CAPITAL ENVIRONMENTAL RISK TRANSFER ALLIANCE

April 15, 2019

Remediation and Reuse Branch
Land and Chemicals Division
U.S. Environmental Protection Agency, Region 5
77 West Jackson Boulevard, LU-9J Chicago, IL 60604

Attention: Ms. Jean Greensley
Corrective Action Section

Subject: Progress Report, Fourth Quarter 2018 and First Quarter 2019
CERTA Vandalia LLC
250 Northwoods Blvd.
Vandalia, Ohio U.S.
EPA ID #OH0 000 048 454

Dear Ms. Greensley:

This submittal constitutes the progress report for work completed during the Fourth Quarter 2018 and First Quarter 2019, related to the above-referenced facility. As you are aware, CERTA Vandalia LLC (CERTA) purchased the facility on September 8, 2017 and signed a new Administrative Order on Consent (RCRA Docket Number RCRA-05-2017-0023) on September 22, 2017, for continuation of ongoing remediation activities. CERTA continued operating the groundwater migration control system and the existing remediation project at the facility during this reporting period.

August of 2018 was the last month that Tetra Tech was responsible for data collection and site management at the Site. Effective September 1st, 2018, The Institute of Ecolonomics (IOE) is responsible for environmental site management and for submitting this report.

Work Performed The fourth Quarter 2018 (October 1 - December 31, 2019) and first Quarter 2019 (January 1 - March 31, 2019):

- Surface water samples from two (2) locations along the unnamed tributary of North Creek were collected and analyzed during the Fourth Quarter 2018 and First Quarter of 2019 (**Table 2**).
- Conducted six (6) rounds of Deep Bedrock (Sugar Rock) and Intermediate Bedrock water level measurements; two (2) rounds of Top-of-Rock water level measurements; and two (2) rounds of Overburden water level measurements (**Attachment A**).
- All of these water level measurements were converted into potentiometric maps for the site that can be used to assess the effectiveness of the groundwater migration control system (**Figures 2-15**)
- Collected and analyzed monthly samples from groundwater migration control system monitoring points, including Deep Bedrock and Overburden (Water Table/First Sand and Second Sand) influent streams prior to treatment, and treated groundwater effluent for compliance with the Ohio Environmental Protection Agency (Ohio EPA) National Pollutant Discharge Elimination System (NPDES) permit (No. 1IC00045*ID) **(Table 3)**.
- Collected surface water samples from the Sugar Rock Aquifer springs on March 22 and March 28, 2019. There were eight different springs that were sampled. Three of the eight springs sampled had measurable levels of TCE (**Figure 16 and Table 3**).

- Groundwater samples were obtained from the groundwater sources that have been historically sampled through the years. These samples were collected on two different sampling efforts, both taking place in Q1 of 2019. These results are presented in **Figures 17-21 and Table 4.**
- Completed a semi-annual inspection of all PCB containing transformers at the Site in March, 2019 (**Attachment G**). No leaking, spillage, or other condition of concern was observed in the inspection.
- Completed and received approval of the Delegation of Authority Form in October 2018, authorizing IOE to submit monthly discharge monitoring reports using the Ohio EPA e-DMR system on behalf of CERTA.
- Sampled a private potable water well located at 10440 Cassel Road on October 17, 2018, as part of the ongoing semi-annual monitoring at this residence, and transmitted results to the property owner. Analytical results showed no detections of constituents of concern.
- Continued to operate the groundwater migration control system (the system). Second and Third Quarters of 2018 monthly discharge reports, system activity logs, site inspection checklists, and system shutdown reports are included in **Attachments B-E**, respectively. The system was online and operational for 89% of the time during this semi-annual period.
- Continued to successfully use the EOS Research Ltd. (EOS) ProControl Unit and the EOS cellular data modem kit in the groundwater migration control system building which was installed in November 2017. Also continued to use the ProView software for improved remote access to the system through WIFI network.
- Installed a Sub-Slab Depressurization System and initiated its operation in April 2018. The system was constructed by the Environmental Doctor Co. using the construction plans developed by Tetra Tech with modifications suggested by USEPA. The system has been operating continuously since its installation.
- Submitted a Proposal to USEPA on September 4, 2018 to conduct an extensive analysis of real time indoor air status over a 4 day period under “worst case” conditions where we are creating indoor conditions that involve negative pressure conditions in the buildings (**Attachment I**). The goal of this study is to see how effectively the SSDS system is performing and if indoor air constituents (TCE specifically) are at safe and acceptable levels to receive a letter from USEPA giving affirmation of the safe indoor air status in the Buildings.
- USEPA approved our plan for conducting this indoor air study in December, 2018, with several additional conditions which CERTA agreed to follow (**Attachment I**).The field work for this project was conducted in January, 2019. We are currently completing interpretation of the data from this project and will have a report completed and submitted in Second Quarter, 2019.
- Repaired the GAC pump (which transfers treated effluent from the air stripper) in October 2018, due to scaling.
- As indicated in the previous semi-annual progress reports dated October 15, 2017, and April 13, 2018, efforts to secure an access agreement with Spears property management have not been successful. Access for monitoring on this property is provided through the Environmental Covenant recorded March 11, 2008, and access continues to be granted verbally by the property owner for each routine monitoring event. The 2016 3-year Assessment Report completed by Haley & Aldrich (H&A), indicated that the last three years of monitoring data in upgradient monitoring well MW-730 showing that volatile organic compound (VOC) concentrations returned to near detection levels. Based on this data, H&A recommended that the formerly proposed monitoring well on the Spears property (referenced as Well A in the 2013 3-year Assessment Report) not be installed. Groundwater sample data collected from upgradient overburden monitoring well MW-730 in December 2016 and July 2017, continue to show only low near-detection level concentrations of the constituents of concern.
- Data continued to be collected regarding Top-of-Rock water levels to evaluate changes in Top-of-Rock groundwater flow patterns, along with TCE concentrations detected in the unnamed tributary to North Creek. This data will continue to be monitored as part of an on-going evaluation of long-term trends.

Data Collected

- VOC Analytical results for surface water samples collected at the unnamed tributary to North Creek are provided in **Table 2**.
- Surface water TCE results from the unnamed tributary of North Creek are illustrated on **Figure 1**.
- Surface water samples results from the Sugar Rock Aquifer Springs are presented on **Figure 16 and Table 3.**
- Groundwater samples collected in sampling rounds in the Fourth quarter 2018 and first Quarter of 2019 are presented in **Figure 17-21 and Table 4.**

- Analytical results for monthly groundwater migration control system samples are presented in **Table 5**. No exceedances of any constituents were identified in any of the monthly sampling and analyses.
- As mentioned in the previous Section, the field work for the Indoor Air Project was conducted during January, 2019. We are currently working on compiling and interpreting the large amount of data collected during that project. A report will be submitted to USEPA in second quarter, 2019. Preliminary indications are excellent for indoor air quality at the Site.
- **Attachment K** contains all of the laboratory reports comprising **Tables 2-5**, and **Figures 16-21** which summarize the analytical reports for groundwater well, spring, surface water, and groundwater treatment building samples.

Performance Evaluation and Problems Encountered

- The groundwater migration control system was operational for approximately 89% of the Fourth Quarter 2018 and First Quarter of 2019. System downtime was entirely related to maintenance issues including:
    - troubleshooting of system components;
    - failure of the GAC pump;
    - routine GAC pump system resets after precipitation events;
    - routine changes of the sock filters to remove sediment from the system.
- Other than the routine maintenance outages noted above, the system has performed exceptionally through the time of publishing of this report.
- The overburden migration control well ceased operating in late February, 2019. We decided to delay its replacement until after we had acquired our first quarter groundwater well levels, spring samples, surface water samples from the unnamed tributary of North Creek, and groundwater well samples. We have now scheduled the replacement for that failed well that will occur early in the second quarter, 2019.
- DNAPL recovery wells were inspected for the presence of DNAPL in both Q4, 2018 and Q1, 2019. Based on bailer checks, no wells contained visible DNAPL during these two quarters.
- As reported in several previous semi-annual reports, a new planned overburden monitoring well, identified in the sampling schedule as Well A, has not yet been installed as mentioned above. Installation of this well, planned on the Spears property north of Northwoods Boulevard, had been delayed pending finalization of an access agreement with the property owner. The previous three years of monitoring data presented in the 2016 3-year Assessment Report for upgradient monitoring well MW-730, indicated that VOC concentrations have been trending near non-detect levels. Based on this data, it is recommended that the new well on the Spears property not be installed. Concentrations of VOCs have continued to be observed at only low near-detection levels or non-detect levels during the ongoing sampling efforts.
- Intermittent elevated VOC concentrations have been observed in surface water samples collected from the unnamed tributary to North Creek. In the previous Semi-Annual Report (April 2018) it was reported that there has been a generally increasing trend in VOC concentrations in this tributary stream. At this time, IOE is skeptical about drawing that conclusion, and is currently studying that trend in more detail.
- Levels of TCE and other VOC's in the Sugar Rock Springs continue to be higher than we would like to see them. We believe this contamination can be eliminated through the installation and operation of a much more aggressive groundwater remediation system for the Site. We will be proposing such an effort to USEPA in the near future.
- Similar to the springs data above, levels of measurable VOC's in groundwater samples taken during March, 2019 remain higher than they might be if a much more aggressive groundwater remediation program was conducted. Again we will be proposing such an effort soon.

U.S. Environmental Protection Agency, Region 5
April 15, 2019

Project Schedule

A project schedule is included in **Attachment G**. We are also currently working to update this schedule to be more relevant moving forward. If you have any questions or require additional information please contact me at (513) 659-8453.

Sincerely,

Kris Bamberger
Principal
CERTA Vandalia LLC
kbamberger@fuse.net

Enclosures:

Tables

1 Schedule of Groundwater Sampling / Water Level Measurements
2 Fourth Quarter 2018 and First Quarter 2019 Analytical Results, Surface Water Sample Results from the Unnamed Tributary of North Creek.
3 Fourth Quarter 2018 and First Quarter 2019 Analytical Results, Surface Water Sample Results
4 Fourth Quarter 2018 and First Quarter 2019 Analytical Results, Overburden and Bedrock Monitoring Well Sample Results.
5 Fourth Quarter 2018 and First Quarter 2019 Performance Monitoring Analytical Data, Groundwater Migration Control System

Figures

1 Fourth Quarter 2018 and First Quarter 2019 Surface Water Sampling Locations on the Unnamed Tributary to North Creek and TCE Results
2 Potentiometric Surface Contours, Shallow Water Table Zone, 3 Oct, 2018
3 Potentiometric Surface Contours, Shallow Water Table Zone, 19 March, 2019
4 Potentiometric Surface Contours, First Sand Zone, 3 Oct, 2018
5 Potentiometric Surface Contours, First Sand Zone, 19 March, 2019
6 Potentiometric Surface Contours, Second Sand Zone, 3 Oct, 2018
7 Potentiometric Surface Contours, Second Sand Zone, 19 March, 2019
8 Potentiometric Surface Contours, Top of Bedrock Zone, 14 Nov, 2018
9 Potentiometric Surface Contours, Top of Bedrock Zone, 19 Mar, 2019
10 Potentiometric Surface Contours, Deep Bedrock, 19 Oct, 2018
11 Potentiometric Surface Contours, Deep Bedrock, 14 Nov, 2018
12 Potentiometric Surface Contours, Deep Bedrock, 13 Dec, 2018
13 Potentiometric Surface Contours, Deep Bedrock, 5 Jan, 2019
14 Potentiometric Surface Contours, Deep Bedrock, 28 Feb, 2019
15 Potentiometric Surface Contours, Deep Bedrock, 19 Mar, 2019
16 Fourth Quarter 2018 Fall Sampling Locations and Measurable VOC Results
17 Fourth Quarter 2018 and First Quarter 2019 Groundwater Well Sampling - Sugar Rock & Middle Brassfield Wells and VOC Results
18 Fourth Quarter 2018 and First Quarter 2019 Groundwater Well Sampling - Top of Rock Wells and VOC Results
19 Fourth Quarter 2018 and First Quarter 2019 Groundwater Well Sampling - Shallow Water Table Wells and VOC Results
20 Fourth Quarter 2018 and First Quarter 2019 Groundwater Well Sampling - First Sand Zone and VOC Results
21 Fourth Quarter 2018 and First Quarter 2019 Groundwater Well Sampling - Second Sand Zone and VOC Results

Attachments

A Water Level Measurements
B Groundwater Migration Control System Monthly Discharge Reports
C Groundwater Migration Control System Activity Log
D Groundwater Migration Control System Inspection Checklists
E Bedrock Groundwater Migration Control System Shutdown Reports
F Project Schedule
G PCB Containing Transformer Inspection March 2019
H Approved Realtime Indoor Air Sampling Plan Submitted to USEPA, September 4, 2018
I Approval of Real Time Indoor Air Sampling + Conditions from USEPA
J Data Usability Summary Reports
K Analytical Reports For Groundwater Well, Spring, Surface Water, and Groundwater Treatment Building Samples

Tables

TABLE 1

2018-2019 GROUND WATER SAMPLING/ WATER LEVEL MEASUREMENTS

CERTA VANDALIA LLC - VANDALIA, OHIO

Well ID	Unit	Frequency	Q4-2018	Q1-2019	Q2-2019	Q3-2019
CSX-18D	SR	15 months				
MW-402D	SR	15 months				
MW-411D	SR	15 months				
MW-412D	SR	15 months				
MW-413D	SR	9 months				
MW-416D	SR	9 months				
MW-417D	SR	9 months		x		
MW-418D	SR	9 months		x		
MW-420M	MB	9 months		x		
MW-420D	SR	9 months		x		
MW-424D	SR	15 months				
MW-434D	SR	15 months				
MW-435D	SR	15 months				
MW-444D	SR	15 months				
MW-453D	SR	15 months				
MW-301S	TOR	15 months				
MW-415S	TOR	15 months				
MW-425S	TOR	9 Months		x		
MW-426S	TOR	15 months				
MW-445S	TOR	15 months				
MW-446S	TOR	15 months				
MW-784	WT	15 months				
MW-806	WT	9 Months		x		
MW-810	WT	9 months		x		
MW-607	WT/S1	9 months		x		
MW-729	WT/S1	15 months				
MW-734	WT/S1	15 months				
MW-775	WT/S1	9 Months		x		
MW-793	WT/S1	15 months				
MW-796	WT/S1	15 months				
MW-776	WT/S1	9 months		x		
VPW-103	WT/S1	15 months				
MW-730	S1	9 Months		x		
MW-732	S1	9 months		x		
MW-809	S1/S2	15 months				
MW-787	WT	15 months				
MW-715	S1	15 months				
MW-515	S2	15 months				
MW-605	S2	9 months		x		
MW-717	S2	9 months		x		
MW-725	S2	9 months		x		
MW-731	S2	9 months		x		
MW-740	S2	9 months		x		
MW-741	S2	9 months		x		
MW-742	S2	15 months				
MW-743	S2	9 months		x		
MW-746	S2	15 months				
MW-759	S2	9 months		x		
MW-800	S2	9 months		x		
MW-807	S2	15 months				
SW-1 North Creek	North Creek	Quarterly	x	x	x	x
SW-4 North Creek	North Creek	Quarterly	x	x	x	x
B005	SR Spring	9 months		x		
B006	SR Spring	9 months		x		
C001	SR Spring	9 months		x		
D001	SR Spring	9 months		x		
E001	SR Spring	9 months		x		
E002	SR Spring	9 months		x		
F001	SR Spring	9 months		x		
G004	SR Spring	9 months		x		
G006	SR Spring	9 months		x		

WATER LEVEL MEASUREMENTS	
Unit	**Frequency**
All SR/MD Wells	Monthly
All TOR Wells	Quarterly
All Overburden Wells	Quarterly

UNIT KEY

Unit	Description
WT	Water Table
S1	First Sand
S2	Second Sand
TOR	Top of Rock
MB	Middle Brassfield
SR	Sugar Rock

TABLE 2

FOURTH QUARTER 2018 & FIRST QUARTER 2019 ANALYTICAL RESULTS

SURFACE WATER FROM THE UNNAMED TRIBUTARY OF NORTH CREEK SAMPLES

CERTA VANDALIA LLC - VANDALIA, OHIO

Location Group	North Creek			
Location	SW-1	SW-1	SW-4	SW-4
Sample Date	12/12/2018	1/4/2019	12/12/2018	1/4/2019
Sample Type	N	N	N	N
Volatile Organic Compounds (ug/L)				
1,1,1-Trichloroethane	< 1	**1.45**	**2.37**	**6.84**
Vinyl chloride	< 1	< 1	**1.39**	< 1
cis-1,2-Dichloroethene	**1.88**	**8.92**	**14.2**	**34.1**
Trichloroethene	**4.01**	**21.8**	**31.3**	**113**
1,2,4-Trichlorobenzene	< 1	**1.19**	< 1	< 1

Notes:

1. Summary includes compounds detected in one or more samples
2. Analysis methods SW8260.
3. See Figure 1 for sample locations.
4. <: Result is below the indicated reporting limit.
   J: Estimated result.
5. Sample type codes: N - Normal, FD - Field Duplicate

TABLE 3

FOURTH QUARTER 2018 AND FIRST QUARTER 2019 ANALYTICAL RESULTS

SURFACE WATER AND SPRING SAMPLES

CERTA VANDALIA LLC - VANDALIA, OHIO

Location Group	Springs							
Location	B005	B006	C001	D001	E001	F001	G004	G006
Sample Date	3/22/2019	3/22/2019	3/22/2019	3/22/2019	3/22/2019	3/22/2019	3/22/2019	3/22/2019
Sample Type	N	N	N	N	N	N	N	N
Volatile Organic Compounds (ug/L)								
1,1,1-Trichloroethane	< 1	< 1	< 5	< 8.33	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	< 1	< 1	< 5	< 8.33	< 1	< 1	< 1	< 1
1,1-Dichloroethane	< 1	< 1	< 5	< 8.33	< 1	< 1	< 1	< 1
Chloroform (Trichloromethane)	< 1	< 1	< 5	< 8.33	< 1	**6.24**	< 1	< 1
cis-1,2-Dichloroethene	< 1	< 1	**3.51**	< 8.33	< 1	< 1	< 1	**1.24**
Trichloroethene	< 1	< 1	**18**	**3.53**	< 1	< 1	< 1	**1.45**

Notes:

1. Summary includes compounds detected in one or more samples
2. Analysis methods SW8260.
3. See Figure 16 for sample locations.
4. <: Result is below the indicated reporting limit.
   J: Estimated result.
5. Sample type codes: N - Normal, FD - Field Duplicate

TABLE 4

FOURTH QUARTER 2018 & FIRST QUARTER 2019 ANALYTICAL RESULTS

GROUNDWATER MONITORING WELLS

CERTA VANDALIA LLC - VANDALIA, OHIO

Location	MW-413D	MW-420D	MW-420M	MW-417D	MW-418D	MW-425S	MW-741	MW-800
Sample Date	3/26/19	3/21/19	3/21/19	3/21/19	3/21/19	3/21/19	3/21/19	3/21/19
Unit	SR	SR	MB	SR	SR	TOR	S2	S2
Sample Type	N	N	N	N	N	N	N	N
Volatile Organic Compounds (ug/L)								
1,1,1-Trichloroethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	< 1	< 1	**1.23**	< 1	**1.2**	< 1	< 1	< 1
cis-1,2-Dichloroethene	< 1	**186**	**563**	**8.41**	**2.03**	**881**	< 1	< 1
Trichloroethene	**10700**	**111**	**327**	< 1	< 1	**1170**	< 1	< 1
Vinyl chloride	< 1	**110**	**39**	**12.9**	**20.3**	< 1	< 1	< 1
trans-1,2-Dichloroethene	< 1	< 1	**8.92**	< 1	< 1	< 1	< 1	< 1

Notes and Abbreviations:

1. Summary includes VOC compounds detected in one or more samples.
2. Analysis method SW8260.
3. See Figure 17 & 18 for sample locations.
4. <: Result is below the indicated reporting limit.
   J: Estimated result.
5. Sample type codes: N - Normal, FD - Field Duplicate

TABLE 4 (continued)

FOURTH QUARTER 2018 & FIRST QUARTER 2019 ANALYTICAL RESULTS

GROUNDWATER MONITORING WELLS

CERTA VANDALIA LLC - VANDALIA, OHIO

Location	MW-775	MW-759	MW-740	MW-776	MW-730	MW-717	MW-731
Sample Date	3/21/2019	3/21/2019	3/21/2019	3/21/2019	3/21/2019	3/21/2019	3/21/2019
Unit	WT/S1	S2	S2	WT/S1	S1	S2	S2
Sample Type	N	N	N	N	N	N	N
Volatile Organic Compounds (ug/L)							
1,1,1-Trichloroethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,2-Dichloroethene	< 1	**66.8**	< 1	< 1	**2.14**	< 1	< 1
Trichloroethene	< 1	**6.63**	< 1	< 1	**2.11**	< 1	< 1
Vinyl chloride	< 1	**71.4**	< 1	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	< 1	**3.28**	< 1	< 1	< 1	< 1	< 1

Notes and Abbreviations:

1. Summary includes VOC compounds detected in one or more samples.
2. Analysis method SW8260.
3. See Figure 17 & 18 for sample locations.
4. <: Result is below the indicated reporting limit.
   J: Estimated result.
5. Sample type codes: N - Normal, FD - Field Duplicate

TABLE 4 (continued)

FOURTH QUARTER 2018 & FIRST QUARTER 2019 ANALYTICAL RESULTS

GROUNDWATER MONITORING WELLS

CERTA VANDALIA LLC - VANDALIA, OHIO

Location	MW-732	MW-725	MW-743	MW-605	MW-810	MW-806	MW-607	MW-806
Sample Date	3/21/2019	3/21/2019	3/21/2019	3/21/2019	3/21/2019	3/21/2019	3/21/2019	3/21/2019
Unit	S1	S2	S2	S2	WT	WT	WT/S1	WT
Sample Type	N	N	N	N	N	N	N	FD
Volatile Organic Compounds (ug/L)								
1,1,1-Trichloroethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,2-Dichloroethene	< 1	< 1	< 1	< 1	< 1	**22200**	< 1	**20800**
Trichloroethene	< 1	< 1	< 1	< 1	< 1	**11100**	**7.27**	**10400**
Vinyl chloride	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1

Notes and Abbreviations:

1. Summary includes VOC compounds detected in one or more samples.
2. Analysis method SW8260.
3. See Figure 17 & 18 for sample locations.
4. <: Result is below the indicated reporting limit.
   J: Estimated result.
5. Sample type codes: N - Normal, FD - Field Duplicate

TABLE 5
FOURTH QUARTER 2018 AND FIRST QUARTER 2019
PERFORMANCE MONITORING ANALYTICAL DATA
GROUNDWATER MIGRATION CONTROL SYSTEM
CERTA VANDALIA LLC - VANDALIA, OHIO

Sample Name	BRIN-102618	OBIN-102618	SSIN-102618	PREAS-102618	EFF-102618
Sample Date	10/26/2018	10/26/2018	10/26/2018	10/26/2018	10/26/2018
Location	Sugar Rock Recovery Well	Overburden Recovery Well	Second Sand Recovery Well	Pre Air Stripper	Effluent
Volatile Organic Compounds (ug/L)					
1,1,1-Trichloroethane	<50.0	<400	<400	<100	<1.00
1,1-Dichloroethane	<50.0	<400	<400	<100	<1.00
cis-1,2-Dichloroethene	**976**	**1350**	**2990**	**1210**	<1.00
Trichloroethene	**2500**	**9970**	**12000**	**3760**	<1.00
Test Method: Oakton PC 450 pH/MV/Con					
pH (field tested) - S.U. (standard units)	-	-	-		**8.59 HF**

Notes:
1. < #: The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
2. Results in bold are detected.
3. Analysis method for Volatile Organic Compounds is EPA 624.
4. Lab qualifiers:
   HF: Field parameter with a holding time of 15 minutes.
5. Oakton PC 450 pH meter was calibrated per manufacturer's instructions prior to data collection.

TABLE 5 (continued)
FOURTH QUARTER 2018 AND FIRST QUARTER 2019
PERFORMANCE MONITORING ANALYTICAL DATA
GROUNDWATER MIGRATION CONTROL SYSTEM
CERTA VANDALIA LLC - VANDALIA, OHIO

Sample Name	BRIN-111318	OBIN-111318	SSIN-111318	PREAS 111318	EFF-111318
Sample Date	11/13/2018	11/13/2018	11/13/2018	11/13/2018	11/13/2018
Location	Sugar Rock Recovery Well	Overburden Recovery Well	Second Sand Recovery Well	Pre Air Stripper	Effluent
Volatile Organic Compounds (ug/L)					
1,1,1-Trichloroethane	<50.0	<400	<400	<100	<1.00
1,1-Dichloroethane	<50.0	<400	<400	<100	<1.00
cis-1,2-Dichloroethene	**935**	**1170**	**3020**	**1260**	<1.00
Trichloroethene	**2460**	**10300**	**11600**	**4960**	<1.00
Test Method: YSI Pro 1030 pH Meter					
pH (field tested) - S.U. (standard units)	-	-	-		**7.91 HF**

Notes:
1. < #: The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
2. Results in bold are detected.
3. Analysis method for Volatile Organic Compounds is EPA 624.
4. Lab qualifiers:
   HF: Field parameter with a holding time of 15 minutes.
5. YSI Pro 1030 pH Meter was calibrated per manufacturer's instructions prior to data collection.

TABLE 5 (continued)
FOURTH QUARTER 2018 AND FIRST QUARTER 2019
PERFORMANCE MONITORING ANALYTICAL DATA
GROUNDWATER MIGRATION CONTROL SYSTEM
CERTA VANDALIA LLC - VANDALIA, OHIO

Sample Name	BRIN-121218	OBIN-121218	SSIN-121218	PREAS 121218	EFF-050118
Sample Date	12/12/2018	12/12/2018	12/12/2018	12/12/2018	12/12/2018
Location	Sugar Rock Recovery Well	Overburden Recovery Well	Second Sand Recovery Well	Pre Air Stripper	Effluent
Volatile Organic Compounds (ug/L)					
1,1,1-Trichloroethane	<50.0	<400	<400	<100	<1.00
1,1-Dichloroethane	<50.0	<400	<400	<100	<1.00
cis-1,2-Dichloroethene	**786**	**1310**	**2460**	**1080**	<1.00
Trichloroethene	**1970**	**10800**	**8940**	**3320**	<1.00
Test Method: Oakton PC 450 pH/MV/Con					
pH (field tested) - S.U. (standard units)	-	-	-		**8.59 HF**

Notes:
1. < #: The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
2. Results in bold are detected.
3. Analysis method for Volatile Organic Compounds is EPA 624.
4. Lab qualifiers:
   HF: Field parameter with a holding time of 15 minutes.
5. Oakton PC 450 pH meter was calibrated per manufacturer's instructions prior to data collection.

TABLE 5 (continued)
FOURTH QUARTER 2018 AND FIRST QUARTER 2019
PERFORMANCE MONITORING ANALYTICAL DATA
GROUNDWATER MIGRATION CONTROL SYSTEM
CERTA VANDALIA LLC - VANDALIA, OHIO

Sample Name	BRIN 010419-1,2,3	OBIN-010419-1,2,3	SSIN-010419-1,2,3	PREAS 010419-1,2,3	EFF-010419-1,2,3
Sample Date	1/4/2019	1/4/2019	1/4/2019	1/4/2019	1/4/2019
Location	Sugar Rock Recovery Well	Overburden Recovery Well	Second Sand Recovery Well	Pre Air Stripper	Effluent
Volatile Organic Compounds (ug/L)					
1,1,1-Trichloroethane	<50.0	**401**	<400	<100	<1.00
1,1-Dichloroethane	<50.0	<400	<400	<100	<1.00
cis-1,2-Dichloroethene	**979**	**1410**	**2850**	**1320**	<1.00
Trichloroethene	**2410**	**13700**	**10200**	**5520**	<1.00
Test Method: Oakton PC 450 pH/MV/Con					
pH (field tested) - S.U. (standard units)	-	-	-		**8.65 HF**

Notes:
1. < #: The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
2. Results in bold are detected.
3. Analysis method for Volatile Organic Compounds is EPA 624.
4. Lab qualifiers:
   HF: Field parameter with a holding time of 15 minutes.
5 Oakton PC 450 pH meter was calibrated per manufacturer's instructions prior to data collection.

TABLE 5 (continued)
FOURTH QUARTER 2018 AND FIRST QUARTER 2019
PERFORMANCE MONITORING ANALYTICAL DATA
GROUNDWATER MIGRATION CONTROL SYSTEM
CERTA VANDALIA LLC - VANDALIA, OHIO

Sample Name	BRIN-022719	OBIN-022719	SSIN-022719	PREAS-022719	EFF-022719
Sample Date	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019
Location	Sugar Rock Recovery Well	Overburden Recovery Well	Second Sand Recovery Well	Pre Air Stripper	Effluent
Volatile Organic Compounds (ug/L)					
1,1,1-Trichloroethane	<200	**539**	<200	**484**	<1.00
1,1-Dichloroethane	**267**	<400	**251**	<200	<1.00
cis-1,2-Dichloroethene	**3120**	**1630**	**3080**	**1490**	<1.00
Trichloroethene	**11300**	**15900**	**11200**	**15100**	<1.00
Test Method: Oakton PC 450 pH/MV/Con					
pH (field tested) - S.U. (standard units)	-	-	-		**9.25 HF**

Notes:
1. < #: The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
2. Results in bold are detected.
3. Analysis method for Volatile Organic Compounds is EPA 624.
4. Lab qualifiers:
   HF: Field parameter with a holding time of 15 minutes.
5. Oakton PC 450 pH meter was calibrated per manufacturer's instructions prior to data collection.

TABLE 5 (continued)
FOURTH QUARTER 2018 AND FIRST QUARTER 2019
PERFORMANCE MONITORING ANALYTICAL DATA
GROUNDWATER MIGRATION CONTROL SYSTEM
CERTA VANDALIA LLC - VANDALIA, OHIO

Sample Name	BRIN-032619	OBIN-032619	SSIN-032619	PREAS-032619	EFF-032619
Sample Date	3/26/2019	3/26/2019	3/26/2019	3/26/2019	3/26/2019
Location	Sugar Rock Recovery Well	Overburden Recovery Well	Second Sand Recovery Well	Pre Air Stripper	Effluent
Volatile Organic Compounds (ug/L)					
1,1,1-Trichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00
1,1-Dichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1,2-Dichloroethene	<1.00	<1.00	<1.00	<1.00	<1.00
Trichloroethene	**8150**	**7870**	**7920**	**8490**	<1.00
Test Method: Oakton PC 450 pH/MV/Con					
pH (field tested) - S.U. (standard units)	-	-	-		**6.8 HF**

Notes:
1. < #: The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
2. Results in bold are detected.
3. Analysis method for Volatile Organic Compounds is EPA 624.
4. Lab qualifiers:
   HF: Field parameter with a holding time of 15 minutes.
5. Oakton PC 450 pH meter was calibrated per manufacturer's instructions prior to data collection.

Figures

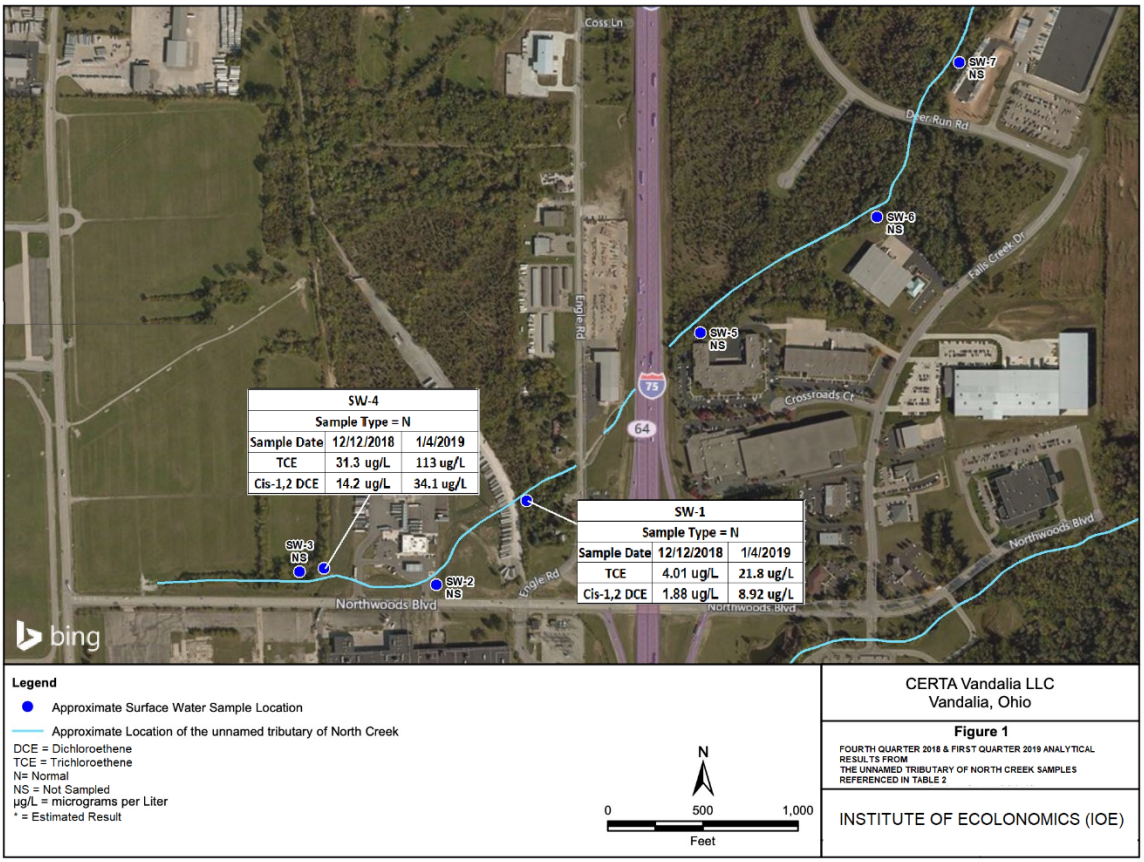


Figure 1: Fourth Quarter 2018 and First Quarter 2019 Surface Water Sampling Locations on the Unnamed Tributary to North Creek and TCE Results

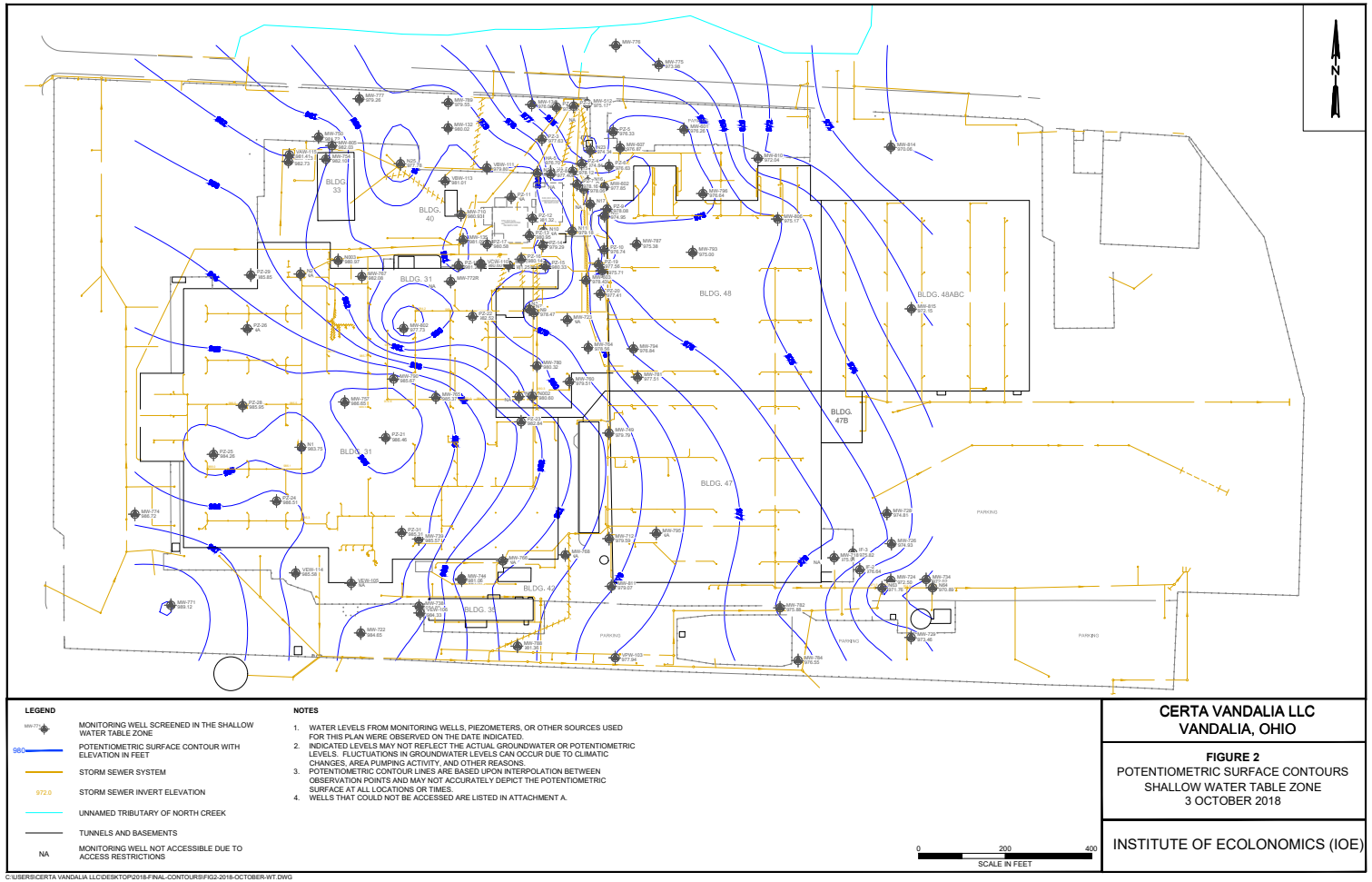


Figure 2 Potentiometric Surface Contours, Shallow Water Table Zone, 3 Oct, 2018

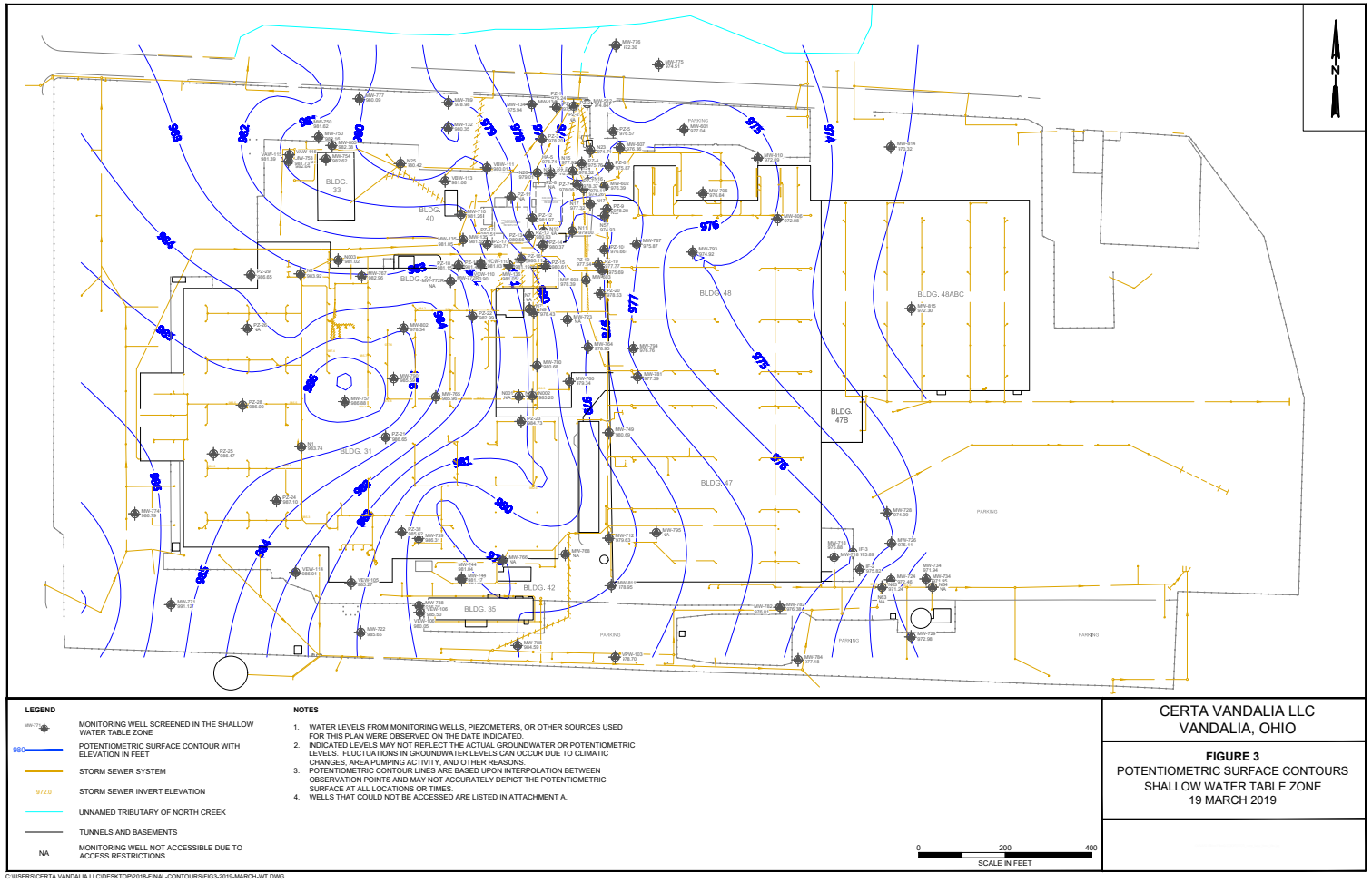


Figure 3 Potentiometric Surface Contours, Shallow Water Table Zone, 19 March, 2019

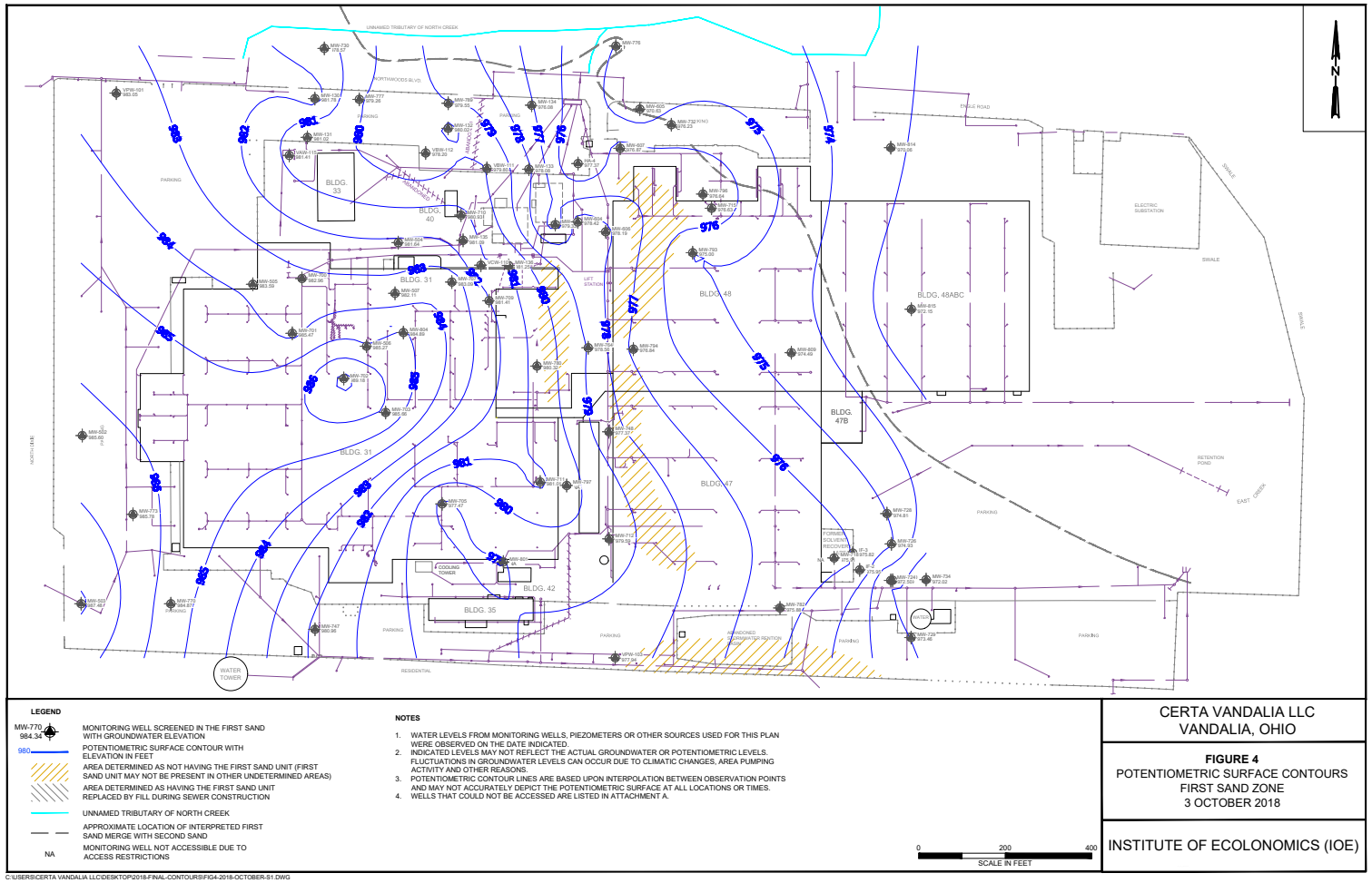
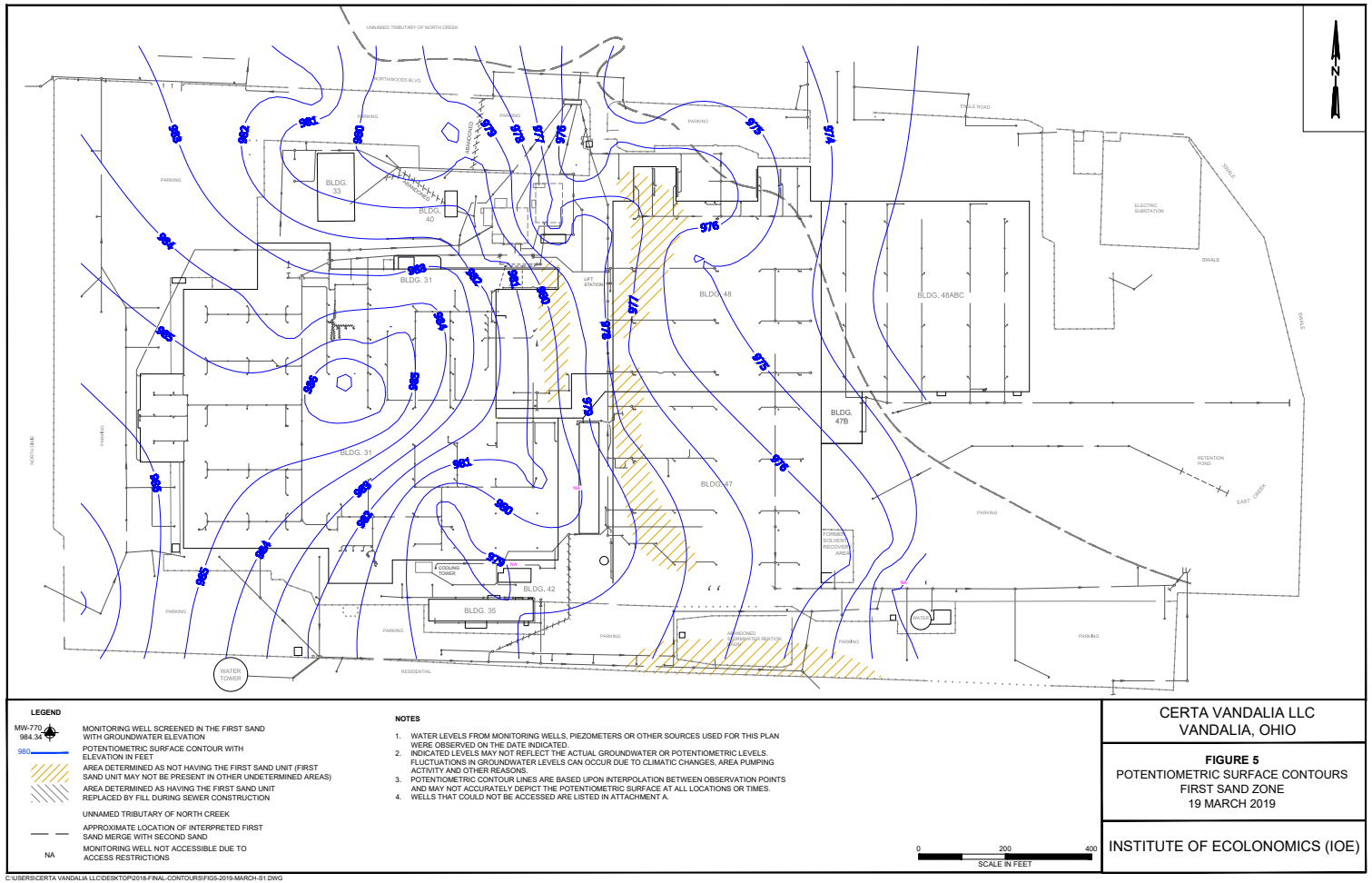


Figure 4 Potentiometric Surface Contours, First Sand Zone, 3 Oct, 2018



LEGEND

MW-770 984.34 — MONITORING WELL SCREENED IN THE FIRST SAND WITH GROUNDWATER ELEVATION

980 — POTENTIOMETRIC SURFACE CONTOUR WITH ELEVATION IN FEET

AREA DETERMINED AS NOT HAVING THE FIRST SAND UNIT (FIRST SAND UNIT MAY NOT BE PRESENT IN OTHER UNDETERMINED AREAS)

AREA DETERMINED AS HAVING THE FIRST SAND UNIT REPLACED BY FILL DURING SEWER CONSTRUCTION

UNNAMED TRIBUTARY OF NORTH CREEK

APPROXIMATE LOCATION OF INTERPRETED FIRST SAND MERGE WITH SECOND SAND

NA — MONITORING WELL NOT ACCESSIBLE DUE TO ACCESS RESTRICTIONS

NOTES

1. WATER LEVELS FROM MONITORING WELLS, PIEZOMETERS OR OTHER SOURCES USED FOR THIS PLAN WERE OBSERVED ON THE DATE INDICATED.
2. INDICATED LEVELS MAY NOT REFLECT THE ACTUAL GROUNDWATER OR POTENTIOMETRIC LEVELS. FLUCTUATIONS IN GROUNDWATER LEVELS CAN OCCUR DUE TO CLIMATIC CHANGES, AREA PUMPING ACTIVITY AND OTHER REASONS.
3. POTENTIOMETRIC CONTOUR LINES ARE BASED UPON INTERPOLATION BETWEEN OBSERVATION POINTS AND MAY NOT ACCURATELY DEPICT THE POTENTIOMETRIC SURFACE AT ALL LOCATIONS OR TIMES.
4. WELLS THAT COULD NOT BE ACCESSED ARE LISTED IN ATTACHMENT A.

0 200 400
SCALE IN FEET

CERTA VANDALIA LLC
VANDALIA, OHIO

FIGURE 5
POTENTIOMETRIC SURFACE CONTOURS
FIRST SAND ZONE
19 MARCH 2019

INSTITUTE OF ECOLONOMICS (IOE)

