetrachloroethene	2.0		ug/kg	1.0	--	1
Vinyl chloride	ND		ug/kg	2.1	--	1
1,1-Dichloroethene	ND		ug/kg	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.6	--	1
Trichloroethene	ND		ug/kg	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	109		70-130

Project Name: DOW HANGING ROCK
Lab Number: L1820859
Project Number: Not Specified
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-12
Client ID: S01-GW08-1828-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 17:20
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 06/06/18 22:05
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Tetrachloroethene	61		ug/l	0.50	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1
Trichloroethene	4.1		ug/l	0.50	--	1
cis-1,2-Dichloroethene	1.2		ug/l	0.50	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	97		70-130

Project Name: DOW HANGING ROCK
Project Number: Not Specified
Lab Number: L1820859
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-13
Client ID: S01-GWFD01-060518
Sample Location: IRONTON, OH
Date Collected: 06/05/18 17:25
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 06/06/18 22:31
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Tetrachloroethene	37		ug/l	0.50	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1
Trichloroethene	3.0		ug/l	0.50	--	1
cis-1,2-Dichloroethene	1.0		ug/l	0.50	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	97		70-130

Project Name: DOW HANGING ROCK
Lab Number: L1820859
Project Number: Not Specified
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-14
Client ID: S01-GW09-1828-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 11:50
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 06/07/18 10:03
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Tetrachloroethene	56		ug/l	0.50	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1
Trichloroethene	22		ug/l	0.50	--	1
cis-1,2-Dichloroethene	27		ug/l	0.50	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	96		70-130

Project Name: DOW HANGING ROCK
Lab Number: L1820859
Project Number: Not Specified
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-15
Client ID: S01-GW01-1828-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 14:55
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 06/06/18 23:21
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Tetrachloroethene	5.8		ug/l	0.50	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1
Trichloroethene	ND		ug/l	0.50	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	97		70-130

Project Name: DOW HANGING ROCK
Project Number: Not Specified
Lab Number: L1820859
Report Date: 06/07/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/06/18 21:07
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 01-02 Batch: WG1123321-5					
Tetrachloroethene	ND		ug/kg	50	--
Vinyl chloride	ND		ug/kg	100	--
1,1-Dichloroethene	ND		ug/kg	50	--
trans-1,2-Dichloroethene	ND		ug/kg	75	--
Trichloroethene	ND		ug/kg	50	--
cis-1,2-Dichloroethene	ND		ug/kg	50	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	104		70-130

Project Name: DOW HANGING ROCK
Project Number: Not Specified
Lab Number: L1820859
Report Date: 06/07/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/06/18 21:07
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 03,05-11 Batch: WG1123324-5					
Tetrachloroethene	ND		ug/kg	1.0	--
Vinyl chloride	ND		ug/kg	2.0	--
1,1-Dichloroethene	ND		ug/kg	1.0	--
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--
Trichloroethene	ND		ug/kg	1.0	--
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	104		70-130

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/06/18 20:50
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 04,12-13,15 Batch: WG1123363-5					
Tetrachloroethene	ND		ug/l	0.50	--
Vinyl chloride	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
trans-1,2-Dichloroethene	ND		ug/l	0.75	--
Trichloroethene	ND		ug/l	0.50	--
cis-1,2-Dichloroethene	ND		ug/l	0.50	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	96		70-130

Project Name: DOW HANGING ROCK
Project Number: Not Specified
Lab Number: L1820859
Report Date: 06/07/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/07/18 09:38
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 14 Batch: WG1123506-5					
Tetrachloroethene	ND		ug/l	0.50	--
Vinyl chloride	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
trans-1,2-Dichloroethene	ND		ug/l	0.75	--
Trichloroethene	ND		ug/l	0.50	--
cis-1,2-Dichloroethene	ND		ug/l	0.50	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	93		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: Not Specified

Lab Number: L1820859

Report Date: 06/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01-02 Batch: WG1123321-3 WG1123321-4								
Tetrachloroethene	108		110		70-130	2		30
Vinyl chloride	98		97		67-130	1		30
1,1-Dichloroethene	100		100		65-135	0		30
trans-1,2-Dichloroethene	102		103		70-130	1		30
Trichloroethene	104		106		70-130	2		30
cis-1,2-Dichloroethene	104		107		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	109		114		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	97		97		70-130
Dibromofluoromethane	106		108		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: Not Specified

Lab Number: L1820859

Report Date: 06/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 03,05-11 Batch: WG1123324-3 WG1123324-4								
Tetrachloroethene	108		110		70-130	2		30
Vinyl chloride	98		97		67-130	1		30
1,1-Dichloroethene	100		100		65-135	0		30
trans-1,2-Dichloroethene	102		103		70-130	1		30
Trichloroethene	104		106		70-130	2		30
cis-1,2-Dichloroethene	104		107		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	109		114		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	97		97		70-130
Dibromofluoromethane	106		109		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: Not Specified

Lab Number: L1820859

Report Date: 06/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 04,12-13,15 Batch: WG1123363-3 WG1123363-4								
Tetrachloroethene	99		100		70-130	1		20
Vinyl chloride	98		100		55-140	2		20
1,1-Dichloroethene	99		100		61-145	1		25
trans-1,2-Dichloroethene	100		100		70-130	0		20
Trichloroethene	94		100		70-130	6		25
cis-1,2-Dichloroethene	99		100		70-130	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		96		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	101		101		70-130
Dibromofluoromethane	98		98		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: Not Specified

Lab Number: L1820859

Report Date: 06/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 14 Batch: WG1123506-3 WG1123506-4								
Tetrachloroethene	96		92		70-130	4		20
Vinyl chloride	98		92		55-140	6		20
1,1-Dichloroethene	95		91		61-145	4		25
trans-1,2-Dichloroethene	100		98		70-130	2		20
Trichloroethene	96		91		70-130	5		25
cis-1,2-Dichloroethene	100		98		70-130	2		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	93		93		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	102		102		70-130
Dibromofluoromethane	96		97		70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 03,05-11 QC Batch ID: WG1123324-6 WG1123324-7 QC Sample: L1820859-08 Client ID: S01-SS27-0102-060518												
Tetrachloroethene	1.8	94.8	62	**64**	Q	71	72		70-130	14		30
Vinyl chloride	ND	94.8	88	92		88	91		67-130	0		30
1,1-Dichloroethene	ND	94.8	86	91		87	90		65-135	1		30
trans-1,2-Dichloroethene	ND	94.8	78	82		79	82		70-130	2		30
Trichloroethene	3.0	94.8	79	80		85	85		70-130	7		30
cis-1,2-Dichloroethene	ND	94.8	79	84		83	86		70-130	4		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		121		70-130
4-Bromofluorobenzene	96		98		70-130
Dibromofluoromethane	111		111		70-130
Toluene-d8	100		101		70-130

Matrix Spike Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 04,12-13,15 QC Batch ID: WG1123363-6 WG1123363-7 QC Sample: L1820859-15 Client ID: S01-GW01-1828-060518												
Tetrachloroethene	5.8	10	24	**182**	Q	24	**182**	Q	70-130	0		20
Vinyl chloride	ND	10	11	110		11	110		55-140	0		20
1,1-Dichloroethene	ND	10	10	100		10	100		61-145	0		25
trans-1,2-Dichloroethene	ND	10	10	100		10	100		70-130	0		20
Trichloroethene	ND	10	10	100		9.9	99		70-130	1		25
cis-1,2-Dichloroethene	ND	10	10	100		10	100		70-130	0		20

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		92		70-130
4-Bromofluorobenzene	102		102		70-130
Dibromofluoromethane	97		96		70-130
Toluene-d8	99		100		70-130

INORGANICS
&
MISCELLANEOUS

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-01
Client ID: S01-SS28-0102-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 10:15
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.2		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI
Moisture	17.8		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-02
Client ID: S01-SS28-0607-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 10:30
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.3		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI
Moisture	16.7		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-03
Client ID: S01-SS28-2223-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 10:55
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI
Moisture	15.1		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-05
Client ID: S01-SS17-0102-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 13:45
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.5		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI
Moisture	16.5		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-06
Client ID: S01-SS17-0809-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 14:05
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.5		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI
Moisture	4.50		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-07
Client ID: S01-SS17-2526-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 14:15
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.3		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI
Moisture	4.70		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-08
Client ID: S01-SS27-0102-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 15:50
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.1		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI
Moisture	14.9		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-09
Client ID: S01-SS27-0708-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 16:20
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.7		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI
Moisture	16.3		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-10
Client ID: S01-SSFD01-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 16:25
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.5		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI
Moisture	16.5		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

SAMPLE RESULTS

Lab ID: L1820859-11
Client ID: S01-SS27-2122-060518
Sample Location: IRONTON, OH

Date Collected: 06/05/18 16:45
Date Received: 06/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.5		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI
Moisture	5.50		%	0.100	NA	1	-	06/06/18 15:19	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: Not Specified

Lab Number: L1820859

Report Date: 06/07/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03,05-11 QC Batch ID: WG1123115-1 QC Sample: L1820859-08 Client ID: S01-SS27-0102-060518						
Solids, Total	85.1	84.7	%	0		20
Moisture	14.9	15.3	%	3		20

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1820859-01A	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-01B	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-01C	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-01D	Bacteria Cup unpreserved	A	NA		3.7	Y	Absent		TS(7),MOISTURE(7)
L1820859-01X	Vial MeOH preserved split	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-01Y	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-01Z	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-02A	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-02B	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-02C	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-02D	Bacteria Cup unpreserved	A	NA		3.7	Y	Absent		TS(7),MOISTURE(7)
L1820859-02X	Vial MeOH preserved split	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-02Y	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-02Z	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-03A	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-03B	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-03C	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-03D	Bacteria Cup unpreserved	A	NA		3.7	Y	Absent		TS(7),MOISTURE(7)
L1820859-03X	Vial MeOH preserved split	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-03Y	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-03Z	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-04A	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-04B	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)

*Values in parentheses indicate holding time in days

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1820859-05A	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-05B	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-05C	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-05D	Bacteria Cup unpreserved	A	NA		3.7	Y	Absent		TS(7),MOISTURE(7)
L1820859-05X	Vial MeOH preserved split	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-05Y	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-05Z	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-06A	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-06B	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-06C	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-06D	Bacteria Cup unpreserved	A	NA		3.7	Y	Absent		TS(7),MOISTURE(7)
L1820859-06X	Vial MeOH preserved split	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-06Y	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-06Z	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-07A	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-07B	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-07C	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-07D	Bacteria Cup unpreserved	A	NA		3.7	Y	Absent		TS(7),MOISTURE(7)
L1820859-07X	Vial MeOH preserved split	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-07Y	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-07Z	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-08A	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-08A1	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-08A2	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-08B	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-08B1	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-08B2	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-08C	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1820859-08C1	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-08C2	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-08D	Bacteria Cup unpreserved	A	NA		3.7	Y	Absent		TS(7),MOISTURE(7)
L1820859-08X	Vial MeOH preserved split	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-08X1	Vial MeOH preserved split	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-08X2	Vial MeOH preserved split	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-08Y	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-08Y1	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-08Y2	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-08Z	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-08Z1	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-08Z2	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-09A	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-09B	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-09C	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-09D	Bacteria Cup unpreserved	A	NA		3.7	Y	Absent		TS(7),MOISTURE(7)
L1820859-09X	Vial MeOH preserved split	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-09Y	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-09Z	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-10A	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-10B	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-10C	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-10D	Bacteria Cup unpreserved	A	NA		3.7	Y	Absent		TS(7),MOISTURE(7)
L1820859-10X	Vial MeOH preserved split	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-10Y	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-10Z	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-11A	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-11B	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1820859
Report Date: 06/07/18

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1820859-11C	5 gram Encore Sampler	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-11D	Bacteria Cup unpreserved	A	NA		3.7	Y	Absent		TS(7),MOISTURE(7)
L1820859-11X	Vial MeOH preserved split	A	NA		3.7	Y	Absent		8260HLW(14)
L1820859-11Z	Vial Water preserved split	A	NA		3.7	Y	Absent	06-JUN-18 15:34	8260HLW(14)
L1820859-12A	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-12B	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-12C	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-13A	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-13B	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-13C	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-14A	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-14B	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-14C	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-15A	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-15A1	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-15A2	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-15B	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-15B1	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-15B2	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-15C	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-15C1	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)
L1820859-15C2	Vial HCl preserved	A	NA		3.7	Y	Absent		8260(14)

*Values in parentheses indicate holding time in days

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1820859
Project Number:	Not Specified	**Report Date:**	06/07/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1820859
Project Number:	Not Specified	**Report Date:**	06/07/18

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: DOW HANGING ROCK
Project Number: Not Specified
Lab Number: L1820859
Report Date: 06/07/18

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

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CHAIN OF CUSTODY

PAGE 1 OF 2

ALPHA ANALYTICAL

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 6/6/18

ALPHA Job #: L1820859

Project Information

Project Name: Dow Hanging Rock
Project Location: Ironton OH
Project #:
Project Manager: Marie Chiller / Shane Lowe
ALPHA Quote #: 5695

Report Information
☐ FAX ☒ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information
☒ Same as Client info PO #:

Regulatory Requirements/Report Limits
State/Fed Program: As Per Contract Criteria

Client Information
Client: Jacobs / CH2M
Address: 1100 NE Circle Blvd Suite 300
Phone: Shane 314-3555075
Fax: Lowe
Email:
☐ These samples have been Previously analyzed by Alpha

Turn-Around Time
☐ Standard ☒ Rush (ONLY IF PRE-APPROVED)
Due Date: 6/7/18 Time: 12:00 None

Other Project Specific Requirements/Comments/Detection Limits:
24hr TAT

ANALYSIS

SAMPLE HANDLING
Filtration: ☐ Done ☒ Not Needed ☐ Lab to do
Preservation: ☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Select VOCs Soil	% Moisture	Select VOCs GW										Sample Specific Comments	TOTAL # BOTTLES
20859 01	S01-SS28-0102-060518	6/5/18	1015	Soil	JM	X	X												
02	S01-SS28-0607-060518	6/5/18	1030	Soil	JM	X	X												
03	S01-SS28-2223-060518	6/5/18	1055	Soil	JM	X	X												
04	060518TB	6/5/18	1205	W	JM			X											
6/5/18	~~S01-SS28-1828-060518~~	~~6/5/18~~	~~1105~~	~~GW~~	JM			X										JM 6/5/18	
05	S01-SS17-0102-060518	6/5/18	1345	Soil	JM	X	X												
06	S01-SS17-0809-060518	6/5/18	1405	Soil	JM	X	X												
07	S01-SS17-2526-060518	6/5/18	1435	Soil	JM	X	X												
6/5/18	~~S01-SS17-1828-060518~~	~~6/5/18~~	~~1455~~	~~GW~~	JM			X										MSMSD JM	
08	S01-SS27-0102-060518	6/5/18	1550	Soil		X	X											MSMSD	

Container Type	Encore	PL	40ml	-	-	-	-	-	-	-	-	-
Preservative	None	None	HCL	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
James F Mallison	1800 6/5/18	Chris Gelbeau	6/6/18 10:10

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO. 01-01-AU1 (Lab 5-JAN-12)

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CHAIN OF CUSTODY

PAGE 2 OF 2

ALPHA ANALYTICAL

Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab: 6/6/18

ALPHA Job #: L1820859

Project Information

Project Name: Dow Hangar Rock

Project Location: Ironton OH

Project #:

Project Manager: Marie Chiller / Shane Lowe

ALPHA Quote #: 5695

Report Information

☐ FAX
☐ ADEx

Data Deliverables

☒ EMAIL
☐ Add'l Deliverables

Billing Information

☒ Same as Client info
PO #:

Regulatory Requirements/Report Limits

State/Fed Program: As Per Contract
Criteria:

Client Information

Client: Jacobs / CH2M
Address: 1100 NE Circle Blvd
Suite 300
Phone: Shane 3104-355 5075
Fax: Lowe
Email:

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☐ Standard ☒ Rush (ONLY IF PRE-APPROVED)

Due Date: 6/7/18 Time: 1200 Noon

Other Project Specific Requirements/Comments/Detection Limits:
24 hr TAT

ANALYSIS

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Select VOCs Soil	% Moisture	Select VOCs GW										Sample Specific Comments
20859 09	S01-SS27-0708-060518	6/5/18	1620	Soil	JM	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
70	S01-SSF001-060518	6/5/18	1625	Soil	JM	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
71	S01-SS27-[illegible]2122-060518	6/5/18	1645	Soil	JM	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
72	S01-GW08-1828-060518	6/5/18	1720	GW	JM	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	
73	S01-GWFD01-060518	6/5/18	1725	GW	JM	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	
74	S01-GW09-1828-060518	6/5/18	1150	GW	JM	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	
75	S01-GW01-1828-060518	6/5/18	1455	GW	JM	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	MSMSD
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
						☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

Container Type	Encore PL 40ml	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	Non Non HCL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
[signature] Jonas F. Mallison	1800 6/5/18	Chris Gelcan	6/6/18 10:10

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO. 01-01(I)-NJ
rev. 5-JAN-12

ALPHA ANALYTICAL

World Class Chemistry

www.alphalab.com

Lab Number: L1822027

Client: CH2M

ATTN: Shane Lowe

Project Name: DOW HANGING ROCK

Project Number:

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Data Deliverable Revision Narrative
Alpha SDG: L1822027
Client: CH2M
Site: DOW HANGING ROCK

July 31, 2018: The report has been included.

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Organics

GC/MS 8260
Analysis

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1822027
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1822027-01	Date Collected	: 06/12/18 10:20
Client ID	: S01-SS29-0102-061218	Date Received	: 06/13/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/14/18 03:56
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: MV
Lab File ID	: V23180613N22	Instrument ID	: VOA123
Sample Amount	: 5.9 g	GC Column	: RTX-VMS
Level	: LOW	%Solids	: 79
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	3.0	1.1	--	
75-01-4	Vinyl chloride	ND	2.1	--	U
75-35-4	1,1-Dichloroethene	ND	1.1	--	U
156-60-5	trans-1,2-Dichloroethene	ND	1.6	--	U
79-01-6	Trichloroethene	ND	1.1	--	U
156-59-2	cis-1,2-Dichloroethene	ND	1.1	--	U

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1822027
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1822027-02	Date Collected	: 06/12/18 10:35
Client ID	: S01-SS29-0708-061218	Date Received	: 06/13/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/14/18 04:22
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: MV
Lab File ID	: V23180613N23	Instrument ID	: VOA123
Sample Amount	: 5.7 g	GC Column	: RTX-VMS
Level	: LOW	%Solids	: 81
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	23	1.1	--	
75-01-4	Vinyl chloride	ND	2.2	--	U
75-35-4	1,1-Dichloroethene	ND	1.1	--	U
156-60-5	trans-1,2-Dichloroethene	ND	1.6	--	U
79-01-6	Trichloroethene	2.8	1.1	--	
156-59-2	cis-1,2-Dichloroethene	1.2	1.1	--	

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1822027
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: L1822027-03	Date Collected	: 06/12/18 10:50
Client ID	: S01-SS29-2425-061218	Date Received	: 06/13/18
Sample Location	: IRONTON, OH	Date Analyzed	: 06/14/18 04:48
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: MV
Lab File ID	: V23180613N24	Instrument ID	: VOA123
Sample Amount	: 5.0 g	GC Column	: RTX-VMS
Level	: LOW	%Solids	: 95
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	140	1.0	--	
75-01-4	Vinyl chloride	ND	2.1	--	U
75-35-4	1,1-Dichloroethene	ND	1.0	--	U
156-60-5	trans-1,2-Dichloroethene	ND	1.6	--	U
79-01-6	Trichloroethene	11	1.0	--	
156-59-2	cis-1,2-Dichloroethene	3.9	1.0	--	

Form 1
VOA

Client	: CH2MHILL	Lab Number	: L1822027
Project Name	: DOW HANGING ROCK	Project Number	:
Lab ID	: WG1125780-5	Date Collected	: NA
Client ID	: WG1125780-5BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 06/13/18 20:40
Sample Matrix	: SOIL	Dilution Factor	: 1
Analytical Method	: 1,8260C	Analyst	: MV
Lab File ID	: V23180613N05	Instrument ID	: VOA123
Sample Amount	: 5.0 g	GC Column	: RTX-VMS
Level	: LOW	%Solids	: NA
Extract Volume (MeOH)	: N/A	Injection Volume	: N/A

		ug/Kg			
CAS NO.	Parameter	Results	RL	MDL	Qualifier
127-18-4	Tetrachloroethene	ND	1.0	--	U
75-01-4	Vinyl chloride	ND	2.0	--	U
75-35-4	1,1-Dichloroethene	ND	1.0	--	U
156-60-5	trans-1,2-Dichloroethene	ND	1.5	--	U
79-01-6	Trichloroethene	ND	1.0	--	U
156-59-2	cis-1,2-Dichloroethene	ND	1.0	--	U

Form 2
Surrogate Recovery
VOLATILES

Client: CH2MHILL
Project Name: DOW HANGING ROCK

Lab Number: L1822027
Project Number:
Matrix: Soil

CLIENT ID (LAB SAMPLE NO.)	SMC1 DCA	SMC2 TOL	SMC3 BFB	SMC4 DBFM	TOT OUT
S01-SS29-0102-061218 (L1822027-01)	107	99	103	97	0
S01-SS29-0708-061218 (L1822027-02)	106	99	103	97	0
S01-SS29-2425-061218 (L1822027-03)	106	100	104	98	0
WG1125780-3LCS	98	100	102	97	0
WG1125780-4LCSD	98	101	102	97	0
WG1125780-5BLANK	103	100	103	97	0

QC LIMITS

(70-130) DCA = 1,2-DICHLOROETHANE-D4
(70-130) TOL = TOLUENE-D8
(70-130) BFB = 4-BROMOFLUOROBENZENE
(70-130) DBFM = DIBROMOFLUOROMETHANE

*** Values outside of QC limits**

FORM II 8260HLW

Laboratory Control Sample
Form 3

Client	: CH2MHILL	**Lab Number**	: L1822027
Project Name	: DOW HANGING ROCK	**Project Number**	:
Matrix	: SOIL		
LCS Sample ID	: WG1125780-3	**Analysis Date**	: 06/13/18 19:48
LCSD Sample ID	: WG1125780-4	**Analysis Date**	: 06/13/18 20:14

File ID : V23180613N03

File ID : V23180613N04

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ug/kg)	Found (ug/kg)	%R	True (ug/kg)	Found (ug/kg)	%R	RPD	Recovery Limits	RPD Limit
Tetrachloroethene	20	19.	92	20	18.	92	0	70-130	30
Vinyl chloride	20	19.	95	20	19.	96	1	67-130	30
1,1-Dichloroethene	20	19.	95	20	19.	94	1	65-135	30
trans-1,2-Dichloroethene	20	19.	96	20	19.	97	1	70-130	30
Trichloroethene	20	19.	95	20	19.	94	1	70-130	30
cis-1,2-Dichloroethene	20	19.	96	20	19.	96	0	70-130	30

Method Blank Summary
Form 4
VOLATILES

Client	: CH2MHILL	**Lab Number**	: L1822027
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab Sample ID	: WG1125780-5	**Lab File ID**	: V23180613N05
Instrument ID	: VOA123		
Matrix	: SOIL	**Analysis Date**	: 06/13/18 20:40

Client Sample No.	Lab Sample ID	Analysis Date
WG1125780-3LCS	WG1125780-3	06/13/18 19:48
WG1125780-4LCSD	WG1125780-4	06/13/18 20:14
S01-SS29-0102-061218	L1822027-01	06/14/18 03:56
S01-SS29-0708-061218	L1822027-02	06/14/18 04:22
S01-SS29-2425-061218	L1822027-03	06/14/18 04:48

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1822027
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA123	**Analysis Date**	: 06/06/18 15:46
Tune Standard	: WG1123609-1	**Tune File ID**	: V23180606NBF1_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	15.0 - 40.0% of mass 95	17.4
75	30.0 - 60.0% of mass 95	48.3
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0 (0)1
174	Greater than 50.0 of mass 95	77.9
175	5.0 - 9.0% of mass 174	5.4 (6.9)1
176	95.0 - 101% of mass 174	74.2 (95.2)1
177	5.0 - 9.0% of mass 176	4.8 (6.5)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
STDL0	R1079615-1	V23180606N03	06/06/18 16:59
STDL1	R1079615-2	V23180606N04	06/06/18 17:24
STDL1.5	R1079615-3	V23180606N05	06/06/18 17:50
STDL2	R1079615-4	V23180606N06	06/06/18 18:16
STDL3	R1079615-5	V23180606N07	06/06/18 18:41
STDL4	R1079615-7	V23180606N08	06/06/18 19:07
STDL6	R1079615-6	V23180606N09	06/06/18 19:32
STDL7	R1079615-8	V23180606N10	06/06/18 19:58

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1822027
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA123	**Analysis Date**	: 06/07/18 11:28
Tune Standard	: WG1123609-2	**Tune File ID**	: V23180606BF2_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	15.0 - 40.0% of mass 95	17.7
75	30.0 - 60.0% of mass 95	48.6
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.6
173	Less than 2.0% of mass 174	0 (0)1
174	Greater than 50.0 of mass 95	77
175	5.0 - 9.0% of mass 174	5.7 (7.4)1
176	95.0 - 101% of mass 174	74.1 (96.3)1
177	5.0 - 9.0% of mass 176	5.1 (6.8)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
STDL8	R1079615-9	V23180607A02	06/07/18 12:17
ICV Quant Report	R1079615-10	V23180607A05	06/07/18 13:34
ICV Summary Form	R1079615-10	V23180607A05	06/07/18 13:34

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: CH2MHILL	**Lab Number**	: L1822027
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA123	**Analysis Date**	: 06/13/18 18:24
Tune Standard	: WG1125780-1	**Tune File ID**	: V23180613NBF1_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	15.0 - 40.0% of mass 95	18.6
75	30.0 - 60.0% of mass 95	48.8
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0 (0)1
174	Greater than 50.0 of mass 95	74.8
175	5.0 - 9.0% of mass 174	5.3 (7)1
176	95.0 - 101% of mass 174	74.6 (99.7)1
177	5.0 - 9.0% of mass 176	4.8 (6.4)2

1-Value is % of mass 174 2-Value is % of mass 176

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
WG1125780-2CCAL	WG1125780-2	V23180613N01	06/13/18 18:44
WG1125780-3LCS	WG1125780-3	V23180613N03	06/13/18 19:48
WG1125780-4LCSD	WG1125780-4	V23180613N04	06/13/18 20:14
WG1125780-5BLANK	WG1125780-5	V23180613N05	06/13/18 20:40
S01-SS29-0102-061218	L1822027-01	V23180613N22	06/14/18 03:56
S01-SS29-0708-061218	L1822027-02	V23180613N23	06/14/18 04:22
S01-SS29-2425-061218	L1822027-03	V23180613N24	06/14/18 04:48

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1822027**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**:**
Instrument ID	**: VOA123**	**Ical Ref**	**: ICAL14769**
Calibration dates	**: 06/06/18 16:59 06/07/18 12:17**		

Calibration Files

L1 =V23180606N04.D L2 =V23180606N06.D L3 =V23180606N07.D L4 =V23180606N08.D L6 =V23180606N09.D

L7 =V23180606N10.D L8 =V23180607A02.D L0 =V23180606N03.D L1.5=V23180606N05.D

		Compound	L1	L2	L3	L4	L6	L7	L8	L0	L1.5	Avg	%RSD
1)	I	Fluorobenzene	----------ISTD----------										
2)	TP	Dichlorodifluoromethane	0.242	0.244	0.217	0.223	0.236	0.222	0.221		0.199	0.226	6.52
3)	TP	Chloromethane	0.297	0.263	0.237	0.228	0.233	0.224	0.214		0.259	0.244	11.03
4)	TC	Vinyl chloride	0.282	0.294	0.270	0.265	0.274	0.254	0.254		0.264	0.270	5.03
5)	TP	Bromomethane	0.229	0.199	0.162	0.146	0.151	0.152	0.148		0.200	*L	0.9995
6)	TP	Chloroethane	0.196	0.201	0.185	0.176	0.163				0.186	0.184	7.33
7)	TP	Trichlorofluoromethane	0.345	0.346	0.325	0.324	0.341	0.311	0.314		0.306	0.326	4.79
8)	TP	Ethyl ether	0.136	0.142	0.141	0.143	0.144	0.142	0.137		0.130	0.139	3.37
10)	TC	1,1-Dichloroethene	0.197	0.209	0.191	0.193	0.206	0.197	0.197		0.185	0.197	3.94
11)	TP	Carbon disulfide		0.741	0.632	0.625	0.658	0.625	0.616		0.758	0.665	8.93
12)	TP	Freon-113	0.200	0.207	0.191	0.201	0.212	0.201	0.201		0.164	0.197	7.41
13)	TP	Iodomethane	0.123	0.129	0.180	0.210	0.243	0.233	0.214		0.110	*L	0.9959
14)	TP	Acrolein	0.053	0.049	0.048	0.049	0.046	0.047	0.046		0.047	0.048#	4.71
15)	TP	Methylene chloride	0.385	0.277	0.248	0.242	0.246	0.241	0.229		0.284	*L	0.9992
17)	TP	Acetone	0.289	0.125	0.079	0.079	0.067	0.065	0.063		0.167	*L	0.9980
18)	TP	trans-1,2-Dichloroethene	0.236	0.236	0.231	0.226	0.238	0.229	0.223		0.223	0.230	2.60
19)	TP	Methyl acetate	0.208	0.190	0.182	0.185	0.173	0.172	0.168		0.189	0.183	6.99
20)	TP	Methyl tert-butyl ether	0.708	0.741	0.730	0.736	0.729	0.718	0.681		0.694	0.717	2.96
21)	TP	tert-Butyl alcohol	0.043	0.040	0.042	0.043	0.039	0.039	0.038		0.039	0.040#	4.94
22)	TP	Diisopropyl ether	0.683	0.714	0.708	0.697	0.707	0.689	0.670		0.660	0.691	2.74
23)	TP	1,1-Dichloroethane	0.404	0.430	0.415	0.406	0.417	0.402	0.391		0.405	0.409	2.90
24)	TP	Halothane	0.175	0.182	0.176	0.176	0.185	0.179	0.177		0.164	0.177	3.49
25)	TP	Acrylonitrile	0.090	0.091	0.096	0.099	0.093	0.093	0.091		0.086	0.092	4.18
26)	TP	Ethyl tert-butyl ether	0.737	0.763	0.762	0.757	0.764	0.747	0.723		0.713	0.746	2.63
27)	TP	Vinyl acetate	0.540	0.571	0.584	0.591	0.579	0.572	0.568		0.520	0.566	4.22
28)	TP	cis-1,2-Dichloroethene	0.264	0.265	0.261	0.255	0.260	0.254	0.244		0.251	0.257	2.71
29)	TP	2,2-Dichloropropane	0.379	0.380	0.351	0.346	0.355	0.341	0.342		0.346	0.355	4.43
30)	TP	Bromochloromethane	0.117	0.128	0.124	0.122	0.123	0.120	0.114		0.114	0.120	3.97
31)	TP	Cyclohexane	0.393	0.378	0.342	0.358	0.375	0.357	0.360		0.313	0.359	6.84
32)	TC	Chloroform	0.428	0.434	0.414	0.406	0.410	0.397	0.381		0.400	0.409	4.19
33)	TP	Ethyl acetate	0.283	0.271	0.277	0.281	0.264	0.262	0.259		0.266	0.270	3.39
34)	TP	Carbon tetrachloride	0.310	0.321	0.299	0.303	0.312	0.300	0.298		0.275	0.302	4.55
35)	TP	Tetrahydrofuran	0.130	0.104	0.099	0.099	0.091	0.090	0.088		0.093	0.099	13.75
36)	S	Dibromofluoromethane	0.251	0.249	0.252	0.252	0.252	0.256	0.251	0.248	0.252	0.252	0.83
37)	TP	1,1,1-Trichloroethane	0.356	0.373	0.349	0.348	0.357	0.343	0.338	0.343	0.334	0.349	3.43
39)	TP	2-Butanone	0.162	0.132	0.128	0.124	0.117	0.118	0.116		0.127	0.128	11.56
40)	TP	1,1-Dichloropropene	0.315	0.322	0.302	0.301	0.314	0.300	0.298	0.303	0.287	0.305	3.45
41)	TP	Benzene	0.989	1.013	0.955	0.932	0.955	0.916	0.882	1.050	0.943	0.959	5.32

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1822027**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**:**
Instrument ID	**: VOA123**	**Ical Ref**	**: ICAL14769**
Calibration dates	**: 06/06/18 16:59 06/07/18 12:17**		

Calibration Files

L1 =V23180606N04.D L2 =V23180606N06.D L3 =V23180606N07.D L4 =V23180606N08.D L6 =V23180606N09.D

L7 =V23180606N10.D L8 =V23180607A02.D L0 =V23180606N03.D L1.5=V23180606N05.D

		Compound	L1	L2	L3	L4	L6	L7	L8	L0	L1.5	Avg	%RSD
42)	TP	tert-Amyl methyl ether	0.759	0.782	0.773	0.766	0.768	0.755	0.726		0.727	0.757	2.71
43)	S	1,2-Dichloroethane-d4	0.286	0.282	0.278	0.282	0.278	0.280	0.288	0.283	0.285	0.283	1.20
44)	TP	1,2-Dichloroethane	0.321	0.331	0.327	0.321	0.318	0.309	0.300		0.319	0.318	3.11
47)	TP	Methyl cyclohexane	0.417	0.430	0.391	0.404	0.431	0.410	0.408		0.345	0.404	6.78
48)	TP	Trichloroethene	0.248	0.252	0.241	0.236	0.244	0.237	0.236	0.246	0.232	0.241	2.70
50)	TP	Dibromomethane	0.144	0.158	0.156	0.157	0.156	0.156	0.151		0.143	0.153	4.04
51)	TC	1,2-Dichloropropane	0.229	0.244	0.242	0.237	0.242	0.236	0.229		0.227	0.236	2.83
53)	TP	2-Chloroethyl vinyl ether	0.162	0.176	0.179	0.182	0.180	0.184	0.180		0.157	0.175	5.77
54)	TP	Bromodichloromethane	0.331	0.344	0.334	0.339	0.342	0.337	0.326	0.328	0.322	0.334	2.27
57)	TP	1,4-Dioxane	0.004	0.004	0.004	0.004	0.004	0.004	0.004		0.004	0.004#	8.15
58)	TP	cis-1,3-Dichloropropene	0.400	0.425	0.425	0.422	0.427	0.419	0.410	0.397	0.398	0.414	3.06
59)	I	Chlorobenzene-d5	----------ISTD----------										
60)	S	Toluene-d8	1.268	1.272	1.276	1.256	1.251	1.241	1.221	1.283	1.265	1.259	1.53
61)	TC	Toluene	0.875	0.827	0.761	0.740	0.753	0.721	0.698		0.781	0.770	7.49
62)	TP	4-Methyl-2-pentanone	0.124	0.128	0.136	0.142	0.136	0.134	0.134		0.120	0.132	5.43
63)	TP	Tetrachloroethene	0.324	0.327	0.306	0.302	0.316	0.302	0.295	0.308	0.294	0.308	3.84
65)	TP	trans-1,3-Dichloropropene	0.465	0.491	0.494	0.484	0.482	0.469	0.457		0.454	0.474	3.24
67)	TP	Ethyl methacrylate	0.375	0.410	0.433	0.449	0.451	0.447	0.438		0.374	0.422	7.62
68)	TP	1,1,2-Trichloroethane	0.225	0.245	0.243	0.240	0.239	0.233	0.227		0.230	0.235	3.20
69)	TP	Chlorodibromomethane	0.298	0.316	0.327	0.329	0.333	0.329	0.315		0.288	0.317	5.15
70)	TP	1,3-Dichloropropane	0.465	0.501	0.495	0.490	0.481	0.466	0.447		0.465	0.476	3.87
71)	TP	1,2-Dibromoethane	0.281	0.291	0.293	0.294	0.291	0.285	0.273		0.273	0.285	3.04
72)	TP	2-Hexanone		0.273	0.243	0.245	0.228	0.223	0.221		0.319	0.250	14.05
73)	TP	Chlorobenzene	0.866	0.883	0.853	0.830	0.847	0.812	0.782	0.871	0.814	0.840	3.93
74)	TC	Ethylbenzene	1.489	1.501	1.441	1.407	1.439	1.357	1.313		1.410	1.420	4.45
75)	TP	1,1,1,2-Tetrachloroethane	0.295	0.309	0.310	0.303	0.311	0.303	0.290	0.274	0.287	0.298	4.17
76)	TP	p/m Xylene	0.575	0.575	0.563	0.549	0.565	0.534	0.520		0.535	0.552	3.73
77)	TP	o Xylene	0.544	0.569	0.557	0.544	0.564	0.536	0.520		0.527	0.545	3.22
78)	TP	Styrene	0.827	0.887	0.928	0.925	0.954	0.893	0.849		0.804	0.884	5.96
79)	I	1,4-Dichlorobenzene-d4	----------ISTD----------										
80)	TP	Bromoform	0.433	0.432	0.450	0.457	0.460	0.453	0.434		0.406	0.441	4.03
82)	TP	Isopropylbenzene	2.701	2.818	2.672	2.582	2.667	2.474	2.352		2.596	2.608	5.51
83)	S	4-Bromofluorobenzene	0.954	0.951	0.941	0.933	0.933	0.921	0.906	0.937	0.949	0.936	1.62
84)	TP	Bromobenzene	0.686	0.716	0.690	0.671	0.684	0.661	0.627		0.669	0.675	3.85
85)	TP	n-Propylbenzene	3.322	3.365	3.237	3.120	3.216	2.941	2.787		3.093	3.135	6.22
86)	TP	1,4-Dichlorobutane	0.982	0.982	0.949	0.936	0.921	0.885	0.854		0.927	0.929	4.76
87)	TP	1,1,2,2-Tetrachloroethane	0.784	0.811	0.805	0.803	0.779	0.754	0.727	0.807	0.754	0.780	3.81
88)	TP	4-Ethyltoluene	2.908	2.971	2.851	2.743	2.823	2.607	2.468		2.742	2.764	5.92

Initial Calibration Summary
Form 6

Client	**: CH2MHILL**	**Lab Number**	**: L1822027**
Project Name	**: DOW HANGING ROCK**	**Project Number**	**:**
Instrument ID	**: VOA123**	**Ical Ref**	**: ICAL14769**
Calibration dates	**: 06/06/18 16:59 06/07/18 12:17**		

Calibration Files

L1 =V23180606N04.D L2 =V23180606N06.D L3 =V23180606N07.D L4 =V23180606N08.D L6 =V23180606N09.D

L7 =V23180606N10.D L8 =V23180607A02.D L0 =V23180606N03.D L1.5=V23180606N05.D

	Compound	L1	L2	L3	L4	L6	L7	L8	L0	L1.5	Avg	%RSD
89) TP	2-Chlorotoluene	2.022	2.050	1.945	1.882	1.942	1.764	1.688		1.899	1.899	6.45
90) TP	1,3,5-Trimethylbenzene	2.258	2.340	2.268	2.207	2.266	2.117	2.027		2.142	2.203	4.61
91) TP	1,2,3-Trichloropropane	0.649	0.659	0.645	0.640	0.613	0.596	0.582		0.613	0.625	4.39
92) TP	trans-1,4-Dichloro-2-b...	0.240	0.241	0.243	0.238	0.228	0.221	0.221		0.215	0.231	4.73
93) TP	4-Chlorotoluene	2.075	2.100	2.025	1.940	1.984	1.852	1.773		1.933	1.960	5.64
94) TP	tert-Butylbenzene	1.932	1.978	1.915	1.846	1.913	1.790	1.704		1.807	1.861	4.85
97) TP	1,2,4-Trimethylbenzene	2.401	2.364	2.325	2.245	2.295	2.156	2.045		2.225	2.257	5.15
98) TP	sec-Butylbenzene	3.008	3.026	2.911	2.819	2.911	2.679	2.523		2.697	2.822	6.25
99) TP	p-Isopropyltoluene	2.486	2.536	2.477	2.401	2.494	2.326	2.187		2.331	2.405	4.87
100) TP	1,3-Dichlorobenzene	1.341	1.382	1.337	1.286	1.324	1.257	1.203		1.301	1.304	4.27
101) TP	1,4-Dichlorobenzene	1.364	1.403	1.341	1.293	1.321	1.263	1.204		1.325	1.314	4.67
102) TP	p-Diethylbenzene	1.610	1.632	1.602	1.551	1.619	1.526	1.473		1.504	1.565	3.79
103) TP	n-Butylbenzene	2.398	2.477	2.406	2.307	2.391	2.188	2.087		2.274	2.316	5.59
104) TP	1,2-Dichlorobenzene	1.268	1.302	1.263	1.226	1.256	1.207	1.151		1.210	1.236	3.79
105) TP	1,2,4,5-Tetramethylben...	2.462	2.552	2.564	2.505	2.593	2.450	2.296		2.404	2.478	3.93
106) TP	1,2-Dibromo-3-chloropr...	0.144	0.141	0.148	0.155	0.151	0.151	0.148		0.126	0.146	6.26
107) TP	1,3,5-Trichlorobenzene	1.071	1.057	1.060	1.023	1.067	1.022	0.986		1.029	1.039	2.81
108) TP	Hexachlorobutadiene	0.474	0.468	0.472	0.462	0.492	0.468	0.440		0.434	0.464	4.02
109) TP	1,2,4-Trichlorobenzene	0.929	0.935	0.940	0.917	0.943	0.910	0.869		0.921	0.920	2.59
110) TP	Naphthalene	2.615	2.545	2.578	2.608	2.534	2.430	2.241		2.426	2.497	5.05
111) TP	1,2,3-Trichlorobenzene	0.868	0.915	0.911	0.892	0.908	0.883	0.826		0.877	0.885	3.30

Continuing Calibration
Form 7

Client	: CH2MHILL	**Lab Number**	: L1822027		
Project Name	: DOW HANGING ROCK	**Project Number**	:		
Instrument ID	: VOA123	**Calibration Date**	: 06/13/18 18:44		
Lab File ID	: V23180613N01	**Init. Calib. Date(s)**	: 06/06/18	06/07/18	
Sample No	: WG1125780-2	**Init. Calib. Times**	: 16:59	12:17	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	89	0
Vinyl chloride	0.27	0.275	-	-1.9	20	90	0
1,1-Dichloroethene	0.197	0.206	-	-4.6	20	89	0
trans-1,2-Dichloroethene	0.23	0.236	-	-2.6	20	89	0
1,1-Dichloroethane	0.409	0.415	-	-1.5	20	89	0
cis-1,2-Dichloroethene	0.257	0.255	-	0.8	20	87	0
Dibromofluoromethane	0.252	0.245	-	2.8	20	87	0
1,1,1-Trichloroethane	0.349	0.353	-	-1.1	20	88	0
1,2-Dichloroethane-d4	0.283	0.276	-	2.5	20	88	0
1,2-Dichloroethane	0.318	0.308	-	3.1	20	86	-.01
Trichloroethene	0.241	0.242	-	-0.4	20	88	0
Chlorobenzene-d5	1	1	-	0	20	89	-.01
Toluene-d8	1.259	1.245	-	1.1	20	89	-.01
Tetrachloroethene	0.308	0.305	-	1	20	86	-.01
1,4-Dichlorobenzene-d4	1	1	-	0	20	88	-.01
4-Bromofluorobenzene	0.936	0.935	-	0.1	20	89	0

* Value outside of QC limits.