C:\USERS\CERTA VANDALIA LLC\DESKTOP\2018-FINAL-CONTOURS\FIG5-2019-MARCH-S1.DWG

Figure 5 Potentiometric Surface Contours, First Sand Zone, 19 March, 2019

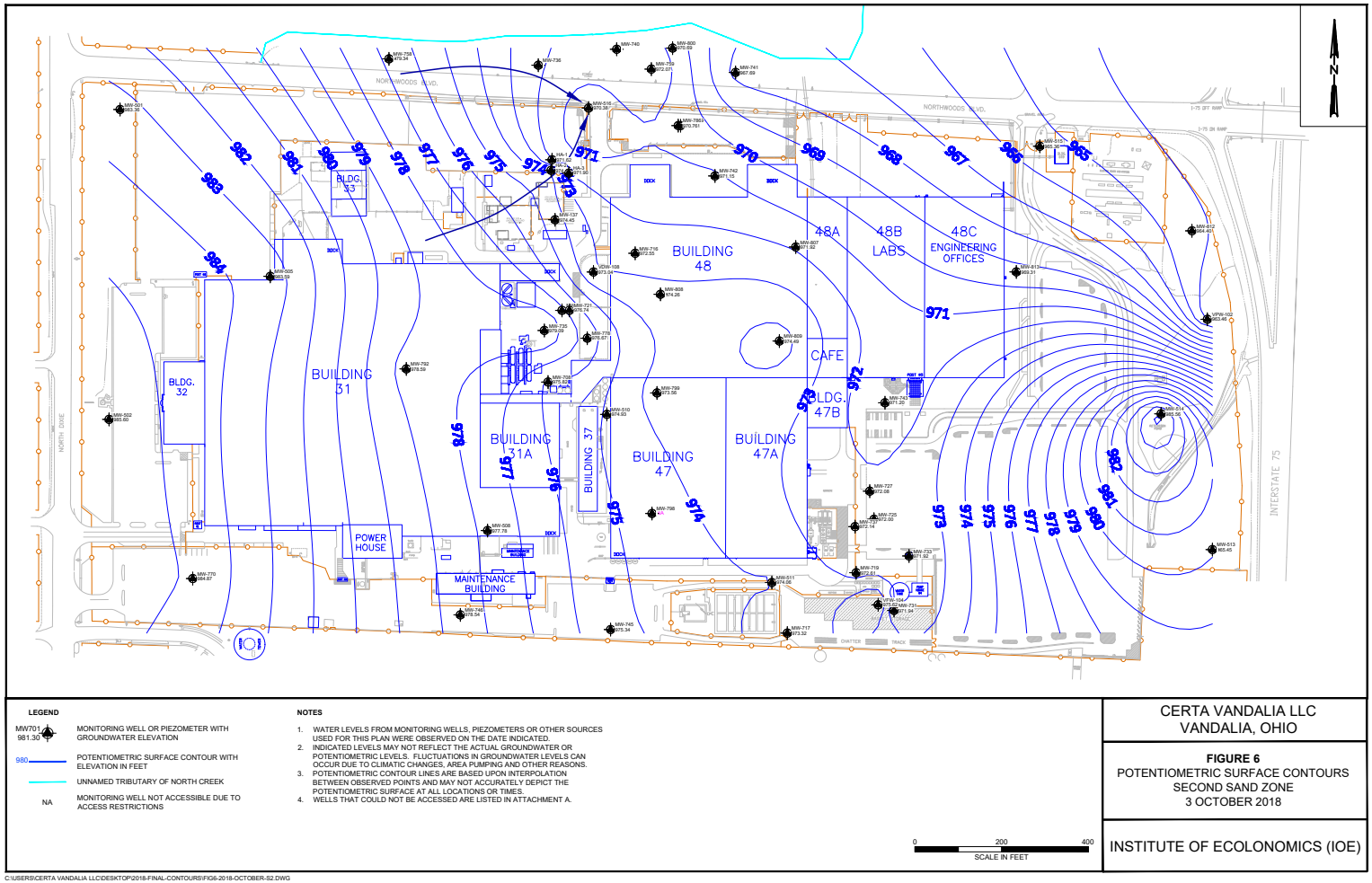


Figure 6 Potentiometric Surface Contours, Second Sand Zone, 3 Oct, 2018

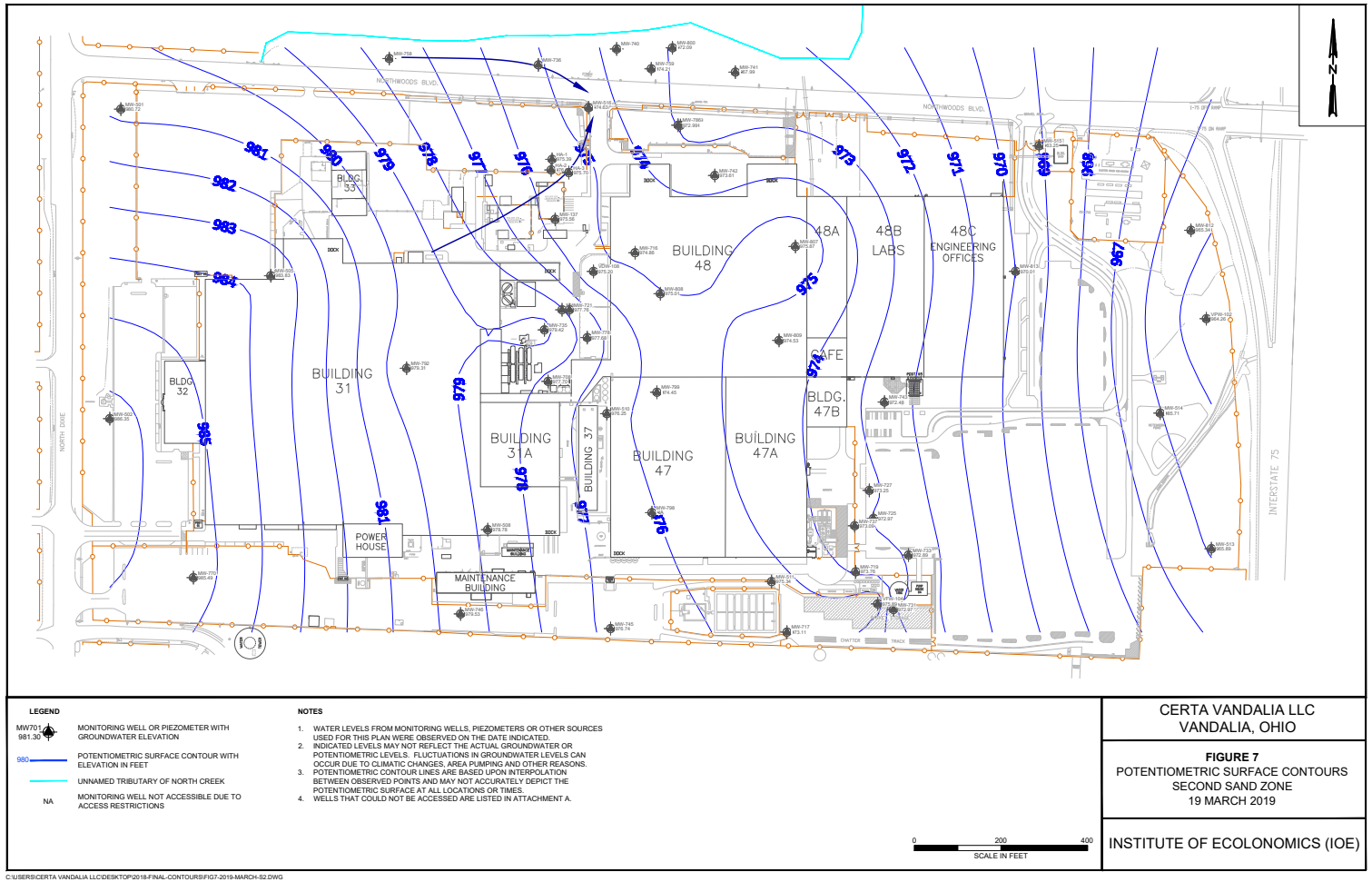


Figure 7 Potentiometric Surface Contours, Second Sand Zone, 19 March, 2019

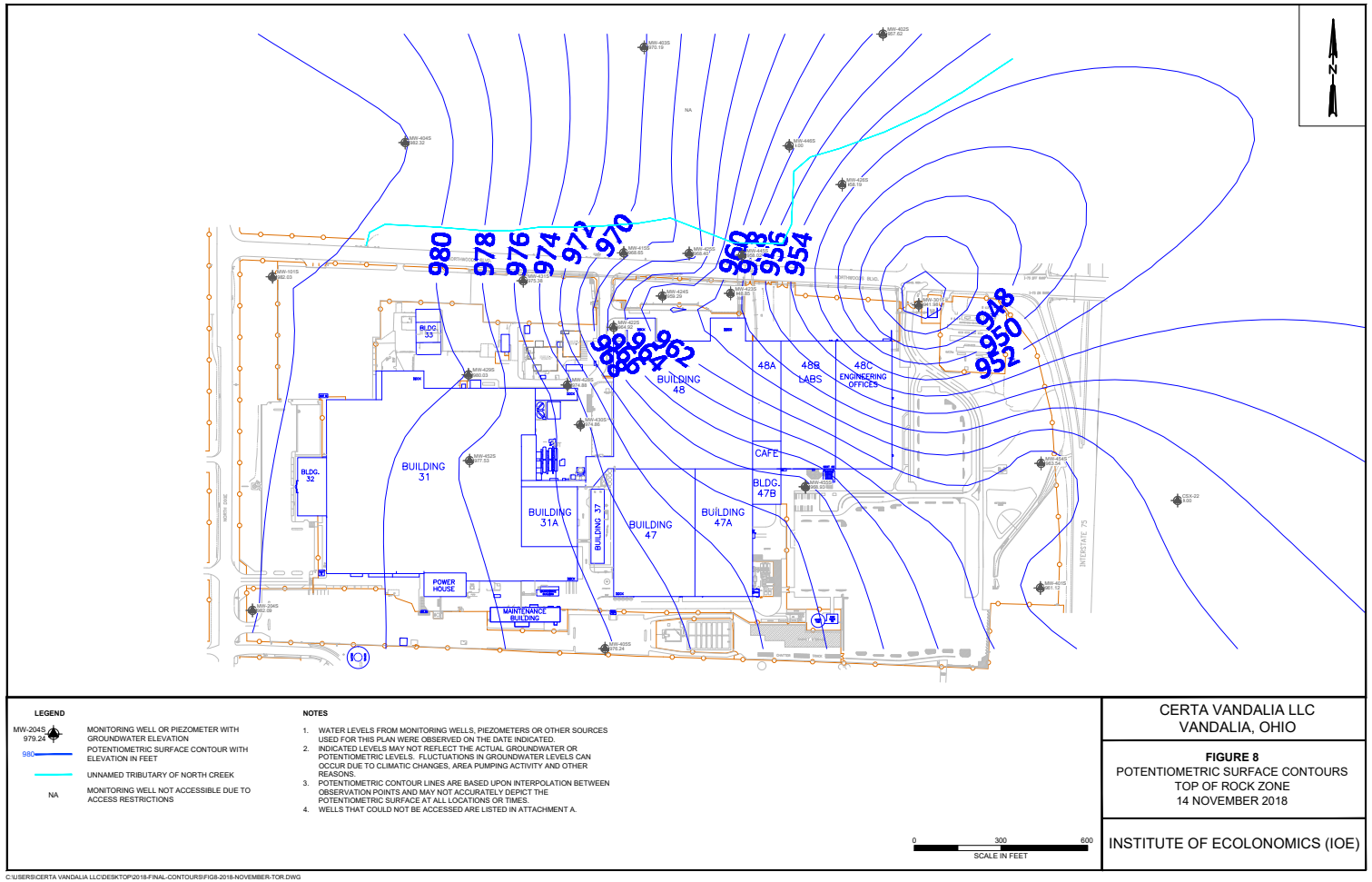


Figure 8 Potentiometric Surface Contours, Top of Bedrock Zone, 14 Nov, 2018

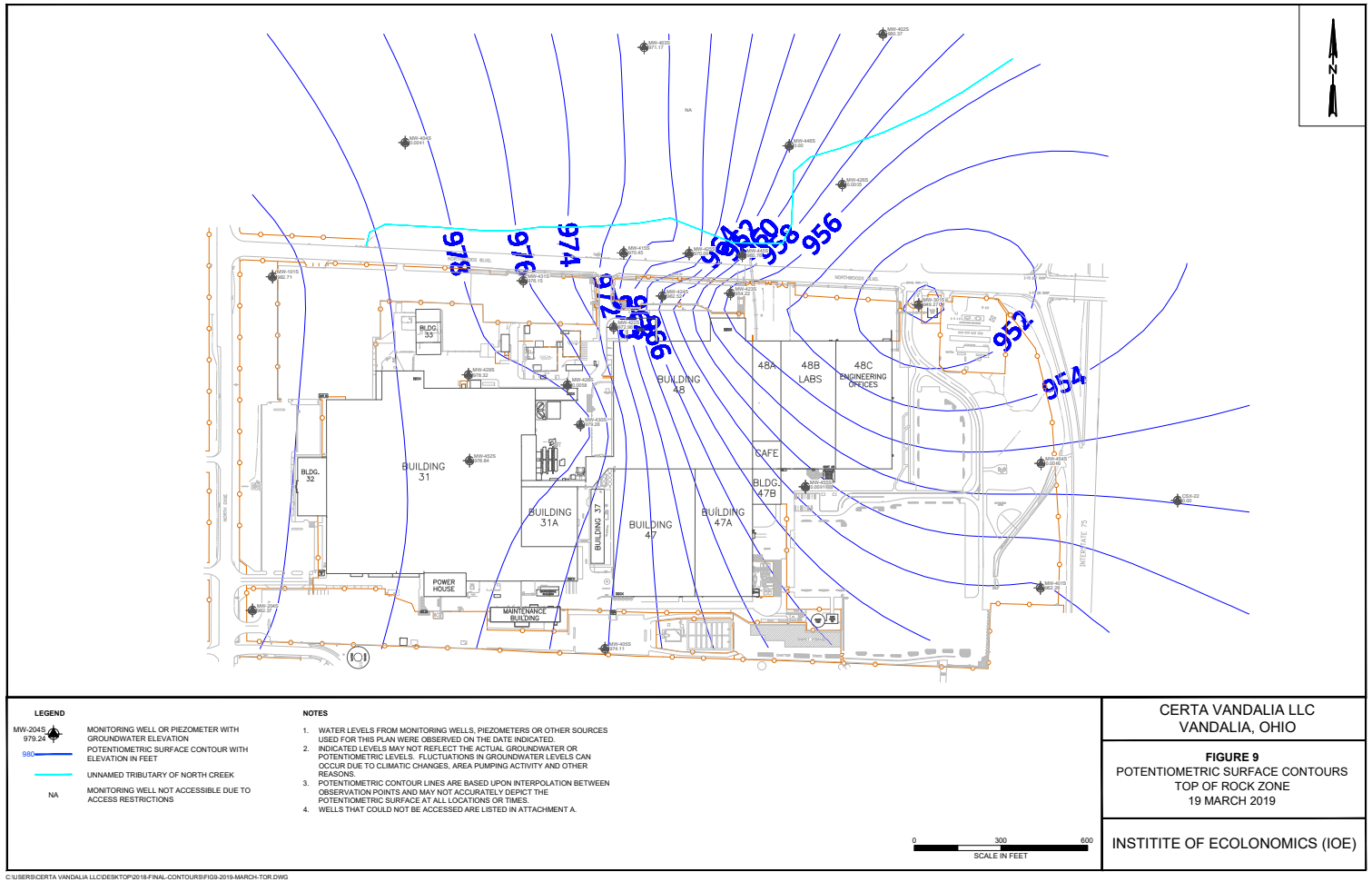


Figure 9 Potentiometric Surface Contours, Top of Bedrock Zone, 19 Mar, 2019

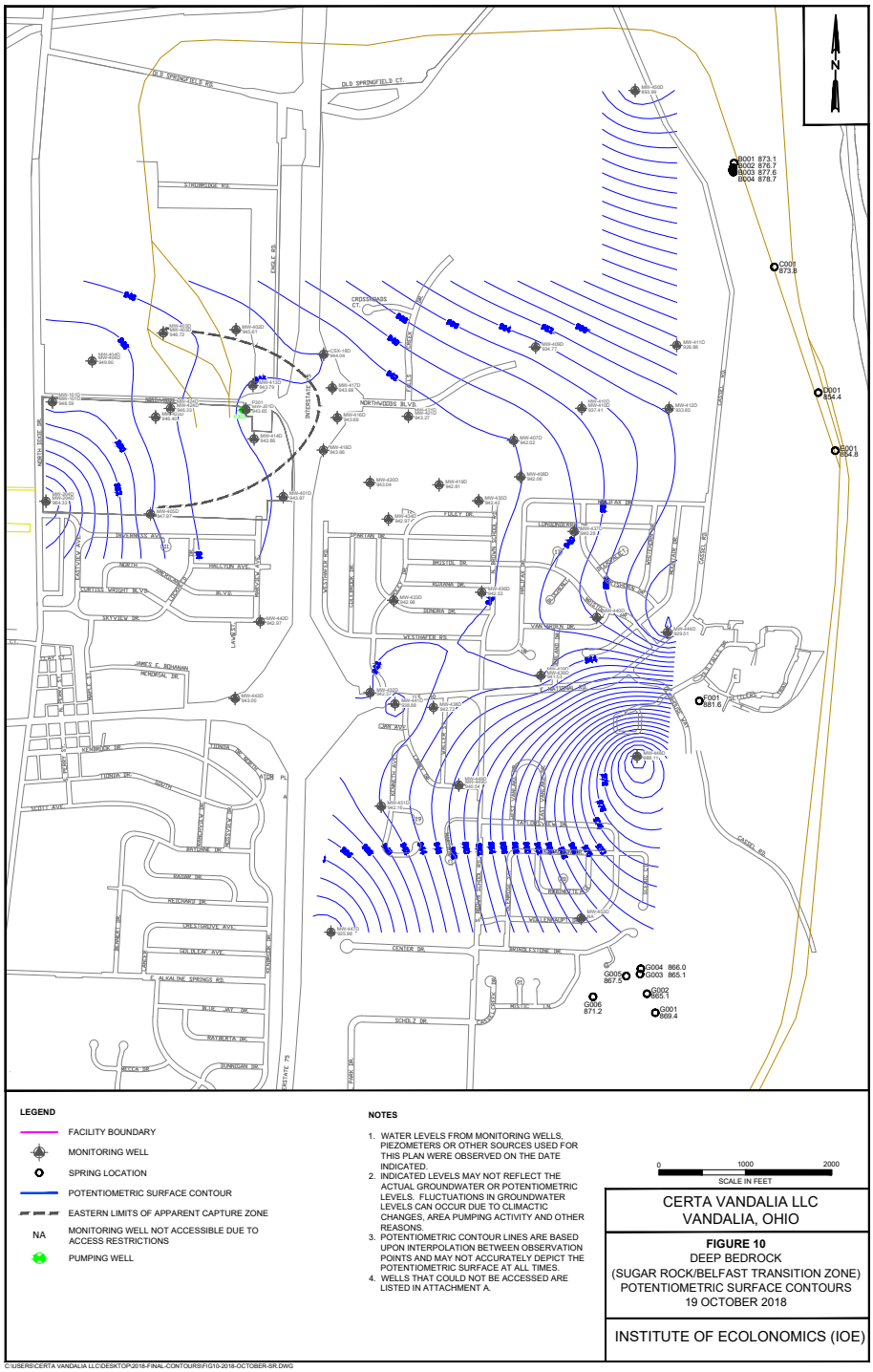


Figure 10 Potentiometric Surface Contours, Deep Bedrock, 19 Oct, 2018

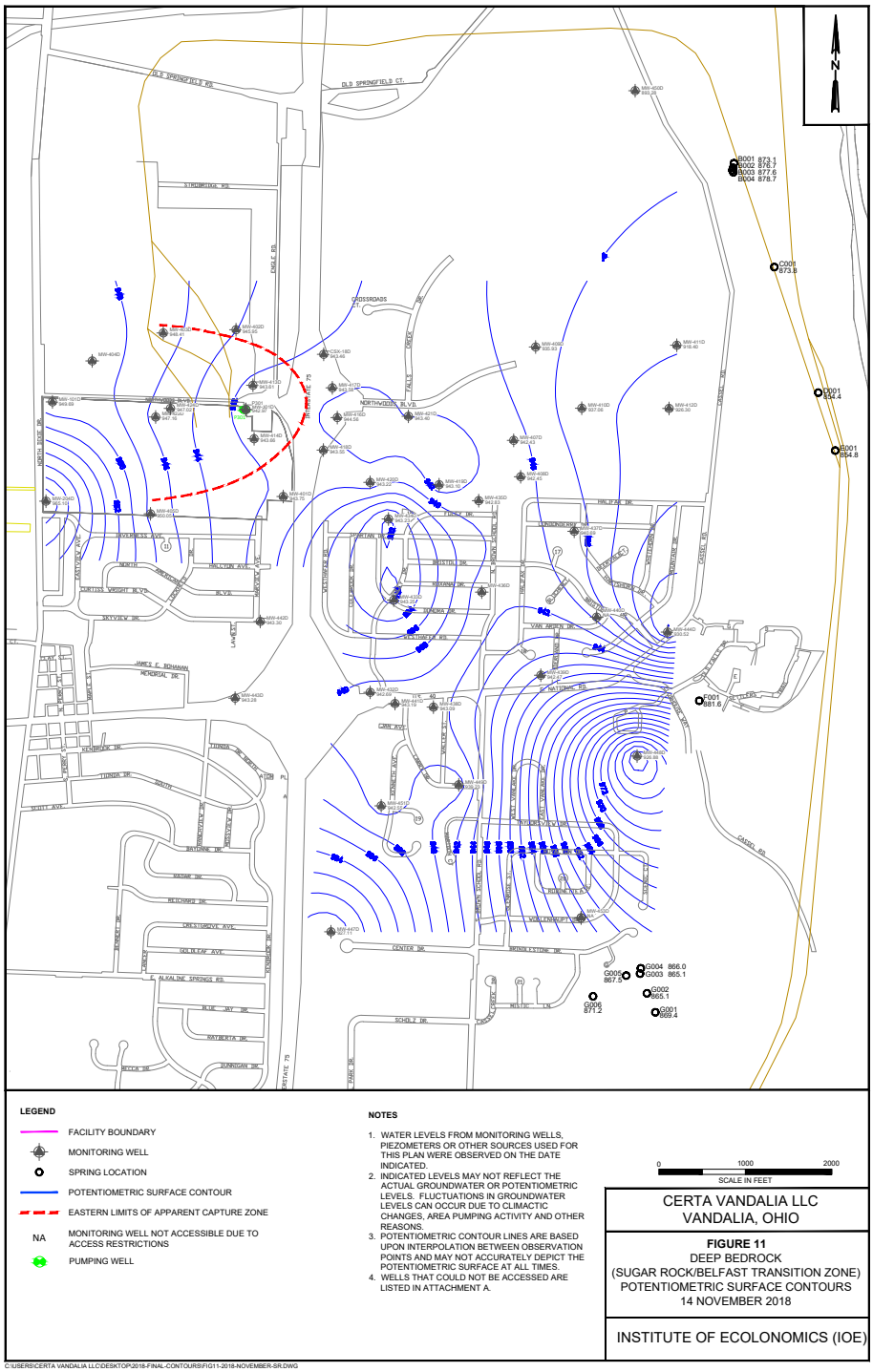


Figure 11 Potentiometric Surface Contours, Deep Bedrock, 14 Nov, 2018

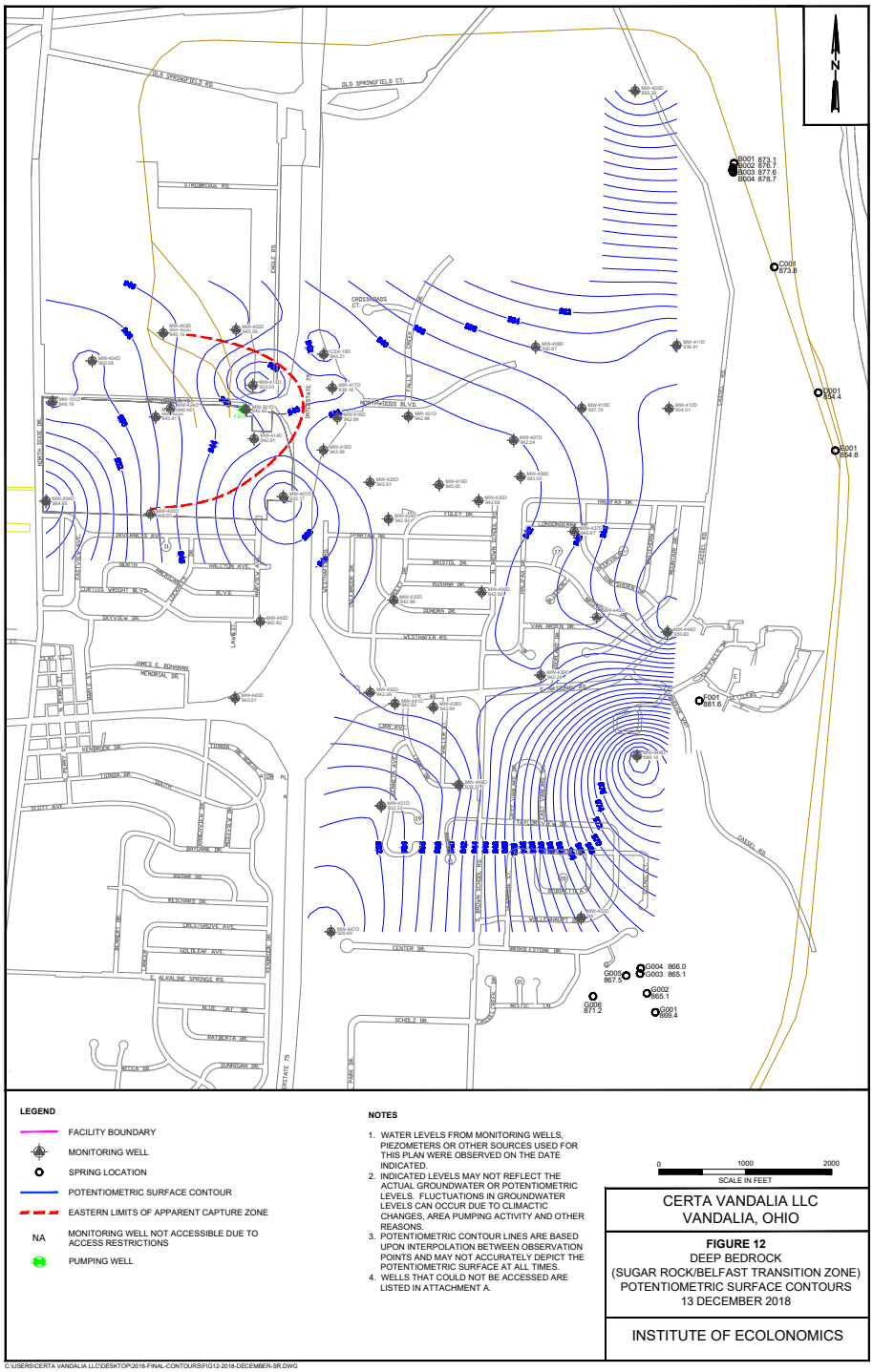


Figure 12 Potentiometric Surface Contours, Deep Bedrock, 13 Dec, 2018

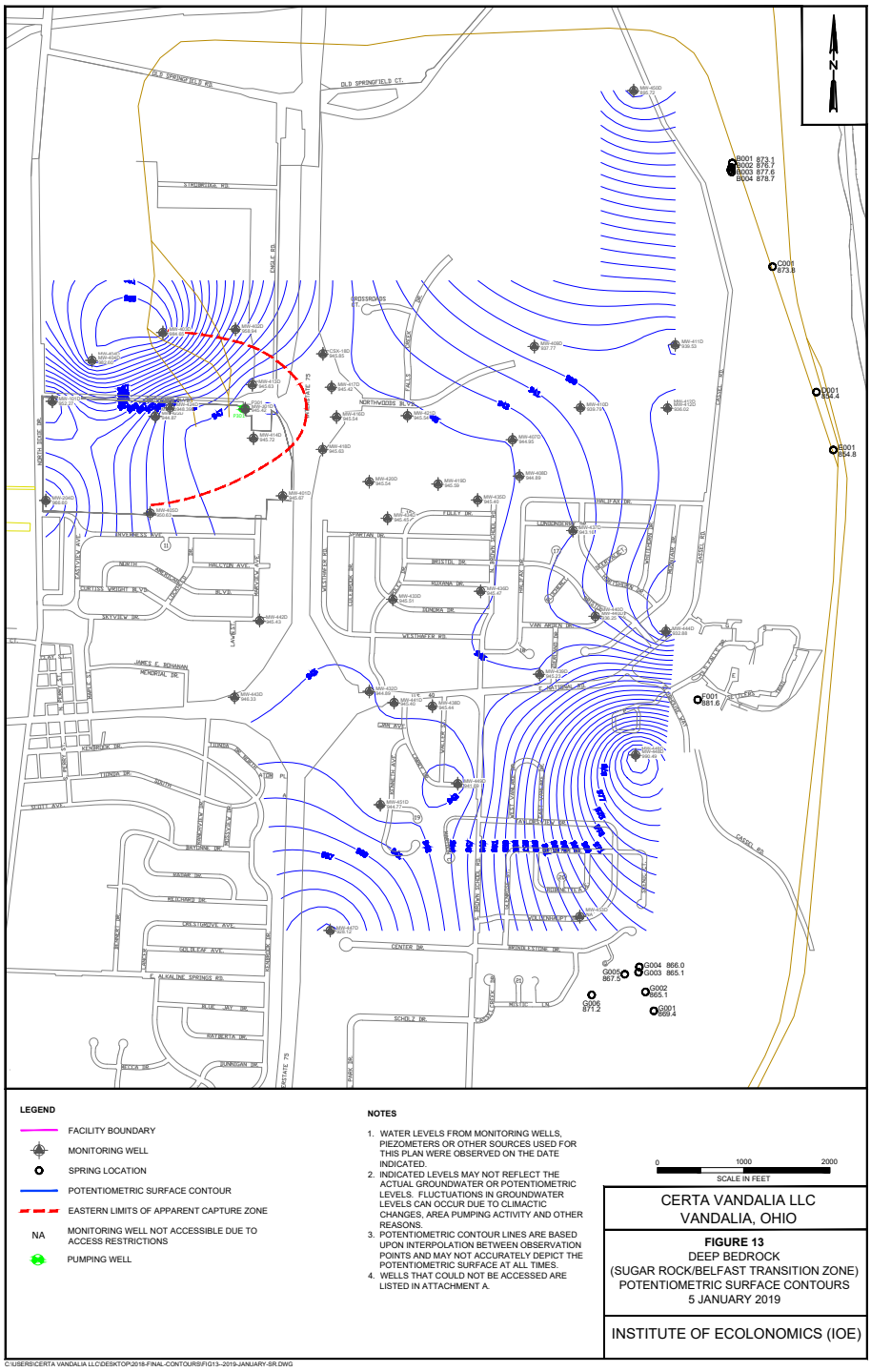


Figure 13 Potentiometric Surface Contours, Deep Bedrock, 5 Jan, 2019

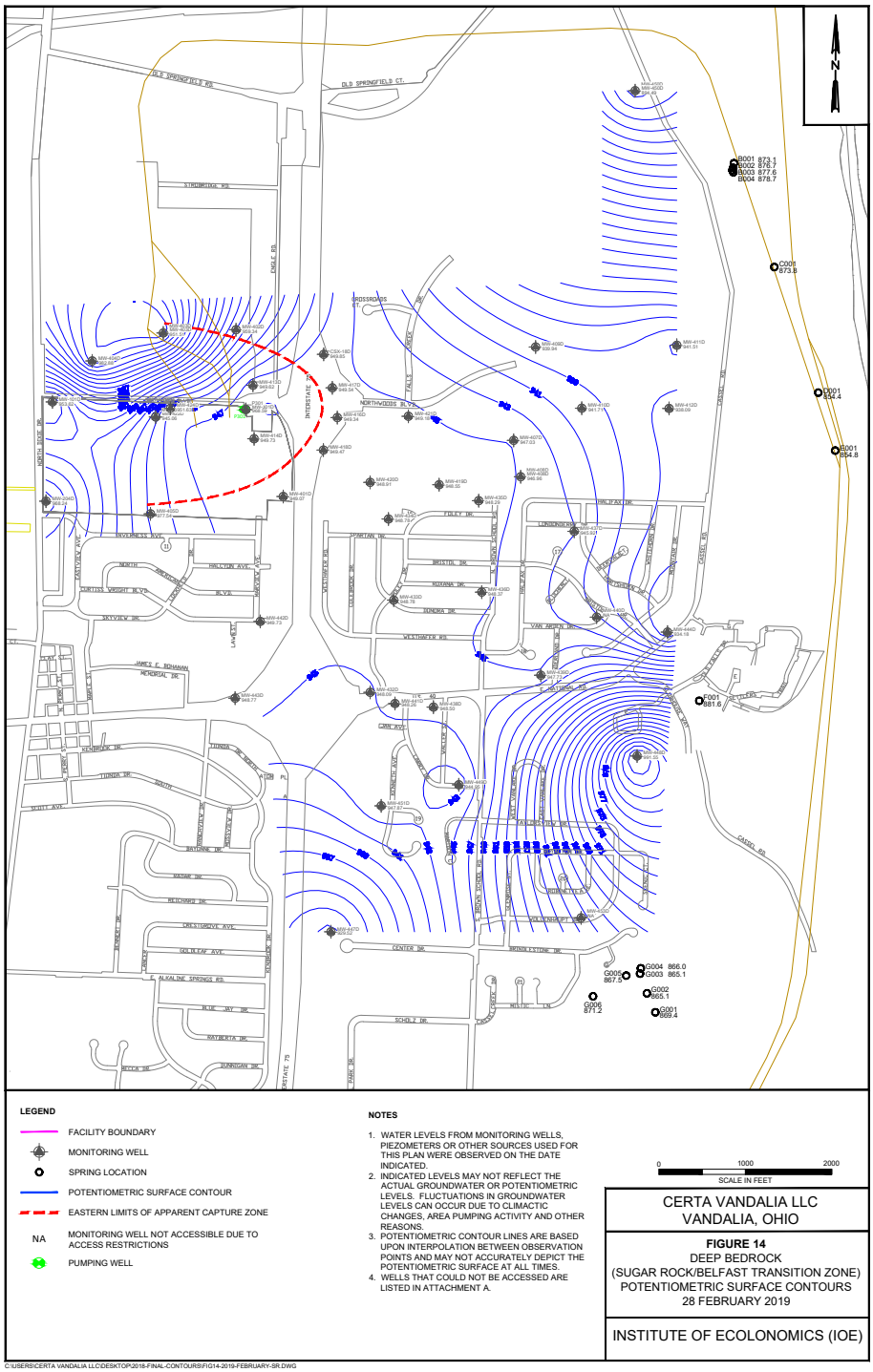


Figure 14 Potentiometric Surface Contours, Deep Bedrock, 28 Feb, 2019

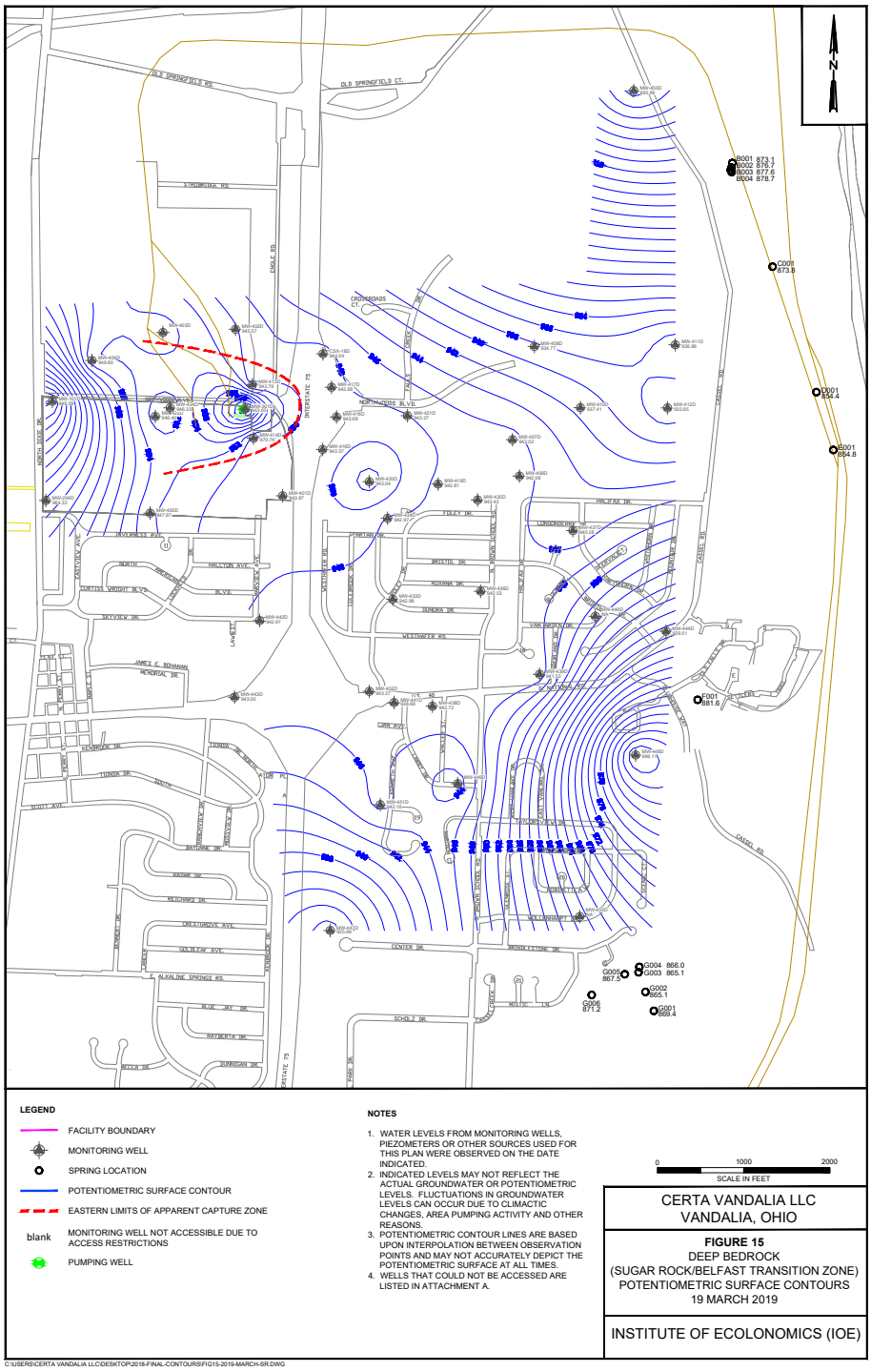


Figure 15 Potentiometric Surface Contours, Deep Bedrock, 19 Mar, 2019

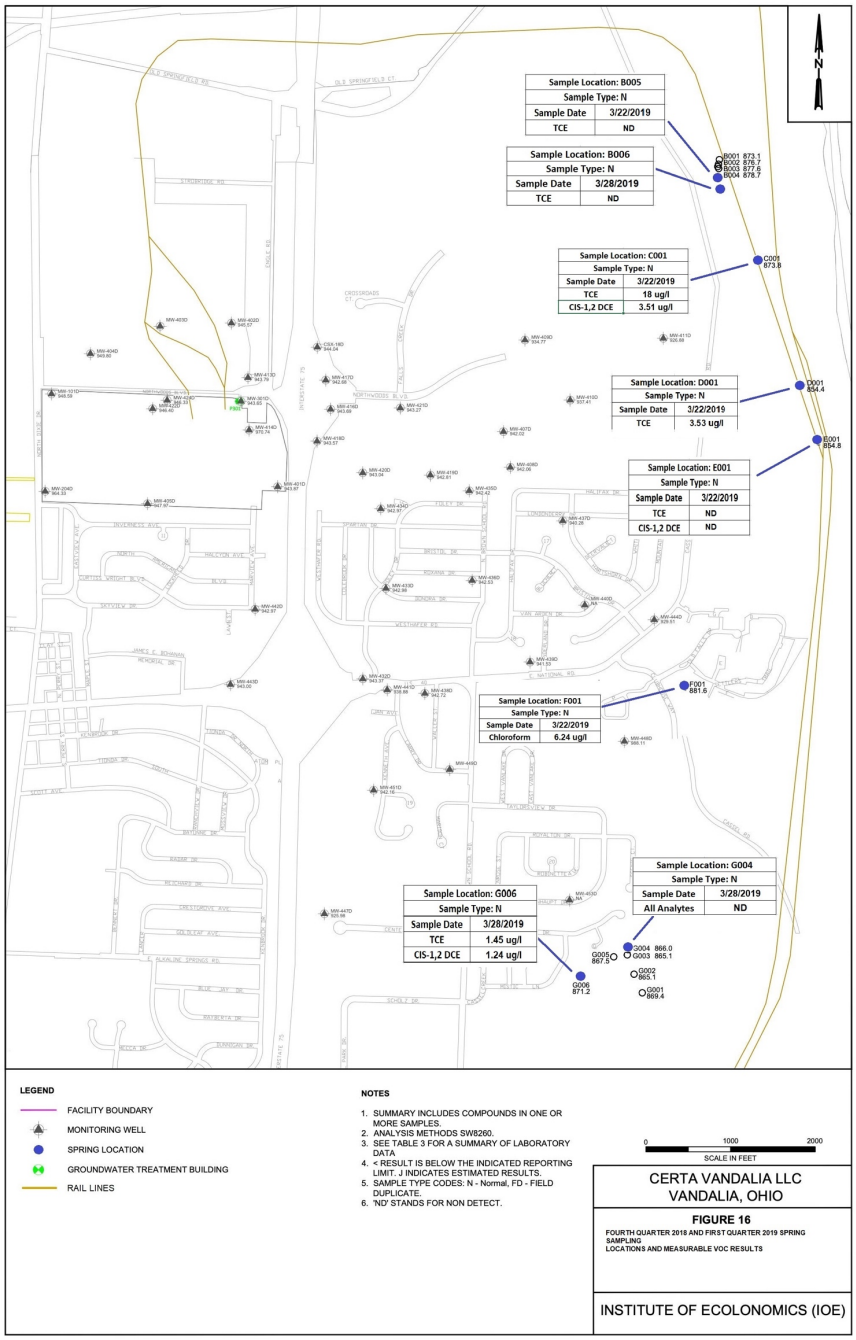


Figure 16: Fourth Quarter 2018 and First Quarter 2019 Spring Sampling Locations and Measurable VOC Results

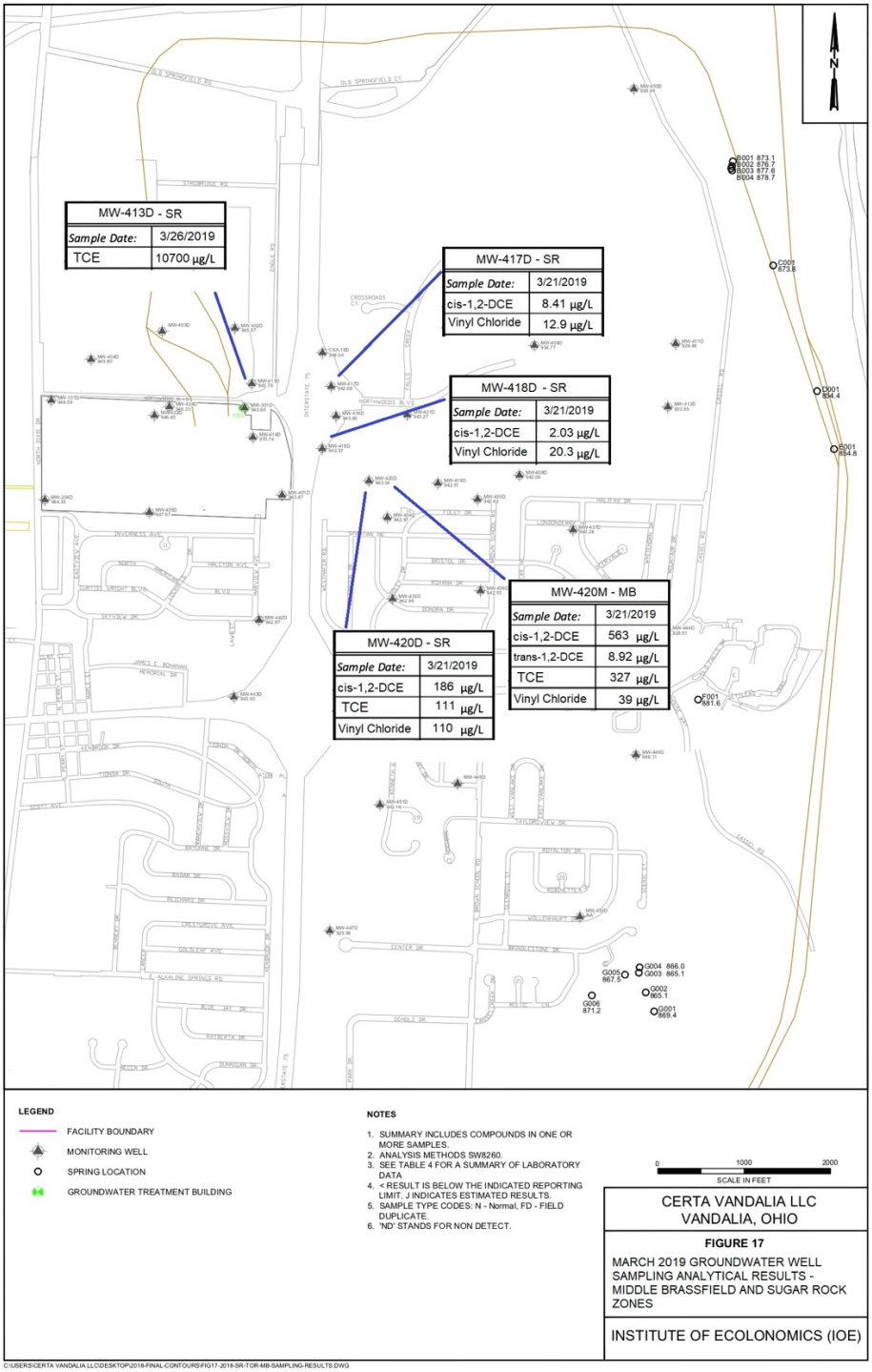


Figure 17 Fourth Quarter 2018 and First Quarter 2019 Groundwater Well Sampling - Sugar Rock & Middle Brassfield Wells and VOC Results

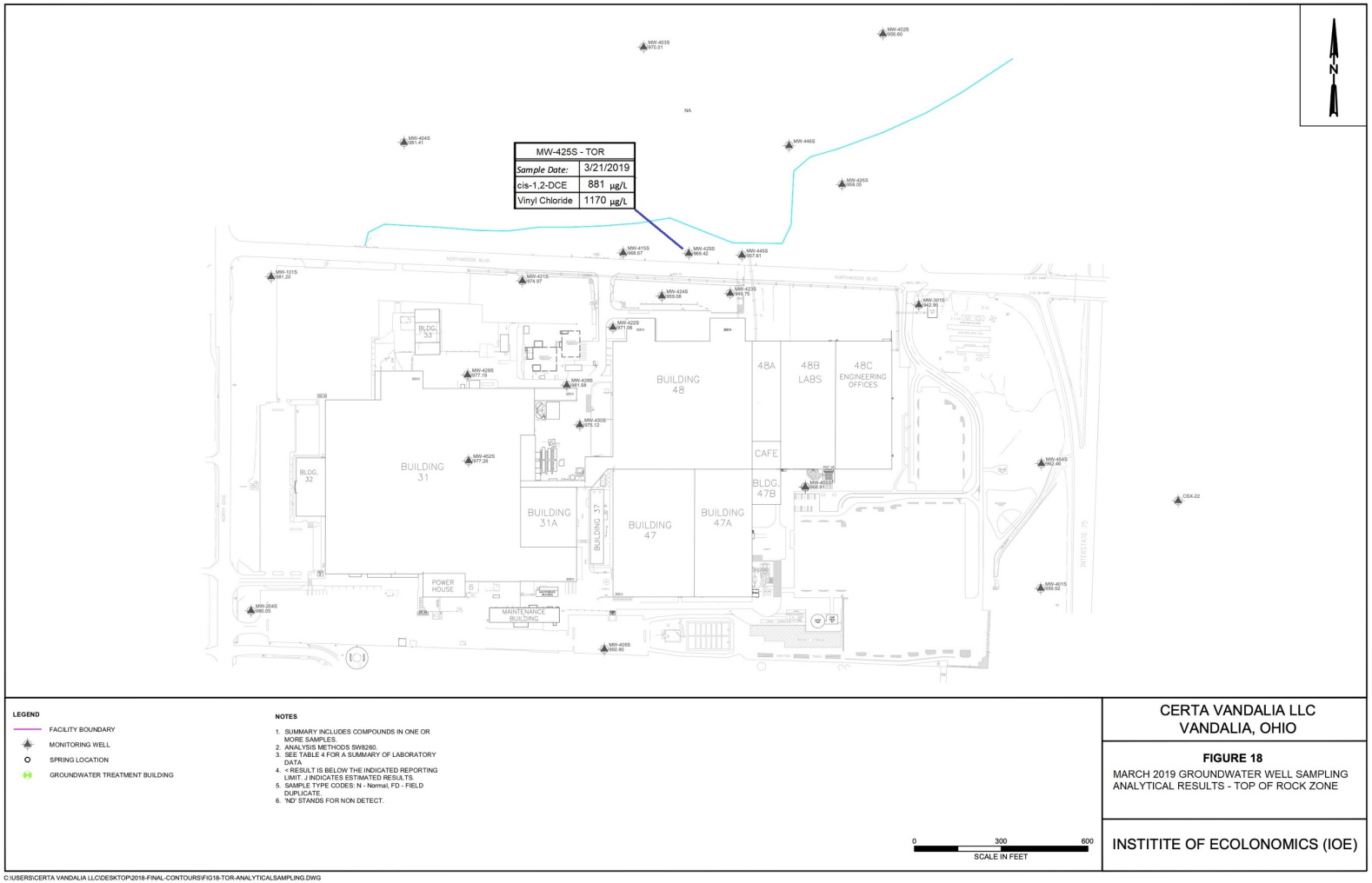


Figure 18 Fourth Quarter 2018 and First Quarter 2019 Groundwater Well Sampling - Top of Rock Wells and VOC Results

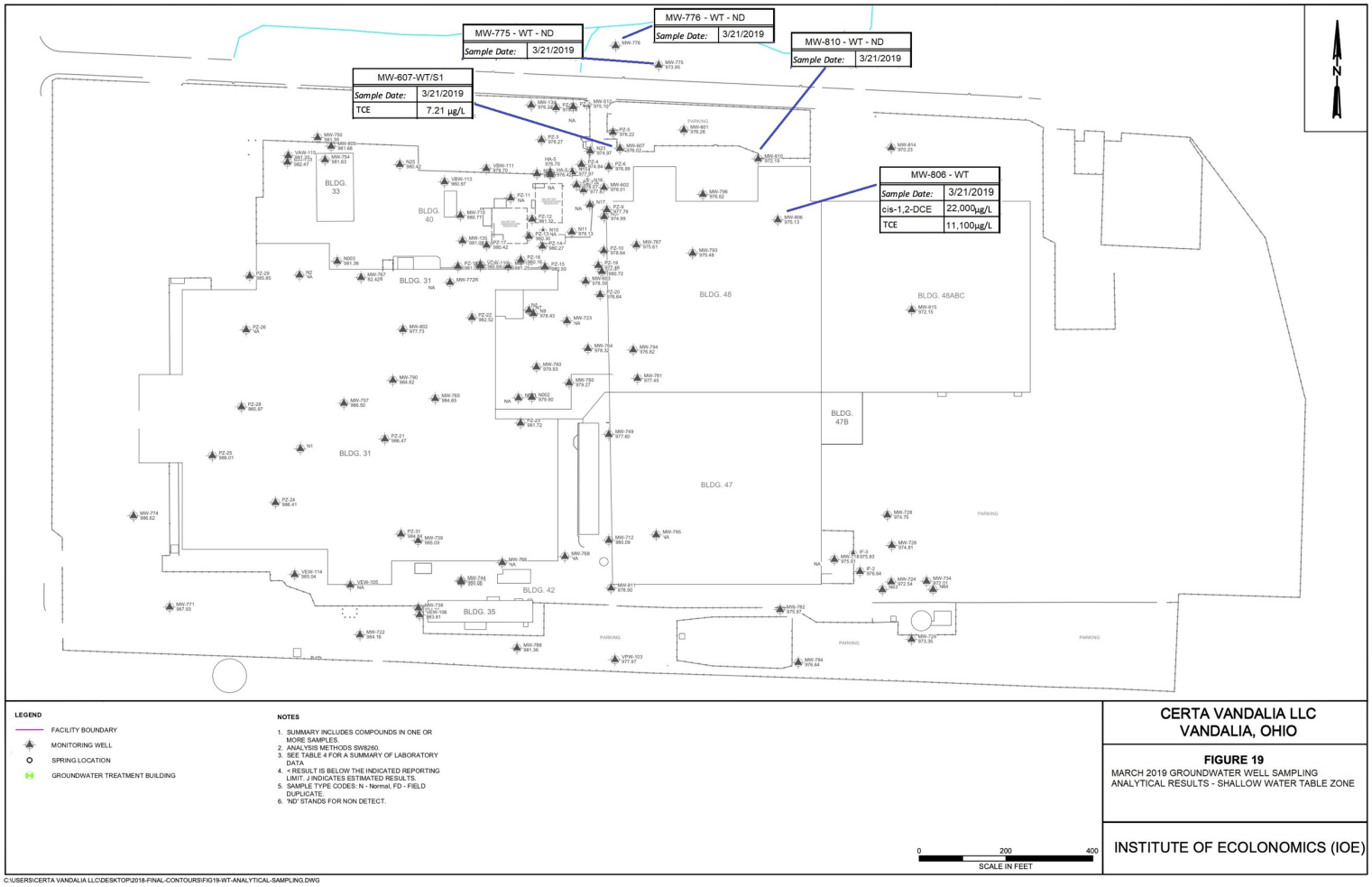


Figure 19 Fourth Quarter 2018 and First Quarter 2019 Groundwater Well Sampling - Shallow Water Table Wells and VOC Results

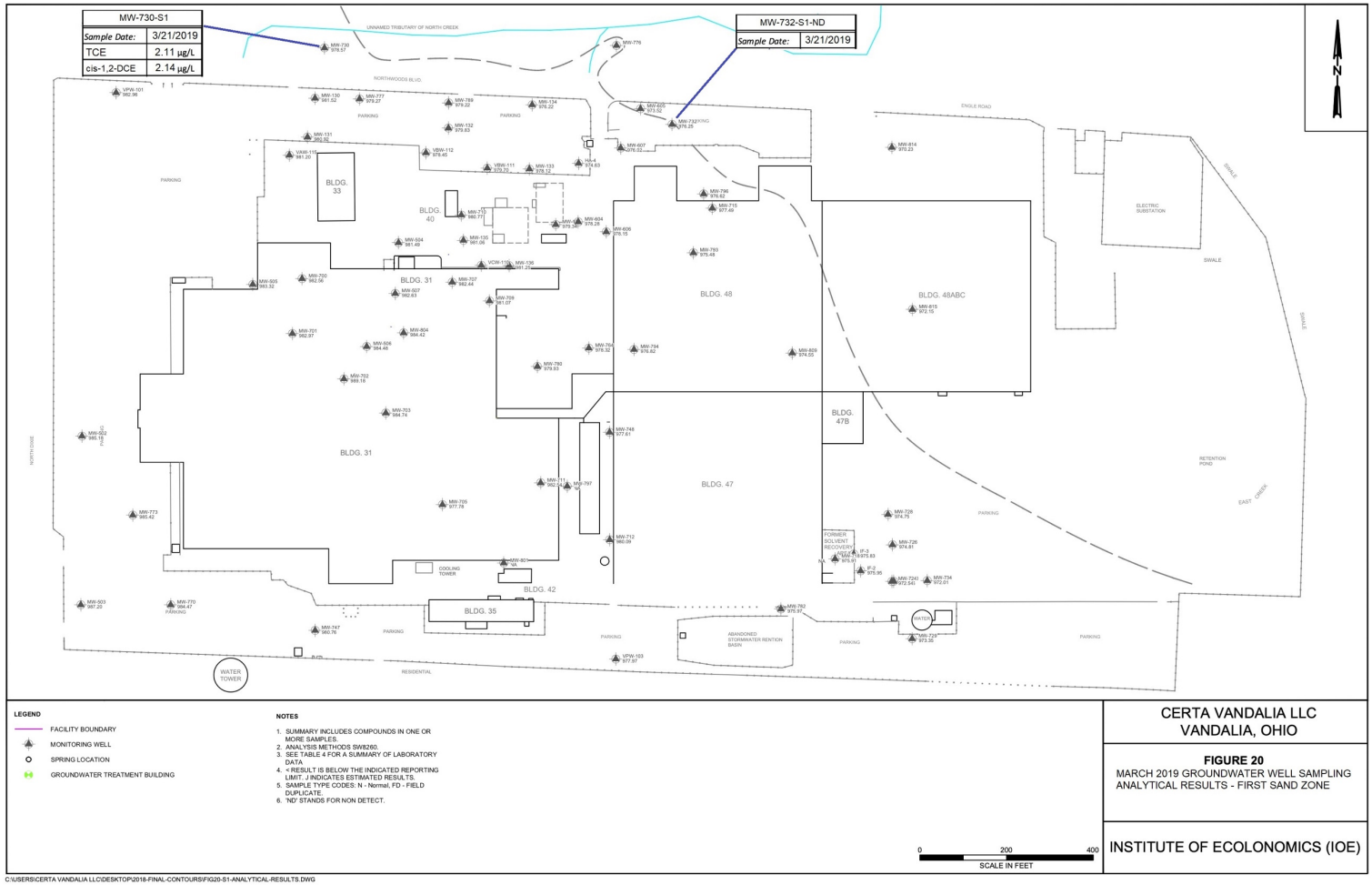


Figure 20 Fourth Quarter 2018 and First Quarter 2019 Groundwater Well Sampling - First Sand Zone and VOC Results

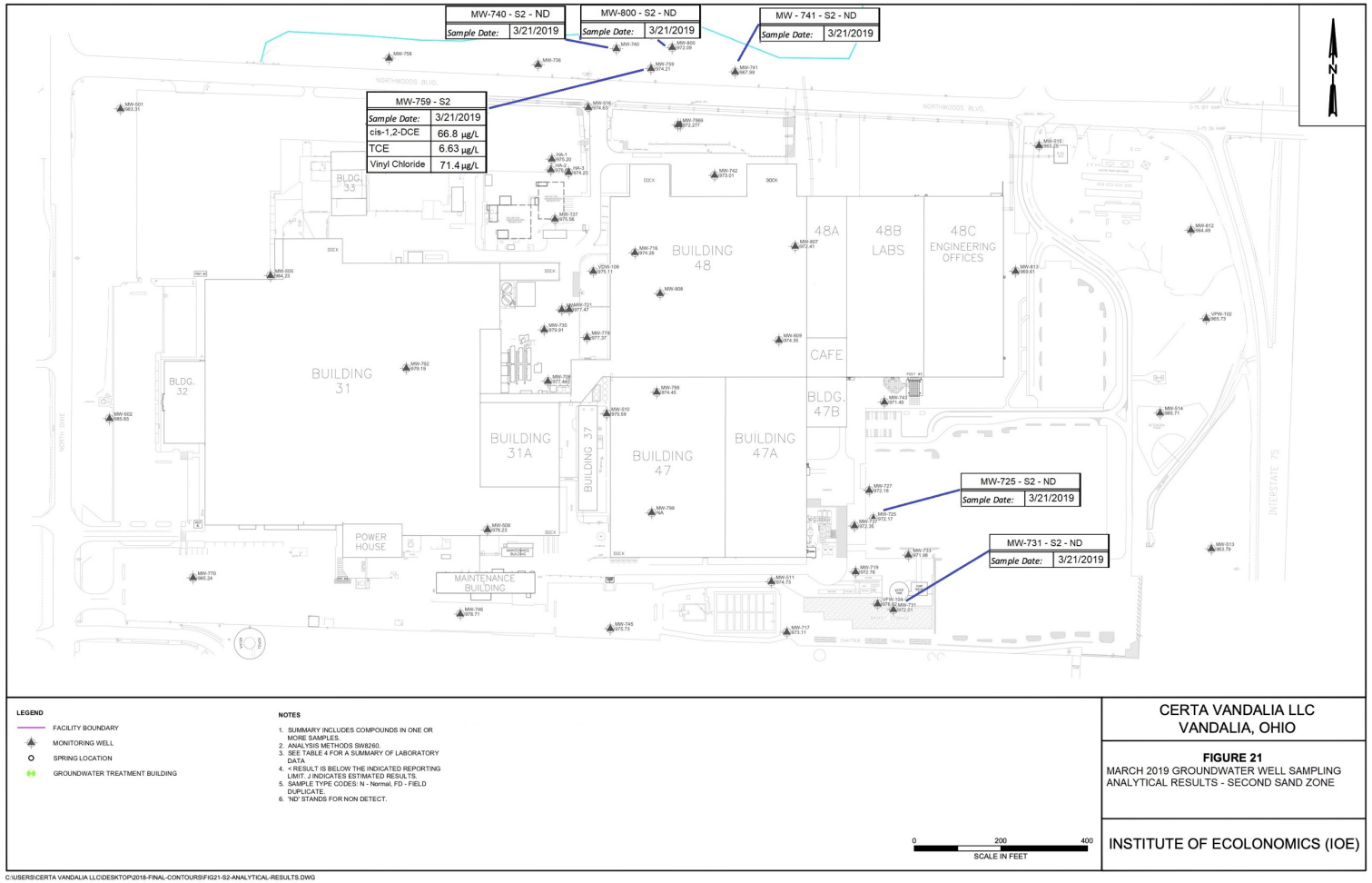


Figure 21 Fourth Quarter 2018 and First Quarter 2019 Groundwater Well Sampling - Second Sand Zone and VOC Results

Attachments

ATTACHMENT A Water Level Measurements

ATTACHMENT A
MONTHLY GROUNDWATER ELEVATION DATA
BEDROCK MONITORING WELLS
OCTOBER 2018
CERTA VANDALIA FACILITY - VANDALIA, OHIO

Monitoring Well ID	Well Type	Date	Time	Water Level (ft.)	Top of Casing Elevation (ft.)	Groundwater Elevation (ft. AMSL)	Notes
CSX-18D	SR	10/25/18	9:18	20.92	964.96	944.04	
MW-101D	SR	10/25/18	9:48	39.65	988.24	948.59	
MW-204D	SR	10/25/18	9:43	29.93	994.26	964.33	
MW-301D	SR	10/25/18	8:55	30.82	974.47	943.65	
MW-401D	SR	10/25/18	10:14	30.70	974.57	943.87	
MW-402D	SR	10/25/18	10:19	20.75	966.36	945.61	
MW-403D	SR	10/25/18	10:43	30.64	977.36	946.72	
MW-404D	SR	10/25/18	10:59	39.03	988.83	949.80	
MW-405D	SR	10/25/18	10:05	34.48	982.45	947.97	
MW-407D	SR	10/25/18	13:42	14.22	956.24	942.02	
MW-408D	SR	10/25/18	13:52	15.01	957.07	942.06	
MW-409D	SR	10/25/18	13:27	7.72	942.49	934.77	
MW-410D	SR	10/25/18	14:02	10.22	947.63	937.41	
MW-411D	SR	10/25/18	14:36	25.89	952.77	926.88	
MW-412D	SR	10/25/18	14:10	24.06	957.91	933.85	
MW-413D	SR	10/25/18	9:24	26.34	970.13	943.79	
MW-414D	SR	10/25/18	8:52	28.05	971.91	943.86	
MW-416D	SR	10/25/18	9:07	22.15	965.84	943.69	
MW-417D	SR	10/25/18	9:11	21.28	964.96	943.68	
MW-418D	SR	10/25/18	9:03	21.40	965.06	943.66	
MW-419D	SR	10/25/18	12:02	24.59	967.40	942.81	
MW-419M	MB	10/25/18	12:05	24.42	967.50	943.08	
MW-420D	SR	10/25/18	12:09	22.22	965.26	943.04	
MW-420M	MB	10/25/18	12:10	22.13	964.85	942.72	
MW-421D	SR	10/25/18	12:20	15.23	958.50	943.27	
MW-422D	SR	10/25/18	11:32	34.58	980.98	946.40	
MW-424D	SR	10/25/18	11:48	33.41	979.74	946.33	
MW-432D	SR	10/25/18	12:45	32.13	974.50	942.37	

MW-432M	MB	10/25/18	12:47	19.62	974.90	955.28	
MW-433D	SR	10/25/18	12:37	27.45	970.43	942.98	
MW-434D	SR	10/25/18	12:43	22.36	965.33	942.97	
MW-435D	SR	10/25/18	12:25	13.49	955.91	942.42	
MW-436D	SR	10/25/18	12:31	19.84	962.37	942.53	
MW-437D	SR	10/25/18	12:13	8.10	948.38	940.28	
MW-438D	SR	10/25/18	10:16	29.87	972.59	942.72	
MW-439D	SR	10/25/18	10:54	14.05	955.58	941.53	
MW-440D	SR	10/25/18	12:18	NA	936.70	NA	Artesian
MW-441D	SR	10/25/18	10:07	35.50	974.38	938.88	
MW-442D	SR	10/25/18	9:57	32.71	975.68	942.97	
MW-443D	SR	10/25/18	9:44	36.72	979.72	943.00	
MW-444D	SR	10/25/18	11:08	4.67	934.18	929.51	
MW-447D	SR	10/25/18	10:34	39.86	965.84	925.98	
MW-448D	SR	10/25/18	11:01	9.39	997.50	988.11	
MW-449D	SR	10/25/18	10:30	NA	970.44	NA	
MW-450D	SR	10/25/18	11:20	16.52	910.51	893.99	Could Not Locate
MW-451D	SR	10/25/18	10:25	25.16	967.32	942.16	
MW-453D	SR	10/25/18	10:42	NA	923.25	NA	Artesian

Notes:

AMSL - above mean sea level

ft. - feet

MB - Middle Brassfield

NA - not applicable

SR - Sugar Rock

Monthly Groundwater Elevation Data Bedrock Monitoring Wells November 2018

Monitoring Well ID	Well Type	Date	Time	Water Level (ft.)	Top of Casing Elevation (ft.)	Groundwater Elevation (ft. AMSL)	Notes
CSX-18D	SR	11/14/2018	8:03	23.11	964.96	941.85	
MW-101D	SR	11/14/2018	9:59	40.21	988.24	948.03	
MW-204D	SR	11/14/2018	9:54	30.12	994.26	964.14	
MW-301D	SR	11/14/2018	7:53	33.18	974.47	941.29	
MW-401D	SR	11/14/2018	9:22	32.85	974.57	941.72	
MW-402D	SR	11/14/2018	8:51	22.30	966.36	944.06	
MW-403D	SR	11/14/2018	12:03	10:04	977.36	946.94	
MW-404D	SR	11/14/2018		39.50	988.83	949.33	
MW-405D	SR	11/14/2018	9:49	34.95	982.45	947.50	
MW-407D	SR	11/14/2018	13:53	15.51	956.24	940.73	
MW-408D	SR	11/14/2018	14:57	16.43	957.07	940.64	
MW-409D	SR	11/14/2018			942.49	NA	Could Not Locate
MW-410D	SR	11/14/2018	14:14	11.01	947.63	936.62	
MW-411D	SR	11/14/2018			952.77	NA	Could Not Locate
MW-412D	SR	11/14/2018			957.91	NA	Could Not Locate
MW-413D	SR	11/14/2018	7:44	28.53	970.13	941.60	
MW-414D	SR	11/14/2018	7:11	30.27	971.91	941.64	
MW-416D	SR	11/14/2018	7:59	23.30	965.84	942.54	
MW-417D	SR	11/14/2018	8:12	23.22	964.96	941.74	
MW-418D	SR	11/14/2018	7:56	23.55	965.06	941.51	
MW-419D	SR	11/14/2018	8:33	24.22	967.40	943.18	
MW-419M	MB	11/14/2018	8:30	26.10	967.50	941.40	
MW-420D	SR	11/14/2018	8:25	23.81	965.26	941.45	
MW-420M	MB	11/14/2018	8:28	23.13	964.85	941.72	
MW-421D	SR	11/14/2018	8:38	16.55	958.50	941.95	
MW-422D	SR	11/14/2018	11:20	35.63	980.98	945.35	
MW-424D	SR	11/14/2018	11:44	34.55	979.74	945.19	
MW-432D	SR	11/14/2018	8:45	33.65	974.50	940.85	
MW-432M	MB	11/14/2018	8:47	16.62	974.90	958.28	
MW-433D	SR	11/14/2018	11:15	39.06	970.43	931.37	
MW-434D	SR	11/14/2018	11:07	34.00	965.33	931.33	
MW-435D	SR	11/14/2018	10:46	14.88	955.91	941.03	
MW-436D	SR	11/14/2018	11:19	21.22	962.37	941.15	
MW-437D	SR	11/14/2018	11:25	9.25	948.38	939.13	
MW-438D	SR	11/14/2018	9:32	31.29	972.59	941.30	

MW-439D	SR	11/14/2018			955.58	NA	Could Not Locate
MW-440D	SR	11/14/2018	11:35	NA	936.70	NA	Artesian
MW-441D	SR	11/14/2018	9:22	33.00	974.38	941.38	
MW-442D	SR	11/14/2018	8:25	34.31	975.68	941.37	
MW-443D	SR	11/14/2018	9:54	38.31	979.72	941.41	
MW-444D	SR	11/14/2018	11:53	4.50	934.18	929.68	
MW-447D	SR	11/14/2018	10:25	39.94	965.84	925.90	
MW-448D	SR	11/14/2018	10:29	14.95	997.50	982.55	
MW-449D	SR	11/14/2018	10:20	31.49	970.44	938.95	
MW-450D	SR	11/14/2018			910.51	NA	Could Not Locate
MW-451D	SR	11/14/2018	10:15	26.51	967.32	940.81	
MW-453D	SR	11/14/2018			923.25	NA	Artesian

Notes:

AMSL - above mean sea level

ft. - feet

MB - Middle Brassfield

NA - not applicable

SR - Sugar Rock

Monthly Groundwater Elevation Data Bedrock Monitoring Wells December 2018

Monitoring Well ID	Well Type	Date	Time	Water Level (ft.)	Top of Casing Elevation (ft.)	Groundwater Elevation (ft. AMSL)	Notes
CSX-18D	SR	12/13/2018	8:31	21.65	964.96	943.31	
MW-101D	SR	12/13/2018	13:29	39.05	988.24	949.19	
MW-204D	SR	12/13/2018	13:21	29.31	994.26	964.95	
MW-301D	SR	12/13/2018	8:05	31.65	974.47	942.82	
MW-401D	SR	12/13/2018	14:29	41.40	974.57	933.17	
MW-402D	SR	12/13/2018	13:29	20.97	966.36	945.39	
MW-403D	SR	12/13/2018	NA	NA	977.36	NA	Could Not Locate
MW-404D	SR	12/13/2018	14:14	38.25	988.83	950.58	
MW-405D	SR	12/13/2018	14:39	33.85	982.45	948.60	
MW-407D	SR	12/13/2018	12:05	14.00	956.24	942.24	
MW-408D	SR	12/13/2018	12:33	14.07	957.07	943.00	
MW-409D	SR	12/13/2018	9:16	6.62	942.49	935.87	
MW-410D	SR	12/13/2018	12:17	9.87	947.63	937.76	
MW-411D	SR	12/13/2018	9:41	14.36	952.77	938.41	
MW-412D	SR	12/13/2018	9:56	23.40	957.91	934.51	
MW-413D	SR	12/13/2018	8:13	37.10	970.13	933.03	
MW-414D	SR	12/13/2018	8:00	29.00	971.91	942.91	
MW-416D	SR	12/13/2018	8:38	22.85	965.84	942.99	
MW-417D	SR	12/13/2018	8:24	26.80	964.96	938.16	
MW-418D	SR	12/13/2018	8:42	21.10	965.06	943.96	
MW-419D	SR	12/13/2018	8:56	24.35	967.40	943.05	
MW-419M	MB	12/13/2018	8:58	24.50	967.50	943.00	
MW-420D	SR	12/13/2018	8:50	22.35	965.26	942.91	
MW-420M	MB	12/13/2018	8:48	21.70	964.85	943.15	
MW-421D	SR	12/13/2018	9:01	15.51	958.50	942.99	
MW-422D	SR	12/13/2018	NA	NA	980.98	NA	Could Not Locate
MW-424D	SR	12/13/2018	14:54	33.25	979.74	946.49	
MW-432D	SR	12/13/2018	10:34	32.11	974.50	942.39	
MW-432M	MB	12/13/2018	10:59	18.52	974.90	956.38	
MW-433D	SR	12/13/2018	11:41	27.45	970.43	942.98	
MW-434D	SR	12/13/2018	11:45	22.41	965.33	942.92	
MW-435D	SR	12/13/2018	11:52	13.25	955.91	942.66	
MW-436D	SR	12/13/2018	13:04	19.55	962.37	942.82	
MW-437D	SR	12/13/2018	10:07	7.71	948.38	940.67	
MW-438D	SR	12/13/2018	11:05	29.75	972.59	942.84	

MW-439D	SR	12/13/2018	11:37	13.30	955.58	942.28	
MW-440D	SR	12/13/2018	10:13	n/a	936.70	NA	Artesian
MW-441D	SR	12/13/2018	10:41	31.46	974.38	942.92	
MW-442D	SR	12/13/2018	13:12	32.76	975.68	942.92	
MW-443D	SR	12/13/2018	12:36	36.71	979.72	943.01	
MW-444D	SR	12/13/2018	10:15	3.36	934.18	930.82	
MW-447D	SR	12/13/2018	11:23	39.15	965.84	926.69	
MW-448D	SR	12/13/2018	10:21	8.32	997.50	989.18	
MW-449D	SR	12/13/2018	11:18	31.07	970.44	939.37	
MW-450D	SR	12/13/2018	10:00	17.12	910.51	893.39	
MW-451D	SR	12/13/2018	11:13	35.00	967.32	932.32	
MW-453D	SR	12/13/2018	NA	NA	923.25	NA	Artesian

Notes:

AMSL - above mean sea level

ft. - feet

MB - Middle Brassfield

NA - not applicable

SR - Sugar Rock

Monthly Groundwater Elevation Data Bedrock Monitoring Wells January 2019

Monitoring Well ID	Well Type	Date	Time	Water Level (ft.)	Top of Casing Elevation (ft.)	Groundwater Elevation (ft. AMSL)	Notes
CSX-18D	SR	1/5/2019	11:21	19.11	964.96	945.85	
MW-101D	SR	1/5/2019	10:15	35.97	988.24	952.27	
MW-204D	SR	1/5/2019	10:00	27.66	994.26	966.60	
MW-301D	SR	1/5/2019	10:18	29.05	974.47	945.42	
MW-401D	SR	1/5/2019	17:46	28.90	974.57	945.67	
MW-402D	SR	1/5/2019	17:23	7.42	966.36	958.94	
MW-403D	SR	1/5/2019	14:55	28.71	977.36	948.65	
MW-404D	SR	1/5/2019	17:39	6.23	988.83	982.60	
MW-405D	SR	1/5/2019	9:30	31.82	982.45	950.63	
MW-407D	SR	1/5/2019	13:28	11.29	956.24	944.95	
MW-408D	SR	1/5/2019	14:06	12.18	957.07	944.89	
MW-409D	SR	1/5/2019	12:06	4.72	942.49	937.77	
MW-410D	SR	1/5/2019	13:41	7.84	947.63	939.79	
MW-411D	SR	1/5/2019	12:32	13.24	952.77	939.53	
MW-412D	SR	1/5/2019	12:47	21.89	957.91	936.02	
MW-413D	SR	1/5/2019	10:25	24.50	970.13	945.63	
MW-414D	SR	1/5/2019	10:11	26.19	971.91	945.72	
MW-416D	SR	1/5/2019	10:39	20.30	965.84	945.54	
MW-417D	SR	1/5/2019	11:27	19.54	964.96	945.42	
MW-418D	SR	1/5/2019	10:36	19.43	965.06	945.63	
MW-419D	SR	1/5/2019	11:50	21.81	967.40	945.59	
MW-419M	MB	1/5/2019	17:11	22.03	967.50	945.47	
MW-420D	SR	1/5/2019	11:46	19.72	965.26	945.54	
MW-420M	MB	1/5/2019	17:10	19.40	964.85	945.45	
MW-421D	SR	1/5/2019	11:55	12.96	958.50	945.54	
MW-422D	SR	1/5/2019	NA	NA	980.98	NA	
MW-424D	SR	1/5/2019	15:07	31.35	979.74	948.39	
MW-432D	SR	1/5/2019	16:02	29.61	974.50	944.89	
MW-432M	MB	1/5/2019	17:05	16.39	974.90	958.51	
MW-433D	SR	1/5/2019	15:43	24.92	970.43	945.51	
MW-434D	SR	1/5/2019	14:22	19.88	965.33	945.45	
MW-435D	SR	1/5/2019	13:07	10.51	955.91	945.40	
MW-436D	SR	1/5/2019	15:34	16.90	962.37	945.47	
MW-437D	SR	1/5/2019	13:04	5.22	948.38	943.16	
MW-438D	SR	1/5/2019	16:39	27.15	972.59	945.44	

MW-439D	SR	1/5/2019	15:26	10.35	955.58	945.23	
MW-440D	SR	1/5/2019	15:05	NA	936.70	NA	Artesian
MW-441D	SR	1/5/2019	16:10	28.98	974.38	945.40	
MW-442D	SR	1/5/2019	16:54	30.25	975.68	945.43	
MW-443D	SR	1/5/2019	16:48	33.39	979.72	946.33	
MW-444D	SR	1/5/2019	15:10	1.30	934.18	932.88	
MW-447D	SR	1/5/2019	16:30	37.72	965.84	928.12	
MW-448D	SR	1/5/2019	15:18	7.01	997.50	990.49	
MW-449D	SR	1/5/2019	16:24	28.75	970.44	941.69	
MW-450D	SR	1/5/2019	15:00	14.79	910.51	895.72	
MW-451D	SR	1/5/2019	16:18	22.55	967.32	944.77	
MW-453D	SR	1/5/2019	16:34	NA	923.25	NA	Artesian

Notes:

AMSL - above mean sea level

ft. - feet

MB - Middle Brassfield

NA - not applicable

SR - Sugar Rock

Monthly Groundwater Elevation Data Bedrock Monitoring Wells February 2019

Monitoring Well ID	Well Type	Date	Time	Water Level (ft.)	Top of Casing Elevation (ft.)	Groundwater Elevation (ft. AMSL)	Notes
CSX-18D	SR	2/28/2019	10:16	15.11	964.96	949.85	
MW-101D	SR	2/28/2019	13:45	34.62	988.24	953.62	
MW-204D	SR	2/28/2019	13:41	26.02	994.26	968.24	
MW-301D	SR	2/28/2019	10:04	5.88	974.47	968.59	
MW-401D	SR	2/28/2019	15:02	25.50	974.57	949.07	
MW-402D	SR	2/28/2019	12:33	7.02	966.36	959.34	
MW-403D	SR	2/28/2019	13:59	25.85	977.36	951.51	
MW-404D	SR	2/28/2019	14:44	5.95	988.83	982.88	
MW-405D	SR	2/28/2019	13:31	4.91	982.45	977.54	
MW-407D	SR	2/28/2019	12:05	9.21	956.24	947.03	
MW-408D	SR	2/28/2019	12:13	10.11	957.07	946.96	
MW-409D	SR	2/28/2019	11:00	2.55	942.49	939.94	
MW-410D	SR	2/28/2019	11:57	5.92	947.63	941.71	
MW-411D	SR	2/28/2019	11:25	11.26	952.77	941.51	
MW-412D	SR	2/28/2019	11:36	19.82	957.91	938.09	
MW-413D	SR	2/28/2019	10:09	20.51	970.13	949.62	
MW-414D	SR	2/28/2019	10:00	22.18	971.91	949.73	
MW-416D	SR	2/28/2019	10:36	16.50	965.84	949.34	
MW-417D	SR	2/28/2019	10:23	15.41	964.96	949.55	
MW-418D	SR	2/28/2019	10:32	15.59	965.06	949.47	
MW-419D	SR	2/28/2019	10:50	18.85	967.40	948.55	
MW-419M	MB	2/28/2019	10:50	18.44	967.50	949.06	
MW-420D	SR	2/28/2019	10:42	16.35	965.26	948.91	
MW-420M	MB	2/28/2019	10:43	15.71	964.85	949.14	
MW-421D	SR	2/28/2019	10:57	9.31	958.50	949.19	
MW-422D	SR	2/28/2019	NA	NA	980.98	NA	Could Not Locate
MW-424D	SR	2/28/2019	14:50	28.11	979.74	951.63	
MW-432D	SR	2/28/2019	15:27	26.41	974.50	948.09	
MW-432M	MB	2/28/2019	15:27	15.83	974.90	959.07	
MW-433D	SR	2/28/2019	15:32	21.65	970.43	948.78	
MW-434D	SR	2/28/2019	15:36	16.55	965.33	948.78	
MW-435D	SR	2/28/2019	11:49	7.62	955.91	948.29	
MW-436D	SR	2/28/2019	15:43	14.00	962.37	948.37	
MW-437D	SR	2/28/2019	11:46	2.46	948.38	945.92	
MW-438D	SR	2/28/2019	16:24	24.09	972.59	948.50	

MW-439D	SR	2/28/2019	15:48	7.85	955.58	947.73	
MW-440D	SR	2/28/2019	NA	NA	936.70	NA	Artesian
MW-441D	SR	2/28/2019	16:41	26.12	974.38	948.26	
MW-442D	SR	2/28/2019	15:17	25.95	975.68	949.73	
MW-443D	SR	2/28/2019	15:11	30.95	979.72	948.77	
MW-444D	SR	2/28/2019	15:52	0.00	934.18	NA	Artesian
MW-447D	SR	2/28/2019	16:09	36.32	965.84	929.52	
MW-448D	SR	2/28/2019	15:59	5.95	997.50	991.55	
MW-449D	SR	2/28/2019	16:15	25.49	970.44	944.95	
MW-450D	SR	2/28/2019	11:17	16.02	910.51	894.49	
MW-451D	SR	2/28/2019	16:19	19.45	967.32	947.87	
MW-453D	SR	2/28/2019	NA	NA	923.25	NA	Artesian

Notes:

AMSL - above mean sea level

ft. - feet

MB - Middle Brassfield

NA - not applicable

SR - Sugar Rock

Monthly Groundwater Elevation Data Bedrock Monitoring Wells March 2019

Monitoring Well ID	Well Type	Date	Time	Water Level (ft.)	Top of Casing Elevation (ft.)	Groundwater Elevation (ft. AMSL)	Notes
CSX-18D	SR	3/19/2019	11:49	16.17	964.96	948.79	
MW-101D	SR	3/19/2019	13:39	5.30	988.24	982.94	
MW-204D	SR	3/19/2019	15:45	26.55	994.26	967.71	
MW-301D	SR	3/19/2019	11:16	4.60	974.47	969.87	
MW-401D	SR	3/19/2019	14:13	26.00	974.57	948.57	
MW-402D	SR	3/19/2019	14:03	16.12	966.36	950.24	
MW-403D	SR	3/19/2019	13:46	22.15	977.36	955.21	
MW-404D	SR	3/19/2019	13:32	34.68	988.83	954.15	
MW-405D	SR	3/19/2019	14:36	30.11	982.45	952.34	
MW-407D	SR	3/19/2019	14:25	9.50	956.24	946.74	
MW-408D	SR	3/19/2019	14:50	10.29	957.07	946.78	
MW-409D	SR	3/19/2019			942.49	NA	
MW-410D	SR	3/19/2019	14:36	6.15	947.63	941.48	
MW-411D	SR	3/19/2019	13:33	13.07	952.77	939.70	
MW-412D	SR	3/19/2019	13:20	21.69	957.91	936.22	
MW-413D	SR	3/19/2019	11:29	21.60	970.13	948.53	
MW-414D	SR	3/19/2019	11:21	23.30	971.91	948.61	
MW-416D	SR	3/19/2019	11:37	17.42	965.84	948.42	
MW-417D	SR	3/19/2019	11:56	16.56	964.96	948.40	
MW-418D	SR	3/19/2019	11:40	16.61	965.06	948.45	
MW-419D	SR	3/19/2019	12:10	19.82	967.40	947.58	
MW-419M	MB	3/19/2019	12:13	19.56	967.50	947.94	
MW-420D	SR	3/19/2019	17:51	12.01	965.26	953.25	
MW-420M	MB	3/19/2019	16:41	12.06	964.85	952.79	
MW-421D	SR	3/19/2019	12:19	10.44	958.50	948.06	
MW-422D	SR	3/19/2019	14:54	30.15	980.98	950.83	
MW-424D	SR	3/19/2019	15:18	29.00	979.74	950.74	
MW-432D	SR	3/19/2019	12:25	27.55	974.50	946.95	
MW-432M	MB	3/19/2019	12:20	16.91	974.90	957.99	
MW-433D	SR	3/19/2019	12:35	22.82	970.43	947.61	
MW-434D	SR	3/19/2019	13:04	17.65	965.33	947.68	
MW-435D	SR	3/19/2019	14:10	8.70	955.91	947.21	
MW-436D	SR	3/19/2019	12:40	15.08	962.37	947.29	
MW-437D	SR	3/19/2019	13:57	3.72	948.38	944.66	
MW-438D	SR	3/19/2019	11:52	25.40	972.59	947.19	

MW-439D	SR	3/19/2019	12:49	9.12	955.58	946.46	
MW-440D	SR	3/19/2019			936.70	NA	Artesian
MW-441D	SR	3/19/2019	11:59	26.92	974.38	947.46	
MW-442D	SR	3/19/2019	11:29	28.07	975.68	947.61	
MW-443D	SR	3/19/2019	11:32	32.05	979.72	947.67	
MW-444D	SR	3/19/2019			934.18	NA	Artesian
MW-447D	SR	3/19/2019	11:37	37.11	965.84	928.73	
MW-448D	SR	3/19/2019	12:57	6.82	997.50	990.68	
MW-449D	SR	3/19/2019	11:42	27.65	970.44	942.79	
MW-450D	SR	3/19/2019	13:07	15.67	910.51	894.84	
MW-451D	SR	3/19/2019	11:46	20.62	967.32	946.70	
MW-453D	SR	3/19/2019			923.25	NA	Artesian

Notes:

AMSL - above mean sea level

ft. - feet

MB - Middle Brassfield

NA - not applicable

SR - Sugar Rock

Quarterly Groundwater Elevation Data Top of Rock Monitoring Wells November 2018

Monitoring Well ID	Well Type	Date	Time	Water Level (ft.)	Top of Casing Elevation (ft.)	Groundwater Elevation (ft. AMSL)	Notes
CSX-22	TOR	11/14/2018			967.35	NA	Could Not Locate
MW-101S	TOR	11/14/2018	10:01	6.01	988.04	982.03	
MW-204S	TOR	11/14/2018	9:52	11.85	993.94	982.09	
MW-301S	TOR	11/14/2018	7:54	29.05	971.03	941.98	
MW-401S	TOR	11/14/2018	9:24	13.61	974.73	961.12	
MW-402S	TOR	11/14/2018	8:53	9.00	966.62	957.62	
MW-403S	TOR	11/14/2018	12:05	6.42	976.61	970.19	
MW-404S	TOR	11/14/2018		7.18	989.50	982.32	
MW-405S	TOR	11/14/2018	9:47	6.23	982.47	976.24	
MW-407S	TOR	11/14/2018			952.99	NA	Could Not Locate
MW-412S	TOR	11/14/2018			949.79	NA	Could Not Locate
MW-415S	TOR	11/14/2018	12:14	8.13	976.78	968.65	
MW-422S	TOR	11/14/2018	11:18	16.35	981.27	964.92	
MW-423S	TOR	11/14/2018			978.96	NA	
MW-424S	TOR	11/14/2018	11:42	20.77	980.06	959.29	
MW-425S	TOR	11/14/2018	9:05	7.69	976.09	968.40	
MW-426S	TOR	11/14/2018			966.24	NA	Could Not Locate
MW-427S	TOR	11/14/2018			978.34	NA	Covered
MW-428S	TOR	11/14/2018	10:17	10.55	985.43	974.88	
MW-429S	TOR	11/14/2018	10:11	5.05	985.08	980.03	
MW-430S	TOR	11/14/2018	11:14	10.01	984.87	974.86	
MW-431S	TOR	11/14/2018	10:06	7.08	982.46	975.38	
MW-445S	TOR	11/14/2018	9:03	18.05	976.07	958.02	
MW-446S	TOR	11/14/2018			975.73	NA	Covered
MW-452S	TOR	11/14/2018	10:33	11.60	989.13	977.53	
MW-454S	TOR	11/14/2018	11:30	5.84	969.38	963.54	
MW-455S	TOR	11/14/2018	11:25	7.72	976.65	968.93	

Notes:

AMSL - above mean sea level

ft. - feet

NA - not applicable

TOR - Top of Rock

Quarterly Groundwater Elevation Data Top of Rock Monitoring Wells March 2019

Monitoring Well ID	Well Type	Date	Time	Water Level (ft.)	Top of Casing Elevation (ft.)	Groundwater Elevation (ft. AMSL)	Notes
CSX-22	TOR	3/12/2019			967.35	NA	Could Not Locate
MW-101S	TOR	3/12/2019	13:12	5.33	988.04	982.71	
MW-204S	TOR	3/12/2019	13:06	11.57	993.94	982.37	
MW-301S	TOR	3/12/2019	11:25	21.76	971.03	949.27	
MW-401S	TOR	3/12/2019	12:16	12.47	974.73	962.26	
MW-402S	TOR	3/12/2019	11:08	6.25	966.62	960.37	
MW-403S	TOR	3/12/2019	10:23	5.44	976.61	971.17	
MW-404S	TOR	3/12/2019			989.50	NA	Could Not Locate
MW-405S	TOR	3/12/2019	12:30	8.36	982.47	974.11	
MW-407S	TOR	3/12/2019			952.99	NA	Could Not Locate
MW-412S	TOR	3/12/2019			949.79	NA	Could Not Locate
MW-415S	TOR	3/12/2019	10:36	6.33	976.78	970.45	
MW-422S	TOR	3/12/2019	12:49	8.31	981.27	972.96	
MW-423S	TOR	3/12/2019	12:53	24.74	978.96	954.22	
MW-424S	TOR	3/12/2019	14:18	17.54	980.06	962.52	
MW-425S	TOR	3/12/2019	10:39	6.00	976.09	970.09	
MW-426S	TOR	3/12/2019			966.24	NA	Could Not Locate
MW-427S	TOR	3/12/2019			978.34	NA	Covered
MW-428S	TOR	3/12/2019			985.43	985.43	
MW-429S	TOR	3/12/2019	13:24	6.76	985.08	978.32	
MW-430S	TOR	3/12/2019	12:35	5.61	984.87	979.26	
MW-431S	TOR	3/12/2019	13:17	6.31	982.46	976.15	
MW-445S	TOR	3/12/2019	10:48	15.31	976.07	960.76	
MW-446S	TOR	3/12/2019			975.73	NA	Covered
MW-452S	TOR	3/12/2019	12:50	10.29	989.13	978.84	
MW-454S	TOR	3/12/2019			969.38	NA	Could Not Locate
MW-455S	TOR	3/12/2019			976.65	NA	Could Not Locate

Notes:

AMSL - above mean sea level

ft. - feet

NA - not applicable

TOR - Top of Rock

Quarterly Groundwater Elevation Data Overburden Monitoring Wells October 2018

Monitoring Well ID	Well Type	Date	Time	Water Level (ft.)	Top of Casing Elevation (ft.)	Groundwater Elevation (ft. AMSL)	Notes
HA-1	S2	10/3/2018	13:35	10.62	982.24	971.62	
HA-2	S2	10/3/2018	13:21	8.25	982.70	974.45	
HA-3	S2	10/3/2018	13:18	10.71	982.61	971.90	
HA-4	S1	10/3/2018	13:15	3.77	981.14	977.37	
HA-5	WT	10/3/2018	13:25	6.10	982.94	976.84	
IF-2	WT/S1	10/3/2018	-	-	978.64	NA	
IF-3	WT/S1	10/3/2018	2:13	2.79	978.61	975.82	
MW-130	S1	10/3/2018	11:42	4.24	986.02	981.78	
MW-131	S1	10/3/2018	11:37	4.70	985.72	981.02	
MW-132	WT/S1	10/3/2018	11:52	4.05	984.07	980.02	
MW-133	S1	10/3/2018	12:05	5.05	983.13	978.08	
MW-134	WT/S1	10/3/2018	12:10	2.70	978.78	976.08	
MW-135	WT/S1	10/3/2018	12:03	3.77	984.86	981.09	
MW-136	WT/S1	10/3/2018	12:09	4.53	985.67	981.14	
MW-137	S2	10/3/2018	11:37	8.22	982.67	974.45	
MW-138	S1	10/3/2018	11:36	2.91	982.24	979.33	
MW-501	S2	10/3/2018	11:30	5.37	988.73	983.36	
MW-502	S1/S2	10/3/2018	11:20	4.60	990.20	985.60	
MW-503	S1	10/3/2018	11:14	7.01	994.49	987.48	
MW-504	S1	10/3/2018	12:20	2.78	984.42	981.64	
MW-505	S1/S2	10/3/2018	11:25	5.69	989.28	983.59	
MW-506	S1	10/3/2018	1:01	3.69	988.96	985.27	
MW-507	S1	10/3/2018	12:26	6.85	988.96	982.11	
MW-508	S2	10/3/2018	12:58	11.29	989.07	977.78	
MW-509	S2	10/3/2018	11:03	8.12	985.34	977.22	
MW-510	S2	10/3/2018	10:53	6.58	981.51	974.93	
MW-511	S2	10/3/2018	11:03	6.00	980.06	974.06	
MW-512	WT	10/3/2018	13:31	3.98	979.15	975.17	
MW-513	S2	10/3/2018	10:00	NA	974.84	NA	
MW-514	S2	10/3/2018	9:53	0.75	986.31	985.56	
MW-515	S2	10/3/2018	9:38	5.08	970.44	965.36	
MW-516	S2	10/3/2018	1:31	8.45	978.83	970.38	
MW-601	WT	10/3/2018	13:37	3.21	979.47	976.26	
MW-602	WT	10/3/2018	11:27	4.09	981.94	977.85	
MW-603	WT	10/3/2018	10:58	5.99	984.42	978.43	

MW-604	S1	10/3/2018	11:33	3.35	981.77	978.42	
MW-605	S1	10/3/2018	13:34	7.99	978.62	970.63	
MW-606	S1	10/3/2018	11:23	4.68	982.87	978.19	
MW-607	WT/S1	10/3/2018	14:24	3.00	979.87	976.87	
MW-700	S1	10/3/2018	12:22	5.81	988.77	982.96	
MW-701	S1	10/3/2018	12:50	3.45	988.92	985.47	
MW-702	S1	10/3/2018	12:50	0.05	989.24	NA	Well Open, Water to Surface
MW-703	S1	10/3/2018	12:45	3.18	988.84	985.66	
MW-705	S1	10/3/2018	12:55	11.54	989.01	977.47	
MW-706	WT	10/3/2018	12:38	6.20	987.67	981.47	
MW-707	S1	10/3/2018	12:31	5.97	989.06	983.09	
MW-708	S2	10/3/2018	12:38	9.42	985.24	975.82	
MW-709	S1	10/3/2018	12:35	7.69	989.10	981.41	
MW-710	WT/S1	10/3/2018	11:53	4.22	985.15	980.93	
MW-711	S1	10/3/2018	13:05	8.15	989.16	981.01	
MW-712	WT/S1	10/3/2018	10:40	2.72	982.31	979.59	
MW-715	S1	10/3/2018	11:02	5.67	982.30	976.63	
MW-716	S2	10/3/2018	10:50	9.76	982.31	972.55	
MW-717	S2	10/3/2018	11:45	6.50	979.82	973.32	
MW-718	WT/S1	10/3/2018	-	-	980.27	NA	Well Appears Destroyed
MW-719	S2	10/3/2018	11:20	6.40	979.01	972.61	
MW-720	S1	10/3/2018	10:19	6.80	979.29	972.49	
MW-721	S2	10/3/2018	11:00	8.07	984.81	976.74	
MW-722	WT	10/3/2018	12:23	2.90	987.55	984.65	
MW-723	WT	10/3/2018	-	-	984.75	NA	Abandoned
MW-724	WT/S1	10/3/2018	10:17	6.65	979.15	972.50	
MW-725	S2	10/3/2018	10:13	6.46	978.46	972.00	
MW-726	WT/S1	10/3/2018	10:14	3.77	978.70	974.93	
MW-727	S2	10/3/2018	10:09	5.76	977.84	972.08	
MW-728	WT/S1	10/3/2018	10:10	3.26	978.07	974.81	
MW-729	WT/S1	10/3/2018	11:40	3.74	977.20	973.46	
MW-730	S1	10/3/2018	10:20	3.55	982.08	978.53	
MW-731	S2	10/3/2018	11:42	5.25	977.19	971.94	
MW-732	S1	10/3/2018	13:36	2.66	978.89	976.23	
MW-733	S2	10/3/2018	10:23	7.06	978.98	971.92	
MW-734	WT/S1	10/3/2018	10:21	7.12	979.14	972.02	
MW-735	S2	10/3/2018	12:43	6.31	985.40	979.09	
MW-736	S2	10/3/2018	10:10	6.99	979.45	972.46	
MW-737	S2	10/3/2018	11:32	6.82	978.96	972.14	

MW-738	WT	10/3/2018	12:25	2.86	987.75	984.89	
MW-739	WT	10/3/2018	12:50	3.48	989.05	985.57	
MW-740	S2	10/3/2018	-	-	973.82	NA	Could Not Locate
MW-741	S2	10/3/2018	9:40	8.50	976.19	967.69	
MW-742	S2	10/3/2018	12:54	8.95	980.10	971.15	
MW-743	S2	10/3/2018	10:27	5.69	976.89	971.20	
MW-744	WT	10/3/2018	12:40	6.30	987.36	981.06	
MW-745	S2	10/3/2018	10:28	7.15	982.49	975.34	
MW-746	S2	10/3/2018	12:31	9.10	987.64	978.54	
MW-747	S1	10/3/2018	12:21	7.18	988.14	980.96	
MW-748	S1	10/3/2018	10:46	4.61	981.98	977.37	
MW-749	WT	10/3/2018	10:49	2.15	981.94	979.79	
MW-750	WT	10/3/2018	11:39	3.60	985.32	981.72	
MW-753	WT	10/3/2018	11:46	2.64	985.37	982.73	
MW-754	WT	10/3/2018	11:43	3.75	985.85	982.10	
MW-757	WT	10/3/2018	12:48	2.30	988.95	986.65	
MW-758	S2	10/3/2018	10:15	3.02	982.34	979.32	
MW-759	S2	10/3/2018	9:54	4.80	976.87	972.07	
MW-760	WT	10/3/2018	10:30	4.98	984.49	979.51	
MW-764	WT/S1	10/3/2018	10:38	4.22	982.78	978.56	
MW-765	WT	10/3/2018	12:37	3.59	988.96	985.37	
MW-766	WT	10/3/2018	-	-	987.15	NA	Covered
MW-767	WT	10/3/2018	12:24	6.84	88.92	82.08	
MW-768	WT	10/3/2018	-	-	985.64	NA	Covered
MW-770	S1/S2	10/3/2018	12:17	7.75	992.62	984.87	
MW-771	WT	10/3/2018	12:19	3.42	992.54	989.12	
MW-772R	WT	10/3/2018	12:33	5.94	NA	#VALUE!	
MW-773	S1	10/3/2018	11:17	3.46	989.24	985.78	
MW-774	WT	10/3/2018	11:19	2.34	989.06	986.72	
MW-775	WT	10/3/2018	9:50	2.93	976.91	973.98	
MW-776	WT/S1	10/3/2018	-	-	974.01	NA	Could Not Locate
MW-777	WT/S1	10/3/2018	11:44	6.39	985.65	979.26	
MW-778	S2	10/3/2018	10:36	6.11	982.78	976.67	
MW-779	S2	10/3/2018	1:35	8.79	979.40	970.61	
MW-780	WT/S1	10/3/2018	12:41	4.31	984.63	980.32	
MW-781	WT	10/3/2018	10:08	4.55	982.06	977.51	
MW-782	WT/S1	10/3/2018	11:00	4.31	980.19	975.88	
MW-784	WT	10/3/2018	11:47	3.54	980.09	976.55	
MW-786	S2	10/3/2018	1:37	8.59	979.35	970.76	

MW-787	WT	10/3/2018	10:53	6.74	982.12	975.38	
MW-788	WT	10/3/2018	-	-	986.90	NA	Could Not Locate
MW-789	WT/S1	10/3/2018	11:50	2.88	982.43	979.55	
MW-790	WT	10/3/2018	12:39	3.25	988.92	985.67	
MW-792	S2	10/3/2018	12:41	10.43	989.02	978.59	
MW-793	WT/S1	10/3/2018	10:58	7.03	982.03	975.00	
MW-794	WT/S1	10/3/2018	10:05	5.23	982.07	976.84	
MW-795	WT	10/3/2018	-	-	982.12	NA	Has Product
MW-796	WT/S1	10/3/2018	12:53	3.61	980.25	976.64	
MW-797	S1	10/3/2018	-	-	985.68	NA	Covered
MW-798	S2	10/3/2018	-	-	982.19	NA	Has Product
MW-799	S2	10/3/2018	10:13	8.53	982.09	973.56	
MW-800	S2	10/3/2018	9:46	8.22	978.91	970.69	
MW-801	S1	10/3/2018	-	-	987.12	NA	Covered
MW-802	WT	10/3/2018	10:04	10.98	988.71	977.73	
MW-804	S1	10/3/2018	10:07	3.88	988.77	984.89	
MW-805	WT	10/3/2018	11:44	3.89	985.92	982.03	
MW-806	WT	10/3/2018	10:30	6.98	982.15	975.17	
MW-807	S2	10/3/2018	10:26	10.16	982.08	971.92	
MW-808	S2	10/3/2018	10:19	9.25	982.20	972.95	
MW-809	S1/S2	10/3/2018	10:00	7.67	982.16	974.49	
MW-810	WT	10/3/2018	12:57	8.36	980.40	972.04	
MW-811	WT	10/3/2018	10:57	3.81	982.88	979.07	
MW-812	S2	10/3/2018	9:48	5.55	969.95	964.40	
MW-813	S2	10/3/2018	9:45	6.12	975.43	969.31	
MW-814	WT/S1	10/3/2018	13:01	6.11	976.17	970.06	
MW-815	WT/S1	10/3/2018	9:50	7.15	979.30	972.15	
N001	WT	10/3/2018	-	-	985.43	NA	Covered
N002	WT	10/3/2018	14:59	4.60	985.20	980.60	Hit Bottom
N003	WT	10/3/2018	14:48	4.31	985.28	980.97	
N1	WT	10/3/2018	14:55	5.68	989.43	983.75	
N2	WT	10/3/2018	-	-	989.37	NA	Covered
N7	WT	10/3/2018	-	-	985.19	NA	Covered
N9	WT	10/3/2018	15:00	6.91	985.38	978.47	
N10	WT	10/3/2018	-	-	982.92	NA	Covered
N11	WT	10/3/2018	14:34	2.45	981.63	979.18	
N12	WT	10/3/2018	14:36	9.11	984.82	975.71	
N13	WT	10/3/2018	14:30	4.15	982.21	978.06	
N15	WT	10/3/2018	14:26	4.35	982.47	978.12	

N16	WT	10/3/2018	15:09	4.03	982.04	987.01	
N17	WT	10/3/2018	15:10	4.05	982.23	978.18	
N23	WT	10/3/2018	11:26	6.23	980.57	974.34	
N25	WT	10/3/2018	14:49	7.55	985.33	977.78	
N26	WT	10/3/2018	14:51	2.91	983.29	980.38	
N57	WT	10/3/2018	14:32	7.55	982.50	974.95	
N62 (E2)	WT	10/3/2018	14:28		NA	NA	
N63	WT	10/3/2018	13:40	7.43	979.19	971.76	
N64	WT	10/3/2018	13:46	7.45	978.34	970.89	
PZ-1	WT	10/3/2018	13:40	3.39	978.64	975.25	
PZ-2	WT	10/3/2018	-	-	978.12	NA	Covered
PZ-3	WT	10/3/2018	12:08	3.92	981.55	977.63	
PZ-4	WT	10/3/2018	-	-	981.32	NA	
PZ-5	WT	10/3/2018	13:33	3.26	979.59	976.33	
PZ-6	WT	10/3/2018	11:30	5.20	981.83	976.63	
PZ-7	WT	10/3/2018	11:31	4.50	982.66	978.16	
PZ-8	WT	10/3/2018	13:28	17:02	983.11	977.40	
PZ-9	WT	10/3/2018	11:26	4.55	982.63	978.08	
PZ-10	WT	10/3/2018	11:25	6.49	983.23	976.74	
PZ-11	WT	10/3/2018	-	-	983.34	NA	Covered
PZ-12	WT	10/3/2018	-	-	982.95	NA	Could Not Locate
PZ-13	WT	10/3/2018	11:59	2.66	983.61	980.95	
PZ-14	WT	10/3/2018	11:57	4.92	984.21	979.29	
PZ-15	WT	10/3/2018	12:12	5.18	985.51	980.33	
PZ-16	WT	10/3/2018	12:11	5.02	985.16	980.14	
PZ-17	WT	10/3/2018	11:55	2.91	983.49	980.58	
PZ-18	WT	10/3/2018	12:18	4.00	985.28	981.28	
PZ-19	WT	10/3/2018	11:01	6.02	983.58	977.56	
PZ-20	WT	10/3/2018	10:54	4.87	982.28	977.41	
PZ-21	WT	10/3/2018	12:30	2.42	988.88	986.46	
PZ-22	WT	10/3/2018	-	-	988.78	NA	
PZ-23	WT	10/3/2018	13:02	6.20	989.04	982.84	
PZ-24	WT	10/3/2018	12:24	2.31	988.82	986.51	
PZ-25	WT	10/3/2018	12:27	4.45	988.71	984.26	
PZ-26	WT	10/3/2018	-	-	989.05	NA	Has Product
PZ-28	WT	10/3/2018	12:56	3.07	989.02	985.95	
PZ-29	WT	10/3/2018	11:27	-	988.22	NA	Artesian
PZ-30	WT	10/3/2018	12:15	15:36	985.25	980.60	
PZ-31	WT	10/3/2018	12:52	3.67	988.98	985.31	

VAW-115	WT/S1	10/3/2018	11:48	3.83	985.24	981.41	
VBW-111	WT/S1	10/3/2018	11:58	4.46	984.26	979.80	
VBW-112	S1	10/3/2018	11:55	7.24	985.44	978.20	
VBW-113	WT	10/3/2018	11:51	4.86	985.87	981.01	
VCW-110	WT/S1	10/3/2018	12:14	4.88	985.84	980.96	
VDW-108	S2	10/3/2018	10:57	10.72	983.76	973.04	
VEW-105	WT	10/3/2018	-	-	988.08	NA	Covered
VEW-106	WT	10/3/2018	12:28	3.46	987.79	984.33	
VEW-114	WT	10/3/2018	12:43	3.28	988.86	985.58	
VFW-104	WT/S2	10/3/2018	11:36	3.12	978.74	975.62	
VPW-101	S1	10/3/2018	11:33	3.76	986.81	983.05	
VPW-102	S2	10/3/2018	9:50	3.29	966.75	963.46	
VPW-103	WT/S1	10/3/2018	10:31	4.11	982.05	977.94	

Notes:

AMSL - above mean sea level

ft. - feet

NA - not applicable

WT - Water Table

S1 - First Sand

S2 - Second Sand

Quarterly Groundwater Elevation Data Overburden Monitoring Wells March 2019

Monitoring Well ID	Well Type	Date	Time	Water Level (ft.)	Top of Casing Elevation (ft.)	Groundwater Elevation (ft. AMSL)	Notes
HA-1	S2	3/19/2019	14:05	6.85	982.24	975.39	
HA-2	S2	3/19/2019			982.70	NA	
HA-3	S2	3/19/2019	7:59	6.91	982.61	975.70	
HA-4	S1	3/19/2019	14:09	6.31	981.14	974.83	
HA-5	WT	3/19/2019	14:11	6.39	982.94	976.55	
IF-2	WT/S1	3/19/2019	10:19	2.82	978.64	975.82	
IF-3	WT/S1	3/19/2019			978.61	NA	CVD
MW-130	S1	3/19/2019	9:57	3.57	986.02	982.45	
MW-131	S1	3/19/2019	10:27	5.78	985.72	979.94	
MW-132	WT/S1	3/19/2019		3.72	984.07	980.35	
MW-133	S1	3/19/2019	9:56	4.93	983.13	978.20	
MW-134	WT/S1	3/19/2019			978.78	NA	
MW-135	WT/S1	3/19/2019	10:53	3.31	984.86	981.55	
MW-136	WT/S1	3/19/2019	10:41	4.48	985.67	981.19	
MW-137	S2	3/19/2019	14:18	7.11	982.67	975.56	
MW-138	S1	3/19/2019	14:20	5.82	982.24	976.42	
MW-501	S2	3/19/2019	9:42	8.01	988.73	980.72	
MW-502	S1/S2	3/19/2019	12:28	3.85	990.20	986.35	
MW-503	S1	3/19/2019	12:48	6.31	994.49	988.18	
MW-504	S1	3/19/2019			984.42	NA	
MW-505	S1/S2	3/19/2019	10:41	5.45	989.28	983.83	
MW-506	S1	3/19/2019	11:39	3.93	988.96	985.03	
MW-507	S1	3/19/2019	11:06	5.55	988.96	983.41	
MW-508	S2	3/19/2019	12:01	10.29	989.07	978.78	
MW-509	S2	3/19/2019	13:52	7.25	985.34	978.09	
MW-510	S2	3/19/2019	13:49	5.26	981.51	976.25	
MW-511	S2	3/19/2019	14:46	4.72	980.06	975.34	
MW-512	WT	3/19/2019			979.15	NA	
MW-513	S2	3/19/2019	10:59	8.95	974.84	965.89	
MW-514	S2	3/19/2019	NA	NA	986.31	NA	Artesian
MW-515	S2	3/19/2019	NA	NA	970.44	NA	Artesian
MW-516	S2	3/19/2019			978.83	NA	
MW-601	WT	3/19/2019	15:13	2.43	979.47	977.04	
MW-602	WT	3/19/2019	13:52	5.55	981.94	976.39	
MW-603	WT	3/19/2019			984.42	NA	

MW-604	S1	3/19/2019	14:20	3.23	981.77	978.54	
MW-605	S1	3/19/2019	15:09	4.35	978.62	974.27	
MW-606	S1	3/19/2019	14:18	4.65	982.87	978.22	
MW-607	WT/S1	3/19/2019	13:46	3.51	979.87	976.36	
MW-700	S1	3/19/2019	10:55	5.57	988.77	983.20	
MW-701	S1	3/19/2019	11:30	5.19	988.92	983.73	
MW-702	S1	3/19/2019	12:00	1.91	989.24	987.33	Well Open, Water to Surface
MW-703	S1	3/19/2019	12:02	2.96	988.84	985.88	
MW-705	S1	3/19/2019	11:56	10.29	989.01	978.72	
MW-706	WT	3/19/2019	12:08	6.12	987.67	981.55	
MW-707	S1	3/19/2019	11:04	5.41	989.06	983.65	
MW-708	S2	3/19/2019	11:32	7.54	985.24	977.70	
MW-709	S1	3/19/2019	11:18	7.10	989.10	982.00	
MW-710	WT/S1	3/19/2019	10:16	3.89	985.15	981.26	
MW-711	S1	3/19/2019	11:51	7.95	989.16	981.21	
MW-712	WT/S1	3/19/2019	13:40	2.68	982.31	979.63	
MW-715	S1	3/19/2019	13:36	5.51	982.30	976.79	
MW-716	S2	3/19/2019	12:55	7.45	982.31	974.86	
MW-717	S2	3/19/2019			979.82	NA	
MW-718	WT/S1	3/19/2019			980.27	NA	Well Appears Destroyed
MW-719	S2	3/19/2019	10:28	5.25	979.01	973.76	
MW-720	S1	3/19/2019	9:52	5.72	979.29	973.57	
MW-721	S2	3/19/2019	13:54	7.05	984.81	977.76	
MW-722	WT	3/19/2019	12:32	1.90	987.55	985.65	
MW-723	WT	3/19/2019	NA	NA	984.75	NA	Abandoned
MW-724	WT/S1	3/19/2019	9:50	6.69	979.15	972.46	
MW-725	S2	3/19/2019	9:47	5.49	978.46	972.97	
MW-726	WT/S1	3/19/2019	9:48	3.59	978.70	975.11	
MW-727	S2	3/19/2019	9:42	4.59	977.84	973.25	
MW-728	WT/S1	3/19/2019	9:44	3.08	978.07	974.99	
MW-729	WT/S1	3/19/2019	10:38	4.22	977.20	972.98	
MW-730	S1	3/19/2019			982.08	NA	Could Not Locate
MW-731	S2	3/19/2019	10:38	4.22	977.19	972.97	
MW-732	S1	3/19/2019	15:13	3.42	978.89	975.47	
MW-733	S2	3/19/2019	9:58	6.09	978.98	972.89	
MW-734	WT/S1	3/19/2019	9:56	7.19	979.14	971.95	
MW-735	S2	3/19/2019	11:26	5.98	985.40	979.42	
MW-736	S2	3/19/2019			979.45	NA	Could Not Locate
MW-737	S2	3/19/2019	10:13	5.87	978.96	973.09	

MW-738	WT	3/19/2019	12:53	2.39	987.75	985.36	
MW-739	WT	3/19/2019	13:16	2.74	989.05	986.31	
MW-740	S2	3/19/2019			973.82	NA	Could Not Locate
MW-741	S2	3/19/2019			976.19	NA	Inaccessible
MW-742	S2	3/19/2019	13:39	6.49	980.10	973.61	
MW-743	S2	3/19/2019	9:36	4.41	976.89	972.48	
MW-744	WT	3/19/2019	12:07	6.19	987.36	981.17	
MW-745	S2	3/19/2019	13:00	5.75	982.49	976.74	
MW-746	S2	3/19/2019	12:28	8.11	987.64	979.53	
MW-747	S1	3/19/2019	12:35	6.31	988.14	981.83	
MW-748	S1	3/19/2019	13:46	3.64	981.98	978.34	
MW-749	WT	3/19/2019	13:44	1.25	981.94	980.69	
MW-750	WT	3/19/2019	10:19	3.16	985.32	982.16	
MW-753	WT	3/19/2019	10:27	3.64	985.37	981.73	
MW-754	WT	3/19/2019	10:15	3.23	985.85	982.62	
MW-757	WT	3/19/2019	11:52	2.07	988.95	986.88	
MW-758	S2	3/19/2019			982.34	NA	Could Not Locate
MW-759	S2	3/19/2019			976.87	NA	Inaccessible
MW-760	WT	3/19/2019			984.49	NA	
MW-764	WT/S1	3/19/2019	14:00	3.83	982.78	978.95	
MW-765	WT	3/19/2019	11:40	3.00	988.96	985.96	
MW-766	WT	3/19/2019			987.15	NA	Covered
MW-767	WT	3/19/2019	11:00	5.96	88.92	82.96	
MW-768	WT	3/19/2019			985.64	NA	Covered
MW-770	S1/S2	3/19/2019	12:44	7.13	992.62	985.49	
MW-771	WT	3/19/2019	12:46	1.42	992.54	991.12	
MW-772R	WT	3/19/2019	11:12	5.35	NA	#VALUE!	
MW-773	S1	3/19/2019	12:32	2.84	989.24	986.40	
MW-774	WT	3/19/2019	12:34	2.27	989.06	986.79	
MW-775	WT	3/19/2019			976.91	NA	Inaccessible
MW-776	WT/S1	3/19/2019			974.01	NA	Could Not Locate
MW-777	WT/S1	3/19/2019	10:01	5.56	985.65	980.09	
MW-778	S2	3/19/2019	13:58	5.10	982.78	977.68	
MW-779	S2	3/19/2019	15:04	6.76	979.40	972.64	
MW-780	WT/S1	3/19/2019	11:29	3.95	984.63	980.68	
MW-781	WT	3/19/2019	12:50	4.67	982.06	977.39	
MW-782	WT/S1	3/19/2019	14:46	3.81	980.19	976.38	
MW-784	WT	3/19/2019			980.09	NA	
MW-786	S2	3/19/2019	15:06	6.36	979.35	972.99	

MW-787	WT	3/19/2019	12:58	6.25	982.12	975.87	
MW-788	WT	3/19/2019	12:23	2.31	986.90	984.59	Could Not Locate
MW-789	WT/S1	3/19/2019	9:45	3.45	982.43	978.98	
MW-790	WT	3/19/2019	11:43	3.33	988.92	985.59	
MW-792	S2	3/19/2019	11:48	9.71	989.02	979.31	
MW-793	WT/S1	3/19/2019	13:39	7.11	982.03	974.92	
MW-794	WT/S1	3/19/2019	12:52	5.31	982.07	976.76	
MW-795	WT	3/19/2019			982.12	NA	Has Product
MW-796	WT/S1	3/19/2019	13:41	3.41	980.25	976.84	
MW-797	S1	3/19/2019			985.68	NA	Covered
MW-798	S2	3/19/2019			982.19	NA	Has Product
MW-799	S2	3/19/2019			982.09	NA	
MW-800	S2	3/19/2019			978.91	NA	Inaccessible
MW-801	S1	3/19/2019	11:12	3:50	987.12	978.96	Covered
MW-802	WT	3/19/2019	11:35	10.37	988.71	978.34	
MW-804	S1	3/19/2019	12:09	3.67	988.77	985.10	
MW-805	WT	3/19/2019	10:13	3.54	985.92	982.38	
MW-806	WT	3/19/2019	13:31	10.07	982.15	972.08	
MW-807	S2	3/19/2019	12:40	6.21	982.08	975.87	
MW-808	S2	3/19/2019	13:45	7.19	982.20	975.01	Could Not Locate
MW-809	S1/S2	3/19/2019	12:44	7.63	982.16	974.53	
MW-810	WT	3/19/2019			980.40	NA	
MW-811	WT	3/19/2019			982.88	NA	
MW-812	S2	3/19/2019	11:17	4.61	969.95	965.34	
MW-813	S2	3/19/2019	11:28	5.42	975.43	970.01	
MW-814	WT/S1	3/19/2019			976.17	NA	
MW-815	WT/S1	3/19/2019	12:34	7.00	979.30	972.30	
N001	WT	3/19/2019			985.43	NA	Covered
N002	WT	3/19/2019			985.20	985.20	Hit Bottom
N003	WT	3/19/2019	11:19	4.26	985.28	981.02	
N1	WT	3/19/2019	12:20	5.69	989.43	983.74	
N2	WT	3/19/2019	11:35	5.45	989.37	983.92	Covered
N7	WT	3/19/2019			985.19	NA	Covered
N9	WT	3/19/2019	11:23	6.95	985.38	978.43	
N10	WT	3/19/2019			982.92	NA	Covered
N11	WT	3/19/2019	14:24	2.63	981.63	979.00	
N12	WT	3/19/2019	14:11	9.13	984.82	975.69	
N13	WT	3/19/2019	13:34	4.10	982.21	978.11	
N15	WT	3/19/2019	14:30	4.15	982.47	978.32	

N16	WT	3/19/2019			982.04	NA	Not Measured
N17	WT	3/19/2019			982.23	NA	Not Measured
N23	WT	3/19/2019	13:59	5.86	980.57	974.71	
N25	WT	3/19/2019			985.33	NA	
N26	WT	3/19/2019	10:06	5.12	983.29	978.17	
N57	WT	3/19/2019			982.50	NA	
N62 (E2)	WT	3/19/2019	14:26	4.66	NA	NA	
N63	WT	3/19/2019	10:23	7.95	979.19	971.24	
N64	WT	3/19/2019			978.34	NA	
PZ-1	WT	3/19/2019	14:33	3.31	978.64	975.33	
PZ-2	WT	3/19/2019			978.12	NA	Covered
PZ-3	WT	3/19/2019	9:53	3.35	981.55	978.20	
PZ-4	WT	3/19/2019	14:15	5.56	981.32	975.76	
PZ-5	WT	3/19/2019	15:02	3.02	979.59	976.57	
PZ-6	WT	3/19/2019	13:50	5.96	981.83	975.87	
PZ-7	WT	3/19/2019	14:25	4.29	982.66	978.37	
PZ-8	WT	3/19/2019			983.11	NA	
PZ-9	WT	3/19/2019	13:54	4.43	982.63	978.20	
PZ-10	WT	3/19/2019	14:15	6.57	983.23	976.66	
PZ-11	WT	3/19/2019			983.34	NA	Covered
PZ-12	WT	3/19/2019	10:20	0.98	982.95	981.97	Could Not Locate
PZ-13	WT	3/19/2019	10:25	2.68	983.61	980.93	
PZ-14	WT	3/19/2019	10:29	3.84	984.21	980.37	
PZ-15	WT	3/19/2019	10:33	4.90	985.51	980.61	
PZ-16	WT	3/19/2019	10:37	5.05	985.16	980.11	
PZ-17	WT	3/19/2019	10:51	2.78	983.49	980.71	
PZ-18	WT	3/19/2019	10:57	3.86	985.28	981.42	
PZ-19	WT	3/19/2019	14:13	5.81	983.58	977.77	
PZ-20	WT	3/19/2019	14:05	3.75	982.28	978.53	
PZ-21	WT	3/19/2019	12:13	2.23	988.88	986.65	
PZ-22	WT	3/19/2019	11:09	5.79	988.78	982.99	
PZ-23	WT	3/19/2019	11:47	4.31	989.04	984.73	
PZ-24	WT	3/19/2019	12:42	1.72	988.82	987.10	
PZ-25	WT	3/19/2019	12:29	2.24	988.71	986.47	
PZ-26	WT	3/19/2019			989.05	NA	Has Product
PZ-28	WT	3/19/2019	11:56	3.02	989.02	986.00	
PZ-29	WT	3/19/2019	11:22	1.57	988.22	986.65	Artesian
PZ-30	WT	3/19/2019	10:46	8:24	985.25	980.90	
PZ-31	WT	3/19/2019	12:12	3.36	988.98	985.62	

VAW-115	WT/S1	3/19/2019			985.24	NA	
VBW-111	WT/S1	3/19/2019	10:09	4.25	984.26	980.01	
VBW-112	S1	3/19/2019	10:06	6.59	985.44	978.85	
VBW-113	WT	3/19/2019	10:13	4.81	985.87	981.06	
VCW-110	WT/S1	3/19/2019	10:44	4.81	985.84	981.03	Covered
VDW-108	S2	3/19/2019	14:07	8.56	983.76	975.20	
VEW-105	WT	3/19/2019	14:44	2.81	988.08	985.27	Covered
VEW-106	WT	3/19/2019	12:54	2.29	987.79	985.50	
VEW-114	WT	3/19/2019	12:39	2.85	988.86	986.01	
VFW-104	WT/S2	3/19/2019	10:32	2.85	978.74	975.89	
VPW-101	S1	3/19/2019	9:48	3.38	986.81	983.43	
VPW-102	S2	3/19/2019	11:14	2.49	966.75	964.26	
VPW-103	WT/S1	3/19/2019			982.05	NA	

Notes:

AMSL - above mean sea level

ft. - feet

NA - not applicable

WT - Water Table

S1 - First Sand

S2 - Second Sand

ATTACHMENT B Groundwater Migration Control System Monthly Discharge Reports

VANDALIA - MIGRATION CONTROL
DAILY DISCHARGE REPORT - OCTOBER
2018

DATE	AVERAGE INFLOW (GPM) BEDROCK/OVERBURDEN/SECOND SAND	DAILY DISCHARGE (GPD)
10/1/18	55.0	79230
10/2/18	103.1	148457
10/3/18	103.0	148387
10/4/18	103.0	148344
10/5/18	103.0	148308
10/6/18	103.0	148283
10/7/18	103.0	148291
10/8/18	103.3	148694
10/9/18	103.3	148699
10/10/18	103.2	148669
10/11/18	103.2	148624
10/12/18	103.2	148633
10/13/18	103.2	148631
10/14/18	103.2	148611
10/15/18	103.2	148645
10/16/18	102.5	147636
10/17/18	100.7	144995
10/18/18	97.2	139980
10/19/18	98.9	142395
10/20/18	99.5	143326
10/21/18	94.3	135810
10/22/18	94.4	135889
10/23/18	93.1	134014
10/24/18	89.9	129461
10/25/18	87.5	125948
10/26/18	87.6	126163
10/27/18	90.6	130485
10/28/18	88.9	128043
10/29/18	88.8	127837
10/30/18	87.5	126019
10/31/18	86.6	124763
	TOTAL DISCHARGE (gal) =	4301269
	AVERAGE DAILY DISCHARGE (gal/day)=	138751

(based on groundwater remediation system operating days)

***Daily read outs for November are not available to being reported due to a data exporting error. During the Month of November the system was operational 100% of the time, and discharged a total of 3.09 million gallons between Nov1-Dec1as measured by totalizer in ProControl.**

VANDALIA - MIGRATION CONTROL
DAILY DISCHARGE REPORT - DECEMBER 2018

DATE	AVERAGE INFLOW (GPM) BEDROCK/OVERBURDEN/SECOND SAND	DAILY DISCHARGE (GPD)
12/4/18	72.28	104079
12/5/18	71.61	103122
12/6/18	74.49	107271
12/7/18	75.61	108878
12/8/18	74.78	107686
12/9/18	75.18	108261
12/10/18	73.48	105816
12/11/18	73.88	106393
12/12/18	74.88	107829
12/13/18	74.16	106793
12/14/18	74.01	106581
12/15/18	81.58	117473
12/16/18	28.67	41291
12/17/18	45.16	65037
12/18/18	75.87	109256
12/19/18	76.12	109612
12/20/18	79.38	114305
12/21/18	98.57	141941
12/22/18	82.94	119430
12/23/18	71.40	102814
12/24/18	70.20	101085
12/25/18	71.85	103471
12/26/18	68.18	98179
12/27/18	76.98	110857
12/28/18	77.75	111959
12/29/18	74.81	107724
12/30/18	74.43	107179
12/31/18	12.88	18554

TOTAL DISCHARGE (gal) = 2834321

AVERAGE DAILY DISCHARGE (gal/day)= 94477

(based on groundwater remediation system operating days)

VANDALIA - MIGRATION CONTROL
DAILY DISCHARGE REPORT - JANUARY 2019

DATE	AVERAGE INFLOW (GPM) BEDROCK/OVERBURDEN/SECOND SAND	DAILY DISCHARGE (GPD)
1/1/19	0.01	11
1/2/19	43.82	63099
1/3/19	88.57	127540
1/4/19	74.56	107370
1/5/19	82.74	119149
1/6/19	67.74	97548
1/7/19	82.02	118110
1/8/19	82.03	118127
1/9/19	77.23	111211
1/10/19	74.28	106958
1/11/19	78.81	113484
1/12/19	77.26	111248
1/13/19	75.63	108906
1/14/19	75.13	108185
1/15/19	41.62	59926
1/16/19	79.10	113899
1/17/19	78.93	113659
1/18/19	81.82	117815
1/19/19	76.48	110133
1/20/19	75.14	108204
1/21/19	72.13	103865
1/22/19	70.31	101245
1/23/19	69.29	99785
1/24/19	12.03	17328
1/25/19	1.02	1474
1/26/19	0.02	29
1/27/19	23.32	33583
1/28/19	52.97	76271
1/29/19	53.41	76911
1/30/19	53.15	76540
1/31/19	53.69	77309

TOTAL DISCHARGE (gal) = 2698922

AVERAGE DAILY DISCHARGE (gal/day)= 89964

(based on groundwater remediation system operating days)

VANDALIA - MIGRATION CONTROL
DAILY DISCHARGE REPORT - FEBRUARY
2019

DATE	AVERAGE INFLOW (GPM) BEDROCK/OVERBURDEN/SECOND SAND	DAILY DISCHARGE (GPD)
2/1/19	53.52	77064
2/2/19	53.35	76825
2/3/19	52.99	76301
2/4/19	52.54	75652
2/5/19	52.13	75061
2/6/19	51.90	74741
2/7/19	51.92	74762
2/8/19	51.67	74408
2/9/19	51.30	73868
2/10/19	50.80	73155
2/11/19	50.36	72517
2/12/19	46.64	67157
2/13/19	0.03	46
2/14/19	0.00	2
2/15/19	0.00	3
2/16/19	0.00	5
2/17/19	0.01	13
2/18/19	0.01	16
2/19/19	0.18	259
2/20/19	14.11	20319
2/21/19	44.57	64175
2/22/19	53.05	76387
2/23/19	54.23	78098
2/24/19	49.08	70681
2/25/19	13.37	19255
2/26/19	59.63	85866
2/27/19	58.30	83952
2/28/19	56.44	81278

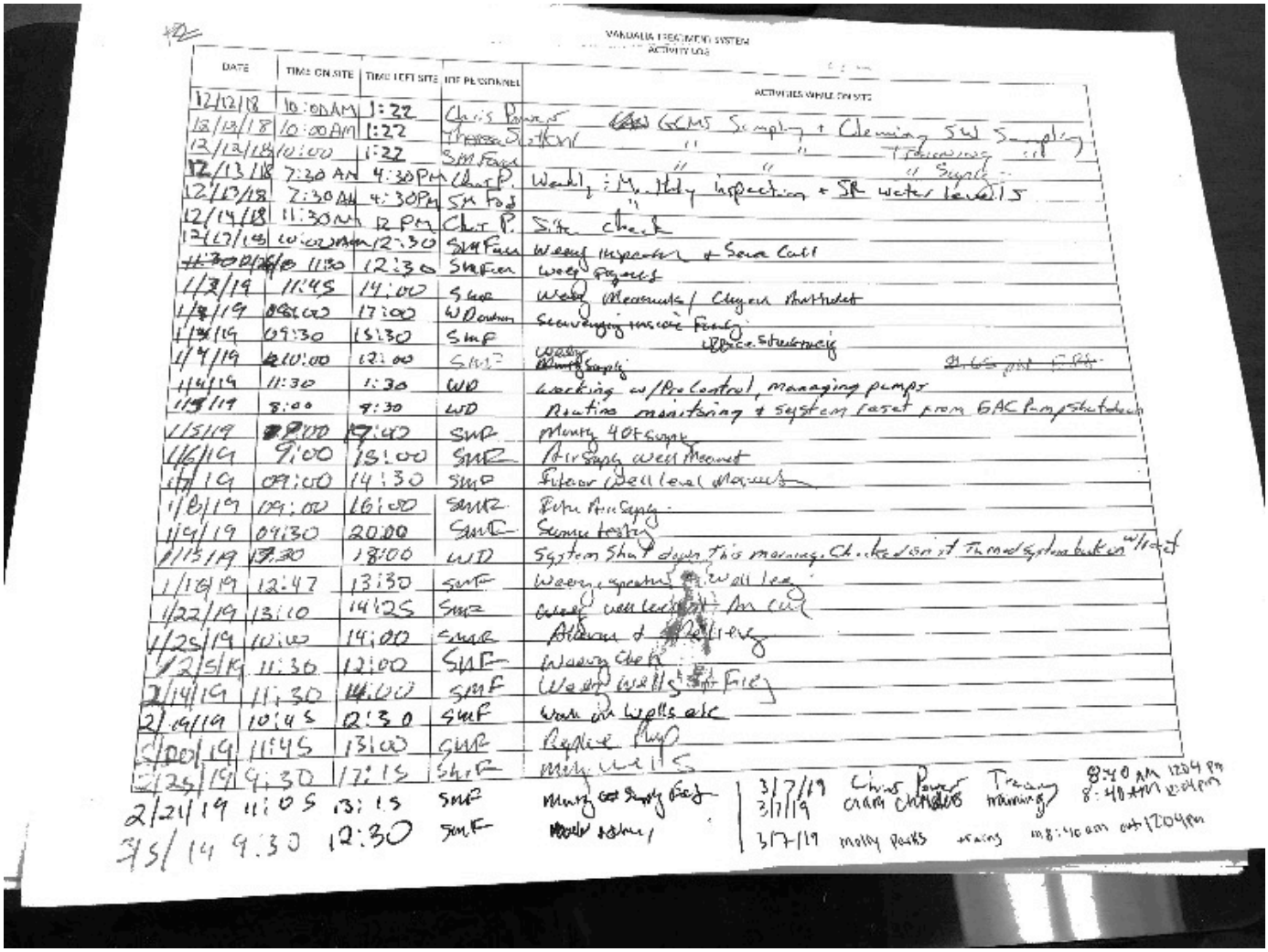
TOTAL DISCHARGE (gal) = 1471869
AVERAGE DAILY DISCHARGE (gal/day)= 47480
(based on groundwater remediation system operating days)

VANDALIA - MIGRATION CONTROL
DAILY DISCHARGE REPORT - MARCH 2019

DATE	AVERAGE INFLOW (GPM) BEDROCK/OVERBURDEN/SECOND SAND	DAILY DISCHARGE (GPD)
3/1/19	57.86	83321
3/2/19	56.87	81890
3/3/19	52.34	75366
3/4/19	51.62	74339
3/5/19	49.19	70831
3/6/19	51.94	74796
3/7/19	54.34	78243
3/8/19	54.63	78667
3/9/19	54.34	78249
3/10/19	52.99	76312
3/11/19	56.98	82050
3/12/19	44.17	63603
3/13/19	0.15	210
3/14/19	0.22	319
3/15/19	16.89	24328
3/16/19	50.03	72050
3/17/19	52.21	75177
3/18/19	48.12	69288
3/19/19	18.23	26249
3/20/19	49.91	71865
3/21/19	46.54	67014
3/22/19	37.21	53578
3/23/19	41.45	59685
3/24/19	0.00	0
3/25/19	0.00	0
3/26/19	29.80	42912
3/27/19	30.44	43833
3/28/19	23.67	34085
3/29/19	23.61	33995
3/30/19	23.99	34551

TOTAL DISCHARGE (gal) = 1626806
AVERAGE DAILY DISCHARGE (gal/day)= 52478
(based on groundwater remediation system operating days)

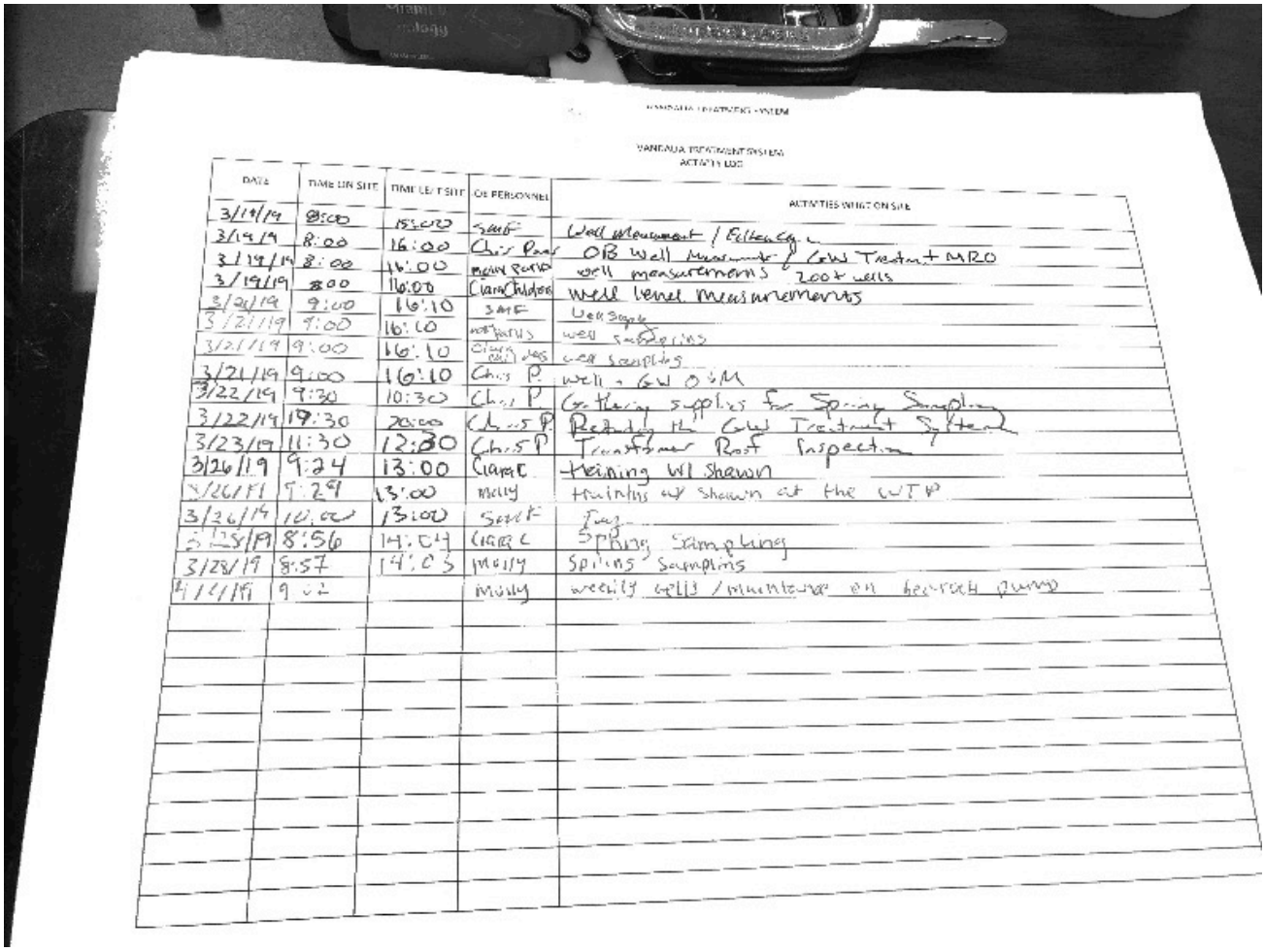
ATTACHMENT C Groundwater Migration Control System Activity Log



VANDALIA TREATMENT SYSTEM
ACTIVITY LOG

DATE	TIME ON SITE	TIME LEFT SITE	IDF PERSONNEL	ACTIVITIES WHILE ON SITE
12/12/18	10:00AM	1:22	Chris Power	GCMS Sampling + Cleaning SW Sampling
12/12/18	10:00AM	1:22	Theresa Sutton	" " Training "
12/12/18	10:00	1:22	SM Fox	" " " Supply
12/13/18	7:30 AM	4:30PM	Chris P.	Weekly & Monthly inspection + SR water levels
12/13/18	7:30 AM	4:30PM	SM Fox	"
12/14/18	11:30AM	12 PM	Chris P.	Site check
12/17/18	10:00AM	12:30	SM Fox	Weekly inspection + Sewer Call
~~11:30~~ 12/26/18	11:30	12:30	SM Fox	Weekly Inspection
1/3/19	11:45	14:00	SMF	Weekly Measurements / Oxygen Antidot
1/3/19	08:00	17:00	WD Dorman	Scavenging inside Fence
1/3/19	09:30	15:30	SMF	Office Structure
1/4/19	10:00	12:00	SMF	Weekly Supply
1/4/19	11:30	1:30	WD	Working w/Pro Control, managing pumps
1/5/19	8:00	9:30	WD	Routine monitoring + system reset from GAC Pump shutdown
1/5/19	9:00	17:00	SMF	Monthly 40+ Supply
1/6/19	9:00	15:00	SMF	Air Supply Well Measurement
1/7/19	09:00	14:30	SMF	Interior Well level Measurements
1/8/19	09:00	16:00	SMF	Return Air Supply
1/9/19	09:30	20:00	SMF	Sample testing
1/15/19	13:30	18:00	WD	System Shut down this morning. Checked on it Turned system back on w/reset
1/16/19	12:47	13:30	SMF	Weekly inspection + Well leg
1/22/19	13:10	14:25	SMF	Weekly well level + Air call
1/25/19	10:00	14:00	SMF	Alarm + Relieving
1/25/19	11:30	12:00	SMF	Weekly Check
2/14/19	11:30	14:00	SMF	Weekly Wells + Filing
2/19/19	10:45	12:30	SMF	Work on Wells etc
2/20/19	11:45	13:00	SMF	Replace Pump
2/25/19	9:30	17:15	SMF	Monthly Wells
2/21/19	11:05	13:15	SMF	Monthly Supply Fed
3/5/19	9:30	12:30	SMF	[illegible]

3/7/19 Chris Power Training 8:40 AM 1204 pm
3/7/19 Cram Chambers training 8:40 AM 1204 pm
3/7/19 Molly Parks training in 8:40 am out 1204 pm



VANDALIA TREATMENT SYSTEM

VANDALIA TREATMENT SYSTEM
ACTIVITY LOG

DATE	TIME ON SITE	TIME LEFT SITE	OB PERSONNEL	ACTIVITIES WHILE ON SITE
3/19/19	8:00	15:00	SMF	Well Measurement / Filtering
3/19/19	8:00	16:00	Chris Pass	OB Well Measurements / GW Treatment MRO
3/19/19	8:00	16:00	Mary Parks	well measurements 200+ wells
3/19/19	8:00	16:00	Clara Childers	Well level measurements
3/21/19	9:00	16:10	SMF	Well Sample
3/21/19	9:00	16:10	Mary Parks	well samplings
3/21/19	9:00	16:10	Clara Childers	well samplings
3/21/19	9:00	16:10	Chris P.	well + GW O&M
3/22/19	9:30	10:30	Chris P.	Gathering supplies for Spring Sampling
3/22/19	19:30	20:00	Chris P.	Restarting the GW Treatment System
3/23/19	11:30	12:30	Chris P	Transformer Roof Inspection
3/26/19	9:24	13:00	Clara C	training w/ Shawn
3/26/19	9:29	13:00	Molly	training w/ Shawn at the WTP
3/26/19	10:00	13:00	SMF	Tag
3/28/19	8:56	14:04	Clara C	Spring Sampling
3/28/19	8:57	14:03	Molly	Spring Samplings
4/2/19	9:02		Molly	weekly wells / maintenance on bedrock pump

ATTACHMENT D Groundwater Migration Control System Inspection Checklists

INSPECTION BY: Dennis Hudgel

	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE	
	EVERY WEEK	EVERY MONTH	TESTED (YES or NO)	MEASURES REQ'D (YES or NO)	COMMENTS
SITE SAFETY					
FIRST AID KIT	X		Yes		
EYEWASH STATION	X		Yes		
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes		
EMERGENCY LIGHTING	X		Yes		
SITE ISSUES	X		Yes		
SITE SECURITY					
FENCING		X			
GATES		X			
LOCKS		X			
SIGNS		X			
SITE		X			
SITE GROUNDS					
DRAINAGE DITCHES/SWALES		X			
BUILDING		X			
RECOVERY WELL		X			
ACCESS ROAD		X			
WASTE					
CARBON	X		Yes		
SOLID	X		Yes		

INSPECTION DATE:
INSPECTION BY:

	EVERY WEEK	EVERY MONTH	EVERY 3 MONTHS	MIN. 6 MO. OR AS REQD(1)	INSPECTED/ TESTED (YES) OR (NO)	CORRECTIVE MEASURES REQ'D (YES or NO)	COMMENTS
GROUNDWATER SYSTEM							
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes		
LOG SYSTEM OPERATING PARAMETERS	X				Yes		
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		
TEST LEVEL CONTROLS ETC.	X				Yes		
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes		
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes		
INSPECT/VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X			Test Trip Set Point and Clean Screens and Louvers
INSPECT/VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes		
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes		
VERIFY PUMP OPERATION	X				Yes		
WELL LEVELS - MANUALLY CHECK WATER LEVEL VS. PLC DATA		X					
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X					
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X			
CHECK BAG FILTER PRESSURES	X				Yes		
CHECK CARBON FILTER PRESSURES	X				Yes		
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		
AMP TRANSFER PUMP MOTORS				X			
TRANSFER PUMPS - PERFORM P.M. SERVICE				X			
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X			
CHECK & CALIBRATE INSTRUMENTATION				X			
MANUALLY OPERATE & CHECK VALVES				X			
MANUALLY TEST SAFETY INTERLOCKS			X				

Notes:

[1] Frequency that may be required is based on manufacturer data for the system equipment, system alarms, and Owner requirements

WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
MW-301D	11:52	36	**974.47**	938.47
MW-414D	11:48	33.21	**971.91**	938.7
MW-413D	11:55	31.38	**970.13**	938.75
MW-416D	11:58	27.21	**965.84**	938.63

INSPECTION DATE: 11/7
INSPECTION BY:Dennis Hudgel

	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE	
	EVERY WEEK	EVERY MONTH	TESTED (YES or NO)	MEASURES REQ'D (YES or NO)	COMMENTS
SITE SAFETY					
FIRST AID KIT	X		Yes		
EYEWASH STATION	X		Yes		
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes		
EMERGENCY LIGHTING	X		Yes		
SITE ISSUES	X		Yes		
SITE SECURITY					
FENCING		X			
GATES		X			
LOCKS		X			
SIGNS		X			
SITE		X			
SITE GROUNDS					
DRAINAGE DITCHES/SWALES		X			
BUILDING		X			
RECOVERY WELL		X			
ACCESS ROAD		X			
WASTE					
CARBON	X		Yes		
SOLID	X		Yes		

INSPECTION DATE:
INSPECTION BY:

	EVERY WEEK	EVERY MONTH	EVERY 3 MONTHS	MIN. 6 MO. OR AS REQD(1)	INSPECTED/ TESTED (YES) OR (NO)	CORRECTIVE MEASURES REQ'D (YES or NO)	COMMENTS
GROUNDWATER SYSTEM							
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes		
LOG SYSTEM OPERATING PARAMETERS	X				Yes		
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		
TEST LEVEL CONTROLS ETC.	X				Yes		
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes		
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes		
INSPECT/VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X			Test Trip Set Point and Clean Screens and Louvers
INSPECT/VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes		
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes		
VERIFY PUMP OPERATION	X				Yes		
WELL LEVELS - MANUALLY CHECK WATER LEVEL VS. PLC DATA		X					
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X					
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X			
CHECK BAG FILTER PRESSURES	X				Yes		
CHECK CARBON FILTER PRESSURES	X				Yes		
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		
AMP TRANSFER PUMP MOTORS				X			
TRANSFER PUMPS - PERFORM P.M. SERVICE				X			
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X			
CHECK & CALIBRATE INSTRUMENTATION				X			
MANUALLY OPERATE & CHECK VALVES				X			
MANUALLY TEST SAFETY INTERLOCKS			X				

Notes:

[1] Frequency that may be required is based on manufacturer data for the system equipment, system alarms, and Owner requirements

WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
MW-301D	12:08	31.93	**974.47**	942.54
MW-414D	12:06	29.14	**971.91**	942.77
MW-413D	12:17	23.08	**970.13**	942.8
MW-416D	12:12	27.33	**965.84**	942.8