Internal Standard Area and RT Summary
Form 8

Client	: CH2MHILL	**Lab Number**	: L1822027
Project Name	: DOW HANGING ROCK	**Project Number**	:
Instrument ID	: VOA123	**Analysis Date**	: 06/13/18 18:44
Sample No	: WG1125780-2	**Lab File ID**	: V23180613N01

	Fluorobenzene (IS)		Chlorobenzene-d5		1,4-Dichlorobenzene-D4	
	Area	RT	Area	RT	Area	RT
WG1125780-2	315218	6.02	256816	9.56	136229	12.26
Upper Limit	630436	6.52	513632	10.06	272458	12.76
Lower Limit	157609	5.52	128408	9.06	68115	11.76
Sample ID						
WG1125780-3 LCS	314582	6.02	253246	9.56	132486	12.26
WG1125780-4 LCSD	308310	6.02	246598	9.56	129935	12.26
WG1125780-5 BLANK	302275	6.02	243478	9.56	124780	12.26
S01-SS29-0102-061218	245097	6.02	201276	9.56	103252	12.26
S01-SS29-0708-061218	248162	6.02	203810	9.56	104601	12.26
S01-SS29-2425-061218	228100	6.02	187843	9.56	93988	12.26

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area

RT Upper Limit = +0.50 minutes of internal standard RT
RT Lower Limit = -0.50 minutes of internal standard RT

* Values outside of QC limits

Wet Chemistry

Total Solids / Percent Moisture Analysis

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1822027
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1822027-01	**Date Collected**	: 06/12/18 10:20
Client ID	: S01-SS29-0102-061218	**Date Received**	: 06/13/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/13/18 15:04
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1125554.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 79
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	79.3	0.100	NA	
NONE	Moisture	20.7	0.100	NA	

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1822027
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1822027-02	**Date Collected**	: 06/12/18 10:35
Client ID	: S01-SS29-0708-061218	**Date Received**	: 06/13/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/13/18 15:04
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1125554.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 81
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	81.0	0.100	NA	
NONE	Moisture	19.0	0.100	NA	

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1822027
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: L1822027-03	**Date Collected**	: 06/12/18 10:50
Client ID	: S01-SS29-2425-061218	**Date Received**	: 06/13/18
Sample Location	: IRONTON, OH	**Date Analyzed**	: 06/13/18 15:04
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1125554.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 95
Digestion Method	:	**Date Digested**	:

		%			
CAS NO.	**Parameter**	**Results**	**RL**	**MDL**	**Qualifier**
NONE	Solids, Total	95.3	0.100	NA	
NONE	Moisture	4.70	0.100	NA	

Form 1
WETCHEM

Client	: CH2MHILL	**Lab Number**	: L1822027
Project Name	: DOW HANGING ROCK	**Project Number**	:
Lab ID	: WG1125554-1	**Date Collected**	: 06/12/18 10:20
Client ID	: S01-SS29-0102-061218DUP	**Date Received**	: 06/13/18
Sample Location	:	**Date Analyzed**	: 06/13/18 15:04
Sample Matrix	: SOIL	**Dilution Factor**	: 1
Analytical Method	: 121,2540G	**Analyst**	: RI
Lab File ID	: WG1125554.pdf	**Instrument ID**	: BALANCE#47
Sample Amount	:	**%Solids**	: 79
Digestion Method	:	**Date Digested**	:

CAS NO.	Parameter	% Results	% RL	% MDL	Qualifier
NONE	Solids, Total	79.5	0.100	NA	
NONE	Moisture	20.5	0.100	NA	

Alpha Report

ANALYTICAL REPORT

Lab Number:	L1822027
Client:	CH2MHILL 1100 NE Circle Blvd. Suite 300 Corvallis, OR 97330
ATTN:	Shane Lowe
Phone:	(314) 335-3024
Project Name:	DOW HANGING ROCK
Project Number:	Not Specified
Report Date:	06/14/18

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1822027
Report Date: 06/14/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1822027-01	S01-SS29-0102-061218	SOIL	IRONTON, OH	06/12/18 10:20	06/13/18
L1822027-02	S01-SS29-0708-061218	SOIL	IRONTON, OH	06/12/18 10:35	06/13/18
L1822027-03	S01-SS29-2425-061218	SOIL	IRONTON, OH	06/12/18 10:50	06/13/18

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1822027
Report Date: 06/14/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Cristin Walker

Title: Technical Director/Representative Date: 06/14/18

ORGANICS

VOLATILES

Project Name: DOW HANGING ROCK
Lab Number: L1822027
Project Number: Not Specified
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1822027-01
Client ID: S01-SS29-0102-061218
Sample Location: IRONTON, OH

Date Collected: 06/12/18 10:20
Date Received: 06/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/14/18 03:56
Analyst: MV
Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Tetrachloroethene	3.0		ug/kg	1.1	--	1
Vinyl chloride	ND		ug/kg	2.1	--	1
1,1-Dichloroethene	ND		ug/kg	1.1	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.6	--	1
Trichloroethene	ND		ug/kg	1.1	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.1	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	97		70-130

Project Name: DOW HANGING ROCK
Project Number: Not Specified
Lab Number: L1822027
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1822027-02
Client ID: S01-SS29-0708-061218
Sample Location: IRONTON, OH
Date Collected: 06/12/18 10:35
Date Received: 06/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/14/18 04:22
Analyst: MV
Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Tetrachloroethene	23		ug/kg	1.1	--	1
Vinyl chloride	ND		ug/kg	2.2	--	1
1,1-Dichloroethene	ND		ug/kg	1.1	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.6	--	1
Trichloroethene	2.8		ug/kg	1.1	--	1
cis-1,2-Dichloroethene	1.2		ug/kg	1.1	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	97		70-130

Project Name: DOW HANGING ROCK
Lab Number: L1822027
Project Number: Not Specified
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1822027-03
Client ID: S01-SS29-2425-061218
Sample Location: IRONTON, OH

Date Collected: 06/12/18 10:50
Date Received: 06/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/14/18 04:48
Analyst: MV
Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Tetrachloroethene	140		ug/kg	1.0	--	1
Vinyl chloride	ND		ug/kg	2.1	--	1
1,1-Dichloroethene	ND		ug/kg	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.6	--	1
Trichloroethene	11		ug/kg	1.0	--	1
cis-1,2-Dichloroethene	3.9		ug/kg	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	98		70-130

Project Name: DOW HANGING ROCK
Project Number: Not Specified
Lab Number: L1822027
Report Date: 06/14/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/13/18 20:40
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 01-03 Batch: WG1125780-5					
Tetrachloroethene	ND		ug/kg	1.0	--
Vinyl chloride	ND		ug/kg	2.0	--
1,1-Dichloroethene	ND		ug/kg	1.0	--
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--
Trichloroethene	ND		ug/kg	1.0	--
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	97		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: Not Specified

Lab Number: L1822027

Report Date: 06/14/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01-03 Batch: WG1125780-3 WG1125780-4								
Tetrachloroethene	92		92		70-130	0		30
Vinyl chloride	95		96		67-130	1		30
1,1-Dichloroethene	95		94		65-135	1		30
trans-1,2-Dichloroethene	96		97		70-130	1		30
Trichloroethene	95		94		70-130	1		30
cis-1,2-Dichloroethene	96		96		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		98		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	102		102		70-130
Dibromofluoromethane	97		97		70-130

INORGANICS
&
MISCELLANEOUS

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1822027
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1822027-01
Client ID: S01-SS29-0102-061218
Sample Location: IRONTON, OH

Date Collected: 06/12/18 10:20
Date Received: 06/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.3		%	0.100	NA	1	-	06/13/18 15:04	121,2540G	RI
Moisture	20.7		%	0.100	NA	1	-	06/13/18 15:04	121,2540G	RI

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1822027
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1822027-02
Client ID: S01-SS29-0708-061218
Sample Location: IRONTON, OH

Date Collected: 06/12/18 10:35
Date Received: 06/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.0		%	0.100	NA	1	-	06/13/18 15:04	121,2540G	RI
Moisture	19.0		%	0.100	NA	1	-	06/13/18 15:04	121,2540G	RI

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1822027
Report Date: 06/14/18

SAMPLE RESULTS

Lab ID: L1822027-03
Client ID: S01-SS29-2425-061218
Sample Location: IRONTON, OH

Date Collected: 06/12/18 10:50
Date Received: 06/13/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.3		%	0.100	NA	1	-	06/13/18 15:04	121,2540G	RI
Moisture	4.70		%	0.100	NA	1	-	06/13/18 15:04	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: DOW HANGING ROCK

Project Number: Not Specified

Lab Number: L1822027

Report Date: 06/14/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1125554-1 QC Sample: L1822027-01 Client ID: S01-SS29-0102-061218						
Solids, Total	79.3	79.5	%	0		20
Moisture	20.7	20.5	%	1		20

Project Name: DOW HANGING ROCK
Project Number: Not Specified

Lab Number: L1822027
Report Date: 06/14/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1822027-01A	5 gram Encore Sampler	A	NA		5.7	Y	Present/Intact		8260HLW(14)
L1822027-01B	5 gram Encore Sampler	A	NA		5.7	Y	Present/Intact		8260HLW(14)
L1822027-01C	5 gram Encore Sampler	A	NA		5.7	Y	Present/Intact		8260HLW(14)
L1822027-01D	Bacteria Cup unpreserved	A	NA		5.7	Y	Present/Intact		TS(7),MOISTURE(7)
L1822027-01X	Vial MeOH preserved split	A	NA		5.7	Y	Present/Intact		8260HLW(14)
L1822027-01Y	Vial Water preserved split	A	NA		5.7	Y	Present/Intact	13-JUN-18 13:19	8260HLW(14)
L1822027-01Z	Vial Water preserved split	A	NA		5.7	Y	Present/Intact	13-JUN-18 13:19	8260HLW(14)
L1822027-02A	5 gram Encore Sampler	A	NA		5.7	Y	Present/Intact		8260HLW(14)
L1822027-02B	5 gram Encore Sampler	A	NA		5.7	Y	Present/Intact		8260HLW(14)
L1822027-02C	5 gram Encore Sampler	A	NA		5.7	Y	Present/Intact		8260HLW(14)
L1822027-02D	Bacteria Cup unpreserved	A	NA		5.7	Y	Present/Intact		TS(7),MOISTURE(7)
L1822027-02X	Vial MeOH preserved split	A	NA		5.7	Y	Present/Intact		8260HLW(14)
L1822027-02Y	Vial Water preserved split	A	NA		5.7	Y	Present/Intact	13-JUN-18 13:19	8260HLW(14)
L1822027-02Z	Vial Water preserved split	A	NA		5.7	Y	Present/Intact	13-JUN-18 13:19	8260HLW(14)
L1822027-03A	5 gram Encore Sampler	A	NA		5.7	Y	Present/Intact		8260HLW(14)
L1822027-03B	5 gram Encore Sampler	A	NA		5.7	Y	Present/Intact		8260HLW(14)
L1822027-03C	5 gram Encore Sampler	A	NA		5.7	Y	Present/Intact		8260HLW(14)
L1822027-03D	Bacteria Cup unpreserved	A	NA		5.7	Y	Present/Intact		TS(7),MOISTURE(7)
L1822027-03X	Vial MeOH preserved split	A	NA		5.7	Y	Present/Intact		8260HLW(14)
L1822027-03Y	Vial Water preserved split	A	NA		5.7	Y	Present/Intact	13-JUN-18 13:19	8260HLW(14)
L1822027-03Z	Vial Water preserved split	A	NA		5.7	Y	Present/Intact	13-JUN-18 13:19	8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1822027
Project Number:	Not Specified	**Report Date:**	06/14/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report

Project Name:	DOW HANGING ROCK	**Lab Number:**	L1822027
Project Number:	Not Specified	**Report Date:**	06/14/18

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name: DOW HANGING ROCK
Project Number: Not Specified
Lab Number: L1822027
Report Date: 06/14/18

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

L1822827

Environmental Analysis Request/Chain of Custody

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For Eurofins Lancaster Laboratories Environmental use only

Acct. # _____ Group # _____ Sample # _____

COC # 562623

Client Information

Client: DOW c/o Jacobs	Acct. #:
Project Name/#: DOW Hanging Rock, OHIO	PWSID #:
Project Manager: Chilker / Shana Lowe	P.O. #:
Sampler: Billy Irish	Quote #:
State where samples were collected: Ohio	For Compliance: Yes ☐ No ☒

Matrix

Soil ☒ Sediment ☐ Tissue ☐ | Water: Potable ☐ Ground ☐ NPDES ☐ Surface ☐ | Other: ☐

Analysis Requested

Preservation and Filtration Codes

Sample Identification	Collected Date	Collected Time	Grab	Composite	Soil	Water	Other	Total # of Containers	VOC's Soil / % moisture
SO1-SS29-0102-061218	6-12-18	1020	X		X			5	X
SO1-SS29-0708-061218	6-12-18	1035	X		X			5	X
SO1-SS29-2425-061218	6-12-18	1050	X		X			5	X

For Lab Use Only

FSC: _____

SCR#: _____

Preservation Codes

H=HCl	T=Thiosulfate
N=HNO_3	B=NaOH
S=H_2SO_4	P=H_3PO_4
F=Field Filtered	O=Other

Remarks

Turnaround Time (TAT) Requested (please circle)

Standard (Rush)

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: 24 hr

E-mail address: _____

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) | Type VI (Raw Data Only)

Type III (Reduced non-CLP) | NJ DKQP | TX TRRP-13

NYSDEC Category A or B | MA MCP | CT RCP

Relinquished by	Date	Time	Received by	Date	Time
[signature]	6-12-18	1820	[signature] GNS AAR	6/13/18	10:10

EDD Required? Yes No

If yes, format: As per Contract

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS _____ FedEx X Other _____

Temperature upon receipt _____ °C

ORIGIN ID:HTSA (414) 248-2874

CH2M
1400 AIRPORT RD

HUNTINGTON, WV 25704
UNITED STATES US

SHIP DATE: 12JUN18
ACTWGT: 26.40 LB
CAD: 006994268/SSFE1904
DIMS: 19x14x14 IN

BILL THIRD PARTY

Part # 156297SHOP/WEB/2/2SS 03/19

TO REF #693874.01.FD
ALPHA LABORATORIES
8 WALKUP DR

WESTBOROUGH MA 01581

(000) 000-0000 REF:
INV:
PO: DEPT:

FedEx Express

E

WED - 13 JUN 10:30A
PRIORITY OVERNIGHT
AHS
01581
MA-US BOS

TRK# 0201 7813 9521 0854

XE BBFA

eurofins | Lancaster Laboratories

CUSTODY SEAL

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 56-2300

DATE: 6-12-18

SIGNATURE: [signature]

Appendix E
Data Quality Evaluation

JACOBS

Memorandum

Data Quality Evaluation for the 2018 Additional Phase 3 RCRA Facility Investigation, Hanging Rock Plant, Ironton, Ohio

PREPARED FOR:	The Dow Chemical Company
PREPARED BY:	Jacobs
DATE:	August 2018

Introduction

The objective of this data quality evaluation (DQE) report is to assess the data quality of analytical results for groundwater, soil, soil gas, and sewer gas samples collected from the Hanging Rock Plant in Ironton, Ohio. Jacobs collected samples June 5 through June 19, 2018. Guidance for this DQE report came from the *Quality Assurance Project Plan Dow Hanging Rock, Ironton, Ohio* (QAPP) (*November 2011);* the *QAPP Addendum 2 (September 2016); QAPP Addendum 3 (May 2018);* the *U.S. Environmental Protection Agency* (*USEPA) National Functional Guidelines for Organic Superfund Methods Data Review, January 2017;* and individual method requirements.

The analytical results were evaluated using the criteria of precision, accuracy, representativeness, comparability, and completeness (PARCC) as described in the QAPP. This report is intended as a general data quality assessment designed to summarize data issues.

Analytical Data

This DQE report covers 81 soil samples, 22 groundwater samples, 14 soil gas samples, 2 sewer gas samples, 3 soil field duplicates (FDs), 3 groundwater FDs, 2 soil gas FDs, 4 soil matrix spike (MS)/matrix spike duplicate (MSD) samples, 5 groundwater MS/MSDs, one equipment blank (EB), and 6 trip blanks (TB). The samples were reported in 12 sample delivery groups (SDGs) identified as DHR36, DHR37, DHR38, DHR39, DHR40, DHR41, DHR42, DHR43, DHR44, L1820859, L1822027, and L1823533. Samples were collected and delivered to Eurofins Lancaster Laboratory in Lancaster, Pennsylvania, and Alpha Analytical in Mansfield and Westborough, Massachusetts. The samples were analyzed by one or more of the methods listed in Table 1.

Table 1

Analytical Parameters

2018 Additional Phase 3 RCRA Facility Investigation, Hanging Rock Plant

Parameter	Method
Volatile Organic Compounds (VOC)	SW8260B
VOC	TO-15

The SDGs were assessed by reviewing the following: (1) the chain of custody documentation; (2) holding-time compliance; (3) initial and continuing calibration criteria; (4) method blanks/field blanks; (5) laboratory control spiking sample/laboratory control spiking sample duplicate (LCS/LCSD) recoveries and precision; (6) MS/MSD recoveries and precision; (7) surrogate recoveries; (8) internal

standard recoveries; (9) FD precision; and (10) the required quality control (QC) samples at the specified frequencies.

Data flags were assigned per the QAPP. Multiple flags are routinely applied to specific sample method/matrix/analyte combinations, but there will only be one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes matrix and blank sample impacts.

The data flags are those listed in the QAPP and are defined below:

- J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- R = The sample result was rejected due to serious deficiencies in the ability to analyze the sample and meet the QC criteria. The presence or absence of the analyte could not be verified.
- U = The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Findings

The overall summaries of the data validation are contained in the following sections. Qualified data are presented in Table 2.

Holding Time and Preservation

Acceptance criteria were met with the following exceptions:

- Due to a FedEx delay, several soil samples were preserved a few hours past the recommended method/QAPP criteria of 48 hours for volatile organic compound (VOC) analysis. The National Functional Guidelines for Organic Data Review recommend samples be preserved immediately upon receipt by the laboratory rather than the 48-hour window recommended in the method/QAPP. As the samples were received at the laboratory still cooled to less than 4 degrees Celsius (°C), were immediately preserved by the laboratory and analyzed within the 14-day analytical hold time, the data were not qualified based on professional judgment.

Calibration

Initial and continuing calibration analyses were performed as required by the methods and acceptance criteria were met with the following exceptions:

- The percent differences (%D) for cis-1,2-dichloroethene and vinyl chloride were greater than criteria in a few VOC initial calibration verification (ICVS) standards, indicating a possible high bias. The data were not qualified because the associated samples did not contain reportable levels of these analytes.
- The concentration of tetrachloroethene exceeded the calibration range of the instrument for sample S01-SS32-2324-061318. The result was qualified as estimated and flagged “J” in the sample.

Method Blanks

Method blanks were analyzed at the required frequency and were free of contamination.

Laboratory Control Samples

LCS/LCSDs were analyzed as required and accuracy and precision criteria were met with the following exception:

- Vinyl chloride was recovered less than the lower control limit in a few VOC LCSDs associated with the soil analysis, indicating a possible low bias. The data were qualified as estimated and flagged "UJ" in the associated samples.

Surrogates

Surrogates were added to the samples for methods requiring their use and acceptance criteria were met with the following exception:

- One surrogate was recovered greater than the upper control limit in the VOC analysis of sample S01-SS33-0708-061118, indicating a possible high bias. Detected results were qualified as estimated and flagged "J". Non-detected results were not qualified.

Matrix Spikes

MS/MSD samples were analyzed as required and accuracy and precision criteria were met with the following exceptions:

- Tetrachloroethene was recovered less than the lower control limits in the MS for sample S01-SS27-0102-060518, indicating a possible low bias. The result was qualified as estimated and flagged "J" in the parent sample.
- cis-1,2-Dichloroethene, tetrachloroethene and/or trichloroethene were recovered greater than the upper control limits in several MS/MSDs, indicating a possible high bias. The data were qualified as estimated and flagged "J" in the respective parent samples.

Field Duplicates

FDs were collected as required and precision criteria were met with the following exceptions:

- The relative percent differences (RPD) for tetrachloroethene and trichloroethene exceeded criteria in FD pair S01-GW08-1828-060518/ S01-GWFD01-060518. The data were qualified as estimated and flagged "J" in the FD pair.
- The RPD for tetrachloroethene exceeded criteria in FD pair S01-SS36-0708-060818/ S01-SSFD01-060818D. The data were qualified as estimated and flagged "J" in the FD pair.

Field Blanks

TBs and an EB were collected and analyzed, and found free of contamination.

Chain of Custody

Required procedures were followed and COCs were generally free of errors.

Overall Assessment

The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected and the resulting analytical data can be used to support the decision-making process. The following summary highlights the PARCC findings for the above-defined events:

Precision of the data was verified through the review of the field and laboratory data quality indicators that include: FD, LCS/LCSD and MS/MSD RPDs. Precision was generally acceptable; however, a few analytes were qualified as estimated in four samples due to FD RPD issues. Data users should consider the impact to any result that is qualified as estimated as it may contain a bias which could affect the decision-making process.

Accuracy of the data was verified through the review of the calibration data, LCS/LCSD, internal standard, surrogate and MS/MSD recoveries, as well as the evaluation of method/field blank data. Accuracy was generally acceptable; however, a few analytes were qualified as estimated due to calibration, LCS/LCSD, surrogate and/or MS/MSD issues. The method/field blanks were free of contamination.

Representativeness of the data was verified through the sample's collection, storage and preservation procedures and the verification of holding-time compliance. No issues were reported for sample collection or storage procedures. Several soil samples were prepared for analysis a few hours past hold time criteria; however, the data are considered useable for decision making. All other data were reported from analyses within the USEPA recommended holding time.

Comparability of the data was verified through the use of standard USEPA analytical procedures and standard units for reporting. Results obtained are comparable to industry standards in that the collection and analytical techniques followed approved, documented procedures.

Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. Completeness is expressed as the percentage of valid or usable measurements compared to planned measurements. Valid data are defined as all data that are not rejected for project use. All data were considered valid. The completeness goal of 90 percent was met for all method/analytes combinations.

The data can be used for project decisions taking into consideration the validation flags applied to the samples.

TABLE 2

Analytical Parameters

2018 Phase 3 RCRA Facility Investigation, Hanging Rock Plant, Ironton, Ohio

Field ID	Method	Analyte	Units	Final Result	Validation Flag	Validation Reason
S01-GW01-1828-060518	SW8260B	Tetrachloroethene	µg/l	5.8	J	MS>UCL, SD>UCL
S01-GW06-2630-060818	SW8260B	Tetrachloroethene	µg/l	38	J	MS>UCL
S01-GW07-2630-061418	SW8260B	Cis-1,2-Dichloroethene	µg/l	55	J	MS>UCL, SD>UCL
S01-GW07-2630-061418	SW8260B	Trichloroethene	µg/l	51	J	MS>UCL, SD>UCL
S01-GW08-1828-060518	SW8260B	Tetrachloroethene	µg/l	61	J	FD>RPD
S01-GW08-1828-060518	SW8260B	Trichloroethene	µg/l	4.1	J	FD>RPD
S01-GWFD01-060518	SW8260B	Tetrachloroethene	µg/l	37	J	FD>RPD
S01-GWFD01-060518	SW8260B	Trichloroethene	µg/l	3	J	FD>RPD
S01-MW08-2636-060918	SW8260B	Cis-1,2-Dichloroethene	µg/l	1.9	J	MS>UCL
S01-MW08-2636-060918	SW8260B	Trichloroethene	µg/l	5.8	J	SD>UCL

TABLE 2

Analytical Parameters

2018 Phase 3 RCRA Facility Investigation, Hanging Rock Plant, Ironton, Ohio

Field ID	Method	Analyte	Units	Final Result	Validation Flag	Validation Reason
S01-SS21-0102-060718	SW8260B	Tetrachloroethene	µg/Kg	12	J	MS>UCL, SD>UCL
S01-SS22-0102-061118	SW8260B	Vinyl chloride	µg/Kg	260	UJ	LCSD<LCL
S01-SS27-0102-060518	SW8260B	Tetrachloroethene	µg/Kg	1.8	J	MS<LCL
S01-SS30-0102-061118	SW8260B	Vinyl chloride	µg/Kg	250	UJ	LCSD<LCL
S01-SS32-2324-061318	SW8260B	Tetrachloroethene	µg/Kg	1500	J	>ICLinearRange
S01-SS33-0203-060718	SW8260B	Vinyl chloride	µg/Kg	260	UJ	LCSD<LCL
S01-SS33-0708-061118	SW8260B	Cis-1,2-Dichloroethene	µg/Kg	230	J	Sur>UCL
S01-SS33-0708-061118	SW8260B	Trans-1,2-Dichloroethene	µg/Kg	4	J	Sur>UCL
S01-SS33-0708-061118	SW8260B	Trichloroethene	µg/Kg	95	J	Sur>UCL
S01-SS36-0708-060818	SW8260B	Tetrachloroethene	µg/Kg	120	J	FD>RPD
S01-SS38-0607-060818	SW8260B	Tetrachloroethene	µg/Kg	58	J	MS>UCL
S01-SSFD01-060818D	SW8260B	Tetrachloroethene	µg/Kg	35	J	FD>RPD

Validation Reason:

>ICLinearRange	The concentration exceeded the linear calibration range of the instrument.
FD>RPD	The RPD exceeded criteria in the field duplicate pair.
LCSD<LCL	The laboratory control sample duplicate recovered less than the lower control limit.
MS<LCL	The matrix spike sample recovered less than the lower control limit.
MS>UCL	The matrix spike sample recovered greater than the upper control limit.
SD>UCL	The matrix spike duplicate sample recovered greater than the upper control limit.
Sur>UCL	The surrogate recovered greater than the upper control limit.

Appendix F
Screening-Level Human Health Risk Assessment Tables and Phase 3 RCRA Facility Investigation Updated Complete Soil Data Set SLHHRA Technical Memorandum

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	GENERAL CHEM	MOIST	MOISTURE	14.4		percent		
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	METAL	7440-38-2	ARSENIC	10		mg/kg	0.0907	0.454
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	METAL	7440-39-3	BARIUM	123		mg/kg	0.021	0.584
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	METAL	7440-43-9	CADMIUM	1.14		mg/kg	0.0234	0.584
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	METAL	7440-47-3	CHROMIUM	21.2		mg/kg	0.164	1.75
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	METAL	7439-92-1	LEAD	20		mg/kg	0.257	1.75
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	METAL	7439-97-6	MERCURY	0.0328	J	mg/kg	0.0077	0.11
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	METAL	7782-49-2	SELENIUM	0.794	U	mg/kg	0.794	2.34
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	METAL	7440-22-4	SILVER	0.097	U	mg/kg	0.097	0.584
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	92-52-4	1,1'-BIPHENYL	370		µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	123-91-1	1,4-DIOXANE	580	U	µg/kg	580	1900
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	51-28-5	2,4-DINITROPHENOL	1900	U	µg/kg	1900	5800
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	121-14-2	2,4-DINITROTOLUENE	390	U	µg/kg	390	970
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	606-20-2	2,6-DINITROTOLUENE	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	41	U	µg/kg	41	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	95-57-8	2-CHLOROPHENOL	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	22	J	µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	95-48-7	2-METHYLPHENOL	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	88-74-4	2-NITROANILINE	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	88-75-5	2-NITROPHENOL	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	580	U	µg/kg	580	1900
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	99-09-2	3-NITROANILINE	390	U	µg/kg	390	970
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	970	U	µg/kg	970	2900
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	106-47-8	4-CHLOROANILINE	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	106-44-5	4-METHYLPHENOL	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	100-01-6	4-NITROANILINE	390	U	µg/kg	390	970
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	100-02-7	4-NITROPHENOL	970	U	µg/kg	970	2900
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	83-32-9	ACENAPHTHENE	64	J	µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	208-96-8	ACENAPHTHYLENE	19	U	µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	120-12-7	ANTHRACENE	22	J	µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	69	J	µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	50-32-8	BENZO(A)PYRENE	73	J	µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	100		µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	60	J	µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	65	J	µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	100-51-6	BENZYL ALCOHOL	970	U	µg/kg	970	2900
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	390	U	µg/kg	390	990
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	390	U	µg/kg	390	970
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	86-74-8	CARBAZOLE	130	J	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	218-01-9	CHRYSENE	88	J	µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	19	U	µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	132-64-9	DIBENZOFURAN	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	84-66-2	DIETHYLPHTHALATE	390	U	µg/kg	390	970
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	131-11-3	DIMETHYLPHTHALATE	390	U	µg/kg	390	970
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	390	U	µg/kg	390	970
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	390	U	µg/kg	390	970
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	206-44-0	FLUORANTHENE	160		µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	86-73-7	FLUORENE	52	J	µg/kg	19	99

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	118-74-1	HEXACHLOROBENZENE	19	U	µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	970	U	µg/kg	970	2900
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	67-72-1	HEXACHLOROETHANE	190	U	µg/kg	190	970
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	52	J	µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	78-59-1	ISOPHORONE	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	98-95-3	NITROBENZENE	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	190	U	µg/kg	190	990
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	85-01-8	PHENANTHRENE	150		µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	108-95-2	PHENOL	97	U	µg/kg	97	190
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	SVOC	129-00-0	PYRENE	140		µg/kg	19	99
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	78-93-3	2-BUTANONE	10	J	µg/kg	4	11
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	11
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	11
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	67-64-1	ACETONE	43	J	µg/kg	8	22
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	71-43-2	BENZENE	2	J	µg/kg	0.6	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	75-15-0	CARBON DISULFIDE	1	J	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	5	J	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	100-41-4	ETHYLBENZENE	2	J	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	11
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	6

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.6	U	µg/kg	0.6	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	127-18-4	TETRACHLOROETHENE	1	J	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	108-88-3	TOLUENE	2	J	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	2	J	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	6
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	11
S01-SS01	S01-SS01-0002-120911	12/9/2011	0	2	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	6
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	GENERAL CHEM	MOIST	MOISTURE	18.7		percent		
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	METAL	7440-38-2	ARSENIC	14.8		mg/kg	0.0965	0.482
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	METAL	7440-39-3	BARIUM	55		mg/kg	0.0213	0.591
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	METAL	7440-43-9	CADMIUM	1.37		mg/kg	0.0237	0.591
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	METAL	7440-47-3	CHROMIUM	21.8		mg/kg	0.166	1.77
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	METAL	7439-92-1	LEAD	15.8		mg/kg	0.26	1.77
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	METAL	7439-97-6	MERCURY	0.0219	J	mg/kg	0.0084	0.119
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	METAL	7782-49-2	SELENIUM	0.804	U	mg/kg	0.804	2.37
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	METAL	7440-22-4	SILVER	0.0982	U	mg/kg	0.0982	0.591
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	92-52-4	1,1'-BIPHENYL	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	121-14-2	2,4-DINITROTOLUENE	82	U	µg/kg	82	210
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	606-20-2	2,6-DINITROTOLUENE	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	95-57-8	2-CHLOROPHENOL	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	95-48-7	2-METHYLPHENOL	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	88-74-4	2-NITROANILINE	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	88-75-5	2-NITROPHENOL	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	99-09-2	3-NITROANILINE	82	U	µg/kg	82	210
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	210	U	µg/kg	210	620
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	106-47-8	4-CHLOROANILINE	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	106-44-5	4-METHYLPHENOL	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	100-01-6	4-NITROANILINE	82	U	µg/kg	82	210
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	100-02-7	4-NITROPHENOL	210	U	µg/kg	210	620
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	100-51-6	BENZYL ALCOHOL	210	U	µg/kg	210	620
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	82	U	µg/kg	82	210
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	82	U	µg/kg	82	210
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	86-74-8	CARBAZOLE	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	132-64-9	DIBENZOFURAN	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	84-66-2	DIETHYLPHTHALATE	82	U	µg/kg	82	210
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	131-11-3	DIMETHYLPHTHALATE	82	U	µg/kg	82	210
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	82	U	µg/kg	82	210
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	82	U	µg/kg	82	210
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	210	U	µg/kg	210	620
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	210
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	78-59-1	ISOPHORONE	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	98-95-3	NITROBENZENE	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	85-01-8	PHENANTHRENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	108-95-2	PHENOL	21	U	µg/kg	21	41
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	11
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	11
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	11
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	67-64-1	ACETONE	38	J	µg/kg	8	22
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	71-43-2	BENZENE	2	J	µg/kg	0.5	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	75-25-2	BROMOFORM	3	J	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	75-15-0	CARBON DISULFIDE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	6		µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	11
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	98-82-8	ISOPROPYLBENZENE	2	J	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	127-18-4	TETRACHLOROETHENE	12		µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	108-88-3	TOLUENE	2	J	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	79-01-6	TRICHLOROETHENE	2	J	µg/kg	1	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	11
S01-SS01	S01-SS01-0305-120911	12/9/2011	3	5	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	GENERAL CHEM	MOIST	MOISTURE	17.5		percent		
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	METAL	7440-38-2	ARSENIC	10.9		mg/kg	0.0941	0.471
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	METAL	7440-39-3	BARIUM	39.1		mg/kg	0.021	0.583
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	METAL	7440-43-9	CADMIUM	1.01		mg/kg	0.0233	0.583
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	METAL	7440-47-3	CHROMIUM	12.4		mg/kg	0.163	1.75
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	METAL	7439-92-1	LEAD	11.3		mg/kg	0.256	1.75
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	METAL	7439-97-6	MERCURY	0.0146	J	mg/kg	0.0081	0.115
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	METAL	7782-49-2	SELENIUM	0.793	U	mg/kg	0.793	2.33
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	METAL	7440-22-4	SILVER	0.0967	U	mg/kg	0.0967	0.583
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	92-52-4	1,1'-BIPHENYL	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	400
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	51-28-5	2,4-DINITROPHENOL	400	U	µg/kg	400	1200
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	121-14-2	2,4-DINITROTOLUENE	81	U	µg/kg	81	200
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	8	U	µg/kg	8	40

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	400
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	99-09-2	3-NITROANILINE	81	U	µg/kg	81	200
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	610
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	100-01-6	4-NITROANILINE	81	U	µg/kg	81	200
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	610
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	610
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	81	U	µg/kg	81	210
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	81	U	µg/kg	81	200
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	132-64-9	DIBENZOFURAN	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	84-66-2	DIETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	131-11-3	DIMETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	610
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	67-72-1	HEXACHLOROETHANE	40	U	µg/kg	40	200
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	87-86-5	PENTACHLOROPHENOL	40	U	µg/kg	40	210
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	85-01-8	PHENANTHRENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	40
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	10
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	10
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	10
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	67-64-1	ACETONE	20	J	µg/kg	7	20
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	75-25-2	BROMOFORM	37		µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	75-15-0	CARBON DISULFIDE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	10
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	127-18-4	TETRACHLOROETHENE	6		µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	10
S01-SS01	S01-SS01-0810-120911	12/9/2011	8	10	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	GENERAL CHEM	MOIST	MOISTURE	15.6		percent		
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	METAL	7440-38-2	ARSENIC	15.7		mg/kg	0.0911	0.456
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	METAL	7440-39-3	BARIUM	104		mg/kg	0.0211	0.587

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	METAL	7440-43-9	CADMIUM	0.537	J	mg/kg	0.0235	0.587
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	METAL	7440-47-3	CHROMIUM	10.6		mg/kg	0.164	1.76
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	METAL	7439-92-1	LEAD	8.51		mg/kg	0.258	1.76
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	METAL	7439-97-6	MERCURY	0.0303	J	mg/kg	0.0079	0.113
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	METAL	7782-49-2	SELENIUM	1.31	J	mg/kg	0.798	2.35
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	METAL	7440-22-4	SILVER	0.0974	U	mg/kg	0.0974	0.587
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	92-52-4	1,1'-BIPHENYL	200		µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	123-91-1	1,4-DIOXANE	590	U	µg/kg	590	2000
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	51-28-5	2,4-DINITROPHENOL	2000	U	µg/kg	2000	5900
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	121-14-2	2,4-DINITROTOLUENE	390	U	µg/kg	390	990
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	606-20-2	2,6-DINITROTOLUENE	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	41	U	µg/kg	41	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	95-57-8	2-CHLOROPHENOL	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	20	U	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	95-48-7	2-METHYLPHENOL	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	88-74-4	2-NITROANILINE	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	88-75-5	2-NITROPHENOL	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	590	U	µg/kg	590	2000
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	99-09-2	3-NITROANILINE	390	U	µg/kg	390	990
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	990	U	µg/kg	990	3000
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	106-47-8	4-CHLOROANILINE	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	106-44-5	4-METHYLPHENOL	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	100-01-6	4-NITROANILINE	390	U	µg/kg	390	990
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	100-02-7	4-NITROPHENOL	990	U	µg/kg	990	3000
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	83-32-9	ACENAPHTHENE	20	U	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	208-96-8	ACENAPHTHYLENE	20	U	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	120-12-7	ANTHRACENE	20	U	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	32	J	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	50-32-8	BENZO(A)PYRENE	45	J	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	74	J	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	53	J	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	43	J	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	100-51-6	BENZYL ALCOHOL	990	U	µg/kg	990	3000
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	390	U	µg/kg	390	1000
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	390	U	µg/kg	390	990
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	86-74-8	CARBAZOLE	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	218-01-9	CHRYSENE	62	J	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	20	U	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	132-64-9	DIBENZOFURAN	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	84-66-2	DIETHYLPHTHALATE	390	U	µg/kg	390	990
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	131-11-3	DIMETHYLPHTHALATE	390	U	µg/kg	390	990
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	390	U	µg/kg	390	990
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	390	U	µg/kg	390	990
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	206-44-0	FLUORANTHENE	43	J	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	86-73-7	FLUORENE	20	U	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	118-74-1	HEXACHLOROBENZENE	20	U	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	990	U	µg/kg	990	3000
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	67-72-1	HEXACHLOROETHANE	200	U	µg/kg	200	990

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	42	J	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	78-59-1	ISOPHORONE	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	98-95-3	NITROBENZENE	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	200	1000
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	85-01-8	PHENANTHRENE	62	J	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	108-95-2	PHENOL	99	U	µg/kg	99	200
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	SVOC	129-00-0	PYRENE	62	J	µg/kg	20	100
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	75-34-3	1,1-DICHLOROETHANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	563-58-6	1,1-DICHLOROPROPENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	89	UJ	µg/kg	89	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	106-93-4	1,2-DIBROMOETHANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	107-06-2	1,2-DICHLOROETHANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	78-87-5	1,2-DICHLOROPROPANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	142-28-9	1,3-DICHLOROPROPANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	594-20-7	2,2-DICHLOROPROPANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	78-93-3	2-BUTANONE	180	UJ	µg/kg	180	440
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	95-49-8	2-CHLOROTOLUENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	591-78-6	2-HEXANONE	130	UJ	µg/kg	130	440
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	106-43-4	4-CHLOROTOLUENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	108-10-1	4-METHYL-2-PENTANONE	130	UJ	µg/kg	130	440
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	67-64-1	ACETONE	310	UJ	µg/kg	310	890
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	71-43-2	BENZENE	22	UJ	µg/kg	22	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	108-86-1	BROMOBENZENE	96	J	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	74-97-5	BROMOCHLOROMETHANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	75-27-4	BROMODICHLOROMETHANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	75-25-2	BROMOFORM	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	74-83-9	BROMOMETHANE	89	UJ	µg/kg	89	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	75-15-0	CARBON DISULFIDE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	56-23-5	CARBON TETRACHLORIDE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	108-90-7	CHLOROBENZENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	75-00-3	CHLOROETHANE	89	UJ	µg/kg	89	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	67-66-3	CHLOROFORM	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	74-87-3	CHLOROMETHANE	89	UJ	µg/kg	89	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	110-82-7	CYCLOHEXANE	53	J	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	74-95-3	DIBROMOMETHANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	89	UJ	µg/kg	89	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	100-41-4	ETHYLBENZENE	720	J	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	76-13-1	FREON 113	89	UJ	µg/kg	89	440
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	87-68-3	HEXACHLOROBUTADIENE	89	UJ	µg/kg	89	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	98-82-8	ISOPROPYLBENZENE	250	J	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	179601-23-1	M+P-XYLENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	79-20-9	METHYL ACETATE	150	J	µg/kg	89	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	22	UJ	µg/kg	22	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	108-87-2	METHYLCYCLOHEXANE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	75-09-2	METHYLENE CHLORIDE	89	UJ	µg/kg	89	220

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	91-20-3	NAPHTHALENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	104-51-8	N-BUTYLBENZENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	103-65-1	N-PROPYLBENZENE	100	J	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	95-47-6	O-XYLENE	45	J	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	135-98-8	SEC-BUTYLBENZENE	67	J	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	100-42-5	STYRENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	98-06-6	TERT-BUTYLBENZENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	127-18-4	TETRACHLOROETHENE	1600	J	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	108-88-3	TOLUENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	79-01-6	TRICHLOROETHENE	68	J	µg/kg	44	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	89	UJ	µg/kg	89	220
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	108-05-4	VINYL ACETATE	89	UJ	µg/kg	89	440
S01-SS02	S01-SS02-0002-120911	12/9/2011	0	2	N	VOC	75-01-4	VINYL CHLORIDE	44	UJ	µg/kg	44	220
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	GENERAL CHEM	MOIST	MOISTURE	18.4		percent		
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	METAL	7440-38-2	ARSENIC	14.1		mg/kg	0.0943	0.471
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	METAL	7440-39-3	BARIUM	68.4		mg/kg	0.0214	0.595
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	METAL	7440-43-9	CADMIUM	1.18		mg/kg	0.0238	0.595
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	METAL	7440-47-3	CHROMIUM	18.6		mg/kg	0.167	1.78
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	METAL	7439-92-1	LEAD	14.1		mg/kg	0.262	1.78
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	METAL	7439-97-6	MERCURY	0.0263	J	mg/kg	0.008	0.114
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	METAL	7782-49-2	SELENIUM	0.809	U	mg/kg	0.809	2.38
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	METAL	7440-22-4	SILVER	0.0988	U	mg/kg	0.0988	0.595
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	92-52-4	1,1'-BIPHENYL	1800		µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	121-14-2	2,4-DINITROTOLUENE	82	U	µg/kg	82	200
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	40
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	99-09-2	3-NITROANILINE	100	J	µg/kg	82	200
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	610
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	100-01-6	4-NITROANILINE	82	U	µg/kg	82	200
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	610
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	610
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	82	U	µg/kg	82	210
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	82	U	µg/kg	82	200
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	132-64-9	DIBENZOFURAN	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	84-66-2	DIETHYLPHTHALATE	82	U	µg/kg	82	200
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	131-11-3	DIMETHYLPHTHALATE	82	U	µg/kg	82	200
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	82	U	µg/kg	82	200
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	82	U	µg/kg	82	200
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	610
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	200
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	85-01-8	PHENANTHRENE	19	J	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	41
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	SVOC	129-00-0	PYRENE	13	J	µg/kg	4	21
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	75-34-3	1,1-DICHLOROETHANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	75-35-4	1,1-DICHLOROETHENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	563-58-6	1,1-DICHLOROPROPENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	100	UJ	µg/kg	100	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	106-93-4	1,2-DIBROMOETHANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	107-06-2	1,2-DICHLOROETHANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	78-87-5	1,2-DICHLOROPROPANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	142-28-9	1,3-DICHLOROPROPANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	594-20-7	2,2-DICHLOROPROPANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	78-93-3	2-BUTANONE	200	UJ	µg/kg	200	510
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	95-49-8	2-CHLOROTOLUENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	591-78-6	2-HEXANONE	150	UJ	µg/kg	150	510
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	106-43-4	4-CHLOROTOLUENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	108-10-1	4-METHYL-2-PENTANONE	150	UJ	µg/kg	150	510
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	67-64-1	ACETONE	360	UJ	µg/kg	360	1000
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	71-43-2	BENZENE	55	J	µg/kg	26	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	108-86-1	BROMOBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	74-97-5	BROMOCHLOROMETHANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	75-27-4	BROMODICHLOROMETHANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	75-25-2	BROMOFORM	120	J	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	74-83-9	BROMOMETHANE	100	UJ	µg/kg	100	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	75-15-0	CARBON DISULFIDE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	56-23-5	CARBON TETRACHLORIDE	51	UJ	µg/kg	51	260

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	108-90-7	CHLOROBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	75-00-3	CHLOROETHANE	100	UJ	µg/kg	100	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	67-66-3	CHLOROFORM	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	74-87-3	CHLOROMETHANE	100	UJ	µg/kg	100	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	110-82-7	CYCLOHEXANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	74-95-3	DIBROMOMETHANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	100	UJ	µg/kg	100	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	100-41-4	ETHYLBENZENE	63	J	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	76-13-1	FREON 113	100	UJ	µg/kg	100	510
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	87-68-3	HEXACHLOROBUTADIENE	100	UJ	µg/kg	100	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	98-82-8	ISOPROPYLBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	179601-23-1	M+P-XYLENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	79-20-9	METHYL ACETATE	100	UJ	µg/kg	100	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	26	UJ	µg/kg	26	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	108-87-2	METHYLCYCLOHEXANE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	75-09-2	METHYLENE CHLORIDE	100	UJ	µg/kg	100	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	91-20-3	NAPHTHALENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	104-51-8	N-BUTYLBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	103-65-1	N-PROPYLBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	95-47-6	O-XYLENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	135-98-8	SEC-BUTYLBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	100-42-5	STYRENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	98-06-6	TERT-BUTYLBENZENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	127-18-4	TETRACHLOROETHENE	55	J	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	108-88-3	TOLUENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	79-01-6	TRICHLOROETHENE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	100	UJ	µg/kg	100	260
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	108-05-4	VINYL ACETATE	100	UJ	µg/kg	100	510
S01-SS02	S01-SS02-0305-120911	12/9/2011	3	5	N	VOC	75-01-4	VINYL CHLORIDE	51	UJ	µg/kg	51	260
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	GENERAL CHEM	MOIST	MOISTURE	17.1		percent		
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	METAL	7440-38-2	ARSENIC	11.1		mg/kg	0.0946	0.473
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	METAL	7440-39-3	BARIUM	39.7		mg/kg	0.0213	0.591
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	METAL	7440-43-9	CADMIUM	1.05		mg/kg	0.0237	0.591
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	METAL	7440-47-3	CHROMIUM	11.4		mg/kg	0.166	1.77
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	METAL	7439-92-1	LEAD	11.5		mg/kg	0.26	1.77
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	METAL	7439-97-6	MERCURY	0.0178	J	mg/kg	0.0082	0.117
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	METAL	7782-49-2	SELENIUM	0.804	U	mg/kg	0.804	2.37
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	METAL	7440-22-4	SILVER	0.0982	U	mg/kg	0.0982	0.591
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	92-52-4	1,1'-BIPHENYL	3800		µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	400
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	51-28-5	2,4-DINITROPHENOL	400	U	µg/kg	400	1200
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	121-14-2	2,4-DINITROTOLUENE	80	U	µg/kg	80	200
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	8	U	µg/kg	8	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	40

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	400
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	99-09-2	3-NITROANILINE	80	U	µg/kg	80	200
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	600
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	100-01-6	4-NITROANILINE	80	U	µg/kg	80	200
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	600
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	600
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	80	U	µg/kg	80	210
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	80	U	µg/kg	80	200
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	132-64-9	DIBENZOFURAN	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	84-66-2	DIETHYLPHTHALATE	80	U	µg/kg	80	200
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	131-11-3	DIMETHYLPHTHALATE	80	U	µg/kg	80	200
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	80	U	µg/kg	80	200
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	80	U	µg/kg	80	200
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	600
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	67-72-1	HEXACHLOROETHANE	40	U	µg/kg	40	200
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	87-86-5	PENTACHLOROPHENOL	40	U	µg/kg	40	210
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	85-01-8	PHENANTHRENE	32		µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	40
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	75-34-3	1,1-DICHLOROETHANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	75-35-4	1,1-DICHLOROETHENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	563-58-6	1,1-DICHLOROPROPENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	110	UJ	µg/kg	110	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	106-93-4	1,2-DIBROMOETHANE	54	UJ	µg/kg	54	270

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	107-06-2	1,2-DICHLOROETHANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	78-87-5	1,2-DICHLOROPROPANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	142-28-9	1,3-DICHLOROPROPANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	594-20-7	2,2-DICHLOROPROPANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	78-93-3	2-BUTANONE	220	UJ	µg/kg	220	540
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	95-49-8	2-CHLOROTOLUENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	591-78-6	2-HEXANONE	160	UJ	µg/kg	160	540
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	106-43-4	4-CHLOROTOLUENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	108-10-1	4-METHYL-2-PENTANONE	160	UJ	µg/kg	160	540
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	67-64-1	ACETONE	380	UJ	µg/kg	380	1100
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	71-43-2	BENZENE	160	J	µg/kg	27	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	108-86-1	BROMOBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	74-97-5	BROMOCHLOROMETHANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	75-27-4	BROMODICHLOROMETHANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	75-25-2	BROMOFORM	130	J	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	74-83-9	BROMOMETHANE	110	UJ	µg/kg	110	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	75-15-0	CARBON DISULFIDE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	56-23-5	CARBON TETRACHLORIDE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	108-90-7	CHLOROBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	75-00-3	CHLOROETHANE	110	UJ	µg/kg	110	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	67-66-3	CHLOROFORM	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	74-87-3	CHLOROMETHANE	110	UJ	µg/kg	110	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	110-82-7	CYCLOHEXANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	74-95-3	DIBROMOMETHANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	110	UJ	µg/kg	110	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	100-41-4	ETHYLBENZENE	260	J	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	76-13-1	FREON 113	110	UJ	µg/kg	110	540
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	87-68-3	HEXACHLOROBUTADIENE	110	UJ	µg/kg	110	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	98-82-8	ISOPROPYLBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	179601-23-1	M+P-XYLENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	79-20-9	METHYL ACETATE	110	UJ	µg/kg	110	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	27	UJ	µg/kg	27	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	108-87-2	METHYLCYCLOHEXANE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	75-09-2	METHYLENE CHLORIDE	110	UJ	µg/kg	110	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	91-20-3	NAPHTHALENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	104-51-8	N-BUTYLBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	103-65-1	N-PROPYLBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	95-47-6	O-XYLENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	135-98-8	SEC-BUTYLBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	100-42-5	STYRENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	98-06-6	TERT-BUTYLBENZENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	127-18-4	TETRACHLOROETHENE	320	J	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	108-88-3	TOLUENE	61	J	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	79-01-6	TRICHLOROETHENE	54	UJ	µg/kg	54	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	110	UJ	µg/kg	110	270
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	108-05-4	VINYL ACETATE	110	UJ	µg/kg	110	540
S01-SS02	S01-SS02-0810-120911	12/9/2011	8	10	N	VOC	75-01-4	VINYL CHLORIDE	54	UJ	µg/kg	54	270
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	METAL	7440-38-2	ARSENIC	11.4		mg/kg	0.092	0.46
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	METAL	7440-39-3	BARIUM	127	J	mg/kg	0.0201	0.558
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	METAL	7440-43-9	CADMIUM	1		mg/kg	0.0223	0.558
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	METAL	7440-47-3	CHROMIUM	23.1		mg/kg	0.156	1.68
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	METAL	7439-92-1	LEAD	17.3	J	mg/kg	0.246	1.68
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	METAL	7439-97-6	MERCURY	0.0131	J	mg/kg	0.0081	0.115

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	METAL	7782-49-2	SELENIUM	0.759	U	mg/kg	0.759	2.23
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	METAL	7440-22-4	SILVER	0.0927	U	mg/kg	0.0927	0.558
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	92-52-4	1,1'-BIPHENYL	25	J	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	390
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	51-28-5	2,4-DINITROPHENOL	390	U	µg/kg	390	1200
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	121-14-2	2,4-DINITROTOLUENE	77	U	µg/kg	77	190
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	606-20-2	2,6-DINITROTOLUENE	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	8	U	µg/kg	8	38
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	95-57-8	2-CHLOROPHENOL	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	J	µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	95-48-7	2-METHYLPHENOL	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	88-74-4	2-NITROANILINE	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	88-75-5	2-NITROPHENOL	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	390
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	99-09-2	3-NITROANILINE	77	U	µg/kg	77	190
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	190	U	µg/kg	190	580
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	106-47-8	4-CHLOROANILINE	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	106-44-5	4-METHYLPHENOL	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	100-01-6	4-NITROANILINE	77	U	µg/kg	77	190
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	100-02-7	4-NITROPHENOL	190	U	µg/kg	190	580
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	83-32-9	ACENAPHTHENE	12	J	µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	208-96-8	ACENAPHTHYLENE	29		µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	120-12-7	ANTHRACENE	19	J	µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	44		µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	50-32-8	BENZO(A)PYRENE	49		µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	63		µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	39		µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	31		µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	100-51-6	BENZYL ALCOHOL	190	U	µg/kg	190	580
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	77	U	µg/kg	77	200
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	77	U	µg/kg	77	190
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	86-74-8	CARBAZOLE	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	218-01-9	CHRYSENE	55		µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	9	J	µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	132-64-9	DIBENZOFURAN	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	84-66-2	DIETHYLPHTHALATE	77	U	µg/kg	77	190
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	131-11-3	DIMETHYLPHTHALATE	77	U	µg/kg	77	190
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	77	U	µg/kg	77	190
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	77	U	µg/kg	77	190
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	206-44-0	FLUORANTHENE	100		µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	86-73-7	FLUORENE	7	J	µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	190	U	µg/kg	190	580
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	67-72-1	HEXACHLOROETHANE	39	U	µg/kg	39	190
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	34		µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	78-59-1	ISOPHORONE	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	98-95-3	NITROBENZENE	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	19	U	µg/kg	19	39

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	19	U	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	39	U	µg/kg	39	200
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	85-01-8	PHENANTHRENE	64		µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	108-95-2	PHENOL	23	J	µg/kg	19	39
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	SVOC	129-00-0	PYRENE	79		µg/kg	4	20
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	R	µg/kg	2	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	78-93-3	2-BUTANONE	4	UJ	µg/kg	4	10
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	95-49-8	2-CHLOROTOLUENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	591-78-6	2-HEXANONE	3	UJ	µg/kg	3	10
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	106-43-4	4-CHLOROTOLUENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	UJ	µg/kg	3	10
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	67-64-1	ACETONE	98	J	µg/kg	7	19
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	71-43-2	BENZENE	0.6	J	µg/kg	0.5	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	108-86-1	BROMOBENZENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	75-25-2	BROMOFORM	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	74-83-9	BROMOMETHANE	2	UJ	µg/kg	2	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	108-90-7	CHLOROBENZENE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	75-00-3	CHLOROETHANE	2	UJ	µg/kg	2	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	67-66-3	CHLOROFORM	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	74-87-3	CHLOROMETHANE	2	UJ	µg/kg	2	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	110-82-7	CYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	74-95-3	DIBROMOMETHANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	UJ	µg/kg	2	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	100-41-4	ETHYLBENZENE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	76-13-1	FREON 113	2	UJ	µg/kg	2	10
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	R	µg/kg	2	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	98-82-8	ISOPROPYLBENZENE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	179601-23-1	M+P-XYLENE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	79-20-9	METHYL ACETATE	2	UJ	µg/kg	2	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	UJ	µg/kg	0.5	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	75-09-2	METHYLENE CHLORIDE	2	UJ	µg/kg	2	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	91-20-3	NAPHTHALENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	104-51-8	N-BUTYLBENZENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	103-65-1	N-PROPYLBENZENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	95-47-6	O-XYLENE	1	UJ	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	100-42-5	STYRENE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	R	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	127-18-4	TETRACHLOROETHENE	1	J	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	108-88-3	TOLUENE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	79-01-6	TRICHLOROETHENE	3	J	µg/kg	1	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	UJ	µg/kg	2	5
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	108-05-4	VINYL ACETATE	2	UJ	µg/kg	2	10
S01-SS03	S01-SS03-0002-121211	12/12/2011	0	2	N	VOC	75-01-4	VINYL CHLORIDE	1	UJ	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	METAL	7440-38-2	ARSENIC	14.9		mg/kg	0.0946	0.473
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	METAL	7440-39-3	BARIUM	89.8		mg/kg	0.0217	0.603
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	METAL	7440-43-9	CADMIUM	0.988		mg/kg	0.0241	0.603
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	METAL	7440-47-3	CHROMIUM	22.5		mg/kg	0.169	1.81
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	METAL	7439-92-1	LEAD	14.1		mg/kg	0.265	1.81
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	METAL	7439-97-6	MERCURY	0.0183	J	mg/kg	0.008	0.113
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	METAL	7782-49-2	SELENIUM	0.82	U	mg/kg	0.82	2.41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	METAL	7440-22-4	SILVER	0.1	U	mg/kg	0.1	0.603
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	92-52-4	1,1'-BIPHENYL	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	121-14-2	2,4-DINITROTOLUENE	81	U	µg/kg	81	200
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	40
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	99-09-2	3-NITROANILINE	81	U	µg/kg	81	200
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	610
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	100-01-6	4-NITROANILINE	81	U	µg/kg	81	200
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	610
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	610
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	81	U	µg/kg	81	210

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	81	U	µg/kg	81	200
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	132-64-9	DIBENZOFURAN	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	84-66-2	DIETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	131-11-3	DIMETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	610
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	200
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	85-01-8	PHENANTHRENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	41
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	10
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	10
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	10
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	67-64-1	ACETONE	19	J	µg/kg	7	20
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	75-15-0	CARBON DISULFIDE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	10
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	127-18-4	TETRACHLOROETHENE	17		µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	79-01-6	TRICHLOROETHENE	2	J	µg/kg	1	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	10
S01-SS03	S01-SS03-0305-121211	12/12/2011	3	5	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	GENERAL CHEM	MOIST	MOISTURE	16.5		percent		
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	METAL	7440-38-2	ARSENIC	9.26		mg/kg	0.0939	0.47
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	METAL	7440-39-3	BARIUM	56.1		mg/kg	0.0207	0.576
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	METAL	7440-43-9	CADMIUM	0.772		mg/kg	0.023	0.576
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	METAL	7440-47-3	CHROMIUM	12.3		mg/kg	0.161	1.73
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	METAL	7439-92-1	LEAD	11.1		mg/kg	0.253	1.73
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	METAL	7439-97-6	MERCURY	0.0149	J	mg/kg	0.0081	0.116
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	METAL	7782-49-2	SELENIUM	0.783	U	mg/kg	0.783	2.3
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	METAL	7440-22-4	SILVER	0.0956	U	mg/kg	0.0956	0.576
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	92-52-4	1,1'-BIPHENYL	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	400
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	51-28-5	2,4-DINITROPHENOL	400	U	µg/kg	400	1200
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	121-14-2	2,4-DINITROTOLUENE	80	U	µg/kg	80	200
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	8	U	µg/kg	8	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	400
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	99-09-2	3-NITROANILINE	80	U	µg/kg	80	200
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	600

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	100-01-6	4-NITROANILINE	80	U	µg/kg	80	200
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	600
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	600
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	80	U	µg/kg	80	200
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	80	U	µg/kg	80	200
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	132-64-9	DIBENZOFURAN	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	84-66-2	DIETHYLPHTHALATE	80	U	µg/kg	80	200
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	131-11-3	DIMETHYLPHTHALATE	80	U	µg/kg	80	200
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	80	U	µg/kg	80	200
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	80	U	µg/kg	80	200
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	600
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	67-72-1	HEXACHLOROETHANE	40	U	µg/kg	40	200
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	87-86-5	PENTACHLOROPHENOL	40	U	µg/kg	40	200
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	85-01-8	PHENANTHRENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	40
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	20
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	11
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	11
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	11
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	67-64-1	ACETONE	28	J	µg/kg	8	22
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	75-15-0	CARBON DISULFIDE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	11
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	127-18-4	TETRACHLOROETHENE	4	J	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	11
S01-SS03	S01-SS03-0810-121211	12/12/2011	8	10	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	GENERAL CHEM	MOIST	MOISTURE	17.7		percent		
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	METAL	7440-38-2	ARSENIC	13.4		mg/kg	0.0972	0.486
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	METAL	7440-39-3	BARIUM	99.8		mg/kg	0.0208	0.579
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	METAL	7440-43-9	CADMIUM	0.979		mg/kg	0.0231	0.579
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	METAL	7440-47-3	CHROMIUM	20.9		mg/kg	0.162	1.74
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	METAL	7439-92-1	LEAD	15.4		mg/kg	0.255	1.74
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	METAL	7439-97-6	MERCURY	0.017	J	mg/kg	0.008	0.114
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	METAL	7782-49-2	SELENIUM	0.787	U	mg/kg	0.787	2.31
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	METAL	7440-22-4	SILVER	0.096	U	mg/kg	0.096	0.579
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	92-52-4	1,1'-BIPHENYL	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	121-14-2	2,4-DINITROTOLUENE	81	U	µg/kg	81	200
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	40
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	99-09-2	3-NITROANILINE	81	U	µg/kg	81	200
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	610
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	100-01-6	4-NITROANILINE	81	U	µg/kg	81	200
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	610
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	610
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	81	U	µg/kg	81	210
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	132-64-9	DIBENZOFURAN	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	84-66-2	DIETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	131-11-3	DIMETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	610
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	200
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	41
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	85-01-8	PHENANTHRENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	41

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	10
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	10
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	10
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	67-64-1	ACETONE	37	J	µg/kg	7	20
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	76-13-1	FREON 113	2	U	µg/kg	2	10
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	127-18-4	TETRACHLOROETHENE	1	J	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	10
S01-SS04	HGR-121211-FD01	12/12/2011	3	5	FD	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	GENERAL CHEM	MOIST	MOISTURE	18.2		percent		
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	METAL	7440-38-2	ARSENIC	13.1		mg/kg	0.095	0.475
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	METAL	7440-39-3	BARIUM	86.3		mg/kg	0.022	0.611
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	METAL	7440-43-9	CADMIUM	1.11		mg/kg	0.0244	0.611
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	METAL	7440-47-3	CHROMIUM	23		mg/kg	0.171	1.83
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	METAL	7439-92-1	LEAD	18.6		mg/kg	0.269	1.83
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	METAL	7439-97-6	MERCURY	0.0234	J	mg/kg	0.0082	0.116
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	METAL	7782-49-2	SELENIUM	0.831	U	mg/kg	0.831	2.44
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	METAL	7440-22-4	SILVER	0.101	U	mg/kg	0.101	0.611
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	92-52-4	1,1'-BIPHENYL	31	J	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	121-14-2	2,4-DINITROTOLUENE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	40
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	99-09-2	3-NITROANILINE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	610
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	100-01-6	4-NITROANILINE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	610
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	10	J	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	50-32-8	BENZO(A)PYRENE	10	J	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	19	J	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	10	J	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	7	J	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	610
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	81	U	µg/kg	81	210
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	218-01-9	CHRYSENE	16	J	µg/kg	4	21

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	132-64-9	DIBENZOFURAN	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	84-66-2	DIETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	131-11-3	DIMETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	206-44-0	FLUORANTHENE	29		µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	610
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	200
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	9	J	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	85-01-8	PHENANTHRENE	19	J	µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	108-95-2	PHENOL	35	J	µg/kg	20	41
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	SVOC	129-00-0	PYRENE	23		µg/kg	4	21
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	78-93-3	2-BUTANONE	10	J	µg/kg	4	10
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	10
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	10
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	67-64-1	ACETONE	58	J	µg/kg	7	20
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	71-43-2	BENZENE	2	J	µg/kg	0.5	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	108-86-1	BROMOBENZENE	4	J	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	75-15-0	CARBON DISULFIDE	3	J	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	108-90-7	CHLOROBENZENE	3	J	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	10
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	98-82-8	ISOPROPYLBENZENE	2	J	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	135-98-8	SEC-BUTYLBENZENE	2	J	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	127-18-4	TETRACHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	10
S01-SS04	S01-SS04-0002-121211	12/12/2011	0	2	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	GENERAL CHEM	MOIST	MOISTURE	17.9		percent		
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	METAL	7440-38-2	ARSENIC	11.9		mg/kg	0.0928	0.464
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	METAL	7440-39-3	BARIUM	92.6		mg/kg	0.0215	0.597
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	METAL	7440-43-9	CADMIUM	0.923		mg/kg	0.0239	0.597
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	METAL	7440-47-3	CHROMIUM	19.6		mg/kg	0.167	1.79
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	METAL	7439-92-1	LEAD	14		mg/kg	0.263	1.79
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	METAL	7439-97-6	MERCURY	0.0278	J	mg/kg	0.0085	0.121
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	METAL	7782-49-2	SELENIUM	0.812	U	mg/kg	0.812	2.39
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	METAL	7440-22-4	SILVER	0.0991	U	mg/kg	0.0991	0.597
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	92-52-4	1,1'-BIPHENYL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	121-14-2	2,4-DINITROTOLUENE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	40
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	99-09-2	3-NITROANILINE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	610
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	41

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	100-01-6	4-NITROANILINE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	610
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	610
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	81	U	µg/kg	81	210
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	132-64-9	DIBENZOFURAN	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	84-66-2	DIETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	131-11-3	DIMETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	610
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	200
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	85-01-8	PHENANTHRENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	41
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	78-93-3	2-BUTANONE	4	J	µg/kg	4	10
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	10

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	10
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	67-64-1	ACETONE	40	J	µg/kg	7	20
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	10
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	127-18-4	TETRACHLOROETHENE	1	J	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	10
S01-SS04	S01-SS04-0305-121211	12/12/2011	3	5	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	GENERAL CHEM	MOIST	MOISTURE	19.9		percent		
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	METAL	7440-38-2	ARSENIC	12.8		mg/kg	0.097	0.485
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	METAL	7440-39-3	BARIUM	63.4		mg/kg	0.0225	0.624
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	METAL	7440-43-9	CADMIUM	0.798		mg/kg	0.025	0.624
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	METAL	7440-47-3	CHROMIUM	14.9		mg/kg	0.175	1.87
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	METAL	7439-92-1	LEAD	12.1		mg/kg	0.275	1.87
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	METAL	7439-97-6	MERCURY	0.0175	J	mg/kg	0.0083	0.118
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	METAL	7782-49-2	SELENIUM	0.849	U	mg/kg	0.849	2.5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	METAL	7440-22-4	SILVER	0.104	U	mg/kg	0.104	0.624
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	92-52-4	1,1'-BIPHENYL	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	420

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	51-28-5	2,4-DINITROPHENOL	420	U	µg/kg	420	1200
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	121-14-2	2,4-DINITROTOLUENE	83	U	µg/kg	83	210
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	606-20-2	2,6-DINITROTOLUENE	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	41
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	95-57-8	2-CHLOROPHENOL	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	95-48-7	2-METHYLPHENOL	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	88-74-4	2-NITROANILINE	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	88-75-5	2-NITROPHENOL	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	420
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	99-09-2	3-NITROANILINE	83	U	µg/kg	83	210
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	210	U	µg/kg	210	620
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	106-47-8	4-CHLOROANILINE	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	106-44-5	4-METHYLPHENOL	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	100-01-6	4-NITROANILINE	83	U	µg/kg	83	210
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	100-02-7	4-NITROPHENOL	210	U	µg/kg	210	620
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	208-96-8	ACENAPHTHYLENE	4	J	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	100-51-6	BENZYL ALCOHOL	210	U	µg/kg	210	620
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	83	U	µg/kg	83	210
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	83	U	µg/kg	83	210
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	86-74-8	CARBAZOLE	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	132-64-9	DIBENZOFURAN	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	84-66-2	DIETHYLPHTHALATE	83	U	µg/kg	83	210
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	131-11-3	DIMETHYLPHTHALATE	83	U	µg/kg	83	210
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	83	U	µg/kg	83	210
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	83	U	µg/kg	83	210
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	210	U	µg/kg	210	620
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	67-72-1	HEXACHLOROETHANE	42	U	µg/kg	42	210
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	78-59-1	ISOPHORONE	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	98-95-3	NITROBENZENE	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	87-86-5	PENTACHLOROPHENOL	42	U	µg/kg	42	210
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	85-01-8	PHENANTHRENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	108-95-2	PHENOL	21	U	µg/kg	21	42
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	78-93-3	2-BUTANONE	8	J	µg/kg	4	11
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	11
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	11
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	67-64-1	ACETONE	64	J	µg/kg	8	22
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	11
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	127-18-4	TETRACHLOROETHENE	4	J	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	11
S01-SS04	S01-SS04-0810-121211	12/12/2011	8	10	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	GENERAL CHEM	MOIST	MOISTURE	17		percent		
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	METAL	7440-38-2	ARSENIC	12.5		mg/kg	0.0936	0.468
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	METAL	7440-39-3	BARIUM	103		mg/kg	0.0213	0.591
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	METAL	7440-43-9	CADMIUM	0.921		mg/kg	0.0236	0.591
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	METAL	7440-47-3	CHROMIUM	26		mg/kg	0.165	1.77
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	METAL	7439-92-1	LEAD	15.2		mg/kg	0.26	1.77
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	METAL	7439-97-6	MERCURY	0.0098	J	mg/kg	0.008	0.114
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	METAL	7782-49-2	SELENIUM	0.803	U	mg/kg	0.803	2.36
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	METAL	7440-22-4	SILVER	0.098	U	mg/kg	0.098	0.591
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	92-52-4	1,1'-BIPHENYL	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	400
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	51-28-5	2,4-DINITROPHENOL	400	U	µg/kg	400	1200
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	121-14-2	2,4-DINITROTOLUENE	80	U	µg/kg	80	200
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	8	U	µg/kg	8	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	400
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	99-09-2	3-NITROANILINE	80	U	µg/kg	80	200
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	600
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	100-01-6	4-NITROANILINE	80	U	µg/kg	80	200
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	600
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	5	J	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	6	J	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	600
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	80	U	µg/kg	80	200
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	80	U	µg/kg	80	200
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	218-01-9	CHRYSENE	5	J	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	132-64-9	DIBENZOFURAN	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	84-66-2	DIETHYLPHTHALATE	80	U	µg/kg	80	200

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	131-11-3	DIMETHYLPHTHALATE	80	U	µg/kg	80	200
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	80	U	µg/kg	80	200
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	80	U	µg/kg	80	200
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	206-44-0	FLUORANTHENE	8	J	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	600
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	67-72-1	HEXACHLOROETHANE	40	U	µg/kg	40	200
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	40	U	µg/kg	40	200
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	85-01-8	PHENANTHRENE	8	J	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	40
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	SVOC	129-00-0	PYRENE	9	J	µg/kg	4	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	10
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	10
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	10
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	67-64-1	ACETONE	8	J	µg/kg	7	20
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	10
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	127-18-4	TETRACHLOROETHENE	3	J	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	10
S01-SS05	S01-SS05-0002-121211	12/12/2011	0	2	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	GENERAL CHEM	MOIST	MOISTURE	18.3		percent		
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	METAL	7440-38-2	ARSENIC	12.1		mg/kg	0.0969	0.485
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	METAL	7440-39-3	BARIUM	78.2		mg/kg	0.0216	0.6
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	METAL	7440-43-9	CADMIUM	0.953		mg/kg	0.024	0.6
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	METAL	7440-47-3	CHROMIUM	19.7		mg/kg	0.168	1.8
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	METAL	7439-92-1	LEAD	14.8		mg/kg	0.264	1.8
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	METAL	7439-97-6	MERCURY	0.0236	J	mg/kg	0.008	0.114
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	METAL	7782-49-2	SELENIUM	0.816	U	mg/kg	0.816	2.4
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	METAL	7440-22-4	SILVER	0.0996	U	mg/kg	0.0996	0.6
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	92-52-4	1,1'-BIPHENYL	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	121-14-2	2,4-DINITROTOLUENE	82	U	µg/kg	82	200
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	40
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	99-09-2	3-NITROANILINE	82	U	µg/kg	82	200
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	610
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	100-01-6	4-NITROANILINE	82	U	µg/kg	82	200

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	610
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	610
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	82	U	µg/kg	82	210
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	82	U	µg/kg	82	200
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	132-64-9	DIBENZOFURAN	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	84-66-2	DIETHYLPHTHALATE	82	U	µg/kg	82	200
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	131-11-3	DIMETHYLPHTHALATE	82	U	µg/kg	82	200
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	82	U	µg/kg	82	200
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	82	U	µg/kg	82	200
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	610
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	200
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	85-01-8	PHENANTHRENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	41
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	10
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	10
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	10
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	67-64-1	ACETONE	15	J	µg/kg	7	20

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	10
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	127-18-4	TETRACHLOROETHENE	4	J	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	10
S01-SS05	S01-SS05-0305-121211	12/12/2011	3	5	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	GENERAL CHEM	MOIST	MOISTURE	19.4		percent		
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	METAL	7440-38-2	ARSENIC	15.2		mg/kg	0.0964	0.482
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	METAL	7440-39-3	BARIUM	61.5		mg/kg	0.0217	0.602
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	METAL	7440-43-9	CADMIUM	0.868		mg/kg	0.0241	0.602
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	METAL	7440-47-3	CHROMIUM	13.9		mg/kg	0.169	1.81
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	METAL	7439-92-1	LEAD	12		mg/kg	0.265	1.81
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	METAL	7439-97-6	MERCURY	0.021	J	mg/kg	0.0081	0.115
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	METAL	7782-49-2	SELENIUM	0.819	U	mg/kg	0.819	2.41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	METAL	7440-22-4	SILVER	0.1	U	mg/kg	0.1	0.602
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	92-52-4	1,1'-BIPHENYL	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	2	J	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	2	J	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	21	U	µg/kg	21	41

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	121-14-2	2,4-DINITROTOLUENE	83	U	µg/kg	83	210
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	606-20-2	2,6-DINITROTOLUENE	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	95-57-8	2-CHLOROPHENOL	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	95-48-7	2-METHYLPHENOL	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	88-74-4	2-NITROANILINE	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	88-75-5	2-NITROPHENOL	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	99-09-2	3-NITROANILINE	83	U	µg/kg	83	210
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	210	U	µg/kg	210	620
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	106-47-8	4-CHLOROANILINE	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	106-44-5	4-METHYLPHENOL	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	100-01-6	4-NITROANILINE	83	U	µg/kg	83	210
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	100-02-7	4-NITROPHENOL	210	U	µg/kg	210	620
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	100-51-6	BENZYL ALCOHOL	210	U	µg/kg	210	620
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	83	U	µg/kg	83	210
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	83	U	µg/kg	83	210
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	86-74-8	CARBAZOLE	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	132-64-9	DIBENZOFURAN	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	84-66-2	DIETHYLPHTHALATE	83	U	µg/kg	83	210
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	131-11-3	DIMETHYLPHTHALATE	83	U	µg/kg	83	210
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	83	U	µg/kg	83	210
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	83	U	µg/kg	83	210
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	210	U	µg/kg	210	620
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	210
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	78-59-1	ISOPHORONE	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	98-95-3	NITROBENZENE	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	85-01-8	PHENANTHRENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	108-95-2	PHENOL	21	U	µg/kg	21	41
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	78-93-3	2-BUTANONE	5	J	µg/kg	4	10
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	10
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	10
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	67-64-1	ACETONE	43	J	µg/kg	7	20
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	10
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	127-18-4	TETRACHLOROETHENE	5	J	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	10
S01-SS05	S01-SS05-0810-121211	12/12/2011	8	10	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	GENERAL CHEM	MOIST	MOISTURE	17.8		percent		
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	METAL	7440-38-2	ARSENIC	11.3		mg/kg	0.0945	0.472
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	METAL	7440-39-3	BARIUM	107		mg/kg	0.0213	0.591
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	METAL	7440-43-9	CADMIUM	1.04		mg/kg	0.0236	0.591
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	METAL	7440-47-3	CHROMIUM	34.9		mg/kg	0.165	1.77
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	METAL	7439-92-1	LEAD	73.5		mg/kg	0.26	1.77
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	METAL	7439-97-6	MERCURY	0.0204	J	mg/kg	0.008	0.113
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	METAL	7782-49-2	SELENIUM	0.803	U	mg/kg	0.803	2.36
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	METAL	7440-22-4	SILVER	0.098	U	mg/kg	0.098	0.591
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	92-52-4	1,1'-BIPHENYL	680		µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	123-91-1	1,4-DIOXANE	610	U	µg/kg	610	2000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	51-28-5	2,4-DINITROPHENOL	2000	U	µg/kg	2000	6100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	121-14-2	2,4-DINITROTOLUENE	410	U	µg/kg	410	1000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	606-20-2	2,6-DINITROTOLUENE	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	43	U	µg/kg	43	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	95-57-8	2-CHLOROPHENOL	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	20	U	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	95-48-7	2-METHYLPHENOL	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	88-74-4	2-NITROANILINE	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	88-75-5	2-NITROPHENOL	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	610	U	µg/kg	610	2000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	99-09-2	3-NITROANILINE	410	U	µg/kg	410	1000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1000	U	µg/kg	1000	3000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	106-47-8	4-CHLOROANILINE	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	106-44-5	4-METHYLPHENOL	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	100-01-6	4-NITROANILINE	410	U	µg/kg	410	1000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	100-02-7	4-NITROPHENOL	1000	U	µg/kg	1000	3000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	83-32-9	ACENAPHTHENE	20	U	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	208-96-8	ACENAPHTHYLENE	20	U	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	120-12-7	ANTHRACENE	20	U	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	78	J	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	50-32-8	BENZO(A)PYRENE	73	J	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	100		µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	58	J	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	47	J	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	100-51-6	BENZYL ALCOHOL	1000	U	µg/kg	1000	3000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	410	U	µg/kg	410	1000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	410	U	µg/kg	410	1000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	86-74-8	CARBAZOLE	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	218-01-9	CHRYSENE	92	J	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	20	U	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	132-64-9	DIBENZOFURAN	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	84-66-2	DIETHYLPHTHALATE	410	U	µg/kg	410	1000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	131-11-3	DIMETHYLPHTHALATE	410	U	µg/kg	410	1000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	410	U	µg/kg	410	1000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	410	U	µg/kg	410	1000

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	206-44-0	FLUORANTHENE	130		µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	86-73-7	FLUORENE	20	U	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	118-74-1	HEXACHLOROBENZENE	20	U	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	1000	U	µg/kg	1000	3000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	67-72-1	HEXACHLOROETHANE	200	U	µg/kg	200	1000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	51	J	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	78-59-1	ISOPHORONE	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	98-95-3	NITROBENZENE	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	200	1000
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	85-01-8	PHENANTHRENE	73	J	µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	108-95-2	PHENOL	100	U	µg/kg	100	200
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	SVOC	129-00-0	PYRENE	120		µg/kg	20	100
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	10
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	10
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	10
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	67-64-1	ACETONE	31	J	µg/kg	7	20
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	10
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	127-18-4	TETRACHLOROETHENE	2	J	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	10
S01-SS06	S01-SS06-0002-121211	12/12/2011	0	2	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	GENERAL CHEM	MOIST	MOISTURE	18.3		percent		
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	METAL	7440-38-2	ARSENIC	13.8		mg/kg	0.0942	0.471
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	METAL	7440-39-3	BARIUM	62.1		mg/kg	0.0216	0.6
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	METAL	7440-43-9	CADMIUM	1		mg/kg	0.024	0.6
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	METAL	7440-47-3	CHROMIUM	21.5		mg/kg	0.168	1.8
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	METAL	7439-92-1	LEAD	16.1		mg/kg	0.264	1.8
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	METAL	7439-97-6	MERCURY	0.0482	J	mg/kg	0.0084	0.119
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	METAL	7782-49-2	SELENIUM	0.816	U	mg/kg	0.816	2.4
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	METAL	7440-22-4	SILVER	0.0996	U	mg/kg	0.0996	0.6
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	92-52-4	1,1'-BIPHENYL	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	121-14-2	2,4-DINITROTOLUENE	82	U	µg/kg	82	200
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	40
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	99-09-2	3-NITROANILINE	82	U	µg/kg	82	200
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	610
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	100-01-6	4-NITROANILINE	82	U	µg/kg	82	200
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	610
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	610
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	82	U	µg/kg	82	210
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	82	U	µg/kg	82	200
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	132-64-9	DIBENZOFURAN	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	84-66-2	DIETHYLPHTHALATE	82	U	µg/kg	82	200
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	131-11-3	DIMETHYLPHTHALATE	82	U	µg/kg	82	200
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	82	U	µg/kg	82	200
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	82	U	µg/kg	82	200
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	610
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	200
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	85-01-8	PHENANTHRENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	41
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	78-93-3	2-BUTANONE	4	J	µg/kg	4	10
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	10
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	10
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	67-64-1	ACETONE	33	J	µg/kg	7	20
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	10
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	127-18-4	TETRACHLOROETHENE	2	J	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	10
S01-SS06	S01-SS06-0305-121211	12/12/2011	3	5	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	GENERAL CHEM	MOIST	MOISTURE	19.7		percent		
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	METAL	7440-38-2	ARSENIC	10.8		mg/kg	0.0986	0.493
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	METAL	7440-39-3	BARIUM	70.9		mg/kg	0.0222	0.616
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	METAL	7440-43-9	CADMIUM	0.869		mg/kg	0.0247	0.616
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	METAL	7440-47-3	CHROMIUM	14.9		mg/kg	0.173	1.85
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	METAL	7439-92-1	LEAD	12.6		mg/kg	0.271	1.85
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	METAL	7439-97-6	MERCURY	0.0137	J	mg/kg	0.0084	0.119
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	METAL	7782-49-2	SELENIUM	0.838	U	mg/kg	0.838	2.47
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	METAL	7440-22-4	SILVER	0.102	U	mg/kg	0.102	0.616
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	92-52-4	1,1'-BIPHENYL	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	420
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	51-28-5	2,4-DINITROPHENOL	420	U	µg/kg	420	1200
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	121-14-2	2,4-DINITROTOLUENE	83	U	µg/kg	83	210

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	606-20-2	2,6-DINITROTOLUENE	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	41
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	95-57-8	2-CHLOROPHENOL	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	5	J	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	95-48-7	2-METHYLPHENOL	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	88-74-4	2-NITROANILINE	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	88-75-5	2-NITROPHENOL	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	420
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	99-09-2	3-NITROANILINE	83	U	µg/kg	83	210
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	210	U	µg/kg	210	620
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	106-47-8	4-CHLOROANILINE	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	106-44-5	4-METHYLPHENOL	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	100-01-6	4-NITROANILINE	83	U	µg/kg	83	210
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	100-02-7	4-NITROPHENOL	210	U	µg/kg	210	620
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	100-51-6	BENZYL ALCOHOL	210	U	µg/kg	210	620
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	83	U	µg/kg	83	210
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	83	U	µg/kg	83	210
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	86-74-8	CARBAZOLE	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	132-64-9	DIBENZOFURAN	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	84-66-2	DIETHYLPHTHALATE	83	U	µg/kg	83	210
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	131-11-3	DIMETHYLPHTHALATE	83	U	µg/kg	83	210
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	83	U	µg/kg	83	210
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	83	U	µg/kg	83	210
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	210	U	µg/kg	210	620
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	67-72-1	HEXACHLOROETHANE	42	U	µg/kg	42	210
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	78-59-1	ISOPHORONE	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	98-95-3	NITROBENZENE	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	87-86-5	PENTACHLOROPHENOL	42	U	µg/kg	42	210
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	85-01-8	PHENANTHRENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	108-95-2	PHENOL	21	U	µg/kg	21	42
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	10
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	10
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	10
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	67-64-1	ACETONE	20	J	µg/kg	7	20
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	10
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	127-18-4	TETRACHLOROETHENE	8		µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	10
S01-SS06	S01-SS06-0810-121211	12/12/2011	8	10	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	GENERAL CHEM	MOIST	MOISTURE	9.4		percent		

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	METAL	7440-38-2	ARSENIC	7.5		mg/kg	0.0874	0.437
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	METAL	7440-39-3	BARIUM	795		mg/kg	0.0964	2.68
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	METAL	7440-43-9	CADMIUM	0.0461	J	mg/kg	0.0214	0.536
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	METAL	7440-47-3	CHROMIUM	36.7		mg/kg	0.15	1.61
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	METAL	7439-92-1	LEAD	11		mg/kg	1.18	8.04
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	METAL	7439-97-6	MERCURY	0.0073	U	mg/kg	0.0073	0.104
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	METAL	7782-49-2	SELENIUM	8.74		mg/kg	0.729	2.14
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	METAL	7440-22-4	SILVER	0.0889	U	mg/kg	0.0889	0.536
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	92-52-4	1,1'-BIPHENYL	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	123-91-1	1,4-DIOXANE	1100	U	µg/kg	1100	3700
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	51-28-5	2,4-DINITROPHENOL	3700	U	µg/kg	3700	11000
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	121-14-2	2,4-DINITROTOLUENE	740	U	µg/kg	740	1800
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	606-20-2	2,6-DINITROTOLUENE	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	77	U	µg/kg	77	360
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	95-57-8	2-CHLOROPHENOL	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	37	U	µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	95-48-7	2-METHYLPHENOL	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	88-74-4	2-NITROANILINE	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	88-75-5	2-NITROPHENOL	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	1100	U	µg/kg	1100	3700
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	99-09-2	3-NITROANILINE	740	U	µg/kg	740	1800
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1800	U	µg/kg	1800	5500
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	106-47-8	4-CHLOROANILINE	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	106-44-5	4-METHYLPHENOL	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	100-01-6	4-NITROANILINE	740	U	µg/kg	740	1800
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	100-02-7	4-NITROPHENOL	1800	U	µg/kg	1800	5500
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	83-32-9	ACENAPHTHENE	37	U	µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	208-96-8	ACENAPHTHYLENE	360		µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	120-12-7	ANTHRACENE	200		µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	570		µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	50-32-8	BENZO(A)PYRENE	850		µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	1200		µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	770		µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	470		µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	100-51-6	BENZYL ALCOHOL	1800	U	µg/kg	1800	5500
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	740	U	µg/kg	740	1900
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	740	U	µg/kg	740	1800
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	86-74-8	CARBAZOLE	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	218-01-9	CHRYSENE	480		µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	210		µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	132-64-9	DIBENZOFURAN	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	84-66-2	DIETHYLPHTHALATE	740	U	µg/kg	740	1800
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	131-11-3	DIMETHYLPHTHALATE	740	U	µg/kg	740	1800
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	740	U	µg/kg	740	1800
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	740	U	µg/kg	740	1800
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	206-44-0	FLUORANTHENE	600		µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	86-73-7	FLUORENE	37	U	µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	118-74-1	HEXACHLOROBENZENE	37	U	µg/kg	37	190

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	1800	U	µg/kg	1800	5500
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	67-72-1	HEXACHLOROETHANE	370	U	µg/kg	370	1800
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	570		µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	78-59-1	ISOPHORONE	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	98-95-3	NITROBENZENE	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	370	U	µg/kg	370	1900
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	85-01-8	PHENANTHRENE	110	J	µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	108-95-2	PHENOL	180	U	µg/kg	180	370
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	SVOC	129-00-0	PYRENE	580		µg/kg	37	190
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	2	J	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	UJ	µg/kg	2	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	78-93-3	2-BUTANONE	12		µg/kg	5	12
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	95-49-8	2-CHLOROTOLUENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	591-78-6	2-HEXANONE	17		µg/kg	4	12
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	106-43-4	4-CHLOROTOLUENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	108-10-1	4-METHYL-2-PENTANONE	5	J	µg/kg	4	12
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	67-64-1	ACETONE	50	J	µg/kg	9	24
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	71-43-2	BENZENE	3	J	µg/kg	0.6	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	108-86-1	BROMOBENZENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	75-15-0	CARBON DISULFIDE	14		µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	100-41-4	ETHYLBENZENE	1	J	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	12
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	UJ	µg/kg	2	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	179601-23-1	M+P-XYLENE	2	J	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.6	U	µg/kg	0.6	6

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	91-20-3	NAPHTHALENE	2	J	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	104-51-8	N-BUTYLBENZENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	103-65-1	N-PROPYLBENZENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	UJ	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	127-18-4	TETRACHLOROETHENE	2	J	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	108-88-3	TOLUENE	6	J	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	6
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	12
S01-SS07	S01-SS07-0002-121211	12/12/2011	0	2	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	6
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	GENERAL CHEM	MOIST	MOISTURE	18.4		percent		
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	METAL	7440-38-2	ARSENIC	12.8		mg/kg	0.0952	0.476
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	METAL	7440-39-3	BARIUM	85.5		mg/kg	0.0214	0.595
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	METAL	7440-43-9	CADMIUM	0.137	J	mg/kg	0.0238	0.595
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	METAL	7440-47-3	CHROMIUM	21.4		mg/kg	0.167	1.78
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	METAL	7439-92-1	LEAD	15.9		mg/kg	0.262	1.78
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	METAL	7439-97-6	MERCURY	0.0147	J	mg/kg	0.0086	0.122
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	METAL	7782-49-2	SELENIUM	0.809	U	mg/kg	0.809	2.38
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	METAL	7440-22-4	SILVER	0.0988	U	mg/kg	0.0988	0.595
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	92-52-4	1,1'-BIPHENYL	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	121-14-2	2,4-DINITROTOLUENE	82	U	µg/kg	82	200
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	40
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	99-09-2	3-NITROANILINE	82	U	µg/kg	82	200
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	610
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	100-01-6	4-NITROANILINE	82	U	µg/kg	82	200
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	610
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	610
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	82	U	µg/kg	82	210
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	82	U	µg/kg	82	200
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	132-64-9	DIBENZOFURAN	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	84-66-2	DIETHYLPHTHALATE	82	U	µg/kg	82	200
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	131-11-3	DIMETHYLPHTHALATE	82	U	µg/kg	82	200
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	82	U	µg/kg	82	200
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	82	U	µg/kg	82	200
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	610
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	200
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	85-01-8	PHENANTHRENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	41
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	11
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	591-78-6	2-HEXANONE	5	J	µg/kg	3	11
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	11
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	67-64-1	ACETONE	23	J	µg/kg	8	22
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	75-15-0	CARBON DISULFIDE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	11
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	127-18-4	TETRACHLOROETHENE	3	J	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	11
S01-SS07	S01-SS07-0305-121211	12/12/2011	3	5	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	GENERAL CHEM	MOIST	MOISTURE	19.4		percent		
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	METAL	7440-38-2	ARSENIC	10.1		mg/kg	0.0983	0.491
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	METAL	7440-39-3	BARIUM	61.8		mg/kg	0.0213	0.591
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	METAL	7440-43-9	CADMIUM	0.199	J	mg/kg	0.0236	0.591
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	METAL	7440-47-3	CHROMIUM	13.8		mg/kg	0.165	1.77
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	METAL	7439-92-1	LEAD	11.7		mg/kg	0.26	1.77
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	METAL	7439-97-6	MERCURY	0.0138	J	mg/kg	0.0083	0.118
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	METAL	7782-49-2	SELENIUM	0.803	U	mg/kg	0.803	2.36
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	METAL	7440-22-4	SILVER	0.0981	U	mg/kg	0.0981	0.591
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	92-52-4	1,1'-BIPHENYL	21	UJ	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	121-14-2	2,4-DINITROTOLUENE	83	U	µg/kg	83	210
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	606-20-2	2,6-DINITROTOLUENE	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	95-57-8	2-CHLOROPHENOL	21	U	µg/kg	21	41

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	95-48-7	2-METHYLPHENOL	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	88-74-4	2-NITROANILINE	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	88-75-5	2-NITROPHENOL	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	99-09-2	3-NITROANILINE	83	U	µg/kg	83	210
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	210	U	µg/kg	210	620
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	106-47-8	4-CHLOROANILINE	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	106-44-5	4-METHYLPHENOL	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	100-01-6	4-NITROANILINE	83	U	µg/kg	83	210
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	100-02-7	4-NITROPHENOL	210	U	µg/kg	210	620
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	100-51-6	BENZYL ALCOHOL	210	U	µg/kg	210	620
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	83	U	µg/kg	83	210
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	83	U	µg/kg	83	210
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	86-74-8	CARBAZOLE	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	132-64-9	DIBENZOFURAN	21	UJ	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	84-66-2	DIETHYLPHTHALATE	83	U	µg/kg	83	210
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	131-11-3	DIMETHYLPHTHALATE	83	U	µg/kg	83	210
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	83	U	µg/kg	83	210
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	83	U	µg/kg	83	210
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	210	U	µg/kg	210	620
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	210
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	78-59-1	ISOPHORONE	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	98-95-3	NITROBENZENE	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	85-01-8	PHENANTHRENE	4	UJ	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	108-95-2	PHENOL	21	U	µg/kg	21	41
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	11
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	11
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	11
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	67-64-1	ACETONE	18	J	µg/kg	7	21
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	75-15-0	CARBON DISULFIDE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	11
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	127-18-4	TETRACHLOROETHENE	4	J	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	79-01-6	TRICHLOROETHENE	1	U	µg/kg	1	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	11
S01-SS07	S01-SS07-0810-121211	12/12/2011	8	10	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	GENERAL CHEM	MOIST	MOISTURE	9.6		percent		
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	METAL	7440-38-2	ARSENIC	6.64		mg/kg	0.0868	0.434
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	METAL	7440-39-3	BARIUM	611		mg/kg	0.0957	2.66
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	METAL	7440-43-9	CADMIUM	0.454	J	mg/kg	0.0213	0.532

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	METAL	7440-47-3	CHROMIUM	26.1		mg/kg	0.149	1.6
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	METAL	7439-92-1	LEAD	15.4		mg/kg	0.234	1.6
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	METAL	7439-97-6	MERCURY	0.0278	J	mg/kg	0.0074	0.105
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	METAL	7782-49-2	SELENIUM	5.35		mg/kg	0.723	2.13
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	METAL	7440-22-4	SILVER	0.0883	U	mg/kg	0.0883	0.532
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	92-52-4	1,1'-BIPHENYL	18	UJ	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	123-91-1	1,4-DIOXANE	110	U	µg/kg	110	370
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	51-28-5	2,4-DINITROPHENOL	370	U	µg/kg	370	1100
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	121-14-2	2,4-DINITROTOLUENE	74	U	µg/kg	74	180
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	606-20-2	2,6-DINITROTOLUENE	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	8	U	µg/kg	8	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	95-57-8	2-CHLOROPHENOL	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	6	J	µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	95-48-7	2-METHYLPHENOL	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	88-74-4	2-NITROANILINE	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	88-75-5	2-NITROPHENOL	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	110	U	µg/kg	110	370
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	99-09-2	3-NITROANILINE	74	U	µg/kg	74	180
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	180	U	µg/kg	180	550
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	106-47-8	4-CHLOROANILINE	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	106-44-5	4-METHYLPHENOL	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	100-01-6	4-NITROANILINE	74	U	µg/kg	74	180
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	100-02-7	4-NITROPHENOL	180	U	µg/kg	180	550
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	83-32-9	ACENAPHTHENE	7	J	µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	208-96-8	ACENAPHTHYLENE	100		µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	120-12-7	ANTHRACENE	80		µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	220		µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	50-32-8	BENZO(A)PYRENE	310		µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	420		µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	350		µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	210		µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	100-51-6	BENZYL ALCOHOL	180	U	µg/kg	180	550
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	74	U	µg/kg	74	190
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	74	U	µg/kg	74	180
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	86-74-8	CARBAZOLE	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	218-01-9	CHRYSENE	220		µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	84		µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	132-64-9	DIBENZOFURAN	18	UJ	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	84-66-2	DIETHYLPHTHALATE	74	U	µg/kg	74	180
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	131-11-3	DIMETHYLPHTHALATE	74	U	µg/kg	74	180
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	74	U	µg/kg	74	180
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	74	U	µg/kg	74	180
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	206-44-0	FLUORANTHENE	260		µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	86-73-7	FLUORENE	15	J	µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	180	U	µg/kg	180	550
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	67-72-1	HEXACHLOROETHANE	37	U	µg/kg	37	180
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	270		µg/kg	4	19

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	78-59-1	ISOPHORONE	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	98-95-3	NITROBENZENE	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	37	U	µg/kg	37	190
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	85-01-8	PHENANTHRENE	82	J	µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	108-95-2	PHENOL	18	U	µg/kg	18	37
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	SVOC	129-00-0	PYRENE	250		µg/kg	4	19
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	75-34-3	1,1-DICHLOROETHANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	563-58-6	1,1-DICHLOROPROPENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	106-93-4	1,2-DIBROMOETHANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	107-06-2	1,2-DICHLOROETHANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	78-87-5	1,2-DICHLOROPROPANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	142-28-9	1,3-DICHLOROPROPANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	594-20-7	2,2-DICHLOROPROPANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	78-93-3	2-BUTANONE	9		µg/kg	4	9
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	95-49-8	2-CHLOROTOLUENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	9
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	106-43-4	4-CHLOROTOLUENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	9
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	67-64-1	ACETONE	68	J	µg/kg	6	18
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	108-86-1	BROMOBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	74-97-5	BROMOCHLOROMETHANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	75-27-4	BROMODICHLOROMETHANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	75-25-2	BROMOFORM	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	75-15-0	CARBON DISULFIDE	1	J	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	56-23-5	CARBON TETRACHLORIDE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	108-90-7	CHLOROBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	67-66-3	CHLOROFORM	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	110-82-7	CYCLOHEXANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	74-95-3	DIBROMOMETHANE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	100-41-4	ETHYLBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	9
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	98-82-8	ISOPROPYLBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	179601-23-1	M+P-XYLENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	108-87-2	METHYLCYCLOHEXANE	0.9	UJ	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	91-20-3	NAPHTHALENE	0.9	U	µg/kg	0.9	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	104-51-8	N-BUTYLBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	103-65-1	N-PROPYLBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	95-47-6	O-XYLENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	135-98-8	SEC-BUTYLBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	100-42-5	STYRENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	98-06-6	TERT-BUTYLBENZENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	127-18-4	TETRACHLOROETHENE	4	J	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	108-88-3	TOLUENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	79-01-6	TRICHLOROETHENE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	9
S01-SS08	S01-SS08-0002-121211	12/12/2011	0	2	N	VOC	75-01-4	VINYL CHLORIDE	0.9	U	µg/kg	0.9	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	GENERAL CHEM	MOIST	MOISTURE	18.4		percent		
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	METAL	7440-38-2	ARSENIC	14.9		mg/kg	0.0971	0.485
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	METAL	7440-39-3	BARIUM	105		mg/kg	0.021	0.584
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	METAL	7440-43-9	CADMIUM	0.137	J	mg/kg	0.0233	0.584
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	METAL	7440-47-3	CHROMIUM	22.1		mg/kg	0.163	1.75
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	METAL	7439-92-1	LEAD	18.3		mg/kg	0.257	1.75
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	METAL	7439-97-6	MERCURY	0.0229	J	mg/kg	0.0084	0.12
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	METAL	7782-49-2	SELENIUM	0.794	U	mg/kg	0.794	2.33
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	METAL	7440-22-4	SILVER	0.0969	U	mg/kg	0.0969	0.584
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	92-52-4	1,1'-BIPHENYL	20	UJ	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	4	J	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	121-14-2	2,4-DINITROTOLUENE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	40
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	99-09-2	3-NITROANILINE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	610
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	100-01-6	4-NITROANILINE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	610
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	610
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	82	U	µg/kg	82	210
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	132-64-9	DIBENZOFURAN	20	UJ	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	84-66-2	DIETHYLPHTHALATE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	131-11-3	DIMETHYLPHTHALATE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	610
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	200
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	85-01-8	PHENANTHRENE	4	UJ	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	11
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	11
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	11
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	67-64-1	ACETONE	16	J	µg/kg	7	21
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	75-25-2	BROMOFORM	6		µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	J	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	11
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	127-18-4	TETRACHLOROETHENE	70		µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	79-01-6	TRICHLOROETHENE	2	J	µg/kg	1	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	11
S01-SS08	S01-SS08-0305-121211	12/12/2011	3	5	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	GENERAL CHEM	MOIST	MOISTURE	18.6		percent		
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	METAL	7440-38-2	ARSENIC	10.3		mg/kg	0.0964	0.482
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	METAL	7440-39-3	BARIUM	79.8		mg/kg	0.0211	0.585
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	METAL	7440-43-9	CADMIUM	0.263	J	mg/kg	0.0234	0.585
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	METAL	7440-47-3	CHROMIUM	14.6		mg/kg	0.164	1.76
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	METAL	7439-92-1	LEAD	12.9		mg/kg	0.257	1.76
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	METAL	7439-97-6	MERCURY	0.0142	J	mg/kg	0.0084	0.12
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	METAL	7782-49-2	SELENIUM	0.796	U	mg/kg	0.796	2.34
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	METAL	7440-22-4	SILVER	0.0971	U	mg/kg	0.0971	0.585
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	92-52-4	1,1'-BIPHENYL	20	UJ	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	2	J	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	121-14-2	2,4-DINITROTOLUENE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	41