					INSPECTION DATE: INSPECTION BY:
	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE	
	EVERY WEEK	EVERY MONTH	TESTED (YES or NO)	MEASURES REQ' (YES or NO)	COMMENTS
SITE SAFETY					
FIRST AID KIT	X		Yes		
EYEWASH STATION	X		Yes		
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes		
EMERGENCY LIGHTING	X		Yes		
SITE ISSUES	X		Yes		
SITE SECURITY					
FENCING		X			
GATES		X			
LOCKS		X			
SIGNS		X			
SITE		X			
SITE GROUNDS					
DRAINAGE DITCHES/SWALES		X			
BUILDING		X			
RECOVERY WELL		X			
ACCESS ROAD		X			
WASTE					
CARBON	X		Yes		
SOLID	X		Yes		

INSPECTION DATE: 11/19/2018
INSPECTION BY: Dennis Hudgel

	EVERY WEEK	EVERY MONTH	EVERY 3 MONTHS	MIN. 6 MO. OR AS REQD(1)	INSPECTED/ TESTED (YES) OR (NO)	CORRECTIVE MEASURES REQ'D (YES or NO)	COMMENTS
GROUNDWATER SYSTEM							
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes		
LOG SYSTEM OPERATING PARAMETERS	X				Yes		
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		
TEST LEVEL CONTROLS ETC.	X				Yes		
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes		
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes		
INSPECT/VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X			Test Trip Set Point and Clean Screens and Louvers
INSPECT/VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes		
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes		
VERIFY PUMP OPERATION	X				Yes		
WELL LEVELS - MANUALLY CHECK WATER LEVEL VS. PLC DATA		X					
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X					
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X			
CHECK BAG FILTER PRESSURES	X				Yes		
CHECK CARBON FILTER PRESSURES	X				Yes		
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		
AMP TRANSFER PUMP MOTORS				X			
TRANSFER PUMPS - PERFORM P.M. SERVICE				X			
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X			
CHECK & CALIBRATE INSTRUMENTATION				X			
MANUALLY OPERATE & CHECK VALVES				X			
MANUALLY TEST SAFETY INTERLOCKS			X				

Notes:

[1] Frequency that may be required is based on manufacturer data for the system equipment, system alarms, and Owner requirements

WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
MW-301D	12:03	32.02	**974.47**	942.45
MW-414D	12:00	29.15	**971.91**	942.76
MW-413D	12:11	27.43	**970.13**	942.7
MW-416D	12:07	27.65	**965.84**	938.19

INSPECTION DATE: 11/30
INSPECTION BY: Dennis Hudgel

	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE	
	EVERY WEEK	EVERY MONTH	TESTED (YES or NO)	MEASURES REQ'D (YES or NO)	COMMENTS
SITE SAFETY					
FIRST AID KIT	X		Yes	No	
EYEWASH STATION	X		Yes	No	
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes	No	
EMERGENCY LIGHTING	X		Yes	No	
SITE ISSUES	X		Yes	No	
SITE SECURITY					
FENCING		X			
GATES		X			
LOCKS		X			
SIGNS		X			
SITE		X			
SITE GROUNDS					
DRAINAGE DITCHES/SWALES		X			
BUILDING		X			
RECOVERY WELL		X			
ACCESS ROAD		X			
WASTE					
CARBON	X		Yes	No	
SOLID	X		Yes	No	

INSPECTION BY: Dennis Hudgel

	EVERY WEEK	EVERY MONTH	EVERY 3 MONTHS	MIN. 6 MO. OR AS REQD(1)	INSPECTED/ TESTED (YES) OR (NO)	CORRECTIVE MEASURES REQ'D (YES or NO)	COMMENTS
GROUNDWATER SYSTEM							
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes	No	
LOG SYSTEM OPERATING PARAMETERS	X				Yes	No	
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes	No	
TEST LEVEL CONTROLS ETC.	X				Yes	No	
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes	No	
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes	No	
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes	No	
INSPECT/VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X			Test Trip Set Point and Clean Screens and Louvers
INSPECT/VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes	No	
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes	No	
VERIFY PUMP OPERATION	X				Yes	No	
WELL LEVELS - MANUALLY CHECK WATER LEVEL VS. PLC DATA		X					
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X					
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X			
CHECK BAG FILTER PRESSURES	X				Yes	No	
CHECK CARBON FILTER PRESSURES	X				Yes	No	
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes	No	
AMP TRANSFER PUMP MOTORS				X			
TRANSFER PUMPS - PERFORM P.M. SERVICE				X			
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X			
CHECK & CALIBRATE INSTRUMENTATION				X			
MANUALLY OPERATE & CHECK VALVES				X			
MANUALLY TEST SAFETY INTERLOCKS			X				

Notes:

[1] Frequency that may be required is based on manufacturer data for the system equipment, system alarms, and Owner requirements

WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
MW-301D	9:15	30.42	**974.47**	944.05
MW-414D	9:12	29.47	**971.91**	942.44
MW-413D	9:23	26.28	**970.13**	943.85
MW-416D	9:19	26.34	**965.84**	939.5

					INSPECTION DATE: December 17, 2018
					INSPECTION BY: Shawn M. Ford
	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE	
	EVERY	EVERY	TESTED	MEASURES REQ'	COMMENTS
	WEEK	MONTH	(YES or NO)	(YES or NO)	
SITE SAFETY					
FIRST AID KIT	X		Yes	No	Present
EYEWASH STATION	X		Yes	Yes	Ordering new station this week (12/17/18)
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes	No	
EMERGENCY LIGHTING	X		Yes	No	
SITE ISSUES	X		Yes	None	
SITE SECURITY					
FENCING		X			
GATES		X			
LOCKS		X			
SIGNS		X			
SITE		X			
SITE GROUNDS					
DRAINAGE DITCHES/SWALES		X			
BUILDING		X			
RECOVERY WELL		X			
ACCESS ROAD		X			
WASTE					
CARBON	X				
SOLID	X		Yes	Yes	Need to arrange for disposal of two bags of trash

							INSPECTION DATE:	17-Dec-18
							INSPECTION BY:	Shawn M. Ford
					INSPECTED/	CORRECTIVE	COMMENTS	
	EVERY	EVERY	EVERY 3	MIN. 6 MO.	TESTED	MEASURES REQ'D		
				OR				
	WEEK	MONTH	MONTHS	AS REQD(1)	(YES) OR (NO)	(YES or NO)		
GROUNDWATER SYSTEM								
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes	No		
LOG SYSTEM OPERATING PARAMETERS	X				Yes	No	Logged remotely via ProControl, Confirmed	
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes	No	Logged remotely via ProControl, Confirmed	
TEST LEVEL CONTROLS ETC.	X				Yes	No	Logged remotely via ProControl, Confirmed	
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes	No	Logged remotely via ProControl, Confirmed	
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes	No	Good	
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes	No	Good	
INSPECT/VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X			Test Trip Set Point and Clean Screens and Louvers	
INSPECT/VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes	No	Good	
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes	No	Good	
VERIFY PUMP OPERATION	X				Yes	No	Good after reset	
WELL LEVELS - MANUALLY CHECK WATER LEVEL VS. PLC DATA		X						
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X						
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X				
CHECK BAG FILTER PRESSURES	X				Yes	Yes	Bags need changed soon.	
CHECK CARBON FILTER PRESSURES	X				NA	NA		
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes	No		
AMP TRANSFER PUMP MOTORS				X				
TRANSFER PUMPS - PERFORM P.M. SERVICE				X				
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X				
CHECK & CALIBRATE INSTRUMENTATION				X				
MANUALLY OPERATE & CHECK VALVES				X				
MANUALLY TEST SAFETY INTERLOCKS			X					

Notes:

[1] Frequency that may be required is based on manufacturer data for the system equipment, system alarms, and Owner requirements

WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
MW-301D	12:01	30.31	974.47	944.16
MW-414D	11:56	27.49	971.91	944.42
MW-413D	12:07	25.79	970.13	944.34
MW-416D	12:14	21.59	965.84	944.25

					INSPECTION DATE: December 26, 2018	
					INSPECTION BY: Shawn M. Ford	
	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE		
	EVERY	EVERY	TESTED	MEASURES REQ'D	COMMENTS	
	WEEK	MONTH	(YES or NO)	(YES or NO)		
SITE SAFETY			Yes	No		
FIRST AID KIT	X		Yes	No		
EYEWASH STATION	X		Yes	Yes	Still Needs Wash Station Ordered	
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes	No		
EMERGENCY LIGHTING	X		Yes	No		
SITE ISSUES	X		No	No		
SITE SECURITY						
FENCING		X				
GATES		X				
LOCKS		X				
SIGNS		X				
SITE		X				
SITE GROUNDS						
DRAINAGE DITCHES/SWALES		X				
BUILDING		X				
RECOVERY WELL		X				
ACCESS ROAD		X				
WASTE						
CARBON	X		NA	NA		
SOLID	X		Yes	Yes	Two bags still need disposed of will dispose of January	

							INSPECTION DATE:	
							INSPECTION BY:	
					INSPECTED	CORRECTIVE	COMMENTS	
	EVERY	EVERY	EVERY 3	MIN. 6 MO.	TESTED	MEASURES REQ'D		
				OR				
	WEEK	MONTH	MONTHS	AS REQD(1)	(YES) OR (NO	(YES or NO)		
GROUNDWATER SYSTEM								
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes			
LOG SYSTEM OPERATING PARAMETERS	X				Yes		Remote	
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		Remote	
TEST LEVEL CONTROLS ETC.	X				Yes		Remote	
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		Remote	
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes			
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes			
INSPECT\VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X			Test Trip Set Point and Clean Screens and Louvers	
INSPECT\VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTE	X				Yes			
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes			
VERIFY PUMP OPERATION	X				Yes		Confirmed, There is an error still	ripping an alarm. Problem in process of t
WELL LEVELS - MANUALLY CHECK WWATER LEVEL VS. PLC DATA		X						
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X						
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X				
CHECK BAG FILTER PRESSURES	X				Yes		Remote	
CHECK CARBON FILTER PRESSURES	X				NA			
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		Remote	
AMP TRANSFER PUMP MOTORS				X				
TRANSFER PUMPS - PERFORM P.M. SERVICE				X				
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X				
CHECK & CALIBRATE INSTRUMENTATION				X				
MANUALLY OPERATE & CHECK VALVES				X				
MANUALLY TEST SAFETY INTERLOCKS			X					

Notes:	WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
[1] Frequency that may be required is based on	MW-301D	12:02	30.41	974.47	944.06
manufacturer data for the system equipment, system alarms, and Owner requirements	MW-414D	11:58	27.72	971.91	944.19
	MW-413D	12:10	26.05	970.13	944.08
	MW-416D	12:20	20.85	965.84	944.99

					INSPECTION DATE: January 3, 2019	
					INSPECTION BY: Shawn M. Ford	
	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE		
	EVERY	EVERY	TESTED	MEASURES REQ'D	COMMENTS	
	WEEK	MONTH	(YES or NO)	(YES or NO)		
SITE SAFETY			Yes	No		
FIRST AID KIT	X		Yes	No		
EYEWASH STATION	X		Yes	Yes	Still Needs Wash Station Ordered	
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes	No		
EMERGENCY LIGHTING	X		Yes	No		
SITE ISSUES	X		No	No		
SITE SECURITY						
FENCING		X				
GATES		X				
LOCKS		X				
SIGNS		X				
SITE		X				
SITE GROUNDS						
DRAINAGE DITCHES/SWALES		X				
BUILDING		X				
RECOVERY WELL		X				
ACCESS ROAD		X				
WASTE						
CARBON	X		NA	NA		
SOLID	X		Yes	Yes	Two bags still need disposed of will dispose of January	

							INSPECTION DATE:	3-Jan-19
							INSPECTION BY:	Shawn M. Ford
					INSPECTED/	CORRECTIVE	COMMENTS	
	EVERY	EVERY	EVERY 3	MIN. 6 MO. OR	TESTED	MEASURES REQ'D		
	WEEK	MONTH	MONTHS	AS REQD(1)	(YES) OR (NO)	(YES or NO)		
GROUNDWATER SYSTEM								
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes			
LOG SYSTEM OPERATING PARAMETERS	X				Yes		Remote	
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		Remote	
TEST LEVEL CONTROLS ETC.	X				Yes		Remote	
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		Remote	
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes			
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes			
INSPECT/VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X			Test Trip Set Point and Clean Screens and Louvers	
INSPECT/VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes			
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes			
VERIFY PUMP OPERATION	X				Yes		Confirmed, There is an error still tripping an alarm. Problem in process of being a	
WELL LEVELS - MANUALLY CHECK VWATER LEVEL VS. PLC DATA		X						
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X						
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X				
CHECK BAG FILTER PRESSURES	X				Yes		Remote	
CHECK CARBON FILTER PRESSURES	X				NA			
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		Remote	
AMP TRANSFER PUMP MOTORS				X				
TRANSFER PUMPS - PERFORM P.M. SERVICE				X				
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X				
CHECK & CALIBRATE INSTRUMENTATION				X				
MANUALLY OPERATE & CHECK VALVES				X				
MANUALLY TEST SAFETY INTERLOCKS			X					

Notes:

[1] Frequency that may be required is based on manufacturer data for the system equipment, system alarms, and Owner requirements

WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
MW-301D	12:28	27.71	974.47	946.76
MW-414D	12:23	25.02	971.91	946.89
MW-413D	12:57	23.47	970.13	946.66
MW-416D	13:04	19.25	965.84	946.59

					INSPECTION DATE: January 10, 2019	
					INSPECTION BY: Shawn M. Ford	
	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE		
	EVERY	EVERY	TESTED	MEASURES REQ'D	COMMENTS	
	WEEK	MONTH	(YES or NO)	(YES or NO)		
SITE SAFETY			Yes	No		
FIRST AID KIT	X		Yes	No		
EYEWASH STATION	X		Yes	Yes	Still Needs Wash Station Ordered	
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes	No		
EMERGENCY LIGHTING	X		Yes	No		
SITE ISSUES	X		No	No		
SITE SECURITY						
FENCING		X	Yes	No		
GATES		X	Yes	No		
LOCKS		X	Yes	No		
SIGNS		X	Yes	No		
SITE		X	Yes	No		
SITE GROUNDS						
DRAINAGE DITCHES/SWALES		X	Yes			
BUILDING		X	Yes			
RECOVERY WELL		X	Yes			
ACCESS ROAD		X	Yes			
WASTE						
CARBON	X		NA	NA		
SOLID	X		Yes	Yes	Two bags still need disposed of will dispose of January	
Notes:	System Filters were cleaned and new sock filters installed in the system by Clean Harbors. Invoice sent to C. Powers on January 10, 2019					

							INSPECTION DATE:	10-Jan-19
							INSPECTION BY:	Shawn M. Ford
					INSPECTED/	CORRECTIVE	COMMENTS	
	EVERY	EVERY	EVERY 3	MIN. 6 MO. OR	TESTED	MEASURES REQ'D		
	WEEK	MONTH	MONTHS	AS REQD(1)	(YES) OR (NO)	(YES or NO)		
GROUNDWATER SYSTEM								
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes			
LOG SYSTEM OPERATING PARAMETERS	X				Yes		Remote	
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		Remote	
TEST LEVEL CONTROLS ETC.	X				Yes		Remote	
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		Remote	
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes			
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes			
INSPECT/VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X			Test Trip Set Point and Clean Screens and Louvers	
INSPECT/VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes			
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes			
VERIFY PUMP OPERATION	X				Yes		Confrimed, There is an error still tripping an alarm. Problem in process of being	
WELL LEVELS - MANUALLY CHECK WATER LEVEL VS. PLC DATA		X						
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X						
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X				
CHECK BAG FILTER PRESSURES	X				Yes		Remote	
CHECK CARBON FILTER PRESSURES	X				NA			
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		Remote	
AMP TRANSFER PUMP MOTORS				X				
TRANSFER PUMPS - PERFORM P.M. SERVICE				X				
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X				
CHECK & CALIBRATE INSTRUMENTATION				X				
MANUALLY OPERATE & CHECK VALVES				X				
MANUALLY TEST SAFETY INTERLOCKS			X					

Notes:

[1] Frequency that may be required is based on manufacturer data for the system equipment, system alarms, and Owner requirements

WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
MW-301D	12:55	29.74	974.47	944.73
MW-414D	12:47	26.91	971.91	945
MW-413D	12:57	25.14	970.13	944.99
MW-416D	13:03	22.93	965.84	942.91

					INSPECTION DATE: January 16, 2019	
					INSPECTION BY: Shawn M. Ford	
	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE		
	EVERY	EVERY	TESTED	MEASURES REQ'D	COMMENTS	
	WEEK	MONTH	(YES or NO)	(YES or NO)		
SITE SAFETY			Yes	No		
FIRST AID KIT	X		Yes	No		
EYEWASH STATION	X		Yes	Yes	Still Needs Wash Station Ordered	
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes	No		
EMERGENCY LIGHTING	X		Yes	No		
SITE ISSUES	X		No	No		
SITE SECURITY						
FENCING		X				
GATES		X				
LOCKS		X				
SIGNS		X				
SITE		X				
SITE GROUNDS						
DRAINAGE DITCHES/SWALES		X				
BUILDING		X				
RECOVERY WELL		X				
ACCESS ROAD		X				
WASTE						
CARBON	X		NA	NA		
SOLID	X		Yes	Yes	Two bags still need disposed of will dispose of January	

							INSPECTION DATE:	16-Jan-19
							INSPECTION BY:	Shawn M. Ford
					INSPECTED/	CORRECTIVE	COMMENTS	
	EVERY	EVERY	EVERY 3	MIN. 6 MO. OR	TESTED	MEASURES REQ'D		
	WEEK	MONTH	MONTHS	AS REQD(1)	(YES) OR (NO)	(YES or NO)		
GROUNDWATER SYSTEM								
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes			
LOG SYSTEM OPERATING PARAMETERS	X				Yes		Remote	
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		Remote	
TEST LEVEL CONTROLS ETC.	X				Yes		Remote	
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		Remote	
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes			
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes			
INSPECT/VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X			Test Trip Set Point and Clean Screens and Louvers	
INSPECT/VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes			
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes			
VERIFY PUMP OPERATION	X				Yes			
WELL LEVELS - MANUALLY CHECK WWATER LEVEL VS. PLC DATA		X						
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X						
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X				
CHECK BAG FILTER PRESSURES	X				Yes		Remote	
CHECK CARBON FILTER PRESSURES	X				NA			
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		Remote	
AMP TRANSFER PUMP MOTORS				X				
TRANSFER PUMPS - PERFORM P.M. SERVICE				X				
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X				
CHECK & CALIBRATE INSTRUMENTATION				X				
MANUALLY OPERATE & CHECK VALVES				X				
MANUALLY TEST SAFETY INTERLOCKS			X					

Notes:

[1] Frequency that may be required is based on manufacturer data for the system equipment, system alarms, and Owner requirements

WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
MW-301D	12:46	30.11	**974.47**	944.36
MW-414D	12:49	27.24	**971.91**	944.67
MW-413D	12:23	25.49	**970.13**	944.64
MW-416D	12:17	21.16	**965.84**	944.68

					INSPECTION DATE: January 22, 2019	
					INSPECTION BY: Shawn M. Ford	
	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE		
	EVERY	EVERY	TESTED	MEASURES REQ'D	COMMENTS	
	WEEK	MONTH	(YES or NO)	(YES or NO)		
SITE SAFETY			Yes	No		
FIRST AID KIT	X		Yes	No		
EYEWASH STATION	X		Yes	Yes		
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes	No		
EMERGENCY LIGHTING	X		Yes	No		
SITE ISSUES	X		No	No		
SITE SECURITY						
FENCING		X				
GATES		X				
LOCKS		X				
SIGNS		X				
SITE		X				
SITE GROUNDS						
DRAINAGE DITCHES/SWALES		X				
BUILDING		X				
RECOVERY WELL		X				
ACCESS ROAD		X				
WASTE						
CARBON	X		NA	NA		
SOLID	X		Yes	Yes	Two bags still need disposed of	

							INSPECTION DATE:	22-Jan-19
							INSPECTION BY:	Shawn M. Ford
					INSPECTED/	CORRECTIVE	COMMENTS	
	EVERY	EVERY	EVERY 3	MIN. 6 MO.	TESTED	MEASURES REQ'D		
				OR				
	WEEK	MONTH	MONTHS	AS REQD(1)	(YES) OR (NO)	(YES or NO)		
GROUNDWATER SYSTEM								
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes			
LOG SYSTEM OPERATING PARAMETERS	X				Yes		Remote	
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		Remote	
TEST LEVEL CONTROLS ETC.	X				Yes		Remote	
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		Remote	
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes			
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes			
INSPECT/VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X				
INSPECT/VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes			
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes			
VERIFY PUMP OPERATION	X				Yes			
WELL LEVELS - MANUALLY CHECK WATER LEVEL VS. PLC DATA		X						
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X						
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X				
CHECK BAG FILTER PRESSURES	X				Yes		Remote	
CHECK CARBON FILTER PRESSURES	X				NA			
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		Remote	
AMP TRANSFER PUMP MOTORS				X				
TRANSFER PUMPS - PERFORM P.M. SERVICE				X				
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X				
CHECK & CALIBRATE INSTRUMENTATION				X				
MANUALLY OPERATE & CHECK VALVES				X				
MANUALLY TEST SAFETY INTERLOCKS			X					

Notes:

[1] Frequency that may be required is based on manufacturer data for the system equipment, system alarms, and Owner requirements

WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
MW-301D	13:59	30.05	974.47	944.42
MW-414D	13:55	27.25	971.91	944.66
MW-413D	14:08	25.49	970.13	944.64
MW-416D	14:15	21.23	965.84	944.61

					INSPECTION DATE: January 27, 2019
					INSPECTION BY: Shawn M. Ford
	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE	
	EVERY	EVERY	TESTED	MEASURES REQ'D	COMMENTS
	WEEK	MONTH	(YES or NO)	(YES or NO)	
SITE SAFETY			Yes	No	
FIRST AID KIT	X		Yes	No	
EYEWASH STATION	X		Yes	Yes	
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes	No	
EMERGENCY LIGHTING	X		Yes	No	
SITE ISSUES	X		No	No	
SITE SECURITY					
FENCING		X			
GATES		X			
LOCKS		X			
SIGNS		X			
SITE		X			
SITE GROUNDS					
DRAINAGE DITCHES/SWALES		X			
BUILDING		X			
RECOVERY WELL		X			
ACCESS ROAD		X			
WASTE					
CARBON	X		NA	NA	
SOLID	X		Yes	Yes	One bag of used filters needs disposed of

							INSPECTION DATE:	27-Jan-19
							INSPECTION BY:	Shawn M. Ford
					INSPECTED/	CORRECTIVE	COMMENTS	
	EVERY	EVERY	EVERY 3	MIN. 6 MO. OR	TESTED	MEASURES REQ'D		
	WEEK	MONTH	MONTHS	AS REQD(1)	(YES) OR (NO)	(YES or NO)		
GROUNDWATER SYSTEM								
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes			
LOG SYSTEM OPERATING PARAMETERS	X				Yes		Remote	
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		Remote	
TEST LEVEL CONTROLS ETC.	X				Yes		Remote	
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		Remote	
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes			
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes			
INSPECT/VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X				
INSPECT/VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes			
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes			
VERIFY PUMP OPERATION	X				Yes			
WELL LEVELS - MANUALLY CHECK WATER LEVEL VS. PLC DATA		X						
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X						
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X				
CHECK BAG FILTER PRESSURES	X				Yes		Remote	
CHECK CARBON FILTER PRESSURES	X				NA			
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		Remote	
AMP TRANSFER PUMP MOTORS				X				
TRANSFER PUMPS - PERFORM P.M. SERVICE				X				
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X				
CHECK & CALIBRATE INSTRUMENTATION				X				
MANUALLY OPERATE & CHECK VALVES				X				
MANUALLY TEST SAFETY INTERLOCKS			X					

Notes:

[1] Frequency that may be required is based on manufacturer data for the system equipment, system alarms, and Owner requirements

WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
MW-301D	13:26	26.61	974.47	947.86
MW-414D	13:32	22.31	971.91	949.6
MW-413D	13:21	23.94	970.13	946.19
MW-416D	13:38	18.09	965.84	947.75

					INSPECTION DATE: February 5, 2019
					INSPECTION BY: Shawn M. Ford
	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE	
	EVERY	EVERY	TESTED	MEASURES REQ'D	COMMENTS
	WEEK	MONTH	(YES or NO)	(YES or NO)	
SITE SAFETY			Yes	No	
FIRST AID KIT	X		Yes	No	
EYEWASH STATION	X		Yes	Yes	
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes	No	
EMERGENCY LIGHTING	X		Yes	No	
SITE ISSUES	X		No	No	
SITE SECURITY					
FENCING		X			
GATES		X			
LOCKS		X			
SIGNS		X			
SITE		X			
SITE GROUNDS					
DRAINAGE DITCHES/SWALES		X			
BUILDING		X			
RECOVERY WELL		X			
ACCESS ROAD		X			
WASTE					
CARBON	X		NA	NA	
SOLID	X		Yes	Yes	One bag of used filters needs disposed of

							INSPECTION DATE:	5-Feb-19
							INSPECTION BY:	Shawn M. Ford
					INSPECTED/	CORRECTIVE	COMMENTS	
	EVERY	EVERY	EVERY 3	MIN. 6 MO.	TESTED	MEASURES REQ'D		
				OR				
	WEEK	MONTH	MONTHS	AS REQD(1)	(YES) OR (NO)	(YES or NO)		
GROUNDWATER SYSTEM								
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes			
LOG SYSTEM OPERATING PARAMETERS	X				Yes		Remote	
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		Remote	
TEST LEVEL CONTROLS ETC.	X				Yes		Remote	
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		Remote	
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes			
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes			
INSPECT/VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X				
INSPECT/VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes			
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes			
VERIFY PUMP OPERATION	X				Yes			
WELL LEVELS - MANUALLY CHECK VWATER LEVEL VS. PLC DATA		X						
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X						
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X				
CHECK BAG FILTER PRESSURES	X				Yes		Remote	
CHECK CARBON FILTER PRESSURES	X				NA			
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		Remote	
AMP TRANSFER PUMP MOTORS				X				
TRANSFER PUMPS - PERFORM P.M. SERVICE				X				
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X				
CHECK & CALIBRATE INSTRUMENTATION				X				
MANUALLY OPERATE & CHECK VALVES				X				
MANUALLY TEST SAFETY INTERLOCKS			X					

Notes:

[1] Frequency that may be required is based on

manufacturer data for the system equipment, system alarms, and Owner requirements

WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
MW-301D	11:24	3.92	**974.47**	970.55
MW-414D	11:27	27.01	**971.91**	944.9
MW-413D	11:20	25.29	**970.13**	944.84
MW-416D	11:14	21.09	**965.84**	944.75

					INSPECTION DATE: February 5, 2019	
					INSPECTION BY: Shawn M. Ford	
	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE		
	EVERY	EVERY	TESTED	MEASURES REQ'D	COMMENTS	
	WEEK	MONTH	(YES or NO)	(YES or NO)		
SITE SAFETY			Yes	No		
FIRST AID KIT	X		Yes	No		
EYEWASH STATION	X		Yes	Yes		
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes	No		
EMERGENCY LIGHTING	X		Yes	No		
SITE ISSUES	X		No	No		
SITE SECURITY						
FENCING		X				
GATES		X				
LOCKS		X				
SIGNS		X				
SITE		X				
SITE GROUNDS						
DRAINAGE DITCHES/SWALES		X				
BUILDING		X				
RECOVERY WELL		X				
ACCESS ROAD		X				
WASTE						
CARBON	X		NA	NA		
SOLID	X		Yes	Yes	One bag of used filters needs disposed of	

							INSPECTION DATE:	14-Feb-19
							INSPECTION BY:	Shawn M. Ford
					INSPECTED/	CORRECTIVE	COMMENTS	
	EVERY	EVERY	EVERY 3	MIN. 6 MO.	TESTED	MEASURES REQ'D		
				OR				
	WEEK	MONTH	MONTHS	AS REQD(1)	(YES) OR (NO)	(YES or NO)		
GROUNDWATER SYSTEM								
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes			
LOG SYSTEM OPERATING PARAMETERS	X				Yes		Remote	
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		Remote	
TEST LEVEL CONTROLS ETC.	X				Yes		Remote	
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		Remote	
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes			
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes			
INSPECT/VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X				
INSPECT/VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes			
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes			
VERIFY PUMP OPERATION	X				Yes			
WELL LEVELS - MANUALLY CHECK WATER LEVEL VS. PLC DATA		X						
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X						
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X				
CHECK BAG FILTER PRESSURES	X				Yes		Remote	
CHECK CARBON FILTER PRESSURES	X				NA			
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		Remote	
AMP TRANSFER PUMP MOTORS				X				
TRANSFER PUMPS - PERFORM P.M. SERVICE				X				
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X				
CHECK & CALIBRATE INSTRUMENTATION				X				
MANUALLY OPERATE & CHECK VALVES				X				
MANUALLY TEST SAFETY INTERLOCKS			X					

Notes:	WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
[1] Frequency that may be required is based on	MW-301D	12:12	3.95	974.47	970.52
manufacturer data for the system equipment, system alarms, and Owner requirements	MW-414D	12:09	21.95	971.91	949.96
	MW-413D	12:18	20.26	970.13	949.87
	MW-416D	12:23	16.04	965.84	949.8

					INSPECTION DATE: March 4, 2019	
					INSPECTION BY: Shawn M. Ford	
	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE		
	EVERY	EVERY	TESTED	MEASURES REQ'D	COMMENTS	
	WEEK	MONTH	(YES or NO)	(YES or NO)		
SITE SAFETY			Yes	No		
FIRST AID KIT	X		Yes	No		
EYEWASH STATION	X		Yes	Yes		
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes	No		
EMERGENCY LIGHTING	X		Yes	No		
SITE ISSUES	X		No	No		
SITE SECURITY						
FENCING		X				
GATES		X				
LOCKS		X				
SIGNS		X				
SITE		X				
SITE GROUNDS						
DRAINAGE DITCHES/SWALES		X				
BUILDING		X				
RECOVERY WELL		X				
ACCESS ROAD		X				
WASTE						
CARBON	X		NA	NA		
SOLID	X		Yes	Yes		

							INSPECTION DATE:	4-Mar-19
							INSPECTION BY:	Shawn M. Ford
					INSPECTED/	CORRECTIVE	COMMENTS	
	EVERY	EVERY	EVERY 3	MIN. 6 MO.	TESTED	MEASURES REQ'D		
				OR				
	WEEK	MONTH	MONTHS	AS REQD(1)	(YES) OR (NO)	(YES or NO)		
GROUNDWATER SYSTEM								
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes			
LOG SYSTEM OPERATING PARAMETERS	X				Yes		Remote	
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		Remote	
TEST LEVEL CONTROLS ETC.	X				Yes		Remote	
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		Remote	
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes			
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes			
INSPECT/VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X				
INSPECT/VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes			
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes			
VERIFY PUMP OPERATION	X				Yes			
WELL LEVELS - MANUALLY CHECK WATER LEVEL VS. PLC DATA		X						
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X						
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X				
CHECK BAG FILTER PRESSURES	X				Yes		Remote	
CHECK CARBON FILTER PRESSURES	X				NA			
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		Remote	
AMP TRANSFER PUMP MOTORS				X				
TRANSFER PUMPS - PERFORM P.M. SERVICE				X				
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X				
CHECK & CALIBRATE INSTRUMENTATION				X				
MANUALLY OPERATE & CHECK VALVES				X				
MANUALLY TEST SAFETY INTERLOCKS			X					

Notes:

[1] Frequency that may be required is based on

manufacturer data for the system equipment, system alarms, and Owner requirements

WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
MW-301D	10:31	24.06	974.47	950.41
MW-414D	10:32	22.55	971.91	949.36
MW-413D	11:02	21.18	970.13	948.95
MW-416D	11:10	17.02	965.84	948.82

							INSPECTION DATE:	11-Mar-19
							INSPECTION BY:	Shawn M. Ford
								Ciara Childers, Molly Parks
					INSPECTED/	CORRECTIVE	COMMENTS	
	EVERY	EVERY	EVERY 3	MIN. 6 MO.	TESTED	MEASURES REQ'D		
				OR				
	WEEK	MONTH	MONTHS	AS REQD(1)	(YES) OR (NO)	(YES or NO)		
GROUNDWATER SYSTEM								
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes			
LOG SYSTEM OPERATING PARAMETERS	X				Yes		Remote	
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		Remote	
TEST LEVEL CONTROLS ETC.	X				Yes		Remote	
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		Remote	
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes			
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes			
INSPECT\VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X				
INSPECT\VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes			
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes			
VERIFY PUMP OPERATION	X				Yes			
WELL LEVELS - MANUALLY CHECK VWATER LEVEL VS. PLC DATA		X						
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X						
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X				
CHECK BAG FILTER PRESSURES	X				Yes		Remote	
CHECK CARBON FILTER PRESSURES	X				NA			
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		Remote	
AMP TRANSFER PUMP MOTORS				X				
TRANSFER PUMPS - PERFORM P.M. SERVICE				X				
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X				
CHECK & CALIBRATE INSTRUMENTATION				X				
MANUALLY OPERATE & CHECK VALVES				X				
MANUALLY TEST SAFETY INTERLOCKS			X					

Notes:

[1] Frequency that may be required is based on manufacturer data for the system equipment, system alarms, and Owner requirements

WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
MW-301D			974.47	974.47
MW-414D			971.91	971.91
MW-413D			970.13	970.13
MW-416D			965.84	965.84

					INSPECTION DATE: March 19, 2019	
					INSPECTION BY: Shawn M. Ford	
					Ciara Childers, Molly Parks	
	MINIMUM FREQUENCY		INSPECTED/	CORRECTIVE		
	EVERY	EVERY	TESTED	MEASURES REQ'D	COMMENTS	
	WEEK	MONTH	(YES or NO)	(YES or NO)		
SITE SAFETY			Yes	No		
FIRST AID KIT	X		Yes	No		
EYEWASH STATION	X		Yes	Yes		
FIRE EXTINGUISHERS\SMOKE DETECTORS	X		Yes	No		
EMERGENCY LIGHTING	X		Yes	No		
SITE ISSUES	X		No	No		
SITE SECURITY						
FENCING		X				
GATES		X				
LOCKS		X				
SIGNS		X				
SITE		X				
SITE GROUNDS						
DRAINAGE DITCHES/SWALES		X				
BUILDING		X				
RECOVERY WELL		X				
ACCESS ROAD		X				
WASTE						
CARBON	X		NA	NA		
SOLID	X		Yes	Yes		

							INSPECTION DATE:	19-Mar-19
							INSPECTION BY:	Shawn M. Ford
								Ciara Childers, Molly Parks
					INSPECTED/	CORRECTIVE	COMMENTS	
	EVERY	EVERY	EVERY 3	MIN. 6 MO.	TESTED	MEASURES REQ'D		
				OR				
	WEEK	MONTH	MONTHS	AS REQD(1)	(YES) OR (NO)	(YES or NO)		
GROUNDWATER SYSTEM								
VERIFY EQUIPMENT IS OPERATING WITH NO DAMAGE OR LEAKS	X				Yes			
LOG SYSTEM OPERATING PARAMETERS	X				Yes		Remote	
USE PLC TO CHECK SYSTEM OPERATING CONDITIONS	X				Yes		Remote	
TEST LEVEL CONTROLS ETC.	X				Yes		Remote	
USE PLC TO VERIFY DIAL OUT STATUS IS ENABLED	X				Yes		Remote	
INSPECT CONTAINMENT SUMP/FLOOR SEAL	X				Yes			
INSPECT BUILDING AND FOUNDATION INTEGRITY	X				Yes			
INSPECT\VERIFY HEATING AND VENTILATING SYSTEM OPERATIONS				X				
INSPECT\VISUALLY CHECK LIGHTING SYSTEM & EMERGENCY SYSTEM	X				Yes			
VISUALLY INSPECT ELECTRICAL SYSTEM	X				Yes			
VERIFY PUMP OPERATION	X				Yes			
WELL LEVELS - MANUALLY CHECK VWATER LEVEL VS. PLC DATA		X						
SAMPLING (SEE TABLE IN NPDES ATTACHMENTS)		X						
AIR STRIPPER - CHECK SOLIDS ACCUMULATION				X				
CHECK BAG FILTER PRESSURES	X				Yes		Remote	
CHECK CARBON FILTER PRESSURES	X				NA			
AIR STRIPPER - CHECK BLOWER OPERATION AND PRESSURE DROP	X				Yes		Remote	
AMP TRANSFER PUMP MOTORS				X				
TRANSFER PUMPS - PERFORM P.M. SERVICE				X				
AIR STRIPPER - MEASURE AIR FLOW, FULL INSPECTION				X				
CHECK & CALIBRATE INSTRUMENTATION				X				
MANUALLY OPERATE & CHECK VALVES				X				
MANUALLY TEST SAFETY INTERLOCKS			X					

Notes:	WELL ID	TIME	WATER LEVEL TOR	TOR ELEVATION	WATER ELEVATION TOR
[1] Frequency that may be required is based on	MW-301D			974.47	974.47
manufacturer data for the system equipment, system alarms, and Owner requirements	MW-414D			971.91	971.91
	MW-413D			970.13	970.13
	MW-416D			965.84	965.84

ATTACHMENT E Bedrock Groundwater Migration Control System Shutdown Reports

VANDALIA - MIGRATION CONTROL SYSTEM
OPERATIONS AND MAINTENANCE PLAN
FIGURE 1 - SITE VISIT REPORT FORM

DATE: 1/5/19

TIME: 7:47 AM

BY: Wayne Dolband WD

SYSTEM NAME: GWT

SYSTEM COMPONENT: GAC Pump

REASON FOR REPORT: The ProControl gave a shutdown Alarm

REASON FOR SHUTDOWN: Remote Shutdown of the GAC Pump

ACTION TAKEN:

SHUTDOWN DATE & TIME: 1/5/19 7:47AM

START-UP DATE & TIME: 1/5/19 8:30 AM

COMMENTS/SUGGESTIONS: The Air Stripper sock needs cleaning. Clean Harbors has quoted $750 to replace the sock & Train Shawn. They also quoted $10,000 for a complete cleaning.

REQUIRED REPORT NOTIFICATION PER SECTION 4.0

IMMEDIATE		NON-CRITICAL	X	ROUTINE	

INDIVIDUAL NOTIFIED

ACTION/RESPONSE

G:\79022\054\OM\O

VANDALIA - MIGRATION CONTROL SYSTEM
OPERATIONS AND MAINTENANCE PLAN
FIGURE 1 - SITE VISIT REPORT FORM

DATE: 01/06/2019
TIME: 09:30
BY: SM Ford

SYSTEM NAME: GWT
SYSTEM COMPONENT: GAC Pump
REASON FOR REPORT: Shutdown Alarm

REASON FOR SHUTDOWN: Remote Shutdown of GAC Pump

ACTION TAKEN: Attempted Reset w/ Alarm System 3 times
4th time System Start

SHUTDOWN DATE & TIME: 1/6/2019 9:30
START-UP DATE & TIME: 1/6/2019 10:30
COMMENTS/SUGGESTIONS: Air Stopper sock need cleaning. Contractor (Clean Harbors) Contractor, Remedy in progress

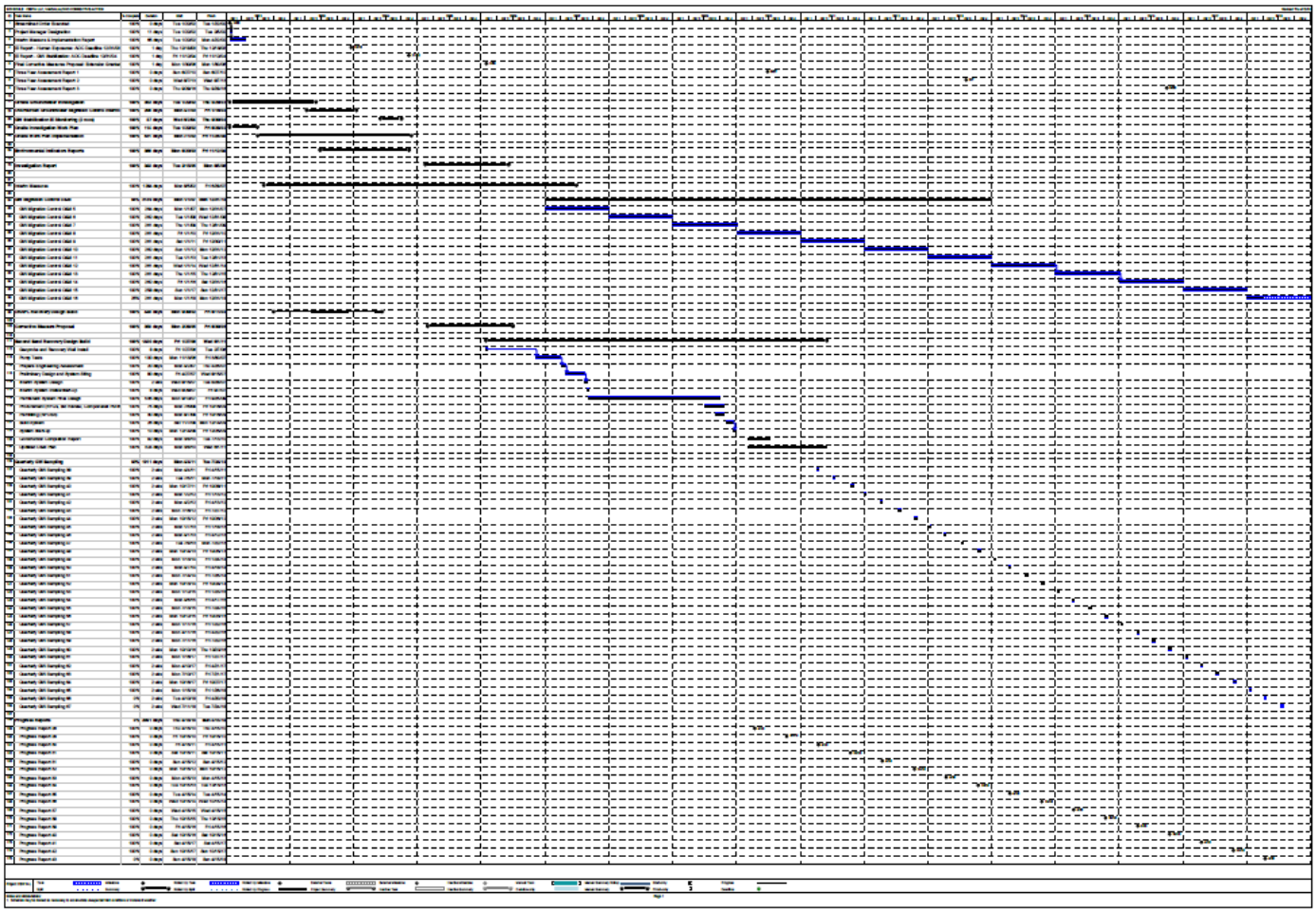
REQUIRED REPORT NOTIFICATION PER SECTION 4.0

IMMEDIATE		NON-CRITICAL	X	ROUTINE	

INDIVIDUAL NOTIFIED
ACTION/RESPONSE

G:\79022\054\OM\O

ATTACHMENT F - Project Schedule



ATTACHMENT G - PCB Containing Transformer Inspection March 23, 2019

Figure H1: View of PCB containing transformer in a rooftop utility room at the CERTA Vandalia site. First Quarter 2019 PCB inspection. Note there is no evidence of leaking or spillage apparent.

ATTACHMENT H - Proposed Realtime Indoor Air Sampling Plan Submitted to USEPA, September 4, 2018

Vapor Intrusion Evaluation Work Plan
CERTA Vandalia LLC Facility
EPA ID Number OH0 000 048 454
250 Northwoods Boulevard, Vandalia, Ohio

Prepared for:

U.S. EPA Region 5
Remediation and Reuse Branch
Land and Chemicals Division
77 West Jackson Blvd., Mail Code: LU-9J
Chicago, IL 60604

Prepared by:

The Institute of Ecolonomics
901 S. County Road 31
Berthoud, Colorado 80513

INSTITUTE OF
ECOLONOMICS

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1.0 INTRODUCTION

The Institute of Ecolonomics (IOE) has prepared this Work Plan on behalf of CERTA Vandalia, LLC to conduct a Vapor Intrusion Evaluation at the CERTA Vandalia LLC (CERTA) facility located at 250 Northwoods Boulevard in Vandalia, Ohio. The site location is shown in **Figure 1** in **Appendix A**.

This work plan outlines the scope of work for real-time evaluation of the indoor air quality under a situation simulating a worst-case scenario that will include sampling with a field portable gas chromatograph (GC), Summa® canister confirmation sampling, and ambient outdoor air sampling. The primary constituent of concern (COC) for indoor air is trichloroethene (TCE) as indicated in the U.S. Environmental Protection Agency (EPA) RCRA Administrative Order on Consent (AOC) for the CERTA facility dated September 22, 2017.

The evaluation results will be compared to the health protective level of 8.8 micrograms per cubic meter (µg/m^3) as established in the AOC. If levels found are consistently less than this protective level it is anticipated that EPA will issue a letter to CERTA stating that the site can be occupied safely by workers and guests as it relates to indoor air quality.

2.0 BACKGROUND

CERTA acquired the facility from MAHLE Behr Properties Management LLC (MAHLE) in September 2017, and is redeveloping the site with the goal of either selling or leasing all or portions of the facility, including Buildings 47 and 48. On behalf of the previous owner MAHLE, Haley & Aldrich (H&A) previously completed an indoor air sampling investigation at the facility that was summarized in a report dated September 2016, and included the collection of indoor air samples using Summa® canisters.

H&A reported that the highest concentrations of TCE were found in the south-central portion of Building 48. Specifically, the highest concentration of TCE (330 µg/m^3) was detected in a mezzanine conference room over the maintenance area in the south-central portion of Building 48. H&A reported TCE concentrations that ranged from 50 to 200 µg/m^3 in the office area and maintenance shop area in the south-central portion of Building 48. TCE concentrations in the open manufacturing area in Building 47 reportedly ranged from 20 to 32 µg/m^3. During this investigation, H&A also sealed:

- cracks, open joints, and abandoned floor drains in the concrete floor of the buildings;
- open pipes near the ceiling;
- the annular space between the PVC riser and the flush-mount road box in monitoring wells located in the buildings, and;
- abandoned roof conductors that penetrated the building floors.

Tetra Tech Inc. (Tetra Tech) prepared an EPA-approved sampling and analysis plan and completed indoor air, sub-slab soil vapor, and ambient air sampling at the CERTA facility in October 2017. The results were summarized in the Revised Vapor Intrusion Investigation Report, dated March 22, 2018. TCE was found in all seven sub-slab soil vapor samples collected during the investigation, with the highest concentration detected at 118,000 µg/m^3 in the south-central

portion of Building 48. TCE was also found in five indoor air samples, with the highest concentration detected at 22.7 µg/m^3 in the southwest portion of Building 48. The TCE results from this investigation are summarized in **Table 1** below and **Figure 2** in **Appendix A**.

In March 2018, an active sub-slab depressurization system (SSDS) was designed and installed as described in the Sub-Slab Depressurization Design and Installation Plan that was included as Attachment 1 in the Revised Vapor Intrusion Investigation Report from March 2018. During the SSDS system installation additional possible vapor pathways from the sub-slab vapor zone were identified and sealed. Following installation of the SSDS, three indoor air sampling events were completed between April and June 2018. The TCE results from these three events are shown in **Table 1** below and **Figure 2** in **Appendix A**. As shown in **Table 1**, TCE concentrations have steadily decreased during each sampling event following installation of the SSDS and below the EPA remedial goal of 8.8 µg/m^3. In fact, in the June, 2018 sampling, all results obtained were Non-Detect (ND) for TCE.

As stated earlier, it is CERTA's goal to provide sufficient evidence for EPA to be able to write a letter expressing their professional opinion that the buildings at the site can be safely occupied as it relates to indoor air quality. The purpose of this work plan as discussed with EPA during a conference call held in May 2018 is to consider multiple lines of evidence in accordance with the EPA OSWER Technical Guidance that includes evaluating temporal variabilities in the data set and potentially identifying preferential pathways in the two CERTA buildings. Due to the limited sampling data collected following installation of the SSDS, real-time indoor air monitoring will be conducted during this sampling event over a 3-day period to gain a better understanding of TCE concentrations over time and determine whether past data are representative of the true variability in TCE concentrations over time.

Also, we will conduct the sampling while creating indoor air conditions in the buildings that are indicative of "worst case" conditions that might be encountered by building occupants. If there are safe levels of volatile organic indoor air constituents (specifically TCE considerably below 8.8 ug/m3) during "worst case" conditions, it should be safe to conclude that levels will be even safer during normal occupancy conditions.

Table 1
Summary of Analytical Results for Indoor Air/Sub-Slab Soil Gas Samples

Sample ID	Building	TCE Results[1]			
		10/5/2017	4/13/2018	4/23/2018	6/26/12018
Sub-Slab Soil Vapor/Indoor Air Samples Prior to Sub-Slab Depressurization System					
CERT-SS-1	47	**34,200**	--	--	--
CERT-SS-2	47	**27,800**	--	--	--
CERT-SS-3	48	14.8	--	--	--
CERT-SS-4	48	**118,000**	--	--	--
CERT-SS-5	48	**43,900**	--	--	--
CERT-SS-6	48	35.2	--	--	--
CERT-SS-7	40	17.2	--	--	--
CERT-IA-1	47	ND	--	--	--
CERT-IA-2	47	**22.7**	--	--	--
CERT-IA-3	48	**16**	--	--	--
CERT-IA-4	48	**14.2**	--	--	--
CERT-IA-5	48	7.2	--	--	--
CERT-IA-6	48	4.35	--	--	--
CERT-IA-7	47	ND	--	--	--
Indoor Air Samples Following Installation of Sub-Slab Depressurization System					
CERT-RE-1/CERT-RE-23	48	--	7.36	ND	--
CERT-RE-2/CERT-RE-20/CERT-RE-2	48	--	7.15	3.49	ND
CERT-RE-3/CERT-RE-21	48	--	ND	3.17	--
CERT-RE-4/CERT-RE-22	48	--	8.65	3.17	--
CERT-RE-5/CERT-RE-19/CERT-RE-1	48	--	4.89	4.41	ND
CERT-RE-6/CERT-RE-18/CERT-Re-3	48	--	1.18	2.85	ND
CERT-RE-7/CERT-RE-17/CERT-RE-4	48	--	1.07	3.65	ND
CERT-RE-8/CERT-RE-16	47	--	1.45	4.03	--
CERT-RE-9/CERT-RE-24	48	--	ND	ND	--
CERT-RE-10/CERT-RE-14	47	--	ND	ND	--
CERT-RE-11/CERT-RE-15	47	--	ND	ND	--
CERT-RE-12/CERT-RE-13	47	--	ND	ND	--
Maximum Detected Concentration		22.7	8.65	4.41	ND

Notes:

[1]Concentrations reported in micrograms per cubic meter (µg/m3)

Denotes TCE concentration in excess of indoor air remedial goal of 8.8 µg/m3 as outlined in the U.S. EPA RCRA Administrative Order on Consent, dated September 22, 2017.

Denotes TCE concentration in excess of U.S. EPA VISL for sub-slab/exterior soil gas samples.

3.0 SCOPE OF WORK

The field evaluation tasks for this scope of work include:

1. real-time indoor air monitoring over 3-days using a field portable GC (FROG-4000) to confirm recent past sample results, evaluate temporal variabilities, and evaluate potential preferential pathways;
2. differential pressure monitoring within both buildings operating under negative pressure to pull make-up air in through holes or cracks in both the buildings in an effort to simulate "worst case" conditions for vapor intrusion;
3. collection of weather data, pressure gradient measurements, and water level data from shallow overburden monitoring wells located in the two buildings for comparison to analytical data sets, and;
4. collection of Summa® canister samples as a quality control (QC) check to confirm portable GC results at sample locations where detectable levels of TCE might be found.

The details of the evaluation process are presented in the sub-sections below.

3.1 Field Portable GC (FROG-4000) Sampling Event

IOE will utilize the FROG-4000 field portable GC to conduct real-time indoor air monitoring over a 3-day period in the two CERTA buildings. The FROG-4000 is a chemical analysis microsystem developed by Defiant Technologies. The GC can perform the analysis in 5 to 7 minutes, following the time of collection, that allows for correlation of data to other short cycle time data.

A field study completed by EPA's National Exposure Research Laboratory in 2014 to measure temporal variability in indoor air showed that data collected from the FROG-4000 is comparable to analyses conducted on a bench top GC system. During the EPA field study, several split samples were also sent to an off-site laboratory for analysis and these data showed good correlation with the on-site measurements using the FROG-4000.

Prior to the field monitoring activities at the two CERTA buildings, the FROG-4000 will be calibrated by the manufacturer (Defiant Technologies, Inc. [Defiant Technologies]) within the TCE concentration range expected and based on previous indoor air sample results. Defiant Technologies will run a minimum of five standards for TCE concentrations ranging from low to high. The Ellvin chromatogram software will then use the analytical data from the varying concentrations of standard solutions to calibrate the instrument.

The location of the FROG-4000 indoor air monitoring in the two CERTA buildings will correspond to previous sampling events where TCE was detected. We will also sample areas where preferential pathways may exist, including sealed basement floor cracks, existing monitoring wells in the buildings, and restrooms with dry p-traps (See **Figure 3** for proposed sampling locations). It is estimated that the Samples will be collected at 13 locations throughout the two buildings every six hours for 72 hours following the procedures outlined in the FROG-4000 Operating Manual (Defiant Technologies 2015). At each location, the FROG-4000 will be set up in the breathing zone, approximately 3 to 5 feet above the floor. A method blank will be run through the FROG-4000 between each sample location to assure acceptable accuracy. The data will be downloaded to a laptop computer loaded with the Ellvin chromatogram software to generate chromatographs

for TCE at each location. **Figure 3** in **Appendix A** and **Table 2** below presents a summary of the real-time indoor air monitoring locations proposed for analysis using the FROG-4000.

Table 2
FROG-4000 Samples

Sampling Area	Sample Locations per 6-Hour Event	Total Number of Samples over 3-Days
Building 48	10	120
Building 47	3	36
Total Number of Samples		**156**

Prior to the air monitoring event, IOE will confirm that the nine make-up air units (48-B3, 48-14, 48-15, 48-2, 48-7, 47-1, 47-4, 47-6 and 47-9) in both buildings are running along with the 40 exhaust fans. We will also confirm that all windows and bay doors within the buildings are closed to induce negative pressure thereby simulating worst-case conditions for intrusion of vapors from the subsurface. Soil gas flow from the subsurface into a building is typically enhanced when a building is under negative pressure (ITRC 2014).

The pressure gradient in both buildings will be measured during the air monitoring event. The pressure condition (i.e., negative pressure relative to outdoors or sub-slab) can provide information on the direction of potential advective flow of vapors into the buildings (ITRC 2014).

During the 3-day monitoring period, pressure gradient measurements will be collected in both buildings using an OMNIGUARD 4 Differential Pressure Recorder. For the measurements, one pressure port on the instrument will be open to the indoor atmosphere and the other port will be connected to 1/4-inch tubing and placed outside of each building (e.g., threaded under closed bay doors). These pressure gradient measurements will be taken at each air sampling location several times throughout the monitoring period. Pressure gradient measurements will be recorded on the field sampling sheets provided in **Attachment 1**.

Weather data, including atmospheric pressure and precipitation, will be collected from the Old Falls Weather Station in Vandalia, Ohio during the 3-day monitoring period. Weather data will be recorded on the field sampling sheets provided in **Attachment 1**.

Table 3 below presents water level and TCE data collected from shallow overburden monitoring wells and summarized in the September 2017 Semi-Annual Progress Report for the CERTA facility. These overburden wells are located within Buildings 47 and 48 as shown in the Progress Report described above. Studies have shown that VOC concentrations in soil gas beneath a slab decrease with increasing vertical separation from the groundwater source (EPA 2009; ITRC 2014). Water levels will be collected from monitoring wells where TCE was detected in groundwater in Building 48 as shown in **Table 3**. Water level will also be collected from one well located in Building 47 (MW-798) where free product was encountered. TCE was not detected in groundwater samples collected from other monitoring wells located in Building 47 during this event. Water level data will be recorded on the field sampling sheets provided in **Attachment 1**.

Table 3
Indoor Overburden Monitoring Wells

Monitoring Well ID	Water Levels		Analytical	
	Date	Water Level (feet below top of casing)	Date	TCE Results[1]
MW-787	9/27/2017	8.14	4/11/2017	56
MW-798[2]	9/27/2017	--	--	--
MW-806	9/27/2017	8.38	7/13/2017	<670
MW-809	9/27/2017	8.48	4/11/2017	12

Notes:
[1]Concentrations reported in micrograms per liter (ug/L).
[2]Water level and sample not collected at this location due to free product in well.

3.2 Summa® Canister Confirmation Sampling

Following the FROG-4000 3-day monitoring event, indoor air samples will be collected through stainless-steel Summa® canisters to confirm FROG-4000 TCE sample results and for comparison to past data sets. It is estimated that seven samples will be collected for analysis. However, depending on the results of the FROG-4000 monitoring, the number of samples collected may change.

The canisters and flow controllers will be individually certified clean by the laboratory and have pre-set flow controllers that are calibrated to collect 6-liters of air over an approximately 8-hour period. Samples will be analyzed for VOCs by U.S. EPA Method TO-15.

The Summa® canisters will be placed on the concrete floor at the first level in the two buildings and in the breathing zone, approximately 3 to 5 feet above the floor. Once the Summa® canister is in the appropriate sampling location, the controller will be affixed to the canister. When the flow controller is affixed, the canister valve will be opened, and the initial vacuum and start time will be recorded on the field data sheets included in **Attachment 1**.

The sampling rate will not exceed 200 millimeters per minute (ml/min). Final vacuum readings will also be recorded on the data sheets when the sample is collected. Samples will be collected while vacuum remains on the Summa canister. To ensure that a representative sample is obtained, the field crew will also return to the sample location no later than mid-way through the 8- to 10-hour sampling interval to check the vacuum and flow rate (Ohio EPA 2010).

3.3 Outdoor Air Sampling

Two ambient (outdoor) air samples will be collected during the Summa® canister sampling period. The ambient air sample locations will be upwind of the indoor air sample locations. The location of the ambient air samples will be selected at the time of sampling, depending on the wind direction at that time. Sampling protocol identical to that described above in Section 3.2 for Summa Cannister Sampling will be used for the ambient air samples.

3.4 Sample Analysis

Once the sampling is complete, indoor and outdoor sample canisters and regulators will be transported to ALS laboratory (ALS) located in Cincinnati, Ohio using EPA Method TO-15. The sample analysis will include the Target Compound List (TCL) compounds for EPA Method TO-15.

4.0 QUALITY ASSURANCE/QUALITY CONTROL

Field QA/QC measures include the collection of one duplicate sample for every 10 samples collected. The IOE field team will be responsible for ensuring that sample quality and integrity are maintained, and that sample packaging and shipping are completed in accordance with the Data Quality Objectives in Section 5.0 below and in the IOE SOP included in **Attachment 2**.

When the results are received, IOE will review the laboratory data package for completeness in accordance with the Data Quality Objectives described in Section 5.0 below and the IOE SOP included in **Attachment 2**. For field duplicates, the relative percent difference (RPD) between the duplicate and original sample will be calculated by the QA reviewer and RPDs greater than 50 percent (where detections are greater than the quantitation limit) will be summarized in a data validation report. Corrective actions may include resampling, reassessment of the laboratory's methods, or the addition of data qualifiers to laboratory results.

Real time indoor air analyses using the FROG-4000 unit will undergo the same QA protocol as all samles obtained through stationary static sampling and analysis. With six hour sampling frequencies over the 3 day sampling period IOE staff will have sufficient time to repeat samplings and analyses with the FROG-4000 whenever sampling events do not meet QA goals.

5.0 DATA QUALITY OBJECTIVES

Data quality objectives address requirements that include when, where, and how to collect samples, the number of samples, and the limits on tolerable error rates. The purpose of this investigation is to conduct indoor air sampling at the facility in order to determine whether the U.S. EPA threshold of 8.8 $\mu g/m^3$ TCE is being met throughout the building under "worst case" indoor building conditions for occupants.

The sampling and analysis plan will be undertaken along with a quality assurance (QA) program that defines the sampling, analysis, and data validation procedures. The field QA program will outline procedures for documenting that samples are collected correctly and without potential cross contamination. The QA methods are outlined in Section 5.1, below.

5.1 Quality Assurance and Quality Control

This section sets forth the requirements and provisions for sample quality assurance and quality control in the field and during transport to the laboratory. The transfer of sample custody will be limited between IOE personnel, laboratory courier and fixed base laboratory personnel.

The primary objective of custody requirements for this project is simply to track that samples are handled by authorized personnel and document that handling occurred within the parameters of this Work Plan. In general, the outline for sample handling and custody will be as follows:

- The IOE project manager will brief sampling personnel on custody procedures.
- Samples will be in the custody of the field team at the site or in secure location until they are transferred to the fixed base laboratory
- Samples will be removed from the project site daily and transported to the Laboratory
- The fixed base laboratory will implement tracking and custody documentation.
- Post-analysis samples will be disposed of properly.
- Chain of Custody (COC) documentation will be maintained by IOE after reporting.

COC protocol will be followed during all phases of the sample collection, storage, shipment, and

analysis procedures. Maintaining the COC in the field will be the responsibility of the IOE project manager. The IOE Project Manager will perform and/or direct the collection, handling, field analysis, and/or shipment of samples collected from the site through the sampling personnel assigned.

Samples collected in the field will be labeled and then stored in a secure location from the time of collection through transfer to the fixed base laboratory (ALS). Air samples will be collected using laboratory prepared and certified clean Summa canisters. Air samples will be kept at ambient temperature.

A COC record will accompany each set of samples during collection and shipment. Each COC record will be filled out and signed in permanent ink by an IOE field team member. The COC records will include the following information: project name and number, sample designation, date and time of collection, samplers name, number of sample containers, type of matrix, preservatives, analysis to be performed, signature of laboratory person(s) receiving samples, and inclusive dates/times of possession.

Original COC documents placed in laboratory shipping containers will be bagged in Ziploc® plastic bags for protection against moisture and damage. A carbon copy or photocopy will be made of the COC record before sealing and placing it in the shipping container to shipment to the fixed base laboratory.

Various blank and duplicate samples will be used to monitor the quality assurance and control of the field sampling activities. These samples will be analyzed for VOCs by EPA Method T0 -15.

5.2 Data Validation and Management

Data validation activities will focus on verifying the completeness and accuracy of field methods used, sample handling, and fixed base laboratory results. The IOE Project Manager will be responsible to conduct a full-package review of the field process and data produced for the site and reports from the fixed base laboratory.

The ALS QA Officers will conduct validation and reporting consistent with the parameters of the Quality Assurance Manual (QAM). Data quality QA packages for analytical services will be delivered to the IOE Project Manager and will be entered into the project record. The IOE Project Manager is responsible for reviewing and confirming that field and laboratory data meets the data quality objectives for the project. Raw data from the laboratory will be provided to IOE electronically. The electronic data will be used to directly populate tables. In addition, field data may be entered onto tables or into forms for use in reporting.

IOE personnel not directly involved in the data input, perform a data check on all manually entered data to ensure data is not transposed or incorrectly typed. IOE maintains electronic files on the local office server. This information is backed up daily from IOE's Servers.

Once the final report is generated, all electronic files except the final report are deleted. At initial project closing, hard copy files are purged of all documents not provided to the client or other third party. Final reports, site photos, internal memos, permits, and laboratory data are retained. Project

closing is 30 days after the last project activity has ceased. A second purge is conducted at three years after project closing. All documents are removed from the file except final reports and documents provided to the client or third parties. These documents are retained at the local office indefinitely.

6.0 AIR SAMPLING METHODOLOGY AND ANALYSIS

Air sampling at the facility will be conducted from multiple locations throughout the buildings to assess whether the U.S. EPA threshold for TCE is being met. Sampling and activities will be documented in field notebooks or field forms.

6.1 FROG-4000 Indoor Air Survey

IOE Staff will carefully follow all the procedures described in detail in the FROG-4000 Operating Manual provided by the Manufacturer, Defiant Technologies (**Attachment 3**). The sampling unit will be used consistently in the same manner for each of the six-hour interval sampling sessions at all the sampling locations.

6.2 Sampling and Analysis Timing

Monitoring and sampling will be performed following this approximate schedule:

Day 1 – Begin real-time air monitoring with the FROG-4000 at 6-hour intervals
Day 2 – Continue real-time air monitoring with the FROG-4000
Day 3 – Continue real-time air monitoring with the FROG-4000; last day for sampling
Day 4 – Set up and collect IA summa cannister samples and ambient air samples

6.3 Sampling Handling Procedures

FROG – 4000 Air sampling and analyses will be handled in the manner recommended by the manufacturer (Defiant Technologies). Since samples are analyzed while they are being collected there is no risk of reduced quality control through post sampling handling.

Summa Cannister Indoor air samples will be collected in laboratory supplied clean and individually certified canisters and labeled with the sample identification number, date and time of collection, and starting/ending canister pressure. Laboratory chain of custody forms will be filled out with the same sample information, and samples will remain under IOE care until delivered to the laboratory. At such a time, the samples will be signed over to the laboratory for analysis.

6.4 Sample Labeling

Sample container tags will be clearly labeled with the following information:

- Unique sample identification (CERTA)
- Sample Type – IA/AA (Indoor Air, Ambient Air)
- Sampler name
- Sample date and time collected
- Beginning and ending canister pressure

Each sample will have a unique sample identification that will include the following: site designation (CERTA), sample type (IA/AA), and the sample number (1, 2, 3, etc.). If the sample is a QA sample, it will be followed by an appropriate explanation and description.

7.0 INDOOR AIR SAMPLING AND REPORTING SCHEDULE

Upon receipt of U.S. EPA's approval of this work plan, sampling activities will commence. IOE anticipates beginning sampling activities mid-September 2018. Summa Canister samples will be submitted to the laboratory for standard turnaround times, and analysis and data validation activities are anticipated to take two to three weeks. Upon receipt of the validated data, the report will be prepared and submitted to EPA within 15 days.

8.0 REFERENCES

Defiant Technologies, Inc.. 2015. FROG-4000 Chemical Analysis System User's Manual, Volume 5.

Interstate Technology and Regulatory Council. 2014. Petroleum Vapor Intrusion Guidance Document. Fundamental of Screening, Investigation, and Management. October.

Lutes, C., Cosky, B., Schumacher, B. Zimmerman, J., Truesdale, B., and Norberg, R. 2014. Four Winters of Continuous Vapor Intrusion Monitoring in Indianapolis – Temporal Variability in Indoor Air. Presented at EPA 2014 Workshop on Vapor Intrusion Exposures – The Challenges, Need for, and Benefits of Long-Term Stewardship. EPA Office of Research and Development (ORD), National Exposure Research Laboratory (NERL).