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	99-09-2	3-NITROANILINE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	610
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	100-01-6	4-NITROANILINE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	610
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	610
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	82	U	µg/kg	82	210
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	132-64-9	DIBENZOFURAN	20	UJ	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	84-66-2	DIETHYLPHTHALATE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	131-11-3	DIMETHYLPHTHALATE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	82	U	µg/kg	82	200
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	610
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	200
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	85-01-8	PHENANTHRENE	4	UJ	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	41
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	11
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	11
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	11
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	67-64-1	ACETONE	14	J	µg/kg	7	21
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	75-25-2	BROMOFORM	1	J	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	3	J	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	11
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	127-18-4	TETRACHLOROETHENE	97		µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	79-01-6	TRICHLOROETHENE	3	J	µg/kg	1	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	11
S01-SS08	S01-SS08-0810-121211	12/12/2011	8	10	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	GENERAL CHEM	MOIST	MOISTURE	9.6		percent		
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	METAL	7440-38-2	ARSENIC	6.57		mg/kg	0.0868	0.434
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	METAL	7440-39-3	BARIUM	859		mg/kg	0.0996	2.77
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	METAL	7440-43-9	CADMIUM	0.042	J	mg/kg	0.0221	0.553
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	METAL	7440-47-3	CHROMIUM	44.4		mg/kg	0.155	1.66
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	METAL	7439-92-1	LEAD	5.58		mg/kg	0.243	1.66
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	METAL	7439-97-6	MERCURY	0.0214	J	mg/kg	0.0075	0.106

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	METAL	7782-49-2	SELENIUM	15.1		mg/kg	0.752	2.21
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	METAL	7440-22-4	SILVER	0.256	J	mg/kg	0.0918	0.553
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	92-52-4	1,1'-BIPHENYL	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	123-91-1	1,4-DIOXANE	110	U	µg/kg	110	370
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	25	J	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	51-28-5	2,4-DINITROPHENOL	370	U	µg/kg	370	1100
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	121-14-2	2,4-DINITROTOLUENE	74	U	µg/kg	74	180
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	606-20-2	2,6-DINITROTOLUENE	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	8	U	µg/kg	8	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	95-57-8	2-CHLOROPHENOL	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	26		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	95-48-7	2-METHYLPHENOL	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	88-74-4	2-NITROANILINE	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	88-75-5	2-NITROPHENOL	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	110	U	µg/kg	110	370
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	99-09-2	3-NITROANILINE	74	U	µg/kg	74	180
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	180	U	µg/kg	180	550
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	106-47-8	4-CHLOROANILINE	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	106-44-5	4-METHYLPHENOL	63		µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	100-01-6	4-NITROANILINE	74	U	µg/kg	74	180
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	100-02-7	4-NITROPHENOL	180	U	µg/kg	180	550
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	83-32-9	ACENAPHTHENE	47		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	208-96-8	ACENAPHTHYLENE	1100		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	120-12-7	ANTHRACENE	1200		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	3700		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	50-32-8	BENZO(A)PYRENE	3800		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	5800		µg/kg	37	190
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	3000		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	1800		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	100-51-6	BENZYL ALCOHOL	180	U	µg/kg	180	550
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	74	U	µg/kg	74	190
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	74	U	µg/kg	74	180
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	86-74-8	CARBAZOLE	120		µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	218-01-9	CHRYSENE	3500		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	890		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	132-64-9	DIBENZOFURAN	51		µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	84-66-2	DIETHYLPHTHALATE	74	U	µg/kg	74	180
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	131-11-3	DIMETHYLPHTHALATE	74	U	µg/kg	74	180
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	74	U	µg/kg	74	180
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	74	U	µg/kg	74	180
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	206-44-0	FLUORANTHENE	5600		µg/kg	37	190
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	86-73-7	FLUORENE	100		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	180	U	µg/kg	180	550
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	67-72-1	HEXACHLOROETHANE	37	U	µg/kg	37	180
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	2700		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	78-59-1	ISOPHORONE	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	98-95-3	NITROBENZENE	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	18	U	µg/kg	18	37

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	18	U	µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	37	U	µg/kg	37	190
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	85-01-8	PHENANTHRENE	1000		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	108-95-2	PHENOL	43		µg/kg	18	37
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	SVOC	129-00-0	PYRENE	4400		µg/kg	4	19
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	3	U	µg/kg	3	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	78-93-3	2-BUTANONE	9	J	µg/kg	5	14
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	591-78-6	2-HEXANONE	4	U	µg/kg	4	14
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	108-10-1	4-METHYL-2-PENTANONE	4	U	µg/kg	4	14
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	67-64-1	ACETONE	31	J	µg/kg	9	27
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	71-43-2	BENZENE	0.7	U	µg/kg	0.7	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	74-83-9	BROMOMETHANE	3	U	µg/kg	3	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	75-15-0	CARBON DISULFIDE	10	J	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	75-00-3	CHLOROETHANE	3	U	µg/kg	3	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	74-87-3	CHLOROMETHANE	3	U	µg/kg	3	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	3	U	µg/kg	3	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	76-13-1	FREON 113	3	U	µg/kg	3	14
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	87-68-3	HEXACHLOROBUTADIENE	3	U	µg/kg	3	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	79-20-9	METHYL ACETATE	3	U	µg/kg	3	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.7	U	µg/kg	0.7	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	75-09-2	METHYLENE CHLORIDE	3	U	µg/kg	3	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	7

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	127-18-4	TETRACHLOROETHENE	53		µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	79-01-6	TRICHLOROETHENE	3	J	µg/kg	1	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	3	U	µg/kg	3	7
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	108-05-4	VINYL ACETATE	3	U	µg/kg	3	14
S01-SS09	S01-SS09-0002-121211	12/12/2011	0	2	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	7
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	GENERAL CHEM	MOIST	MOISTURE	18.2		percent		
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	METAL	7440-38-2	ARSENIC	17.3		mg/kg	0.094	0.47
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	METAL	7440-39-3	BARIUM	98.6		mg/kg	0.022	0.611
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	METAL	7440-43-9	CADMIUM	1.04		mg/kg	0.0244	0.611
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	METAL	7440-47-3	CHROMIUM	21.6		mg/kg	0.171	1.83
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	METAL	7439-92-1	LEAD	17.1		mg/kg	0.269	1.83
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	METAL	7439-97-6	MERCURY	0.0173	J	mg/kg	0.0081	0.115
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	METAL	7782-49-2	SELENIUM	0.831	U	mg/kg	0.831	2.44
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	METAL	7440-22-4	SILVER	0.101	U	mg/kg	0.101	0.611
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	92-52-4	1,1'-BIPHENYL	20	UJ	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	410
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	51-28-5	2,4-DINITROPHENOL	410	U	µg/kg	410	1200
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	121-14-2	2,4-DINITROTOLUENE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	9	U	µg/kg	9	40
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	410
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	99-09-2	3-NITROANILINE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	610
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	100-01-6	4-NITROANILINE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	610
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	610
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	41

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	81	U	µg/kg	81	210
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	132-64-9	DIBENZOFURAN	20	UJ	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	84-66-2	DIETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	131-11-3	DIMETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	610
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	67-72-1	HEXACHLOROETHANE	41	U	µg/kg	41	200
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	87-86-5	PENTACHLOROPHENOL	41	U	µg/kg	41	210
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	85-01-8	PHENANTHRENE	4	UJ	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	41
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	10
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	10
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	10
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	67-64-1	ACETONE	28	J	µg/kg	7	20
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	3	J	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	10
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	127-18-4	TETRACHLOROETHENE	33		µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	79-01-6	TRICHLOROETHENE	4	J	µg/kg	1	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	10
S01-SS09	S01-SS09-0305-121211	12/12/2011	3	5	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	GENERAL CHEM	MOIST	MOISTURE	17.4		percent		
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	METAL	7440-38-2	ARSENIC	13.1		mg/kg	0.095	0.475
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	METAL	7440-39-3	BARIUM	60		mg/kg	0.0218	0.605
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	METAL	7440-43-9	CADMIUM	0.749		mg/kg	0.0242	0.605
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	METAL	7440-47-3	CHROMIUM	11.9		mg/kg	0.169	1.82
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	METAL	7439-92-1	LEAD	10.7		mg/kg	0.266	1.82
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	METAL	7439-97-6	MERCURY	0.0174	J	mg/kg	0.0079	0.112
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	METAL	7782-49-2	SELENIUM	0.823	U	mg/kg	0.823	2.42
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	METAL	7440-22-4	SILVER	0.1	U	mg/kg	0.1	0.605
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	92-52-4	1,1'-BIPHENYL	20	UJ	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	95-50-1	1,2-DICHLOROBENZENE	1	J	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	541-73-1	1,3-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	106-46-7	1,4-DICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	123-91-1	1,4-DIOXANE	120	U	µg/kg	120	400
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	95-95-4	2,4,5-TRICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	88-06-2	2,4,6-TRICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	120-83-2	2,4-DICHLOROPHENOL	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	105-67-9	2,4-DIMETHYLPHENOL	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	51-28-5	2,4-DINITROPHENOL	400	U	µg/kg	400	1200
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	121-14-2	2,4-DINITROTOLUENE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	606-20-2	2,6-DINITROTOLUENE	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	91-58-7	2-CHLORONAPHTHALENE	8	U	µg/kg	8	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	95-57-8	2-CHLOROPHENOL	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	95-48-7	2-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	88-74-4	2-NITROANILINE	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	88-75-5	2-NITROPHENOL	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	91-94-1	3,3'-DICHLOROBENZIDINE	120	U	µg/kg	120	400
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	99-09-2	3-NITROANILINE	81	U	µg/kg	81	200

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	534-52-1	4,6-DINITRO-2-METHYLPHENOL	200	U	µg/kg	200	610
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	101-55-3	4-BROMOPHENYL-PHENYLETHER	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	59-50-7	4-CHLORO-3-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	106-47-8	4-CHLOROANILINE	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	7005-72-3	4-CHLOROPHENYL-PHENYLETHER	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	106-44-5	4-METHYLPHENOL	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	100-01-6	4-NITROANILINE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	100-02-7	4-NITROPHENOL	200	U	µg/kg	200	610
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	83-32-9	ACENAPHTHENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	208-96-8	ACENAPHTHYLENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	120-12-7	ANTHRACENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	50-32-8	BENZO(A)PYRENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	191-24-2	BENZO(G,H,I)PERYLENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	207-08-9	BENZO(K)FLUORANTHENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	100-51-6	BENZYL ALCOHOL	200	U	µg/kg	200	610
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	111-91-1	BIS(2-CHLOROETHOXY)METHANE	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	111-44-4	BIS(2-CHLOROETHYL)ETHER	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	81	U	µg/kg	81	210
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	85-68-7	BUTYLBENZYLPHTHALATE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	86-74-8	CARBAZOLE	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	218-01-9	CHRYSENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	132-64-9	DIBENZOFURAN	20	UJ	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	84-66-2	DIETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	131-11-3	DIMETHYLPHTHALATE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	84-74-2	DI-N-BUTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	117-84-0	DI-N-OCTYLPHTHALATE	81	U	µg/kg	81	200
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	206-44-0	FLUORANTHENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	86-73-7	FLUORENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	118-74-1	HEXACHLOROBENZENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	77-47-4	HEXACHLOROCYCLOPENTADIENE	200	U	µg/kg	200	610
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	67-72-1	HEXACHLOROETHANE	40	U	µg/kg	40	200
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	78-59-1	ISOPHORONE	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	98-95-3	NITROBENZENE	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	86-30-6	N-NITROSODIPHENYLAMINE	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	87-86-5	PENTACHLOROPHENOL	40	U	µg/kg	40	210
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	85-01-8	PHENANTHRENE	4	UJ	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	108-95-2	PHENOL	20	U	µg/kg	20	40
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	SVOC	129-00-0	PYRENE	4	U	µg/kg	4	21
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	630-20-6	1,1,1,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	71-55-6	1,1,1-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	79-00-5	1,1,2-TRICHLOROETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	75-34-3	1,1-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	563-58-6	1,1-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	87-61-6	1,2,3-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	96-18-4	1,2,3-TRICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	95-63-6	1,2,4-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	106-93-4	1,2-DIBROMOETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	107-06-2	1,2-DICHLOROETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	78-87-5	1,2-DICHLOROPROPANE	1	UJ	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	142-28-9	1,3-DICHLOROPROPANE	1	U	µg/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	594-20-7	2,2-DICHLOROPROPANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	78-93-3	2-BUTANONE	4	U	µg/kg	4	10
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	95-49-8	2-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	591-78-6	2-HEXANONE	3	U	µg/kg	3	10
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	106-43-4	4-CHLOROTOLUENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	108-10-1	4-METHYL-2-PENTANONE	3	U	µg/kg	3	10
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	67-64-1	ACETONE	14	J	µg/kg	7	20
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	71-43-2	BENZENE	0.5	U	µg/kg	0.5	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	108-86-1	BROMOBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	74-97-5	BROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	75-27-4	BROMODICHLOROMETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	75-25-2	BROMOFORM	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	74-83-9	BROMOMETHANE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	75-15-0	CARBON DISULFIDE	1	UJ	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	56-23-5	CARBON TETRACHLORIDE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	108-90-7	CHLOROBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	75-00-3	CHLOROETHANE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	67-66-3	CHLOROFORM	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	74-87-3	CHLOROMETHANE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	156-59-2	CIS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	10061-01-5	CIS-1,3-DICHLOROPROPENE	1	UJ	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	110-82-7	CYCLOHEXANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	124-48-1	DIBROMOCHLOROMETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	74-95-3	DIBROMOMETHANE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	75-71-8	DICHLORODIFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	100-41-4	ETHYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	76-13-1	FREON 113	2	U	µg/kg	2	10
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	87-68-3	HEXACHLOROBUTADIENE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	98-82-8	ISOPROPYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	179601-23-1	M+P-XYLENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	79-20-9	METHYL ACETATE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	1634-04-4	METHYL TERTIARY BUTYL ETHER	0.5	U	µg/kg	0.5	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	108-87-2	METHYLCYCLOHEXANE	1	UJ	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	75-09-2	METHYLENE CHLORIDE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	91-20-3	NAPHTHALENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	104-51-8	N-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	103-65-1	N-PROPYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	95-47-6	O-XYLENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	99-87-6	P-ISOPROPYLTOLUENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	135-98-8	SEC-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	100-42-5	STYRENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	98-06-6	TERT-BUTYLBENZENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	127-18-4	TETRACHLOROETHENE	21		µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	108-88-3	TOLUENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	79-01-6	TRICHLOROETHENE	1	J	µg/kg	1	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	75-69-4	TRICHLOROFLUOROMETHANE	2	U	µg/kg	2	5
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	108-05-4	VINYL ACETATE	2	U	µg/kg	2	10
S01-SS09	S01-SS09-0810-121211	12/12/2011	8	10	N	VOC	75-01-4	VINYL CHLORIDE	1	U	µg/kg	1	5
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	GENERAL CHEM	MOIST	MOISTURE	15.9		percent		
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	SVOC	92-52-4	1,1'-BIPHENYL	73000		µg/kg	33	780
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	11	J	µg/kg	4	20
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	20	U	µg/kg	13	20
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	SVOC	50-32-8	BENZO(A)PYRENE	20	U	µg/kg	13	20
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	20	U	µg/kg	13	20
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	20	U	µg/kg	13	20
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	SVOC	132-64-9	DIBENZOFURAN	170		µg/kg	33	39
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	20	U	µg/kg	13	20
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	SVOC	98-95-3	NITROBENZENE	39	U	µg/kg	33	39

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	130	200
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	230	U	µg/kg	2	230
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	230	U	µg/kg	2	230
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	107-13-1	ACRYLONITRILE	920	U	µg/kg	8	920
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	71-43-2	BENZENE	230	U	µg/kg	2	230
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	75-25-2	BROMOFORM	230	U	µg/kg	2	230
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	100-41-4	ETHYLBENZENE	230	U	µg/kg	2	230
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	98-82-8	ISOPROPYLBENZENE	230	U	µg/kg	2	230
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	179601-23-1	M+P-XYLENE	230	U	µg/kg	2	230
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	75-09-2	METHYLENE CHLORIDE	230	U	µg/kg	4	230
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	91-20-3	NAPHTHALENE	230	U	µg/kg	2	230
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	103-65-1	N-PROPYLBENZENE	230	U	µg/kg	2	230
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	95-47-6	O-XYLENE	230	U	µg/kg	2	230
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	100-42-5	STYRENE	230	U	µg/kg	2	230
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	127-18-4	TETRACHLOROETHENE	230	U	µg/kg	2	230
S01-SS10	S01-SS10-0002-100615	10/6/2015	0	2	N	VOC	79-01-6	TRICHLOROETHENE	230	U	µg/kg	2	230
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	GENERAL CHEM	MOIST	MOISTURE	18.4		percent		
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	SVOC	92-52-4	1,1'-BIPHENYL	110000		µg/kg	33	1600
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	6	J	µg/kg	4	21
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	21	U	µg/kg	13	21
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	SVOC	50-32-8	BENZO(A)PYRENE	21	U	µg/kg	13	21
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	21	U	µg/kg	13	21
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	21	U	µg/kg	13	21
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	SVOC	132-64-9	DIBENZOFURAN	170		µg/kg	33	40
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	21	U	µg/kg	13	21
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	SVOC	98-95-3	NITROBENZENE	40	U	µg/kg	33	40
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	SVOC	87-86-5	PENTACHLOROPHENOL	210	U	µg/kg	130	210
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	340	U	µg/kg	2	340
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	340	U	µg/kg	2	340
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	107-13-1	ACRYLONITRILE	1300	U	µg/kg	8	1300
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	71-43-2	BENZENE	340	U	µg/kg	2	340
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	75-25-2	BROMOFORM	340	U	µg/kg	2	340
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	100-41-4	ETHYLBENZENE	340	U	µg/kg	2	340
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	98-82-8	ISOPROPYLBENZENE	340	U	µg/kg	2	340
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	179601-23-1	M+P-XYLENE	340	U	µg/kg	2	340
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	75-09-2	METHYLENE CHLORIDE	340	U	µg/kg	4	340
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	91-20-3	NAPHTHALENE	340	U	µg/kg	2	340
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	103-65-1	N-PROPYLBENZENE	340	U	µg/kg	2	340
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	95-47-6	O-XYLENE	340	U	µg/kg	2	340
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	100-42-5	STYRENE	340	U	µg/kg	2	340
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	127-18-4	TETRACHLOROETHENE	73	J	µg/kg	67	340
S01-SS10	S01-SS10-0305-100615	10/6/2015	3	5	N	VOC	79-01-6	TRICHLOROETHENE	340	U	µg/kg	2	340
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	GENERAL CHEM	MOIST	MOISTURE	18.6		percent		
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	SVOC	92-52-4	1,1'-BIPHENYL	1500		µg/kg	33	40
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	21	U	µg/kg	13	21
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	21	U	µg/kg	13	21
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	SVOC	50-32-8	BENZO(A)PYRENE	21	U	µg/kg	13	21
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	21	U	µg/kg	13	21
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	21	U	µg/kg	13	21
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	SVOC	132-64-9	DIBENZOFURAN	40	U	µg/kg	33	40
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	21	U	µg/kg	13	21
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	SVOC	98-95-3	NITROBENZENE	40	U	µg/kg	33	40
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	SVOC	87-86-5	PENTACHLOROPHENOL	210	U	µg/kg	130	210
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	270	U	µg/kg	2	270
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	270	U	µg/kg	2	270
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	107-13-1	ACRYLONITRILE	1100	U	µg/kg	8	1100
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	71-43-2	BENZENE	270	U	µg/kg	2	270
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	75-25-2	BROMOFORM	270	U	µg/kg	2	270
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	100-41-4	ETHYLBENZENE	270	U	µg/kg	2	270
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	98-82-8	ISOPROPYLBENZENE	270	U	µg/kg	2	270

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	179601-23-1	M+P-XYLENE	270	U	µg/kg	2	270
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	75-09-2	METHYLENE CHLORIDE	270	U	µg/kg	4	270
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	91-20-3	NAPHTHALENE	270	UJ	µg/kg	2	270
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	103-65-1	N-PROPYLBENZENE	270	U	µg/kg	2	270
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	95-47-6	O-XYLENE	270	U	µg/kg	2	270
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	100-42-5	STYRENE	270	U	µg/kg	2	270
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	127-18-4	TETRACHLOROETHENE	170	J	µg/kg	55	270
S01-SS10	S01-SS10-0809-100615	10/6/2015	8	9	N	VOC	79-01-6	TRICHLOROETHENE	270	U	µg/kg	2	270
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	GENERAL CHEM	MOIST	MOISTURE	14.4		percent		
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	SVOC	92-52-4	1,1'-BIPHENYL	39	U	µg/kg	33	39
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	20	U	µg/kg	13	20
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	20	U	µg/kg	13	20
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	SVOC	50-32-8	BENZO(A)PYRENE	20	U	µg/kg	13	20
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	20	U	µg/kg	13	20
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	20	U	µg/kg	13	20
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	SVOC	132-64-9	DIBENZOFURAN	39	U	µg/kg	33	39
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	20	U	µg/kg	13	20
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	SVOC	98-95-3	NITROBENZENE	39	U	µg/kg	33	39
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	130	200
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	107-13-1	ACRYLONITRILE	19	U	µg/kg	8	19
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	127-18-4	TETRACHLOROETHENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0002-100615	10/6/2015	0	2	N	VOC	79-01-6	TRICHLOROETHENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	GENERAL CHEM	MOIST	MOISTURE	18.3		percent		
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	SVOC	92-52-4	1,1'-BIPHENYL	40	U	µg/kg	33	40
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	21	U	µg/kg	13	21
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	21	U	µg/kg	13	21
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	SVOC	50-32-8	BENZO(A)PYRENE	21	U	µg/kg	13	21
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	21	U	µg/kg	13	21
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	21	U	µg/kg	13	21
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	SVOC	132-64-9	DIBENZOFURAN	40	U	µg/kg	33	40
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	21	U	µg/kg	13	21
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	SVOC	98-95-3	NITROBENZENE	40	U	µg/kg	33	40
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	SVOC	87-86-5	PENTACHLOROPHENOL	210	U	µg/kg	130	210
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	107-13-1	ACRYLONITRILE	21	U	µg/kg	8	21
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	127-18-4	TETRACHLOROETHENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0304-100615	10/6/2015	3	4	N	VOC	79-01-6	TRICHLOROETHENE	5	U	µg/kg	2	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	GENERAL CHEM	MOIST	MOISTURE	15.6		percent		
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	SVOC	92-52-4	1,1'-BIPHENYL	39	U	µg/kg	33	39
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	20	U	µg/kg	13	20
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	20	U	µg/kg	13	20
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	SVOC	50-32-8	BENZO(A)PYRENE	20	U	µg/kg	13	20
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	20	U	µg/kg	13	20
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	20	U	µg/kg	13	20
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	SVOC	132-64-9	DIBENZOFURAN	39	U	µg/kg	33	39
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	20	U	µg/kg	13	20
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	SVOC	98-95-3	NITROBENZENE	39	U	µg/kg	33	39
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	130	200
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	107-13-1	ACRYLONITRILE	20	U	µg/kg	8	20
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	127-18-4	TETRACHLOROETHENE	38		µg/kg	2	5
S01-SS11	S01-SS11-0810-100615	10/6/2015	8	10	N	VOC	79-01-6	TRICHLOROETHENE	1	J	µg/kg	1	5
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	GENERAL CHEM	MOIST	MOISTURE	17.2		percent		
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	SVOC	92-52-4	1,1'-BIPHENYL	40	U	µg/kg	33	40
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	SVOC	50-32-8	BENZO(A)PYRENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	4	J	µg/kg	4	20
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	SVOC	132-64-9	DIBENZOFURAN	40	U	µg/kg	33	40
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	6	J	µg/kg	4	20
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	SVOC	98-95-3	NITROBENZENE	40	U	µg/kg	33	40
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	130	200
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	107-13-1	ACRYLONITRILE	970	U	µg/kg	8	970
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	71-43-2	BENZENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	75-25-2	BROMOFORM	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	100-41-4	ETHYLBENZENE	10000		µg/kg	2	240
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	98-82-8	ISOPROPYLBENZENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	179601-23-1	M+P-XYLENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	75-09-2	METHYLENE CHLORIDE	240	U	µg/kg	4	240
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	91-20-3	NAPHTHALENE	240	UJ	µg/kg	2	240
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	103-65-1	N-PROPYLBENZENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	95-47-6	O-XYLENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	100-42-5	STYRENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	127-18-4	TETRACHLOROETHENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0002-100615	10/6/2015	0	2	N	VOC	79-01-6	TRICHLOROETHENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	GENERAL CHEM	MOIST	MOISTURE	16.8		percent		
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	SVOC	92-52-4	1,1'-BIPHENYL	40	U	µg/kg	33	40
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	SVOC	50-32-8	BENZO(A)PYRENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	SVOC	132-64-9	DIBENZOFURAN	40	U	µg/kg	33	40

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	SVOC	98-95-3	NITROBENZENE	40	U	µg/kg	33	40
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	130	200
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	270	U	µg/kg	2	270
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	270	U	µg/kg	2	270
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	107-13-1	ACRYLONITRILE	1100	U	µg/kg	8	1100
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	71-43-2	BENZENE	270	U	µg/kg	2	270
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	75-25-2	BROMOFORM	270	U	µg/kg	2	270
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	100-41-4	ETHYLBENZENE	21000		µg/kg	2	2700
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	98-82-8	ISOPROPYLBENZENE	270	U	µg/kg	2	270
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	179601-23-1	M+P-XYLENE	270	U	µg/kg	2	270
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	75-09-2	METHYLENE CHLORIDE	270	U	µg/kg	4	270
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	91-20-3	NAPHTHALENE	270	UJ	µg/kg	2	270
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	103-65-1	N-PROPYLBENZENE	270	U	µg/kg	2	270
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	95-47-6	O-XYLENE	270	U	µg/kg	2	270
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	100-42-5	STYRENE	270	U	µg/kg	2	270
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	127-18-4	TETRACHLOROETHENE	270	U	µg/kg	2	270
S01-SS12	S01-SS12-0305-100615	10/6/2015	3	5	N	VOC	79-01-6	TRICHLOROETHENE	270	U	µg/kg	2	270
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	GENERAL CHEM	MOIST	MOISTURE	14.6		percent		
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	SVOC	92-52-4	1,1'-BIPHENYL	39	U	µg/kg	33	39
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	23		µg/kg	13	20
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	SVOC	50-32-8	BENZO(A)PYRENE	4	J	µg/kg	4	20
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	8	J	µg/kg	4	20
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	SVOC	132-64-9	DIBENZOFURAN	39	U	µg/kg	33	39
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	SVOC	98-95-3	NITROBENZENE	39	U	µg/kg	33	39
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	130	200
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	107-13-1	ACRYLONITRILE	970	U	µg/kg	8	970
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	71-43-2	BENZENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	75-25-2	BROMOFORM	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	100-41-4	ETHYLBENZENE	18000		µg/kg	2	2400
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	98-82-8	ISOPROPYLBENZENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	179601-23-1	M+P-XYLENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	75-09-2	METHYLENE CHLORIDE	240	U	µg/kg	4	240
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	91-20-3	NAPHTHALENE	240	UJ	µg/kg	2	240
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	103-65-1	N-PROPYLBENZENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	95-47-6	O-XYLENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	100-42-5	STYRENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	127-18-4	TETRACHLOROETHENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0506-100615	10/6/2015	5	6	N	VOC	79-01-6	TRICHLOROETHENE	240	U	µg/kg	2	240
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	GENERAL CHEM	MOIST	MOISTURE	14.8		percent		
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	SVOC	92-52-4	1,1'-BIPHENYL	39	U	µg/kg	33	39
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	SVOC	50-32-8	BENZO(A)PYRENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	SVOC	132-64-9	DIBENZOFURAN	39	U	µg/kg	33	39
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	20	U	µg/kg	13	20
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	SVOC	98-95-3	NITROBENZENE	39	U	µg/kg	33	39
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	130	200
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	107-13-1	ACRYLONITRILE	20	U	µg/kg	8	20
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	71-43-2	BENZENE	0.5	J	µg/kg	0.5	5
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	75-25-2	BROMOFORM	10		µg/kg	2	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	127-18-4	TETRACHLOROETHENE	62		µg/kg	2	5
S01-SS12	S01-SS12-0810-100615	10/6/2015	8	10	N	VOC	79-01-6	TRICHLOROETHENE	6		µg/kg	2	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	GENERAL CHEM	MOIST	MOISTURE	17.8		percent		
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	SVOC	92-52-4	1,1'-BIPHENYL	40	U	µg/kg	33	40
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	8	J	µg/kg	4	20
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	26		µg/kg	13	20
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	SVOC	50-32-8	BENZO(A)PYRENE	20	J	µg/kg	4	20
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	28		µg/kg	13	20
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	20	U	µg/kg	13	20
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	SVOC	132-64-9	DIBENZOFURAN	40	U	µg/kg	33	40
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	12	J	µg/kg	4	20
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	SVOC	98-95-3	NITROBENZENE	40	U	µg/kg	33	40
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	130	200
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	107-13-1	ACRYLONITRILE	21	U	µg/kg	8	21
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	127-18-4	TETRACHLOROETHENE	1	J	µg/kg	1	5
S01-SS13	S01-SS13-0002-100615	10/6/2015	0	2	N	VOC	79-01-6	TRICHLOROETHENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	GENERAL CHEM	MOIST	MOISTURE	18.8		percent		
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	SVOC	92-52-4	1,1'-BIPHENYL	41	U	µg/kg	33	41
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	21	U	µg/kg	13	21
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	130		µg/kg	13	21
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	SVOC	50-32-8	BENZO(A)PYRENE	110		µg/kg	13	21
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	170		µg/kg	13	21
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	23		µg/kg	13	21
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	SVOC	132-64-9	DIBENZOFURAN	41	U	µg/kg	33	41
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	66		µg/kg	13	21
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	SVOC	98-95-3	NITROBENZENE	41	U	µg/kg	33	41
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	SVOC	87-86-5	PENTACHLOROPHENOL	210	U	µg/kg	130	210
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	107-13-1	ACRYLONITRILE	20	U	µg/kg	8	20
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	100-41-4	ETHYLBENZENE	2	J	µg/kg	1	5
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	179601-23-1	M+P-XYLENE	9		µg/kg	2	5
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	91-20-3	NAPHTHALENE	8		µg/kg	2	5
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	95-47-6	O-XYLENE	3	J	µg/kg	1	5
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	127-18-4	TETRACHLOROETHENE	5		µg/kg	2	5
S01-SS13	S01-SS13-0506-100615	10/6/2015	5	6	N	VOC	79-01-6	TRICHLOROETHENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	GENERAL CHEM	MOIST	MOISTURE	20.7		percent		
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	SVOC	92-52-4	1,1'-BIPHENYL	41	U	µg/kg	33	41
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	21	U	µg/kg	13	21
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	21	U	µg/kg	13	21
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	SVOC	50-32-8	BENZO(A)PYRENE	21	U	µg/kg	13	21
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	21	U	µg/kg	13	21
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	21	U	µg/kg	13	21
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	SVOC	132-64-9	DIBENZOFURAN	41	U	µg/kg	33	41
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	21	U	µg/kg	13	21
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	SVOC	98-95-3	NITROBENZENE	41	U	µg/kg	33	41
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	SVOC	87-86-5	PENTACHLOROPHENOL	210	U	µg/kg	130	210
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	107-13-1	ACRYLONITRILE	22	U	µg/kg	8	22
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	127-18-4	TETRACHLOROETHENE	24		µg/kg	2	5
S01-SS13	S01-SS13-0810-100615	10/6/2015	8	10	N	VOC	79-01-6	TRICHLOROETHENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	GENERAL CHEM	MOIST	MOISTURE	16.5		percent		
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	SVOC	92-52-4	1,1'-BIPHENYL	40	U	µg/kg	33	40
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	20	U	µg/kg	13	20
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	20	U	µg/kg	13	20
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	SVOC	50-32-8	BENZO(A)PYRENE	20	U	µg/kg	13	20
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	20	U	µg/kg	13	20
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	20	U	µg/kg	13	20
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	SVOC	132-64-9	DIBENZOFURAN	40	U	µg/kg	33	40
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	20	U	µg/kg	13	20
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	SVOC	98-95-3	NITROBENZENE	40	U	µg/kg	33	40
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	130	200
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	107-13-1	ACRYLONITRILE	20	U	µg/kg	8	20
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	127-18-4	TETRACHLOROETHENE	3	J	µg/kg	1	5
S01-SS14	S01-SS14-0102-100715	10/7/2015	1	2	N	VOC	79-01-6	TRICHLOROETHENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	GENERAL CHEM	MOIST	MOISTURE	18.7		percent		
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	SVOC	92-52-4	1,1'-BIPHENYL	40	U	µg/kg	33	40
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	21	U	µg/kg	13	21
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	21	U	µg/kg	13	21
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	SVOC	50-32-8	BENZO(A)PYRENE	21	U	µg/kg	13	21
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	21	U	µg/kg	13	21

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	21	U	µg/kg	13	21
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	SVOC	132-64-9	DIBENZOFURAN	40	U	µg/kg	33	40
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	21	U	µg/kg	13	21
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	SVOC	98-95-3	NITROBENZENE	40	U	µg/kg	33	40
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	SVOC	87-86-5	PENTACHLOROPHENOL	210	U	µg/kg	130	210
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	107-13-1	ACRYLONITRILE	21	U	µg/kg	8	21
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	127-18-4	TETRACHLOROETHENE	5		µg/kg	2	5
S01-SS14	S01-SS14-0304-100715	10/7/2015	3	4	N	VOC	79-01-6	TRICHLOROETHENE	5	U	µg/kg	2	5
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	GENERAL CHEM	MOIST	MOISTURE	20.2		percent		
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	SVOC	92-52-4	1,1'-BIPHENYL	42	U	µg/kg	33	42
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	21	U	µg/kg	13	21
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	21	U	µg/kg	13	21
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	SVOC	50-32-8	BENZO(A)PYRENE	21	U	µg/kg	13	21
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	21	U	µg/kg	13	21
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	21	U	µg/kg	13	21
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	SVOC	132-64-9	DIBENZOFURAN	42	U	µg/kg	33	42
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	21	U	µg/kg	13	21
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	SVOC	98-95-3	NITROBENZENE	42	U	µg/kg	33	42
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	SVOC	87-86-5	PENTACHLOROPHENOL	210	U	µg/kg	130	210
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	6	U	µg/kg	2	6
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	6	U	µg/kg	2	6
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	107-13-1	ACRYLONITRILE	23	U	µg/kg	8	23
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	71-43-2	BENZENE	6	U	µg/kg	2	6
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	75-25-2	BROMOFORM	6	U	µg/kg	2	6
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	100-41-4	ETHYLBENZENE	6	U	µg/kg	2	6
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	98-82-8	ISOPROPYLBENZENE	6	U	µg/kg	2	6
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	179601-23-1	M+P-XYLENE	6	U	µg/kg	2	6
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	75-09-2	METHYLENE CHLORIDE	6	U	µg/kg	4	6
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	91-20-3	NAPHTHALENE	6	U	µg/kg	2	6
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	103-65-1	N-PROPYLBENZENE	6	U	µg/kg	2	6
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	95-47-6	O-XYLENE	6	U	µg/kg	2	6
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	100-42-5	STYRENE	6	U	µg/kg	2	6
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	127-18-4	TETRACHLOROETHENE	12		µg/kg	2	6
S01-SS14	S01-SS14-0809-100715	10/7/2015	8	9	N	VOC	79-01-6	TRICHLOROETHENE	6	U	µg/kg	2	6
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	GENERAL CHEM	MOIST	MOISTURE	19.1		percent		
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	SVOC	92-52-4	1,1'-BIPHENYL	41	U	µg/kg	33	41
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	SVOC	50-32-8	BENZO(A)PYRENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	SVOC	132-64-9	DIBENZOFURAN	41	U	µg/kg	33	41
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	SVOC	98-95-3	NITROBENZENE	41	U	µg/kg	33	41
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	210	U	µg/kg	130	210
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	107-13-1	ACRYLONITRILE	19	U	µg/kg	8	19

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	127-18-4	TETRACHLOROETHENE	9		µg/kg	2	5
S01-SS15	S01-SS15-0102-100715	10/7/2015	1	2	N	VOC	79-01-6	TRICHLOROETHENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	GENERAL CHEM	MOIST	MOISTURE	21		percent		
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	SVOC	92-52-4	1,1'-BIPHENYL	42	U	µg/kg	33	42
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	SVOC	50-32-8	BENZO(A)PYRENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	SVOC	132-64-9	DIBENZOFURAN	42	U	µg/kg	33	42
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	SVOC	98-95-3	NITROBENZENE	42	U	µg/kg	33	42
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	SVOC	87-86-5	PENTACHLOROPHENOL	210	U	µg/kg	130	210
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	107-13-1	ACRYLONITRILE	21	U	µg/kg	8	21
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	127-18-4	TETRACHLOROETHENE	22		µg/kg	2	5
S01-SS15	S01-SS15-0405-100715	10/7/2015	4	5	N	VOC	79-01-6	TRICHLOROETHENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	GENERAL CHEM	MOIST	MOISTURE	19.9		percent		
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	SVOC	92-52-4	1,1'-BIPHENYL	42	U	µg/kg	33	42
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	SVOC	50-32-8	BENZO(A)PYRENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	SVOC	132-64-9	DIBENZOFURAN	42	U	µg/kg	33	42
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	21	U	µg/kg	13	21
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	SVOC	98-95-3	NITROBENZENE	42	U	µg/kg	33	42
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	SVOC	87-86-5	PENTACHLOROPHENOL	210	U	µg/kg	130	210
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	107-13-1	ACRYLONITRILE	22	U	µg/kg	8	22
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	127-18-4	TETRACHLOROETHENE	46		µg/kg	2	5
S01-SS15	S01-SS15-0809-100715	10/7/2015	8	9	N	VOC	79-01-6	TRICHLOROETHENE	3	J	µg/kg	1	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	GENERAL CHEM	MOIST	MOISTURE	16.2		percent		
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	SVOC	92-52-4	1,1'-BIPHENYL	40	U	µg/kg	33	40
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	SVOC	50-32-8	BENZO(A)PYRENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	SVOC	132-64-9	DIBENZOFURAN	40	U	µg/kg	33	40
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	SVOC	98-95-3	NITROBENZENE	40	U	µg/kg	33	40
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	130	200
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	107-13-1	ACRYLONITRILE	19	U	µg/kg	8	19
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	127-18-4	TETRACHLOROETHENE	18		µg/kg	2	5
S01-SS16	S01-SS16-0102-100715	10/7/2015	1	2	N	VOC	79-01-6	TRICHLOROETHENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	GENERAL CHEM	MOIST	MOISTURE	16.7		percent		
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	SVOC	92-52-4	1,1'-BIPHENYL	40	U	µg/kg	33	40
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	SVOC	50-32-8	BENZO(A)PYRENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	SVOC	132-64-9	DIBENZOFURAN	40	U	µg/kg	33	40
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	SVOC	98-95-3	NITROBENZENE	40	U	µg/kg	33	40
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	130	200
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	107-13-1	ACRYLONITRILE	20	U	µg/kg	8	20
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	127-18-4	TETRACHLOROETHENE	79		µg/kg	2	5
S01-SS16	S01-SS16-0304-100715	10/7/2015	3	4	N	VOC	79-01-6	TRICHLOROETHENE	3	J	µg/kg	1	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	GENERAL CHEM	MOIST	MOISTURE	17.6		percent		
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	SVOC	92-52-4	1,1'-BIPHENYL	40	U	µg/kg	33	40
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	20	U	µg/kg	13	20

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	SVOC	50-32-8	BENZO(A)PYRENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	SVOC	132-64-9	DIBENZOFURAN	40	U	µg/kg	33	40
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	SVOC	193-39-5	INDENO(1,2,3-CD)PYRENE	20	U	µg/kg	13	20
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	SVOC	98-95-3	NITROBENZENE	40	U	µg/kg	33	40
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	SVOC	87-86-5	PENTACHLOROPHENOL	200	U	µg/kg	130	200
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	107-13-1	ACRYLONITRILE	21	U	µg/kg	8	21
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	71-43-2	BENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	75-25-2	BROMOFORM	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	100-41-4	ETHYLBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	98-82-8	ISOPROPYLBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	179601-23-1	M+P-XYLENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	75-09-2	METHYLENE CHLORIDE	5	U	µg/kg	4	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	91-20-3	NAPHTHALENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	103-65-1	N-PROPYLBENZENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	95-47-6	O-XYLENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	100-42-5	STYRENE	5	U	µg/kg	2	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	127-18-4	TETRACHLOROETHENE	60		µg/kg	2	5
S01-SS16	S01-SS16-0809-100715	10/7/2015	8	9	N	VOC	79-01-6	TRICHLOROETHENE	4	J	µg/kg	1	5
S01-SS17	S01-SS17-0102-060518	6/5/2018	1	2	N	GENCHEM	MOIST	Moisture	16.5		%	0.1	0.1
S01-SS17	S01-SS17-0102-060518	6/5/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	6.1		ug/kg	0.33	1.1
S01-SS17	S01-SS17-0102-060518	6/5/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1.1	U	ug/kg	0.38	1.1
S01-SS17	S01-SS17-0102-060518	6/5/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1.7	U	ug/kg	0.27	1.7
S01-SS17	S01-SS17-0102-060518	6/5/2018	1	2	N	VOC	75-01-4	Vinyl chloride	2.2	U	ug/kg	0.35	2.2
S01-SS17	S01-SS17-0102-060518	6/5/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	1.1	U	ug/kg	0.41	1.1
S01-SS17	S01-SS17-0102-060518	6/5/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	1.1	U	ug/kg	0.33	1.1
S01-SS17	S01-SS17-0809-060518	6/5/2018	8	9	N	GENCHEM	MOIST	Moisture	4.5		%	0.1	0.1
S01-SS17	S01-SS17-0809-060518	6/5/2018	8	9	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	0.99	U	ug/kg	0.3	0.99
S01-SS17	S01-SS17-0809-060518	6/5/2018	8	9	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	0.99	U	ug/kg	0.34	0.99
S01-SS17	S01-SS17-0809-060518	6/5/2018	8	9	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1.5	U	ug/kg	0.24	1.5
S01-SS17	S01-SS17-0809-060518	6/5/2018	8	9	N	VOC	75-01-4	Vinyl chloride	2	U	ug/kg	0.31	2
S01-SS17	S01-SS17-0809-060518	6/5/2018	8	9	N	VOC	75-35-4	1,1-DICHLOROETHENE	0.99	U	ug/kg	0.37	0.99
S01-SS17	S01-SS17-0809-060518	6/5/2018	8	9	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	0.99	U	ug/kg	0.3	0.99
S01-SS18	S01-SS18-0102-061218	6/12/2018	1	2	N	GENCHEM	MOIST	Moisture	18.9		%	0.5	0.5
S01-SS18	S01-SS18-0102-061218	6/12/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	7		ug/kg	1	5
S01-SS18	S01-SS18-0102-061218	6/12/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS18	S01-SS18-0102-061218	6/12/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS18	S01-SS18-0102-061218	6/12/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS18	S01-SS18-0102-061218	6/12/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS18	S01-SS18-0102-061218	6/12/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS18	S01-SS18-0708-061218	6/12/2018	7	8	N	GENCHEM	MOIST	Moisture	18.3		%	0.5	0.5
S01-SS18	S01-SS18-0708-061218	6/12/2018	7	8	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	39		ug/kg	1	6
S01-SS18	S01-SS18-0708-061218	6/12/2018	7	8	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	6	U	ug/kg	1	6
S01-SS18	S01-SS18-0708-061218	6/12/2018	7	8	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS18	S01-SS18-0708-061218	6/12/2018	7	8	N	VOC	75-01-4	Vinyl chloride	6	U	ug/kg	1	6
S01-SS18	S01-SS18-0708-061218	6/12/2018	7	8	N	VOC	75-35-4	1,1-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS18	S01-SS18-0708-061218	6/12/2018	7	8	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	6	U	ug/kg	1	6
S01-SS19	S01-SS19-0102-061418	6/14/2018	1	2	N	GENCHEM	MOIST	Moisture	19.3		%	0.5	0.5
S01-SS19	S01-SS19-0102-061418	6/14/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	3	J	ug/kg	1	5
S01-SS19	S01-SS19-0102-061418	6/14/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS19	S01-SS19-0102-061418	6/14/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS19	S01-SS19-0102-061418	6/14/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS19	S01-SS19-0102-061418	6/14/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS19	S01-SS19-0102-061418	6/14/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS19	S01-SS19-0607-061418	6/14/2018	6	7	N	GENCHEM	MOIST	Moisture	19.1		%	0.5	0.5
S01-SS19	S01-SS19-0607-061418	6/14/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	10		ug/kg	1	6
S01-SS19	S01-SS19-0607-061418	6/14/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	6	U	ug/kg	1	6

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS19	S01-SS19-0607-061418	6/14/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS19	S01-SS19-0607-061418	6/14/2018	6	7	N	VOC	75-01-4	Vinyl chloride	6	U	ug/kg	1	6
S01-SS19	S01-SS19-0607-061418	6/14/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS19	S01-SS19-0607-061418	6/14/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	6	U	ug/kg	1	6
S01-SS20	S01-SS20-0102-061218	6/12/2018	1	2	N	GENCHEM	MOIST	Moisture	16.8		%	0.5	0.5
S01-SS20	S01-SS20-0102-061218	6/12/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	5	U	ug/kg	1	5
S01-SS20	S01-SS20-0102-061218	6/12/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS20	S01-SS20-0102-061218	6/12/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS20	S01-SS20-0102-061218	6/12/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS20	S01-SS20-0102-061218	6/12/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS20	S01-SS20-0102-061218	6/12/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS20	S01-SS20-0607-061218	6/12/2018	6	7	N	GENCHEM	MOIST	Moisture	16.3		%	0.5	0.5
S01-SS20	S01-SS20-0607-061218	6/12/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	10		ug/kg	1	5
S01-SS20	S01-SS20-0607-061218	6/12/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS20	S01-SS20-0607-061218	6/12/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS20	S01-SS20-0607-061218	6/12/2018	6	7	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS20	S01-SS20-0607-061218	6/12/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS20	S01-SS20-0607-061218	6/12/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS21	S01-SS21-0102-060718	6/7/2018	1	2	N	GENCHEM	MOIST	Moisture	12.8		%	0.5	0.5
S01-SS21	S01-SS21-0102-060718	6/7/2018	1	2	N	GENCHEM	MOIST	Moisture	12.7		%	0.5	0.5
S01-SS21	S01-SS21-0102-060718	6/7/2018	1	2	N	GENCHEM	MOIST	Moisture	12.8		%	0.5	0.5
S01-SS21	S01-SS21-0102-060718	6/7/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	12	J	ug/kg	1	5
S01-SS21	S01-SS21-0102-060718	6/7/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS21	S01-SS21-0102-060718	6/7/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS21	S01-SS21-0102-060718	6/7/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS21	S01-SS21-0102-060718	6/7/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS21	S01-SS21-0102-060718	6/7/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS21	S01-SS21-0607-060718	6/7/2018	6	7	N	GENCHEM	MOIST	Moisture	18.6		%	0.5	0.5
S01-SS21	S01-SS21-0607-060718	6/7/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	25		ug/kg	1	5
S01-SS21	S01-SS21-0607-060718	6/7/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS21	S01-SS21-0607-060718	6/7/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS21	S01-SS21-0607-060718	6/7/2018	6	7	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS21	S01-SS21-0607-060718	6/7/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS21	S01-SS21-0607-060718	6/7/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS21	S01-SSFD-060718	6/7/2018	6	7	FD	GENCHEM	MOIST	Moisture	18.4		%	0.5	0.5
S01-SS21	S01-SSFD-060718	6/7/2018	6	7	FD	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	18		ug/kg	1	5
S01-SS21	S01-SSFD-060718	6/7/2018	6	7	FD	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS21	S01-SSFD-060718	6/7/2018	6	7	FD	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS21	S01-SSFD-060718	6/7/2018	6	7	FD	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS21	S01-SSFD-060718	6/7/2018	6	7	FD	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS21	S01-SSFD-060718	6/7/2018	6	7	FD	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS22	S01-SS22-0102-061118	6/11/2018	1	2	N	GENCHEM	MOIST	Moisture	16.5		%	0.5	0.5
S01-SS22	S01-SS22-0102-061118	6/11/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	260	U	ug/kg	51	260
S01-SS22	S01-SS22-0102-061118	6/11/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	260	U	ug/kg	51	260
S01-SS22	S01-SS22-0102-061118	6/11/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	260	U	ug/kg	51	260
S01-SS22	S01-SS22-0102-061118	6/11/2018	1	2	N	VOC	75-01-4	Vinyl chloride	260	UJ	ug/kg	51	260
S01-SS22	S01-SS22-0102-061118	6/11/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	260	U	ug/kg	51	260
S01-SS22	S01-SS22-0102-061118	6/11/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	260	U	ug/kg	51	260
S01-SS22	S01-SS22-0607-061118	6/11/2018	6	7	N	GENCHEM	MOIST	Moisture	16.7		%	0.5	0.5
S01-SS22	S01-SS22-0607-061118	6/11/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	190		ug/kg	1	5
S01-SS22	S01-SS22-0607-061118	6/11/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	4	J	ug/kg	1	5
S01-SS22	S01-SS22-0607-061118	6/11/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS22	S01-SS22-0607-061118	6/11/2018	6	7	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS22	S01-SS22-0607-061118	6/11/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS22	S01-SS22-0607-061118	6/11/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	15		ug/kg	1	5
S01-SS23	S01-SS23-0102-060718	6/7/2018	1	2	N	GENCHEM	MOIST	Moisture	16.5		%	0.5	0.5
S01-SS23	S01-SS23-0102-060718	6/7/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	2	J	ug/kg	0.9	5
S01-SS23	S01-SS23-0102-060718	6/7/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	33		ug/kg	0.9	5
S01-SS23	S01-SS23-0102-060718	6/7/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	0.9	5
S01-SS23	S01-SS23-0102-060718	6/7/2018	1	2	N	VOC	75-01-4	Vinyl chloride	1	J	ug/kg	0.9	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS23	S01-SS23-0102-060718	6/7/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	0.9	5
S01-SS23	S01-SS23-0102-060718	6/7/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	0.9	5
S01-SS23	S01-SS23-0405-060718	6/7/2018	4	5	N	GENCHEM	MOIST	Moisture	17.4		%	0.5	0.5
S01-SS23	S01-SS23-0405-060718	6/7/2018	4	5	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	65		ug/kg	1	6
S01-SS23	S01-SS23-0405-060718	6/7/2018	4	5	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	6		ug/kg	1	6
S01-SS23	S01-SS23-0405-060718	6/7/2018	4	5	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS23	S01-SS23-0405-060718	6/7/2018	4	5	N	VOC	75-01-4	Vinyl chloride	6	U	ug/kg	1	6
S01-SS23	S01-SS23-0405-060718	6/7/2018	4	5	N	VOC	75-35-4	1,1-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS23	S01-SS23-0405-060718	6/7/2018	4	5	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	6	J	ug/kg	1	6
S01-SS23	S01-SS23-0910-060718	6/7/2018	9	10	N	GENCHEM	MOIST	Moisture	22.5		%	0.5	0.5
S01-SS23	S01-SS23-0910-060718	6/7/2018	9	10	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	210		ug/kg	2	8
S01-SS23	S01-SS23-0910-060718	6/7/2018	9	10	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	18		ug/kg	2	8
S01-SS23	S01-SS23-0910-060718	6/7/2018	9	10	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	8	U	ug/kg	2	8
S01-SS23	S01-SS23-0910-060718	6/7/2018	9	10	N	VOC	75-01-4	Vinyl chloride	8	U	ug/kg	2	8
S01-SS23	S01-SS23-0910-060718	6/7/2018	9	10	N	VOC	75-35-4	1,1-DICHLOROETHENE	8	U	ug/kg	2	8
S01-SS23	S01-SS23-0910-060718	6/7/2018	9	10	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	22		ug/kg	2	8
S01-SS24	S01-SS24-0607-060718	6/7/2018	6	7	N	GENCHEM	MOIST	Moisture	17.4		%	0.5	0.5
S01-SS24	S01-SS24-0607-060718	6/7/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	93		ug/kg	1	5
S01-SS24	S01-SS24-0607-060718	6/7/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	2	J	ug/kg	1	5
S01-SS24	S01-SS24-0607-060718	6/7/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS24	S01-SS24-0607-060718	6/7/2018	6	7	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS24	S01-SS24-0607-060718	6/7/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS24	S01-SS24-0607-060718	6/7/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	J	ug/kg	1	5
S01-SS24	S01-SS24-102-060718	6/7/2018	1	2	N	GENCHEM	MOIST	Moisture	17.1		%	0.5	0.5
S01-SS24	S01-SS24-102-060718	6/7/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	50		ug/kg	1	5
S01-SS24	S01-SS24-102-060718	6/7/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS24	S01-SS24-102-060718	6/7/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS24	S01-SS24-102-060718	6/7/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS24	S01-SS24-102-060718	6/7/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS24	S01-SS24-102-060718	6/7/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	1	J	ug/kg	1	5
S01-SS25	S01-SS25-0001-060818	6/8/2018	0	1	N	GENCHEM	MOIST	Moisture	13.1		%	0.5	0.5
S01-SS25	S01-SS25-0001-060818	6/8/2018	0	1	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	29		ug/kg	1	5
S01-SS25	S01-SS25-0001-060818	6/8/2018	0	1	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS25	S01-SS25-0001-060818	6/8/2018	0	1	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS25	S01-SS25-0001-060818	6/8/2018	0	1	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS25	S01-SS25-0001-060818	6/8/2018	0	1	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS25	S01-SS25-0001-060818	6/8/2018	0	1	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS25	S01-SS25-0809-060818	6/8/2018	8	9	N	GENCHEM	MOIST	Moisture	16.3		%	0.5	0.5
S01-SS25	S01-SS25-0809-060818	6/8/2018	8	9	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	49		ug/kg	1	5
S01-SS25	S01-SS25-0809-060818	6/8/2018	8	9	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1	J	ug/kg	1	5
S01-SS25	S01-SS25-0809-060818	6/8/2018	8	9	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS25	S01-SS25-0809-060818	6/8/2018	8	9	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS25	S01-SS25-0809-060818	6/8/2018	8	9	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS25	S01-SS25-0809-060818	6/8/2018	8	9	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	2	J	ug/kg	1	5
S01-SS26	S01-SS26-0102-061218	6/12/2018	1	2	N	GENCHEM	MOIST	Moisture	17.6		%	0.5	0.5
S01-SS26	S01-SS26-0102-061218	6/12/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	5	U	ug/kg	1	5
S01-SS26	S01-SS26-0102-061218	6/12/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS26	S01-SS26-0102-061218	6/12/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS26	S01-SS26-0102-061218	6/12/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS26	S01-SS26-0102-061218	6/12/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS26	S01-SS26-0102-061218	6/12/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS26	S01-SS26-0607-061218	6/12/2018	6	7	N	GENCHEM	MOIST	Moisture	17.7		%	0.5	0.5
S01-SS26	S01-SS26-0607-061218	6/12/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	7		ug/kg	1	5
S01-SS26	S01-SS26-0607-061218	6/12/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS26	S01-SS26-0607-061218	6/12/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS26	S01-SS26-0607-061218	6/12/2018	6	7	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS26	S01-SS26-0607-061218	6/12/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS26	S01-SS26-0607-061218	6/12/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS27	S01-SS27-0102-060518	6/5/2018	1	2	N	GENCHEM	MOIST	Moisture	14.9		%	0.1	0.1
S01-SS27	S01-SS27-0102-060518	6/5/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	1.8	J	ug/kg	0.31	1

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS27	S01-SS27-0102-060518	6/5/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1	U	ug/kg	0.35	1
S01-SS27	S01-SS27-0102-060518	6/5/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1.5	U	ug/kg	0.25	1.5
S01-SS27	S01-SS27-0102-060518	6/5/2018	1	2	N	VOC	75-01-4	Vinyl chloride	2.1	U	ug/kg	0.32	2.1
S01-SS27	S01-SS27-0102-060518	6/5/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	ug/kg	0.38	1
S01-SS27	S01-SS27-0102-060518	6/5/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	3		ug/kg	0.31	1
S01-SS27	S01-SS27-0708-060518	6/5/2018	7	8	N	GENCHEM	MOIST	Moisture	16.3		%	0.1	0.1
S01-SS27	S01-SS27-0708-060518	6/5/2018	7	8	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	72		ug/kg	0.35	1.2
S01-SS27	S01-SS27-0708-060518	6/5/2018	7	8	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1.2	U	ug/kg	0.4	1.2
S01-SS27	S01-SS27-0708-060518	6/5/2018	7	8	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1.8	U	ug/kg	0.28	1.8
S01-SS27	S01-SS27-0708-060518	6/5/2018	7	8	N	VOC	75-01-4	Vinyl chloride	2.3	U	ug/kg	0.37	2.3
S01-SS27	S01-SS27-0708-060518	6/5/2018	7	8	N	VOC	75-35-4	1,1-DICHLOROETHENE	1.2	U	ug/kg	0.44	1.2
S01-SS27	S01-SS27-0708-060518	6/5/2018	7	8	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	1.2	U	ug/kg	0.35	1.2
S01-SS27	S01-SSFD01-060518	6/5/2018	7	8	FD	GENCHEM	MOIST	Moisture	16.5		%	0.1	0.1
S01-SS27	S01-SSFD01-060518	6/5/2018	7	8	FD	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	58		ug/kg	0.31	1
S01-SS27	S01-SSFD01-060518	6/5/2018	7	8	FD	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1	U	ug/kg	0.35	1
S01-SS27	S01-SSFD01-060518	6/5/2018	7	8	FD	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1.5	U	ug/kg	0.24	1.5
S01-SS27	S01-SSFD01-060518	6/5/2018	7	8	FD	VOC	75-01-4	Vinyl chloride	2	U	ug/kg	0.32	2
S01-SS27	S01-SSFD01-060518	6/5/2018	7	8	FD	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	ug/kg	0.38	1
S01-SS27	S01-SSFD01-060518	6/5/2018	7	8	FD	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	1	U	ug/kg	0.31	1
S01-SS28	S01-SS28-0102-060518	6/5/2018	1	2	N	GENCHEM	MOIST	Moisture	17.8		%	0.1	0.1
S01-SS28	S01-SS28-0102-060518	6/5/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	63	U	ug/kg	19	63
S01-SS28	S01-SS28-0102-060518	6/5/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	63	U	ug/kg	22	63
S01-SS28	S01-SS28-0102-060518	6/5/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	95	U	ug/kg	15	95
S01-SS28	S01-SS28-0102-060518	6/5/2018	1	2	N	VOC	75-01-4	Vinyl chloride	130	U	ug/kg	20	130
S01-SS28	S01-SS28-0102-060518	6/5/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	63	U	ug/kg	24	63
S01-SS28	S01-SS28-0102-060518	6/5/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	63	U	ug/kg	19	63
S01-SS28	S01-SS28-0607-060518	6/5/2018	6	7	N	GENCHEM	MOIST	Moisture	16.7		%	0.1	0.1
S01-SS28	S01-SS28-0607-060518	6/5/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	240		ug/kg	19	64
S01-SS28	S01-SS28-0607-060518	6/5/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	64	U	ug/kg	22	64
S01-SS28	S01-SS28-0607-060518	6/5/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	95	U	ug/kg	15	95
S01-SS28	S01-SS28-0607-060518	6/5/2018	6	7	N	VOC	75-01-4	Vinyl chloride	130	U	ug/kg	20	130
S01-SS28	S01-SS28-0607-060518	6/5/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	64	U	ug/kg	24	64
S01-SS28	S01-SS28-0607-060518	6/5/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	64	U	ug/kg	19	64
S01-SS29	S01-SS29-0102-061218	6/12/2018	1	2	N	GENCHEM	MOIST	Moisture	20.5		%	0.1	0.1
S01-SS29	S01-SS29-0102-061218	6/12/2018	1	2	N	GENCHEM	MOIST	Moisture	20.7		%	0.1	0.1
S01-SS29	S01-SS29-0102-061218	6/12/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	3		ug/kg	0.32	1.1
S01-SS29	S01-SS29-0102-061218	6/12/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1.1	U	ug/kg	0.36	1.1
S01-SS29	S01-SS29-0102-061218	6/12/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1.6	U	ug/kg	0.26	1.6
S01-SS29	S01-SS29-0102-061218	6/12/2018	1	2	N	VOC	75-01-4	Vinyl chloride	2.1	U	ug/kg	0.34	2.1
S01-SS29	S01-SS29-0102-061218	6/12/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	1.1	U	ug/kg	0.4	1.1
S01-SS29	S01-SS29-0102-061218	6/12/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	1.1	U	ug/kg	0.32	1.1
S01-SS29	S01-SS29-0708-061218	6/12/2018	7	8	N	GENCHEM	MOIST	Moisture	19		%	0.1	0.1
S01-SS29	S01-SS29-0708-061218	6/12/2018	7	8	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	23		ug/kg	0.33	1.1
S01-SS29	S01-SS29-0708-061218	6/12/2018	7	8	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1.2		ug/kg	0.37	1.1
S01-SS29	S01-SS29-0708-061218	6/12/2018	7	8	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1.6	U	ug/kg	0.26	1.6
S01-SS29	S01-SS29-0708-061218	6/12/2018	7	8	N	VOC	75-01-4	Vinyl chloride	2.2	U	ug/kg	0.34	2.2
S01-SS29	S01-SS29-0708-061218	6/12/2018	7	8	N	VOC	75-35-4	1,1-DICHLOROETHENE	1.1	U	ug/kg	0.4	1.1
S01-SS29	S01-SS29-0708-061218	6/12/2018	7	8	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	2.8		ug/kg	0.33	1.1
S01-SS30	S01-SS30-0102-061118	6/11/2018	1	2	N	GENCHEM	MOIST	Moisture	16.5		%	0.5	0.5
S01-SS30	S01-SS30-0102-061118	6/11/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	250	U	ug/kg	49	250
S01-SS30	S01-SS30-0102-061118	6/11/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	250	U	ug/kg	49	250
S01-SS30	S01-SS30-0102-061118	6/11/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	250	U	ug/kg	49	250
S01-SS30	S01-SS30-0102-061118	6/11/2018	1	2	N	VOC	75-01-4	Vinyl chloride	250	UJ	ug/kg	49	250
S01-SS30	S01-SS30-0102-061118	6/11/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	250	U	ug/kg	49	250
S01-SS30	S01-SS30-0102-061118	6/11/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	250	U	ug/kg	49	250
S01-SS30	S01-SS30-0607-061118	6/11/2018	6	7	N	GENCHEM	MOIST	Moisture	16.4		%	0.5	0.5
S01-SS30	S01-SS30-0607-061118	6/11/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	39		ug/kg	1	5
S01-SS30	S01-SS30-0607-061118	6/11/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS30	S01-SS30-0607-061118	6/11/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS30	S01-SS30-0607-061118	6/11/2018	6	7	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS30	S01-SS30-0607-061118	6/11/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS30	S01-SS30-0607-061118	6/11/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS31	S01-SS31-0102-061318	6/13/2018	1	2	N	GENCHEM	MOIST	Moisture	18.3		%	0.5	0.5
S01-SS31	S01-SS31-0102-061318	6/13/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	9		ug/kg	1	5
S01-SS31	S01-SS31-0102-061318	6/13/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS31	S01-SS31-0102-061318	6/13/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS31	S01-SS31-0102-061318	6/13/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS31	S01-SS31-0102-061318	6/13/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS31	S01-SS31-0102-061318	6/13/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS31	S01-SS31-0607-061318	6/13/2018	6	7	N	GENCHEM	MOIST	Moisture	18.6		%	0.5	0.5
S01-SS31	S01-SS31-0607-061318	6/13/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	50		ug/kg	1	6
S01-SS31	S01-SS31-0607-061318	6/13/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	6		ug/kg	1	6
S01-SS31	S01-SS31-0607-061318	6/13/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS31	S01-SS31-0607-061318	6/13/2018	6	7	N	VOC	75-01-4	Vinyl chloride	6	U	ug/kg	1	6
S01-SS31	S01-SS31-0607-061318	6/13/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS31	S01-SS31-0607-061318	6/13/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	J	ug/kg	1	6
S01-SS32	S01-SS32-0102-061318	6/13/2018	1	2	N	GENCHEM	MOIST	Moisture	17.7		%	0.5	0.5
S01-SS32	S01-SS32-0102-061318	6/13/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	12		ug/kg	1	5
S01-SS32	S01-SS32-0102-061318	6/13/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS32	S01-SS32-0102-061318	6/13/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS32	S01-SS32-0102-061318	6/13/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS32	S01-SS32-0102-061318	6/13/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS32	S01-SS32-0102-061318	6/13/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS32	S01-SS32-0607-061318	6/13/2018	6	7	N	GENCHEM	MOIST	Moisture	15.7		%	0.5	0.5
S01-SS32	S01-SS32-0607-061318	6/13/2018	6	7	N	GENCHEM	MOIST	Moisture	15.5		%	0.5	0.5
S01-SS32	S01-SS32-0607-061318	6/13/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	13		ug/kg	1	5
S01-SS32	S01-SS32-0607-061318	6/13/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS32	S01-SS32-0607-061318	6/13/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS32	S01-SS32-0607-061318	6/13/2018	6	7	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS32	S01-SS32-0607-061318	6/13/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS32	S01-SS32-0607-061318	6/13/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS33	S01-SS33-0102-061118	6/11/2018	1	2	N	GENCHEM	MOIST	Moisture	15.1		%	0.5	0.5
S01-SS33	S01-SS33-0102-061118	6/11/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	2	J	ug/kg	1	5
S01-SS33	S01-SS33-0102-061118	6/11/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	4	J	ug/kg	1	5
S01-SS33	S01-SS33-0102-061118	6/11/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS33	S01-SS33-0102-061118	6/11/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS33	S01-SS33-0102-061118	6/11/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS33	S01-SS33-0102-061118	6/11/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS33	S01-SS33-0203-060718	6/7/2018	2	3	N	GENCHEM	MOIST	Moisture	15.6		%	0.5	0.5
S01-SS33	S01-SS33-0203-060718	6/7/2018	2	3	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	1100		ug/kg	52	260
S01-SS33	S01-SS33-0203-060718	6/7/2018	2	3	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	260	U	ug/kg	52	260
S01-SS33	S01-SS33-0203-060718	6/7/2018	2	3	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	260	U	ug/kg	52	260
S01-SS33	S01-SS33-0203-060718	6/7/2018	2	3	N	VOC	75-01-4	Vinyl chloride	260	UJ	ug/kg	52	260
S01-SS33	S01-SS33-0203-060718	6/7/2018	2	3	N	VOC	75-35-4	1,1-DICHLOROETHENE	260	U	ug/kg	52	260
S01-SS33	S01-SS33-0203-060718	6/7/2018	2	3	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	260	U	ug/kg	52	260
S01-SS33	S01-SS33-0708-061118	6/11/2018	7	8	N	GENCHEM	MOIST	Moisture	16.5		%	0.5	0.5
S01-SS33	S01-SS33-0708-061118	6/11/2018	7	8	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	230	J	ug/kg	1	5
S01-SS33	S01-SS33-0708-061118	6/11/2018	7	8	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	4	J	ug/kg	1	5
S01-SS33	S01-SS33-0708-061118	6/11/2018	7	8	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS33	S01-SS33-0708-061118	6/11/2018	7	8	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS33	S01-SS33-0708-061118	6/11/2018	7	8	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	95	J	ug/kg	1	5
S01-SS33	S01-SS33-0708-061118	6/11/2018	7	8	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	1400		ug/kg	53	270
S01-SS34	S01-SS34-0708-061218	6/12/2018	7	8	N	GENCHEM	MOIST	Moisture	16.3		%	0.5	0.5
S01-SS34	S01-SS34-0708-061218	6/12/2018	7	8	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	3	J	ug/kg	1	5
S01-SS34	S01-SS34-0708-061218	6/12/2018	7	8	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS34	S01-SS34-0708-061218	6/12/2018	7	8	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS34	S01-SS34-0708-061218	6/12/2018	7	8	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS34	S01-SS34-0708-061218	6/12/2018	7	8	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS34	S01-SS34-0708-061218	6/12/2018	7	8	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS35	S01-SS35-0102-061318	6/13/2018	1	2	N	GENCHEM	MOIST	Moisture	23		%	0.5	0.5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS35	S01-SS35-0102-061318	6/13/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	6	U	ug/kg	1	6
S01-SS35	S01-SS35-0102-061318	6/13/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	6	U	ug/kg	1	6
S01-SS35	S01-SS35-0102-061318	6/13/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS35	S01-SS35-0102-061318	6/13/2018	1	2	N	VOC	75-01-4	Vinyl chloride	6	U	ug/kg	1	6
S01-SS35	S01-SS35-0102-061318	6/13/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS35	S01-SS35-0102-061318	6/13/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	6	U	ug/kg	1	6
S01-SS35	S01-SS35-0506-061318	6/13/2018	5	6	N	GENCHEM	MOIST	Moisture	19.4		%	0.5	0.5
S01-SS35	S01-SS35-0506-061318	6/13/2018	5	6	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	6	U	ug/kg	1	6
S01-SS35	S01-SS35-0506-061318	6/13/2018	5	6	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	6	U	ug/kg	1	6
S01-SS35	S01-SS35-0506-061318	6/13/2018	5	6	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS35	S01-SS35-0506-061318	6/13/2018	5	6	N	VOC	75-01-4	Vinyl chloride	6	U	ug/kg	1	6
S01-SS35	S01-SS35-0506-061318	6/13/2018	5	6	N	VOC	75-35-4	1,1-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS35	S01-SS35-0506-061318	6/13/2018	5	6	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	6	U	ug/kg	1	6
S01-SS36	S01-SS36-0001-060818	6/8/2018	0	1	N	GENCHEM	MOIST	Moisture	15.7		%	0.5	0.5
S01-SS36	S01-SS36-0001-060818	6/8/2018	0	1	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	68		ug/kg	1	5
S01-SS36	S01-SS36-0001-060818	6/8/2018	0	1	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS36	S01-SS36-0001-060818	6/8/2018	0	1	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS36	S01-SS36-0001-060818	6/8/2018	0	1	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS36	S01-SS36-0001-060818	6/8/2018	0	1	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS36	S01-SS36-0001-060818	6/8/2018	0	1	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS36	S01-SS36-0708-060818	6/8/2018	7	8	N	GENCHEM	MOIST	Moisture	18		%	0.5	0.5
S01-SS36	S01-SS36-0708-060818	6/8/2018	7	8	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	120	J	ug/kg	1	5
S01-SS36	S01-SS36-0708-060818	6/8/2018	7	8	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1	J	ug/kg	1	5
S01-SS36	S01-SS36-0708-060818	6/8/2018	7	8	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS36	S01-SS36-0708-060818	6/8/2018	7	8	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS36	S01-SS36-0708-060818	6/8/2018	7	8	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS36	S01-SS36-0708-060818	6/8/2018	7	8	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	3	J	ug/kg	1	5
S01-SS36	S01-SSFD01-060818D	6/8/2018	7	8	FD	GENCHEM	MOIST	Moisture	18.8		%	0.5	0.5
S01-SS36	S01-SSFD01-060818D	6/8/2018	7	8	FD	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	35	J	ug/kg	1	5
S01-SS36	S01-SSFD01-060818D	6/8/2018	7	8	FD	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS36	S01-SSFD01-060818D	6/8/2018	7	8	FD	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS36	S01-SSFD01-060818D	6/8/2018	7	8	FD	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS36	S01-SSFD01-060818D	6/8/2018	7	8	FD	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS36	S01-SSFD01-060818D	6/8/2018	7	8	FD	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS37	S01-SS37-0102-061418	6/14/2018	1	2	N	GENCHEM	MOIST	Moisture	16.3		%	0.5	0.5
S01-SS37	S01-SS37-0102-061418	6/14/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	25		ug/kg	1	5
S01-SS37	S01-SS37-0102-061418	6/14/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS37	S01-SS37-0102-061418	6/14/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS37	S01-SS37-0102-061418	6/14/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS37	S01-SS37-0102-061418	6/14/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS37	S01-SS37-0102-061418	6/14/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS37	S01-SS37-0607-061418	6/14/2018	6	7	N	GENCHEM	MOIST	Moisture	16.4		%	0.5	0.5
S01-SS37	S01-SS37-0607-061418	6/14/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	77		ug/kg	1	5
S01-SS37	S01-SS37-0607-061418	6/14/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS37	S01-SS37-0607-061418	6/14/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS37	S01-SS37-0607-061418	6/14/2018	6	7	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS37	S01-SS37-0607-061418	6/14/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS37	S01-SS37-0607-061418	6/14/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	1	J	ug/kg	1	5
S01-SS38	S01-SS38-0102-060818	6/8/2018	1	2	N	GENCHEM	MOIST	Moisture	15.4		%	0.5	0.5
S01-SS38	S01-SS38-0102-060818	6/8/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	79		ug/kg	1	5
S01-SS38	S01-SS38-0102-060818	6/8/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	2	J	ug/kg	1	5
S01-SS38	S01-SS38-0102-060818	6/8/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS38	S01-SS38-0102-060818	6/8/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS38	S01-SS38-0102-060818	6/8/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS38	S01-SS38-0102-060818	6/8/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	53		ug/kg	1	5
S01-SS38	S01-SS38-0607-060818	6/8/2018	6	7	N	GENCHEM	MOIST	Moisture	16.5		%	0.5	0.5
S01-SS38	S01-SS38-0607-060818	6/8/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	58	J	ug/kg	1	5
S01-SS38	S01-SS38-0607-060818	6/8/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS38	S01-SS38-0607-060818	6/8/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS38	S01-SS38-0607-060818	6/8/2018	6	7	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS38	S01-SS38-0607-060818	6/8/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS38	S01-SS38-0607-060818	6/8/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS39	S01-SS39-0102-061318	6/13/2018	1	2	N	GENCHEM	MOIST	Moisture	15.9		%	0.5	0.5
S01-SS39	S01-SS39-0102-061318	6/13/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	16		ug/kg	1	5
S01-SS39	S01-SS39-0102-061318	6/13/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS39	S01-SS39-0102-061318	6/13/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS39	S01-SS39-0102-061318	6/13/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS39	S01-SS39-0102-061318	6/13/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS39	S01-SS39-0102-061318	6/13/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS39	S01-SS39-0506-061318	6/13/2018	5	6	N	GENCHEM	MOIST	Moisture	20.5		%	0.5	0.5
S01-SS39	S01-SS39-0506-061318	6/13/2018	5	6	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	6		ug/kg	1	6
S01-SS39	S01-SS39-0506-061318	6/13/2018	5	6	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	6	U	ug/kg	1	6
S01-SS39	S01-SS39-0506-061318	6/13/2018	5	6	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS39	S01-SS39-0506-061318	6/13/2018	5	6	N	VOC	75-01-4	Vinyl chloride	6	U	ug/kg	1	6
S01-SS39	S01-SS39-0506-061318	6/13/2018	5	6	N	VOC	75-35-4	1,1-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS39	S01-SS39-0506-061318	6/13/2018	5	6	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	6	U	ug/kg	1	6
S01-SS40	S01-SS40-0102-061318	6/13/2018	1	2	N	GENCHEM	MOIST	Moisture	17.1		%	0.5	0.5
S01-SS40	S01-SS40-0102-061318	6/13/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	5	U	ug/kg	1	5
S01-SS40	S01-SS40-0102-061318	6/13/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS40	S01-SS40-0102-061318	6/13/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS40	S01-SS40-0102-061318	6/13/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS40	S01-SS40-0102-061318	6/13/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS40	S01-SS40-0102-061318	6/13/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS40	S01-SS40-0607-061318	6/13/2018	6	7	N	GENCHEM	MOIST	Moisture	18.3		%	0.5	0.5
S01-SS40	S01-SS40-0607-061318	6/13/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	39		ug/kg	1	5
S01-SS40	S01-SS40-0607-061318	6/13/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS40	S01-SS40-0607-061318	6/13/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS40	S01-SS40-0607-061318	6/13/2018	6	7	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS40	S01-SS40-0607-061318	6/13/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS40	S01-SS40-0607-061318	6/13/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS41	S01-SS41-0102-061318	6/13/2018	1	2	N	GENCHEM	MOIST	Moisture	17.7		%	0.5	0.5
S01-SS41	S01-SS41-0102-061318	6/13/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	20		ug/kg	1	5
S01-SS41	S01-SS41-0102-061318	6/13/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS41	S01-SS41-0102-061318	6/13/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS41	S01-SS41-0102-061318	6/13/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS41	S01-SS41-0102-061318	6/13/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS41	S01-SS41-0102-061318	6/13/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS41	S01-SS41-0607-061318	6/13/2018	6	7	N	GENCHEM	MOIST	Moisture	17.3		%	0.5	0.5
S01-SS41	S01-SS41-0607-061318	6/13/2018	6	7	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	40		ug/kg	1	5
S01-SS41	S01-SS41-0607-061318	6/13/2018	6	7	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS41	S01-SS41-0607-061318	6/13/2018	6	7	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS41	S01-SS41-0607-061318	6/13/2018	6	7	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS41	S01-SS41-0607-061318	6/13/2018	6	7	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS41	S01-SS41-0607-061318	6/13/2018	6	7	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS42	S01-SS42-0102-061118	6/11/2018	1	2	N	GENCHEM	MOIST	Moisture	17.5		%	0.5	0.5
S01-SS42	S01-SS42-0102-061118	6/11/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	5	U	ug/kg	1	5
S01-SS42	S01-SS42-0102-061118	6/11/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	6		ug/kg	1	5
S01-SS42	S01-SS42-0102-061118	6/11/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS42	S01-SS42-0102-061118	6/11/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS42	S01-SS42-0102-061118	6/11/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS42	S01-SS42-0102-061118	6/11/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS42	S01-SS42-0608-061118	6/11/2018	6	8	N	GENCHEM	MOIST	Moisture	15.8		%	0.5	0.5
S01-SS42	S01-SS42-0608-061118	6/11/2018	6	8	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	2	J	ug/kg	1	6
S01-SS42	S01-SS42-0608-061118	6/11/2018	6	8	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	38		ug/kg	1	6
S01-SS42	S01-SS42-0608-061118	6/11/2018	6	8	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS42	S01-SS42-0608-061118	6/11/2018	6	8	N	VOC	75-01-4	Vinyl chloride	6	U	ug/kg	1	6
S01-SS42	S01-SS42-0608-061118	6/11/2018	6	8	N	VOC	75-35-4	1,1-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS42	S01-SS42-0608-061118	6/11/2018	6	8	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	6	U	ug/kg	1	6
S01-SS43	S01-SS43-0102-061418	6/14/2018	1	2	N	GENCHEM	MOIST	Moisture	18.1		%	0.5	0.5
S01-SS43	S01-SS43-0102-061418	6/14/2018	1	2	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	3	J	ug/kg	1	5

Table F-1. Analytical Soil Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SS43	S01-SS43-0102-061418	6/14/2018	1	2	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5	U	ug/kg	1	5
S01-SS43	S01-SS43-0102-061418	6/14/2018	1	2	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS43	S01-SS43-0102-061418	6/14/2018	1	2	N	VOC	75-01-4	Vinyl chloride	5	U	ug/kg	1	5
S01-SS43	S01-SS43-0102-061418	6/14/2018	1	2	N	VOC	75-35-4	1,1-DICHLOROETHENE	5	U	ug/kg	1	5
S01-SS43	S01-SS43-0102-061418	6/14/2018	1	2	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5	U	ug/kg	1	5
S01-SS43	S01-SS43-0506-061418	6/14/2018	5	6	N	GENCHEM	MOIST	Moisture	19.8		%	0.5	0.5
S01-SS43	S01-SS43-0506-061418	6/14/2018	5	6	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	4	J	ug/kg	1	6
S01-SS43	S01-SS43-0506-061418	6/14/2018	5	6	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	6	U	ug/kg	1	6
S01-SS43	S01-SS43-0506-061418	6/14/2018	5	6	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS43	S01-SS43-0506-061418	6/14/2018	5	6	N	VOC	75-01-4	Vinyl chloride	6	U	ug/kg	1	6
S01-SS43	S01-SS43-0506-061418	6/14/2018	5	6	N	VOC	75-35-4	1,1-DICHLOROETHENE	6	U	ug/kg	1	6
S01-SS43	S01-SS43-0506-061418	6/14/2018	5	6	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	6	U	ug/kg	1	6

Table F-2. Analytical Groundwater Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	VOC	100-41-4	ETHYLBENZENE	0.5	U	µg/L	0.2	0.5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	VOC	100-42-5	STYRENE	0.5	U	µg/L	0.2	0.5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	VOC	103-65-1	N-PROPYLBENZENE	0.5	U	µg/L	0.2	0.5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	VOC	107-13-1	ACRYLONITRILE	5	U	µg/L	2	5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE (MESITYLENE)	0.5	U	µg/L	0.2	0.5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	0.5	U	µg/L	0.2	0.5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	VOC	179601-23-1	m,p-Xylene	0.5	U	µg/L	0.2	0.5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	VOC	71-43-2	BENZENE	0.2	J	µg/L	0.1	0.5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	VOC	75-09-2	METHYLENE CHLORIDE	0.5	U	µg/L	0.4	0.5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	VOC	75-25-2	BROMOFORM	0.7		µg/L	0.2	0.5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	14		µg/L	0.2	0.5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	SVOC	91-20-3	NAPHTHALENE	0.5	U	µg/L	0.2	0.5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	VOC	95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	0.5	U	µg/L	0.2	0.5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	SVOC	98-82-8	ISOPROPYLBENZENE (CUMENE)	0.5	U	µg/L	0.2	0.5
MW08	MW08-GW-2636-021616	2/16/2016	26	36	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	90		µg/L	0.2	10
MW08	S01-MW08-2636-060918	6/9/2018	26	36	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1.9	J	µg/L	0.1	0.5
MW08	S01-MW08-2636-060918	6/9/2018	26	36	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	0.5	U	µg/L	0.1	0.5
MW08	S01-MW08-2636-060918	6/9/2018	26	36	N	VOC	75-01-4	Vinyl chloride	0.5	U	µg/L	0.1	0.5
MW08	S01-MW08-2636-060918	6/9/2018	26	36	N	VOC	75-35-4	1,1-DICHLOROETHENE	0.5	U	µg/L	0.1	0.5
MW08	S01-MW08-2636-060918	6/9/2018	26	36	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5.8	J	µg/L	0.1	0.5
MW08	S01-MW08-2636-060918	6/9/2018	26	36	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	51		µg/L	2	10
S01-GW01	S01-GW01-1828-060518	6/5/2018	18	28	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	5.8	J	µg/L	0.18	0.5
S01-GW01	S01-GW01-1828-060518	6/5/2018	18	28	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	0.5	U	µg/L	0.19	0.5
S01-GW01	S01-GW01-1828-060518	6/5/2018	18	28	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	0.75	U	µg/L	0.16	0.75
S01-GW01	S01-GW01-1828-060518	6/5/2018	18	28	N	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.07	1
S01-GW01	S01-GW01-1828-060518	6/5/2018	18	28	N	VOC	75-35-4	1,1-DICHLOROETHENE	0.5	U	µg/L	0.17	0.5
S01-GW01	S01-GW01-1828-060518	6/5/2018	18	28	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	0.5	U	µg/L	0.18	0.5
S01-GW02	S01-GW02-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	37		µg/L	0.5	1
S01-GW02	S01-GW02-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	0.6	J	µg/L	0.5	1
S01-GW02	S01-GW02-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW02	S01-GW02-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.5	1
S01-GW02	S01-GW02-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW02	S01-GW02-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	3		µg/L	0.5	1
S01-GW03	S01-GW03-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	100		µg/L	0.5	1
S01-GW03	S01-GW03-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	4		µg/L	0.5	1
S01-GW03	S01-GW03-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW03	S01-GW03-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.5	1
S01-GW03	S01-GW03-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW03	S01-GW03-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	4		µg/L	0.5	1
S01-GW04	S01-GW04-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	14		µg/L	0.1	0.5
S01-GW04	S01-GW04-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	0.5		µg/L	0.1	0.5
S01-GW04	S01-GW04-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	0.5	U	µg/L	0.1	0.5
S01-GW04	S01-GW04-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	0.5	U	µg/L	0.1	0.5
S01-GW04	S01-GW04-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	0.5	U	µg/L	0.1	0.5
S01-GW04	S01-GW04-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	1.3		µg/L	0.1	0.5
S01-GW05	S01-GW05-2830-060718	6/7/2018	28	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	79		µg/L	0.5	1
S01-GW05	S01-GW05-2830-060718	6/7/2018	28	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	25		µg/L	0.5	1
S01-GW05	S01-GW05-2830-060718	6/7/2018	28	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW05	S01-GW05-2830-060718	6/7/2018	28	30	N	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.5	1
S01-GW05	S01-GW05-2830-060718	6/7/2018	28	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/L	0.5	1

Table F-2. Analytical Groundwater Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-GW05	S01-GW05-2830-060718	6/7/2018	28	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	21		µg/L	0.5	1
S01-GW06	S01-GW06-2630-060818	6/8/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	38	J	µg/L	0.5	1
S01-GW06	S01-GW06-2630-060818	6/8/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	3		µg/L	0.5	1
S01-GW06	S01-GW06-2630-060818	6/8/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW06	S01-GW06-2630-060818	6/8/2018	26	30	N	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.5	1
S01-GW06	S01-GW06-2630-060818	6/8/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW06	S01-GW06-2630-060818	6/8/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5		µg/L	0.5	1
S01-GW07	S01-GW07-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	55	J	µg/L	0.5	2.5
S01-GW07	S01-GW07-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	2.5	U	µg/L	0.5	2.5
S01-GW07	S01-GW07-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	2.5	U	µg/L	0.5	2.5
S01-GW07	S01-GW07-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	2.5	U	µg/L	0.5	2.5
S01-GW07	S01-GW07-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	51	J	µg/L	0.5	2.5
S01-GW07	S01-GW07-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	280		µg/L	5	25
S01-GW08	S01-GW08-1828-060518	6/5/2018	18	28	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	61	J	µg/L	0.18	0.5
S01-GW08	S01-GW08-1828-060518	6/5/2018	18	28	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1.2		µg/L	0.19	0.5
S01-GW08	S01-GW08-1828-060518	6/5/2018	18	28	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	0.75	U	µg/L	0.16	0.75
S01-GW08	S01-GW08-1828-060518	6/5/2018	18	28	N	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.07	1
S01-GW08	S01-GW08-1828-060518	6/5/2018	18	28	N	VOC	75-35-4	1,1-DICHLOROETHENE	0.5	U	µg/L	0.17	0.5
S01-GW08	S01-GW08-1828-060518	6/5/2018	18	28	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	4.1	J	µg/L	0.18	0.5
S01-GW08	S01-GWFD01-060518	6/5/2018	18	28	FD	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	37	J	µg/L	0.18	0.5
S01-GW08	S01-GWFD01-060518	6/5/2018	18	28	FD	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1		µg/L	0.19	0.5
S01-GW08	S01-GWFD01-060518	6/5/2018	18	28	FD	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	0.75	U	µg/L	0.16	0.75
S01-GW08	S01-GWFD01-060518	6/5/2018	18	28	FD	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.07	1
S01-GW08	S01-GWFD01-060518	6/5/2018	18	28	FD	VOC	75-35-4	1,1-DICHLOROETHENE	0.5	U	µg/L	0.17	0.5
S01-GW08	S01-GWFD01-060518	6/5/2018	18	28	FD	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	3	J	µg/L	0.18	0.5
S01-GW09	S01-GW09-1828-060518	6/5/2018	18	28	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	56		µg/L	0.18	0.5
S01-GW09	S01-GW09-1828-060518	6/5/2018	18	28	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	27		µg/L	0.19	0.5
S01-GW09	S01-GW09-1828-060518	6/5/2018	18	28	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	0.75	U	µg/L	0.16	0.75
S01-GW09	S01-GW09-1828-060518	6/5/2018	18	28	N	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.07	1
S01-GW09	S01-GW09-1828-060518	6/5/2018	18	28	N	VOC	75-35-4	1,1-DICHLOROETHENE	0.5	U	µg/L	0.17	0.5
S01-GW09	S01-GW09-1828-060518	6/5/2018	18	28	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	22		µg/L	0.18	0.5
S01-GW10	S01-GW10-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	35		µg/L	0.2	1
S01-GW10	S01-GW10-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	0.4	J	µg/L	0.2	1
S01-GW10	S01-GW10-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.2	1
S01-GW10	S01-GW10-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/L	0.2	1
S01-GW10	S01-GW10-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	34		µg/L	0.2	1
S01-GW10	S01-GW10-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	200		µg/L	2	10
S01-GW10	S01-GWFD02-061418	6/14/2018	26	30	FD	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	35		µg/L	0.2	1
S01-GW10	S01-GWFD02-061418	6/14/2018	26	30	FD	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	0.4	J	µg/L	0.2	1
S01-GW10	S01-GWFD02-061418	6/14/2018	26	30	FD	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.2	1
S01-GW10	S01-GWFD02-061418	6/14/2018	26	30	FD	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/L	0.2	1
S01-GW10	S01-GWFD02-061418	6/14/2018	26	30	FD	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	38		µg/L	0.2	1
S01-GW10	S01-GWFD02-061418	6/14/2018	26	30	FD	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	210		µg/L	2	10
S01-GW11	S01-GW11-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	62		µg/L	0.5	1
S01-GW11	S01-GW11-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	16		µg/L	0.5	1
S01-GW11	S01-GW11-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW11	S01-GW11-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.5	1
S01-GW11	S01-GW11-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW11	S01-GW11-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	13		µg/L	0.5	1
S01-GW12	S01-GW12-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	200		µg/L	2	10

Table F-2. Analytical Groundwater Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-GW12	S01-GW12-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1	U	µg/L	0.2	1
S01-GW12	S01-GW12-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/L	0.2	1
S01-GW12	S01-GW12-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.2	1
S01-GW12	S01-GW12-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/L	0.2	1
S01-GW12	S01-GW12-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	2.4		µg/L	0.2	1
S01-GW13	S01-GW13-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	0.5	U	µg/L	0.1	0.5
S01-GW13	S01-GW13-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	24		µg/L	0.1	0.5
S01-GW13	S01-GW13-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	0.1	J	µg/L	0.1	0.5
S01-GW13	S01-GW13-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	0.5	U	µg/L	0.1	0.5
S01-GW13	S01-GW13-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	0.5	U	µg/L	0.1	0.5
S01-GW13	S01-GW13-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	1.8		µg/L	0.1	0.5
S01-GW14	S01-GW14-2831-060818	6/8/2018	28	31	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	44		µg/L	0.5	1
S01-GW14	S01-GW14-2831-060818	6/8/2018	28	31	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1		µg/L	0.5	1
S01-GW14	S01-GW14-2831-060818	6/8/2018	28	31	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW14	S01-GW14-2831-060818	6/8/2018	28	31	N	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.5	1
S01-GW14	S01-GW14-2831-060818	6/8/2018	28	31	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW14	S01-GW14-2831-060818	6/8/2018	28	31	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	2		µg/L	0.5	1
S01-GW15	S01-GW15-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	220		µg/L	10	50
S01-GW15	S01-GW15-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	6.1		µg/L	0.5	2.5
S01-GW15	S01-GW15-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	2.5	U	µg/L	0.5	2.5
S01-GW15	S01-GW15-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	2.5	U	µg/L	0.5	2.5
S01-GW15	S01-GW15-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	2.5	U	µg/L	0.5	2.5
S01-GW15	S01-GW15-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	10		µg/L	0.5	2.5
S01-GW16	S01-GW16-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	200		µg/L	0.5	1
S01-GW16	S01-GW16-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	4		µg/L	0.5	1
S01-GW16	S01-GW16-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW16	S01-GW16-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.5	1
S01-GW16	S01-GW16-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW16	S01-GW16-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	11		µg/L	0.5	1
S01-GW17	S01-GW17-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	0.6	J	µg/L	0.5	2.5
S01-GW17	S01-GW17-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	2.5	U	µg/L	0.5	2.5
S01-GW17	S01-GW17-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	2.5	U	µg/L	0.5	2.5
S01-GW17	S01-GW17-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	2.5	U	µg/L	0.5	2.5
S01-GW17	S01-GW17-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	6.1		µg/L	0.5	2.5
S01-GW17	S01-GW17-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	200		µg/L	5	25
S01-GW18	S01-GW18-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	2.5	U	µg/L	0.5	2.5
S01-GW18	S01-GW18-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	2.5	U	µg/L	0.5	2.5
S01-GW18	S01-GW18-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	2.5	U	µg/L	0.5	2.5
S01-GW18	S01-GW18-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	2.5	U	µg/L	0.5	2.5
S01-GW18	S01-GW18-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	3.4		µg/L	0.5	2.5
S01-GW18	S01-GW18-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	270		µg/L	5	25
S01-GW20	S01-GW20-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	14		µg/L	0.1	0.5
S01-GW20	S01-GW20-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	23		µg/L	0.1	0.5
S01-GW20	S01-GW20-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	0.5	U	µg/L	0.1	0.5
S01-GW20	S01-GW20-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	0.5	U	µg/L	0.1	0.5
S01-GW20	S01-GW20-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	0.5	U	µg/L	0.1	0.5
S01-GW20	S01-GW20-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	23		µg/L	1	5
S01-GW21	S01-GW21-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	2.1		µg/L	0.1	0.5
S01-GW21	S01-GW21-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	0.5	U	µg/L	0.1	0.5
S01-GW21	S01-GW21-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	0.5	U	µg/L	0.1	0.5