Ohio Environmental Protection Agency (Ohio EPA). 2010. "Sample Collection and Evaluation of Vapor Intrusion to Indoor Air for Remedial Response and Voluntary Action Programs." May.

Tetra Tech, Inc. 2017. Sampling and Analysis Plan for Vapor Intrusion Investigation at CERTA Vandalia LLC Facility. September 19.

U.S. Environmental Protection Agency (EPA). 1999. Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition. Compendium Method TO-15, Determination of Volatile Organic Compounds (VOCs) In Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS). January.

EPA. 2009. Vertical Distribution of VOCs in Soils from Groundwater to the Surface/Subslab. ORD, NERL. August.

EPA. 2010. Vapor Intrusion Guidebook. November.

EPA. 2015. Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air. EPA Office of Solid Waste and Emergency Response (OSWER). June.

9.0 APPENDIX A

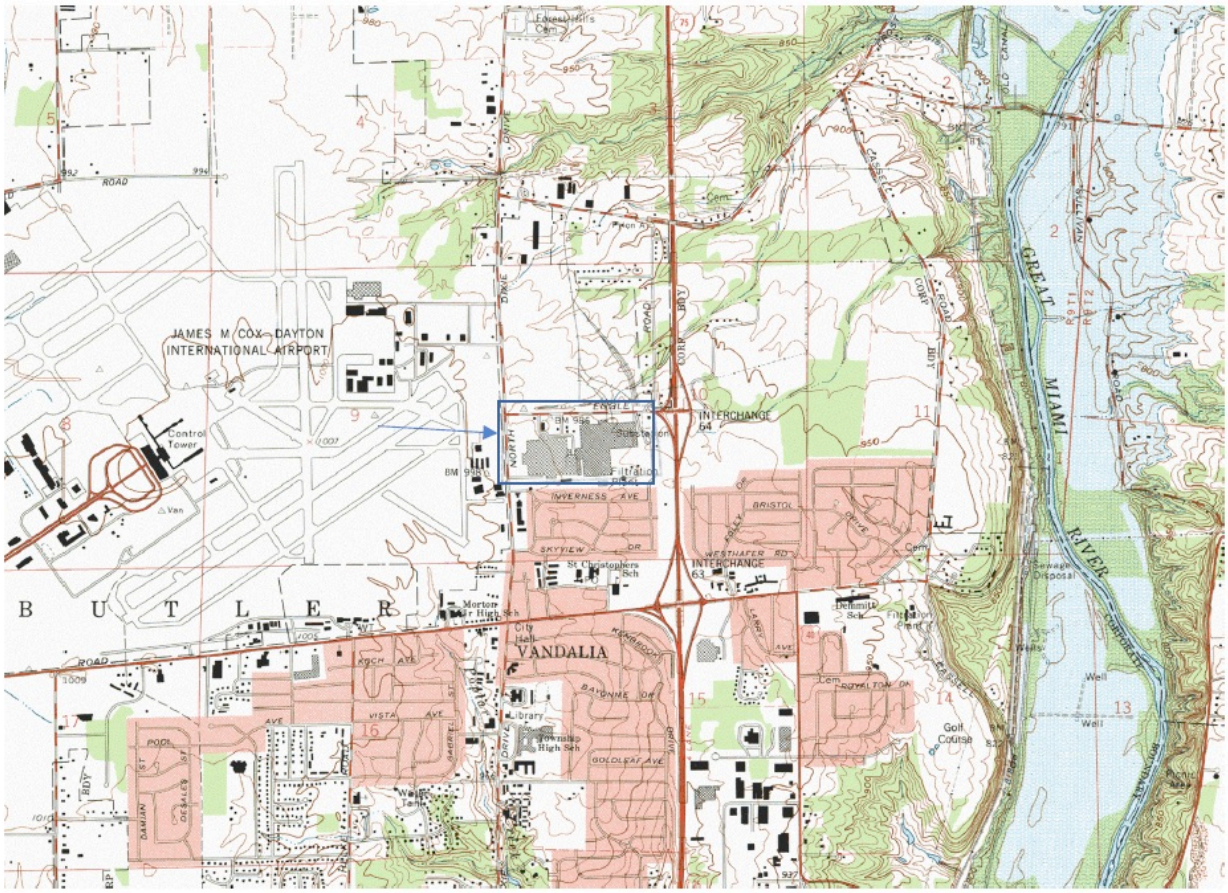

Figure 1: CERTA Vandalia Site adjacent to the Dayton, OH, airport shown in the black lined box indicated by the blue arrow.

Figure 2: Locations and sample results for indoor air sampling rounds conducted on four occasions from October, 2017 through June, 2018.

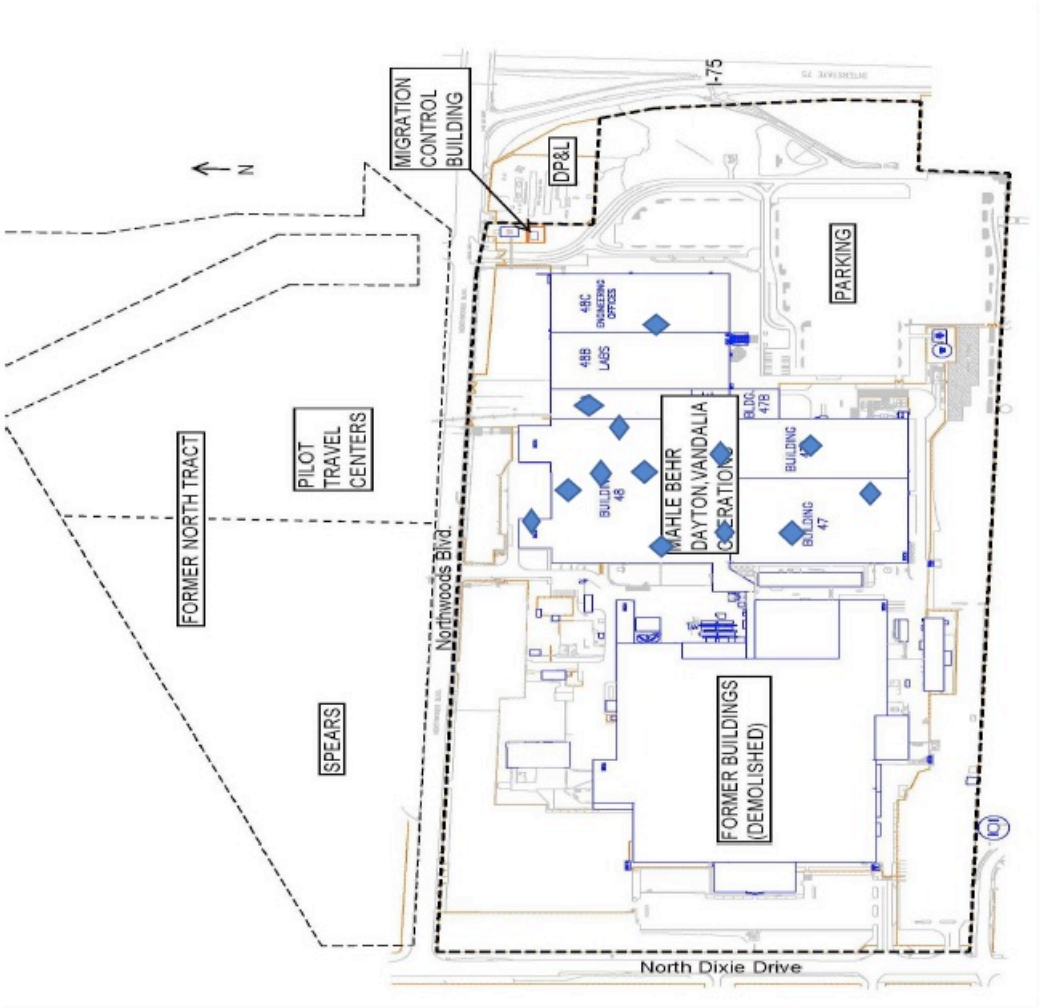

Figure 3: Approximate locations indicated by the "Blue Diamonds" for the Frog – 4000 and Summa Cannister Indoor Air Sampling described in this Work Plan.

ATTACHMENT I - Approval of Real Time Indoor Air Sampling + Conditions from USEPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

November 26, 2018

REPLY TO THE ATTENTION OF

LU-16J

Mr. Kris Bamburger
CERTA Vandalia, LLC
250 Northwoods Boulevard
Vandalia, Ohio 45377

RE: Vapor Intrusion Evaluation Work Plan Approval
CERTA Vandalia LLC Facility, 250 Northwoods Boulevard, Vandalia, Ohio
EPA ID: OH0 000 048 454

Dear Mr. Bamburger:

The United States Environmental Protection Agency reviewed the Vapor Intrusion Evaluation Work Plan (Plan) prepared and submitted, on your behalf, by your contractor, The Institute of Ecolonomics. The EPA is approving this Plan with the following conditions and understandings.

1. After the test conditions are established with use of make-up air units and exhaust fans, pressure differential measurements should be recorded across the building slab at the locations corresponding to the extraction points for the sub-slab depressurization system (SSDS).

2. For the 3-day real time sampling project, the portable FROG-4000 unit, or any other portable gas chromatograph with photoionization detector calibrated to detect only Trichloroethylene (TCE), may be used. Please provide additional details such as operating measurements of SSDS and HVAC system to evaluate the indoor air exchange dynamics.

3. For the post 3-day indoor air confirmation sampling event, the SUMMA canister samples should be analyzed for all the volatile constituents by EPA Method TO-15.

4. For the ambient outdoor air sampling event, one canister should be located upwind of the buildings, and one canister should be located downwind of the buildings at the property boundary or as close to the boundary as possible. The final location of the outdoor samples can be selected based on the prevailing wind directions at the time of sampling.

5. You shall submit the monitoring results to EPA for our review and evaluation.

6. EPA might require CERTA to conduct an additional round of indoor air sampling, to confirm the efficiency of the SSDS with the operational components of the future industrial building use. The monitoring frequency will be decided based on the data collected and the residual soil gas contamination in source areas as well as other areas under the building foot print.

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If you have any questions regarding the Plan conditions in this letter, please do not hesitate to contact me at 312-353-1171 or greensley.jean@epa.gov.

Sincerely,

Jean M. Greensley, Geologist
Corrective Action Section #1

cc: Wayne Dorband, The Institute of Ecolonomics

ATTACHMENT J Data Usability Reports

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	4-10-19	Technical Reviewer (signature and date)	4-10-19
Laboratory Report No.	240-106587-1	Laboratory	Test America/North Canton Ohio
Sampling Date	January 4, 2019		
Analyses	Volatile Organics Compounds (VOCs) by GC/MS Method EPA SW-846 Method 8260B		
Samples	Two (2) Water Samples from surface water in the unnamed creek north of CERTA Vandalia		
Field Duplicate Pairs	NA		
Field Blanks	NA		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
No	The following samples were submitted for volatile analysis with insufficient preservation (pH>2). Sample SW04 010419-1,2,3 (240-106587-2) had a pH of 6. The results from this sample should be ignored.

Method blanks:

Within Criteria	Exceedance/Notes
Yes	

Field blanks:

Within Criteria	Exceedance/Notes
NA	

Surrogates:

Within Criteria	Exceedance/Notes
Yes	

MS/MSD:

Within Criteria	Exceedance/Notes
Yes	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCS/LCSD:

Within Criteria	Exceedance/Notes
Yes	

Sample dilutions:

Within Criteria	Exceedance/Notes
Yes	Sample SW04 010419-1,2,3 (240-106587-2)[6.67X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

MDLs/RLs:

Within Criteria	Exceedance/Notes
Yes	All sample with detectable quantities of analytes exceeded MDL/RL's

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	4-10-19	Technical Reviewer (signature and date)	4-10-19
Laboratory Report No.	240-106587-2	Laboratory	Test America/North Canton Ohio
Sampling Date	January 4, 2019		
Analyses	Volatile Organics Compounds (VOCs) by GC/MS Method 624		
Samples	Five (5) Water Samples from the Groundwater Treatment Building		
Field Duplicate Pairs	NA		
Field Blanks	NA		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Yes	

Method blanks:

Within Criteria	Exceedance/Notes
Yes	

Field blanks:

Within Criteria	Exceedance/Notes
Yes	No field/trip blank was taken

Surrogates:

Within Criteria	Exceedance/Notes
Yes	

MS/MSD:

Within Criteria	Exceedance/Notes
Yes	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCS/LCSD:

Within Criteria	Exceedance/Notes
Yes	

Sample dilutions:

Within Criteria	Exceedance/Notes
Yes	Samples BRIN 010419-1,2,3 (240-106587-3)[50X], SS 010419-1,2,3 (240-106587-4)[400X], OBIN 010419-1,2,3 (240-106587-5)[400X] and PREAS 010419-1,2,3 (240-106587-6)[100X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

MDLs/RLs:

Within Criteria	Exceedance/Notes
Yes	All sample with detectable quantities of analytes exceeded MDL/RL's

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	4-10-19	Technical Reviewer (signature and date)	4-10-19
Laboratory Report No.	240-108626-1	Laboratory	Test America/North Canton Ohio
Sampling Date	February 27, 2019		
Analyses	Volatile Organics Compounds (VOCs) by GC/MS Method 624		
Samples	Five (5) Water Samples from the Groundwater Treatment Building		
Field Duplicate Pairs	NA		
Field Blanks	NA		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Yes	

Method blanks:

Within Criteria	Exceedance/Notes
Yes	

Field blanks:

Within Criteria	Exceedance/Notes
Yes	No field/trip blank was taken

Surrogates:

Within Criteria	Exceedance/Notes
Yes	

MS/MSD:

Within Criteria	Exceedance/Notes
Yes	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCS/LCSD:

Within Criteria	Exceedance/Notes
Yes	

Sample dilutions:

Within Criteria	Exceedance/Notes
Yes	Samples PREAS 022719 (240-108626-1)[200X], BRIN 022719 (240-108626-5)[200X], SS 022719 (240-108626-6)[200X] and OBIN 022719 (240-108626-7)[400X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

MDLs/RLs:

Within Criteria	Exceedance/Notes
Yes	All sample with detectable quantities of analytes exceeded MDL/RL's

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	4-10-19	Technical Reviewer (signature and date)	4-10-19
Laboratory Report No.	240-108626-2	Laboratory	Test America/North Canton Ohio
Sampling Date	February 27, 2019		
Analyses	Volatile Organics Compounds (VOCs) by GC/MS Method EPA SW-846 Method 8260B		
Samples	Three (3) Water Samples from surface water in the unnamed creek north of CERTA Vandalia including 1 trip blank		
Field Duplicate Pairs	NA		
Field Blanks	1 trip blank		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Yes	

Method blanks:

Within Criteria	Exceedance/Notes
Yes	

Field blanks:

Within Criteria	Exceedance/Notes
Yes	

Surrogates:

Within Criteria	Exceedance/Notes
Yes	

MS/MSD:

Within Criteria	Exceedance/Notes
Yes	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCS/LCSD:

Within Criteria	Exceedance/Notes
No	The laboratory control sample (LCS) for analytical batch 240-370294 recovered outside control limits for multiple analytes: 4-Methyl-2-pentanone (MIBK) and Methyl acetate. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported. SW01 022719 (240-108626-3), SW04 022719 (240-108626-4), TRIP BLANK (240-108626-8) and (LCS 240-370294/4)

Sample dilutions:

Within Criteria	Exceedance/Notes
Yes	Sample SW04 022719 (240-108626-4)[4X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

MDLs/RLs:

Within Criteria	Exceedance/Notes
Yes	All sample with detectable quantities of analytes exceeded MDL/RL's

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	4-9-19	Technical Reviewer (signature and date)	4-9-19
Laboratory Report No.	240-109849-1	Laboratory	Test America/North Canton Ohio
Sampling Date	February 27, 2019		
Analyses	Volatile Organics Compounds (VOCs) by GC/MS Method EPA SW-846 Method 8260B		
Samples	Eight (8) Water Samples from outcropping springs in the area, including one Field Blank		
Field Duplicate Pairs	NA		
Field Blanks	One (1) Field Blank		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Yes	

Method blanks:

Within Criteria	Exceedance/Notes
Yes	

Field blanks:

Within Criteria	Exceedance/Notes
Yes	

Surrogates:

Within Criteria	Exceedance/Notes
Yes	

MS/MSD:

Within Criteria	Exceedance/Notes
Yes	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCS/LCSD:

Within Criteria	Exceedance/Notes
Yes	

Sample dilutions:

Within Criteria	Exceedance/Notes
Yes	

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

MDLs/RLs:

Within Criteria	Exceedance/Notes
Yes	All sample with detectable quantities of analytes exceeded MDL/RL's

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	4-10-19	Technical Reviewer (signature and date)	4-10-19
Laboratory Report No.	240-109977-1	Laboratory	Test America/North Canton Ohio
Sampling Date	February 27, 2019		
Analyses	Volatile Organics Compounds (VOCs) by GC/MS Method EPA SW-846 Method 8260B		
Samples	One (1) Water Sample		
Field Duplicate Pairs	NA		
Field Blanks	NA		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Yes	

Method blanks:

Within Criteria	Exceedance/Notes
Yes	

Field blanks:

Within Criteria	Exceedance/Notes
Yes	

Surrogates:

Within Criteria	Exceedance/Notes
Yes	

MS/MSD:

Within Criteria	Exceedance/Notes
Yes	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCS/LCSD:

Within Criteria	Exceedance/Notes
No	The laboratory control sample (LCS) for 375210 recovered outside control limits for multiple analytes. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.413D (240-109977-6) and (LCS 240-375210/4)

Sample dilutions:

Within Criteria	Exceedance/Notes
Yes	Sample 413D (240-109977-6)[333.33X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

MDLs/RLs:

Within Criteria	Exceedance/Notes
Yes	All sample with detectable quantities of analytes exceeded MDL/RL's

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	Wayne [illegible] 4-8-19	Technical Reviewer (signature and date)	[illegible] 4-8-19
Laboratory Report No.	240-109800-1	Laboratory	Test America/North Canton Ohio
Sampling Date	March 21, 2019		
Analyses	Volatile Organics Compounds (VOCs) by Method 8260B		
Samples	Twenty-two (22) Water Samples from primarily Groundwater Monitoring Wells		
Field Duplicate Pairs	One Field Duplicate for Sample 806		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	There was no Trip Blank taken and submitted for this group of samples, but it's absence does not compromise the validity of all the water samples analyzed.

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Yes	

Method blanks:

Within Criteria	Exceedance/Notes
Yes	Except cis- 1,2-Dichloroethene was detected in method blank MB 240-374533/8 at a level exceeding the reporting limit. The associated samples (240-109800-19 and 240-109800-21) did not report results above the RL or MDL therefor this exceedance does not affect the accuracy of these two sample results.

Field blanks:

Within Criteria	Exceedance/Notes
NA	No field blanks were analyzed.

Surrogates:

Within Criteria	Exceedance/Notes
Yes	Except Surrogate recovery for the following samples were outside the upper control limit: 810 (240-109800-19), 607 (240-109800-21) and (MB 240-374533/8). These samples did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

MS/MSD:

Within Criteria	Exceedance/Notes
Yes	Except, the MS/MSD for batch 240-374533 was not analyzed due to an instrument malfunction. Batch included samples 810 (240-109800-19) and 607 (240-109800-21). This may impact the relevance of the 1,2 Dichloroethene detected in sample 607, but does not impact sample 810 that had no target analytes identified.

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
Yes	IOE collected and submitted a duplicate sample for Sample 806 (labelled 806 DUP). The analyte results for both samples were similar.

LCS/LCSD:

Within Criteria	Exceedance/Notes
Yes	Except, the laboratory control sample (LCS) for analytical batch 240-374533 recovered outside control limits for the following analyte: Benzene. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data has been reported. The samples included 810 (240-109800-19), 607 (240-109800-21) and (LCS 240-374533/4)

Sample dilutions:

Within Criteria	Exceedance/Notes
NA	Samples 420D (240-109800-1)[5X], 420M (240-109800-2)[25X], 425S (240-109800-5)[50X], 759 (240-109800-9)[2X], 806 (240-109800-20)[1250X] and 806 DUP (240-109800-22)[1250X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
Yes	Except, Sample 420M (240-109800-2) had a reanalysis that had different results than the original analysis. This is most likely due to non-homogeneity in the sample. Both runs are reported.

MDLs/RLs:

Within Criteria	Exceedance/Notes
Yes	All results were either non-detect or above the reporting limit. Method detection limits and reporting limits are listed in the electronic data deliverable.

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	4-9-19	Technical Reviewer (signature and date)	4-9-19
Laboratory Report No.	240-109977-1	Laboratory	Test America/North Canton Ohio
Sampling Date	March 26, 2019		
Analyses	Volatile Organics Compounds (VOCs) by GC/MS Method 624		
Samples	Five (5) Water Samples from the Groundwater Treatment Building		
Field Duplicate Pairs	NA		
Field Blanks	NA		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Yes	

Method blanks:

Within Criteria	Exceedance/Notes
Yes	

Field blanks:

Within Criteria	Exceedance/Notes
Yes	No field/trip blank was taken

Surrogates:

Within Criteria	Exceedance/Notes
Yes	

MS/MSD:

Within Criteria	Exceedance/Notes
No	The MS/MSD for batch 374274 was not reported because the parent sample needed a further dilution. Batch included samples EFF (240-109977-1), SSIN (240-109977-2) and OBIN (240-109977-3). This issue does not negatively affect the appropriateness of the samples in this batch.

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCS/LCSD:

Within Criteria	Exceedance/Notes
Yes	

Sample dilutions:

Within Criteria	Exceedance/Notes
Yes	Samples SSIN (240-109977-2)[400X], OBIN (240-109977-3)[400X], BRIN (240-109977-4)[200X] and PRE (240-109977-5)[200X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

MDLs/RLs:

Within Criteria	Exceedance/Notes
Yes	All sample with detectable quantities of analytes exceeded MDL/RL's

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	4-15-19	Technical Reviewer (signature and date)	4-15-19
Laboratory Report No.	240-110121-1	Laboratory	Test America/North Canton Ohio
Sampling Date	March 28, 2019		
Analyses	Volatile Organics Compounds (VOCs) by GC/MS Method EPA SW-846 Method 8260B		
Samples	Three (3) Water Samples from surface water from outcrop springs		
Field Duplicate Pairs	NA		
Field Blanks	NA		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Yes	

Method blanks:

Within Criteria	Exceedance/Notes
Yes	

Field blanks:

Within Criteria	Exceedance/Notes
NA	

Surrogates:

Within Criteria	Exceedance/Notes
Yes	

MS/MSD:

Within Criteria	Exceedance/Notes
Yes	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCS/LCSD:

Within Criteria	Exceedance/Notes
Yes	

Sample dilutions:

Within Criteria	Exceedance/Notes
NA	

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

MDLs/RLs:

Within Criteria	Exceedance/Notes
Yes	All sample with detectable quantities of analytes exceeded MDL/RL's

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	4-8-19	Technical Reviewer (signature and date)	4-8-19
Laboratory Report No.	240-102995-1	Laboratory	Test America North Canton
Sampling Date	October 17, 2018		
Analyses	Drinking Water Standard Method 524.2 Rev. 4.1 Volatiles List		
Samples	Analyses actually completed by Alloway Environmental Testing , Lima, OH subcontracted by Test America. Six (6) Water Samples from The Couch Residence		
Field Duplicate Pairs	One Duplicate (440-IN1DUP-101718-1015)		
Field Blanks	One Trip Blank (TB-1-10-17-18		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Yes	

Method blanks:

Within Criteria	Exceedance/Notes
Yes	

Field blanks:

Within Criteria	Exceedance/Notes
Yes	Field Blank had non-detects for all analytes tested.

Surrogates:

Within Criteria	Exceedance/Notes
Yes	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
Yes	Field Duplicate sample had non-detect for all analytes as did the original sample.

LCS/LCSD:

Within Criteria	Exceedance/Notes
Yes	

Sample dilutions:

Within Criteria	Exceedance/Notes
NA	

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

MDLs/RLs:

Within Criteria	Exceedance/Notes
NA	

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	4-7-19	Technical Reviewer (signature and date)	4-7-19
Laboratory Report No.	240-103614-1	Laboratory	Test America/North Canton Ohio
Sampling Date	October 26, 2018		
Analyses	Volatile Organics Compounds (VOCs) by GC/MS Method 624		
Samples	Six (6) Water Samples from the Groundwater Treatment Building		
Field Duplicate Pairs	NA		
Field Blanks	The six samples includes One (1) Trip Blank		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Yes	

Method blanks:

Within Criteria	Exceedance/Notes
Yes	

Field blanks:

Within Criteria	Exceedance/Notes
Yes	Field Blank was Non-Detect

Surrogates:

Within Criteria	Exceedance/Notes
Yes	

MS/MSD:

Within Criteria	Exceedance/Notes
Yes	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCS/LCSD:

Within Criteria	Exceedance/Notes
Yes	

Sample dilutions:

Within Criteria	Exceedance/Notes
Yes	Samples OBIN-102618 (240-103614-1)[400X], BRIN-102618 (240-103614-2)[50X], SSIN-102618 (240-103614-3)[400X] and PREAS-102618 (240-103614-4)[100X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes

MDLs/RLs:

Within Criteria	Exceedance/Notes

Other [specify]:

Within Criteria	Exceedance/Notes

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	4-8-19	Technical Reviewer (signature and date)	4-8-19
Laboratory Report No.	240-103614-1	Laboratory	Test America/North Canton Ohio
Sampling Date	November 13, 2018		
Analyses	Volatile Organics Compounds (VOCs) by GC/MS Method 624		
Samples	Five (5) Water Samples from the Groundwater Treatment Building		
Field Duplicate Pairs	NA		
Field Blanks	NA		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Yes	

Method blanks:

Within Criteria	Exceedance/Notes
Yes	

Field blanks:

Within Criteria	Exceedance/Notes
Yes	No field/trip blank was taken

Surrogates:

Within Criteria	Exceedance/Notes
Yes	

MS/MSD:

Within Criteria	Exceedance/Notes
Yes	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCS/LCSD:

Within Criteria	Exceedance/Notes
Yes	

Sample dilutions:

Within Criteria	Exceedance/Notes
Yes	Samples BRIN-111318 (240-104354-1)[50X], SSIN-111318 (240-104354-2)[400X], OBIN-111318 (240-104354-3)[400X] and PREAS-111318 (240-104354-4)[100X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

MDLs/RLs:

Within Criteria	Exceedance/Notes
Yes	All sample with detectable quantities of analytes exceeded MDL/RL's

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	4-10-19	Technical Reviewer (signature and date)	4-15-19
Laboratory Report No.	240-105715-1	Laboratory	Test America/North Canton Ohio
Sampling Date	December 12, 2018		
Analyses	Volatile Organics Compounds (VOCs) by GC/MS Method 624		
Samples	Six (6) Water Samples from the Groundwater Treatment Building		
Field Duplicate Pairs	NA		
Field Blanks	One Trip Blank was included		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Yes	

Method blanks:

Within Criteria	Exceedance/Notes
Yes	

Field blanks:

Within Criteria	Exceedance/Notes
Yes	

Surrogates:

Within Criteria	Exceedance/Notes
Yes	

MS/MSD:

Within Criteria	Exceedance/Notes
Yes	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCS/LCSD:

Within Criteria	Exceedance/Notes
Yes	

Sample dilutions:

Within Criteria	Exceedance/Notes
Yes	Samples PREAS 121218 (240-105715-1)[100X], BRIN 121218 (240-105715-1)[50X], SS 121218 (240-105715-2)[400X] and OBIN 121218 (240-105715-3)[400X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

MDLs/RLs:

Within Criteria	Exceedance/Notes
Yes	All sample with detectable quantities of analytes exceeded MDL/RL's

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

DATA VALIDATION CHECKLIST – STAGE 2A

Site Name	CERTA Vandalia	Project No.	080118-12
Data Reviewer (signature and date)	4-10-19	Technical Reviewer (signature and date)	4-10-19
Laboratory Report No.	240-105717-1	Laboratory	Test America/North Canton Ohio
Sampling Date	December 12, 2018		
Analyses	Volatile Organics Compounds (VOCs) by GC/MS Method EPA SW-846 Method 8260B		
Samples	Two (2) Water Samples from surface water in the unnamed creek north of CERTA Vandalia		
Field Duplicate Pairs	NA		
Field Blanks	NA		

INTRODUCTION

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

No rejection or qualification of results was required for this data set. The data is usable as reported by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Yes	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Yes	

Method blanks:

Within Criteria	Exceedance/Notes
Yes	

Field blanks:

Within Criteria	Exceedance/Notes
NA	

Surrogates:

Within Criteria	Exceedance/Notes
Yes	

MS/MSD:

Within Criteria	Exceedance/Notes
Yes	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCS/LCSD:

Within Criteria	Exceedance/Notes
No	The laboratory control sample (LCS) for 361385 recovered outside control limits for one or multiple analytes: Carbon tetrachloride and Chloroform. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.SW01 121218 (240-105717-1), SW04 121218 (240-105717-2) and (LCS 240-361385/4)

Sample dilutions:

Within Criteria	Exceedance/Notes
NA	

DATA VALIDATION CHECKLIST – STAGE 2A

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

MDLs/RLs:

Within Criteria	Exceedance/Notes
Yes	All sample with detectable quantities of analytes exceeded MDL/RL's

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

ATTACHMENT K – Analytical Reports For Groundwater Well, Spring, Surface Water, and Groundwater Treatment Building Samples

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-102995-1
Client Project/Site: CERTA

For:
Tetra Tech, Inc.
250 West Court Street
Suite 200W
Cincinnati, Ohio 45202

Attn: Timothy J Schnieber

Authorized for release by:
10/31/2018 12:48:13 PM

John McFadden, Project Manager I
(330)497-9396
john.mcfadden@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at:
www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Method Summary 5
Sample Summary 6
Certification Summary 7
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Chain of Custody 178

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)

Case Narrative

Client: Tetra Tech, Inc.
Project/Site: CERTA

TestAmerica Job ID: 240-102995-1

Job ID: 240-102995-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative
240-102995-1

Comments
The 524.2 Volatiles analysis was performed at Alloway Environmental Testing Services.

No additional comments.

Receipt
The samples were received on 10/18/2018 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.1º C.

Method Summary

Client: Tetra Tech, Inc.
Project/Site: CERTA

TestAmerica Job ID: 240-102995-1

Method	Method Description	Protocol	Laboratory
Subcontract	524.2 Rev. 4.1 Volatiles List	None	Alloway

Protocol References:

None = None

Laboratory References:

Alloway = Alloway Environmental Testing, 1101 North Cole Street, Lima, OH 45805

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: CERTA

TestAmerica Job ID: 240-102995-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-102995-1	440-IN1-101718-1010	Water	10/17/18 10:10	10/18/18 08:00
240-102995-2	440-IN1DUP-101718-1015	Water	10/17/18 10:25	10/18/18 08:00
240-102995-3	440-IN2-10-17-18-1035	Water	10/17/18 10:35	10/18/18 08:00
240-102995-4	440-OUT-10-17-18-1045	Water	10/17/18 10:45	10/18/18 08:00
240-102995-5	440-CWL-10-17-18-1100	Water	10/17/18 11:00	10/18/18 08:00
240-102995-6	TB-1-10-17-18	Water	10/17/18 00:00	10/18/18 08:00

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: CERTA

TestAmerica Job ID: 240-102995-1

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Alloway
Your Resource for Defensible Data

CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project # M18-33006
Received: 10/19/2018
Reported: 10/29/2018
Date/Time Sampled: 10/17/2018 10:10
Sampled By: Unknown
Sampled Matrix: Water
Containers: 3
Collection Method: -

Project Name: Mahle - Vandalia

Sample ID: 440-IN1-101718-1010 (240-102995-1)
Lab Sample # M18-33006-01

Analyte	Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
Analytical Method: EPA 524.2 Rev. 4.1		Preparation Method:			Validation Date:	10/29/2018
Benzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Bromobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Bromochloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Bromodichloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Bromoform	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Bromomethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
n-Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
sec - Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
tert-Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Carbon Tetrachloride	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Chlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Chloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Chloroform	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Chloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
2-Chlorotoluene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
4-Chlorotoluene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Dibromochloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Dibromomethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,2-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,3-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,4-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Dichlorodifluoromethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,1-Dichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,2-Dichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00

Analysis Certified By: Rhonda C. Morris
Rhonda C Morris

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1101 N. Cole Street - Lima, Ohio 45805
419.223.1362 - Fax 419.227.3792
800.436.1243

1502 W. Fourth St. - Mansfield, Ohio 44906
419.525.1644 - Fax 419.524.5575
800.635.3222

1776 Marion-Waldo Rd. - Marion, Ohio 43302
740.389.5991 - Fax 740.389.1481
800.873.2835

CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 10:10
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-IN1-101718-1010 (240-102995-1)

Lab Sample # M18-33006-01

Analyte	Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
1,1-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
cis-1,2-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
trans-1,2-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,2-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,3-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
2,2-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,1,-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
cis-1,3-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
trans-1,3-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Ethylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Hexachlorobutadiene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Isopropylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
p-Isopropyltoluene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Methylene Chloride	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Naphthalene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
n-Propylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Styrene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,1,2,2-Tetrachloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Tetrachloroethylene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Toluene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,2,3-Trichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,2,4-Trichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,1,1-Trichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,1,1,2-Tetrachloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,1,2-Trichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 14:00

Analysis Certified By: Rhonda C. Morris

Rhonda C Morris

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CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 10:10
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-IN1-101718-1010 (240-102995-1)

Lab Sample # M18-33006-01

Analyte		Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
Trichloroethylene		<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Trichlorofluoromethane		<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,2,4-Trimethylbenzene		<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,3,5-Trimethylbenzene		<0.5	ug/L	0.5	SKR		10/24/2018 14:00
1,2,3-Trichloropropane		<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Vinyl Chloride		<0.5	ug/L	0.5	SKR		10/24/2018 14:00
o-Xylene		<0.2	ug/L	0.2	SKR		10/24/2018 14:00
m,p-Xylene		<0.3	ug/L	0.3	SKR		10/24/2018 14:00
Xylene (Total)		<0.5	ug/L	0.5	SKR		10/24/2018 14:00
Methyl-tert-butyl-ether (MTBE)		<5.0	ug/L	5.0	SKR		10/24/2018 14:00
(Surrogate) 1,2-Dichlorobenzene-d4	70 - 130	87.4	%	0.1	SKR		10/24/2018 14:00
(Surrogate) Bromofluorobenzene	70 - 130	90.7	%	0.1	SKR		10/24/2018 14:00

Analysis Certified By: Rhonda C. Morris

Rhonda C Morris

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800.635.3222

1776 Marion-Waldo Rd. - Marion, Ohio 43302
740.389.5991 - Fax 740.389.1481
800.873.2835

CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 10:25
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-IN1DUP-101718-1015 (240-102995-2)

Lab Sample # M18-33006-02

Analyte	Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
Analytical Method: EPA 524.2 Rev. 4.1	Preparation Method:				Validation Date:	10/29/2018
Benzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Bromobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Bromochloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Bromodichloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Bromoform	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Bromomethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
n-Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
sec - Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
tert-Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Carbon Tetrachloride	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Chlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Chloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Chloroform	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Chloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
2-Chlorotoluene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
4-Chlorotoluene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Dibromochloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Dibromomethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,2-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,3-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,4-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Dichlorodifluoromethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,1-Dichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,2-Dichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02

Analysis Certified By: Rhonda C. Morris

Rhonda C Morris

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CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 10:25
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-IN1DUP-101718-1015 (240-102995-2)

Lab Sample # M18-33006-02

Analyte	Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
1,1-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
cis-1,2-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
trans-1,2-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,2-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,3-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
2,2-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,1,-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
cis-1,3-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
trans-1,3-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Ethylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Hexachlorobutadiene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Isopropylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
p-Isopropyltoluene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Methylene Chloride	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Naphthalene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
n-Propylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Styrene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,1,2,2-Tetrachloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Tetrachloroethylene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Toluene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,2,3-Trichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,2,4-Trichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,1,1-Trichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,1,1,2-Tetrachloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,1,2-Trichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02

Analysis Certified By: Rhonda C. Morris

Rhonda C Morris

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CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 10:25
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-IN1DUP-101718-1015 (240-102995-2)

Lab Sample # M18-33006-02

Analyte	Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
Trichloroethylene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Trichlorofluoromethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,2,4-Trimethylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,3,5-Trimethylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
1,2,3-Trichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Vinyl Chloride	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
o-Xylene	<0.2	ug/L	0.2	SKR		10/24/2018 15:02
m,p-Xylene	<0.3	ug/L	0.3	SKR		10/24/2018 15:02
Xylene (Total)	<0.5	ug/L	0.5	SKR		10/24/2018 15:02
Methyl-tert-butyl-ether (MTBE)	<5.0	ug/L	5.0	SKR		10/24/2018 15:02
(Surrogate) 1,2-Dichlorobenzene-d4	84.9	%	0.1	SKR		10/24/2018 15:02
70 - 130						
(Surrogate) Bromofluorobenzene	88.6	%	0.1	SKR		10/24/2018 15:02
70 - 130						

Analysis Certified By: Rhonda C. Morris

Rhonda C Morris

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800.436.1243

1502 W. Fourth St. - Mansfield, Ohio 44906
419.525.1644 - Fax 419.524.5575
800.635.3222

1776 Marion-Waldo Rd. - Marion, Ohio 43302
740.389.5991 - Fax 740.389.1481
800.873.2835

CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 10:35
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-IN2-101718-1035 (240-102995-3)

Lab Sample # M18-33006-03

Analyte	Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
Analytical Method: EPA 524.2 Rev. 4.1		Preparation Method:			Validation Date:	10/29/2018
Benzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Bromobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Bromochloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Bromodichloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Bromoform	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Bromomethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
n-Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
sec - Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
tert-Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Carbon Tetrachloride	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Chlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Chloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Chloroform	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Chloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
2-Chlorotoluene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
4-Chlorotoluene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Dibromochloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Dibromomethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,2-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,3-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,4-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Dichlorodifluoromethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,1-Dichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,2-Dichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33

Analysis Certified By: Rhonda C. Morris

Rhonda C Morris

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CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 10:35
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-IN2-101718-1035 (240-102995-3)

Lab Sample # M18-33006-03

Analyte	Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
1,1-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
cis-1,2-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
trans-1,2-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,2-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,3-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
2,2-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,1,-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
cis-1,3-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
trans-1,3-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Ethylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Hexachlorobutadiene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Isopropylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
p-Isopropyltoluene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Methylene Chloride	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Naphthalene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
n-Propylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Styrene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,1,2,2-Tetrachloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Tetrachloroethylene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Toluene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,2,3-Trichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,2,4-Trichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,1,1-Trichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,1,1,2-Tetrachloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,1,2-Trichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 15:33

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Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 10:35
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-IN2-101718-1035 (240-102995-3)

Lab Sample # M18-33006-03

Analyte		Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
Trichloroethylene		<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Trichlorofluoromethane		<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,2,4-Trimethylbenzene		<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,3,5-Trimethylbenzene		<0.5	ug/L	0.5	SKR		10/24/2018 15:33
1,2,3-Trichloropropane		<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Vinyl Chloride		<0.5	ug/L	0.5	SKR		10/24/2018 15:33
o-Xylene		<0.2	ug/L	0.2	SKR		10/24/2018 15:33
m,p-Xylene		<0.3	ug/L	0.3	SKR		10/24/2018 15:33
Xylene (Total)		<0.5	ug/L	0.5	SKR		10/24/2018 15:33
Methyl-tert-butyl-ether (MTBE)		<5.0	ug/L	5.0	SKR		10/24/2018 15:33
(Surrogate) 1,2-Dichlorobenzene-d4	70 - 130	88.6	%	0.1	SKR		10/24/2018 15:33
(Surrogate) Bromofluorobenzene	70 - 130	91.3	%	0.1	SKR		10/24/2018 15:33

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800.635.3222

1776 Marion-Waldo Rd. - Marion, Ohio 43302
740.389.5991 - Fax 740.389.1481
800.873.2835

CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 10:45
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-OUT-101718-1045 (240-102995-4)

Lab Sample # M18-33006-04

Analyte	Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
Analytical Method: EPA 524.2 Rev. 4.1	Preparation Method:				Validation Date:	10/29/2018
Benzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Bromobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Bromochloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Bromodichloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Bromoform	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Bromomethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
n-Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
sec - Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
tert-Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Carbon Tetrachloride	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Chlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Chloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Chloroform	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Chloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
2-Chlorotoluene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
4-Chlorotoluene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Dibromochloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Dibromomethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,2-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,3-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,4-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Dichlorodifluoromethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,1-Dichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,2-Dichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04

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CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 10:45
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-OUT-101718-1045 (240-102995-4)

Lab Sample # M18-33006-04

Analyte	Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
1,1-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
cis-1,2-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
trans-1,2-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,2-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,3-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
2,2-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,1,-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
cis-1,3-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
trans-1,3-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Ethylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Hexachlorobutadiene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Isopropylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
p-Isopropyltoluene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Methylene Chloride	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Naphthalene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
n-Propylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Styrene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,1,2,2-Tetrachloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Tetrachloroethylene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Toluene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,2,3-Trichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,2,4-Trichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,1,1-Trichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,1,1,2-Tetrachloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,1,2-Trichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:04

Analysis Certified By: Rhonda C. Morris

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CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 10:45
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-OUT-101718-1045 (240-102995-4)

Lab Sample # M18-33006-04

Analyte		Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
Trichloroethylene		<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Trichlorofluoromethane		<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,2,4-Trimethylbenzene		<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,3,5-Trimethylbenzene		<0.5	ug/L	0.5	SKR		10/24/2018 16:04
1,2,3-Trichloropropane		<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Vinyl Chloride		<0.5	ug/L	0.5	SKR		10/24/2018 16:04
o-Xylene		<0.2	ug/L	0.2	SKR		10/24/2018 16:04
m,p-Xylene		<0.3	ug/L	0.3	SKR		10/24/2018 16:04
Xylene (Total)		<0.5	ug/L	0.5	SKR		10/24/2018 16:04
Methyl-tert-butyl-ether (MTBE)		<5.0	ug/L	5.0	SKR		10/24/2018 16:04
(Surrogate) 1,2-Dichlorobenzene-d4	70 - 130	90.1	%	0.1	SKR		10/24/2018 16:04
(Surrogate) Bromofluorobenzene	70 - 130	89.1	%	0.1	SKR		10/24/2018 16:04

Analysis Certified By: Rhonda C. Morris

Rhonda C Morris

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CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 11:00
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-CWL-101718-1100 (240-102995-5)

Lab Sample # M18-33006-05

Analyte	Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
Analytical Method: EPA 524.2 Rev. 4.1		Preparation Method:			Validation Date:	10/29/2018
Benzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Bromobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Bromochloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Bromodichloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Bromoform	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Bromomethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
n-Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
sec - Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
tert-Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Carbon Tetrachloride	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Chlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Chloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Chloroform	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Chloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
2-Chlorotoluene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
4-Chlorotoluene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Dibromochloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Dibromomethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,2-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,3-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,4-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Dichlorodifluoromethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,1-Dichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,2-Dichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36

Analysis Certified By: Rhonda C. Morris

Rhonda C Morris

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CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 11:00
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-CWL-101718-1100 (240-102995-5)

Lab Sample # M18-33006-05

Analyte	Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
1,1-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
cis-1,2-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
trans-1,2-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,2-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,3-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
2,2-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,1,-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
cis-1,3-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
trans-1,3-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Ethylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Hexachlorobutadiene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Isopropylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
p-Isopropyltoluene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Methylene Chloride	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Naphthalene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
n-Propylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Styrene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,1,2,2-Tetrachloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Tetrachloroethylene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Toluene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,2,3-Trichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,2,4-Trichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,1,1-Trichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,1,1,2-Tetrachloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,1,2-Trichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 16:36

Analysis Certified By: Rhonda C. Morris

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North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date/Time Sampled:	10/17/2018 11:00
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: 440-CWL-101718-1100 (240-102995-5)

Lab Sample # M18-33006-05

Analyte		Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
Trichloroethylene		<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Trichlorofluoromethane		<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,2,4-Trimethylbenzene		<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,3,5-Trimethylbenzene		<0.5	ug/L	0.5	SKR		10/24/2018 16:36
1,2,3-Trichloropropane		<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Vinyl Chloride		<0.5	ug/L	0.5	SKR		10/24/2018 16:36
o-Xylene		<0.2	ug/L	0.2	SKR		10/24/2018 16:36
m,p-Xylene		<0.3	ug/L	0.3	SKR		10/24/2018 16:36
Xylene (Total)		<0.5	ug/L	0.5	SKR		10/24/2018 16:36
Methyl-tert-butyl-ether (MTBE)		<5.0	ug/L	5.0	SKR		10/24/2018 16:36
(Surrogate) 1,2-Dichlorobenzene-d4	70 - 130	83.1	%	0.1	SKR		10/24/2018 16:36
(Surrogate) Bromofluorobenzene	70 - 130	86.0	%	0.1	SKR		10/24/2018 16:36

Analysis Certified By: Rhonda C. Morris

Rhonda C Morris

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800.635.3222

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740.389.5991 - Fax 740.389.1481
800.873.2835

CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date Sampled:	10/17/2018
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: TB-1-10-17-18 (240-102995-6)

Lab Sample # M18-33006-06

Analyte	Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
Analytical Method: EPA 524.2 Rev. 4.1	Preparation Method:				Validation Date:	10/29/2018
Benzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Bromobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Bromochloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Bromodichloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Bromoform	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Bromomethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
n-Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
sec - Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
tert-Butylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Carbon Tetrachloride	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Chlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Chloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Chloroform	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Chloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
2-Chlorotoluene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
4-Chlorotoluene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Dibromochloromethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Dibromomethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,2-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,3-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,4-Dichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Dichlorodifluoromethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,1-Dichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,2-Dichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07

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Rhonda C Morris

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CERTIFICATE OF ANALYSIS
Reported by Alloway - Marion
Chain of Custody attached

Test America - North Canton
Attn: Denise Pohl
4101 Shuffel Street NW
North Canton, OH 44720

Lab Project #	M18-33006
Received:	10/19/2018
Reported:	10/29/2018
Date Sampled:	10/17/2018
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: TB-1-10-17-18 (240-102995-6)

Lab Sample # M18-33006-06

Analyte	Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
1,1-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
cis-1,2-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
trans-1,2-Dichloroethene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,2-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,3-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
2,2-Dichloropropane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,1,-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
cis-1,3-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
trans-1,3-Dichloropropene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Ethylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Hexachlorobutadiene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Isopropylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
p-Isopropyltoluene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Methylene Chloride	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Naphthalene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
n-Propylbenzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Styrene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,1,2,2-Tetrachloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Tetrachloroethylene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Toluene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,2,3-Trichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,2,4-Trichlorobenzene	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,1,1-Trichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,1,1,2-Tetrachloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,1,2-Trichloroethane	<0.5	ug/L	0.5	SKR		10/24/2018 17:07

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Lab Project #	M18-33006
Received:	10/19/2018
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Date Sampled:	10/17/2018
Sampled By:	Unknown
Sampled Matrix:	Water
Containers:	3
Collection Method:	-

Project Name: Mahle - Vandalia

Sample ID: TB-1-10-17-18 (240-102995-6)

Lab Sample # M18-33006-06

Analyte		Results	Units	PQL	Analyst	Extraction Date	Analysis Start Date/Time
Trichloroethylene		<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Trichlorofluoromethane		<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,2,4-Trimethylbenzene		<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,3,5-Trimethylbenzene		<0.5	ug/L	0.5	SKR		10/24/2018 17:07
1,2,3-Trichloropropane		<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Vinyl Chloride		<0.5	ug/L	0.5	SKR		10/24/2018 17:07
o-Xylene		<0.2	ug/L	0.2	SKR		10/24/2018 17:07
m,p-Xylene		<0.3	ug/L	0.3	SKR		10/24/2018 17:07
Xylene (Total)		<0.5	ug/L	0.5	SKR		10/24/2018 17:07
Methyl-tert-butyl-ether (MTBE)		<5.0	ug/L	5.0	SKR		10/24/2018 17:07
(Surrogate) 1,2-Dichlorobenzene-d4	70 - 130	82.2	%	0.1	SKR		10/24/2018 17:07
(Surrogate) Bromofluorobenzene	70 - 130	86.4	%	0.1	SKR		10/24/2018 17:07

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800.873.2835

Alloway
Your Resource for Defensible Data

Test America – North Canton

Batch Quality Control Data

Sample(s):

M18-33006-01
M18-33006-02
M18-33006-03
M18-33006-04
M18-33006-05
M18-33006-06

EPA Method(s): 524.2

Analysis Date(s):
October 24, 2018

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800.436.1243

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800.635.3222

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740.389.5991 • Fax 740.389.1481
800.873.2835

VOLATILE ORGANICS INITIAL CALIBRATION DATA

EPA Method 524.2

Lab Name: Contract:

Lab Code: Case No.: SAS No: SDG No:

Instrument ID: Calibration Date(s): 10/8/2018 10/8/2018

Heated Purge (Y/N): No Calibration Time(s): 11:15 14:53

GC Column: ID: (mm)

Calibration File: C:\SaturnWS\data\524.2 October 08 2018\V-02 S-87041.SMS

Index: 1	Level: 2	Replicate: 1	Acquired: 10/8/2018 11:46	File: c:\saturnws\data\524.2 october 08 2018\v-04 s-87254.sms
Index: 2	Level: 3	Replicate: 1	Acquired: 10/8/2018 12:17	File: c:\saturnws\data\524.2 october 08 2018\v-05 s-87255.sms
Index: 3	Level: 4	Replicate: 1	Acquired: 10/8/2018 12:49	File: c:\saturnws\data\524.2 october 08 2018\v-06 s-87256.sms
Index: 4	Level: 5	Replicate: 1	Acquired: 10/8/2018 13:20	File: c:\saturnws\data\524.2 october 08 2018\v-07 s-87257.sms
Index: 5	Level: 6	Replicate: 1	Acquired: 10/8/2018 13:51	File: c:\saturnws\data\524.2 october 08 2018\v-08 s-87258.sms
Index: 6	Level: 7	Replicate: 1	Acquired: 10/8/2018 14:22	File: c:\saturnws\data\524.2 october 08 2018\v-09 s-87259.sms
Index: 7	Level: 8	Replicate: 1	Acquired: 10/8/2018 14:53	File: c:\saturnws\data\524.2 october 08 2018\v-10 s-87260.sms
Index: 8	Level: 1	Replicate: 1	Acquired: 10/8/2018 11:15	File: c:\saturnws\data\524.2 october 08 2018\v-03 s-87253.sms

RRF = (Area(sample)/(Amount(sample))/(Area(standard)/Amount(standard))

Compound	RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	RRF7	RRF8	COD(r2)	Avg RRF	% RSD	CCC	SPCC
Dichlorodifluoromethane	0.060	0.068	0.075	0.099	0.093	0.110	0.103		0.9979	0.087	22.0		
Chloromethane	0.018	0.017	0.018	0.020	0.021	0.023	0.024		0.9993	0.020	12.9		
Vinyl chloride	0.038	0.046	0.054	0.065	0.062	0.069	0.065		0.9987	0.057	20.0		
Bromomethane	0.029	0.023	0.023	0.028	0.029	0.035	0.039		0.9963	0.029	19.9		
Chloroethane	0.013	0.009	0.007	0.008	0.008	0.007			0.9995	0.009	26.4		
Trichlorofluoromethane	0.084	0.103	0.108	0.150	0.142	0.168	0.159		0.9981	0.130	24.6		
1,1-Dichloroethene	0.095	0.078	0.099	0.118	0.129	0.144	0.139		0.9990	0.115	21.6		
Methylene chloride	0.034	0.030	0.049	0.061	0.070	0.081	0.079		0.9990	0.058	35.4		
methyl-tert-butyl-ether (MTBE)	0.129	0.139	0.159	0.156	0.160	0.158	0.153		0.9997	0.151	8.0		
trans-1,2-Dichloroethene	0.136	0.121	0.155	0.170	0.162	0.190	0.186		0.9988	0.160	15.8		
1,1-Dichloroethane	0.081	0.078	0.104	0.118	0.119	0.132	0.131		0.9995	0.109	20.3		
2,2-Dichloropropane	0.093	0.079	0.098	0.113	0.116	0.127	0.118		0.9982	0.106	15.9		

Compound	RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	RRF7	RRF8	COD(r2)	Avg RRF	% RSD	CCC	SPCC
cis-1,2-Dichloroethene	0.040	0.037	0.046	0.053	0.054	0.058	0.053		0.9979	0.049	15.9		
Bromochloromethane	0.072	0.069	0.090	0.100	0.104	0.110	0.102		0.9982	0.093	17.5		
Chloroform (THM)	0.072	0.065	0.083	0.092	0.093	0.101	0.095		0.9990	0.086	15.3		
1,1,1-Trichloroethane	0.083	0.072	0.096	0.102	0.103	0.116	0.109		0.9988	0.097	15.7		
Carbon tetrachloride	0.062	0.052	0.064	0.073	0.074	0.082	0.081		0.9996	0.070	15.6		
1,1-Dichloro-1-propene	0.041	0.038	0.048	0.052	0.053	0.058	0.055		0.9990	0.049	14.3		
Benzene	0.107	0.098	0.119	0.132	0.126	0.142	0.130		0.9980	0.122	12.4		
1,2-Dichloroethane	0.107	0.100	0.131	0.143	0.137	0.150	0.145		0.9993	0.130	15.0		
Trichloroethene (TCE)	0.072	0.064	0.077	0.089	0.088	0.100	0.095		0.9985	0.084	15.4		
1,2-Dichloropropane	0.032	0.029	0.038	0.044	0.042	0.048	0.045		0.9981	0.040	17.4		
Dibromomethane	0.031	0.028	0.033	0.037	0.037	0.041	0.040		0.9993	0.035	13.4		
Bromodichloromethane (THM)	0.065	0.067	0.084	0.091	0.091	0.101	0.100		0.9995	0.086	17.1		
cis-1,3-Dichloro-1-propene	0.057	0.056	0.070	0.075	0.074	0.082	0.083		0.9995	0.071	15.2		
Toluene	0.208	0.203	0.256	0.285	0.285	0.308	0.300		0.9996	0.264	16.3		
trans-1,3-Dichloro-1-propene	0.055	0.056	0.068	0.076	0.075	0.082	0.082		0.9997	0.071	16.2		
1,1,2-Trichloroethane	0.063	0.064	0.082	0.093	0.092	0.097	0.097		0.9999	0.084	17.7		
Tetrachloroethene (PCE)	0.039	0.034	0.041	0.045	0.046	0.052	0.051		0.9992	0.044	14.6		
1,3-dichloropropane	0.073	0.071	0.093	0.106	0.101	0.113	0.111		0.9995	0.095	17.9		
Dibromochloromethane (THM)	0.047	0.047	0.060	0.063	0.062	0.069	0.069		0.9995	0.059	15.6		
1,2-Dibromomethane (EDB)	0.103	0.100	0.122	0.130	0.129	0.145	0.142		0.9994	0.124	14.2		
Ethylbenzene	0.223	0.214	0.277	0.305	0.319	0.365	0.351		0.9989	0.293	20.1		
Chlorobenzene	0.114	0.114	0.151	0.154	0.157	0.177	0.172		0.9993	0.148	17.2		
1,1,1,2-Tetrachloroethane	0.056	0.056	0.069	0.074	0.077	0.086	0.083		0.9992	0.072	16.7		
m&p-Xylenes	0.196	0.182	0.251	0.274	0.287	0.311	0.307	0.242	0.9996	0.256	18.7		
o-Xylene	0.214	0.201	0.272	0.295	0.298	0.324	0.325	0.268	0.9996	0.275	16.8		
Styrene	0.116	0.106	0.144	0.171	0.172	0.187	0.194		0.9994	0.156	22.1		
Bromoform (THM)	0.029	0.027	0.035	0.040	0.039	0.040	0.039		0.9998	0.036	15.6		
Isopropylbenzene	0.212	0.202	0.260	0.294	0.301	0.340	0.328		0.9991	0.277	19.6		
(S-1) Bromofluorobenzene (BFB)	1.532	1.481	1.594	1.541	1.662	1.642	1.701	1.533	0.9820	1.586	4.8		
1,1,2,2-Tetrachloroethane	0.046	0.047	0.057	0.061	0.064	0.065	0.065		0.9999	0.058	13.9		
n-Propylbenzene	0.226	0.201	0.285	0.316	0.356	0.377	0.375		0.9997	0.305	23.2		
Bromobenzene	0.082	0.078	0.107	0.114	0.118	0.125	0.124		0.9998	0.107	18.2		
1,2,3-Trichloropropane	0.075	0.071	0.083	0.095	0.100	0.095	0.090		0.9987	0.087	12.8		
2-Chlorotoluene	0.167	0.155	0.209	0.228	0.236	0.255	0.249		0.9996	0.214	18.4		

Compound	RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	RRF7	RRF8	COD(r2)	Avg RRF	% RSD	CCC	SPCC
1,3,5-Trimethylbenzene	0.147	0.149	0.185	0.217	0.227	0.243	0.237		0.9996	0.201	20.2		
4-Chlorotoluene	0.157	0.156	0.208	0.234	0.252	0.262	0.257		0.9997	0.218	21.0		
tert-Butylbenzene	0.196	0.190	0.249	0.291	0.300	0.318	0.318		0.9999	0.266	20.7		
1,2,4-Trimethylbenzene	0.098	0.098	0.123	0.145	0.148	0.155	0.153		0.9998	0.131	19.1		
sec-Butylbenzene	0.198	0.179	0.239	0.288	0.304	0.333	0.328		0.9995	0.267	23.3		
p-Isopropyltoluene (4-Iso)	0.164	0.151	0.203	0.244	0.265	0.278	0.277		0.9998	0.226	23.5		
1,3-Dichlorobenzene	0.079	0.078	0.096	0.115	0.116	0.127	0.121		0.9991	0.104	19.1		
1,4-Dichlorobenzene	0.082	0.088	0.110	0.128	0.132	0.140	0.134		0.9994	0.116	20.1		
n-Butylbenzene	0.121	0.115	0.164	0.196	0.214	0.241	0.241		0.9994	0.184	28.6		
1,2 -Dichlorobenzene	0.094	0.087	0.112	0.128	0.125	0.131	0.131		0.9999	0.115	16.0		
(S-2) 1,2-Dichlorobenzene-d4	0.414	0.420	0.439	0.431	0.460	0.479	0.474	0.379	0.9555	0.437	7.7		
1,2-Dibromo-3-chloropropane (DBCP)	0.015	0.014	0.015	0.019	0.016	0.018	0.019		0.9983	0.016	11.9		
1,2,4-Trichlorobenzene	0.010	0.009	0.011	0.013	0.014	0.016	0.016		0.9995	0.013	21.8		
Hexachlorobutadiene	0.014	0.013	0.016	0.020	0.019	0.021	0.020		0.9994	0.018	18.4		
Naphthalene	0.025	0.022	0.028	0.032	0.034	0.037	0.038		0.9994	0.031	19.8		
1,2,3 -Trichlorobenzene	0.011	0.010	0.013	0.014	0.015	0.016	0.017		0.9996	0.014	18.8		
									Average %RSD		17.5		

Print Date: 12 Oct 2018 14:48:03

Calibration Block Report

Run File:	c:\saturnws\data\524.2 october 08 2018\v-02 s-87041.sms		
Instrument Method:	c:\saturnws\methods\8260aq1.mth	Acquisition Date:	10/8/2018 10:29 AM
Recalc Method:	c:\... \methods\524.2 october 08 2018.mth	Last Calibration:	10/8/2018 5:15 PM
Sample List:		Compound Table Updated:	10/12/2018 2:47 PM
Sequence:		Detector:	2000 Mass Spec
Workstation Name:	Saturn GC/MS Workstation	Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

RRF1	Level 1	Rep. 1	10/8/2018 11:15 AM	c:\saturnws\data\524.2 october 08 2018\v-03 s-87253.sms
RRF2	Level 2	Rep. 1	10/8/2018 11:46 AM	c:\saturnws\data\524.2 october 08 2018\v-04 s-87254.sms
RRF3	Level 3	Rep. 1	10/8/2018 12:17 PM	c:\saturnws\data\524.2 october 08 2018\v-05 s-87255.sms
RRF4	Level 4	Rep. 1	10/8/2018 12:49 PM	c:\saturnws\data\524.2 october 08 2018\v-06 s-87256.sms
RRF5	Level 5	Rep. 1	10/8/2018 1:20 PM	c:\saturnws\data\524.2 october 08 2018\v-07 s-87257.sms
RRF6	Level 6	Rep. 1	10/8/2018 1:51 PM	c:\saturnws\data\524.2 october 08 2018\v-08 s-87258.sms
RRF7	Level 7	Rep. 1	10/8/2018 2:22 PM	c:\saturnws\data\524.2 october 08 2018\v-09 s-87259.sms
RRF8	Level 8	Rep. 1	10/8/2018 2:53 PM	c:\saturnws\data\524.2 october 08 2018\v-10 s-87260.sms

#	Compound Name	Cal. Method	Corr.	Avg. RRF	% RSD	RRF1	RRF2	RRF3	RRF4	RRF5	RRF6	RRF7	RRF8
1	Dichlorodifluoromethane	1 IG 1/nX2	0.997895	0.086974	22.0034		0.060394	0.067743	0.075139	0.099228	0.093178	0.110066	0.103071
2	Chloromethane	1 FO 1/nX2	0.999302	0.020129	12.8837		0.017687	0.017486	0.017639	0.020323	0.021233	0.022910	0.023624
3	Vinyl chloride	1 IG 1/nX2	0.998746	0.056939	20.0488		0.037940	0.046279	0.053566	0.064534	0.062272	0.068947	0.065038
4	Bromomethane	2 IG 1/nX2	0.999066	0.029319	19.9359		0.028532	0.023109	0.022850	0.028182	0.028589	0.035468	0.038502
5	Chloroethane	1 IG 1/nX2	0.999451	0.008774	26.4379		0.013285	0.009199	0.007217	0.007940	0.007607	0.007399	
6	Trichlorofluoromethane	1 IG 1/nX2	0.998081	0.130422	24.5628		0.083992	0.102825	0.107692	0.149986	0.141738	0.167988	0.158734
7	1,1-Dichloroethene	1 IG 1/nX2	0.998965	0.114574	21.5946		0.094733	0.078376	0.098571	0.117952	0.128648	0.144465	0.139271
8	Methylene chloride	1 IG 1/nX2	0.998951	0.057783	35.4473		0.034431	0.030471	0.048502	0.061303	0.069996	0.080571	0.079205
9	methyl-tert-butyl-ether (MTBE)	1 FO 1/nX2	0.999656	0.150733	7.95293		0.129101	0.138853	0.158761	0.156363	0.160298	0.158385	0.153369
10	trans-1,2-Dichloroethene	1 IG 1/nX2	0.998849	0.159877	15.8102		0.136094	0.120575	0.154819	0.169557	0.161933	0.190190	0.185971
11	1,1-Dichloroethane	1 IG 1/nX2	0.999507	0.109017	20.3042		0.081140	0.078174	0.104200	0.117667	0.118838	0.132365	0.130737
12	2,2-Dichloropropane	1 IG 1/nX2	0.998242	0.106164	15.8561		0.092684	0.078821	0.098063	0.112935	0.116024	0.126824	0.117796
13	cis-1,2-Dichloroethene	1 IG 1/nX2	0.997940	0.048741	15.8660		0.040485	0.036734	0.046477	0.053058	0.053778	0.057628	0.053029
14	Bromochloromethane	1 IG 1/nX2	0.998215	0.092528	17.4978		0.072298	0.068886	0.089907	0.100306	0.103737	0.110357	0.102206
15	Chloroform (THM)	1 IG 1/nX2	0.999000	0.085778	15.2566		0.071559	0.065123	0.083479	0.091707	0.092635	0.100615	0.095326
16	1,1,1-Trichloroethane	1 IG 1/nX2	0.998763	0.097338	15.6664		0.083118	0.071866	0.095686	0.102286	0.103371	0.115660	0.109377
17	Carbon tetrachloride	1 IG 1/nX2	0.999568	0.069711	15.6114		0.061714	0.052027	0.064375	0.072820	0.074117	0.081740	0.081188
18	1,1-Dichloro-1-propene	1 IG 1/nX2	0.999034	0.049383	14.3478		0.041468	0.038375	0.048426	0.052260	0.052807	0.057637	0.054706