Table F-2. Analytical Groundwater Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-GW21	S01-GW21-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	0.5	U	µg/L	0.1	0.5
S01-GW21	S01-GW21-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	16		µg/L	0.1	0.5
S01-GW21	S01-GW21-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	57		µg/L	2	10
S01-GW21	S01-GWFD01-061418	6/14/2018	26	30	FD	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	2		µg/L	0.1	0.5
S01-GW21	S01-GWFD01-061418	6/14/2018	26	30	FD	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	0.5	U	µg/L	0.1	0.5
S01-GW21	S01-GWFD01-061418	6/14/2018	26	30	FD	VOC	75-01-4	Vinyl chloride	0.5	U	µg/L	0.1	0.5
S01-GW21	S01-GWFD01-061418	6/14/2018	26	30	FD	VOC	75-35-4	1,1-DICHLOROETHENE	0.5	U	µg/L	0.1	0.5
S01-GW21	S01-GWFD01-061418	6/14/2018	26	30	FD	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	16		µg/L	0.1	0.5
S01-GW21	S01-GWFD01-061418	6/14/2018	26	30	FD	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	56		µg/L	2	10
S01-GW22	S01-GW22-2630-061418	6/14/2018	26	30	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	36		µg/L	0.5	1
S01-GW22	S01-GW22-2630-061418	6/14/2018	26	30	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	5		µg/L	0.5	1
S01-GW22	S01-GW22-2630-061418	6/14/2018	26	30	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW22	S01-GW22-2630-061418	6/14/2018	26	30	N	VOC	75-01-4	Vinyl chloride	1	U	µg/L	0.5	1
S01-GW22	S01-GW22-2630-061418	6/14/2018	26	30	N	VOC	75-35-4	1,1-DICHLOROETHENE	1	U	µg/L	0.5	1
S01-GW22	S01-GW22-2630-061418	6/14/2018	26	30	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	9		µg/L	0.5	1
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	SVOC	91-20-3	NAPHTHALENE	0.1	U	µg/L	0.1	0.5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	SVOC	98-82-8	ISOPROPYLBENZENE (CUMENE)	0.1	U	µg/L	0.1	0.5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	SVOC	87-86-5	Pentachlorophenol	1	U	µg/L	1	5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	SVOC	92-52-4	BIPHENYL (DIPHENYL)	0.5	U	µg/L	0.5	1
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	SVOC	98-95-3	NITROBENZENE	0.5	U	µg/L	0.5	1
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	SVOC	132-64-9	DIBENZOFURAN	0.013	J	µg/L	0.01	0.05
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	SVOC	193-39-5	INDENO(1,2,3-C,D)PYRENE	0.01	UJ	µg/L	0.01	0.05
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	0.01	UJ	µg/L	0.01	0.05
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	SVOC	50-32-8	BENZO(A)PYRENE	0.01	UJ	µg/L	0.01	0.05
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	0.01	UJ	µg/L	0.01	0.05
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	0.01	UJ	µg/L	0.01	0.05
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	0.04	J	µg/L	0.01	0.05
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	SVOC	91-20-3	NAPHTHALENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	SVOC	98-82-8	ISOPROPYLBENZENE (CUMENE)	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	SVOC	87-86-5	Pentachlorophenol	1	U	µg/L	1	6
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	SVOC	92-52-4	BIPHENYL (DIPHENYL)	0.6	U	µg/L	0.6	1
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	SVOC	98-95-3	NITROBENZENE	0.6	U	µg/L	0.6	1
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	SVOC	132-64-9	DIBENZOFURAN	0.038	J	µg/L	0.011	0.056
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	SVOC	193-39-5	INDENO(1,2,3-C,D)PYRENE	0.011	U	µg/L	0.011	0.056
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	0.056	U	µg/L	0.011	0.056
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	SVOC	50-32-8	BENZO(A)PYRENE	0.011	U	µg/L	0.011	0.056
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	0.011	U	µg/L	0.011	0.056
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	0.056	U	µg/L	0.011	0.056
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	0.056	U	µg/L	0.011	0.056
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	SVOC	91-20-3	NAPHTHALENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	SVOC	98-82-8	ISOPROPYLBENZENE (CUMENE)	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	SVOC	87-86-5	Pentachlorophenol	1	U	µg/L	1	6
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	SVOC	92-52-4	BIPHENYL (DIPHENYL)	0.6	U	µg/L	0.6	1
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	SVOC	98-95-3	NITROBENZENE	0.6	U	µg/L	0.6	1
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	SVOC	132-64-9	DIBENZOFURAN	0.012	U	µg/L	0.012	0.058
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	SVOC	193-39-5	INDENO(1,2,3-C,D)PYRENE	0.012	U	µg/L	0.012	0.058
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	0.012	U	µg/L	0.012	0.058
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	SVOC	50-32-8	BENZO(A)PYRENE	0.012	U	µg/L	0.012	0.058
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	0.012	U	µg/L	0.012	0.058

Table F-2. Analytical Groundwater Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	0.012	U	µg/L	0.012	0.058
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	0.012	U	µg/L	0.012	0.058
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	SVOC	91-20-3	NAPHTHALENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	SVOC	98-82-8	ISOPROPYLBENZENE (CUMENE)	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	SVOC	92-52-4	BIPHENYL (DIPHENYL)	0.6	U	µg/L	0.6	1
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	SVOC	98-95-3	NITROBENZENE	0.6	U	µg/L	0.6	1
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	SVOC	132-64-9	DIBENZOFURAN	0.031	J	µg/L	0.011	0.056
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	SVOC	193-39-5	INDENO(1,2,3-C,D)PYRENE	0.011	U	µg/L	0.011	0.056
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	SVOC	205-99-2	BENZO(B)FLUORANTHENE	0.011	U	µg/L	0.011	0.056
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	SVOC	50-32-8	BENZO(A)PYRENE	0.011	U	µg/L	0.011	0.056
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	SVOC	53-70-3	DIBENZ(A,H)ANTHRACENE	0.011	U	µg/L	0.011	0.056
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	SVOC	56-55-3	BENZO(A)ANTHRACENE	0.011	U	µg/L	0.011	0.056
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	SVOC	91-57-6	2-METHYLNAPHTHALENE	0.011	U	µg/L	0.011	0.087
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	VOC	100-41-4	ETHYLBENZENE	0.1	U	µg/L	0.1	0.5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	VOC	100-42-5	STYRENE	0.1	U	µg/L	0.1	0.5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	VOC	103-65-1	N-PROPYLBENZENE	0.1	U	µg/L	0.1	0.5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	VOC	107-13-1	ACRYLONITRILE	1	U	µg/L	1	5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE (MESITYLENE)	0.1	U	µg/L	0.1	0.5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	0.1	U	µg/L	0.1	0.5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	VOC	179601-23-1	m,p-Xylene	0.1	U	µg/L	0.1	0.5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	VOC	71-43-2	BENZENE	0.2	J	µg/L	0.1	0.5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	VOC	75-09-2	METHYLENE CHLORIDE	0.2	U	µg/L	0.2	0.5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	VOC	75-25-2	BROMOFORM	0.1	U	µg/L	0.1	0.5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5.9		µg/L	0.1	0.5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	VOC	95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	0.1	U	µg/L	0.1	0.5
VP10	VD10-GW-2529-112014	11/20/2014	25	29	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	35		µg/L	1	5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	VOC	100-41-4	ETHYLBENZENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	VOC	100-42-5	STYRENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	VOC	103-65-1	N-PROPYLBENZENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	VOC	107-13-1	ACRYLONITRILE	1	U	µg/L	1	5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE (MESITYLENE)	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	0.5	J	µg/L	0.1	0.5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	VOC	179601-23-1	m,p-Xylene	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	VOC	71-43-2	BENZENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	VOC	75-09-2	METHYLENE CHLORIDE	0.2	U	µg/L	0.2	0.5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	VOC	75-25-2	BROMOFORM	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	0.2	J	µg/L	0.1	0.5
VP10	VP10-GW-4549-111914	11/19/2014	45	49	N	VOC	95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	VOC	100-41-4	ETHYLBENZENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	VOC	100-42-5	STYRENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	VOC	103-65-1	N-PROPYLBENZENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	VOC	107-13-1	ACRYLONITRILE	1	U	µg/L	1	5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE (MESITYLENE)	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	0.3	J	µg/L	0.1	0.5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	VOC	179601-23-1	m,p-Xylene	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	VOC	71-43-2	BENZENE	0.1	U	µg/L	0.1	0.5

Table F-2. Analytical Groundwater Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	VOC	75-09-2	METHYLENE CHLORIDE	0.2	U	µg/L	0.2	0.5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	VOC	75-25-2	BROMOFORM	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-6569-111914	11/19/2014	65	69	N	VOC	95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	VOC	100-41-4	ETHYLBENZENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	VOC	100-42-5	STYRENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	VOC	103-65-1	N-PROPYLBENZENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	VOC	107-13-1	ACRYLONITRILE	1	U	µg/L	1	5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	VOC	108-67-8	1,3,5-TRIMETHYLBENZENE (MESITYLENE)	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	VOC	120-82-1	1,2,4-TRICHLOROBENZENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	0.2	J	µg/L	0.1	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	VOC	179601-23-1	m,p-Xylene	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	VOC	71-43-2	BENZENE	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	VOC	75-09-2	METHYLENE CHLORIDE	0.2	U	µg/L	0.2	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	VOC	75-25-2	BROMOFORM	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	0.1	U	µg/L	0.1	0.5
VP10	VP10-GW-7680-111914	11/19/2014	76	80	N	VOC	95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	0.1	U	µg/L	0.1	0.5

Table F-3. Analytical Exterior Soil Gas Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SG07	S01-SG07-060718	6/7/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	507	U	ug/m3	144	507
S01-SG07	S01-SG07-060718	6/7/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	507	U	ug/m3	149	507
S01-SG07	S01-SG07-060718	6/7/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	226000		ug/m3	330	868
S01-SG07	S01-SG07-060718	6/7/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	507	U	ug/m3	188	507
S01-SG07	S01-SG07-060718	6/7/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	688	U	ug/m3	245	688
S01-SG07	S01-SG07-060718	6/7/2018	0	0	N	VOC	75-01-4	Vinyl chloride	327	U	ug/m3	64.4	327
S01-SG07	S01-SGFD01-060718	6/7/2018	0	0	FD	VOC	75-35-4	1,1-DICHLOROETHENE	825	U	ug/m3	234	825
S01-SG07	S01-SGFD01-060718	6/7/2018	0	0	FD	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	825	U	ug/m3	243	825
S01-SG07	S01-SGFD01-060718	6/7/2018	0	0	FD	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	253000		ug/m3	536	1410
S01-SG07	S01-SGFD01-060718	6/7/2018	0	0	FD	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	825	U	ug/m3	306	825
S01-SG07	S01-SGFD01-060718	6/7/2018	0	0	FD	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	1120	U	ug/m3	398	1120
S01-SG07	S01-SGFD01-060718	6/7/2018	0	0	FD	VOC	75-01-4	Vinyl chloride	532	U	ug/m3	105	532
S01-SG08	S01-SG08-060618	6/6/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	39.4	U	ug/m3	11.1	39.4
S01-SG08	S01-SG08-060618	6/6/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	39.4	U	ug/m3	11.6	39.4
S01-SG08	S01-SG08-060618	6/6/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	15200		ug/m3	25.6	67.4
S01-SG08	S01-SG08-060618	6/6/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	39.4	U	ug/m3	14.6	39.4
S01-SG08	S01-SG08-060618	6/6/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	53.4	U	ug/m3	19	53.4
S01-SG08	S01-SG08-060618	6/6/2018	0	0	N	VOC	75-01-4	Vinyl chloride	25.4	U	ug/m3	5.01	25.4
S01-SG09	S01-SG09-060618	6/6/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	1.83	U	ug/m3	0.519	1.83
S01-SG09	S01-SG09-060618	6/6/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	1.83	U	ug/m3	0.539	1.83
S01-SG09	S01-SG09-060618	6/6/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	1090		ug/m3	1.19	3.13
S01-SG09	S01-SG09-060618	6/6/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	1.83	U	ug/m3	0.678	1.83
S01-SG09	S01-SG09-060618	6/6/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5.08		ug/m3	0.881	2.48
S01-SG09	S01-SG09-060618	6/6/2018	0	0	N	VOC	75-01-4	Vinyl chloride	1.18	U	ug/m3	0.233	1.18
S01-SG10	S01-SG10-060618	6/6/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	20.7	U	ug/m3	5.87	20.7
S01-SG10	S01-SG10-060618	6/6/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	20.7	U	ug/m3	6.11	20.7
S01-SG10	S01-SG10-060618	6/6/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	10600		ug/m3	13.4	35.5
S01-SG10	S01-SG10-060618	6/6/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	20.7	U	ug/m3	7.69	20.7
S01-SG10	S01-SG10-060618	6/6/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	88.1		ug/m3	10	28.1
S01-SG10	S01-SG10-060618	6/6/2018	0	0	N	VOC	75-01-4	Vinyl chloride	13.4	U	ug/m3	2.63	13.4
S01-SG11	S01-SG11-060618	6/6/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	76.9	U	ug/m3	21.7	76.9
S01-SG11	S01-SG11-060618	6/6/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	76.9	U	ug/m3	22.6	76.9
S01-SG11	S01-SG11-060618	6/6/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	35200		ug/m3	49.8	132
S01-SG11	S01-SG11-060618	6/6/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	76.9	U	ug/m3	28.4	76.9
S01-SG11	S01-SG11-060618	6/6/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	109		ug/m3	37	104
S01-SG11	S01-SG11-060618	6/6/2018	0	0	N	VOC	75-01-4	Vinyl chloride	49.6	U	ug/m3	9.76	49.6
S01-SG12	S01-SG12-060718	6/7/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	204	U	ug/m3	57.9	204
S01-SG12	S01-SG12-060718	6/7/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	204	U	ug/m3	59.9	204
S01-SG12	S01-SG12-060718	6/7/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	119000		ug/m3	132	349
S01-SG12	S01-SG12-060718	6/7/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	204	U	ug/m3	75.7	204
S01-SG12	S01-SG12-060718	6/7/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	291		ug/m3	98.3	277
S01-SG12	S01-SG12-060718	6/7/2018	0	0	N	VOC	75-01-4	Vinyl chloride	132	U	ug/m3	26.1	132
S01-SG13	S01-SG13-060618	6/6/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	40.8		ug/m3	5.87	20.7
S01-SG13	S01-SG13-060618	6/6/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	448		ug/m3	6.11	20.7
S01-SG13	S01-SG13-060618	6/6/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	9830		ug/m3	13.4	35.5
S01-SG13	S01-SG13-060618	6/6/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	45.2		ug/m3	7.69	20.7
S01-SG13	S01-SG13-060618	6/6/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	656		ug/m3	10	28.1
S01-SG13	S01-SG13-060618	6/6/2018	0	0	N	VOC	75-01-4	Vinyl chloride	13.4	U	ug/m3	2.63	13.4
S01-SG14	S01-SG14-060718	6/7/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	86	U	ug/m3	24.4	86
S01-SG14	S01-SG14-060718	6/7/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	86	U	ug/m3	25.3	86
S01-SG14	S01-SG14-060718	6/7/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	65600		ug/m3	55.9	147
S01-SG14	S01-SG14-060718	6/7/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	86	U	ug/m3	31.9	86
S01-SG14	S01-SG14-060718	6/7/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	1270		ug/m3	41.5	117
S01-SG14	S01-SG14-060718	6/7/2018	0	0	N	VOC	75-01-4	Vinyl chloride	55.5	U	ug/m3	10.9	55.5
S01-SG14	S01-SGFD02-060718	6/7/2018	0	0	FD	VOC	75-35-4	1,1-DICHLOROETHENE	215	U	ug/m3	61.1	215
S01-SG14	S01-SGFD02-060718	6/7/2018	0	0	FD	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	215	U	ug/m3	63	215
S01-SG14	S01-SGFD02-060718	6/7/2018	0	0	FD	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	63800		ug/m3	140	368
S01-SG14	S01-SGFD02-060718	6/7/2018	0	0	FD	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	215	U	ug/m3	79.7	215
S01-SG14	S01-SGFD02-060718	6/7/2018	0	0	FD	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	1260		ug/m3	104	292
S01-SG14	S01-SGFD02-060718	6/7/2018	0	0	FD	VOC	75-01-4	Vinyl chloride	139	U	ug/m3	27.4	139
S01-SG15	S01-SG15-060718	6/7/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	40	U	ug/m3	11.3	40

Table F-3. Analytical Exterior Soil Gas Data Used in the HHRA - SWMU 1

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Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SG15	S01-SG15-060718	6/7/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	40	U	ug/m3	11.7	40
S01-SG15	S01-SG15-060718	6/7/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	12700		ug/m3	25.9	68.5
S01-SG15	S01-SG15-060718	6/7/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	40	U	ug/m3	14.8	40
S01-SG15	S01-SG15-060718	6/7/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	54.3	U	ug/m3	19.2	54.3
S01-SG15	S01-SG15-060718	6/7/2018	0	0	N	VOC	75-01-4	Vinyl chloride	25.8	U	ug/m3	5.06	25.8
S01-SG16	S01-SG16-061918	6/19/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	793	U	ug/m3	224	793
S01-SG16	S01-SG16-061918	6/19/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	793	U	ug/m3	233	793
S01-SG16	S01-SG16-061918	6/19/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	314000		ug/m3	514	1360
S01-SG16	S01-SG16-061918	6/19/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	793	U	ug/m3	293	793
S01-SG16	S01-SG16-061918	6/19/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	1070	U	ug/m3	382	1070
S01-SG16	S01-SG16-061918	6/19/2018	0	0	N	VOC	75-01-4	Vinyl chloride	511	U	ug/m3	101	511
S01-SG17	S01-SG17-061918	6/19/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	80.1	U	ug/m3	22.7	80.1
S01-SG17	S01-SG17-061918	6/19/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	80.1	U	ug/m3	23.6	80.1
S01-SG17	S01-SG17-061918	6/19/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	41600		ug/m3	52	137
S01-SG17	S01-SG17-061918	6/19/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	80.1	U	ug/m3	29.7	80.1
S01-SG17	S01-SG17-061918	6/19/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	109	U	ug/m3	38.6	109
S01-SG17	S01-SG17-061918	6/19/2018	0	0	N	VOC	75-01-4	Vinyl chloride	51.6	U	ug/m3	10.2	51.6
S01-SG18	S01-SG18-061918	6/19/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	420	U	ug/m3	119	420
S01-SG18	S01-SG18-061918	6/19/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	420	U	ug/m3	124	420
S01-SG18	S01-SG18-061918	6/19/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	149000		ug/m3	273	719
S01-SG18	S01-SG18-061918	6/19/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	420	U	ug/m3	156	420
S01-SG18	S01-SG18-061918	6/19/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	570	U	ug/m3	203	570
S01-SG18	S01-SG18-061918	6/19/2018	0	0	N	VOC	75-01-4	Vinyl chloride	271	U	ug/m3	53.7	271
S01-SG19	S01-SG19-061918	6/19/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	456		ug/m3	30.2	107
S01-SG19	S01-SG19-061918	6/19/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	42000		ug/m3	31.3	107
S01-SG19	S01-SG19-061918	6/19/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	78000		ug/m3	69.2	182
S01-SG19	S01-SG19-061918	6/19/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	2820		ug/m3	39.4	107
S01-SG19	S01-SG19-061918	6/19/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	9460		ug/m3	51.3	145
S01-SG19	S01-SG19-061918	6/19/2018	0	0	N	VOC	75-01-4	Vinyl chloride	1430		ug/m3	13.5	68.8
S01-SG20	S01-SG20-061918	6/19/2018	0	0	N	VOC	75-35-4	1,1-DICHLOROETHENE	6.42	U	ug/m3	1.82	6.42
S01-SG20	S01-SG20-061918	6/19/2018	0	0	N	VOC	156-59-2	CIS-1,2-DICHLOROETHYLENE	6.42	U	ug/m3	1.88	6.42
S01-SG20	S01-SG20-061918	6/19/2018	0	0	N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	3420		ug/m3	4.16	11
S01-SG20	S01-SG20-061918	6/19/2018	0	0	N	VOC	156-60-5	TRANS-1,2-DICHLOROETHENE	6.42	U	ug/m3	2.37	6.42
S01-SG20	S01-SG20-061918	6/19/2018	0	0	N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	8.71	U	ug/m3	3.08	8.71
S01-SG20	S01-SG20-061918	6/19/2018	0	0	N	VOC	75-01-4	Vinyl chloride	4.14	U	ug/m3	0.815	4.14
S01-SG01	S01-SG01-081717	8/17/2017			N	VOC	100-41-4	ETHYLBENZENE	620	U	ug/m3	97	620
S01-SG01	S01-SG01-081717	8/17/2017			N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	55000		ug/m3	120	960
S01-SG01	S01-SG01-081717	8/17/2017			N	VOC	71-43-2	BENZENE	1000		ug/m3	90	450
S01-SG01	S01-SG01-081717	8/17/2017			N	VOC	75-25-2	BROMOFORM	1500	U	ug/m3	260	1500
S01-SG01	S01-SG01-081717	8/17/2017			N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	12000		ug/m3	200	760
S01-SG01	S01-SG01-081717	8/17/2017			N	VOC	91-20-3	NAPHTHALENE	1500	U	ug/m3	1000	1500
S01-SG02	S01-SG02-081717	8/17/2017			N	VOC	100-41-4	ETHYLBENZENE	750	U	ug/m3	120	750
S01-SG02	S01-SG02-081717	8/17/2017			N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	100000		ug/m3	150	1200
S01-SG02	S01-SG02-081717	8/17/2017			N	VOC	71-43-2	BENZENE	550	U	ug/m3	110	550
S01-SG02	S01-SG02-081717	8/17/2017			N	VOC	75-25-2	BROMOFORM	1800	U	ug/m3	310	1800
S01-SG02	S01-SG02-081717	8/17/2017			N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	5800		ug/m3	240	930
S01-SG02	S01-SG02-081717	8/17/2017			N	VOC	91-20-3	NAPHTHALENE	1800	U	ug/m3	1300	1800
S01-SG03	S01-SG03-081717	8/17/2017			N	VOC	100-41-4	ETHYLBENZENE	290	U	ug/m3	45	290
S01-SG03	S01-SG03-081717	8/17/2017			N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	62000		ug/m3	57	450
S01-SG03	S01-SG03-081717	8/17/2017			N	VOC	71-43-2	BENZENE	210	U	ug/m3	42	210
S01-SG03	S01-SG03-081717	8/17/2017			N	VOC	75-25-2	BROMOFORM	680	U	ug/m3	120	680
S01-SG03	S01-SG03-081717	8/17/2017			N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	2000		ug/m3	93	350
S01-SG03	S01-SG03-081717	8/17/2017			N	VOC	91-20-3	NAPHTHALENE	690	U	ug/m3	490	690
S01-SG04	S01-SG04-081717	8/17/2017			N	VOC	100-41-4	ETHYLBENZENE	190	U	ug/m3	30	190
S01-SG04	S01-SG04-081717	8/17/2017			N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	31000		ug/m3	38	300
S01-SG04	S01-SG04-081717	8/17/2017			N	VOC	71-43-2	BENZENE	140	U	ug/m3	28	140
S01-SG04	S01-SG04-081717	8/17/2017			N	VOC	75-25-2	BROMOFORM	450	U	ug/m3	80	450
S01-SG04	S01-SG04-081717	8/17/2017			N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	430		ug/m3	62	240
S01-SG04	S01-SG04-081717	8/17/2017			N	VOC	91-20-3	NAPHTHALENE	460	U	ug/m3	320	460
S01-SG05	S01-SG05-081717	8/17/2017			N	VOC	100-41-4	ETHYLBENZENE	210	U	ug/m3	33	210
S01-SG05	S01-SG05-081717	8/17/2017			N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	37000		ug/m3	42	330

Table F-3. Analytical Exterior Soil Gas Data Used in the HHRA - SWMU 1

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Location Name	Sample Name	Sample Date	Sample Beginning Depth	Sample Ending Depth	Sample Type Code	Analytical Group	CAS Number	Analyte Name	Result Value	Result Flag	Result Units	Method Detection Limit	Reporting Limit
S01-SG05	S01-SG05-081717	8/17/2017			N	VOC	71-43-2	BENZENE	150	U	ug/m3	30	150
S01-SG05	S01-SG05-081717	8/17/2017			N	VOC	75-25-2	BROMOFORM	500	U	ug/m3	87	500
S01-SG05	S01-SG05-081717	8/17/2017			N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	260	U	ug/m3	68	260
S01-SG05	S01-SG05-081717	8/17/2017			N	VOC	91-20-3	NAPHTHALENE	500	U	ug/m3	350	500
S01-SG05	S01-SG05-081717-FD	8/17/2017			FD	VOC	100-41-4	ETHYLBENZENE	210	U	ug/m3	33	210
S01-SG05	S01-SG05-081717-FD	8/17/2017			FD	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	37000		ug/m3	42	330
S01-SG05	S01-SG05-081717-FD	8/17/2017			FD	VOC	71-43-2	BENZENE	150	U	ug/m3	30	150
S01-SG05	S01-SG05-081717-FD	8/17/2017			FD	VOC	75-25-2	BROMOFORM	500	U	ug/m3	87	500
S01-SG05	S01-SG05-081717-FD	8/17/2017			FD	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	260	U	ug/m3	68	260
S01-SG05	S01-SG05-081717-FD	8/17/2017			FD	VOC	91-20-3	NAPHTHALENE	500	U	ug/m3	350	500
S01-SG06	S01-SG06-081717	8/17/2017			N	VOC	100-41-4	ETHYLBENZENE	1400	U	ug/m3	220	1400
S01-SG06	S01-SG06-081717	8/17/2017			N	VOC	127-18-4	TETRACHLOROETHYLENE(PCE)	180000		ug/m3	270	2100
S01-SG06	S01-SG06-081717	8/17/2017			N	VOC	71-43-2	BENZENE	1000	U	ug/m3	200	1000
S01-SG06	S01-SG06-081717	8/17/2017			N	VOC	75-25-2	BROMOFORM	3300	U	ug/m3	570	3300
S01-SG06	S01-SG06-081717	8/17/2017			N	VOC	79-01-6	TRICHLOROETHYLENE (TCE)	1700	U	ug/m3	450	1700
S01-SG06	S01-SG06-081717	8/17/2017			N	VOC	91-20-3	NAPHTHALENE	3300	U	ug/m3	2300	3300

Table F-4. SWMU 1 Soil: Detection Limit Evaluation

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

CAS Number	Analyte[a]	Minimum Detection Limit	Maximum Detection Limit	Units	Screening Level		Exceed Screening Level?
630-20-6	1,1,1,2-TETRACHLOROETHANE	9.0E-04	5.4E-02	mg/kg	8.8E+00	c	No
71-55-6	1,1,1-TRICHLOROETHANE	9.0E-04	5.4E-02	mg/kg	6.4E+02	sat	No
79-34-5	1,1,2,2-TETRACHLOROETHANE	9.0E-04	5.4E-02	mg/kg	2.7E+00	c	No
79-00-5	1,1,2-TRICHLOROETHANE	9.0E-04	5.4E-02	mg/kg	6.3E-01	n	No
75-34-3	1,1-DICHLOROETHANE	9.0E-04	5.4E-02	mg/kg	1.6E+01	c	No
75-35-4	1,1-DICHLOROETHENE	9.0E-04	2.6E-01	mg/kg	1.0E+02	n	No
563-58-6	1,1-DICHLOROPROPENE	9.0E-04	5.4E-02	mg/kg	NA		NA
87-61-6	1,2,3-TRICHLOROBENZENE	9.0E-04	5.4E-02	mg/kg	9.3E+01	n	No
96-18-4	1,2,3-TRICHLOROPROPANE	9.0E-04	5.4E-02	mg/kg	1.1E-01	c	No
120-82-1	1,2,4-TRICHLOROBENZENE	9.0E-04	3.4E-01	mg/kg	2.6E+01	n	No
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2.0E-03	1.1E-01	mg/kg	6.4E-02	c	Yes
106-93-4	1,2-DIBROMOETHANE	9.0E-04	5.4E-02	mg/kg	1.6E-01	c	No
107-06-2	1,2-DICHLOROETHANE	9.0E-04	5.4E-02	mg/kg	2.0E+00	c	No
78-87-5	1,2-DICHLOROPROPANE	9.0E-04	5.4E-02	mg/kg	6.6E+00	n	No
108-67-8	1,3,5-TRIMETHYLBENZENE	9.0E-04	3.4E-01	mg/kg	1.5E+02	n	No
142-28-9	1,3-DICHLOROPROPANE	9.0E-04	5.4E-02	mg/kg	1.5E+03	sat	No
594-20-7	2,2-DICHLOROPROPANE	9.0E-04	5.4E-02	mg/kg	NA		NA
95-49-8	2-CHLOROTOLUENE	9.0E-04	5.4E-02	mg/kg	9.1E+02	sat	No
106-43-4	4-CHLOROTOLUENE	9.0E-04	5.4E-02	mg/kg	2.5E+02	sat	No
107-13-1	ACRYLONITRILE	1.9E-02	1.3E+00	mg/kg	1.1E+00	c	Yes
74-97-5	BROMOCHLOROMETHANE	9.0E-04	5.4E-02	mg/kg	6.3E+01	n	No
75-27-4	BROMODICHLOROMETHANE	9.0E-04	5.4E-02	mg/kg	1.3E+00	c	No
74-83-9	BROMOMETHANE	2.0E-03	1.1E-01	mg/kg	3.0E+00	n	No
56-23-5	CARBON TETRACHLORIDE	9.0E-04	5.4E-02	mg/kg	2.9E+00	c	No
75-00-3	CHLOROETHANE	2.0E-03	1.1E-01	mg/kg	2.1E+03	sat	No
67-66-3	CHLOROFORM	9.0E-04	5.4E-02	mg/kg	1.4E+00	c	No
74-87-3	CHLOROMETHANE	2.0E-03	1.1E-01	mg/kg	4.6E+01	n	No
10061-01-5	CIS-1,3-DICHLOROPROPENE	9.0E-04	5.4E-02	mg/kg	NA		NA
124-48-1	DIBROMOCHLOROMETHANE	9.0E-04	5.4E-02	mg/kg	3.9E+01	c	No
74-95-3	DIBROMOMETHANE	9.0E-04	5.4E-02	mg/kg	9.9E+00	n	No
75-71-8	DICHLORODIFLUOROMETHANE	2.0E-03	1.1E-01	mg/kg	3.7E+01	n	No
76-13-1	FREON 113	2.0E-03	1.1E-01	mg/kg	9.1E+02	sat	No
87-68-3	HEXACHLOROBUTADIENE	2.0E-03	1.1E-01	mg/kg	5.3E+00	c	No
1634-04-4	METHYL TERTIARY BUTYL ETHER	5.0E-04	2.7E-02	mg/kg	2.1E+02	c	No
108-87-2	METHYLCYCLOHEXANE	9.0E-04	5.4E-02	mg/kg	NA		NA
75-09-2	METHYLENE CHLORIDE	2.0E-03	3.4E-01	mg/kg	3.2E+02	n	No
104-51-8	N-BUTYLBENZENE	9.0E-04	5.4E-02	mg/kg	1.1E+02	sat	No
99-87-6	P-ISOPROPYLTOLUENE	9.0E-04	5.4E-02	mg/kg	NA		NA
100-42-5	STYRENE	9.0E-04	3.4E-01	mg/kg	8.7E+02	sat	No
98-06-6	TERT-BUTYLBENZENE	9.0E-04	5.4E-02	mg/kg	1.8E+02	sat	No
10061-02-6	TRANS-1,3-DICHLOROPROPENE	9.0E-04	5.4E-02	mg/kg	NA		NA
75-69-4	TRICHLOROFLUOROMETHANE	2.0E-03	1.1E-01	mg/kg	1.2E+03	sat	No
108-05-4	VINYL ACETATE	2.0E-03	1.1E-01	mg/kg	3.8E+02	n	No
75-01-4	VINYL CHLORIDE	9.0E-04	5.4E-02	mg/kg	1.7E+00	c	No
541-73-1	1,3-DICHLOROBENZENE	9.0E-04	5.4E-02	mg/kg	NA		NA
123-91-1	1,4-DIOXANE	1.1E-01	1.1E+00	mg/kg	2.4E+01	c	No
95-95-4	2,4,5-TRICHLOROPHENOL	1.8E-02	1.8E-01	mg/kg	8.2E+03	n	No
88-06-2	2,4,6-TRICHLOROPHENOL	1.8E-02	1.8E-01	mg/kg	8.2E+01	n	No
120-83-2	2,4-DICHLOROPHENOL	1.8E-02	1.8E-01	mg/kg	2.5E+02	n	No
51-28-5	2,4-DINITROPHENOL	3.7E-01	3.7E+00	mg/kg	1.6E+02	n	No
121-14-2	2,4-DINITROTOLUENE	7.4E-02	7.4E-01	mg/kg	7.4E+00	c	No
606-20-2	2,6-DINITROTOLUENE	1.8E-02	1.8E-01	mg/kg	1.5E+00	c	No
91-58-7	2-CHLORONAPHTHALENE	8.0E-03	7.7E-02	mg/kg	6.0E+03	n	No
95-57-8	2-CHLOROPHENOL	1.8E-02	1.8E-01	mg/kg	5.8E+02	n	No
95-48-7	2-METHYLPHENOL	1.8E-02	1.8E-01	mg/kg	4.1E+03	n	No
88-74-4	2-NITROANILINE	1.8E-02	1.8E-01	mg/kg	8.0E+02	n	No

Table F-4. SWMU 1 Soil: Detection Limit Evaluation

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

CAS Number	Analyte[a]	Minimum Detection Limit	Maximum Detection Limit	Units	Screening Level		Exceed Screening Level?
88-75-5	2-NITROPHENOL	1.8E-02	1.8E-01	mg/kg	NA		NA
91-94-1	3,3'-DICHLOROBENZIDINE	1.1E-01	1.1E+00	mg/kg	5.1E+00	c	No
534-52-1	4,6-DINITRO-2-METHYLPHENOL	1.8E-01	1.8E+00	mg/kg	6.6E+00	n	No
101-55-3	4-BROMOPHENYL-PHENYLETHER	1.8E-02	1.8E-01	mg/kg	NA		NA
59-50-7	4-CHLORO-3-METHYLPHENOL	1.8E-02	1.8E-01	mg/kg	8.2E+03	n	No
106-47-8	4-CHLOROANILINE	1.8E-02	1.8E-01	mg/kg	1.1E+01	c	No
7005-72-3	4-CHLOROPHENYL-PHENYLETHER	1.8E-02	1.8E-01	mg/kg	NA		NA
100-01-6	4-NITROANILINE	7.4E-02	7.4E-01	mg/kg	1.1E+02	c	No
100-02-7	4-NITROPHENOL	1.8E-01	1.8E+00	mg/kg	NA		NA
100-51-6	BENZYL ALCOHOL	1.8E-01	1.8E+00	mg/kg	8.2E+03	n	No
111-91-1	BIS(2-CHLOROETHOXY)METHANE	1.8E-02	1.8E-01	mg/kg	2.5E+02	n	No
111-44-4	BIS(2-CHLOROETHYL)ETHER	1.8E-02	1.8E-01	mg/kg	1.0E+00	c	No
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	7.4E-02	7.4E-01	mg/kg	1.6E+02	c	No
85-68-7	BUTYLBENZYLPHTHALATE	7.4E-02	7.4E-01	mg/kg	1.2E+03	c	No
84-66-2	DIETHYLPHTHALATE	7.4E-02	7.4E-01	mg/kg	6.6E+04	n	No
131-11-3	DIMETHYLPHTHALATE	7.4E-02	7.4E-01	mg/kg	NA		NA
84-74-2	DI-N-BUTYLPHTHALATE	7.4E-02	7.4E-01	mg/kg	8.2E+03	n	No
117-84-0	DI-N-OCTYLPHTHALATE	7.4E-02	7.4E-01	mg/kg	8.2E+02	n	No
118-74-1	HEXACHLOROBENZENE	4.0E-03	3.7E-02	mg/kg	9.6E-01	c	No
77-47-4	HEXACHLOROCYCLOPENTADIENE	1.8E-01	1.8E+00	mg/kg	7.5E-01	n	Yes
67-72-1	HEXACHLOROETHANE	3.7E-02	3.7E-01	mg/kg	8.0E+00	c	No
78-59-1	ISOPHORONE	1.8E-02	1.8E-01	mg/kg	2.4E+03	c	No
98-95-3	NITROBENZENE	1.8E-02	1.8E-01	mg/kg	2.2E+01	c	No
621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1.8E-02	1.8E-01	mg/kg	3.3E-01	c	No
86-30-6	N-NITROSODIPHENYLAMINE	1.8E-02	1.8E-01	mg/kg	4.7E+02	c	No
87-86-5	PENTACHLOROPHENOL	3.7E-02	3.7E-01	mg/kg	4.0E+00	c	No

[a] Chemicals included in table had 100% non-detect results in the analytical data set.

Screening Level = U.S. Environmental Protection Agency Industrial Regional Screening Level (RSL) based on $1x10^{-6}$ or HQ = 1 (May 2018).

c = carcinogenic

mg/kg = milligrams per kilogram

n = noncarcinogenic

NA = not applicable/not available

sat = calculated RSL exceeds the saturation limit, therefore the saturation limit is used as screening level

Table F-5. Groundwater: Detection Limit Evaluation

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

CAS Number	Analyte[a]	Minimum Detection Limit	Maximum Detection Limit	Units	Screening Level		Exceed Screening Level?
100-41-4	ETHYLBENZENE	5.0E-01	1.0E+01	µg/L	1.5E+00	c	Yes
103-65-1	N-PROPYLBENZENE	5.0E-01	1.0E+01	µg/L	6.6E+01	n	No
107-13-1	ACRYLONITRILE	5.0E+00	1.0E+02	µg/L	5.2E-02	c	Yes
108-67-8	1,3,5-TRIMETHYLBENZENE (MESITYLENE	5.0E-01	1.0E+01	µg/L	6.0E+00	n	Yes
120-82-1	1,2,4-TRICHLOROBENZENE	5.0E-01	1.0E+01	µg/L	4.0E-01	n	Yes
179601-23-1	m,p-Xylene	5.0E-01	1.0E+01	µg/L	1.9E+01	n	No
75-01-4	Vinyl chloride	5.0E-01	2.5E+00	µg/L	1.9E-02	c	Yes
75-09-2	METHYLENE CHLORIDE	5.0E-01	1.0E+01	µg/L	1.1E+01	n	No
75-35-4	1,1-DICHLOROETHENE	5.0E-01	2.5E+00	µg/L	2.8E+01	n	No
91-20-3	NAPHTHALENE	5.0E-01	1.0E+01	µg/L	1.7E-01	c	Yes
95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	5.0E-01	1.0E+01	µg/L	1.9E+01	n	No
98-82-8	ISOPROPYLBENZENE (CUMENE)	5.0E-01	1.0E+01	µg/L	4.5E+01	n	No

[a] Chemicals included in table had 100% non-detect results in the analytical data set.

Screening Level = U.S. Environmental Protection Agency Tap Water Regional Screening Level (RSL) based on $1x10^{-6}$ or HQ = 1 (May 2018).
c = Carcinogenic
J = estimated value
n = noncarcinogenic
NA = not applicable/not available
µg/L = micrograms per liter

Table F-6. Groundwater (Vapor Instrusion): Detection Limit Evaluation

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

CAS Number	Analyte[a]	Minimum Detection Limit	Maximum Detection Limit	Units	Screening Level		Exceed Screening Level?
100-41-4	ETHYLBENZENE	5.0E-01	1.0E+01	µg/L	1.5E+01	c	No
103-65-1	N-PROPYLBENZENE	5.0E-01	1.0E+01	µg/L	1.0E+04	n	No
107-13-1	ACRYLONITRILE	5.0E+00	1.0E+02	µg/L	3.2E+01	c	Yes
108-67-8	1,3,5-TRIMETHYLBENZENE (MESITYLENE	5.0E-01	1.0E+01	µg/L	7.3E+02	n	No
120-82-1	1,2,4-TRICHLOROBENZENE	5.0E-01	1.0E+01	µg/L	1.5E+02	n	No
179601-23-1	m,p-Xylene	5.0E-01	1.0E+01	µg/L	1.5E+03	n	No
75-01-4	Vinyl chloride	5.0E-01	2.5E+00	µg/L	2.5E+00	c	Yes
75-09-2	METHYLENE CHLORIDE	5.0E-01	1.0E+01	µg/L	9.2E+03	c	No
75-35-4	1,1-DICHLOROETHENE	5.0E-01	2.5E+00	µg/L	8.2E+02	n	No
91-20-3	NAPHTHALENE	5.0E-01	1.0E+01	µg/L	2.0E+01	c	No
95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	5.0E-01	1.0E+01	µg/L	2.1E+03	n	No
98-82-8	ISOPROPYLBENZENE (CUMENE)	5.0E-01	1.0E+01	µg/L	3.7E+03	n	No

[a] Chemicals included in table had 100% non-detect results in the analytical data set.

Screening Level = U.S. Environmental Protection Agency Tap Water Regional Screening Level (RSL) based on $1x10^{-6}$ or HQ = 1 (May 2018).
c = Carcinogenic
J = estimated value
n = noncarcinogenic
NA = not applicable/not available
µg/L = micrograms per liter

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Technical Memorandum

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Subject	**Phase 3 RCRA Facility Investigation Updated Complete Soil Data Set SLHHRA**
Attention	The Dow Chemical Company
From	Jacobs
Date	October 2018

The Phase 3 RCRA Facility Investigation Report Section 5 Screening-Level Human Health Risk Assessment (SLHHRA) presents Step 1 below for the Phase 3 volatile organic compound (VOC) soil sampling results. This technical memorandum provides, for completeness, the combined soil data set SLHHRA for the VOC, semivolatile organic compound (SVOC) and metals soil data that were collected in 2011, 2015, and 2018.

Soil samples collected in December 2011 were analyzed for VOCs, SVOCs, and select metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). Soil samples collected in October 2015 were analyzed for the focused target list of VOCs and SVOCs presented in Table 2-2 of the Phase II RFI Work Plan (Jacobs 2014b). Soil samples collected in 2018 were analyzed for the focused target list of VOCs (Section 4, Phase 3 RFI Report).

The SLHHRA was conducted in three steps. Step 1 identified constituents of potential concern (COPCs) in soil by a comparison to risk-based screening levels. The identified COPCs were evaluated in Step 2 using maximum detected soil concentrations and a risk ratio approach (USEPA 1991a) to determine whether concentrations pose risks to potential receptor populations above the U.S. Environmental Protection Agency (USEPA) risk management levels (target cancer risk of $1x10^{-6}$ to $1x10^{-4}$ and target noncancer hazard index of 1). In Step 3, the identified COPCs were evaluated using the 95 percent upper confidence limit (UCL) concentration and a risk ratio approach (USEPA 1991a) to determine whether concentrations pose risks to potential receptor populations above the USEPA risk management levels. The results of the SLHHRA for VOCs, SVOCs, and metals in soil are provide in **Tables 1 through 4**.

1. Step 1

The COPC screening process was conducted for soil on a site-specific basis for each data grouping. Surface soil and subsurface soil analytical results were screened against the industrial soil Regional Screening Levels (RSLs) (USEPA 2018a). The industrial soil RSLs are used to identified COPCs for the receptors potentially exposed to soil (trespassers, construction workers, and maintenance workers).

The detection limits for the nondetected constituents in soil and groundwater (i.e., those constituents never detected in the Solid Waste Management Unit (SWMU) soil or groundwater samples) were compared to the screening levels discussed above and are provided in **Table 1**. For soil, the detection limits for 1,2-dibromo-3-chloropropane, acrylonitrile, and hexachlorocyclopentadiene exceeded their respective screening levels. Because these constituents were not detected in the soil samples, they were not identified as COPCs for further evaluation.

2. Step 2

For COPCs retained for further evaluation following Step 1, corresponding noncancer hazards and excess lifetime cancer risks (ELCRs) were calculated on a site-specific basis using methods described below. For those constituents identified as COPCs based on soil saturation-based RSLs, corresponding hazards and risks were calculated using risk-based RSLs. The industrial soil RSLs are used to estimate noncancer hazards and ELCRs for the receptors potentially exposed to soil (trespassers, construction workers, and maintenance workers [CH2M 2011]).

3. Step 3

In Step 3, a corresponding risk level was calculated as discussed above for Step 2; however, the 95 percent UCL was used as the concentration instead of the maximum detected concentration. This step is only applicable for soil.

ProUCL software Version 5.1.002 (USEPA 2016) was used to calculate the 95 percent UCL. In cases where the recommended UCL exceeded the maximum detected concentration, the maximum detected concentration was used to calculate the risk. The ProUCL output for surface soil and total soil is provided in **Table 4**.

4. Results

The Step 1 screening of surface soil and total soil is presented in **Table 1**. One carcinogenic polynuclear aromatic hydrocarbon (PAH) (benzo[a]pyrene,), 1,1'-biphenyl, and arsenic were identified as COPCs in both surface soil and total soil. The risk ratio calculations using the maximum COPC concentration (Step 2) are provided in **Table 2**. Based on constituents in the same class, the cPAHs benzo[a]anthracene, benzo[b] fluoranthene, benzo(k)fluoranthene, chrysene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene were included in the risk ratio calculations (using maximum detected concentrations) with the PAH identified as a COPC. The ELCRs associated with surface soil (5×10^{-6}) and total soil (9×10^{-6}) at SWMU 1 were within USEPA's risk management range of 1×10^{-6} to 1×10^{-4}. The estimated cumulative noncancer hazard indices (HIs) for surface soil (0.4) and total soil (0.6) were below USEPA's threshold of 1.

The risk ratio calculations using the UCL concentration (Step 3) are provided in **Table 4**. The ELCRs associated with surface soil (6×10^{-6}) and total soil (4×10^{-6}) at SWMU 1 were within USEPA's risk management range of 1×10^{-6} to 1×10^{-4}. The estimated cumulative noncancer HIs for surface soil (0.3) and total soil (0.1) were below USEPA's threshold of 1.

The estimated ELCRs and noncancer hazards associated with all COPCs for soil at SWMU 1 are within USEPA's risk management range for cancer risks and below the USEPA noncancer threshold. Based on the results of this SLHHRA for soil exposure scenarios associated with current and anticipated future industrial land use at the facility, no further evaluation is necessary for soil at SWMU 1.