19	Benzene			1 FO 1/nX2	0.997965	0.121971	12.4452		0.107335	0.097591	0.119156	0.131997	
		0.126130	0.141539	0.130051									
20	1,2-Dichloroethane			1 IG 1/nX2	0.999298	0.130390	15.0425		0.106703	0.099714	0.131303	0.143365	
		0.136855	0.150290	0.144502									
21	(IS-1) Fluorobenzene			Standard #1									
22	Trichloroethene (TCE)			1 IG 1/nX2	0.998495	0.083516	15.4264		0.072279	0.064339	0.076602	0.088582	
		0.087658	0.100391	0.094763									
23	1,2-Dichloropropane			1 IG 1/nX2	0.998131	0.039817	17.4359		0.032214	0.029149	0.038200	0.044343	
		0.042344	0.047923	0.044548									
24	Dibromomethane			1 FO 1/nX2	0.999337	0.035443	13.3822		0.031092	0.028308	0.033394	0.037053	
		0.036761	0.041168	0.040326									
25	Bromodichloromethane (THM)			1 IG 1/nX2	0.999524	0.085695	17.1267		0.065161	0.066973	0.083887	0.091177	
		0.090991	0.101273	0.100400									
26	cis-1,3-Dichloro-1-propene			1 IG 1/nX2	0.999523	0.071133	15.1833		0.057358	0.056318	0.069625	0.075180	
		0.074347	0.081856	0.083245									
27	Toluene			1 IG 1/nX2	0.999593	0.263671	16.3289		0.208113	0.202869	0.255515	0.285418	
		0.285093	0.308315	0.300374									
28	trans-1,3-Dichloro-1-propene			1 IG 1/nX2	0.999675	0.070515	16.1716		0.054654	0.056153	0.067753	0.076204	
		0.074864	0.081647	0.082328									
29	1,1,2-Trichloroethane			1 IG 1/nX2	0.999862	0.084088	17.6596		0.063224	0.064146	0.081894	0.093449	
		0.091605	0.097180	0.097117									
30	Tetrachloroethene (PCE)			1 IG 1/nX2	0.999187	0.044013	14.5763		0.039473	0.034336	0.040603	0.044703	
		0.045600	0.052041	0.051336									
31	1,3-dichloropropane			1 IG 1/nX2	0.999506	0.095392	17.9417		0.073179	0.071146	0.093243	0.105580	
		0.101152	0.112520	0.110926									
32	Dibromochloromethane (THM)			1 IG 1/nX2	0.999542	0.059471	15.6113		0.046848	0.046815	0.059581	0.063332	
		0.061999	0.068817	0.068904									
33	1,2-Dibromomethane (EDB)			1 IG 1/nX2	0.999387	0.124446	14.1843		0.102954	0.099821	0.121707	0.130441	
		0.128989	0.144847	0.142361									
34	Ethylbenzene			1 IG 1/nX2	0.998858	0.293241	20.0649		0.222586	0.214002	0.276772	0.304791	
		0.318982	0.364991	0.350560									
35	Chlorobenzene			1 IG 1/nX2	0.999273	0.148475	17.1570		0.113542	0.113940	0.151347	0.154449	
		0.157117	0.176795	0.172136									
36	1,1,1,2-Tetrachloroethane			1 IG 1/nX2	0.999194	0.071754	16.6634		0.056166	0.056438	0.068839	0.074412	
		0.077223	0.086121	0.083082									
37	m&p-Xylenes			1 IG 1/nX2	0.999616	0.256127	18.6978	0.242328	0.196177	0.182085	0.250721	0.273785	
		0.286815	0.310532	0.306576									
38	o-Xylene			1 IG 1/nX2	0.999628	0.274691	16.8173	0.268374	0.214302	0.201495	0.272042	0.294761	
		0.297569	0.324182	0.324804									
39	Styrene			1 IG 1/nX2	0.999434	0.155854	22.1091		0.116061	0.106490	0.143741	0.171402	
		0.171682	0.187496	0.194111									
40	Bromoform (THM)			1 IG 1/nX2	0.999839	0.035593	15.6332		0.029245	0.026667	0.034790	0.039920	
		0.039115	0.040002	0.039410									
41	Isopropylbenzene			1 IG 1/nX2	0.999057	0.276703	19.5993		0.211902	0.201835	0.259692	0.294455	
		0.301038	0.340307	0.327694									
42	(S-1) Bromofluorobenzene (BFB)			1 FO 1/nX2	0.981987	1.58570	4.82635	1.53336	1.53155	1.48055	1.59412	1.54128	
		1.66188	1.64199	1.70083									
43	1,1,2,2-Tetrachloroethane			1 FO 1/nX2	0.999931	0.057799	13.9271		0.046394	0.046966	0.057267	0.060718	
		0.063505	0.064863	0.064879									
44	n-Propylbenzene			1 IG 1/nX2	0.999726	0.305130	23.2293		0.226118	0.201388	0.285036	0.315505	
		0.355691	0.376693	0.375481									
45	Bromobenzene			1 IG 1/nX2	0.999802	0.106698	18.2201		0.081792	0.077656	0.106849	0.114161	
		0.117571	0.125182	0.123678									
46	1,2,3-Trichloropropane			1 FO 1/nX2	0.998728	0.086998	12.7667		0.074811	0.070648	0.082928	0.095450	
		0.099548	0.095195	0.090408									
47	2-Chlorotoluene			1 IG 1/nX2	0.999624	0.214093	18.3865		0.166688	0.155304	0.208632	0.227772	

		0.236409	0.254814	0.249032										
48	1,3,5-Trimethylbenzene			1 IG 1/nX2	0.999576	0.200908	20.2097		0.147440	0.148860	0.185264	0.216821		
		0.227274	0.243467	0.237231										
49	4-Chlorotoluene			1 IG 1/nX2	0.999700	0.218004	21.0205		0.157152	0.155760	0.207748	0.233580		
		0.252413	0.262489	0.256887										
50	tert-Butylbenzene			1 IG 1/nX2	0.999859	0.266269	20.7009		0.195856	0.190303	0.249299	0.291470		
		0.300329	0.318314	0.318315										
51	1,2,4-Trimethylbenzene			1 IG 1/nX2	0.999832	0.131488	19.1450		0.097979	0.097807	0.123444	0.144708		
		0.148370	0.155066	0.153039										
52	sec-Butylbenzene			1 IG 1/nX2	0.999529	0.266941	23.2649		0.197997	0.179357	0.238519	0.287622		
		0.303966	0.333284	0.327844										
53	p-Isopropyltoluene (4-Iso)			1 IG 1/nX2	0.999827	0.226179	23.5370		0.164309	0.151495	0.203447	0.244127		
		0.265085	0.277553	0.277235										
54	1,3-Dichlorobenzene			1 IG 1/nX2	0.999059	0.104447	19.1305		0.079102	0.077898	0.096476	0.114696		
		0.115749	0.126603	0.120606										
55	1,4-Dichlorobenzene			1 IG 1/nX2	0.999354	0.116426	20.1167		0.082201	0.087812	0.110397	0.127723		
		0.132298	0.140100	0.134448										
56	n-Butylbenzene			1 IG 1/nX2	0.999374	0.184448	28.5773		0.121084	0.114567	0.164135	0.195750		
		0.213866	0.240613	0.241119										
57	1,2 -Dichlorobenzene			1 IG 1/nX2	0.999866	0.115456	15.9729		0.094357	0.086568	0.111836	0.128405		
		0.124603	0.131380	0.131039										
58	(S-2) 1,2-Dichlorobenzene-d4			1 FO 1/nX2	0.955465	0.436931	7.69342	0.378582	0.413857	0.419797	0.439450	0.431097		
		0.460296	0.478558	0.473810										
59	1,2-Dibromo-3-chloropropane (DBCP)			1 FO 1/nX2	0.998335	0.016262	11.8555		0.014642	0.014072	0.014690	0.018529		
		0.015763	0.017579	0.018561										
60	1,2,4-Trichlorobenzene			1 IG 1/nX2	0.999467	0.012741	21.7966		0.009984	0.008840	0.011182	0.013487		
		0.014115	0.015711	0.015865										
61	Hexachlorobutadiene			1 IG 1/nX2	0.999417	0.017634	18.3678		0.013949	0.013180	0.015891	0.019944		
		0.019028	0.020986	0.020458										
62	Naphthalene			1 IG 1/nX2	0.999430	0.030770	19.8330		0.024589	0.022379	0.027637	0.031592		
		0.033999	0.037019	0.038178										
63	1,2,3 -Trichlorobenzene			1 IG 1/nX2	0.999586	0.013695	18.7540		0.010999	0.009993	0.012667	0.014274		
		0.014967	0.016344	0.016624										

Curve Fit Codes

1 linear
2 quadratic
3 cubic

Origin Point Codes

IN include
IG ignore
FO force

Regression Weighting Codes

None 1/nX
1/n 1/X2
1/X 1/nX2

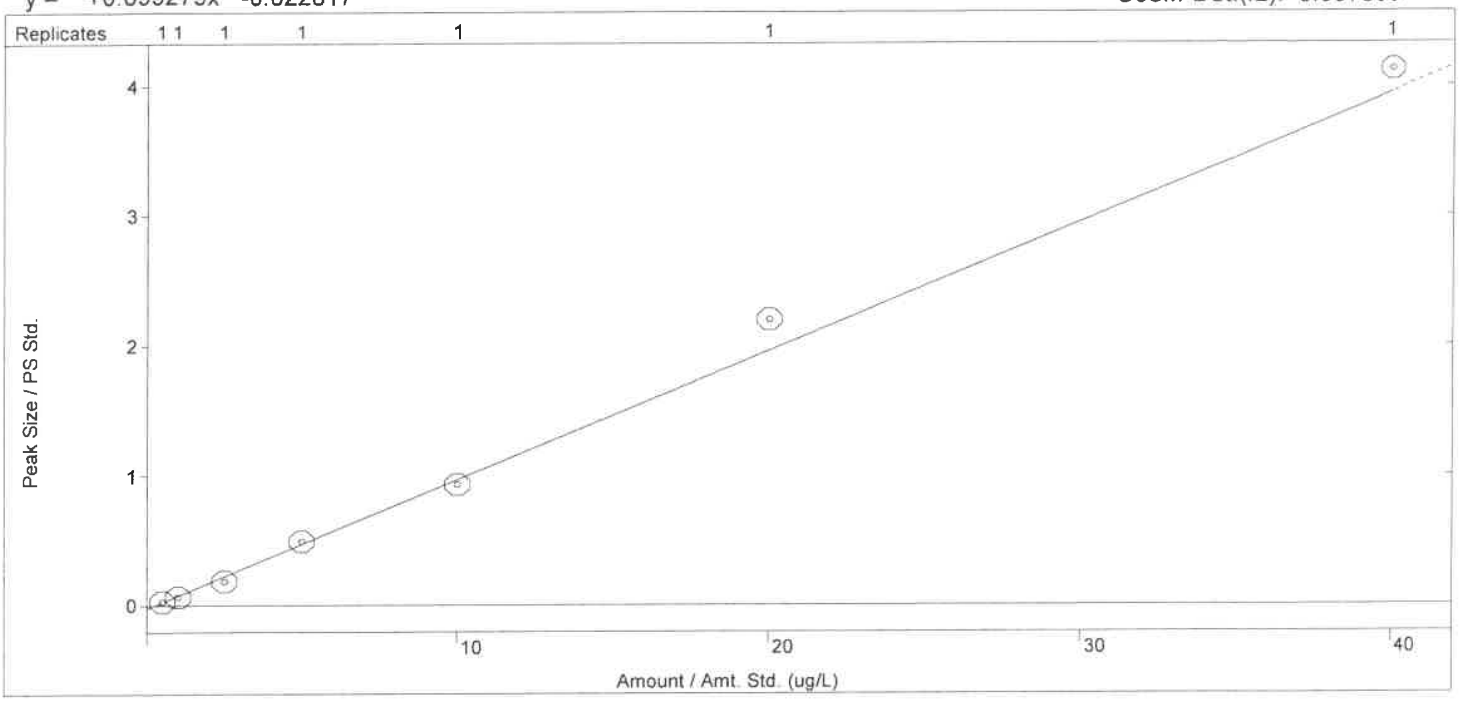
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

Dichlorodifluoromethane

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.099279x -0.022817

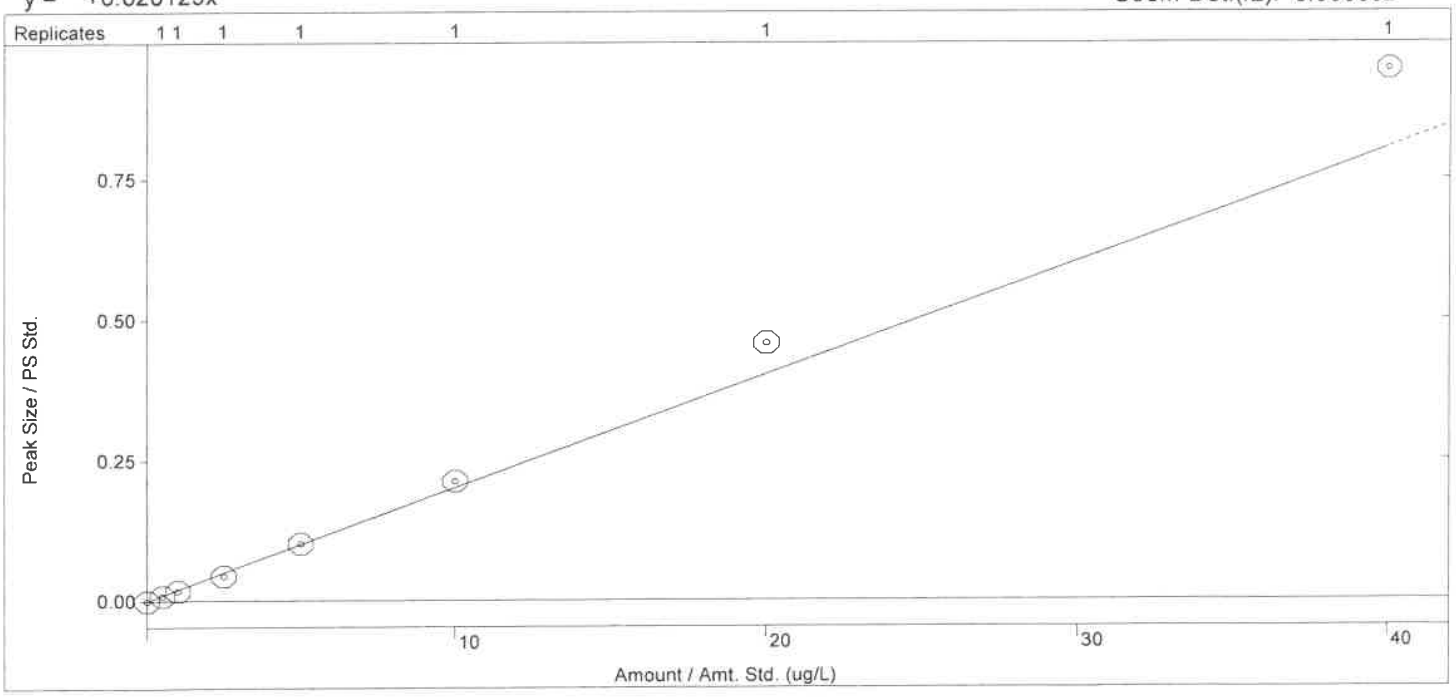
Resp. Fact. RSD: 22.00%
Coeff. Det.(r2): 0.997895



Chloromethane

Curve Fit: Linear (Edited), Origin: Force (Edited), Weight: 1/nX2
y = +0.020129x

Resp. Fact. RSD: 12.88%
Coeff. Det.(r2): 0.999302



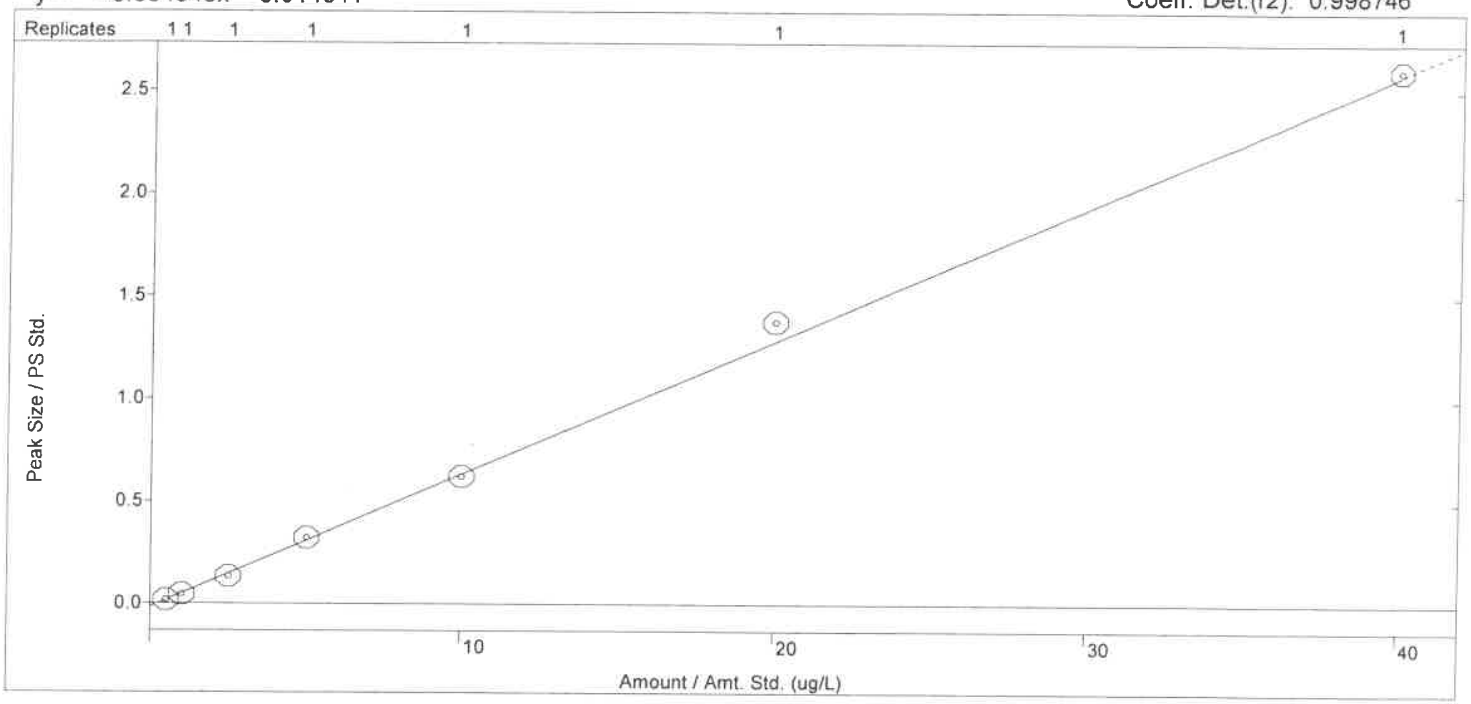
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

Vinyl chloride

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.064943x -0.014841

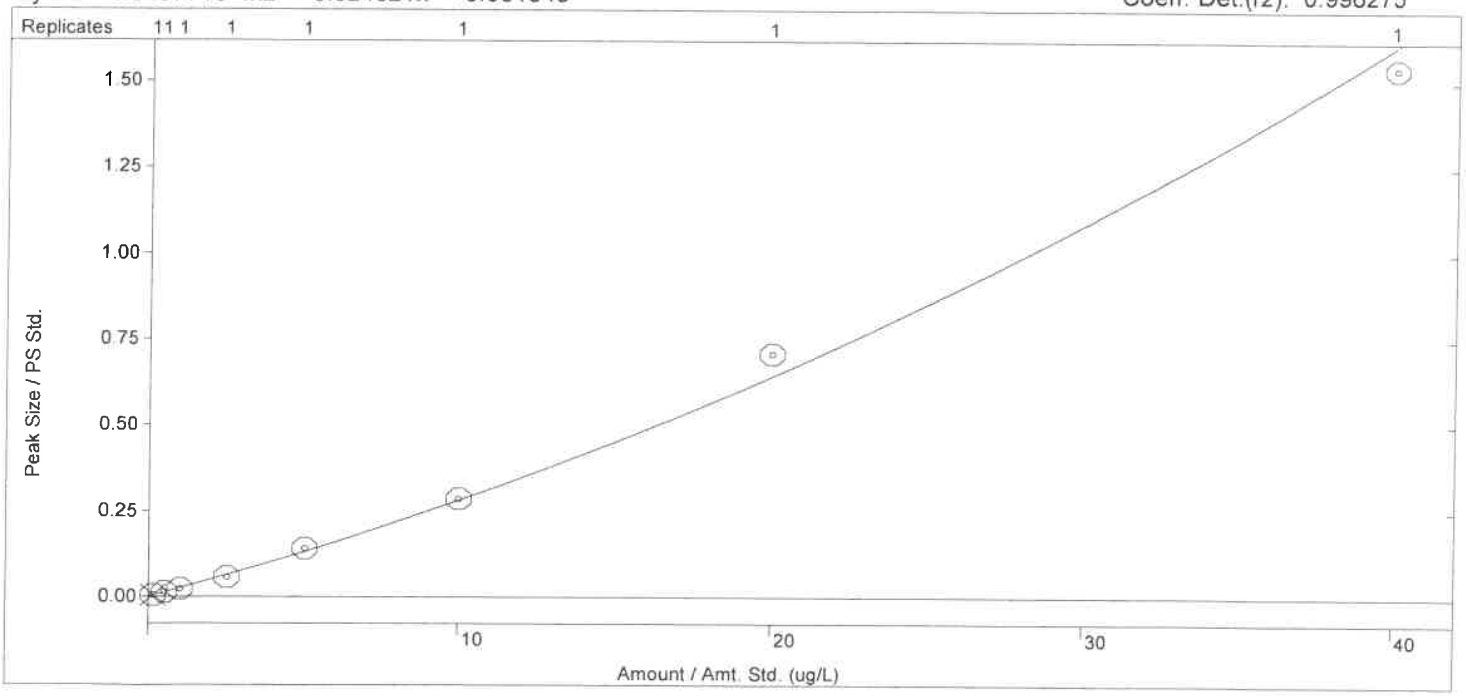
Resp. Fact. RSD: 20.05%
Coeff. Det.(r2): 0.998746



Bromomethane

Curve Fit: Quadratic (Edited), Origin: Ignore (Edited), Weight: 1/nX2
y = +4.049771e-4x2 +0.024021x +0.001348

Resp. Fact. RSD: 19.94%
Coeff. Det.(r2): 0.996275



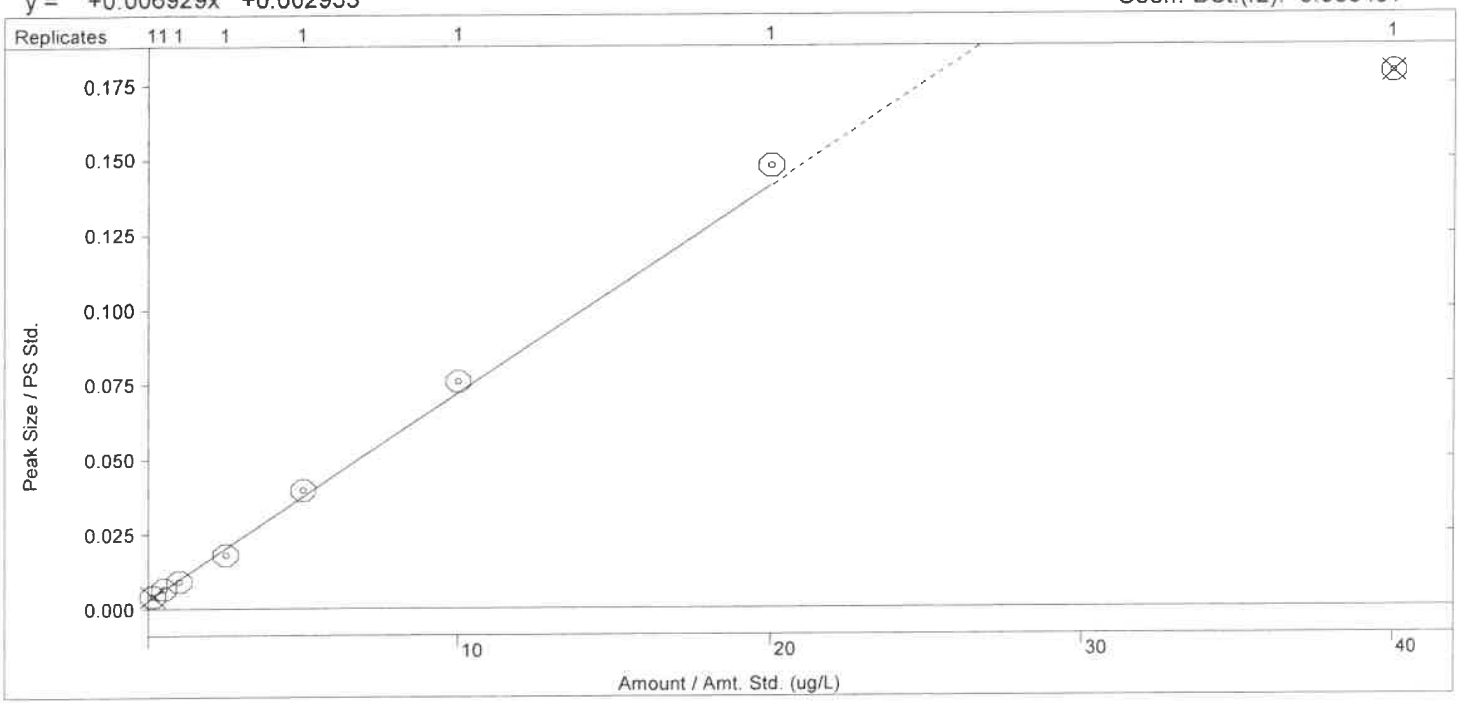
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

Chloroethane

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.006929x +0.002953

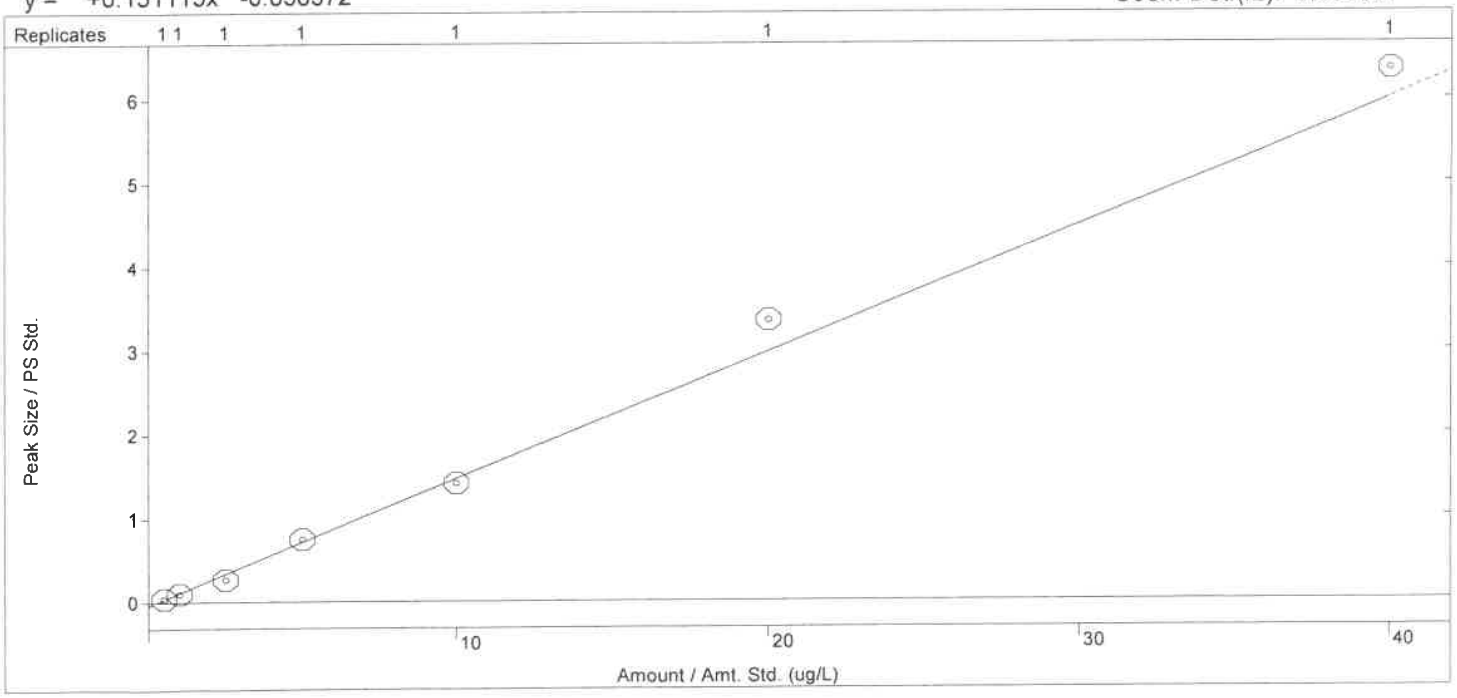
Resp. Fact. RSD: 26.44%
Coeff. Det.(r2): 0.999451



Trichlorofluoromethane

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.151115x -0.038372

Resp. Fact. RSD: 24.56%
Coeff. Det.(r2): 0.998081



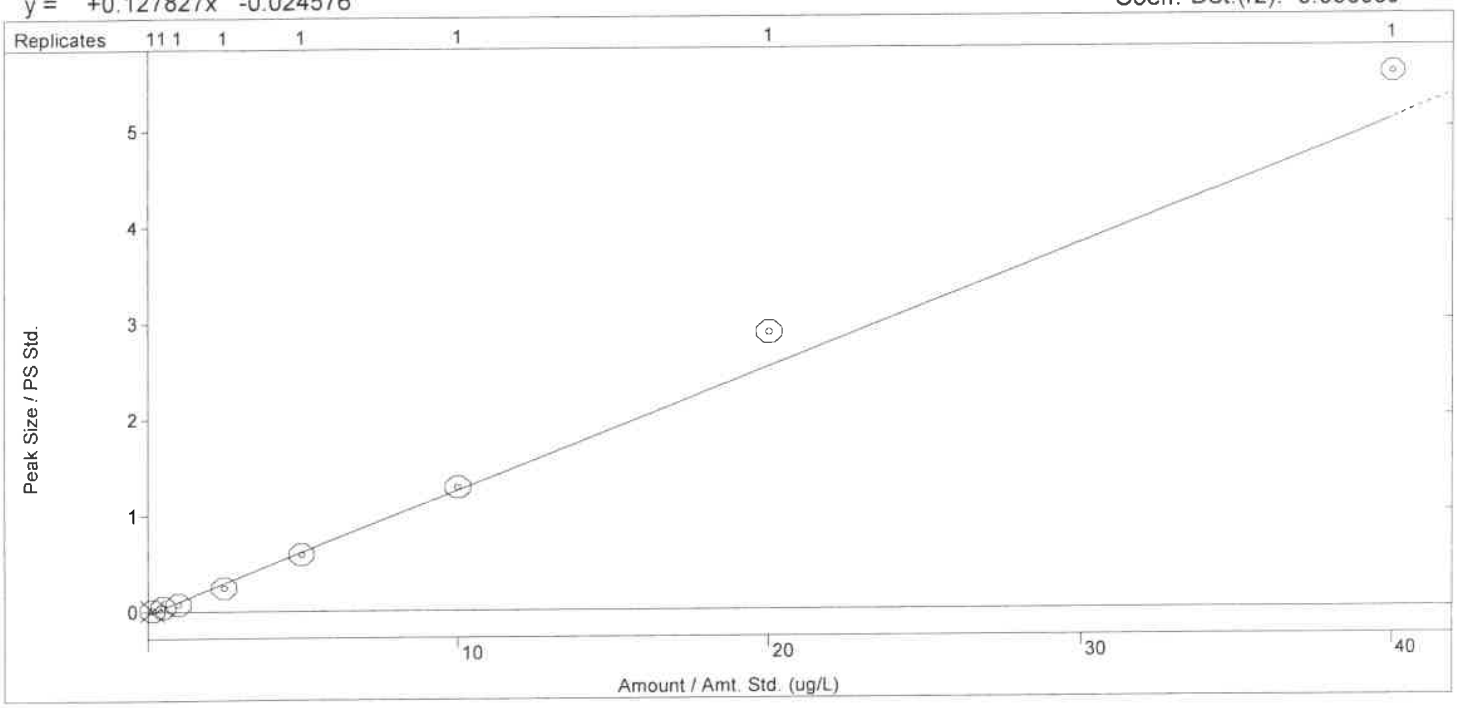
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

1,1-Dichloroethene

Curve Fit: Linear (Edited), Origin: Ignore, Weight: 1/nX2
y = +0.127827x -0.024576

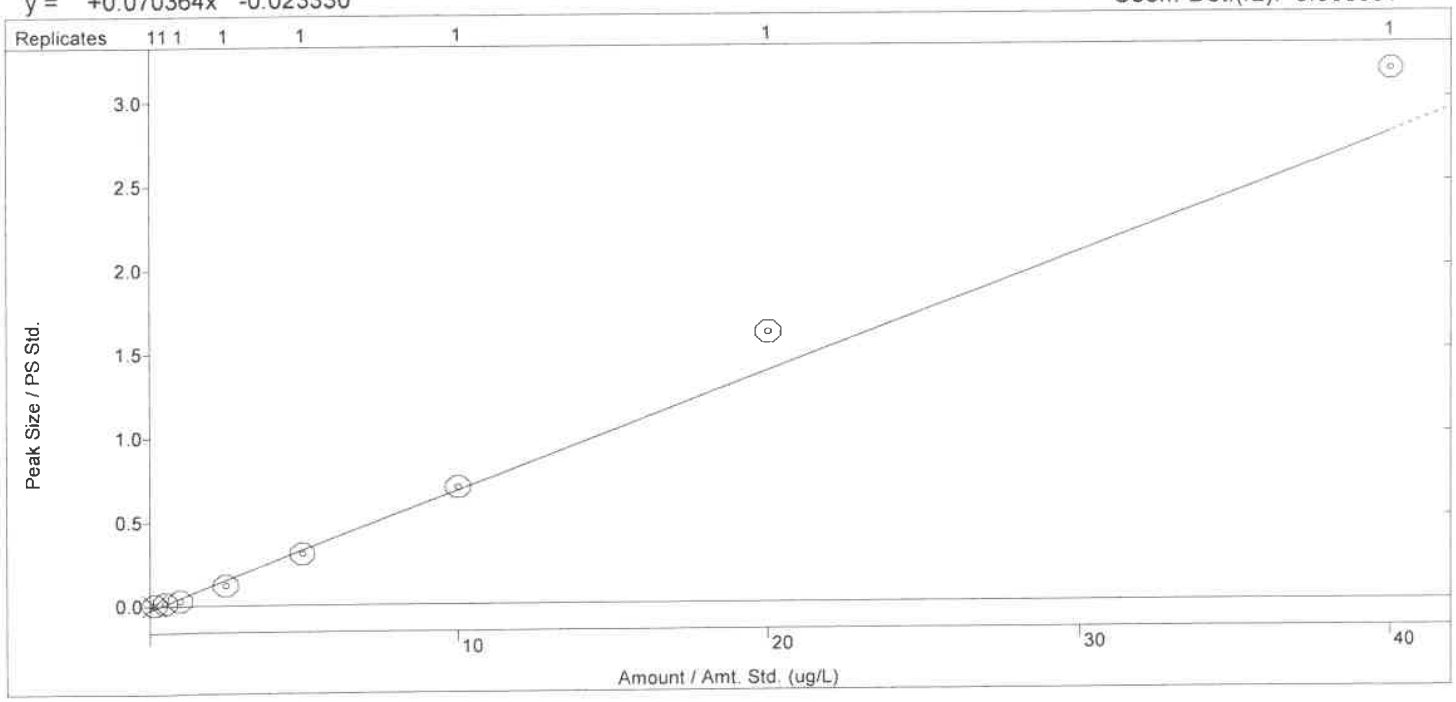
Resp. Fact. RSD: 21.59%
Coeff. Det.(r2): 0.998965



Methylene chloride

Curve Fit: Linear (Edited), Origin: Ignore, Weight: 1/nX2
y = +0.070364x -0.023330

Resp. Fact. RSD: 35.45%
Coeff. Det.(r2): 0.998951



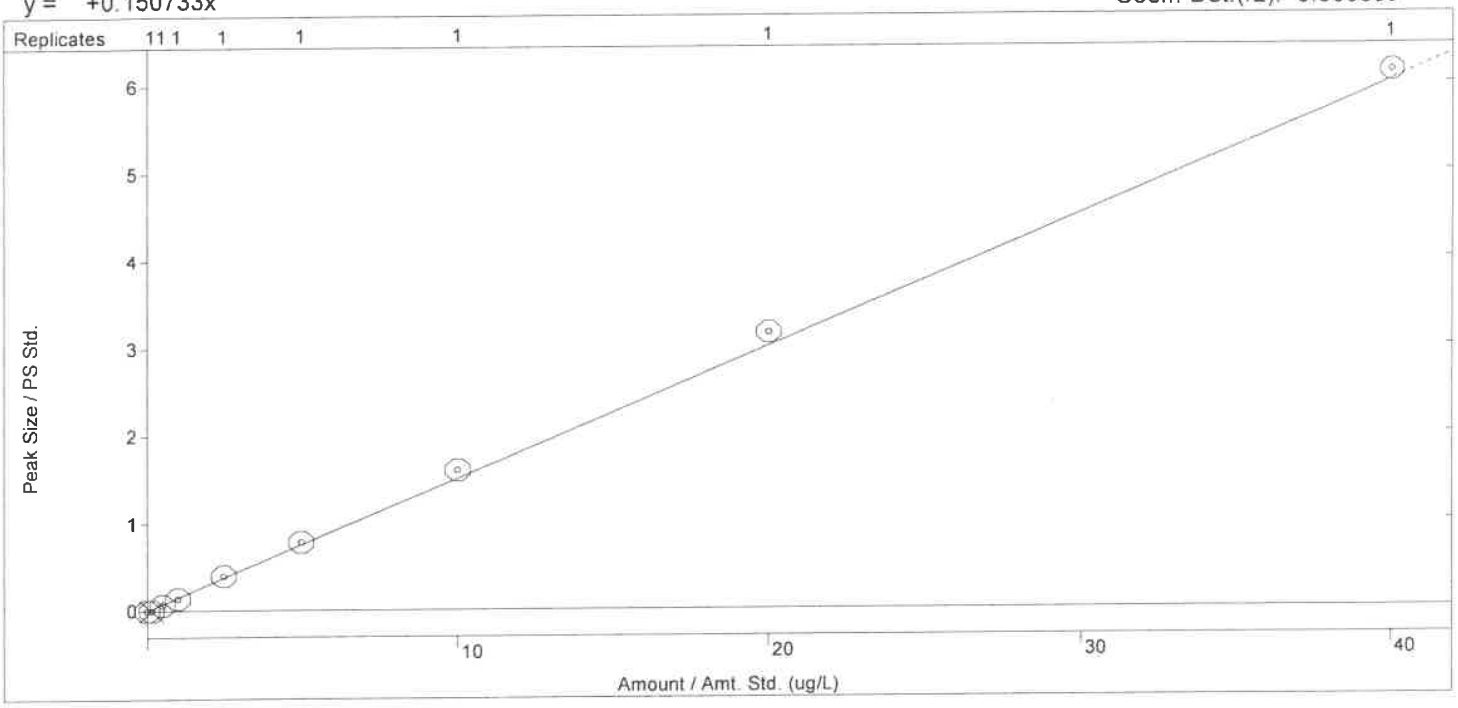
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

methyl-tert-butyl-ether (MTBE)

Curve Fit: Linear, Origin: Force (Edited), Weight: 1/nX2
y = +0.150733x

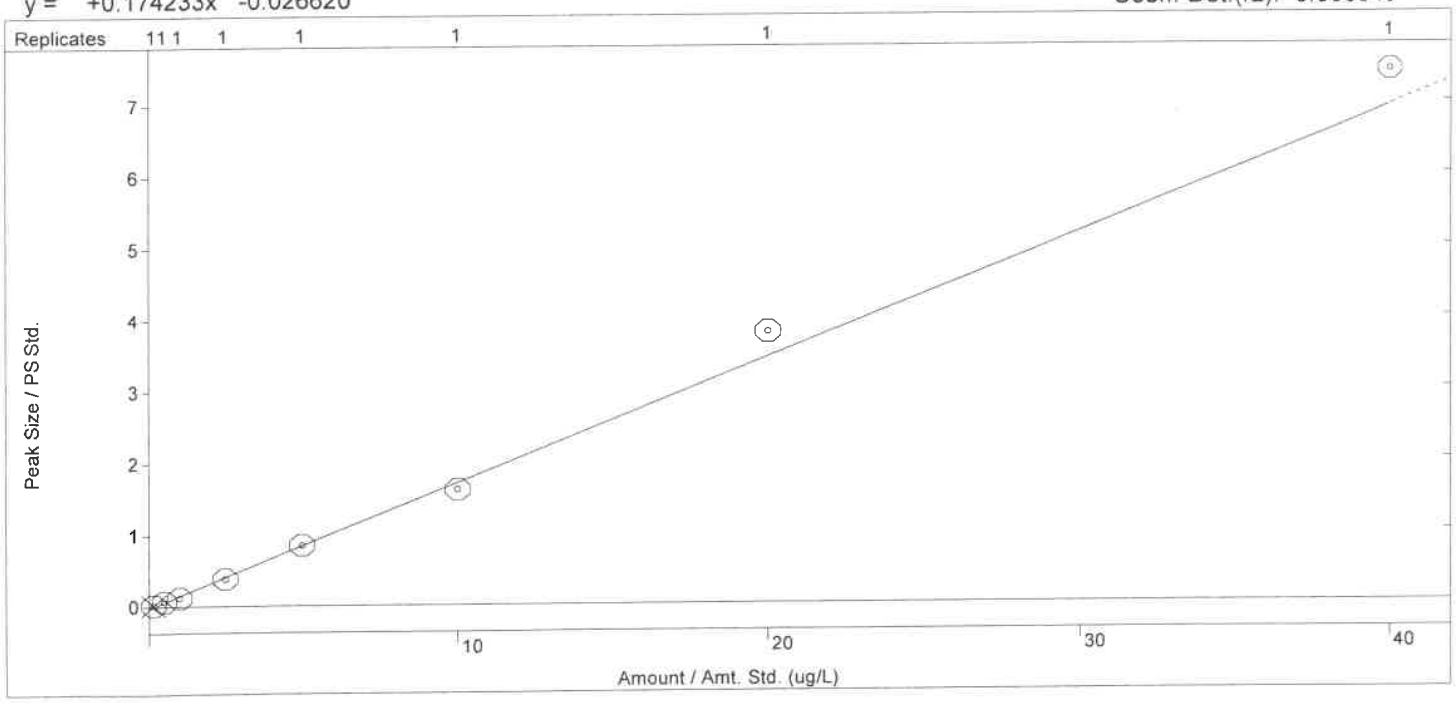
Resp. Fact. RSD: 7.953%
Coeff. Det.(r2): 0.999656



trans-1,2-Dichloroethene

Curve Fit: Linear (Edited), Origin: Ignore, Weight: 1/nX2
y = +0.174233x -0.026620

Resp. Fact. RSD: 15.81%
Coeff. Det.(r2): 0.998849



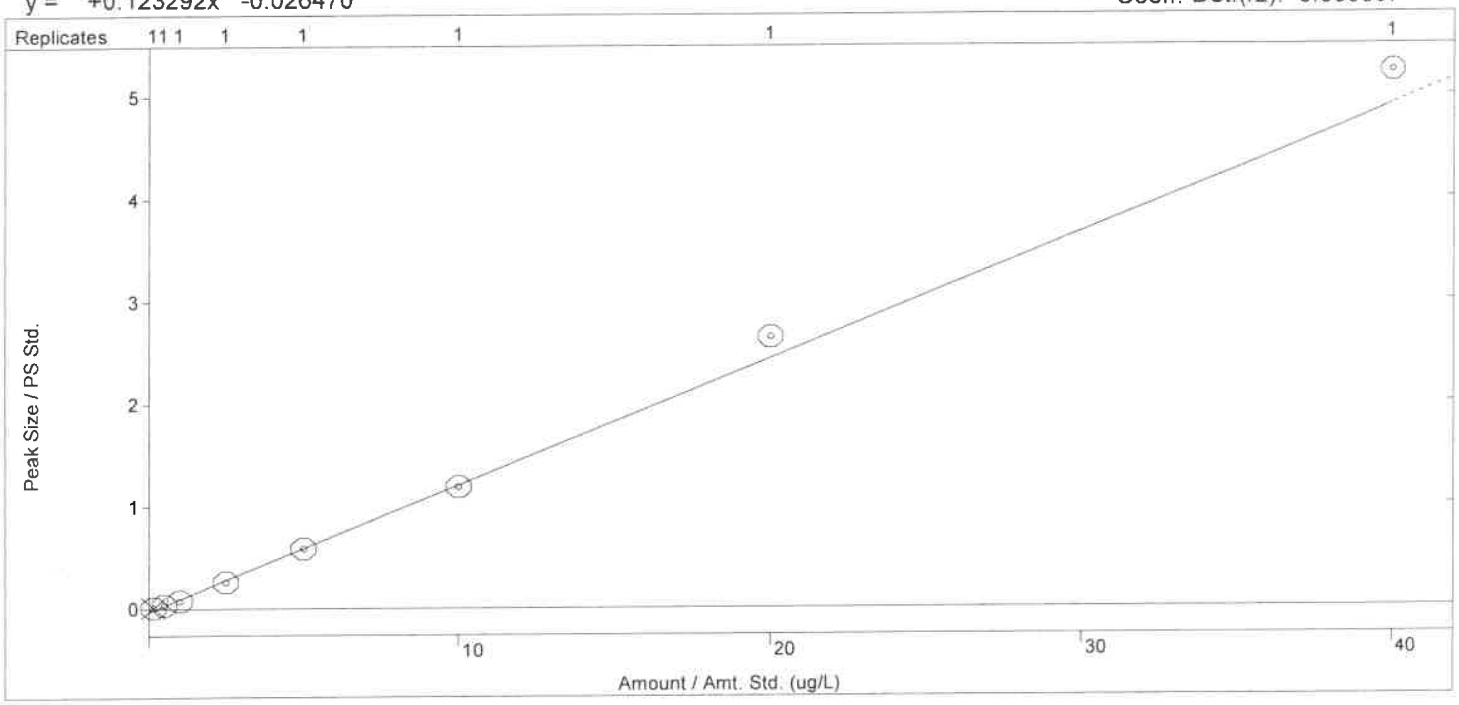
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

1,1-Dichloroethane

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.123292x -0.026470

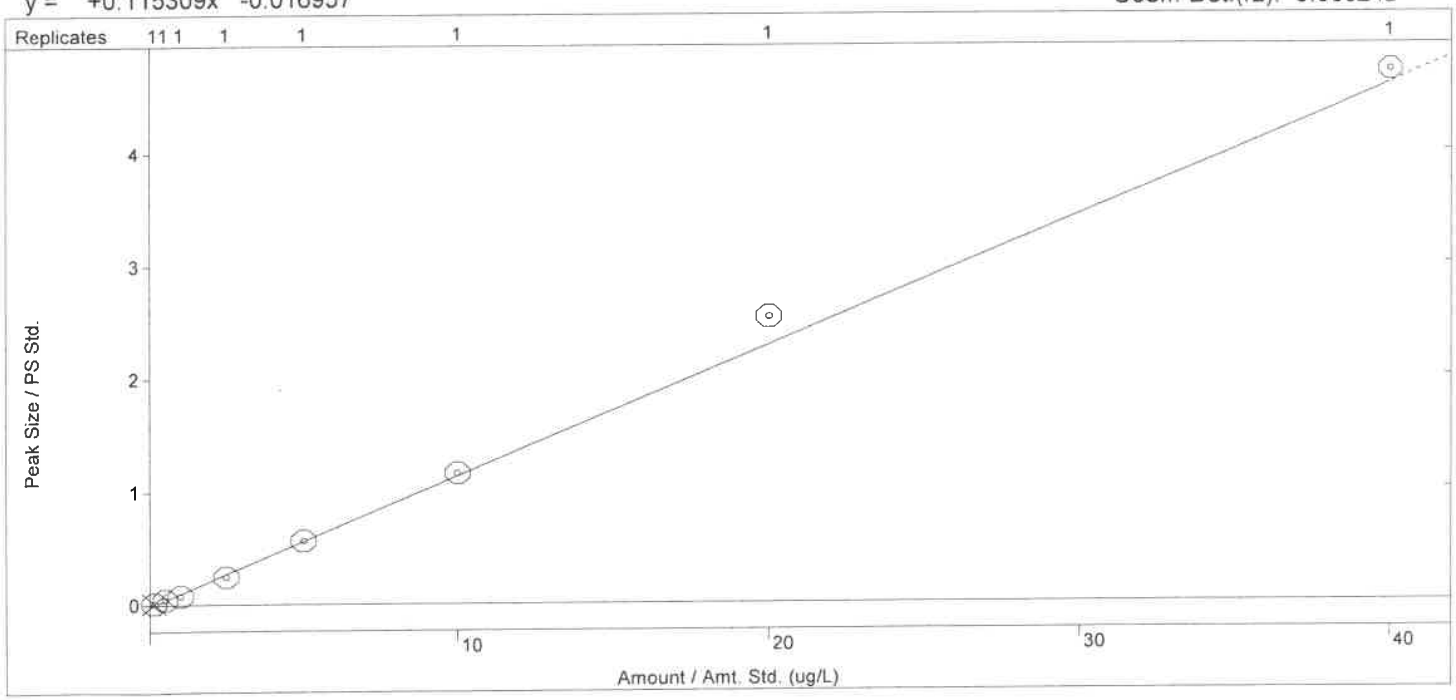
Resp. Fact. RSD: 20.30%
Coeff. Det.(r2): 0.999507



2,2-Dichloropropane

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.115309x -0.016957

Resp. Fact. RSD: 15.86%
Coeff. Det.(r2): 0.998242



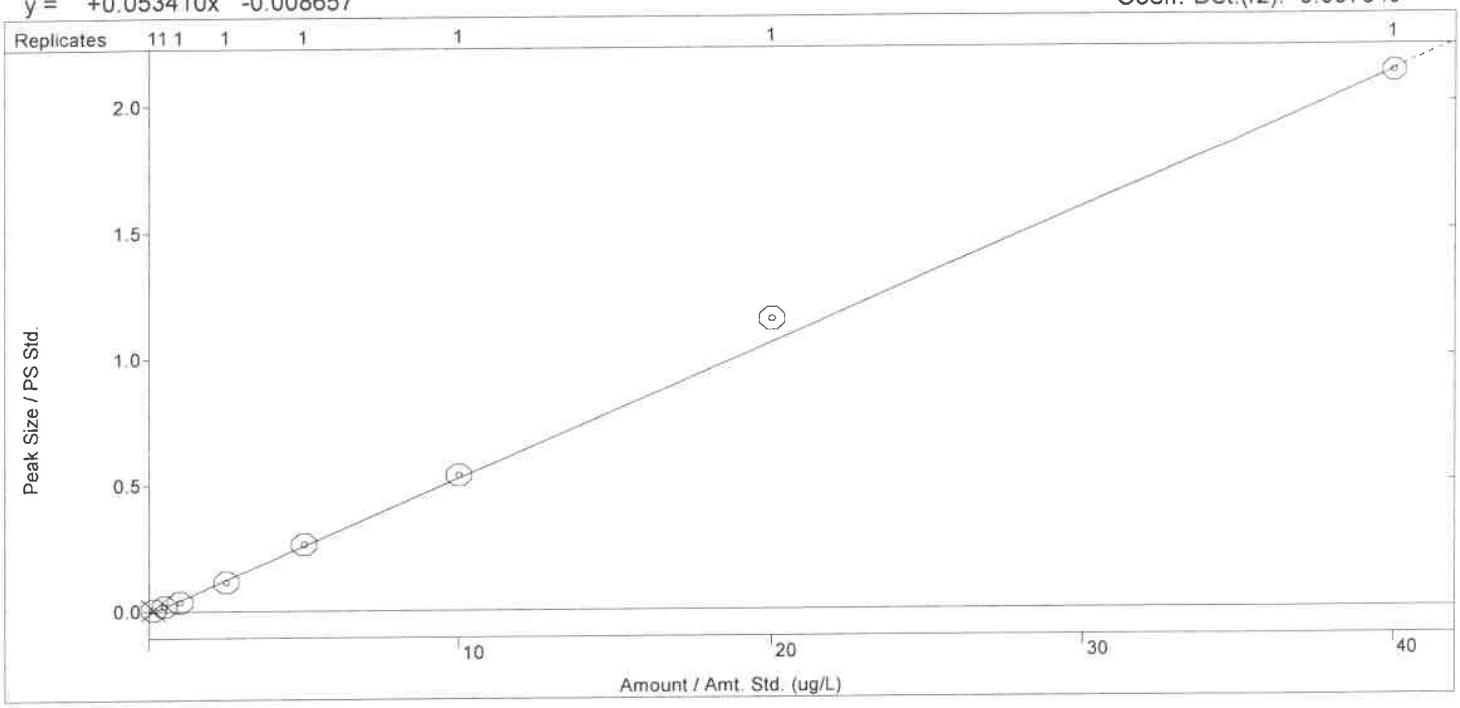
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

cis-1,2-Dichloroethene

Curve Fit: Linear (Edited), Origin: Ignore, Weight: 1/nX2
y = +0.053410x -0.008657

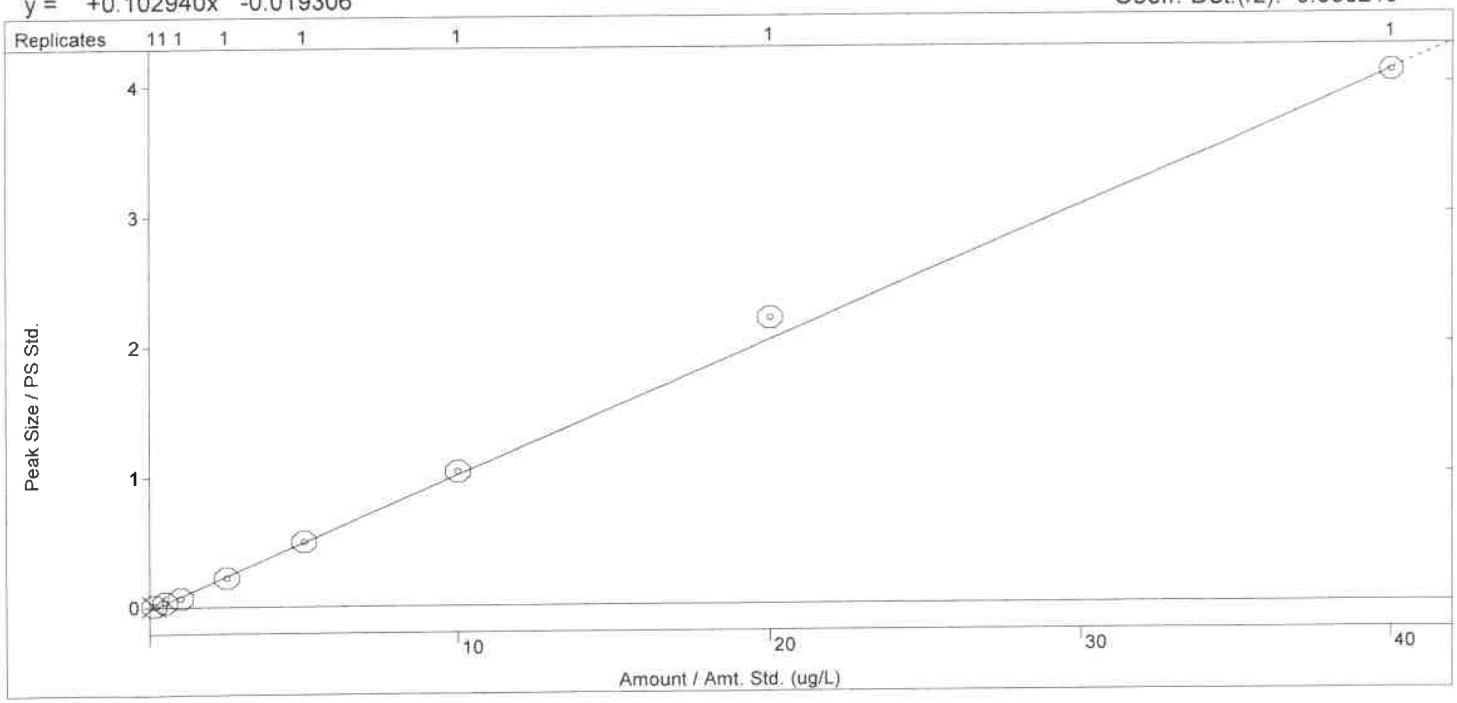
Resp. Fact. RSD: 15.87%
Coeff. Det.(r2): 0.997940



Bromochloromethane

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.102940x -0.019306

Resp. Fact. RSD: 17.50%
Coeff. Det.(r2): 0.998215



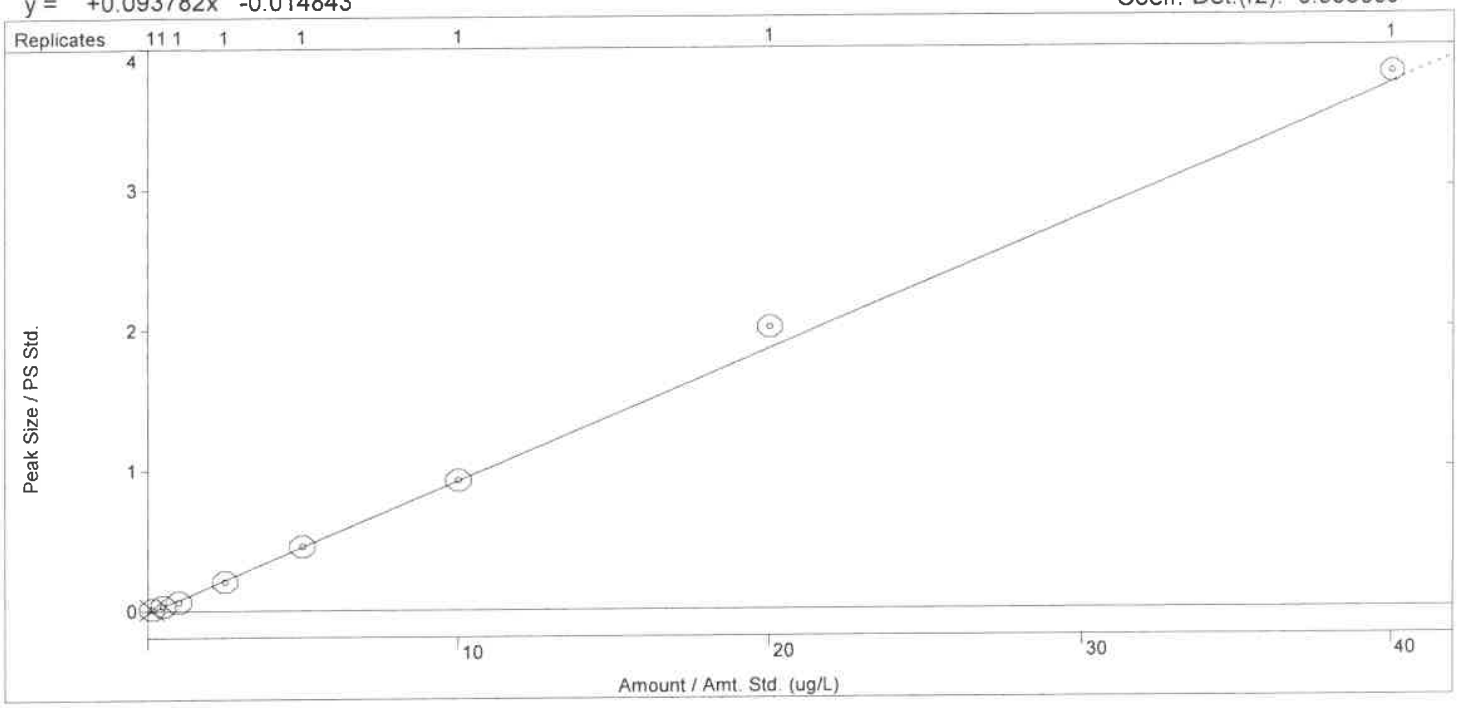
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

Chloroform (THM)

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.093782x -0.014843

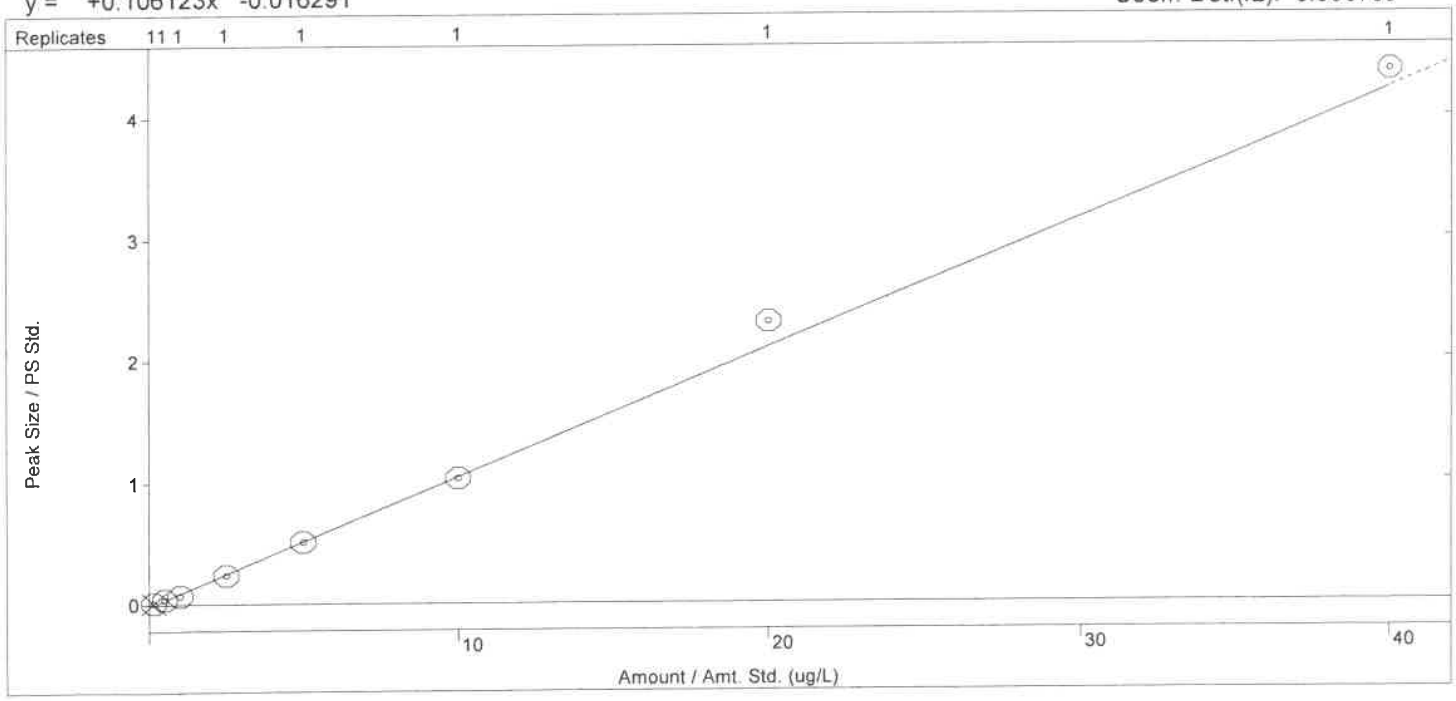
Resp. Fact. RSD: 15.26%
Coeff. Det.(r2): 0.999000



1,1,1-Trichloroethane

Curve Fit: Linear (Edited), Origin: Ignore, Weight: 1/nX2
y = +0.106123x -0.016291

Resp. Fact. RSD: 15.67%
Coeff. Det.(r2): 0.998763



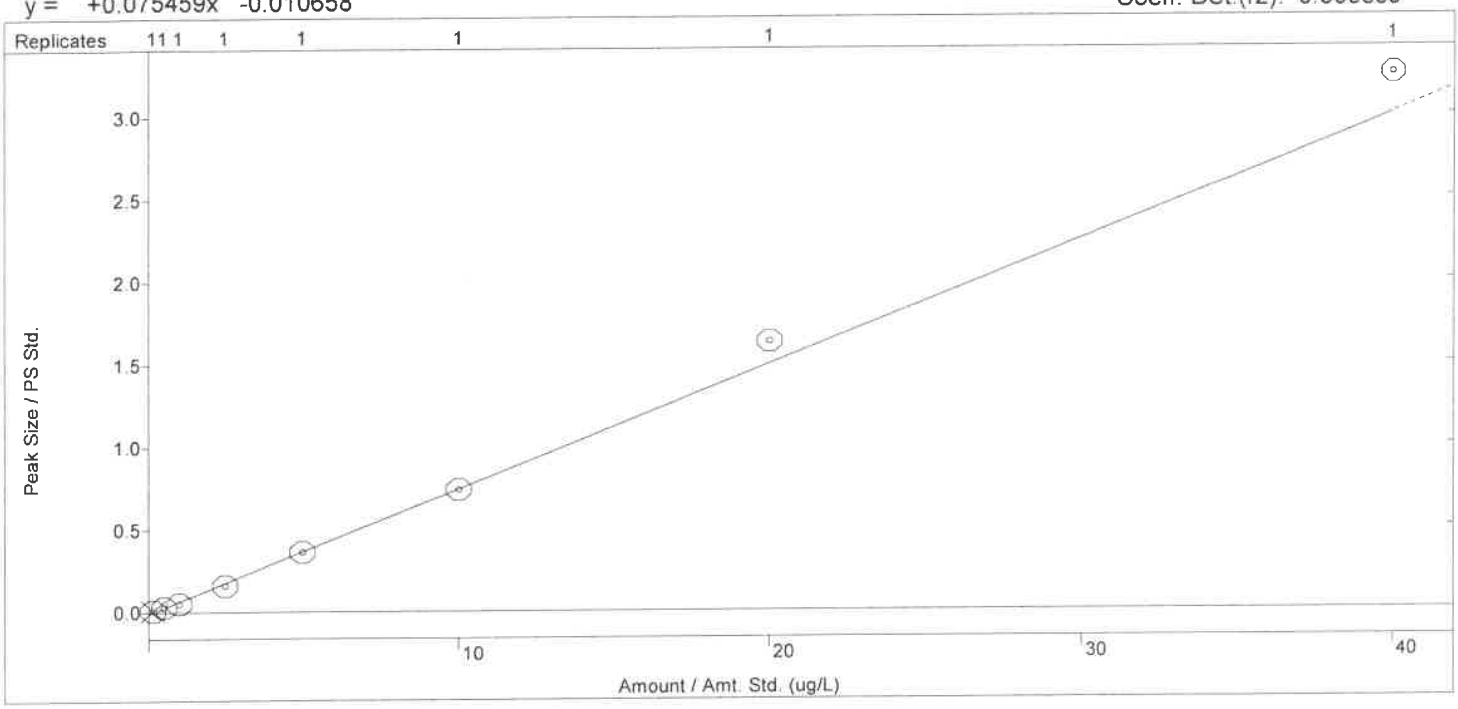
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

Carbon tetrachloride

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.075459x -0.010658

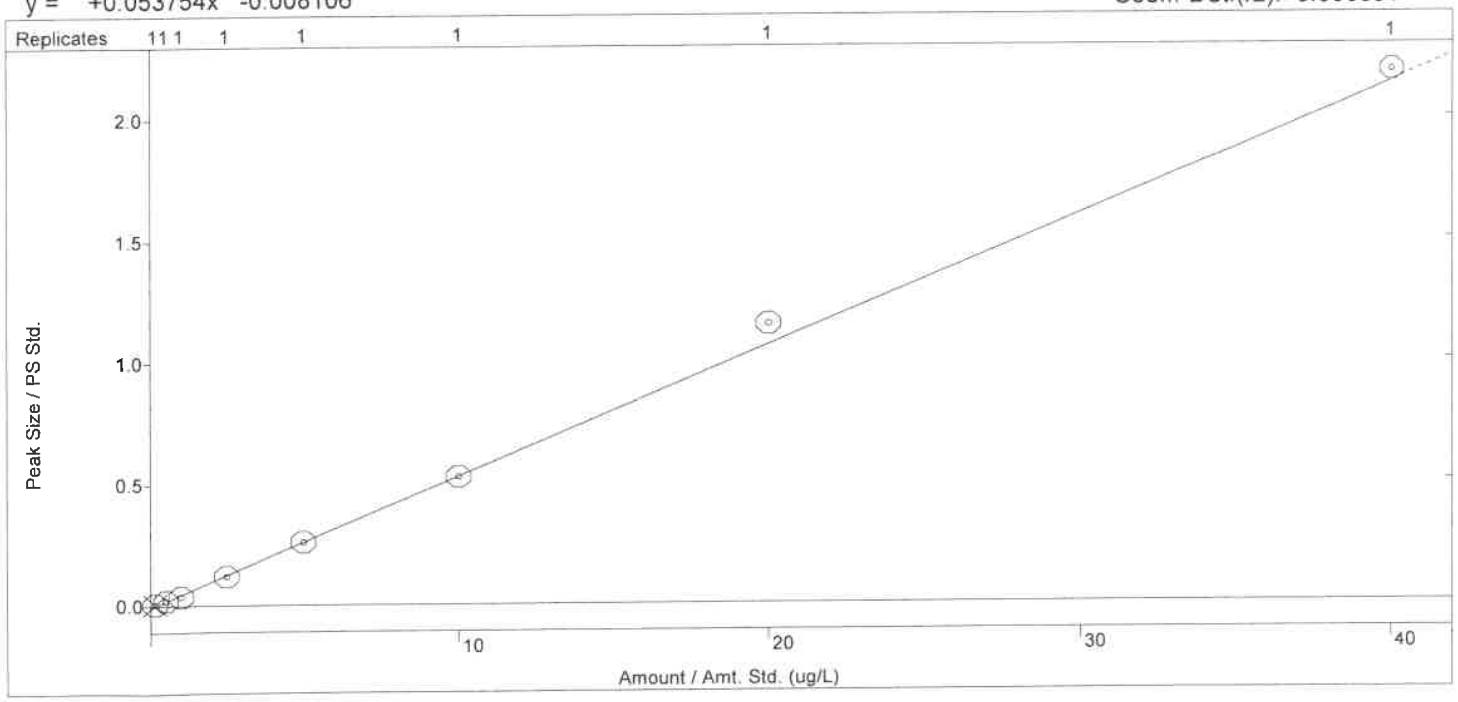
Resp. Fact. RSD: 15.61%
Coeff. Det.(r2): 0.999568



1,1-Dichloro-1-propene

Curve Fit: Linear (Edited), Origin: Ignore, Weight: 1/nX2
y = +0.053754x -0.008106

Resp. Fact. RSD: 14.35%
Coeff. Det.(r2): 0.999034



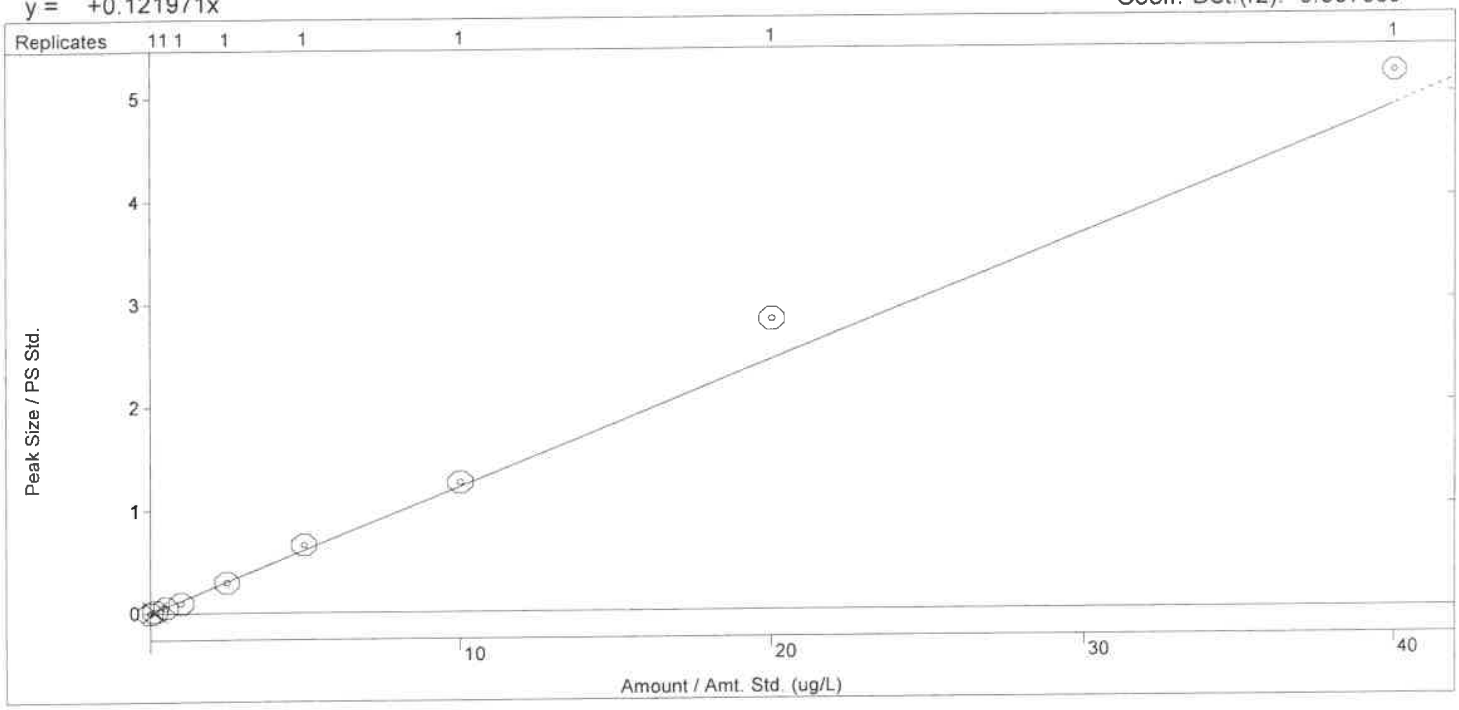
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

Benzene

Curve Fit: Linear, Origin: Force, Weight: 1/nX2
y = +0.121971x

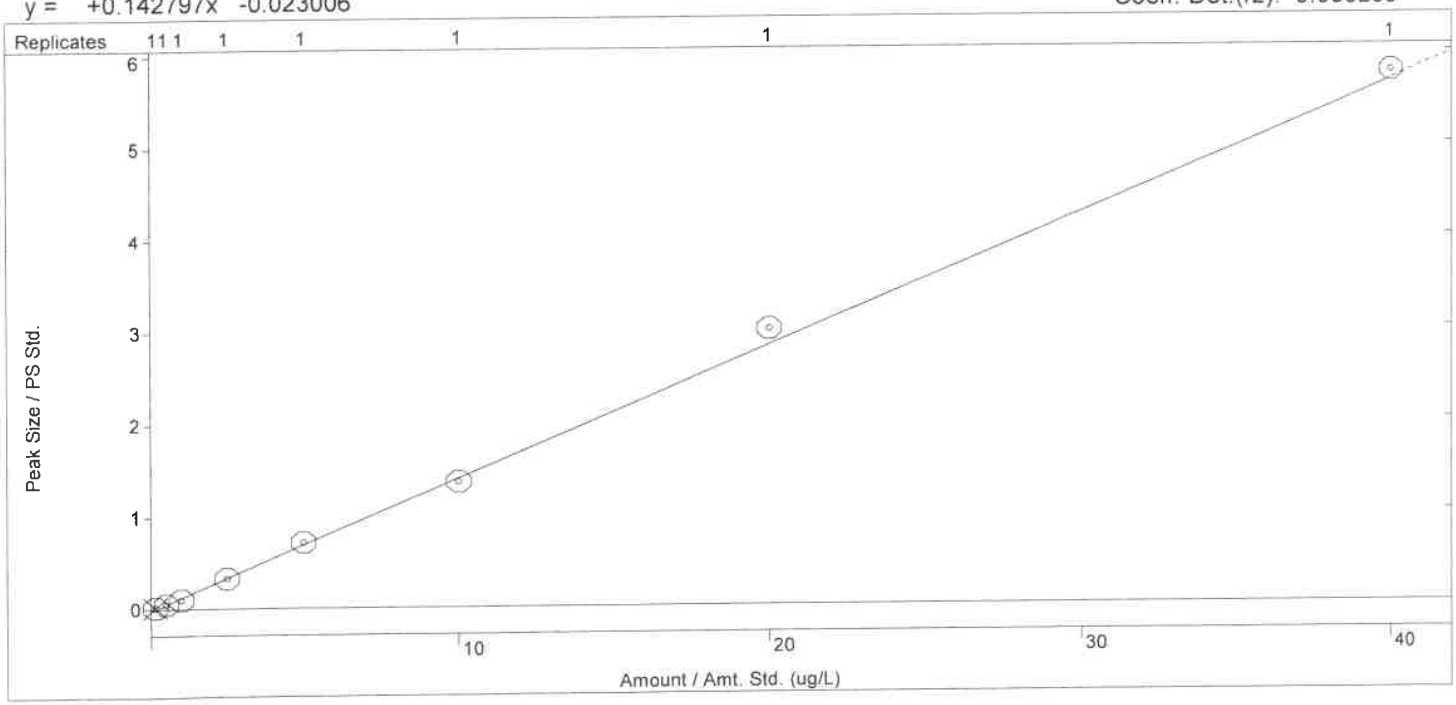
Resp. Fact. RSD: 12.45%
Coeff. Det.(r2): 0.997965



1,2-Dichloroethane

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.142797x -0.023006

Resp. Fact. RSD: 15.04%
Coeff. Det.(r2): 0.999298



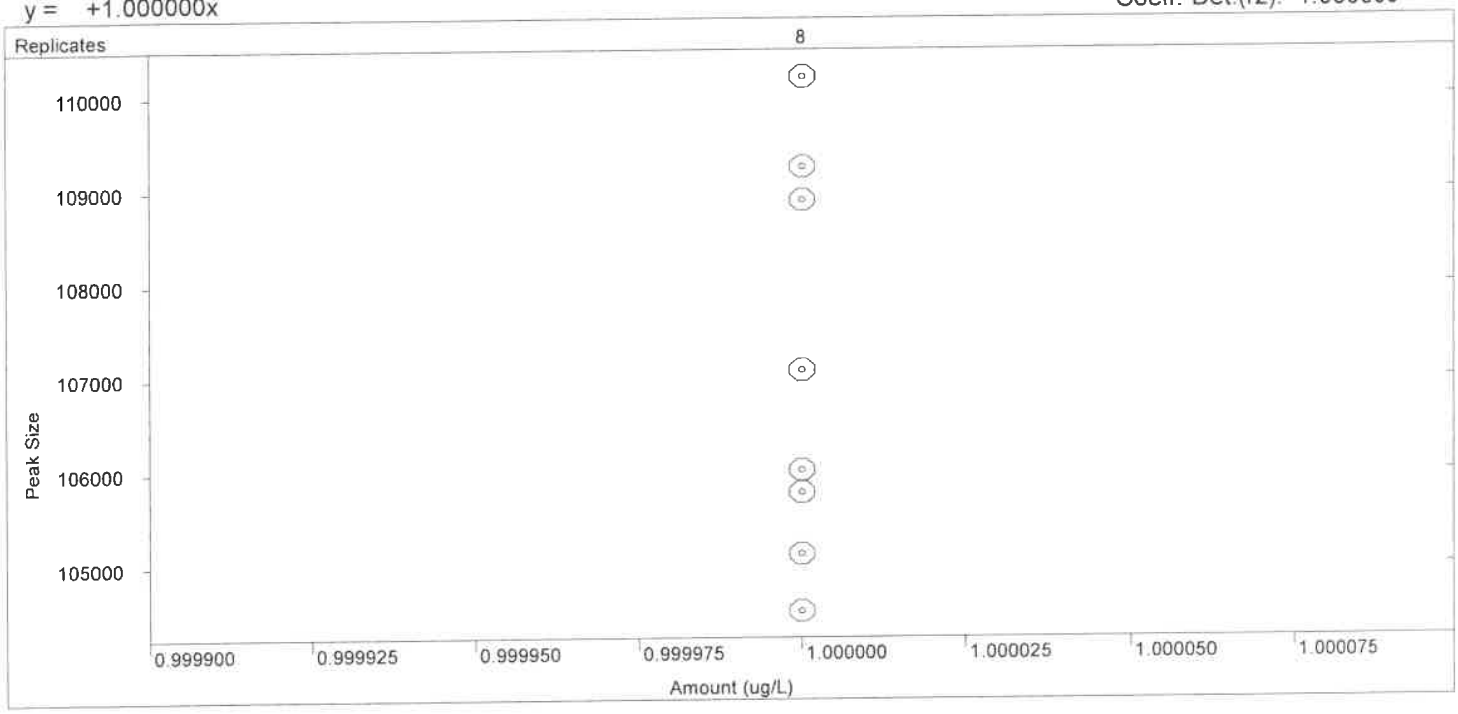
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

(IS-1) Fluorobenzene

Curve Fit: Linear, Origin: Force, Weight: 1/nX2
y = +1.000000x

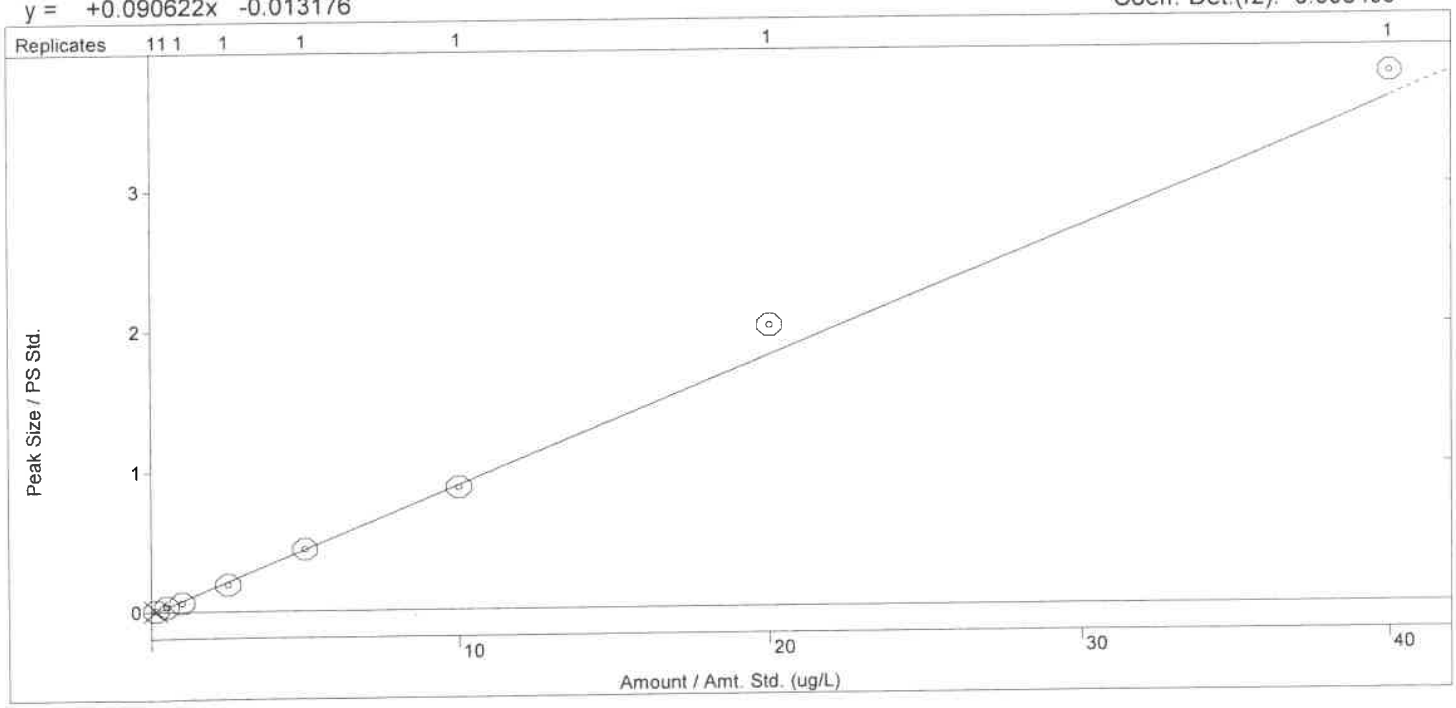
Resp. Fact. RSD: 0.0000%
Coeff. Det.(r2): 1.000000



Trichloroethene (TCE)

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.090622x -0.013176

Resp. Fact. RSD: 15.43%
Coeff. Det.(r2): 0.998495



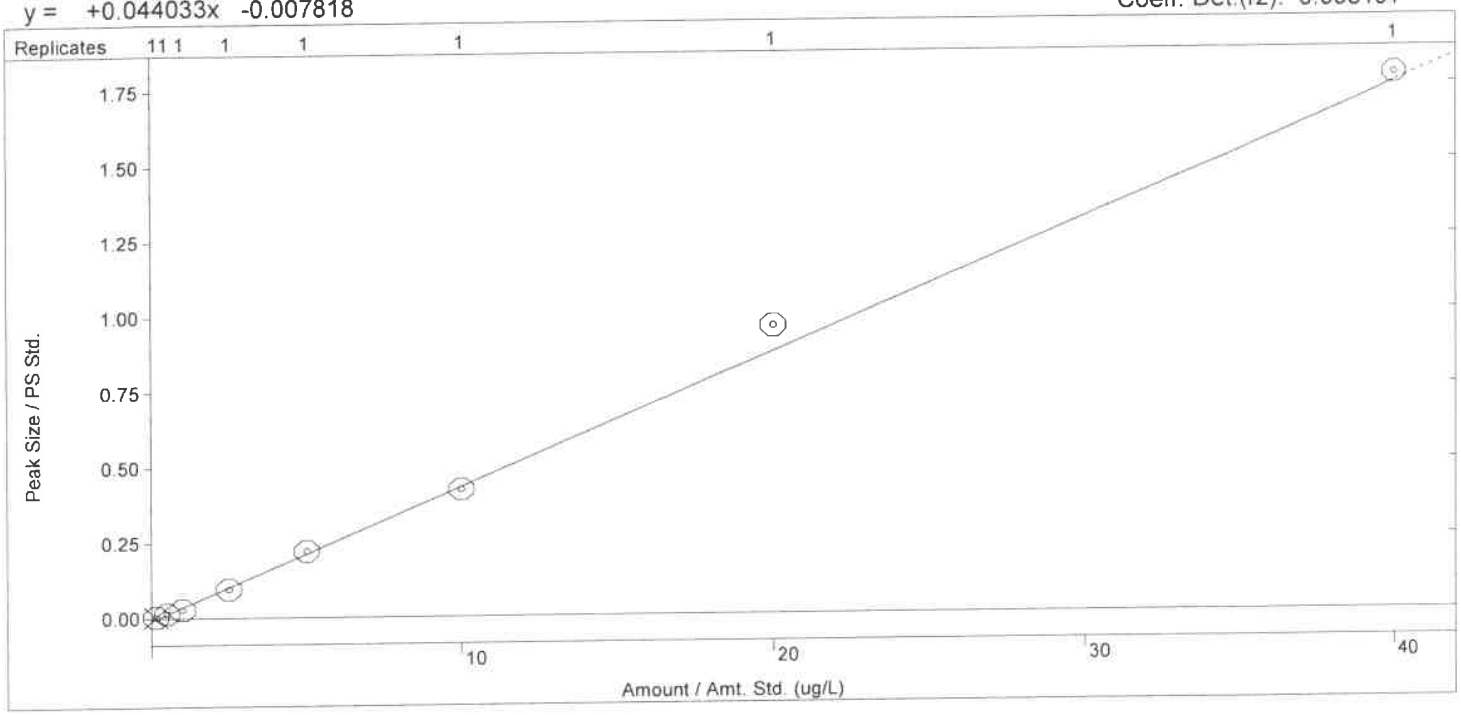
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

1,2-Dichloropropane

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.044033x -0.007818

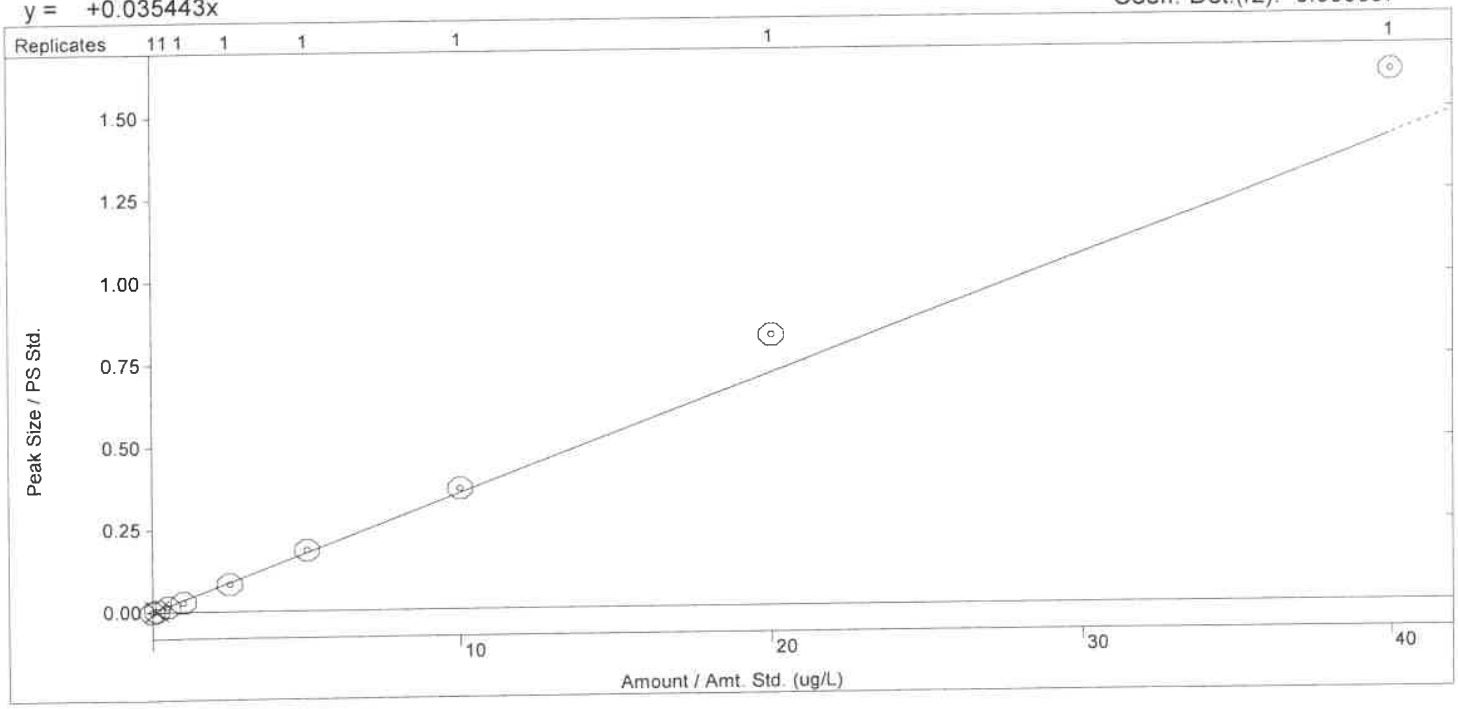
Resp. Fact. RSD: 17.44%
Coeff. Det.(r2): 0.998131



Dibromomethane

Curve Fit: Linear, Origin: Force (Edited), Weight: 1/nX2
y = +0.035443x

Resp. Fact. RSD: 13.38%
Coeff. Det.(r2): 0.999337



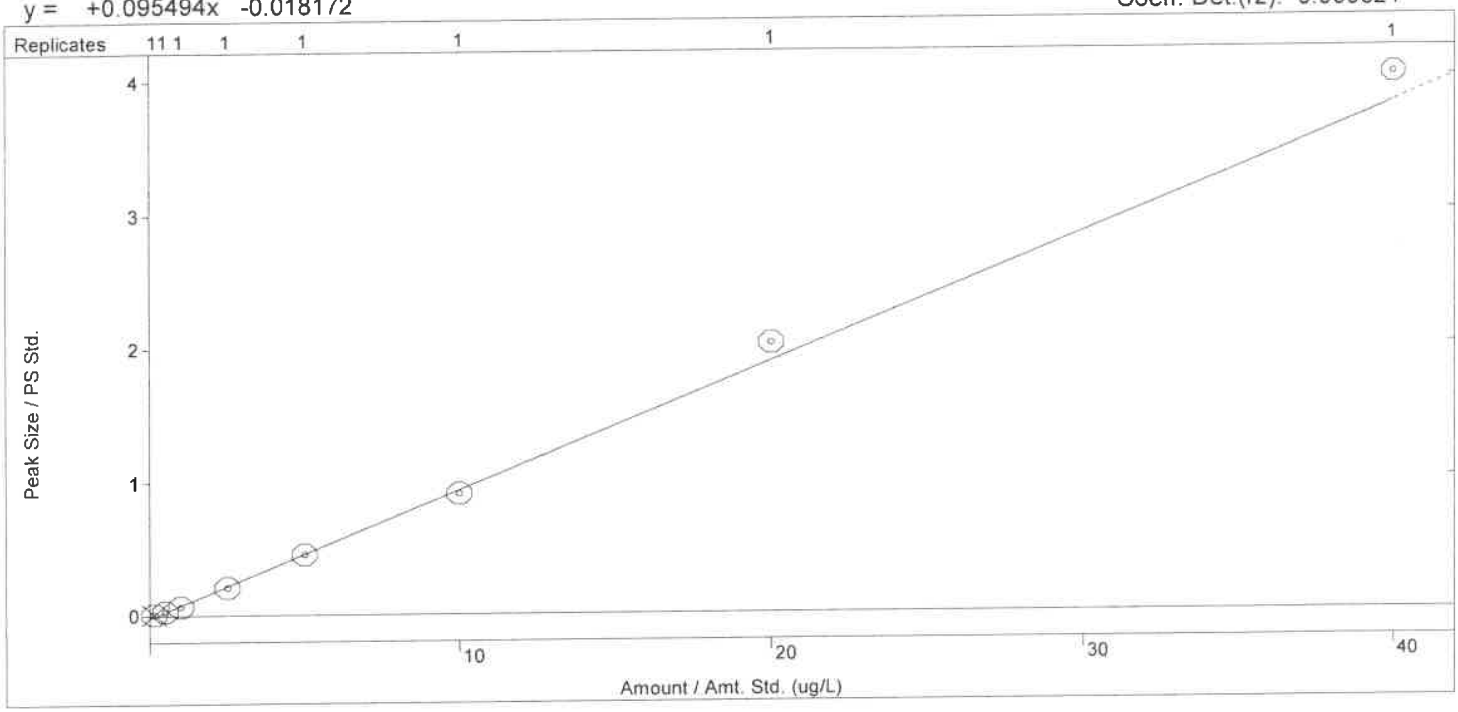
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

Bromodichloromethane (THM)

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.095494x -0.018172

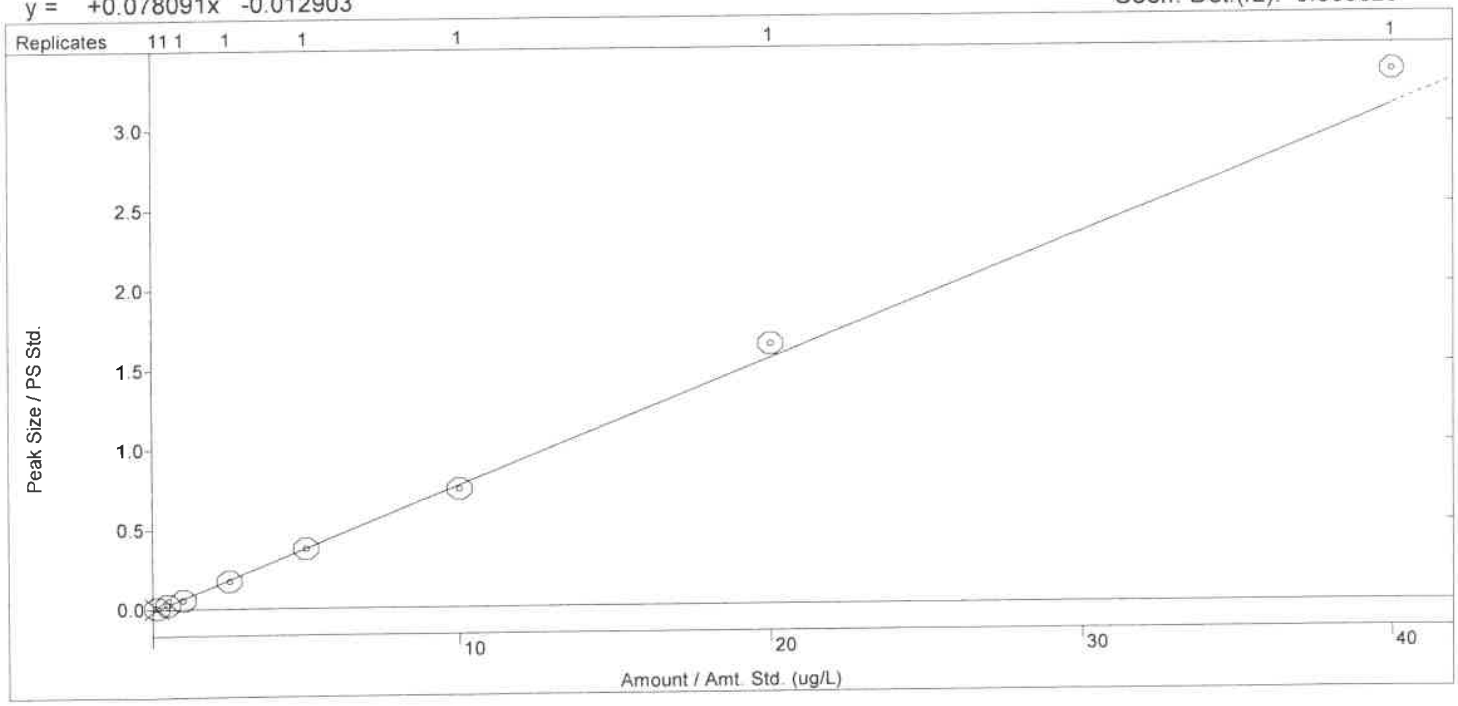
Resp. Fact. RSD: 17.13%
Coeff. Det.(r2): 0.999524



cis-1,3-Dichloro-1-propene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.078091x -0.012903

Resp. Fact. RSD: 15.18%
Coeff. Det.(r2): 0.999523



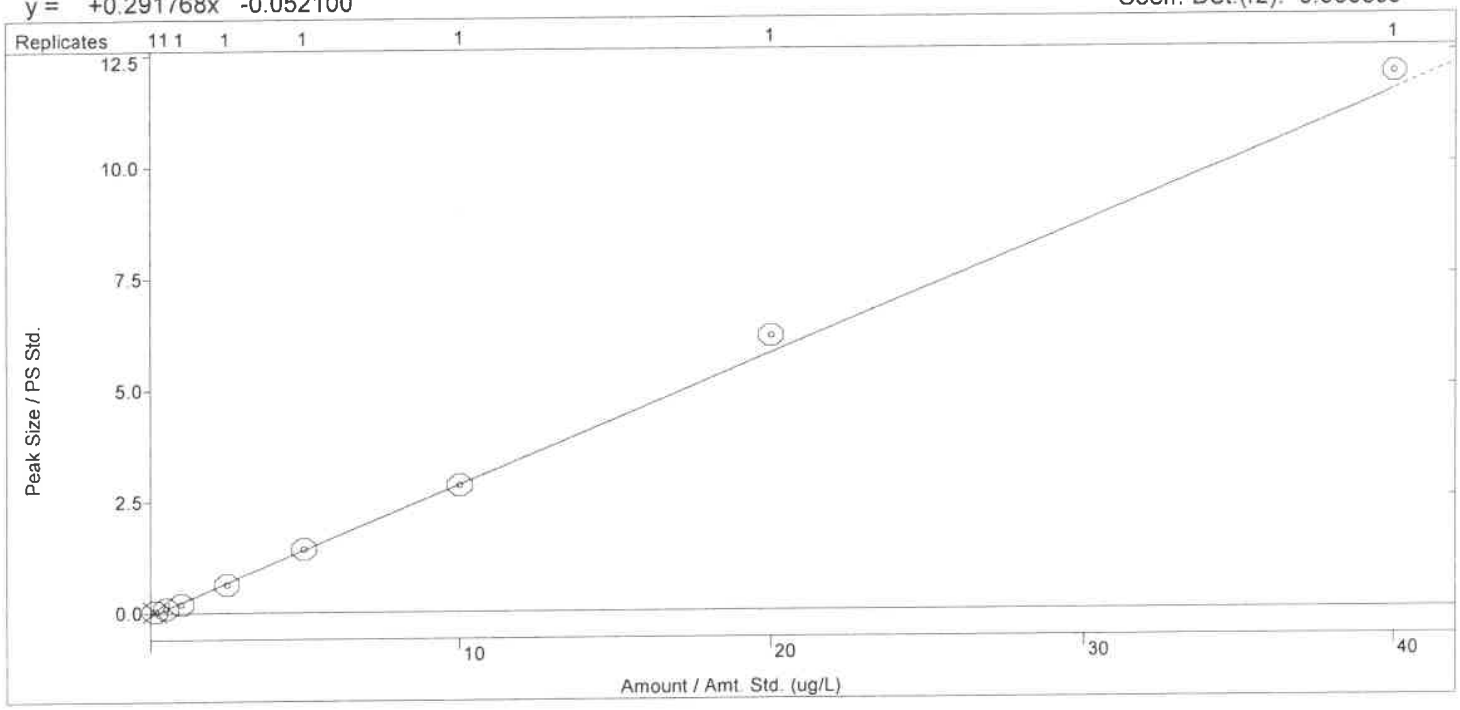
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

Toluene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.291768x -0.052100

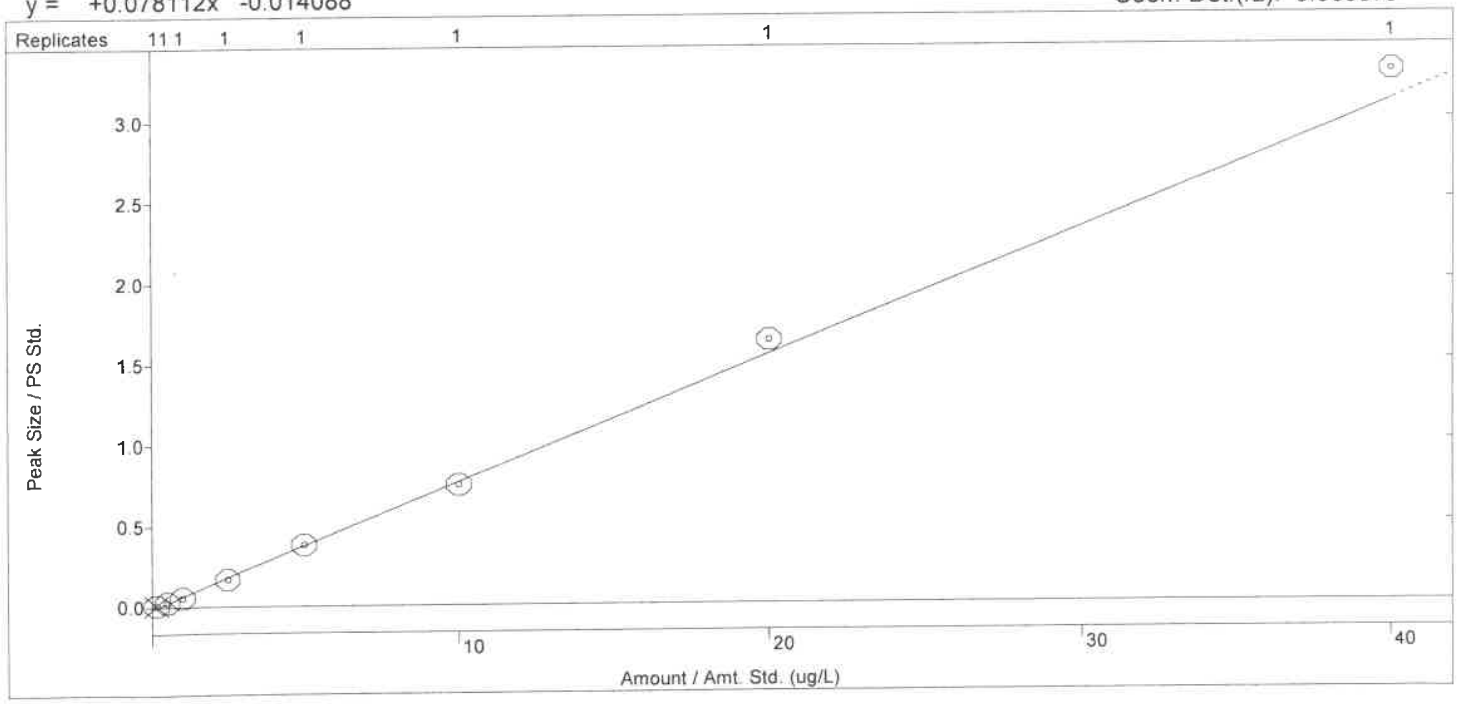
Resp. Fact. RSD: 16.33%
Coeff. Det.(r2): 0.999593



trans-1,3-Dichloro-1-propene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.078112x -0.014088

Resp. Fact. RSD: 16.17%
Coeff. Det.(r2): 0.999675



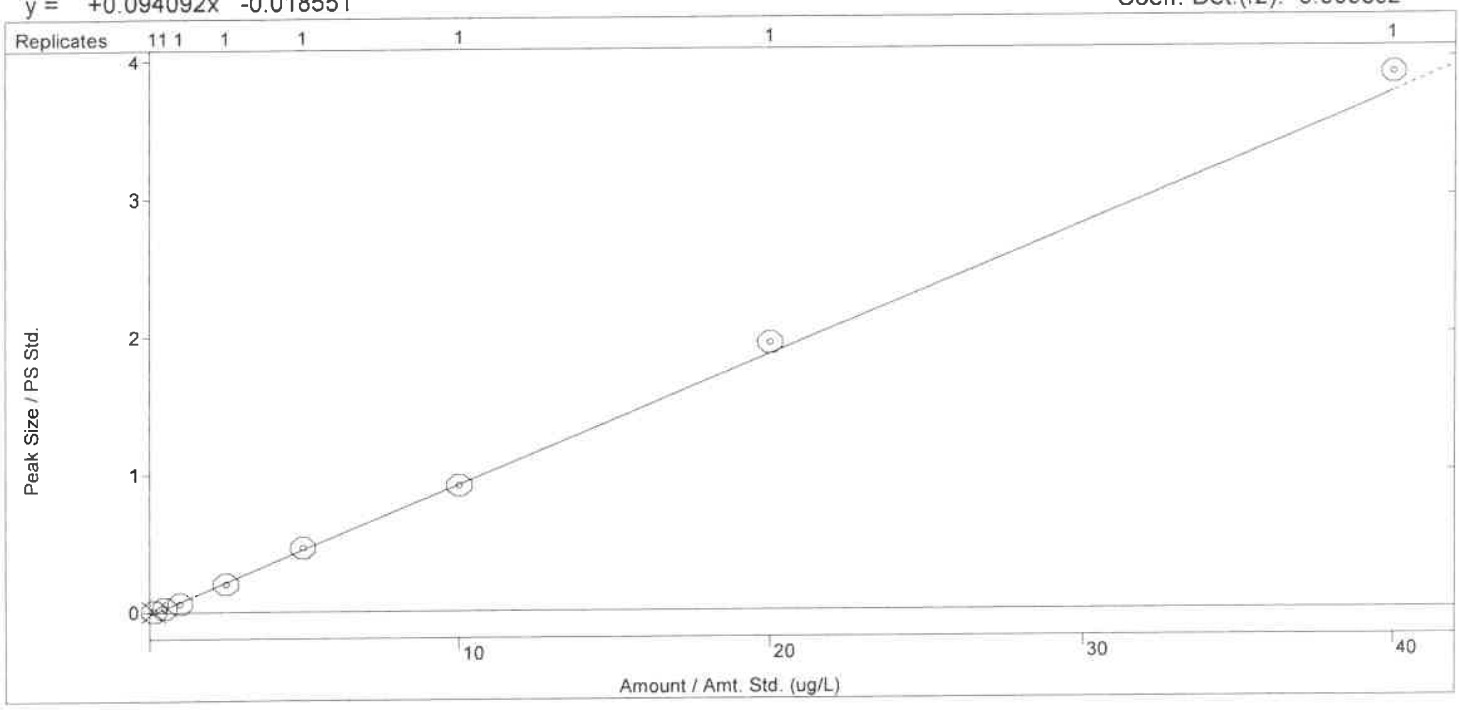
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

1,1,2-Trichloroethane

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.094092x -0.018551

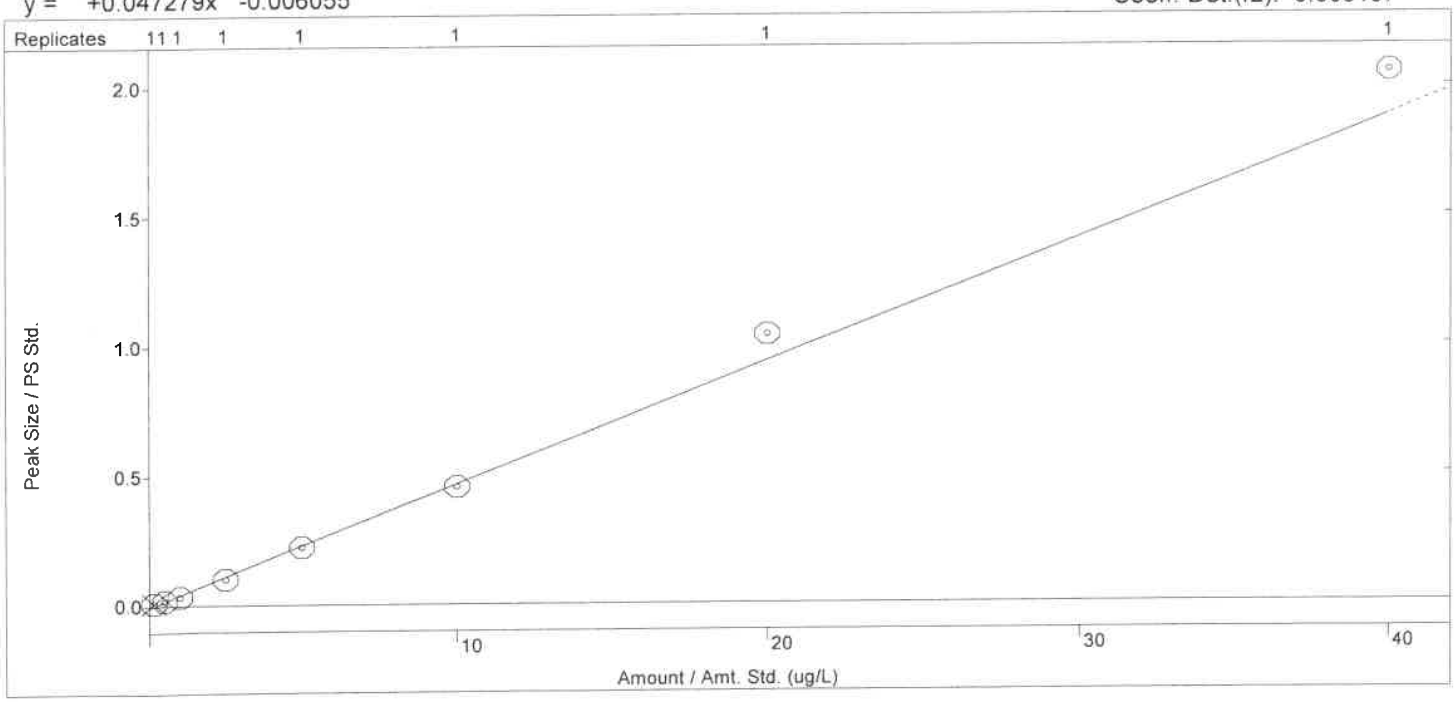
Resp. Fact. RSD: 17.66%
Coeff. Det.(r2): 0.999862



Tetrachloroethene (PCE)

Curve Fit: Linear (Edited), Origin: Ignore, Weight: 1/nX2
y = +0.047279x -0.006055

Resp. Fact. RSD: 14.58%
Coeff. Det.(r2): 0.999187



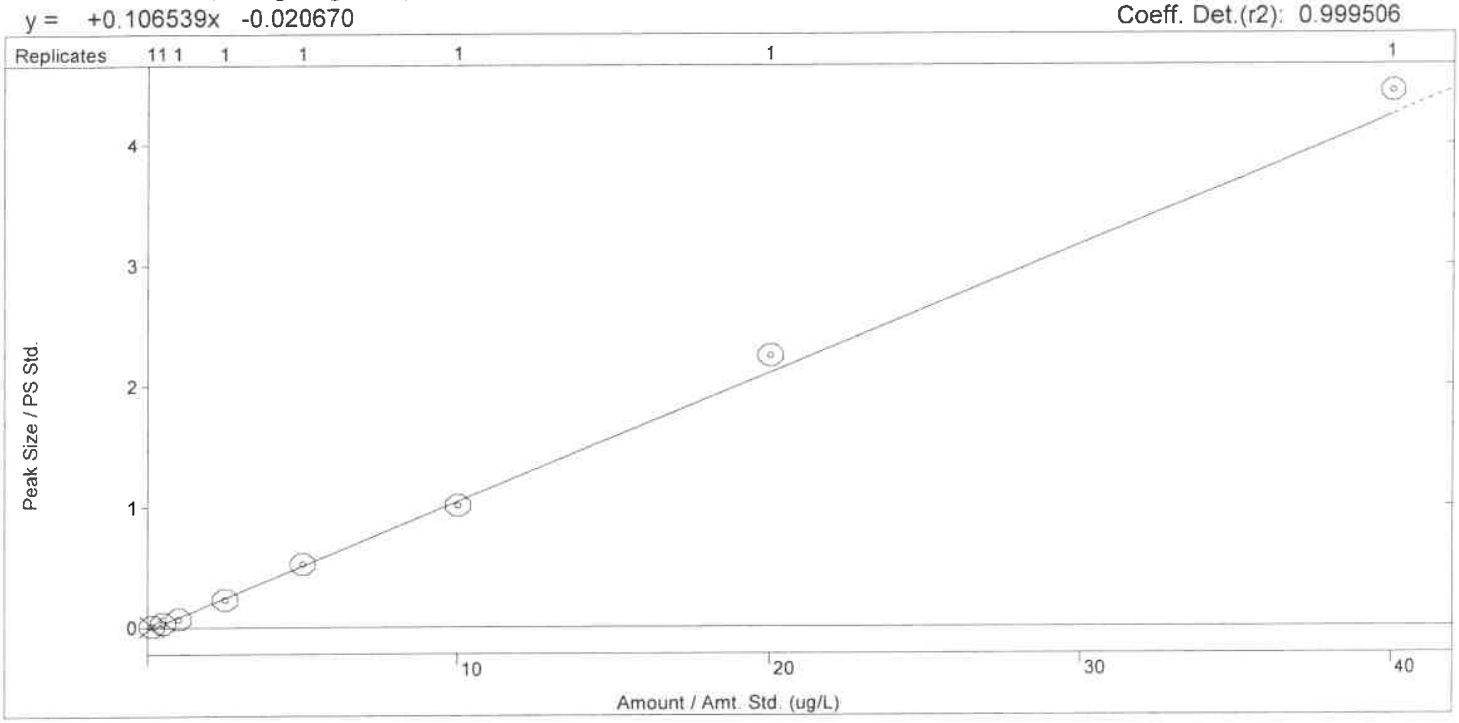
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

1,3-dichloropropane

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.106539x -0.020670

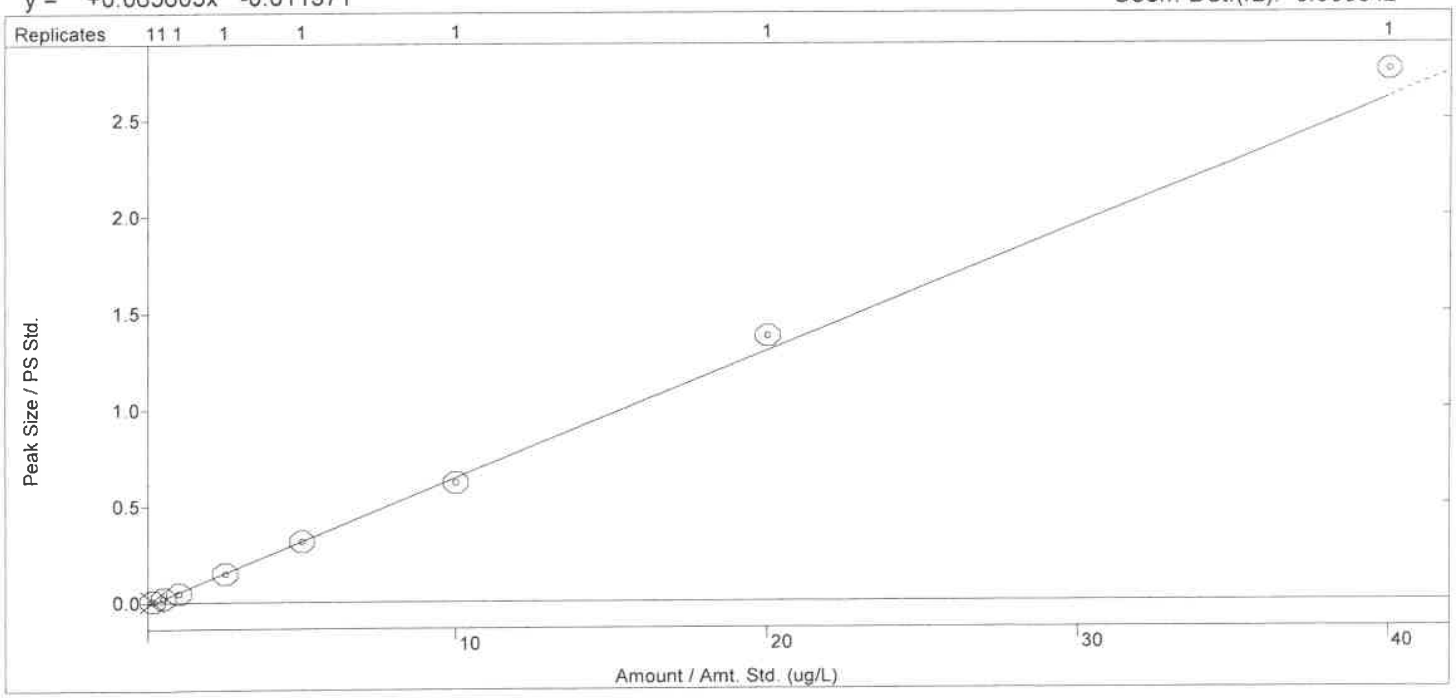
Resp. Fact. RSD: 17.94%
Coeff. Det.(r2): 0.999506



Dibromochloromethane (THM)

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.065603x -0.011371

Resp. Fact. RSD: 15.61%
Coeff. Det.(r2): 0.999542



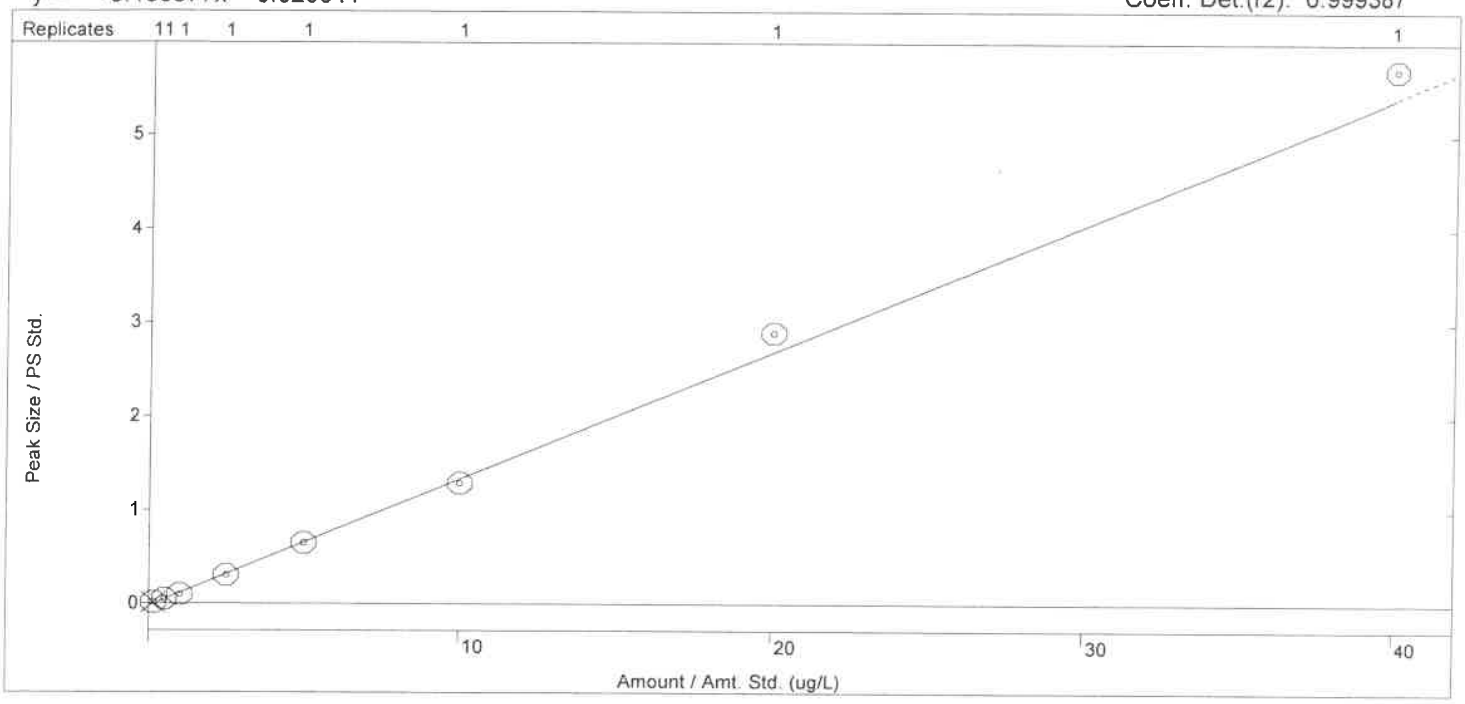
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

1,2-Dibromomethane (EDB)

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.135577x -0.020641

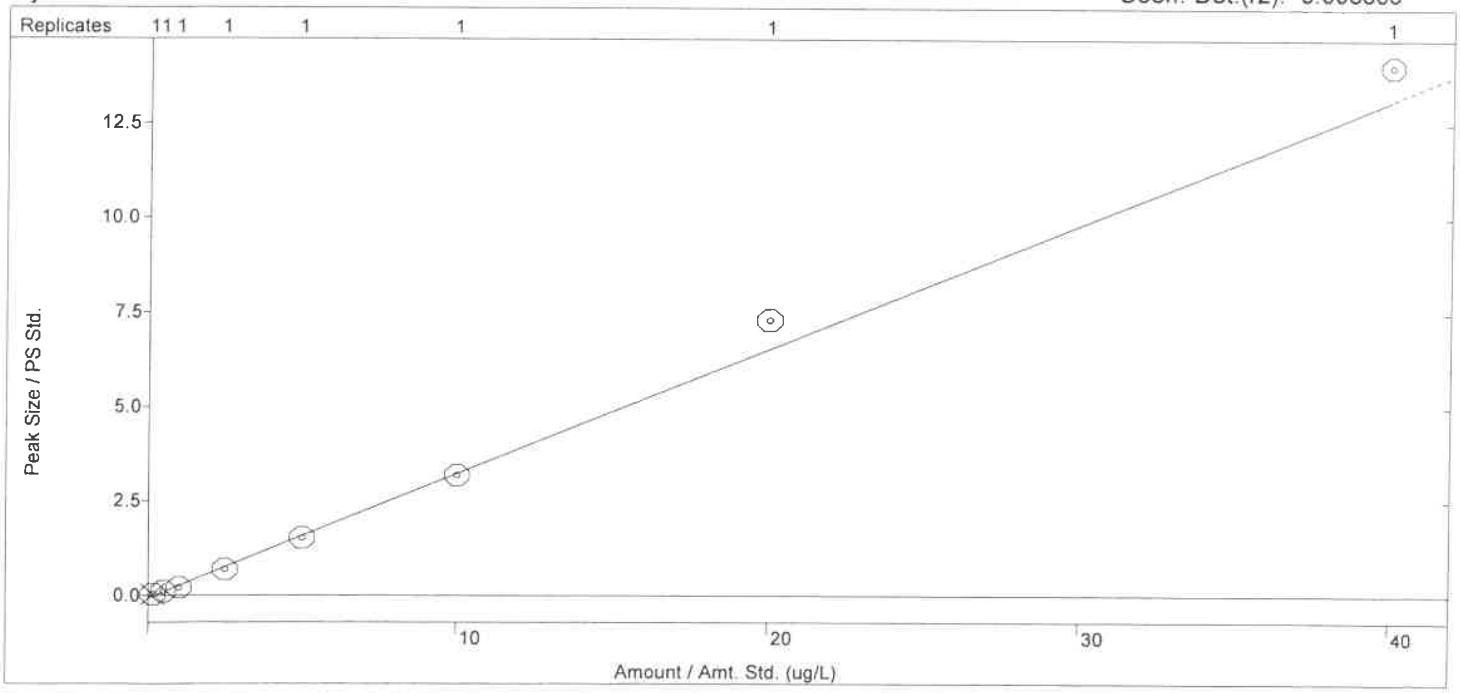
Resp. Fact. RSD: 14.18%
Coeff. Det.(r2): 0.999387



Ethylbenzene

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.330111x -0.068369

Resp. Fact. RSD: 20.06%
Coeff. Det.(r2): 0.998858



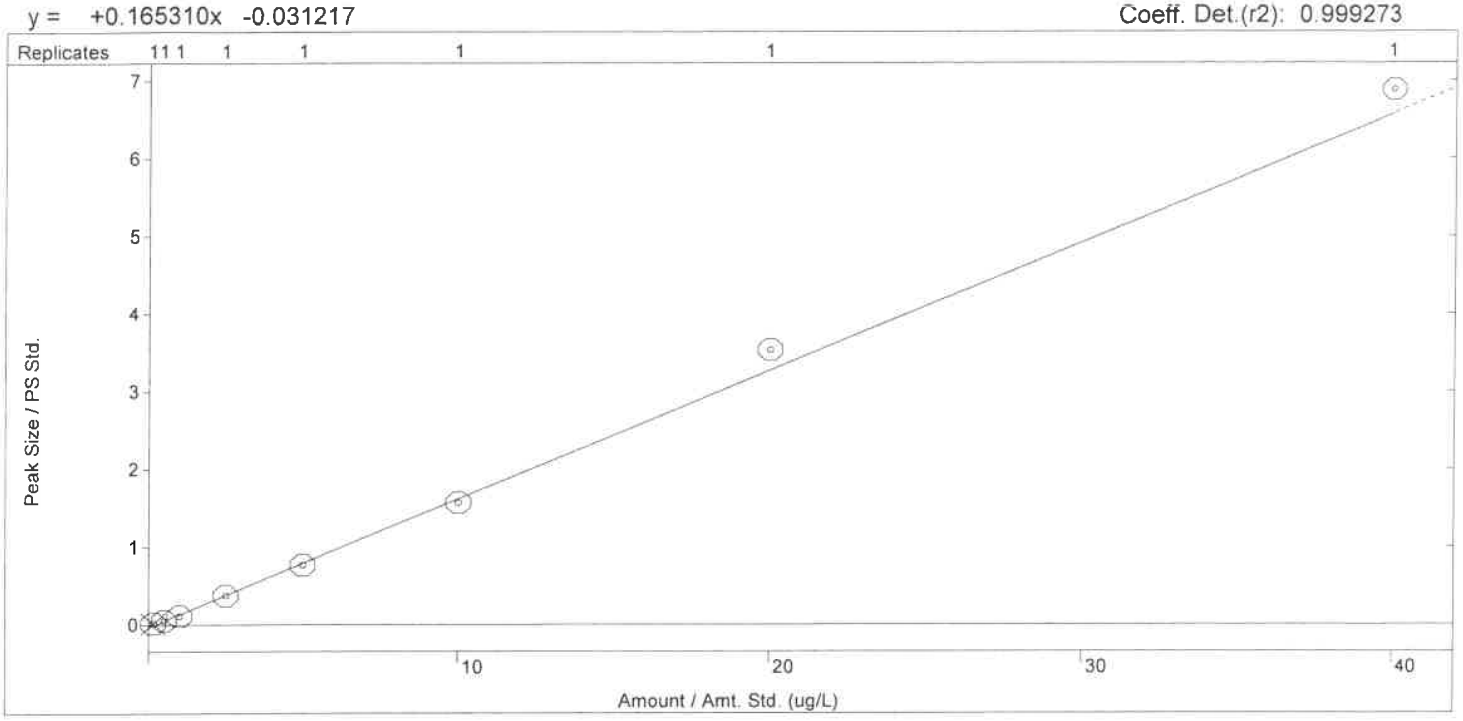
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

Chlorobenzene

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.165310x -0.031217

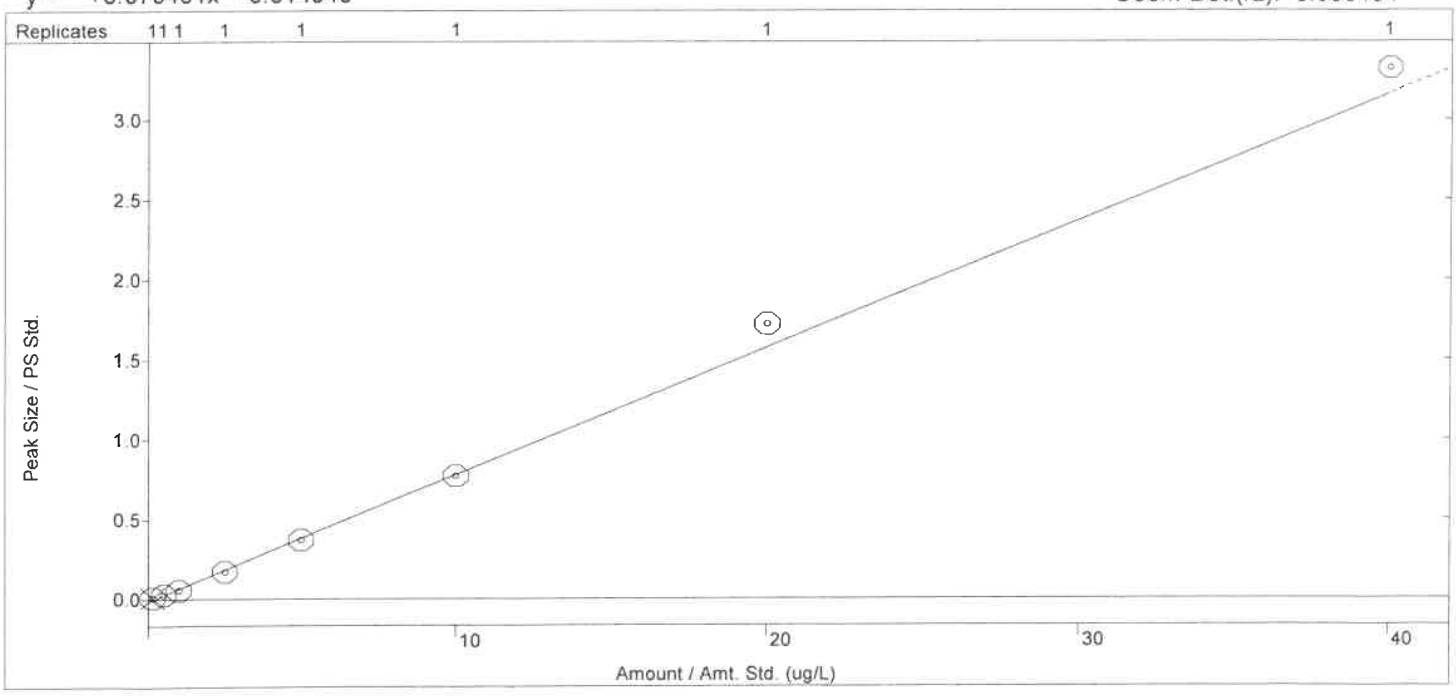
Resp. Fact. RSD: 17.16%
Coeff. Det.(r2): 0.999273