Tables

Table 1. SWMU 1 Soil Step 1: Selection of Chemicals of Potential Concern (Industrial Exposure Scenario)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Soil Type	CAS Number	Analyte	Minimum Detected Concentration	Maximum Detected Concentration	Units	Location of Maximum Detection	Frequency of Detection	Range of Detection Limits	Screening Level		Frequency of Exceedance	COPC Flag
Surface Soil	95-63-6	1,2,4-TRIMETHYLBENZENE	2.0E-03 J	2.0E-03 J	mg/kg	S01-SS07	1/8	0.005 - 0.22	1.8E+02	N	0/1	No
Surface Soil	591-78-6	2-HEXANONE	1.7E-02	1.7E-02	mg/kg	S01-SS07	1/9	0.009 - 0.44	1.3E+02	N	0/1	No
Surface Soil	67-64-1	ACETONE	8.0E-03 J	9.8E-02 J	mg/kg	S01-SS03	8/9	0.018 - 0.89	6.7E+04	N	0/8	No
Surface Soil	71-43-2	BENZENE	6.0E-04 J	3.0E-03 J	mg/kg	S01-SS07	4/16	0.005 - 0.24	5.1E+00	C	0/4	No
Surface Soil	108-86-1	BROMOBENZENE	4.0E-03 J	9.6E-02 J	mg/kg	S01-SS02	2/8	0.005 - 0.22	1.8E+02	N	0/2	No
Surface Soil	75-15-0	CARBON DISULFIDE	1.0E-03 J	1.4E-02	mg/kg	S01-SS07	5/9	0.005 - 0.22	3.5E+02	N	0/5	No
Surface Soil	108-90-7	CHLOROBENZENE	3.0E-03 J	3.0E-03 J	mg/kg	S01-SS04	1/9	0.005 - 0.22	1.3E+02	N	0/1	No
Surface Soil	156-59-2	CIS-1,2-DICHLOROETHYLENE	2.0E-03 J	3.3E-02	mg/kg	S01-SS23	5/35	0.001 - 0.26	2.4E+03	Sat	0/5	No
Surface Soil	110-82-7	CYCLOHEXANE	5.3E-02 J	5.3E-02 J	mg/kg	S01-SS02	1/9	0.005 - 0.22	1.2E+02	Sat	0/1	No
Surface Soil	100-41-4	ETHYLBENZENE	1.0E-03 J	1.0E+01	mg/kg	S01-SS12	4/16	0.005 - 0.24	2.5E+01	C	0/4	No
Surface Soil	179601-23-1	m,p-Xylene	2.0E-03 J	2.0E-03 J	mg/kg	S01-SS07	1/16	0.005 - 0.24	2.4E+02	N	0/1	No
Surface Soil	79-20-9	METHYL ACETATE	1.5E-01 J	1.5E-01 J	mg/kg	S01-SS02	1/9	0.005 - 0.22	2.9E+04	Sat	0/1	No
Surface Soil	78-93-3	METHYL ETHYL KETONE (2-BUTANONE)	9.0E-03 J	1.2E-02	mg/kg	S01-SS07	5/9	0.009 - 0.44	1.9E+04	N	0/5	No
Surface Soil	108-10-1	METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	5.0E-03 J	5.0E-03 J	mg/kg	S01-SS07	1/9	0.009 - 0.44	3.4E+03	Sat	0/1	No
Surface Soil	103-65-1	N-PROPYLBENZENE	1.0E-01 J	1.0E-01 J	mg/kg	S01-SS02	1/15	0.005 - 0.24	2.6E+02	Sat	0/1	No
Surface Soil	95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	4.5E-02 J	4.5E-02 J	mg/kg	S01-SS02	1/16	0.005 - 0.24	2.8E+02	N	0/1	No
Surface Soil	129-00-0	PYRENE	9.0E-03 J	4.4E+00	mg/kg	S01-SS09	9/9	0.019 - 0.19	2.3E+03	N	0/9	No
Surface Soil	135-98-8	SEC-BUTYLBENZENE	2.0E-03 J	6.7E-02 J	mg/kg	S01-SS02	2/8	0.005 - 0.22	1.5E+02	Sat	0/2	No
Surface Soil	127-18-4	TETRACHLOROETHYLENE(PCE)	1.0E-03 J	1.6E+00 J	mg/kg	S01-SS02	30/42	0.001 - 0.26	3.9E+01	N	0/30	No
Surface Soil	108-88-3	TOLUENE	2.0E-03 J	6.0E-03 J	mg/kg	S01-SS07	2/9	0.005 - 0.22	8.2E+02	Sat	0/2	No
Surface Soil	156-60-5	TRANS-1,2-DICHLOROETHENE	2.0E-03 J	2.0E-03 J	mg/kg	S01-SS01	1/35	0.0015 - 0.26	1.9E+03	Sat	0/1	No
Surface Soil	79-01-6	TRICHLOROETHYLENE (TCE)	1.0E-03 J	6.8E-02 J	mg/kg	S01-SS02	6/42	0.001 - 0.26	1.9E+00	N	0/6	No
Surface Soil	75-01-4	Vinyl chloride	1.0E-03 J	1.0E-03 J	mg/kg	S01-SS23	1/35	0.0021 - 0.26	1.7E+00	C	0/1	No
Surface Soil	105-67-9	2,4-DIMETHYLPHENOL	2.5E-02 J	2.5E-02 J	mg/kg	S01-SS09	1/9	0.037 - 0.37	1.6E+03	N	0/1	No
Surface Soil	91-57-6	2-METHYLNAPHTHALENE	4.0E-03 J	2.6E-02	mg/kg	S01-SS09	6/16	0.019 - 0.19	3.0E+02	N	0/6	No
Surface Soil	106-44-5	4-METHYLPHENOL (P-CRESOL)	6.3E-02	6.3E-02	mg/kg	S01-SS09	1/9	0.037 - 0.37	8.2E+03	N	0/1	No
Surface Soil	83-32-9	ACENAPHTHENE	7.0E-03 J	6.4E-02 J	mg/kg	S01-SS01	4/9	0.019 - 0.19	4.5E+03	N	0/4	No
Surface Soil	208-96-8	ACENAPHTHYLENE	2.9E-02	1.1E+00	mg/kg	S01-SS09	4/9	0.019 - 0.19	4.5E+03	N	0/4	No
Surface Soil	120-12-7	ANTHRACENE	1.9E-02 J	1.2E+00	mg/kg	S01-SS09	5/9	0.019 - 0.19	2.3E+04	N	0/5	No
Surface Soil	56-55-3	BENZO(A)ANTHRACENE	1.0E-02 J	3.7E+00	mg/kg	S01-SS09	9/16	0.019 - 0.19	2.1E+01	C	0/9	No
Surface Soil	50-32-8	BENZO(A)PYRENE	1.0E-02 J	3.8E+00	mg/kg	S01-SS09	9/16	0.019 - 0.19	2.1E+00	C	1/9	Yes
Surface Soil	205-99-2	BENZO(B)FLUORANTHENE	5.0E-03 J	5.8E+00	mg/kg	S01-SS09	10/16	0.019 - 0.19	2.1E+01	C	0/10	No
Surface Soil	191-24-2	BENZO(G,H,I)PERYLENE	6.0E-03 J	3.0E+00	mg/kg	S01-SS09	9/9	0.019 - 0.19	2.3E+03	N	0/9	No
Surface Soil	207-08-9	BENZO(K)FLUORANTHENE	7.0E-03 J	1.8E+00	mg/kg	S01-SS09	8/9	0.019 - 0.19	2.1E+02	C	0/8	No
Surface Soil	92-52-4	BIPHENYL (DIPHENYL)	2.5E-02 J	7.3E+01	mg/kg	S01-SS10	6/16	0.037 - 0.78	2.0E+01	N	1/6	Yes
Surface Soil	86-74-8	CARBAZOLE	1.2E-01	1.3E-01 J	mg/kg	S01-SS01	2/9	0.037 - 0.37	No Value		--	--
Surface Soil	218-01-9	CHRYSENE	5.0E-03 J	3.5E+00	mg/kg	S01-SS09	9/9	0.019 - 0.19	2.1E+03	C	0/9	No
Surface Soil	53-70-3	DIBENZ(A,H)ANTHRACENE	4.0E-03 J	8.9E-01	mg/kg	S01-SS09	5/16	0.019 - 0.19	2.1E+00	C	0/5	No
Surface Soil	132-64-9	DIBENZOFURAN	5.1E-02	1.7E-01	mg/kg	S01-SS10	2/16	0.037 - 0.37	1.0E+02	N	0/2	No
Surface Soil	206-44-0	FLUORANTHENE	8.0E-03 J	5.6E+00	mg/kg	S01-SS09	9/9	0.019 - 0.19	3.0E+03	N	0/9	No
Surface Soil	86-73-7	FLUORENE	7.0E-03 J	1.0E-01	mg/kg	S01-SS09	4/9	0.019 - 0.19	3.0E+03	N	0/4	No
Surface Soil	193-39-5	INDENO(1,2,3-CD)PYRENE	6.0E-03 J	2.7E+00	mg/kg	S01-SS09	10/16	0.019 - 0.19	2.1E+01	c	0/10	No
Surface Soil	98-82-8	ISOPROPYLBENZENE (CUMENE)	2.0E-03 J	2.5E-01 J	mg/kg	S01-SS02	2/16	0.005 - 0.24	2.7E+02	Sat	0/2	No
Surface Soil	91-20-3	NAPHTHALENE	2.0E-03 J	2.0E-03 J	mg/kg	S01-SS07	1/15	0.005 - 0.24	1.7E+01	C	0/1	No
Surface Soil	85-01-8	PHENANTHRENE	8.0E-03 J	1.0E+00	mg/kg	S01-SS09	9/9	0.019 - 0.19	2.3E+04	N	0/9	No
Surface Soil	108-95-2	PHENOL	2.3E-02 J	4.3E-02	mg/kg	S01-SS09	3/9	0.037 - 0.37	2.5E+04	N	0/3	No
Surface Soil	7440-38-2	ARSENIC	6.6E+00	1.6E+01	mg/kg	S01-SS02	9/9	0.434 - 0.475	3.0E+00	C	9/9	Yes
Surface Soil	7440-39-3	BARIUM	8.6E+01	8.6E+02	mg/kg	S01-SS09	9/9	0.558 - 2.77	2.2E+04	N	0/9	No
Surface Soil	7440-43-9	CADMIUM	4.2E-02 J	1.1E+00	mg/kg	S01-SS01	9/9	0.532 - 0.611	9.8E+01	N	0/9	No
Surface Soil	7440-47-3	CHROMIUM	1.1E+01	4.4E+01	mg/kg	S01-SS09	9/9	1.6 - 1.83	1.8E+05	N	0/9	No
Surface Soil	7439-92-1	LEAD	5.6E+00	7.4E+01	mg/kg	S01-SS06	9/9	1.6 - 8.04	8.0E+02	L	0/9	No
Surface Soil	7439-97-6	MERCURY	9.8E-03 J	3.3E-02 J	mg/kg	S01-SS01	8/9	0.104 - 0.116	4.6E+00	N	0/8	No
Surface Soil	7782-49-2	SELENIUM	1.3E+00 J	1.5E+01	mg/kg	S01-SS09	4/9	2.13 - 2.44	5.8E+02	N	0/4	No
Surface Soil	7440-22-4	SILVER	2.6E-01 J	2.6E-01 J	mg/kg	S01-SS09	1/9	0.532 - 0.611	5.8E+02	N	0/1	No
Total Soil	95-63-6	1,2,4-TRIMETHYLBENZENE	2.0E-03 J	2.0E-03 J	mg/kg	S01-SS07	1/27	0.005 - 0.27	1.8E+02	N	0/1	No
Total Soil	95-50-1	1,2-DICHLOROBENZENE	1.0E-03 J	4.0E-03 J	mg/kg	S01-SS08	4/27	0.005 - 0.27	3.8E+02	Sat	0/4	No
Total Soil	106-46-7	1,4-DICHLOROBENZENE	2.0E-03 J	2.0E-03 J	mg/kg	S01-SS05	1/27	0.005 - 0.27	1.1E+01	C	0/1	No
Total Soil	591-78-6	2-HEXANONE	5.0E-03 J	1.7E-02	mg/kg	S01-SS07	2/28	0.009 - 0.54	1.3E+02	N	0/2	No
Total Soil	67-64-1	ACETONE	8.0E-03 J	9.8E-02 J	mg/kg	S01-SS03	25/28	0.018 - 1.1	6.7E+04	N	0/25	No
Total Soil	71-43-2	BENZENE	5.0E-04 J	1.6E-01 J	mg/kg	S01-SS02	8/50	0.005 - 0.34	5.1E+00	C	0/8	No
Total Soil	108-86-1	BROMOBENZENE	4.0E-03 J	9.6E-02 J	mg/kg	S01-SS02	2/27	0.005 - 0.27	1.8E+02	N	0/2	No

Table 1. SWMU 1 Soil Step 1: Selection of Chemicals of Potential Concern (Industrial Exposure Scenario)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Soil Type	CAS Number	Analyte	Minimum Detected Concentration	Maximum Detected Concentration	Units	Location of Maximum Detection	Frequency of Detection	Range of Detection Limits	Screening Level		Frequency of Exceedance	COPC Flag
Total Soil	75-25-2	BROMOFORM	1.0E-03 J	1.3E-01 J	mg/kg	S01-SS02	7/49	0.005 - 0.34	8.6E+01	C	0/7	No
Total Soil	75-15-0	CARBON DISULFIDE	1.0E-03 J	1.4E-02	mg/kg	S01-SS07	5/28	0.005 - 0.27	3.5E+02	N	0/5	No
Total Soil	108-90-7	CHLOROBENZENE	3.0E-03 J	3.0E-03 J	mg/kg	S01-SS04	1/28	0.005 - 0.27	1.3E+02	N	0/1	No
Total Soil	156-59-2	CIS-1,2-DICHLOROETHYLENE	1.0E-03 J	2.3E-01 J	mg/kg	S01-SS33	19/86	0.00099 - 0.27	2.4E+03	Sat	0/19	No
Total Soil	110-82-7	CYCLOHEXANE	5.3E-02 J	5.3E-02 J	mg/kg	S01-SS02	1/28	0.005 - 0.27	1.2E+02	Sat	0/1	No
Total Soil	100-41-4	ETHYLBENZENE	1.0E-03 J	2.1E+01	mg/kg	S01-SS12	9/50	0.005 - 2.7	2.5E+01	C	0/9	No
Total Soil	179601-23-1	m,p-Xylene	2.0E-03 J	9.0E-03	mg/kg	S01-SS13	2/50	0.005 - 0.34	2.4E+02	N	0/2	No
Total Soil	79-20-9	METHYL ACETATE	1.5E-01 J	1.5E-01 J	mg/kg	S01-SS02	1/28	0.005 - 0.27	2.9E+04	Sat	0/1	No
Total Soil	78-93-3	METHYL ETHYL KETONE (2-BUTANONE)	4.0E-03 J	1.2E-02	mg/kg	S01-SS07	9/28	0.009 - 0.54	1.9E+04	N	0/9	No
Total Soil	108-10-1	METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	5.0E-03 J	5.0E-03 J	mg/kg	S01-SS07	1/28	0.009 - 0.54	3.4E+03	Sat	0/1	No
Total Soil	103-65-1	N-PROPYLBENZENE	1.0E-01 J	1.0E-01 J	mg/kg	S01-SS02	1/49	0.005 - 0.34	2.6E+02	Sat	0/1	No
Total Soil	95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	3.0E-03 J	4.5E-02 J	mg/kg	S01-SS02	2/50	0.005 - 0.34	2.8E+02	N	0/2	No
Total Soil	129-00-0	PYRENE	9.0E-03 J	4.4E+00	mg/kg	S01-SS09	10/28	0.019 - 0.19	2.3E+03	N	0/10	No
Total Soil	135-98-8	SEC-BUTYLBENZENE	2.0E-03 J	6.7E-02 J	mg/kg	S01-SS02	2/27	0.005 - 0.27	1.5E+02	Sat	0/2	No
Total Soil	127-18-4	TETRACHLOROETHYLENE(PCE)	1.0E-03 J	1.6E+00 J	mg/kg	S01-SS02	91/108	0.00099 - 0.34	3.9E+01	N	0/91	No
Total Soil	108-88-3	TOLUENE	2.0E-03 J	6.1E-02 J	mg/kg	S01-SS02	4/28	0.005 - 0.27	8.2E+02	Sat	0/4	No
Total Soil	156-60-5	TRANS-1,2-DICHLOROETHENE	2.0E-03 J	4.0E-03 J	mg/kg	S01-SS33	2/86	0.0015 - 0.27	1.9E+03	Sat	0/2	No
Total Soil	79-01-6	TRICHLOROETHYLENE (TCE)	1.0E-03 J	9.5E-02 J	mg/kg	S01-SS33	27/108	0.00099 - 0.34	1.9E+00	N	0/27	No
Total Soil	75-01-4	Vinyl chloride	1.0E-03 J	1.0E-03 J	mg/kg	S01-SS23	1/86	0.002 - 0.27	1.7E+00	C	0/1	No
Total Soil	105-67-9	2,4-DIMETHYLPHENOL	2.5E-02 J	2.5E-02 J	mg/kg	S01-SS09	1/28	0.037 - 0.37	1.6E+03	N	0/1	No
Total Soil	91-57-6	2-METHYLNAPHTHALENE	4.0E-03 J	2.6E-02	mg/kg	S01-SS09	9/50	0.019 - 0.19	3.0E+02	N	0/9	No
Total Soil	99-09-2	3-NITROANILINE	1.0E-01 J	1.0E-01 J	mg/kg	S01-SS02	1/28	0.18 - 1.8	8.0E+02	N	0/1	No
Total Soil	106-44-5	4-METHYLPHENOL (P-CRESOL)	6.3E-02	6.3E-02	mg/kg	S01-SS09	1/28	0.037 - 0.37	8.2E+03	N	0/1	No
Total Soil	83-32-9	ACENAPHTHENE	7.0E-03 J	6.4E-02 J	mg/kg	S01-SS01	4/28	0.019 - 0.19	4.5E+03	N	0/4	No
Total Soil	208-96-8	ACENAPHTHYLENE	4.0E-03 J	1.1E+00	mg/kg	S01-SS09	5/28	0.019 - 0.19	4.5E+03	N	0/5	No
Total Soil	120-12-7	ANTHRACENE	1.9E-02 J	1.2E+00	mg/kg	S01-SS09	5/28	0.019 - 0.19	2.3E+04	N	0/5	No
Total Soil	56-55-3	BENZO(A)ANTHRACENE	1.0E-02 J	3.7E+00	mg/kg	S01-SS09	10/50	0.019 - 0.19	2.1E+01	C	0/10	No
Total Soil	50-32-8	BENZO(A)PYRENE	4.0E-03 J	3.8E+00	mg/kg	S01-SS09	11/50	0.019 - 0.19	2.1E+00	C	1/11	Yes
Total Soil	205-99-2	BENZO(B)FLUORANTHENE	5.0E-03 J	5.8E+00	mg/kg	S01-SS09	12/50	0.019 - 0.19	2.1E+01	C	0/12	No
Total Soil	191-24-2	BENZO(G,H,I)PERYLENE	6.0E-03 J	3.0E+00	mg/kg	S01-SS09	9/28	0.019 - 0.19	2.3E+03	N	0/9	No
Total Soil	207-08-9	BENZO(K)FLUORANTHENE	7.0E-03 J	1.8E+00	mg/kg	S01-SS09	8/28	0.019 - 0.19	2.1E+02	C	0/8	No
Total Soil	92-52-4	BIPHENYL (DIPHENYL)	2.5E-02 J	1.1E+02	mg/kg	S01-SS10	10/50	0.037 - 1.6	2.0E+01	N	2/10	Yes
Total Soil	86-74-8	CARBAZOLE	1.2E-01	1.3E-01 J	mg/kg	S01-SS01	2/28	0.037 - 0.37	No Value		--	--
Total Soil	218-01-9	CHRYSENE	5.0E-03 J	3.5E+00	mg/kg	S01-SS09	9/28	0.019 - 0.19	2.1E+03	C	0/9	No
Total Soil	53-70-3	DIBENZ(A,H)ANTHRACENE	4.0E-03 J	8.9E-01	mg/kg	S01-SS09	6/50	0.019 - 0.19	2.1E+00	C	0/6	No
Total Soil	132-64-9	DIBENZOFURAN	5.1E-02	1.7E-01	mg/kg	S01-SS10	3/50	0.037 - 0.37	1.0E+02	N	0/3	No
Total Soil	206-44-0	FLUORANTHENE	8.0E-03 J	5.6E+00	mg/kg	S01-SS09	9/28	0.019 - 0.19	3.0E+03	N	0/9	No
Total Soil	86-73-7	FLUORENE	7.0E-03 J	1.0E-01	mg/kg	S01-SS09	4/28	0.019 - 0.19	3.0E+03	N	0/4	No
Total Soil	193-39-5	INDENO(1,2,3-CD)PYRENE	6.0E-03 J	2.7E+00	mg/kg	S01-SS09	11/50	0.019 - 0.19	2.1E+01	C	0/11	No
Total Soil	98-82-8	ISOPROPYLBENZENE (CUMENE)	2.0E-03 J	2.5E-01 J	mg/kg	S01-SS02	3/50	0.005 - 0.34	2.7E+02	Sat	0/3	No
Total Soil	91-20-3	NAPHTHALENE	2.0E-03 J	8.0E-03	mg/kg	S01-SS13	2/49	0.005 - 0.34	1.7E+01	C	0/2	No
Total Soil	85-01-8	PHENANTHRENE	8.0E-03 J	1.0E+00	mg/kg	S01-SS09	11/28	0.019 - 0.19	2.3E+04	N	0/11	No
Total Soil	108-95-2	PHENOL	2.3E-02 J	4.3E-02	mg/kg	S01-SS09	3/28	0.037 - 0.37	2.5E+04	N	0/3	No
Total Soil	7440-38-2	ARSENIC	6.6E+00	1.7E+01	mg/kg	S01-SS09	28/28	0.434 - 0.493	3.0E+00	C	28/28	Yes
Total Soil	7440-39-3	BARIUM	3.9E+01	8.6E+02	mg/kg	S01-SS09	28/28	0.558 - 2.77	2.2E+04	N	0/28	No
Total Soil	7440-43-9	CADMIUM	4.2E-02 J	1.4E+00	mg/kg	S01-SS01	28/28	0.532 - 0.624	9.8E+01	N	0/28	No
Total Soil	7440-47-3	CHROMIUM	1.1E+01	4.4E+01	mg/kg	S01-SS09	28/28	1.6 - 1.87	1.8E+05	N	0/28	No
Total Soil	7439-92-1	LEAD	5.6E+00	7.4E+01	mg/kg	S01-SS06	28/28	1.6 - 8.04	8.0E+02	L	0/28	No
Total Soil	7439-97-6	MERCURY	9.8E-03 J	4.8E-02 J	mg/kg	S01-SS06	27/28	0.104 - 0.122	3.5E+01	N	0/27	No
Total Soil	7782-49-2	SELENIUM	1.3E+00 J	1.5E+01	mg/kg	S01-SS09	4/28	2.13 - 2.5	5.8E+02	N	0/4	No
Total Soil	7440-22-4	SILVER	2.6E-01 J	2.6E-01 J	mg/kg	S01-SS09	1/28	0.532 - 0.624	5.8E+02	N	0/1	No

Note:

Screening Level = USEPA Industrial Soil Regional Screening Level (RSL) based on TR = $1x10^{-6}$ or HQ = 0.1 (May 2018).

RSL value for m-xylene used as surrogate for m,p-xylene.

RSL value for 2-nitroaniline used as surrogate for 3-nitroaniline.

RSL value for acenaphthene used as surrogate for acenaphthylene.

RSL value for pyrene used as surrogate for benzo(g,h,i)perylene.

RSL value for anthracene used as surrogate for phenanthrene.

RSL value for chromium III used as surrogate for chromium.

Table 1. SWMU 1 Soil Step 1: Selection of Chemicals of Potential Concern (Industrial Exposure Scenario)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Soil Type	CAS Number	Analyte	Minimum Detected Concentration	Maximum Detected Concentration	Units	Location of Maximum Detection	Frequency of Detection	Range of Detection Limits	Screening Level	Frequency of Exceedance	COPC Flag

Surface Soil = 0-2 foot below ground surface samples
Total Soil = 0-10 foot below ground surface samples

CAS = Chemical Abstracts Service
COPC = chemical of potential concern are defined as chemicals with maximum detected concentrations greater than the screening level.
HQ = hazard quotient
J = estimated value
C = carcinogenic
mg/kg = milligrams per kilogram
N = noncarcinogenic
L = Screening level for lead is from the Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, USEPA, July 14, 1994.
SAT = Calculated RSL exceeds the saturation limit, therefore the saturation limit is used as screening level
SWMU = solid waste management unit
TR = target risk

Table 2. SWMU 1 Soil Step 2: Industrial Exposure Scenario Risk Ratio Screening, Maximum Detected Concentration

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Surface Soil

Analyte	Maximum Detected Concentration (Qualifier)	Location of Maximum Detection	Frequency of Detection	Industrial Soil RSL		Acceptable Risk Level	Acceptable Hazard	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ/ Critical Effect
				Carcinogenic	Noncarcinogenic					
Semi-volatile Organic Compounds (mg/kg)										
1,1'-Biphenyl	7.3E+01 J	S01-SS10	6 / 16	4.1E+02	2.0E+02	1E-06	1E+00	0.4	2E-07	Kidney
Benzo(a)anthracene	3.7E+00 J	S01-SS09	9/16	2.1E+01	NA	1E-06	1E+00	--	2E-07	--
Benzo(a)pyrene	3.8E+00 J	S01-SS09	9/16	2.1E+00	2.2E+02	1E-06	1E+00	0.02	2E-06	Developmental
Benzo(b)fluoranthene	5.8E+00 J	S01-SS09	10/16	2.1E+01	NA	1E-06	1E+00	--	3E-07	--
Benzo(k)fluoranthene	1.8E+00 J	S01-SS09	8/9	2.1E+02	NA	1E-06	1E+00	--	9E-09	--
Chrysene	3.5E+00 J	S01-SS09	9/9	2.1E+03	NA	1E-06	1E+00	--	2E-09	--
Dibenz(a,h)anthracene	8.9E-01 J	S01-SS09	5/16	2.1E+00	NA	1E-06	1E+00	--	4E-07	--
Indeno(1,2,3-cd)pyrene	2.7E+00 J	S01-SS09	10/16	2.1E+01	NA	1E-06	1E+00	--	1E-07	--
Metals (mg/kg)										
Arsenic	6.6E+00	S01-SS02	9 / 9	3.0E+00	4.8E+02	1E-06	1E+00	0.01	2E-06	Skin, Vascular
Cumulative Corresponding Hazard Index[c]								0.4		
Cumulative Corresponding Cancer Risk[d]									5E-06	

Total Soil

Analyte	Maximum Detected Concentration (Qualifier)	Location of Maximum Detection	Frequency of Detection	Industrial Soil RSL		Acceptable Risk Level	Acceptable Hazard	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ/ Critical Effect
				Carcinogenic	Noncarcinogenic					
Semi-volatile Organic Compounds (mg/kg)										
1,1'-Biphenyl	1.1E+02 J	S01-SS10	10/50	4.1E+02	2.0E+02	1E-06	1E+00	0.6	3E-07	--
Benzo(a)anthracene	3.7E+00 J	S01-SS09	10/50	2.1E+01	NA	1E-06	1E+00	--	2E-07	--
Benzo(a)pyrene	3.8E+00 J	S01-SS09	11/50	2.1E+00	2.2E+02	1E-06	1E+00	0.02	2E-06	Developmental
Benzo(b)fluoranthene	5.8E+00 J	S01-SS09	12/50	2.1E+01	NA	1E-06	1E+00	--	3E-07	--
Benzo(k)fluoranthene	1.8E+00 J	S01-SS09	8/28	2.1E+02	NA	1E-06	1E+00	--	9E-09	--
Chrysene	3.5E+00 J	S01-SS09	9/28	2.1E+03	NA	1E-06	1E+00	--	2E-09	--
Dibenz(a,h)anthracene	8.9E-01 J	S01-SS09	6/50	2.1E+00	NA	1E-06	1E+00	--	4E-07	--
Indeno(1,2,3-cd)pyrene	2.7E+00 J	S01-SS09	11/50	2.1E+01	NA	1E-06	1E+00	--	--	--
Metals (mg/kg)										
Arsenic	1.7E+01	S01-SS09	28/28	3.0E+00	4.8E+02	1E-06	1E+00	0.04	6E-06	Skin, Vascular
Cumulative Corresponding Hazard Index[c]								0.6		
Cumulative Corresponding Cancer Risk[d]									9E-06	

Notes:

[a] $$\mathrm{HQ} = \frac{\text{Maximum detected soil concentration } \left(\frac{\mathrm{mg}}{\mathrm{kg}}\right) \times \text{target hazard } (1.0)}{\text{Industrial Soil RSL}(\frac{\mathrm{mg}}{\mathrm{kg}})}$$

[b] $$\mathrm{ELCR} = \frac{\text{Maximum detected concentration } \left(\frac{\mathrm{mg}}{\mathrm{kg}}\right) \times \text{target risk level } (1 \times 10^{-6})}{\text{Industrial Soil RSL } (\frac{\mathrm{mg}}{\mathrm{kg}})}$$

[c] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[d] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites (USEPA, May 2018). [Online]. Available: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.

ELCR = excess lifetime cancer risk

HQ = hazard quotient

Table 3. SWMU 1 Soil Step 3: Industrial Exposure Scenario Risk Ratio Screening, 95% UCL

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Surface Soil

Analyte	Upper Confidence Limit Concentration (Statistic)	Location of Maximum Detection	Frequency of Detection	Industrial Soil RSL		Acceptable Risk Level	Acceptable Hazard	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ/ Critical Effect
				Carcinogenic	Noncarcinogenic					
Semi-volatile Organic Compounds (mg/kg)										
1,1'-Biphenyl	5.3E+01 [1]	S01-SS10	6 / 16	4.1E+02	2.0E+02	1E-06	1E+00	0.26	1E-07	Kidney
Benzo(a)anthracene	1.8E+00 [2]	S01-SS09	9/16	2.1E+01	NA	1E-06	1E+00	--	8E-08	--
Benzo(a)pyrene	1.9E+00 [2]	S01-SS09	9/16	2.1E+00	2.2E+02	1E-06	1E+00	0.01	9E-07	Developmental
Benzo(b)fluoranthene	4.2E+00 [1]	S01-SS09	10/16	2.1E+01	NA	1E-06	1E+00	--	2E-07	--
Benzo(k)fluoranthene	2.6E+00 [3]	S01-SS09	8/9	2.1E+02	NA	1E-06	1E+00	--	1E-08	--
Chrysene	2.4E+00 [4]	S01-SS09	9/9	2.1E+03	NA	1E-06	1E+00	--	1E-09	--
Dibenz(a,h)anthracene	1.9E-01 [5]	S01-SS09	5/16	2.1E+00	NA	1E-06	1E+00	--	9E-08	--
Indeno(1,2,3-cd)pyrene	1.3E+00 [7]	S01-SS09	10/16	2.1E+01	NA	1E-06	1E+00	--	6E-08	--
Metals (mg/kg)										
Arsenic	1.2E+01 [6]	S01-SS02	9 / 9	3.0E+00	4.8E+02	1E-06	1E+00	0.03	4E-06	Skin, Vascular
Cumulative Corresponding Hazard Index[c]								**0.3**		
Cumulative Corresponding Cancer Risk[d]									**6E-06**	

Total Soil

Analyte	Upper Confidence Limit Concentration (Statistic)	Location of Maximum Detection	Frequency of Detection	Industrial Soil RSL		Acceptable Risk Level	Acceptable Hazard	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ/ Critical Effect
				Carcinogenic	Noncarcinogenic					
Semi-volatile Organic Compounds (mg/kg)										
1,1'-Biphenyl	1.5E+01 [8]	S01-SS10	10/50	4.1E+02	2.0E+02	1E-06	1E+00	0.08	4E-08	--
Benzo(a)anthracene	4.4E-01 [8]	S01-SS09	10/50	2.1E+01	NA	1E-06	1E+00	--	2E-08	--
Benzo(a)pyrene	5.7E-02 [9]	S01-SS09	11/50	2.1E+00	2.2E+02	1E-06	1E+00	0.00	3E-08	Developmental
Benzo(b)fluoranthene	7.0E-01 [10]	S01-SS09	12/50	2.1E+01	NA	1E-06	1E+00	--	3E-08	--
Benzo(k)fluoranthene	4.2E-01 [11]	S01-SS09	8/28	2.1E+02	NA	1E-06	1E+00	--	2E-09	--
Chrysene	8.6E-01 [11]	S01-SS09	9/28	2.1E+03	NA	1E-06	1E+00	--	4E-10	--
Dibenz(a,h)anthracene	1.0E-01 [8]	S01-SS09	6/50	2.1E+00	NA	1E-06	1E+00	--	5E-08	--
Indeno(1,2,3-cd)pyrene	4.2E-02 [9]	S01-SS09	11/50	2.1E+01	NA	1E-06	1E+00	--	--	--
Metals (mg/kg)										
Arsenic	1.3E+01 [6]	S01-SS09	28/28	3.0E+00	4.8E+02	1E-06	1E+00	0.03	4E-06	Skin, Vascular
Cumulative Corresponding Hazard Index[c]								0.1		
Cumulative Corresponding Cancer Risk[d]									4E-06	

Table 3. SWMU 1 Soil Step 3: Industrial Exposure Scenario Risk Ratio Screening, 95% UCL
Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

Notes:

[a] $$\text{HQ} = \frac{\text{Maximum detected soil concentration } \left(\frac{\text{mg}}{\text{kg}}\right) \times \text{target hazard (1.0)}}{\text{Industrial Soil RSL}(\frac{\text{mg}}{\text{kg}})}$$

[b] $$\text{ELCR} = \frac{\text{Maximum detected concentration } \left(\frac{\text{mg}}{\text{kg}}\right) \times \text{target risk level } (1 \times 10^{-6})}{\text{Industrial Soil RSL } (\frac{\text{mg}}{\text{kg}})}$$

[c] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[d] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites (USEPA, May 2018). [Online]. Available: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.

ELCR = excess lifetime cancer risk
HQ = hazard quotient
KM = Kaplan Meier
mg/kg = milligrams per kilogram
NA = not available/not applicable
SWMU = solid waste management unit
UCL = upper confidence limit

ProUCL, Version 5.1.002 used to calculate UCL, following recommendations provided in the Users Guide (EPA. ProUCL Version 5.1.002 User Guide Prepared by Lockheed Martin Environmental Services. June 2016).

Statistics Definitions: KM - Kaplan-Meier; UCL - upper confidence limit

[1] 99% KM (Chebyshev) UCL
[2] 97.5% KM (Chebyshev) UCL
[3] 95% KM Bootstrap t UCL
[4] 95% Adjusted Gamma UCL
[5] 95% KM (t) UCL
[6] 95% Student's-t UCL
[7] 97.5% KM (Chebyshev) UCL
[8] 95% KM Approximate Gamma UCL
[9] KM H-UCL
[10] 95% KM (Chebyshev) UCL
[11] Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Benzo(a)anthracene (Surface soil 0-2 feet below ground surface)

General Statistics

Total Number of Observations	16	Number of Distinct Observations	11
Number of Detects	9	Number of Non-Detects	7
Number of Distinct Detects	9	Number of Distinct Non-Detects	2
Minimum Detect	0.01	Minimum Non-Detect	0.02
Maximum Detect	3.7	Maximum Non-Detect	0.021
Variance Detects	1.446	Percent Non-Detects	43.75%
Mean Detects	0.528	SD Detects	1.203
Median Detects	0.069	CV Detects	2.279
Skewness Detects	2.883	Kurtosis Detects	8.438
Mean of Logged Detects	-2.313	SD of Logged Detects	1.802

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.493	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.379	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.301	KM Standard Error of Mean	0.236
KM SD	0.888	95% KM (BCA) UCL	0.746
95% KM (t) UCL	0.714	95% KM (Percentile Bootstrap) UCL	0.746
95% KM (z) UCL	0.689	95% KM Bootstrap t UCL	4.902
90% KM Chebyshev UCL	1.008	95% KM Chebyshev UCL	1.328
97.5% KM Chebyshev UCL	1.772	99% KM Chebyshev UCL	2.645

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.934	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.79	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.305	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.298	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.394	k star (bias corrected MLE)	0.337
Theta hat (MLE)	1.339	Theta star (bias corrected MLE)	1.566
nu hat (MLE)	7.095	nu star (bias corrected)	6.064
Mean (detects)	0.528		

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.301
Maximum	3.7	Median	0.018
SD	0.918	CV	3.046
k hat (MLE)	0.322	k star (bias corrected MLE)	0.303
Theta hat (MLE)	0.935	Theta star (bias corrected MLE)	0.993
nu hat (MLE)	10.31	nu star (bias corrected)	9.71
Adjusted Level of Significance (β)	0.0335		
Approximate Chi Square Value (9.71, α)	3.761	Adjusted Chi Square Value (9.71, β)	3.35
95% Gamma Approximate UCL (use when n>=50)	0.778	95% Gamma Adjusted UCL (use when n<50)	0.873

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.301	SD (KM)	0.888
Variance (KM)	0.789	SE of Mean (KM)	0.236
k hat (KM)	0.115	k star (KM)	0.135
nu hat (KM)	3.678	nu star (KM)	4.322
theta hat (KM)	2.62	theta star (KM)	2.23
80% gamma percentile (KM)	0.299	90% gamma percentile (KM)	0.878
95% gamma percentile (KM)	1.689	99% gamma percentile (KM)	4.099

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.32, α)	0.853	Adjusted Chi Square Value (4.32, β)	0.696
95% Gamma Approximate KM-UCL (use when n>=50)	1.526	95% Gamma Adjusted KM-UCL (use when n<50)	1.87

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.931	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.219	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.299	Mean in Log Scale	-3.794
SD in Original Scale	0.918	SD in Log Scale	2.288
95% t UCL (assumes normality of ROS data)	0.701	95% Percentile Bootstrap UCL	0.737

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

95% BCA Bootstrap UCL	1.015	95% Bootstrap t UCL	4.832
95% H-UCL (Log ROS)	5.993		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.316	KM Geo Mean	0.0363
KM SD (logged)	1.708	95% Critical H Value (KM-Log)	3.922
KM Standard Error of Mean (logged)	0.453	95% H-UCL (KM -Log)	0.88
KM SD (logged)	1.708	95% Critical H Value (KM-Log)	3.922
KM Standard Error of Mean (logged)	0.453		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.301	Mean in Log Scale	-3.313
SD in Original Scale	0.917	SD in Log Scale	1.762
95% t UCL (Assumes normality)	0.703	95% H-Stat UCL	1.071

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	1.772	99% KM (Chebyshev) UCL	2.645

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Benzo(a)pyrene (Surface soil 0-2 feet below ground surface)

General Statistics

Total Number of Observations	16	Number of Distinct Observations	9
Number of Detects	9	Number of Non-Detects	7
Number of Distinct Detects	8	Number of Distinct Non-Detects	2
Minimum Detect	0.01	Minimum Non-Detect	0.02
Maximum Detect	3.8	Maximum Non-Detect	0.021
Variance Detects	1.529	Percent Non-Detects	43.75%
Mean Detects	0.581	SD Detects	1.237
Median Detects	0.073	CV Detects	2.128
Skewness Detects	2.755	Kurtosis Detects	7.781
Mean of Logged Detects	-2.208	SD of Logged Detects	1.879

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.534	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.365	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.331	KM Standard Error of Mean	0.244
KM SD	0.919	95% KM (BCA) UCL	0.772
95% KM (t) UCL	0.759	95% KM (Percentile Bootstrap) UCL	0.772
95% KM (z) UCL	0.732	95% KM Bootstrap t UCL	4.009
90% KM Chebyshev UCL	1.063	95% KM Chebyshev UCL	1.394
97.5% KM Chebyshev UCL	1.853	99% KM Chebyshev UCL	2.756

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.825	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.79	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.328	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.298	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.396	k star (bias corrected MLE)	0.338
Theta hat (MLE)	1.468	Theta star (bias corrected MLE)	1.719
nu hat (MLE)	7.127	nu star (bias corrected)	6.085
Mean (detects)	0.581		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.331
Maximum	3.8	Median	0.015
SD	0.949	CV	2.866
k hat (MLE)	0.318	k star (bias corrected MLE)	0.3
Theta hat (MLE)	1.043	Theta star (bias corrected MLE)	1.105
nu hat (MLE)	10.16	nu star (bias corrected)	9.589

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Adjusted Level of Significance (β)	0.0335		
Approximate Chi Square Value (9.59, α)	3.687	Adjusted Chi Square Value (9.59, β)	3.281
95% Gamma Approximate UCL (use when n>=50)	0.862	95% Gamma Adjusted UCL (use when n<50)	0.968

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.331	SD (KM)	0.919
Variance (KM)	0.845	SE of Mean (KM)	0.244
k hat (KM)	0.13	k star (KM)	0.147
nu hat (KM)	4.158	nu star (KM)	4.712
theta hat (KM)	2.55	theta star (KM)	2.25
80% gamma percentile (KM)	0.355	90% gamma percentile (KM)	0.98
95% gamma percentile (KM)	1.83	99% gamma percentile (KM)	4.307

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.71, α)	1.021	Adjusted Chi Square Value (4.71, β)	0.843
95% Gamma Approximate KM-UCL (use when n>=50)	1.528	95% Gamma Adjusted KM-UCL (use when n<50)	1.851

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.933	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.253	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.329	Mean in Log Scale	-3.724
SD in Original Scale	0.95	SD in Log Scale	2.358
95% t UCL (assumes normality of ROS data)	0.746	95% Percentile Bootstrap UCL	0.753
95% BCA Bootstrap UCL	1.041	95% Bootstrap t UCL	3.953
95% H-UCL (Log ROS)	8.98		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.251	KM Geo Mean	0.0387
KM SD (logged)	1.78	95% Critical H Value (KM-Log)	4.056
KM Standard Error of Mean (logged)	0.472	95% H-UCL (KM -Log)	1.219
KM SD (logged)	1.78	95% Critical H Value (KM-Log)	4.056
KM Standard Error of Mean (logged)	0.472		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.331	Mean in Log Scale	-3.253

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

SD in Original Scale	0.949	SD in Log Scale	1.839
95% t UCL (Assumes normality)	0.747	95% H-Stat UCL	1.518

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	1.853	99% KM (Chebyshev) UCL	2.756

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Benzo(b)fluoranthene (Surface soil 0-2 feet below ground surface)

General Statistics

Total Number of Observations	16	Number of Distinct Observations	11
Number of Detects	10	Number of Non-Detects	6
Number of Distinct Detects	9	Number of Distinct Non-Detects	2
Minimum Detect	0.005	Minimum Non-Detect	0.02
Maximum Detect	5.8	Maximum Non-Detect	0.021
Variance Detects	3.243	Percent Non-Detects	37.5%
Mean Detects	0.781	SD Detects	1.801
Median Detects	0.087	CV Detects	2.306
Skewness Detects	2.943	Kurtosis Detects	8.87
Mean of Logged Detects	-2.174	SD of Logged Detects	2.061

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.496	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.379	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.493	KM Standard Error of Mean	0.369
KM SD	1.401	95% KM (BCA) UCL	1.199
95% KM (t) UCL	1.14	95% KM (Percentile Bootstrap) UCL	1.174
95% KM (z) UCL	1.1	95% KM Bootstrap t UCL	6.752

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

90% KM Chebyshev UCL	1.6	95% KM Chebyshev UCL	2.102
97.5% KM Chebyshev UCL	2.798	99% KM Chebyshev UCL	4.166

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.856	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.805	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.325	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.286	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.349	k star (bias corrected MLE)	0.311
Theta hat (MLE)	2.236	Theta star (bias corrected MLE)	2.51
nu hat (MLE)	6.984	nu star (bias corrected)	6.222
Mean (detects)	0.781		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.005	Mean	0.492
Maximum	5.8	Median	0.0235
SD	1.447	CV	2.943
k hat (MLE)	0.292	k star (bias corrected MLE)	0.279
Theta hat (MLE)	1.687	Theta star (bias corrected MLE)	1.765
nu hat (MLE)	9.331	nu star (bias corrected)	8.914
Adjusted Level of Significance (β)	0.0335		
Approximate Chi Square Value (8.91, α)	3.275	Adjusted Chi Square Value (8.91, β)	2.897
95% Gamma Approximate UCL (use when n>=50)	1.339	95% Gamma Adjusted UCL (use when n<50)	1.513

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.493	SD (KM)	1.401
Variance (KM)	1.963	SE of Mean (KM)	0.369
k hat (KM)	0.124	k star (KM)	0.142
nu hat (KM)	3.955	nu star (KM)	4.547
theta hat (KM)	3.985	theta star (KM)	3.466
80% gamma percentile (KM)	0.512	90% gamma percentile (KM)	1.449
95% gamma percentile (KM)	2.739	99% gamma percentile (KM)	6.525

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.55, α)	0.949	Adjusted Chi Square Value (4.55, β)	0.78
95% Gamma Approximate KM-UCL (use when n>=50)	2.36	95% Gamma Adjusted KM-UCL (use when n<50)	2.872

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.962	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.225	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.491	Mean in Log Scale	-3.324
SD in Original Scale	1.448	SD in Log Scale	2.298
95% t UCL (assumes normality of ROS data)	1.125	95% Percentile Bootstrap UCL	1.188
95% BCA Bootstrap UCL	1.574	95% Bootstrap t UCL	6.676
95% H-UCL (Log ROS)	10.03		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.095	KM Geo Mean	0.0453
KM SD (logged)	1.993	95% Critical H Value (KM-Log)	4.456
KM Standard Error of Mean (logged)	0.568	95% H-UCL (KM -Log)	3.262
KM SD (logged)	1.993	95% Critical H Value (KM-Log)	4.456
KM Standard Error of Mean (logged)	0.568		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.492	Mean in Log Scale	-3.083
SD in Original Scale	1.447	SD in Log Scale	2.004
95% t UCL (Assumes normality)	1.126	95% H-Stat UCL	3.462

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL	4.166

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Benzo(k)fluoranthene (Surface soil 0-2 feet below ground surface)

General Statistics

Total Number of Observations	9	Number of Distinct Observations	9
Number of Detects	8	Number of Non-Detects	1
Number of Distinct Detects	8	Number of Distinct Non-Detects	1
Minimum Detect	0.007	Minimum Non-Detect	0.02
Maximum Detect	1.8	Maximum Non-Detect	0.02
Variance Detects	0.374	Percent Non-Detects	11.11%
Mean Detects	0.334	SD Detects	0.612
Median Detects	0.056	CV Detects	1.831
Skewness Detects	2.51	Kurtosis Detects	6.487
Mean of Logged Detects	-2.388	SD of Logged Detects	1.738

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.6	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.33	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.298	KM Standard Error of Mean	0.196
KM SD	0.549	95% KM (BCA) UCL	0.674
95% KM (t) UCL	0.662	95% KM (Percentile Bootstrap) UCL	0.664
95% KM (z) UCL	0.62	95% KM Bootstrap t UCL	2.574
90% KM Chebyshev UCL	0.885	95% KM Chebyshev UCL	1.151
97.5% KM Chebyshev UCL	1.52	99% KM Chebyshev UCL	2.246

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.559	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.764	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.281	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.309	Detected data appear Gamma Distributed at 5% Significance Level

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.493	k star (bias corrected MLE)	0.391
Theta hat (MLE)	0.678	Theta star (bias corrected MLE)	0.854
nu hat (MLE)	7.887	nu star (bias corrected)	6.263
Mean (detects)	0.334		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.007	Mean	0.298
Maximum	1.8	Median	0.047
SD	0.583	CV	1.954
k hat (MLE)	0.453	k star (bias corrected MLE)	0.376
Theta hat (MLE)	0.658	Theta star (bias corrected MLE)	0.793
nu hat (MLE)	8.155	nu star (bias corrected)	6.77
Adjusted Level of Significance (β)	0.0231		
Approximate Chi Square Value (6.77, α)	2.045	Adjusted Chi Square Value (6.77, β)	1.544
95% Gamma Approximate UCL (use when n>=50)	0.987	95% Gamma Adjusted UCL (use when n<50)	1.307

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.298	SD (KM)	0.549
Variance (KM)	0.302	SE of Mean (KM)	0.196
k hat (KM)	0.294	k star (KM)	0.27
nu hat (KM)	5.288	nu star (KM)	4.859
theta hat (KM)	1.014	theta star (KM)	1.103
80% gamma percentile (KM)	0.444	90% gamma percentile (KM)	0.888
95% gamma percentile (KM)	1.408	99% gamma percentile (KM)	2.778

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.86, α)	1.088	Adjusted Chi Square Value (4.86, β)	0.762
95% Gamma Approximate KM-UCL (use when n>=50)	1.33	95% Gamma Adjusted KM-UCL (use when n<50)	1.899

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.963	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.204	**Lilliefors GOF Test**

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.298	Mean in Log Scale	-2.711
SD in Original Scale	0.583	SD in Log Scale	1.893
95% t UCL (assumes normality of ROS data)	0.659	95% Percentile Bootstrap UCL	0.648
95% BCA Bootstrap UCL	0.849	95% Bootstrap t UCL	2.559
95% H-UCL (Log ROS)	15.14		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-2.674	KM Geo Mean	0.069
KM SD (logged)	1.733	95% Critical H Value (KM-Log)	5.024
KM Standard Error of Mean (logged)	0.618	95% H-UCL (KM -Log)	6.737
KM SD (logged)	1.733	95% Critical H Value (KM-Log)	5.024
KM Standard Error of Mean (logged)	0.618		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.298	Mean in Log Scale	-2.634
SD in Original Scale	0.583	SD in Log Scale	1.786
95% t UCL (Assumes normality)	0.659	95% H-Stat UCL	9.189

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Bootstrap t UCL	2.574	ımma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	1.899

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Chrysene (Surface soil 0-2 feet below ground surface)

General Statistics

Total Number of Observations	9	Number of Distinct Observations	9
		Number of Missing Observations	0

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Minimum	0.005	Mean	0.502
Maximum	3.5	Median	0.088
SD	1.134	Std. Error of Mean	0.378
Coefficient of Variation	2.259	Skewness	2.908

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.49	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.397	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1.205	95% Adjusted-CLT UCL (Chen-1995)	1.515
		95% Modified-t UCL (Johnson-1978)	1.266

Gamma GOF Test

A-D Test Statistic	0.759	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.789	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.28	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.298	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.402	k star (bias corrected MLE)	0.342
Theta hat (MLE)	1.249	Theta star (bias corrected MLE)	1.468
nu hat (MLE)	7.235	nu star (bias corrected)	6.156
MLE Mean (bias corrected)	0.502	MLE Sd (bias corrected)	0.858
		Approximate Chi Square Value (0.05)	1.72
Adjusted Level of Significance	0.0231	Adjusted Chi Square Value	1.273

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	1.797	95% Adjusted Gamma UCL (use when n<50)	2.427

Lognormal GOF Test

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Shapiro Wilk Test Statistic	0.97	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.829	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.179	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.274	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-5.298	Mean of logged Data	-2.325
Maximum of Logged Data	1.253	SD of logged Data	1.893

Assuming Lognormal Distribution

95% H-UCL	22.2	90% Chebyshev (MVUE) UCL	1.153
95% Chebyshev (MVUE) UCL	1.496	97.5% Chebyshev (MVUE) UCL	1.972
99% Chebyshev (MVUE) UCL	2.906		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	1.124	95% Jackknife UCL	1.205
95% Standard Bootstrap UCL	1.098	95% Bootstrap-t UCL	8.066
95% Hall's Bootstrap UCL	5.41	95% Percentile Bootstrap UCL	1.24
95% BCA Bootstrap UCL	1.591		
90% Chebyshev(Mean, Sd) UCL	1.636	95% Chebyshev(Mean, Sd) UCL	2.149
97.5% Chebyshev(Mean, Sd) UCL	2.862	99% Chebyshev(Mean, Sd) UCL	4.262

Suggested UCL to Use

95% Adjusted Gamma UCL 2.427

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Dibenz(a,h)anthracene (Surface soil 0-2 feet below ground surface)

General Statistics

Total Number of Observations	16	Number of Distinct Observations	9
Number of Detects	5	Number of Non-Detects	11
Number of Distinct Detects	5	Number of Distinct Non-Detects	4
Minimum Detect	0.004	Minimum Non-Detect	0.02

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Maximum Detect	0.89	Maximum Non-Detect	0.1
Variance Detects	0.139	Percent Non-Detects	68.75%
Mean Detects	0.239	SD Detects	0.373
Median Detects	0.084	CV Detects	1.558
Skewness Detects	1.976	Kurtosis Detects	3.976
Mean of Logged Detects	-2.877	SD of Logged Detects	2.229

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.73	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.331	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.343	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0806	KM Standard Error of Mean	0.0603
KM SD	0.215	95% KM (BCA) UCL	0.178
95% KM (t) UCL	0.186	95% KM (Percentile Bootstrap) UCL	0.19
95% KM (z) UCL	0.18	95% KM Bootstrap t UCL	0.508
90% KM Chebyshev UCL	0.261	95% KM Chebyshev UCL	0.343
97.5% KM Chebyshev UCL	0.457	99% KM Chebyshev UCL	0.68

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.256	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.718	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.219	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.374	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.447	k star (bias corrected MLE)	0.312
Theta hat (MLE)	0.536	Theta star (bias corrected MLE)	0.767
nu hat (MLE)	4.466	nu star (bias corrected)	3.12
Mean (detects)	0.239		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Minimum	0.004	Mean	0.0843
Maximum	0.89	Median	0.01
SD	0.221	CV	2.623
k hat (MLE)	0.436	k star (bias corrected MLE)	0.396
Theta hat (MLE)	0.193	Theta star (bias corrected MLE)	0.213
nu hat (MLE)	13.95	nu star (bias corrected)	12.67
Adjusted Level of Significance (β)	0.0335		
Approximate Chi Square Value (12.67, α)	5.669	Adjusted Chi Square Value (12.67, β)	5.145
95% Gamma Approximate UCL (use when n>=50)	0.188	95% Gamma Adjusted UCL (use when n<50)	0.208

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0806	SD (KM)	0.215
Variance (KM)	0.0464	SE of Mean (KM)	0.0603
k hat (KM)	0.14	k star (KM)	0.156
nu hat (KM)	4.484	nu star (KM)	4.976
theta hat (KM)	0.575	theta star (KM)	0.518
80% gamma percentile (KM)	0.0903	90% gamma percentile (KM)	0.24
95% gamma percentile (KM)	0.44	99% gamma percentile (KM)	1.018

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.98, α)	1.141	Adjusted Chi Square Value (4.98, β)	0.949
95% Gamma Approximate KM-UCL (use when n>=50)	0.351	95% Gamma Adjusted KM-UCL (use when n<50)	0.423

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.953	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.195	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.343	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0818	Mean in Log Scale	-4.387
SD in Original Scale	0.222	SD in Log Scale	1.809
95% t UCL (assumes normality of ROS data)	0.179	95% Percentile Bootstrap UCL	0.186
95% BCA Bootstrap UCL	0.245	95% Bootstrap t UCL	0.82
95% H-UCL (Log ROS)	0.436		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.371	KM Geo Mean	0.0126
KM SD (logged)	1.576	95% Critical H Value (KM-Log)	3.68
KM Standard Error of Mean (logged)	0.509	95% H-UCL (KM -Log)	0.195

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

KM SD (logged)	1.576	95% Critical H Value (KM-Log)	3.68
KM Standard Error of Mean (logged)	0.509		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.0892	Mean in Log Scale	-3.758
SD in Original Scale	0.22	SD in Log Scale	1.439
95% t UCL (Assumes normality)	0.186	95% H-Stat UCL	0.235

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.186

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Indeno(1,2,3-cd)pyrene (Surface soil 0-2 feet below ground surface)

General Statistics

Total Number of Observations	16	Number of Distinct Observations	12
Number of Detects	10	Number of Non-Detects	6
Number of Distinct Detects	10	Number of Distinct Non-Detects	2
Minimum Detect	0.006	Minimum Non-Detect	0.02
Maximum Detect	2.7	Maximum Non-Detect	0.021
Variance Detects	0.699	Percent Non-Detects	37.5%
Mean Detects	0.375	SD Detects	0.836
Median Detects	0.0465	CV Detects	2.232
Skewness Detects	2.92	Kurtosis Detects	8.76
Mean of Logged Detects	-2.761	SD of Logged Detects	1.937

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.508	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Lilliefors Test Statistic	0.35	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.238	KM Standard Error of Mean	0.172
KM SD	0.652	95% KM (BCA) UCL	0.561
95% KM (t) UCL	0.539	95% KM (Percentile Bootstrap) UCL	0.554
95% KM (z) UCL	0.52	95% KM Bootstrap t UCL	2.335
90% KM Chebyshev UCL	0.753	95% KM Chebyshev UCL	0.986
97.5% KM Chebyshev UCL	1.31	99% KM Chebyshev UCL	1.946

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.891	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.8	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.333	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.285	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.374	k star (bias corrected MLE)	0.328
Theta hat (MLE)	1.002	Theta star (bias corrected MLE)	1.141
nu hat (MLE)	7.478	nu star (bias corrected)	6.568
Mean (detects)	0.375		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.006	Mean	0.238
Maximum	2.7	Median	0.011
SD	0.673	CV	2.829
k hat (MLE)	0.336	k star (bias corrected MLE)	0.314
Theta hat (MLE)	0.709	Theta star (bias corrected MLE)	0.757
nu hat (MLE)	10.74	nu star (bias corrected)	10.06
Adjusted Level of Significance (β)	0.0335		
Approximate Chi Square Value (10.06, α)	3.981	Adjusted Chi Square Value (10.06, β)	3.555
95% Gamma Approximate UCL (use when n>=50)	0.601	95% Gamma Adjusted UCL (use when n<50)	0.673

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.238	SD (KM)	0.652
Variance (KM)	0.425	SE of Mean (KM)	0.172
k hat (KM)	0.133	k star (KM)	0.15
nu hat (KM)	4.251	nu star (KM)	4.787
theta hat (KM)	1.788	theta star (KM)	1.588
80% gamma percentile (KM)	0.258	90% gamma percentile (KM)	0.704
95% gamma percentile (KM)	1.308	99% gamma percentile (KM)	3.061

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.79, α)	1.055	Adjusted Chi Square Value (4.79, β)	0.873
95% Gamma Approximate KM-UCL (use when n>=50)	1.078	95% Gamma Adjusted KM-UCL (use when n<50)	1.302

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.928	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.24	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.238	Mean in Log Scale	-3.61
SD in Original Scale	0.673	SD in Log Scale	1.959
95% t UCL (assumes normality of ROS data)	0.532	95% Percentile Bootstrap UCL	0.553
95% BCA Bootstrap UCL	0.756	95% Bootstrap t UCL	2.351
95% H-UCL (Log ROS)	1.697		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.507	KM Geo Mean	0.03
KM SD (logged)	1.752	95% Critical H Value (KM-Log)	4.003
KM Standard Error of Mean (logged)	0.468	95% H-UCL (KM -Log)	0.85
KM SD (logged)	1.752	95% Critical H Value (KM-Log)	4.003
KM Standard Error of Mean (logged)	0.468		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.238	Mean in Log Scale	-3.45
SD in Original Scale	0.673	SD in Log Scale	1.759
95% t UCL (Assumes normality)	0.533	95% H-Stat UCL	0.925

DL/2 is not a recommended method, provided for comparisons and historical reasons

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	1.31	99% KM (Chebyshev) UCL	1.946

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Benzo(a)anthracene (Total Soil 0-10 feet below ground surface)

General Statistics

Total Number of Observations	50	Number of Distinct Observations	12
Number of Detects	10	Number of Non-Detects	40
Number of Distinct Detects	10	Number of Distinct Non-Detects	2
Minimum Detect	0.01	Minimum Non-Detect	0.02
Maximum Detect	3.7	Maximum Non-Detect	0.021
Variance Detects	1.302	Percent Non-Detects	80%
Mean Detects	0.488	SD Detects	1.141
Median Detects	0.0735	CV Detects	2.338
Skewness Detects	3.044	Kurtosis Detects	9.408
Mean of Logged Detects	-2.285	SD of Logged Detects	1.701

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.471	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.393	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.106	KM Standard Error of Mean	0.0776
KM SD	0.52	95% KM (BCA) UCL	0.274
95% KM (t) UCL	0.236	95% KM (Percentile Bootstrap) UCL	0.247
95% KM (z) UCL	0.233	95% KM Bootstrap t UCL	1.41
90% KM Chebyshev UCL	0.338	95% KM Chebyshev UCL	0.444
97.5% KM Chebyshev UCL	0.59	99% KM Chebyshev UCL	0.877

Gamma GOF Tests on Detected Observations Only

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

A-D Test Statistic	1.006	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.792	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.267	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.284	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.417	k star (bias corrected MLE)	0.359
Theta hat (MLE)	1.17	Theta star (bias corrected MLE)	1.361
nu hat (MLE)	8.339	nu star (bias corrected)	7.171
Mean (detects)	0.488		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.106
Maximum	3.7	Median	0.01
SD	0.526	CV	4.979
k hat (MLE)	0.355	k star (bias corrected MLE)	0.347
Theta hat (MLE)	0.298	Theta star (bias corrected MLE)	0.305
nu hat (MLE)	35.45	nu star (bias corrected)	34.66
Adjusted Level of Significance (β)	0.0452		
Approximate Chi Square Value (34.66, α)	22.19	Adjusted Chi Square Value (34.66, β)	21.89
95% Gamma Approximate UCL (use when n>=50)	0.165	95% Gamma Adjusted UCL (use when n<50)	0.167

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.106	SD (KM)	0.52
Variance (KM)	0.271	SE of Mean (KM)	0.0776
k hat (KM)	0.0412	k star (KM)	0.052
nu hat (KM)	4.116	nu star (KM)	5.202
theta hat (KM)	2.565	theta star (KM)	2.029
80% gamma percentile (KM)	0.0164	90% gamma percentile (KM)	0.169
95% gamma percentile (KM)	0.569	99% gamma percentile (KM)	2.261

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (5.20, α)	1.247	Adjusted Chi Square Value (5.20, β)	1.191
95% Gamma Approximate KM-UCL (use when n>=50)	0.441	95% Gamma Adjusted KM-UCL (use when n<50)	0.461

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.945	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.162	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.103	Mean in Log Scale	-5.254
SD in Original Scale	0.526	SD in Log Scale	2.245
95% t UCL (assumes normality of ROS data)	0.228	95% Percentile Bootstrap UCL	0.244
95% BCA Bootstrap UCL	0.381	95% Bootstrap t UCL	1.477
95% H-UCL (Log ROS)	0.232		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.141	KM Geo Mean	0.0159
KM SD (logged)	1.176	95% Critical H Value (KM-Log)	2.541
KM Standard Error of Mean (logged)	0.175	95% H-UCL (KM -Log)	0.0486
KM SD (logged)	1.176	95% Critical H Value (KM-Log)	2.541
KM Standard Error of Mean (logged)	0.175		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.106	Mean in Log Scale	-4.115
SD in Original Scale	0.526	SD in Log Scale	1.177
95% t UCL (Assumes normality)	0.23	95% H-Stat UCL	0.0501

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	0.441

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Benzo(a)pyrene (Total Soil 0-10 feet below ground surface)

General Statistics

Total Number of Observations	50	Number of Distinct Observations	11
Number of Detects	11	Number of Non-Detects	39
Number of Distinct Detects	10	Number of Distinct Non-Detects	2
Minimum Detect	0.004	Minimum Non-Detect	0.02
Maximum Detect	3.8	Maximum Non-Detect	0.021
Variance Detects	1.269	Percent Non-Detects	78%
Mean Detects	0.486	SD Detects	1.127
Median Detects	0.073	CV Detects	2.319
Skewness Detects	3.058	Kurtosis Detects	9.605
Mean of Logged Detects	-2.509	SD of Logged Detects	1.955

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.485	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.38	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.251	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.113	KM Standard Error of Mean	0.0803
KM SD	0.541	95% KM (BCA) UCL	0.279
95% KM (t) UCL	0.247	95% KM (Percentile Bootstrap) UCL	0.261
95% KM (z) UCL	0.245	95% KM Bootstrap t UCL	1.205
90% KM Chebyshev UCL	0.354	95% KM Chebyshev UCL	0.463
97.5% KM Chebyshev UCL	0.614	99% KM Chebyshev UCL	0.912

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.877	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.806	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.29	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.273	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.373	k star (bias corrected MLE)	0.332
Theta hat (MLE)	1.304	Theta star (bias corrected MLE)	1.465
nu hat (MLE)	8.196	nu star (bias corrected)	7.294

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Mean (detects)	0.486

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.004	Mean	0.115
Maximum	3.8	Median	0.01
SD	0.546	CV	4.765
k hat (MLE)	0.341	k star (bias corrected MLE)	0.334
Theta hat (MLE)	0.336	Theta star (bias corrected MLE)	0.343
nu hat (MLE)	34.13	nu star (bias corrected)	33.42
Adjusted Level of Significance (β)	0.0452		
Approximate Chi Square Value (33.42, α)	21.2	Adjusted Chi Square Value (33.42, β)	20.91
95% Gamma Approximate UCL (use when n>=50)	0.181	95% Gamma Adjusted UCL (use when n<50)	0.183

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.113	SD (KM)	0.541
Variance (KM)	0.293	SE of Mean (KM)	0.0803
k hat (KM)	0.0434	k star (KM)	0.0542
nu hat (KM)	4.342	nu star (KM)	5.415
theta hat (KM)	2.598	theta star (KM)	2.083
80% gamma percentile (KM)	0.02	90% gamma percentile (KM)	0.19
95% gamma percentile (KM)	0.616	99% gamma percentile (KM)	2.376

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (5.42, α)	1.349	Adjusted Chi Square Value (5.42, β)	1.29
95% Gamma Approximate KM-UCL (use when n>=50)	0.453	95% Gamma Adjusted KM-UCL (use when n<50)	0.473

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.969	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.166	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.251	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.114	Mean in Log Scale	-4.979
SD in Original Scale	0.547	SD in Log Scale	2.13

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

95% t UCL (assumes normality of ROS data)	0.243	95% Percentile Bootstrap UCL	0.263
95% BCA Bootstrap UCL	0.393	95% Bootstrap t UCL	1.232
95% H-UCL (Log ROS)	0.212		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.46	KM Geo Mean	0.0116
KM SD (logged)	1.428	95% Critical H Value (KM-Log)	2.849
KM Standard Error of Mean (logged)	0.339	95% H-UCL (KM -Log)	0.0574
KM SD (logged)	1.428	95% Critical H Value (KM-Log)	2.849
KM Standard Error of Mean (logged)	0.339		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.115	Mean in Log Scale	-4.118
SD in Original Scale	0.546	SD in Log Scale	1.235
95% t UCL (Assumes normality)	0.245	95% H-Stat UCL	0.0553

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 0.0574

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Benzo(b)fluoranthene (Total Soil 0-10 feet below ground surface)

General Statistics

Total Number of Observations	50	Number of Distinct Observations	13
Number of Detects	12	Number of Non-Detects	38
Number of Distinct Detects	11	Number of Distinct Non-Detects	2
Minimum Detect	0.005	Minimum Non-Detect	0.02
Maximum Detect	5.8	Maximum Non-Detect	0.021
Variance Detects	2.727	Percent Non-Detects	76%
Mean Detects	0.666	SD Detects	1.651
Median Detects	0.087	CV Detects	2.481
Skewness Detects	3.233	Kurtosis Detects	10.72

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Mean of Logged Detects	-2.362	SD of Logged Detects	2.023

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.454	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.859	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.392	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.243	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.168	KM Standard Error of Mean	0.122
KM SD	0.824	95% KM (BCA) UCL	0.393
95% KM (t) UCL	0.372	95% KM (Percentile Bootstrap) UCL	0.394
95% KM (z) UCL	0.368	95% KM Bootstrap t UCL	2.035
90% KM Chebyshev UCL	0.533	95% KM Chebyshev UCL	0.698
97.5% KM Chebyshev UCL	0.928	99% KM Chebyshev UCL	1.379

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.978	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.815	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.276	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.264	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.345	k star (bias corrected MLE)	0.314
Theta hat (MLE)	1.93	Theta star (bias corrected MLE)	2.118
nu hat (MLE)	8.277	nu star (bias corrected)	7.541
Mean (detects)	0.666		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.005	Mean	0.167
Maximum	5.8	Median	0.01
SD	0.832	CV	4.972
k hat (MLE)	0.302	k star (bias corrected MLE)	0.297
Theta hat (MLE)	0.554	Theta star (bias corrected MLE)	0.563

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

nu hat (MLE)	30.22	nu star (bias corrected)	29.74
Adjusted Level of Significance (β)	0.0452		
Approximate Chi Square Value (29.74, α)	18.29	Adjusted Chi Square Value (29.74, β)	18.02
95% Gamma Approximate UCL (use when n>=50)	0.272	95% Gamma Adjusted UCL (use when n<50)	0.276

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.168	SD (KM)	0.824
Variance (KM)	0.678	SE of Mean (KM)	0.122
k hat (KM)	0.0415	k star (KM)	0.0524
nu hat (KM)	4.154	nu star (KM)	5.238
theta hat (KM)	4.041	theta star (KM)	3.205
80% gamma percentile (KM)	0.0267	90% gamma percentile (KM)	0.272
95% gamma percentile (KM)	0.907	99% gamma percentile (KM)	3.584

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (5.24, α)	1.264	Adjusted Chi Square Value (5.24, β)	1.208
95% Gamma Approximate KM-UCL (use when n>=50)	0.696	95% Gamma Adjusted KM-UCL (use when n<50)	0.728

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.966	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.859	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.155	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.243	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.17	Mean in Log Scale	-4.493
SD in Original Scale	0.832	SD in Log Scale	2.03
95% t UCL (assumes normality of ROS data)	0.367	95% Percentile Bootstrap UCL	0.396
95% BCA Bootstrap UCL	0.57	95% Bootstrap t UCL	2.233
95% H-UCL (Log ROS)	0.254		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.136	KM Geo Mean	0.016
KM SD (logged)	1.458	95% Critical H Value (KM-Log)	2.888
KM Standard Error of Mean (logged)	0.34	95% H-UCL (KM -Log)	0.0845
KM SD (logged)	1.458	95% Critical H Value (KM-Log)	2.888
KM Standard Error of Mean (logged)	0.34		

DL/2 Statistics

DL/2 Normal **DL/2 Log-Transformed**

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Mean in Original Scale	0.168	Mean in Log Scale	-4.04
SD in Original Scale	0.832	SD in Log Scale	1.352
95% t UCL (Assumes normality)	0.365	95% H-Stat UCL	0.0746

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	0.698

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Benzo(k)fluoranthene (Total Soil 0-10 feet below ground surface)

General Statistics

Total Number of Observations	28	Number of Distinct Observations	10
Number of Detects	8	Number of Non-Detects	20
Number of Distinct Detects	8	Number of Distinct Non-Detects	2
Minimum Detect	0.007	Minimum Non-Detect	0.02
Maximum Detect	1.8	Maximum Non-Detect	0.021
Variance Detects	0.374	Percent Non-Detects	71.43%
Mean Detects	0.334	SD Detects	0.612
Median Detects	0.056	CV Detects	1.831
Skewness Detects	2.51	Kurtosis Detects	6.487
Mean of Logged Detects	-2.388	SD of Logged Detects	1.738

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.6	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.33	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.283	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.1	KM Standard Error of Mean	0.0686
KM SD	0.34	95% KM (BCA) UCL	0.242
95% KM (t) UCL	0.217	95% KM (Percentile Bootstrap) UCL	0.229

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

95% KM (z) UCL	0.213	95% KM Bootstrap t UCL	0.792
90% KM Chebyshev UCL	0.306	95% KM Chebyshev UCL	0.4
97.5% KM Chebyshev UCL	0.529	99% KM Chebyshev UCL	0.783

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.559	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.764	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.281	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.309	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.493	k star (bias corrected MLE)	0.391
Theta hat (MLE)	0.678	Theta star (bias corrected MLE)	0.854
nu hat (MLE)	7.887	nu star (bias corrected)	6.263
Mean (detects)	0.334		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.007	Mean	0.103
Maximum	1.8	Median	0.01
SD	0.345	CV	3.366
k hat (MLE)	0.39	k star (bias corrected MLE)	0.372
Theta hat (MLE)	0.263	Theta star (bias corrected MLE)	0.276
nu hat (MLE)	21.83	nu star (bias corrected)	20.83
Adjusted Level of Significance (β)	0.0404		
Approximate Chi Square Value (20.83, α)	11.46	Adjusted Chi Square Value (20.83, β)	11.03
95% Gamma Approximate UCL (use when n>=50)	0.186	95% Gamma Adjusted UCL (use when n<50)	0.194

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.1	SD (KM)	0.34
Variance (KM)	0.115	SE of Mean (KM)	0.0686
k hat (KM)	0.0874	k star (KM)	0.102
nu hat (KM)	4.896	nu star (KM)	5.704
theta hat (KM)	1.149	theta star (KM)	0.986
80% gamma percentile (KM)	0.0716	90% gamma percentile (KM)	0.269
95% gamma percentile (KM)	0.582	99% gamma percentile (KM)	1.581

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (5.70, α)	1.491	Adjusted Chi Square Value (5.70, β)	1.363
95% Gamma Approximate KM-UCL (use when n>=50)	0.384	95% Gamma Adjusted KM-UCL (use when n<50)	0.421

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.963	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.204	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.1	Mean in Log Scale	-4.918
SD in Original Scale	0.346	SD in Log Scale	2.281
95% t UCL (assumes normality of ROS data)	0.211	95% Percentile Bootstrap UCL	0.222
95% BCA Bootstrap UCL	0.331	95% Bootstrap t UCL	1.536
95% H-UCL (Log ROS)	0.661		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.226	KM Geo Mean	0.0146
KM SD (logged)	1.452	95% Critical H Value (KM-Log)	3.06
KM Standard Error of Mean (logged)	0.293	95% H-UCL (KM -Log)	0.0985
KM SD (logged)	1.452	95% Critical H Value (KM-Log)	3.06
KM Standard Error of Mean (logged)	0.293		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.103	Mean in Log Scale	-3.94
SD in Original Scale	0.345	SD in Log Scale	1.335
95% t UCL (Assumes normality)	0.214	95% H-Stat UCL	0.0998

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

ımma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1) 0.421

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Chrysene (Total Soil 0-10 feet below ground surface)

General Statistics

Total Number of Observations	28	Number of Distinct Observations	11
Number of Detects	9	Number of Non-Detects	19
Number of Distinct Detects	9	Number of Distinct Non-Detects	2
Minimum Detect	0.005	Minimum Non-Detect	0.02
Maximum Detect	3.5	Maximum Non-Detect	0.021
Variance Detects	1.286	Percent Non-Detects	67.86%
Mean Detects	0.502	SD Detects	1.134
Median Detects	0.088	CV Detects	2.259
Skewness Detects	2.908	Kurtosis Detects	8.565
Mean of Logged Detects	-2.325	SD of Logged Detects	1.893

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.49	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.397	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.168	KM Standard Error of Mean	0.13
KM SD	0.648	95% KM (BCA) UCL	0.427
95% KM (t) UCL	0.39	95% KM (Percentile Bootstrap) UCL	0.41
95% KM (z) UCL	0.382	95% KM Bootstrap t UCL	2.262
90% KM Chebyshev UCL	0.558	95% KM Chebyshev UCL	0.735
97.5% KM Chebyshev UCL	0.98	99% KM Chebyshev UCL	1.461

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.759	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.789	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.28	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.298	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

k hat (MLE)	0.402	k star (bias corrected MLE)	0.342
Theta hat (MLE)	1.249	Theta star (bias corrected MLE)	1.468
nu hat (MLE)	7.235	nu star (bias corrected)	6.156
Mean (detects)	0.502		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.005	Mean	0.168
Maximum	3.5	Median	0.01
SD	0.66	CV	3.925
k hat (MLE)	0.326	k star (bias corrected MLE)	0.315
Theta hat (MLE)	0.516	Theta star (bias corrected MLE)	0.535
nu hat (MLE)	18.24	nu star (bias corrected)	17.62
Adjusted Level of Significance (β)	0.0404		
Approximate Chi Square Value (17.62, α)	9.114	Adjusted Chi Square Value (17.62, β)	8.736
95% Gamma Approximate UCL (use when n>=50)	0.325	95% Gamma Adjusted UCL (use when n<50)	0.339

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.168	SD (KM)	0.648
Variance (KM)	0.42	SE of Mean (KM)	0.13
k hat (KM)	0.0676	k star (KM)	0.0842
nu hat (KM)	3.785	nu star (KM)	4.713
theta hat (KM)	2.493	theta star (KM)	2.002
80% gamma percentile (KM)	0.0882	90% gamma percentile (KM)	0.412
95% gamma percentile (KM)	0.981	99% gamma percentile (KM)	2.913

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (4.71, α)	1.022	Adjusted Chi Square Value (4.71, β)	0.922
95% Gamma Approximate KM-UCL (use when n>=50)	0.777	95% Gamma Adjusted KM-UCL (use when n<50)	0.861

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.97	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.179	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.169	Mean in Log Scale	-4.29
SD in Original Scale	0.66	SD in Log Scale	2.096
95% t UCL (assumes normality of ROS data)	0.382	95% Percentile Bootstrap UCL	0.414
95% BCA Bootstrap UCL	0.649	95% Bootstrap t UCL	2.326
95% H-UCL (Log ROS)	0.629		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.948	KM Geo Mean	0.0193
KM SD (logged)	1.581	95% Critical H Value (KM-Log)	3.249
KM Standard Error of Mean (logged)	0.444	95% H-UCL (KM -Log)	0.181
KM SD (logged)	1.581	95% Critical H Value (KM-Log)	3.249
KM Standard Error of Mean (logged)	0.444		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.168	Mean in Log Scale	-3.841
SD in Original Scale	0.66	SD in Log Scale	1.48
95% t UCL (Assumes normality)	0.381	95% H-Stat UCL	0.155

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

ımma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1) 0.861

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Dibenz(a,h)anthracene (Total Soil 0-10 feet below ground surface)

General Statistics

Total Number of Observations	50	Number of Distinct Observations	10
Number of Detects	6	Number of Non-Detects	44
Number of Distinct Detects	6	Number of Distinct Non-Detects	4
Minimum Detect	0.004	Minimum Non-Detect	0.02
Maximum Detect	0.89	Maximum Non-Detect	0.1

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Variance Detects	0.119	Percent Non-Detects	88%
Mean Detects	0.203	SD Detects	0.345
Median Detects	0.0535	CV Detects	1.698
Skewness Detects	2.195	Kurtosis Detects	4.92
Mean of Logged Detects	-3.026	SD of Logged Detects	2.027

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.669	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.326	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0302	KM Standard Error of Mean	0.0197
KM SD	0.127	95% KM (BCA) UCL	0.076
95% KM (t) UCL	0.0633	95% KM (Percentile Bootstrap) UCL	0.0665
95% KM (z) UCL	0.0626	95% KM Bootstrap t UCL	0.199
90% KM Chebyshev UCL	0.0893	95% KM Chebyshev UCL	0.116
97.5% KM Chebyshev UCL	0.153	99% KM Chebyshev UCL	0.226

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.308	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.743	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.209	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.351	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.45	k star (bias corrected MLE)	0.336
Theta hat (MLE)	0.451	Theta star (bias corrected MLE)	0.605
nu hat (MLE)	5.405	nu star (bias corrected)	4.036
Mean (detects)	0.203		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.004	Mean	0.0394

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Maximum	0.89	Median	0.01
SD	0.128	CV	3.244
k hat (MLE)	0.62	k star (bias corrected MLE)	0.597
Theta hat (MLE)	0.0635	Theta star (bias corrected MLE)	0.0661
nu hat (MLE)	62.05	nu star (bias corrected)	59.66
Adjusted Level of Significance (β)	0.0452		
Approximate Chi Square Value (59.66, α)	42.9	Adjusted Chi Square Value (59.66, β)	42.47
95% Gamma Approximate UCL (use when n>=50)	0.0548	95% Gamma Adjusted UCL (use when n<50)	0.0554

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0302	SD (KM)	0.127
Variance (KM)	0.016	SE of Mean (KM)	0.0197
k hat (KM)	0.0571	k star (KM)	0.067
nu hat (KM)	5.712	nu star (KM)	6.702
theta hat (KM)	0.53	theta star (KM)	0.451
80% gamma percentile (KM)	0.00977	90% gamma percentile (KM)	0.063
95% gamma percentile (KM)	0.173	99% gamma percentile (KM)	0.581

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (6.70, α)	2.009	Adjusted Chi Square Value (6.70, β)	1.934
95% Gamma Approximate KM-UCL (use when n>=50)	0.101	95% Gamma Adjusted KM-UCL (use when n<50)	0.105

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.974	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.144	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0332	Mean in Log Scale	-5.065
SD in Original Scale	0.128	SD in Log Scale	1.606
95% t UCL (assumes normality of ROS data)	0.0634	95% Percentile Bootstrap UCL	0.0687
95% BCA Bootstrap UCL	0.0984	95% Bootstrap t UCL	0.231
95% H-UCL (Log ROS)	0.0465		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.86	KM Geo Mean	0.00775
KM SD (logged)	1.012	95% Critical H Value (KM-Log)	2.357
KM Standard Error of Mean (logged)	0.323	95% H-UCL (KM -Log)	0.0182
KM SD (logged)	1.012	95% Critical H Value (KM-Log)	2.357

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

KM Standard Error of Mean (logged)	0.323

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.0359	Mean in Log Scale	-4.292
SD in Original Scale	0.127	SD in Log Scale	0.885
95% t UCL (Assumes normality)	0.066	95% H-Stat UCL	0.0268

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	0.101

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Indeno(1,2,3-cd)pyrene (Total Soil 0-10 feet below ground surface)

General Statistics

Total Number of Observations	50	Number of Distinct Observations	13
Number of Detects	11	Number of Non-Detects	39
Number of Distinct Detects	11	Number of Distinct Non-Detects	2
Minimum Detect	0.006	Minimum Non-Detect	0.02
Maximum Detect	2.7	Maximum Non-Detect	0.021
Variance Detects	0.638	Percent Non-Detects	78%
Mean Detects	0.347	SD Detects	0.799
Median Detects	0.051	CV Detects	2.305
Skewness Detects	3.07	Kurtosis Detects	9.689
Mean of Logged Detects	-2.757	SD of Logged Detects	1.838

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.485	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.365	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.251	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0833	KM Standard Error of Mean	0.0569
KM SD	0.384	95% KM (BCA) UCL	0.197
95% KM (t) UCL	0.179	95% KM (Percentile Bootstrap) UCL	0.194
95% KM (z) UCL	0.177	95% KM Bootstrap t UCL	1.454
90% KM Chebyshev UCL	0.254	95% KM Chebyshev UCL	0.331
97.5% KM Chebyshev UCL	0.439	99% KM Chebyshev UCL	0.65

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.015	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.803	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.327	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.273	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.389	k star (bias corrected MLE)	0.344
Theta hat (MLE)	0.89	Theta star (bias corrected MLE)	1.008
nu hat (MLE)	8.566	nu star (bias corrected)	7.563
Mean (detects)	0.347		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.006	Mean	0.0846
Maximum	2.7	Median	0.01
SD	0.387	CV	4.578
k hat (MLE)	0.388	k star (bias corrected MLE)	0.378
Theta hat (MLE)	0.218	Theta star (bias corrected MLE)	0.224
nu hat (MLE)	38.84	nu star (bias corrected)	37.84
Adjusted Level of Significance (β)	0.0452		
Approximate Chi Square Value (37.84, α)	24.76	Adjusted Chi Square Value (37.84, β)	24.44
95% Gamma Approximate UCL (use when n>=50)	0.129	95% Gamma Adjusted UCL (use when n<50)	0.131

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0833	SD (KM)	0.384
Variance (KM)	0.147	SE of Mean (KM)	0.0569
k hat (KM)	0.0471	k star (KM)	0.0576

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

nu hat (KM)	4.711	nu star (KM)	5.762
theta hat (KM)	1.767	theta star (KM)	1.445
80% gamma percentile (KM)	0.0179	90% gamma percentile (KM)	0.15
95% gamma percentile (KM)	0.462	99% gamma percentile (KM)	1.709

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (5.76, α)	1.519	Adjusted Chi Square Value (5.76, β)	1.456
95% Gamma Approximate KM-UCL (use when n>=50)	0.316	95% Gamma Adjusted KM-UCL (use when n<50)	0.329

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.932	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.219	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.251	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0856	Mean in Log Scale	-4.58
SD in Original Scale	0.387	SD in Log Scale	1.724
95% t UCL (assumes normality of ROS data)	0.177	95% Percentile Bootstrap UCL	0.19
95% BCA Bootstrap UCL	0.258	95% Bootstrap t UCL	1.458
95% H-UCL (Log ROS)	0.101		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.311	KM Geo Mean	0.0134
KM SD (logged)	1.192	95% Critical H Value (KM-Log)	2.559
KM Standard Error of Mean (logged)	0.225	95% H-UCL (KM -Log)	0.0422
KM SD (logged)	1.192	95% Critical H Value (KM-Log)	2.559
KM Standard Error of Mean (logged)	0.225		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.0843	Mean in Log Scale	-4.172
SD in Original Scale	0.387	SD in Log Scale	1.125
95% t UCL (Assumes normality)	0.176	95% H-Stat UCL	0.0433

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

KM H-UCL 0.0422

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Biphenyl (Surface Soil 0-2 feet below ground surface)

General Statistics

Total Number of Observations	16	Number of Distinct Observations	10
Number of Detects	6	Number of Non-Detects	10
Number of Distinct Detects	6	Number of Distinct Non-Detects	5
Minimum Detect	0.025	Minimum Non-Detect	0.037
Maximum Detect	73	Maximum Non-Detect	0.37
Variance Detects	881.9	Percent Non-Detects	62.5%
Mean Detects	12.38	SD Detects	29.7
Median Detects	0.285	CV Detects	2.398
Skewness Detects	2.449	Kurtosis Detects	5.999
Mean of Logged Detects	-0.977	SD of Logged Detects	2.901

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.504	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.487	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	4.663	KM Standard Error of Mean	4.832
KM SD	17.65	95% KM (BCA) UCL	13.79
95% KM (t) UCL	13.13	95% KM (Percentile Bootstrap) UCL	13.76
95% KM (z) UCL	12.61	95% KM Bootstrap t UCL	806.7
90% KM Chebyshev UCL	19.16	95% KM Chebyshev UCL	25.73
97.5% KM Chebyshev UCL	34.84	99% KM Chebyshev UCL	52.74

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.915	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.799	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.405	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.364	Detected Data Not Gamma Distributed at 5% Significance Level

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.209	k star (bias corrected MLE)	0.216
Theta hat (MLE)	59.2	Theta star (bias corrected MLE)	57.41
nu hat (MLE)	2.51	nu star (bias corrected)	2.588
Mean (detects)	12.38		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	4.65
Maximum	73	Median	0.01
SD	18.23	CV	3.92
k hat (MLE)	0.159	k star (bias corrected MLE)	0.171
Theta hat (MLE)	29.19	Theta star (bias corrected MLE)	27.18
nu hat (MLE)	5.098	nu star (bias corrected)	5.476
Adjusted Level of Significance (β)	0.0335		
Approximate Chi Square Value (5.48, α)	1.378	Adjusted Chi Square Value (5.48, β)	1.16
95% Gamma Approximate UCL (use when n>=50)	18.48	95% Gamma Adjusted UCL (use when n<50)	21.95

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	4.663	SD (KM)	17.65
Variance (KM)	311.4	SE of Mean (KM)	4.832
k hat (KM)	0.0698	k star (KM)	0.0984
nu hat (KM)	2.234	nu star (KM)	3.149
theta hat (KM)	66.78	theta star (KM)	47.39
80% gamma percentile (KM)	3.159	90% gamma percentile (KM)	12.33
95% gamma percentile (KM)	27.09	99% gamma percentile (KM)	74.66

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (3.15, α)	0.418	Adjusted Chi Square Value (3.15, β)	0.328
95% Gamma Approximate KM-UCL (use when n>=50)	35.14	95% Gamma Adjusted KM-UCL (use when n<50)	44.78

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.87	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Lilliefors Test Statistic	0.253	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	4.665	Mean in Log Scale	-2.803
SD in Original Scale	18.22	SD in Log Scale	2.4
95% t UCL (assumes normality of ROS data)	12.65	95% Percentile Bootstrap UCL	13.77
95% BCA Bootstrap UCL	18.39	95% Bootstrap t UCL	940.3
95% H-UCL (Log ROS)	27.74		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-2.594	KM Geo Mean	0.0747
KM SD (logged)	2.056	95% Critical H Value (KM-Log)	4.576
KM Standard Error of Mean (logged)	0.567	95% H-UCL (KM -Log)	7.02
KM SD (logged)	2.056	95% Critical H Value (KM-Log)	4.576
KM Standard Error of Mean (logged)	0.567		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	4.667	Mean in Log Scale	-2.682
SD in Original Scale	18.22	SD in Log Scale	2.229
95% t UCL (Assumes normality)	12.65	95% H-Stat UCL	13.83

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL	52.74

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Biphenyl (Total Soil 0-10 feet below ground surface)

General Statistics

Total Number of Observations	50	Number of Distinct Observations	15
Number of Detects	10	Number of Non-Detects	40

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Number of Distinct Detects	10	Number of Distinct Non-Detects	6
Minimum Detect	0.025	Minimum Non-Detect	0.037
Maximum Detect	110	Maximum Non-Detect	0.37
Variance Detects	1532	Percent Non-Detects	80%
Mean Detects	19.14	SD Detects	39.14
Median Detects	1.09	CV Detects	2.045
Skewness Detects	1.989	Kurtosis Detects	2.865
Mean of Logged Detects	0.117	SD of Logged Detects	2.83

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.563	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.452	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3.851	KM Standard Error of Mean	2.725
KM SD	18.28	95% KM (BCA) UCL	8.969
95% KM (t) UCL	8.419	95% KM (Percentile Bootstrap) UCL	8.305
95% KM (z) UCL	8.333	95% KM Bootstrap t UCL	119.9
90% KM Chebyshev UCL	12.03	95% KM Chebyshev UCL	15.73
97.5% KM Chebyshev UCL	20.87	99% KM Chebyshev UCL	30.96

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.827	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.834	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.285	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.291	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.25	k star (bias corrected MLE)	0.242
Theta hat (MLE)	76.42	Theta star (bias corrected MLE)	79.1
nu hat (MLE)	5.009	nu star (bias corrected)	4.84
Mean (detects)	19.14		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	3.836
Maximum	110	Median	0.01
SD	18.47	CV	4.814
k hat (MLE)	0.153	k star (bias corrected MLE)	0.157
Theta hat (MLE)	25.06	Theta star (bias corrected MLE)	24.4
nu hat (MLE)	15.31	nu star (bias corrected)	15.72
Adjusted Level of Significance (β)	0.0452		
Approximate Chi Square Value (15.72, α)	7.768	Adjusted Chi Square Value (15.72, β)	7.602
95% Gamma Approximate UCL (use when n>=50)	7.765	95% Gamma Adjusted UCL (use when n<50)	7.935

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3.851	SD (KM)	18.28
Variance (KM)	334.2	SE of Mean (KM)	2.725
k hat (KM)	0.0444	k star (KM)	0.055
nu hat (KM)	4.437	nu star (KM)	5.504
theta hat (KM)	86.78	theta star (KM)	69.96
80% gamma percentile (KM)	0.719	90% gamma percentile (KM)	6.607
95% gamma percentile (KM)	21.12	99% gamma percentile (KM)	80.56

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (5.50, α)	1.392	Adjusted Chi Square Value (5.50, β)	1.332
95% Gamma Approximate KM-UCL (use when n>=50)	15.23	95% Gamma Adjusted KM-UCL (use when n<50)	15.91

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.939	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.134	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.873	Mean in Log Scale	-3.413
SD in Original Scale	18.46	SD in Log Scale	2.812
95% t UCL (assumes normality of ROS data)	8.251	95% Percentile Bootstrap UCL	8.336
95% BCA Bootstrap UCL	10.52	95% Bootstrap t UCL	124.5
95% H-UCL (Log ROS)	11.8		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-2.841	KM Geo Mean	0.0584

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

KM SD (logged)	1.908	95% Critical H Value (KM-Log)	3.491
KM Standard Error of Mean (logged)	0.292	95% H-UCL (KM -Log)	0.932
KM SD (logged)	1.908	95% Critical H Value (KM-Log)	3.491
KM Standard Error of Mean (logged)	0.292		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	3.848	Mean in Log Scale	-3.055
SD in Original Scale	18.47	SD in Log Scale	2.033
95% t UCL (Assumes normality)	8.226	95% H-Stat UCL	1.081

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL 15.23

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Arsenic (Surface Soil 0-2 feet below ground surface)

General Statistics

Total Number of Observations	9	Number of Distinct Observations	9
		Number of Missing Observations	0
Minimum	6.57	Mean	10.52
Maximum	15.7	Median	11.3
SD	3.139	Std. Error of Mean	1.046
Coefficient of Variation	0.298	Skewness	0.0861

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.936	**Shapiro Wilk GOF Test**

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

5% Shapiro Wilk Critical Value	0.829	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.166	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	12.47	95% Adjusted-CLT UCL (Chen-1995)	12.28
		95% Modified-t UCL (Johnson-1978)	12.47

Gamma GOF Test

A-D Test Statistic	0.379	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.722	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.191	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.279	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	12.04	k star (bias corrected MLE)	8.103
Theta hat (MLE)	0.874	Theta star (bias corrected MLE)	1.299
nu hat (MLE)	216.8	nu star (bias corrected)	145.9
MLE Mean (bias corrected)	10.52	MLE Sd (bias corrected)	3.697
		Approximate Chi Square Value (0.05)	118.9
Adjusted Level of Significance	0.0231	Adjusted Chi Square Value	113.8

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	12.9	95% Adjusted Gamma UCL (use when n<50)	13.49

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.914	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.829	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.197	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.274	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.883	Mean of logged Data	2.312
Maximum of Logged Data	2.754	SD of logged Data	0.313

Assuming Lognormal Distribution

95% H-UCL	13.26	90% Chebyshev (MVUE) UCL	13.86

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

95% Chebyshev (MVUE) UCL	15.36	97.5% Chebyshev (MVUE) UCL	17.45
99% Chebyshev (MVUE) UCL	21.55		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	12.24	95% Jackknife UCL	12.47
95% Standard Bootstrap UCL	12.15	95% Bootstrap-t UCL	12.43
95% Hall's Bootstrap UCL	12.34	95% Percentile Bootstrap UCL	12.12
95% BCA Bootstrap UCL	12.08		
90% Chebyshev(Mean, Sd) UCL	13.66	95% Chebyshev(Mean, Sd) UCL	15.08
97.5% Chebyshev(Mean, Sd) UCL	17.06	99% Chebyshev(Mean, Sd) UCL	20.94

Suggested UCL to Use

95% Student's-t UCL 12.47

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Arsenic (Total Soil 0-10 feet below ground surface)

General Statistics

Total Number of Observations	28	Number of Distinct Observations	25
		Number of Missing Observations	0
Minimum	6.57	Mean	12.08
Maximum	17.3	Median	12.3
SD	2.659	Std. Error of Mean	0.502
Coefficient of Variation	0.22	Skewness	-0.364

Normal GOF Test

Shapiro Wilk Test Statistic	0.972	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.924	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.074	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.164	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	12.94	95% Adjusted-CLT UCL (Chen-1995)	12.87
		95% Modified-t UCL (Johnson-1978)	12.93

Gamma GOF Test

A-D Test Statistic	0.486	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.745	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.094	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.165	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	19.08	k star (bias corrected MLE)	17.06
Theta hat (MLE)	0.633	Theta star (bias corrected MLE)	0.708
nu hat (MLE)	1069	nu star (bias corrected)	955.5
MLE Mean (bias corrected)	12.08	MLE Sd (bias corrected)	2.925
		Approximate Chi Square Value (0.05)	884.7
Adjusted Level of Significance	0.0404	Adjusted Chi Square Value	880.5

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	13.05	95% Adjusted Gamma UCL (use when n<50)	13.11

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.922	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.924	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.112	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.164	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.883	Mean of logged Data	2.465
Maximum of Logged Data	2.851	SD of logged Data	0.243

Assuming Lognormal Distribution

95% H-UCL	13.16	90% Chebyshev (MVUE) UCL	13.79
95% Chebyshev (MVUE) UCL	14.55	97.5% Chebyshev (MVUE) UCL	15.61
99% Chebyshev (MVUE) UCL	17.69		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Table 4. ProUCL Output for Surface Soil (0-2 ft bgs) and Total Soil (0-10 bgs)

Phase 3 Remedial Investigation Report, Dow Hanging Rock, Ironton, Ohio

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/21/2018 11:30:22 AM
From File	PAHINPUTSSTOT_08212018.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

All units are milligrams per kilogram.

Nonparametric Distribution Free UCLs

95% CLT UCL	12.91	95% Jackknife UCL	12.94
95% Standard Bootstrap UCL	12.88	95% Bootstrap-t UCL	12.91
95% Hall's Bootstrap UCL	12.88	95% Percentile Bootstrap UCL	12.9
95% BCA Bootstrap UCL	12.87		
90% Chebyshev(Mean, Sd) UCL	13.59	95% Chebyshev(Mean, Sd) UCL	14.27
97.5% Chebyshev(Mean, Sd) UCL	15.22	99% Chebyshev(Mean, Sd) UCL	17.08

Suggested UCL to Use

95% Student's-t UCL 12.94

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.