1,1,1,2-Tetrachloroethane

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.079491x -0.014345

Resp. Fact. RSD: 16.66%
Coeff. Det.(r2): 0.999194



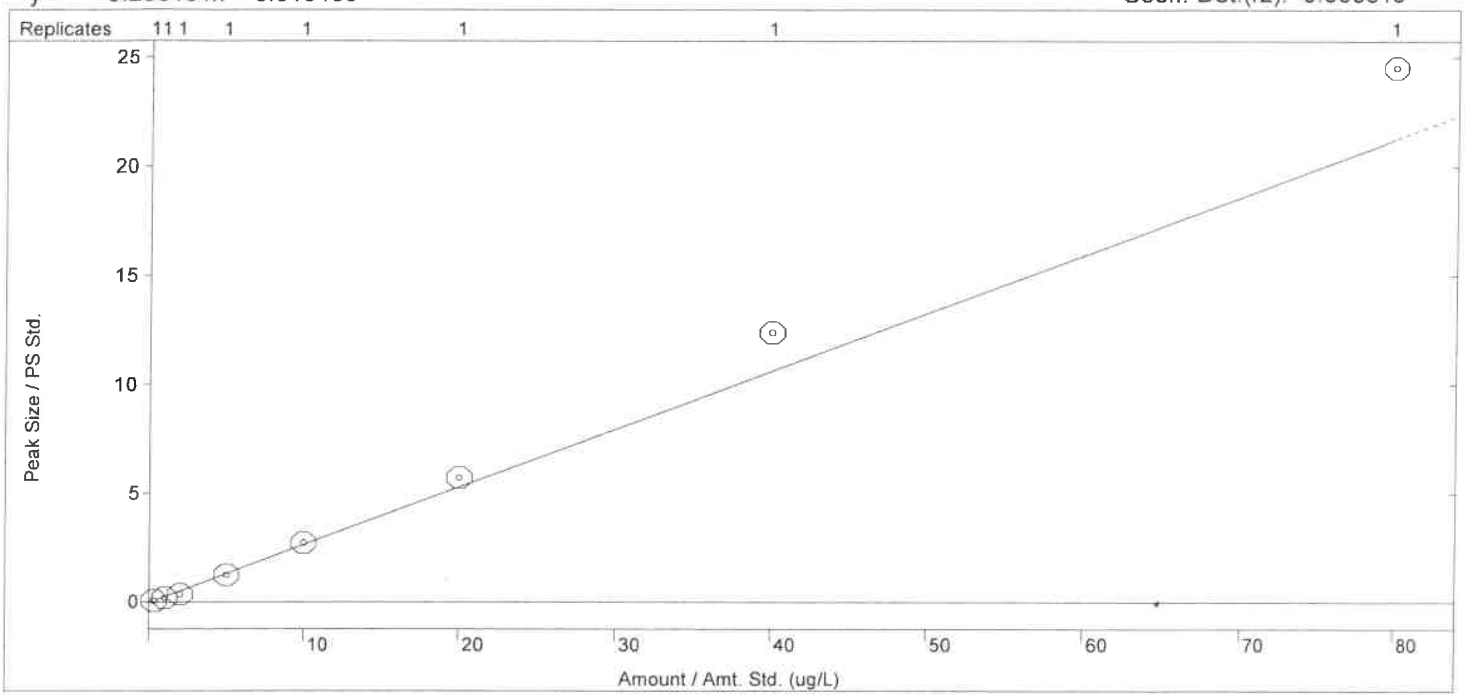
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

m&p-Xylenes

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.266181x -0.015405

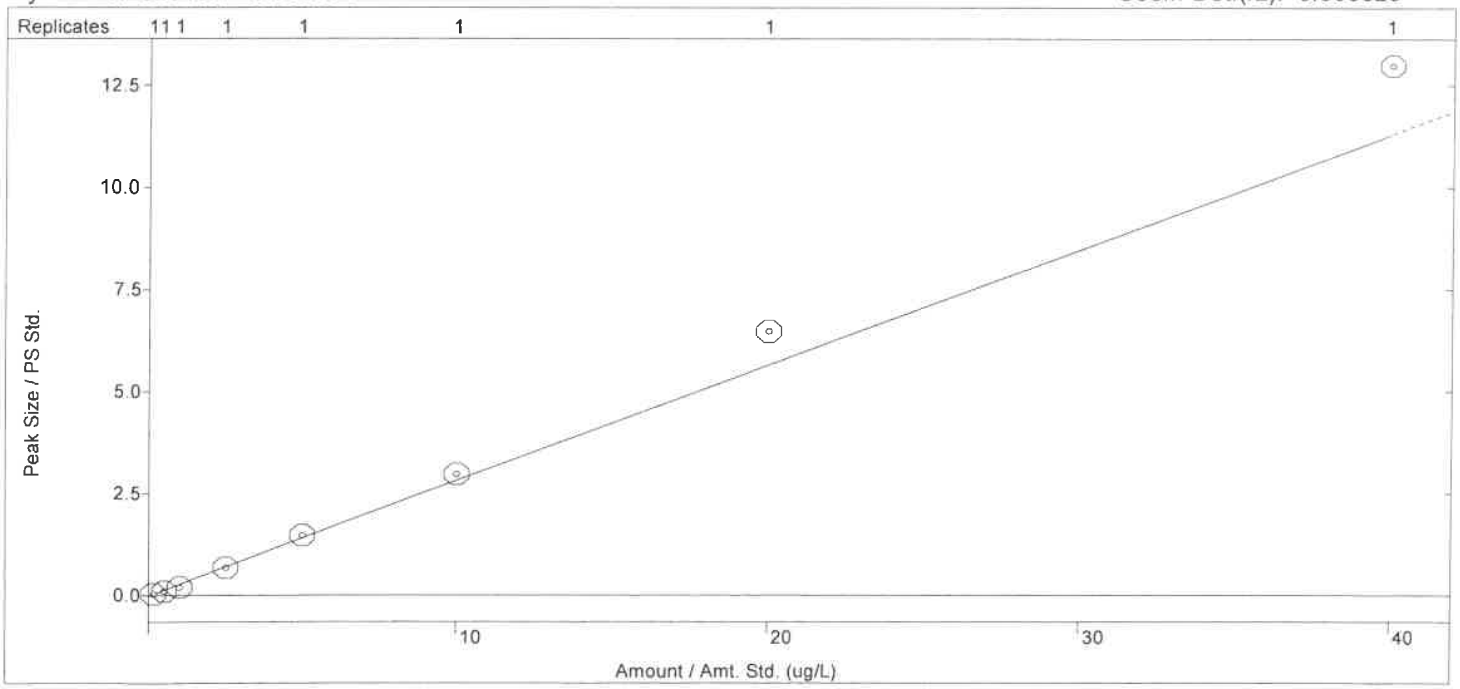
Resp. Fact. RSD: 18.70%
Coeff. Det.(r2): 0.999616



o-Xylene

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.282919x -0.006304

Resp. Fact. RSD: 16.82%
Coeff. Det.(r2): 0.999628



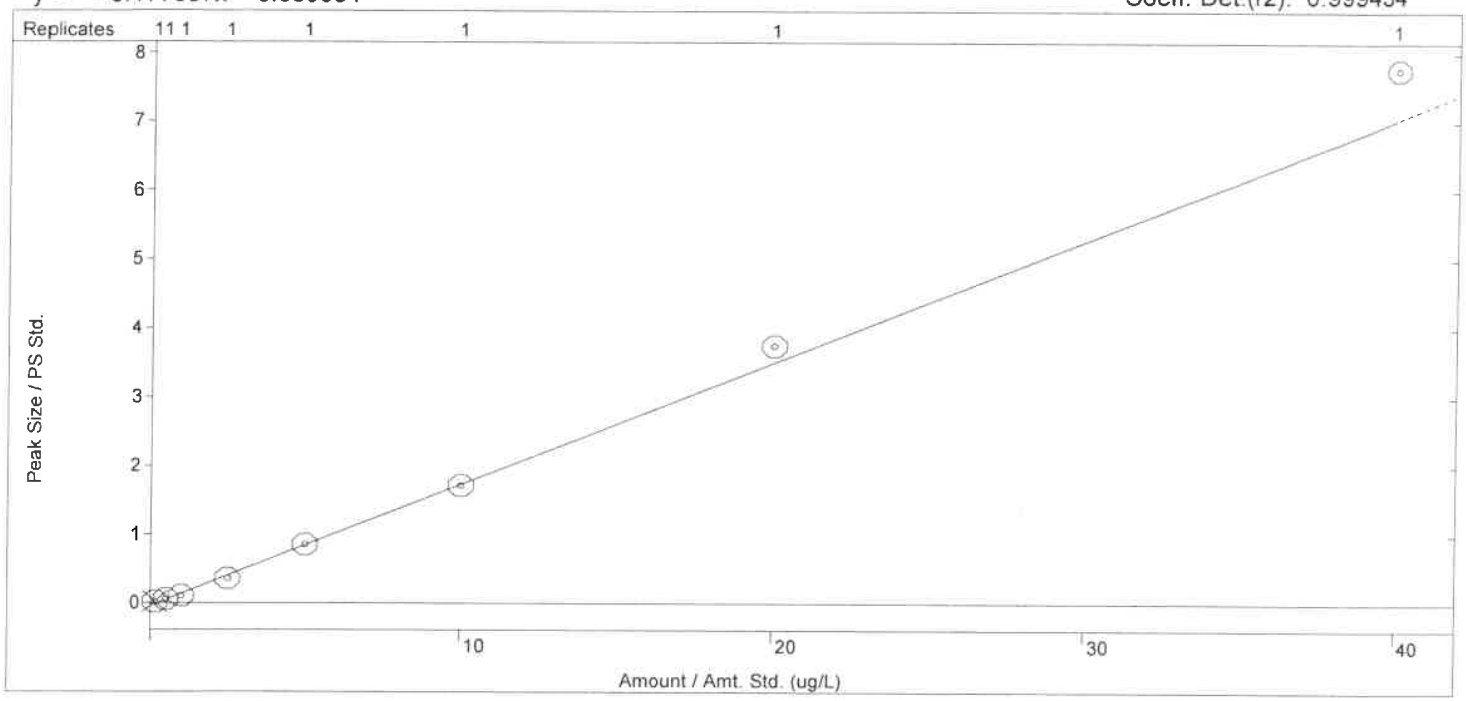
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

Styrene

Curve Fit: Linear, Origin: Ignore, Weight: 1/nX2
y = +0.177337x -0.039834

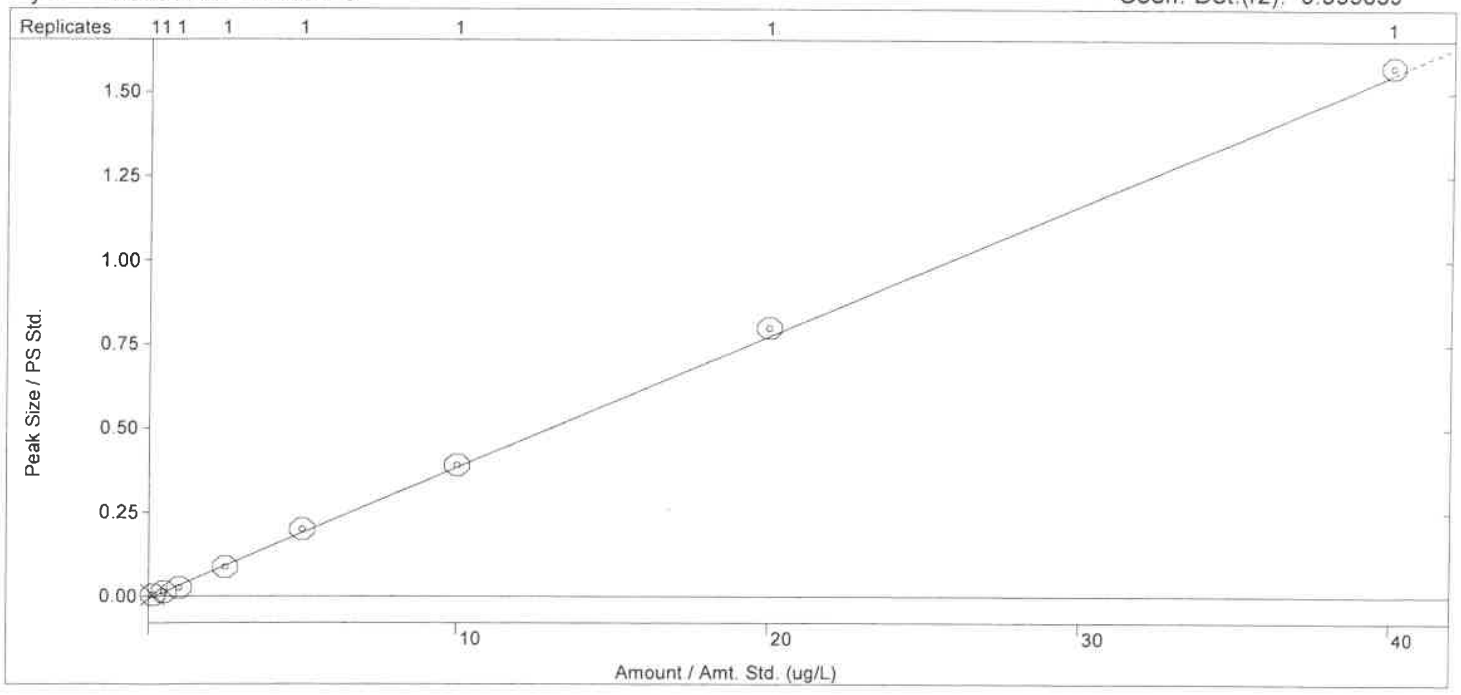
Resp. Fact. RSD: 22.11%
Coeff. Det.(r2): 0.999434



Bromoform (THM)

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.039057x -0.006423

Resp. Fact. RSD: 15.63%
Coeff. Det.(r2): 0.999839



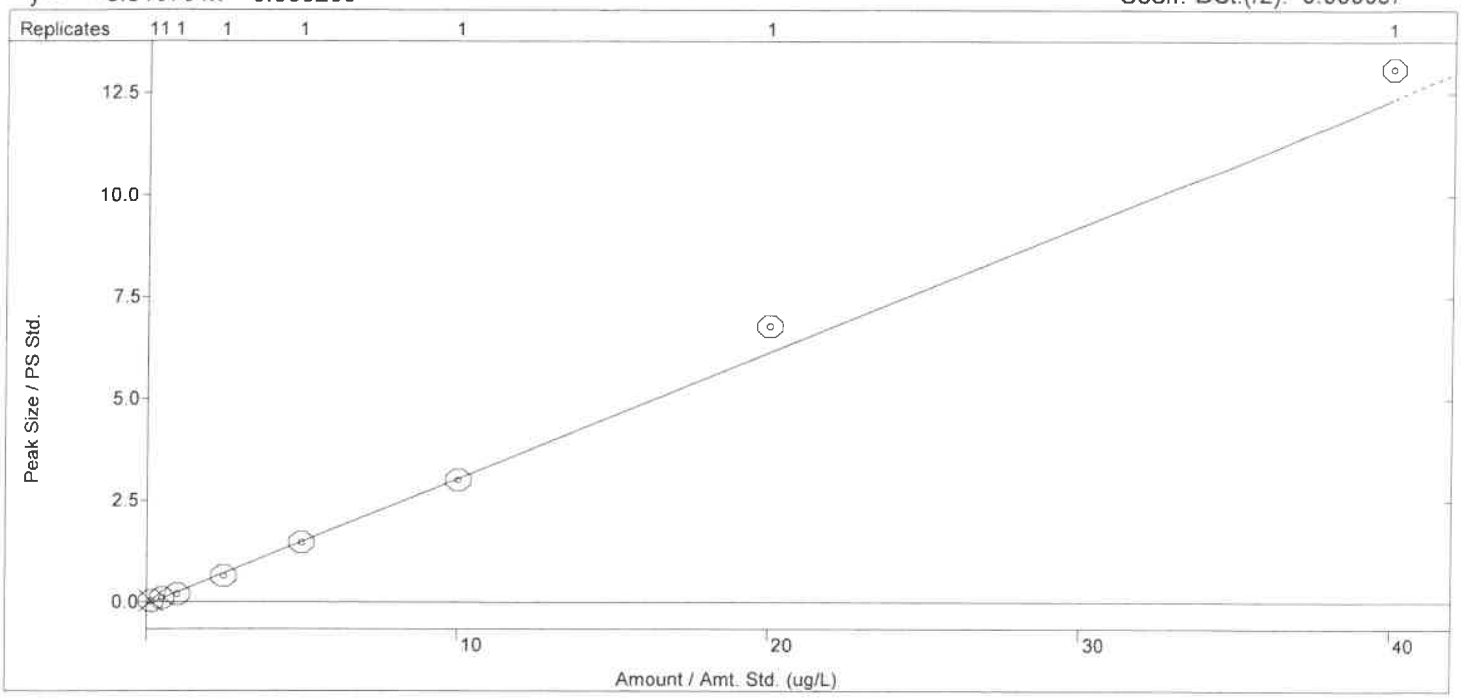
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

Isopropylbenzene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.310791x -0.063209

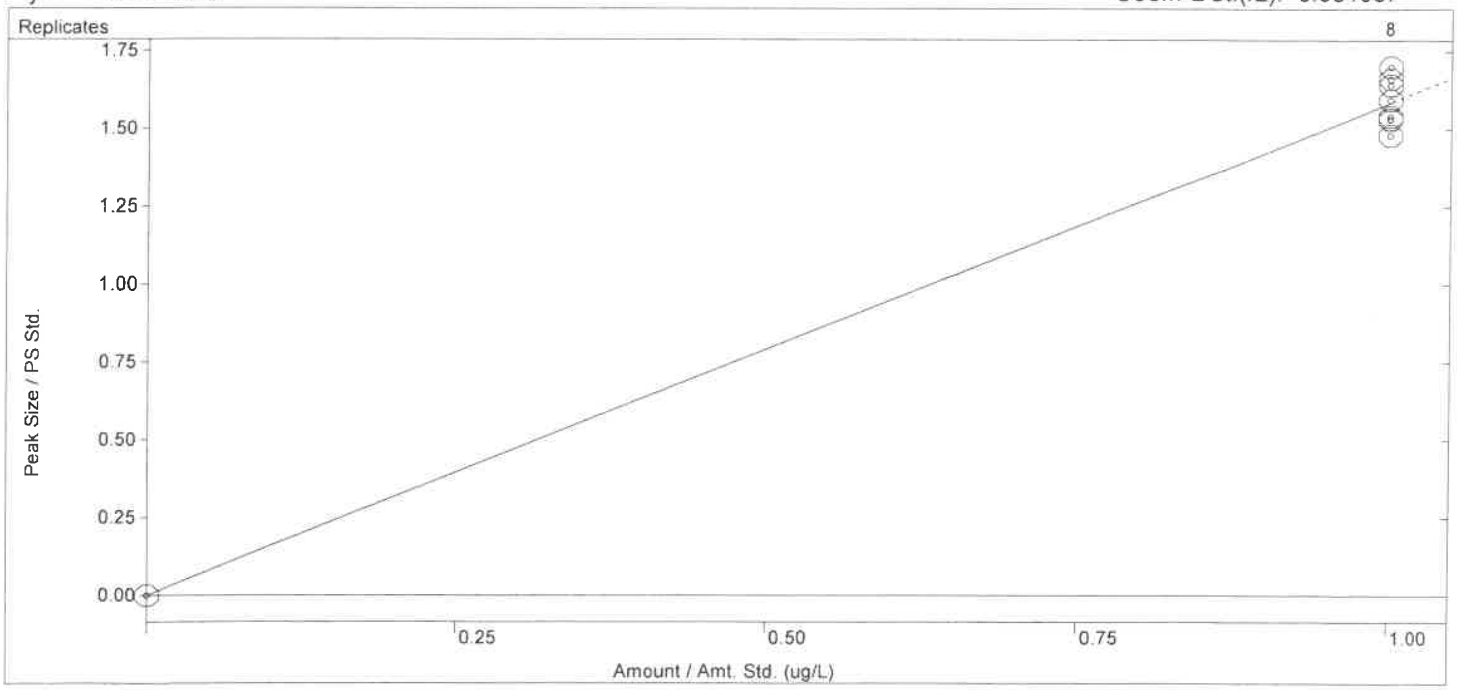
Resp. Fact. RSD: 19.60%
Coeff. Det.(r2): 0.999057



(S-1) Bromofluorobenzene (BFB)

Curve Fit: Linear, Origin: Force, Weight: 1/nX2
y = +1.585695x

Resp. Fact. RSD: 4.826%
Coeff. Det.(r2): 0.981987



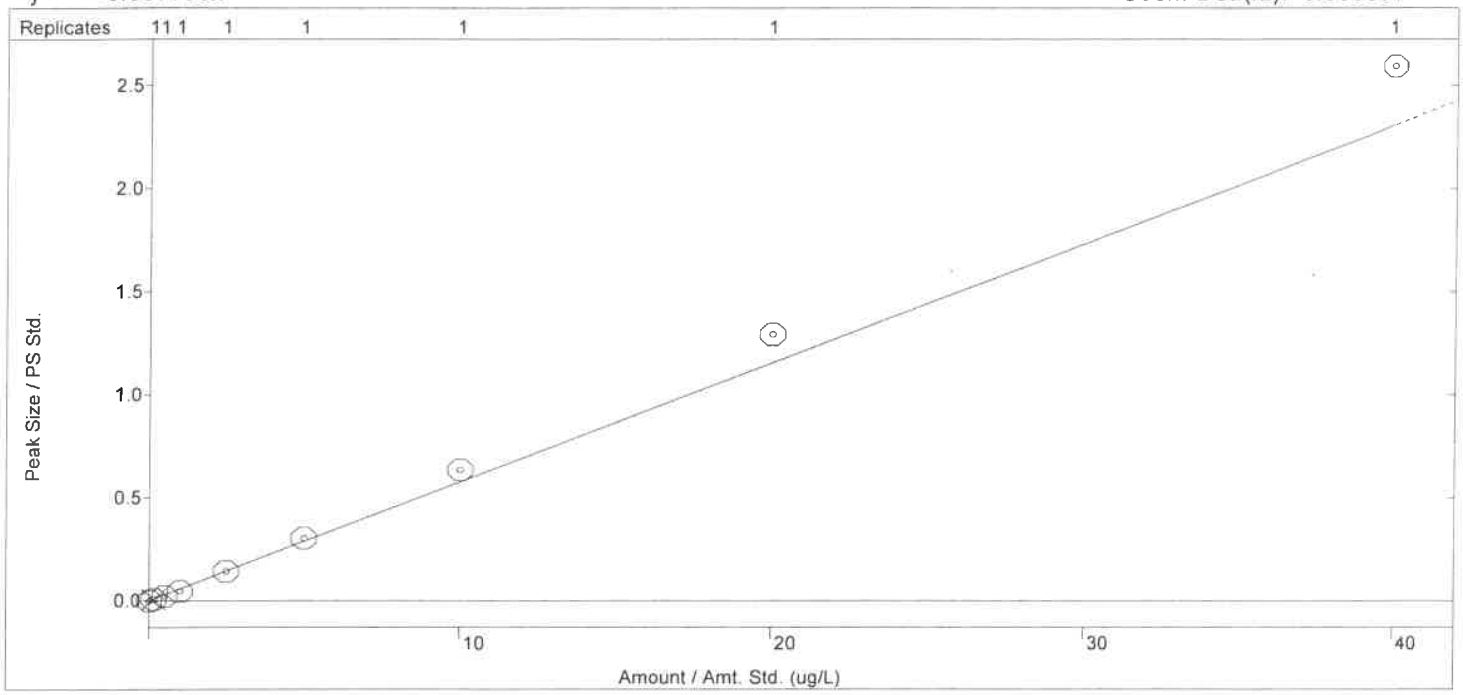
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

1,1,2,2-Tetrachloroethane

Curve Fit: Linear, Origin: Force, Weight: 1/nX2
y = +0.057799x

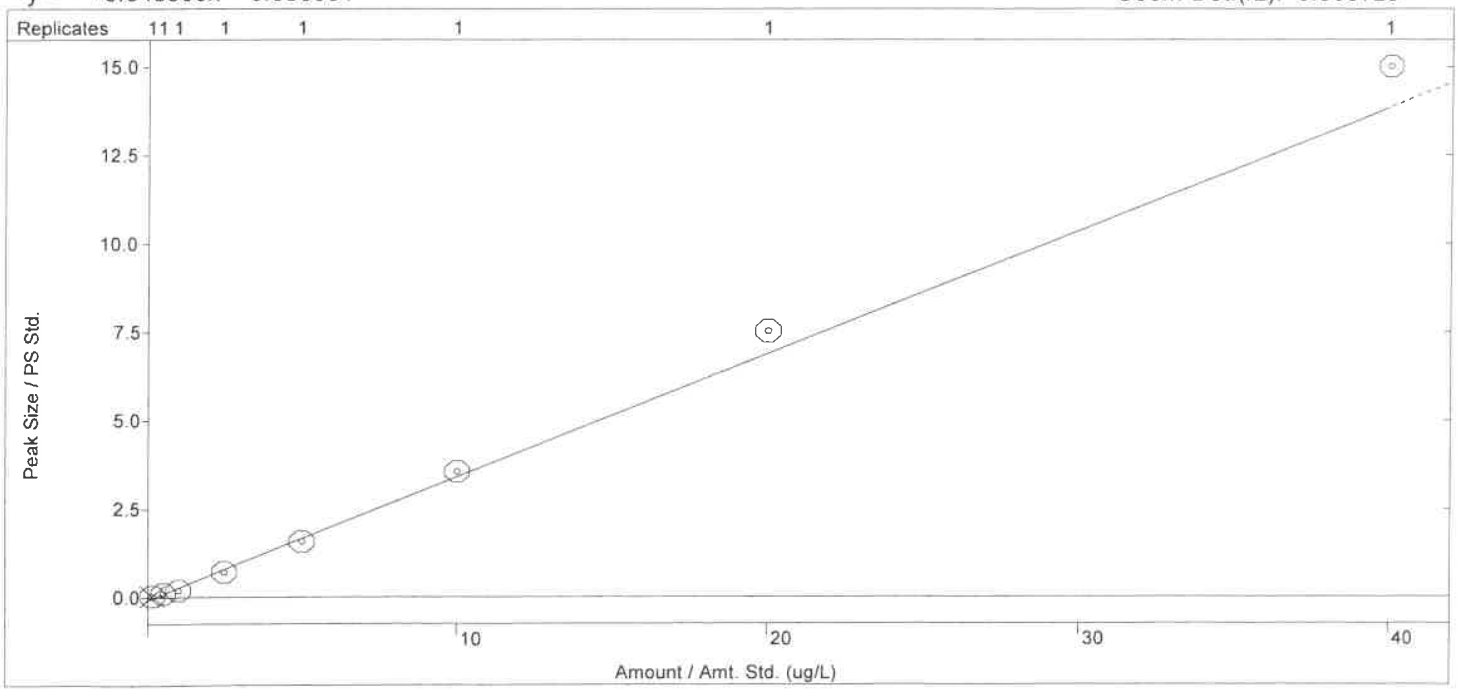
Resp. Fact. RSD: 13.93%
Coeff. Det.(r2): 0.999931



n-Propylbenzene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.348808x -0.080991

Resp. Fact. RSD: 23.23%
Coeff. Det.(r2): 0.999726



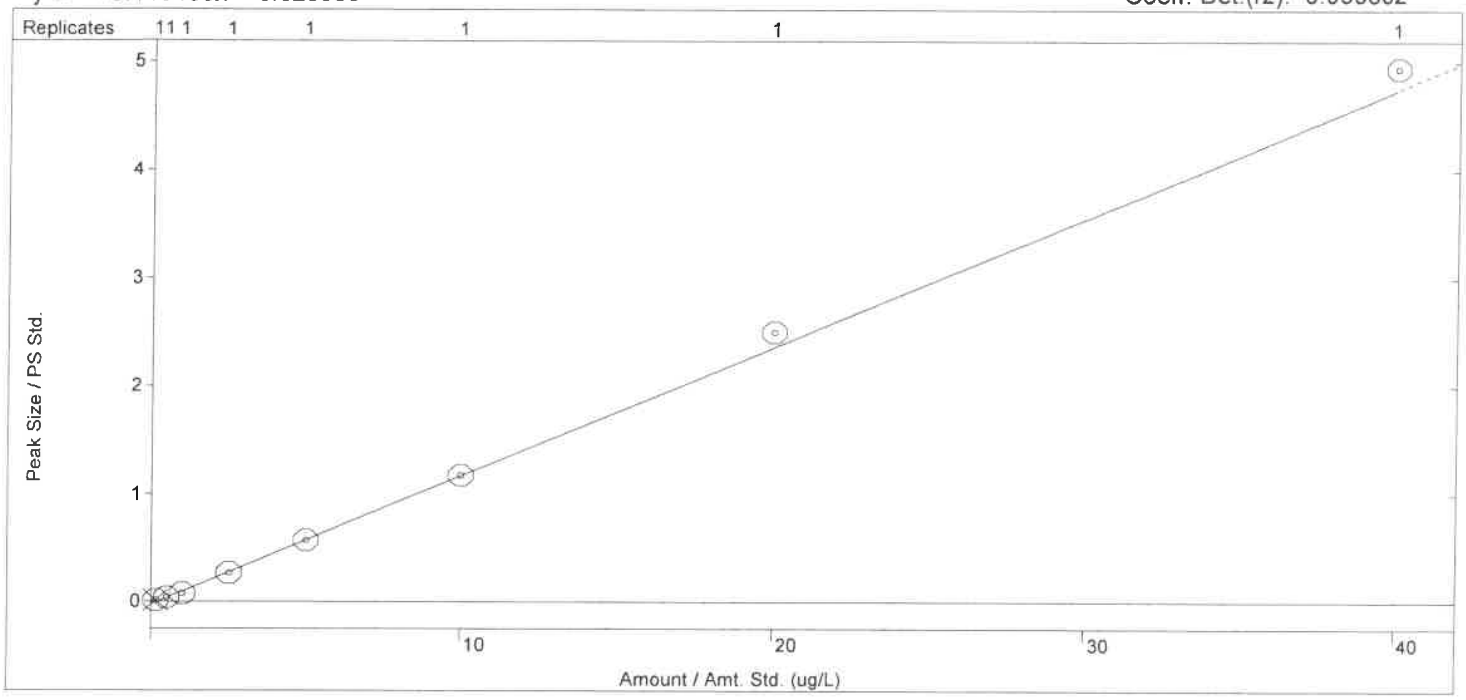
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

Bromobenzene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.119405x -0.023563

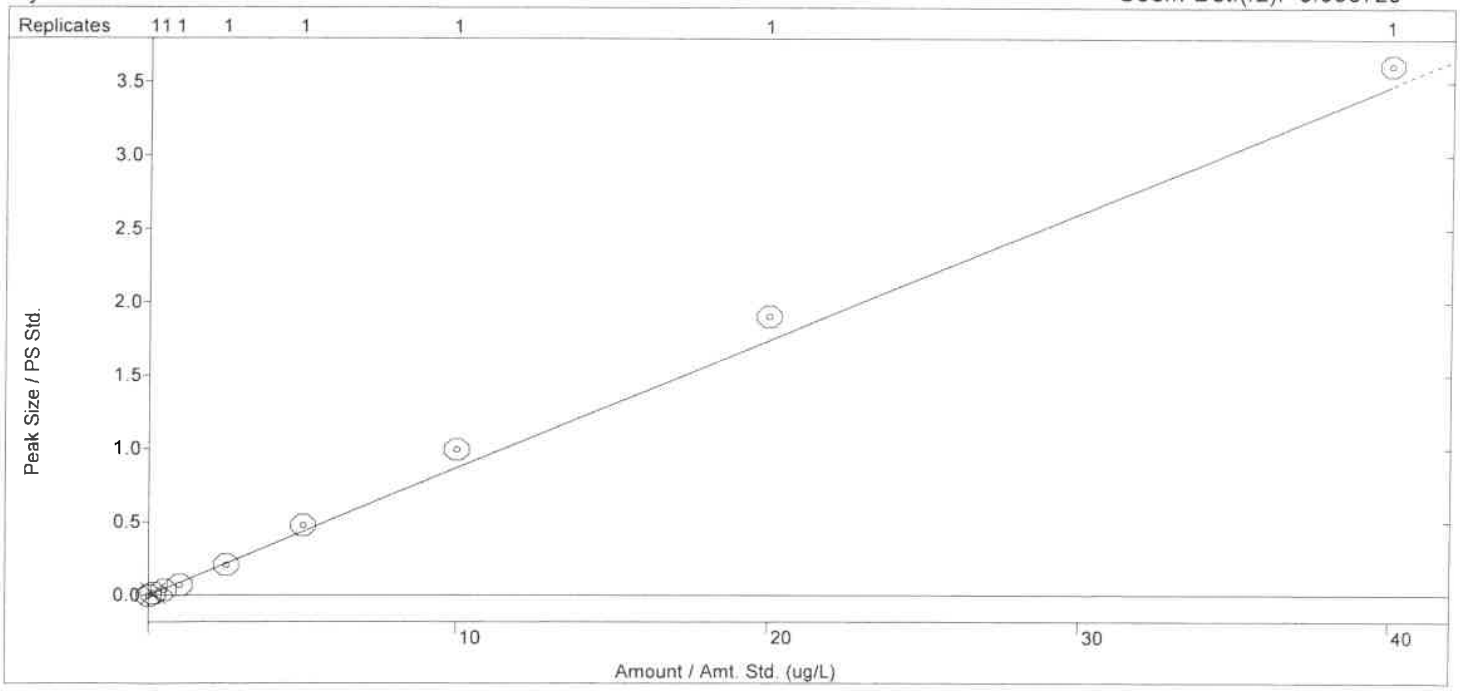
Resp. Fact. RSD: 18.22%
Coeff. Det.(r2): 0.999802



1,2,3-Trichloropropane

Curve Fit: Linear, Origin: Force (Edited), Weight: 1/nX2
y = +0.086998x

Resp. Fact. RSD: 12.77%
Coeff. Det.(r2): 0.998728



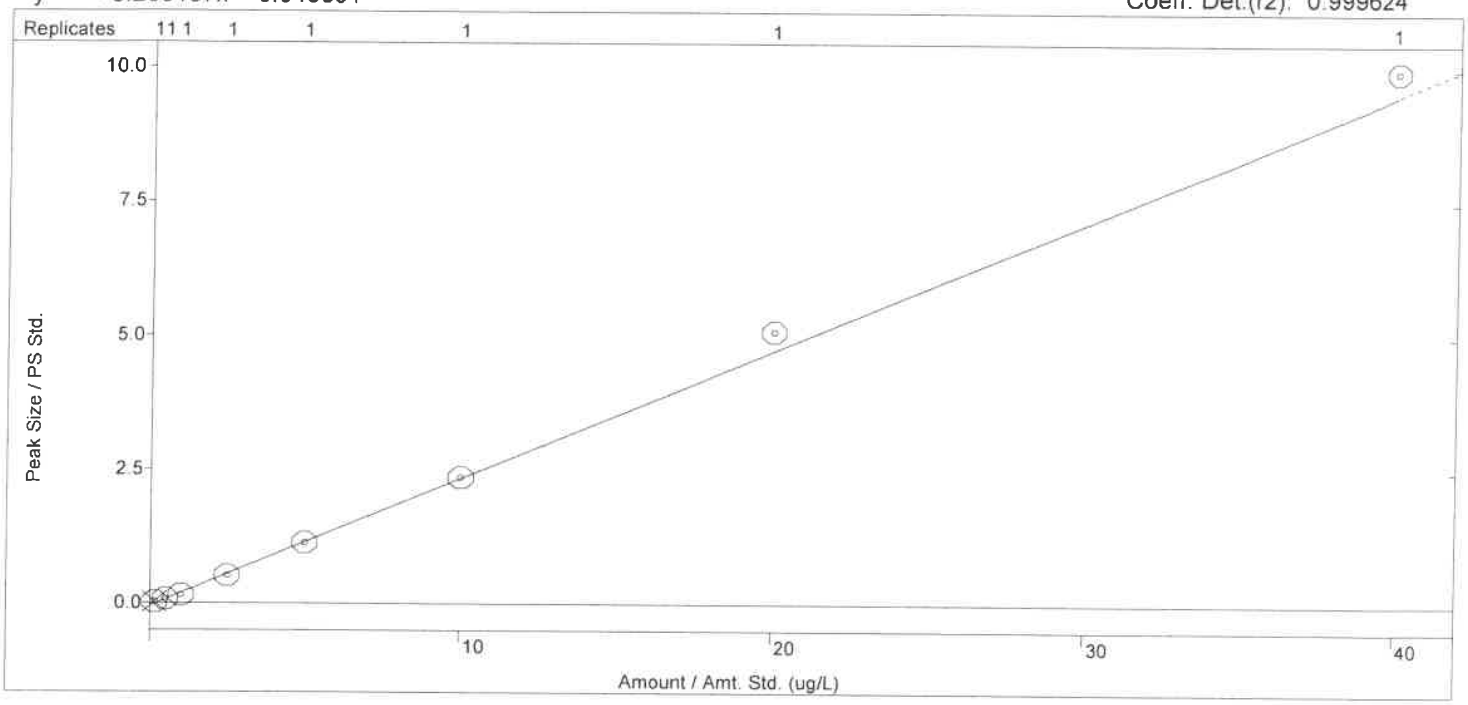
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

2-Chlorotoluene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.239197x -0.046551

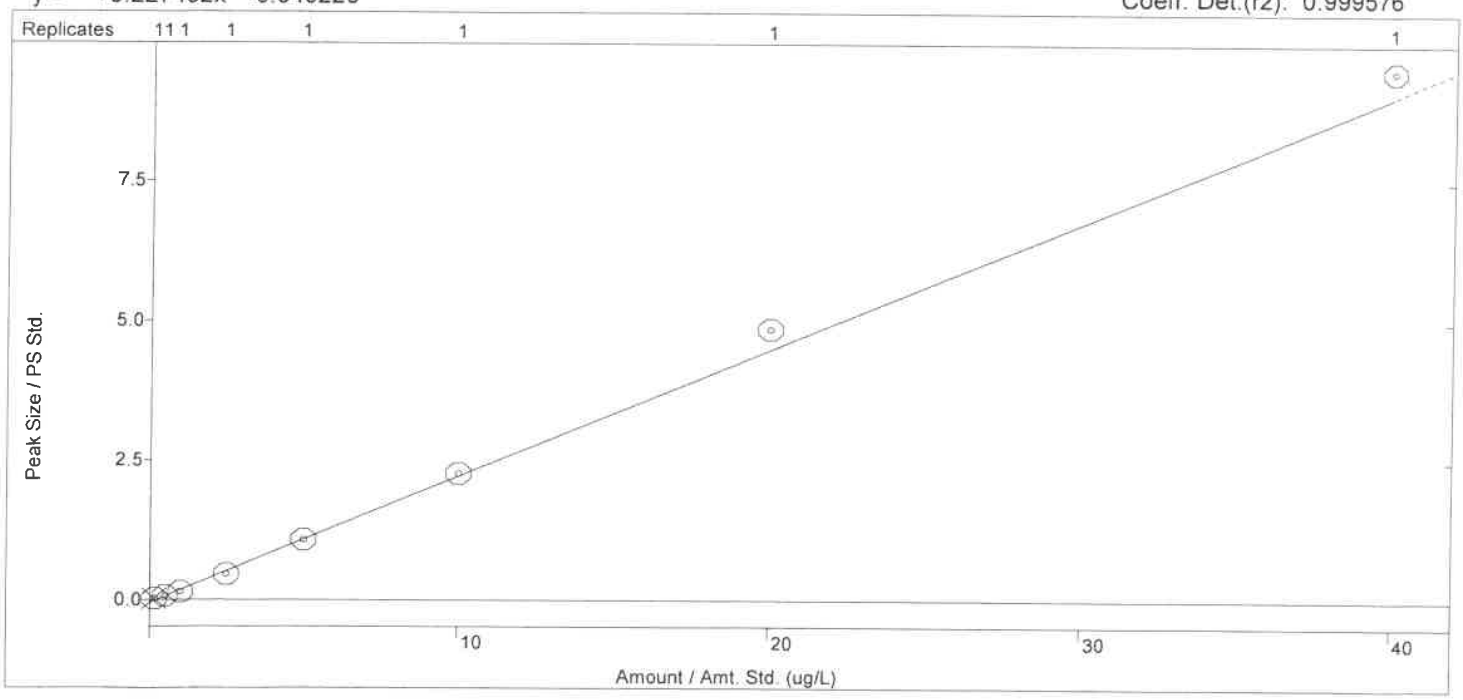
Resp. Fact. RSD: 18.39%
Coeff. Det.(r2): 0.999624



1,3,5-Trimethylbenzene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.227452x -0.049220

Resp. Fact. RSD: 20.21%
Coeff. Det.(r2): 0.999576



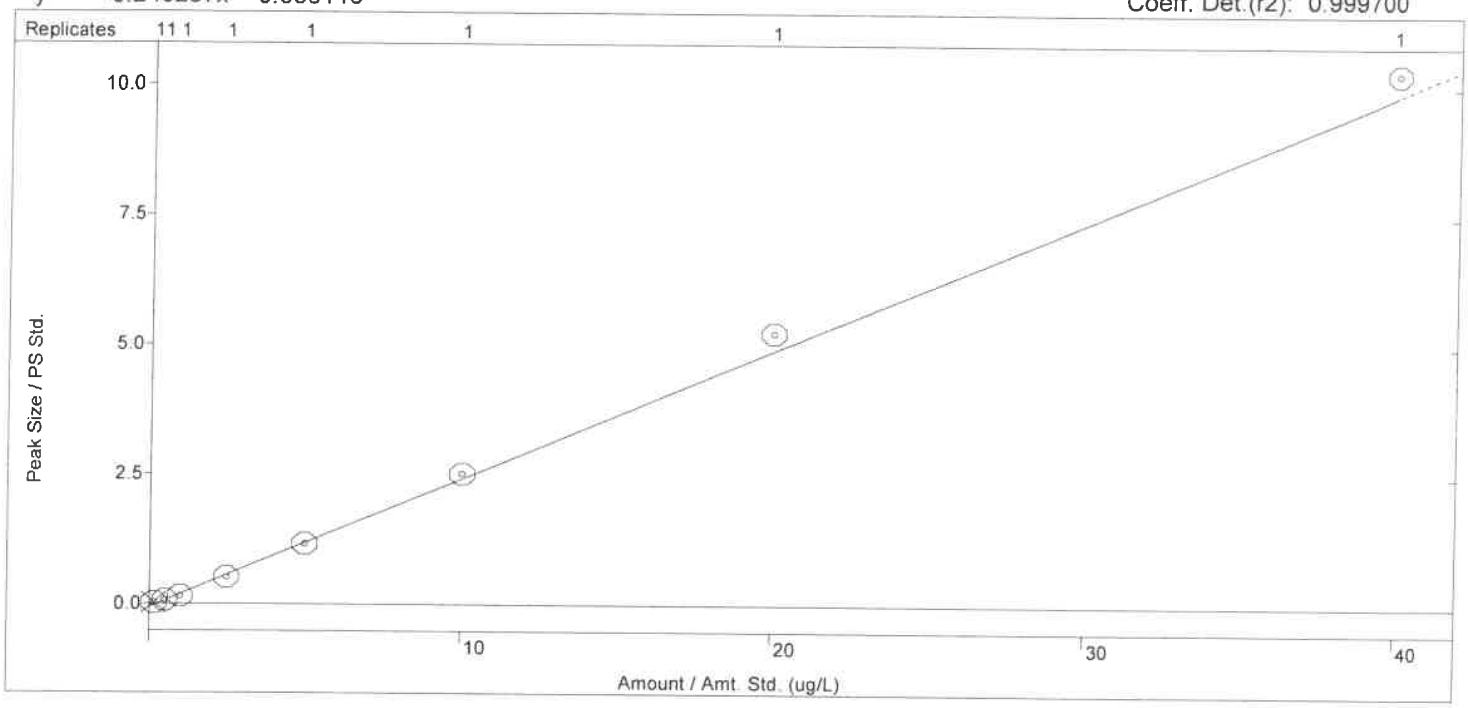
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

4-Chlorotoluene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.248267x -0.056116

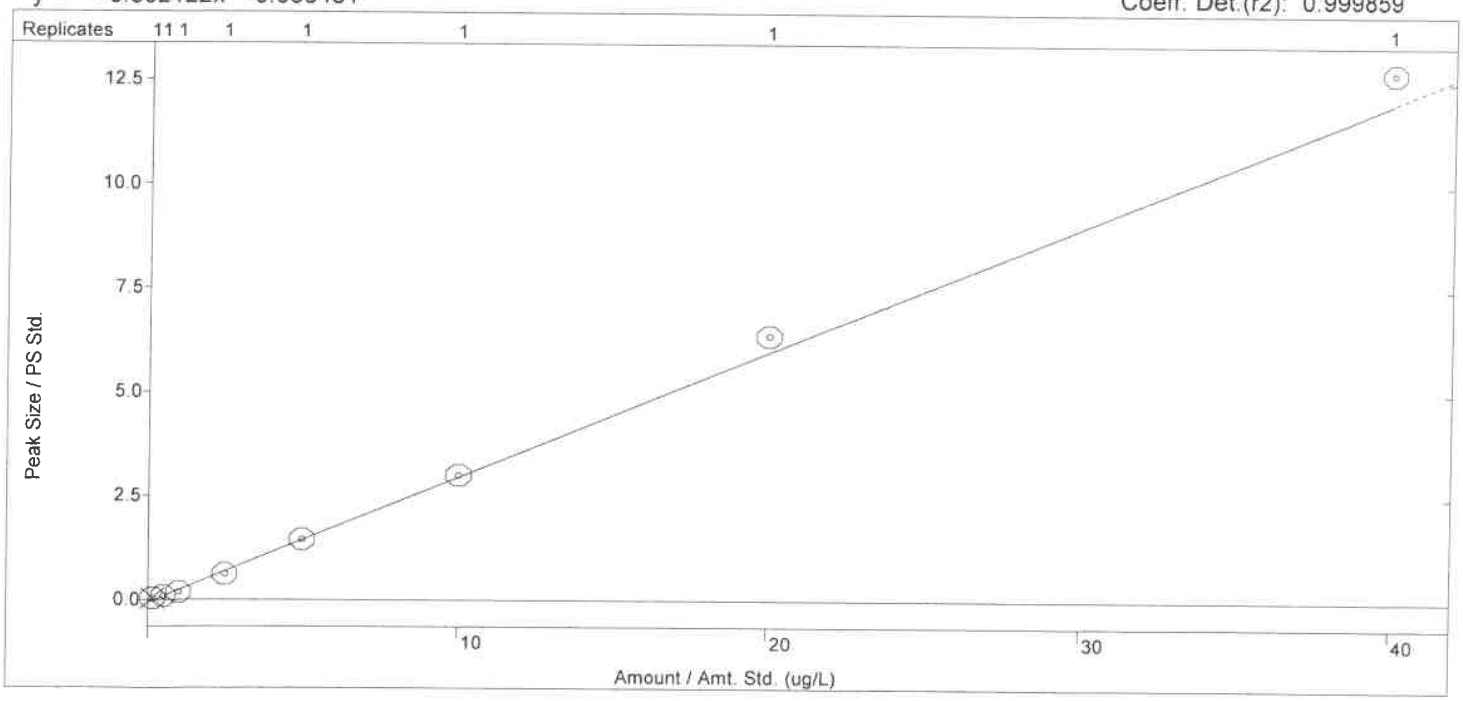
Resp. Fact. RSD: 21.02%
Coeff. Det.(r2): 0.999700



tert-Butylbenzene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.302122x -0.066481

Resp. Fact. RSD: 20.70%
Coeff. Det.(r2): 0.999859



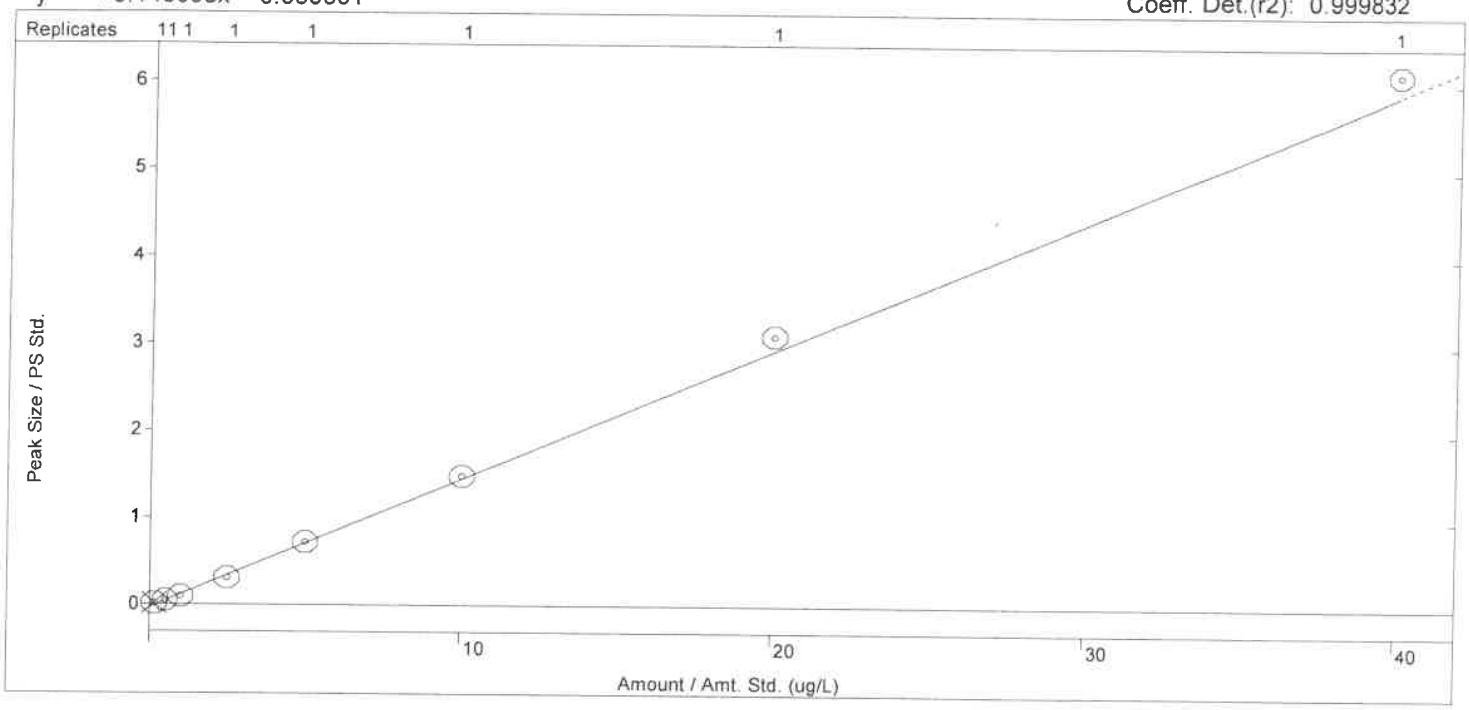
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

1,2,4-Trimethylbenzene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.148098x -0.030801

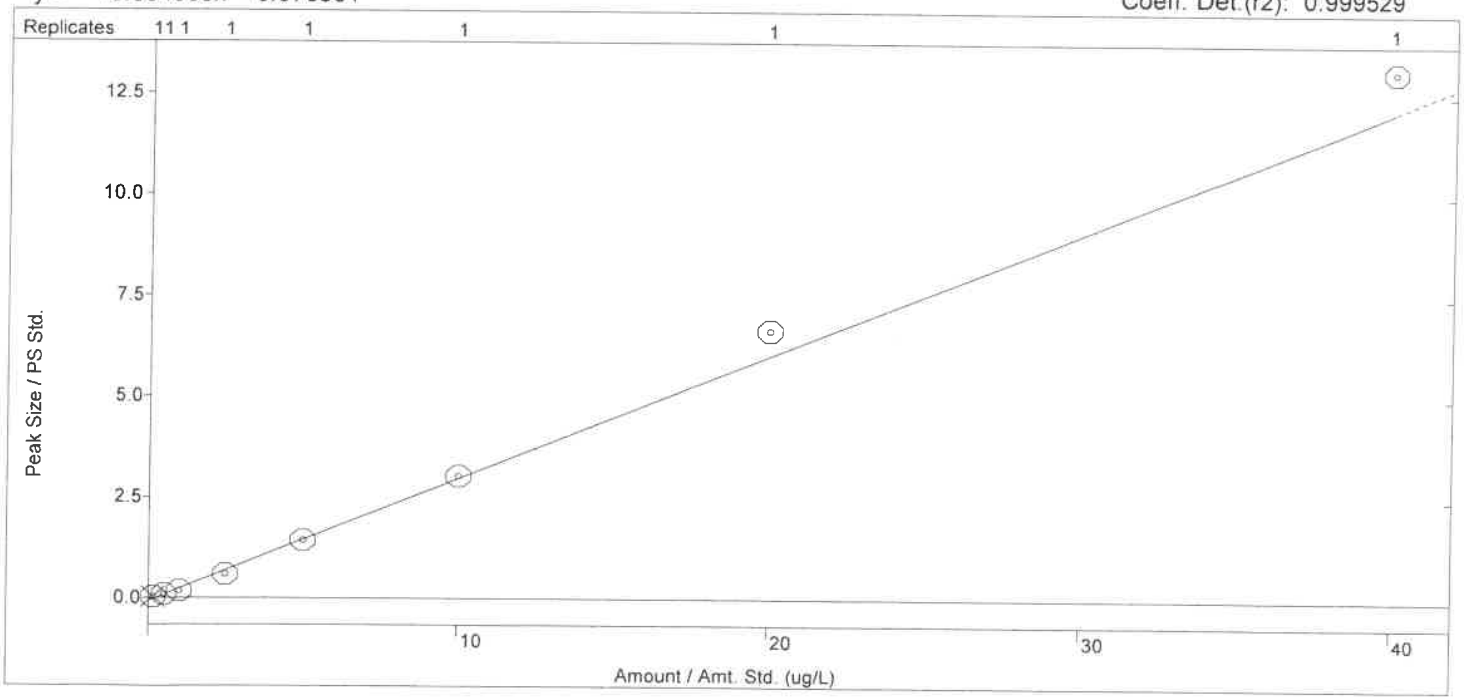
Resp. Fact. RSD: 19.14%
Coeff. Det.(r2): 0.999832



sec-Butylbenzene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.304988x -0.070551

Resp. Fact. RSD: 23.26%
Coeff. Det.(r2): 0.999529



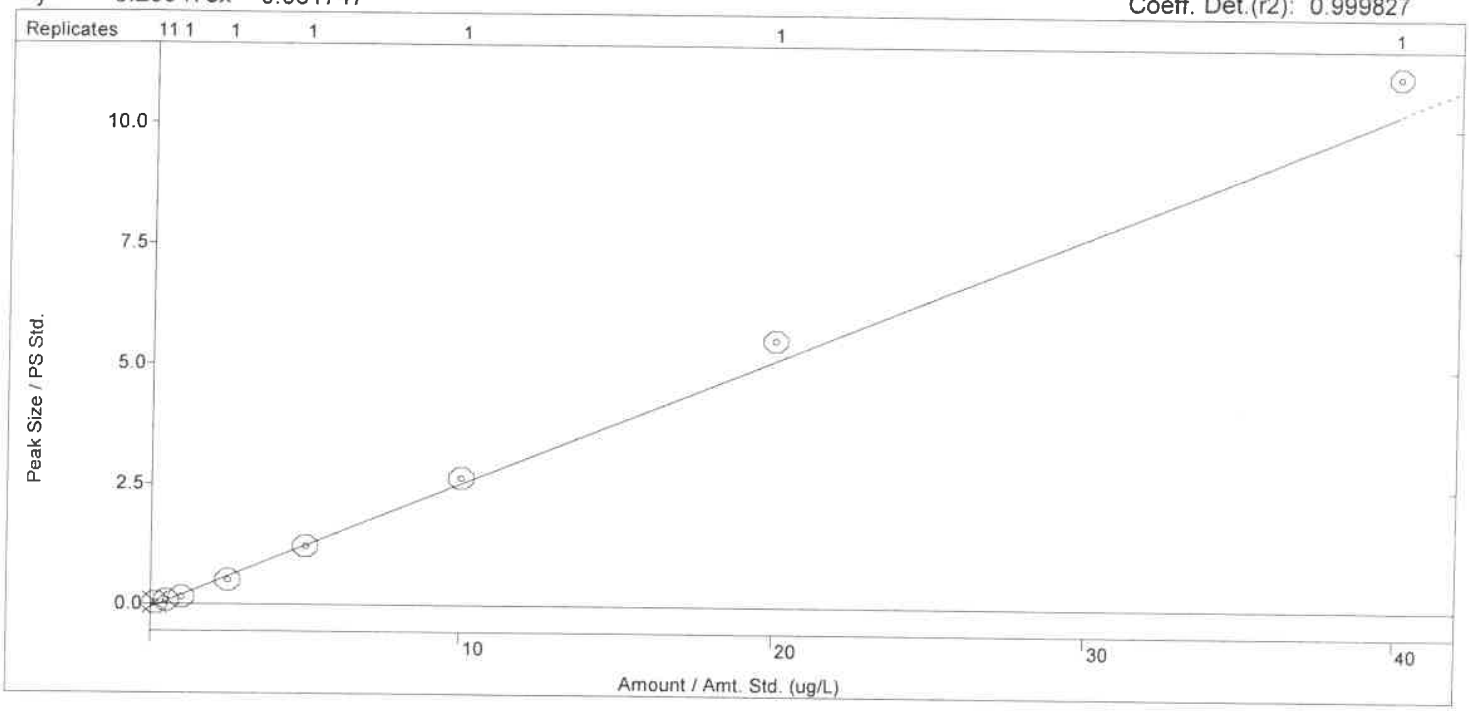
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

p-Isopropyltoluene (4-Iso)

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.259478x -0.061747

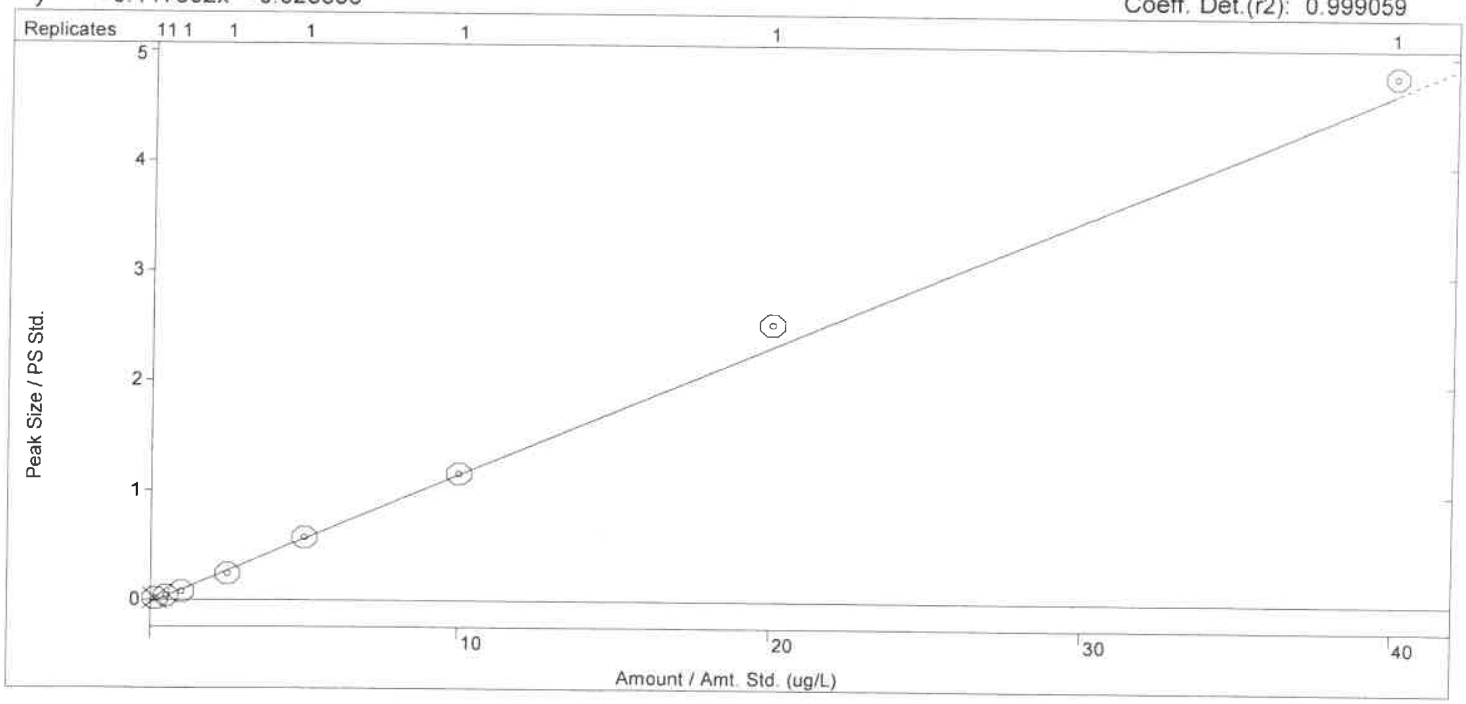
Resp. Fact. RSD: 23.54%
Coeff. Det.(r2): 0.999827



1,3-Dichlorobenzene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.117302x -0.023836

Resp. Fact. RSD: 19.13%
Coeff. Det.(r2): 0.999059



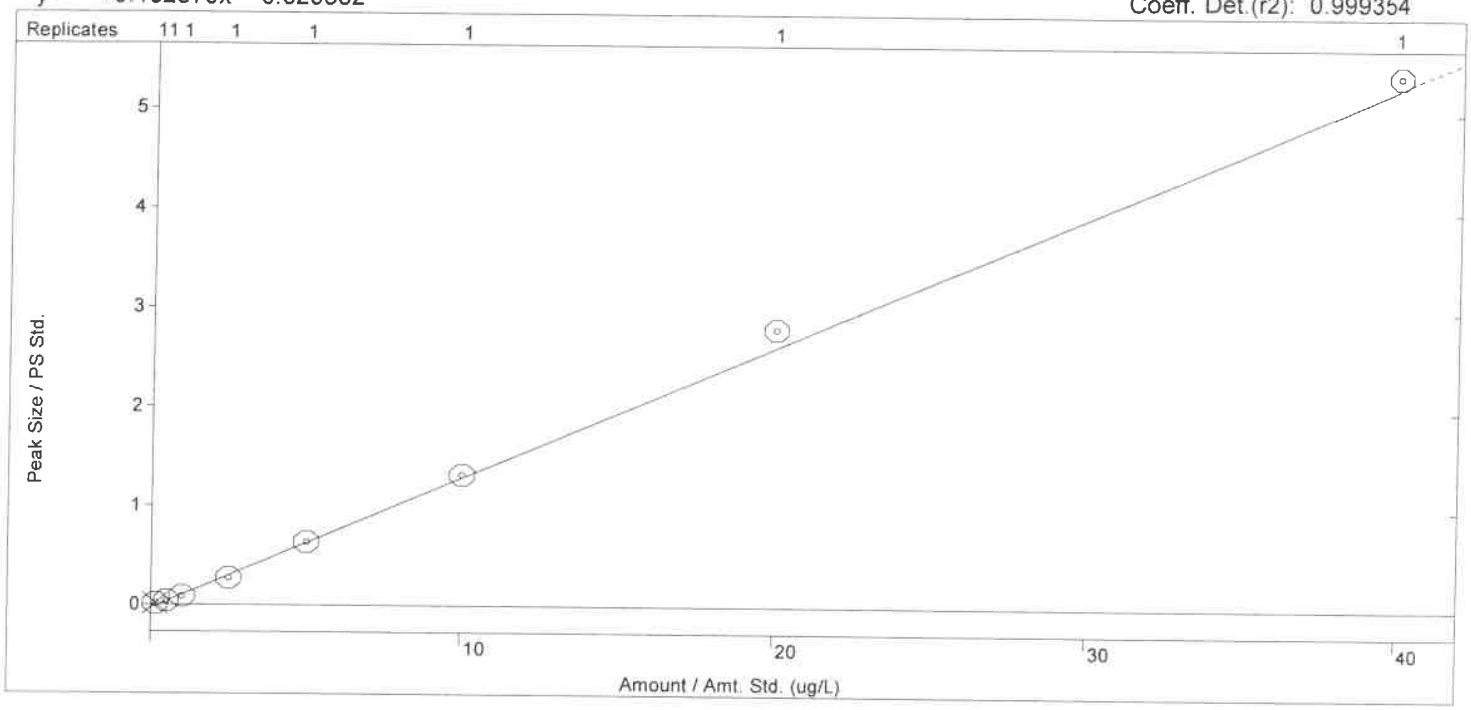
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

1,4-Dichlorobenzene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.132379x -0.029582

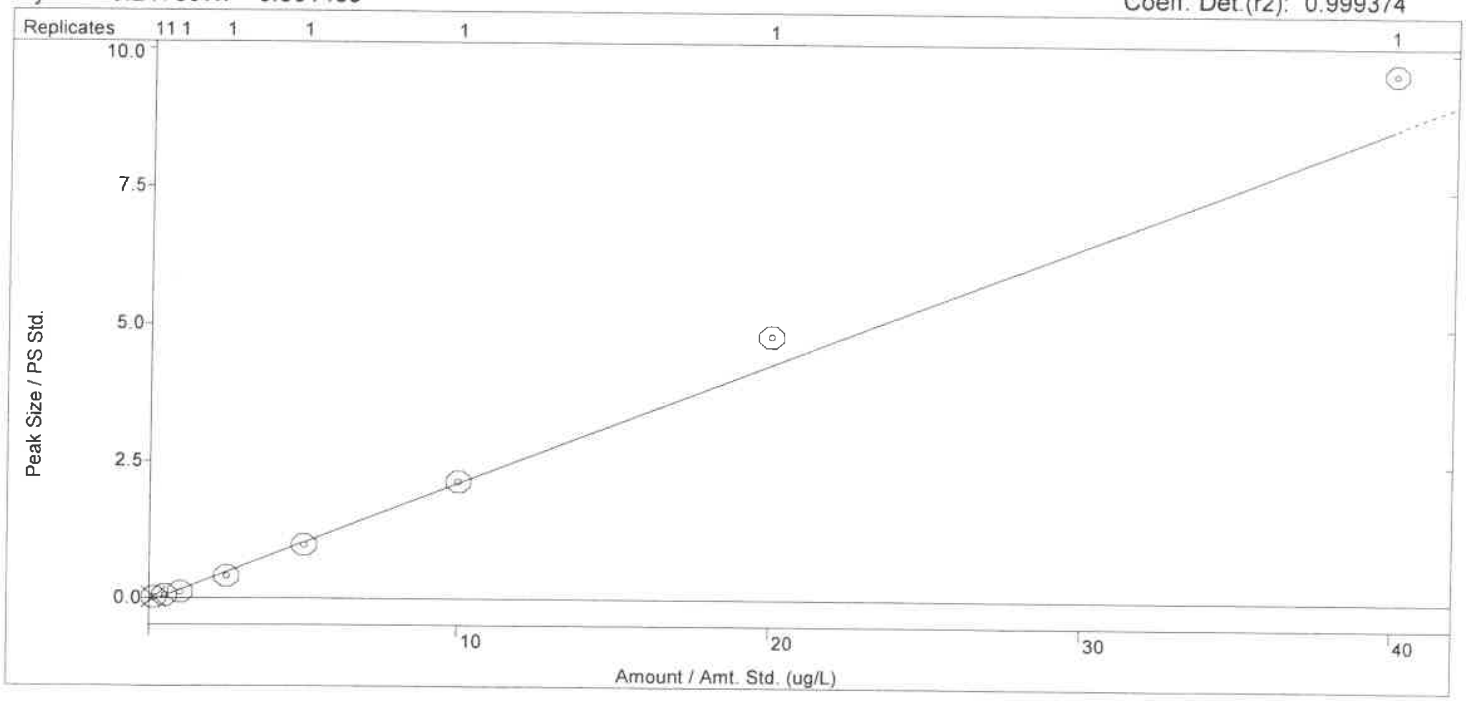
Resp. Fact. RSD: 20.12%
Coeff. Det.(r2): 0.999354



n-Butylbenzene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.217597x -0.061469

Resp. Fact. RSD: 28.58%
Coeff. Det.(r2): 0.999374



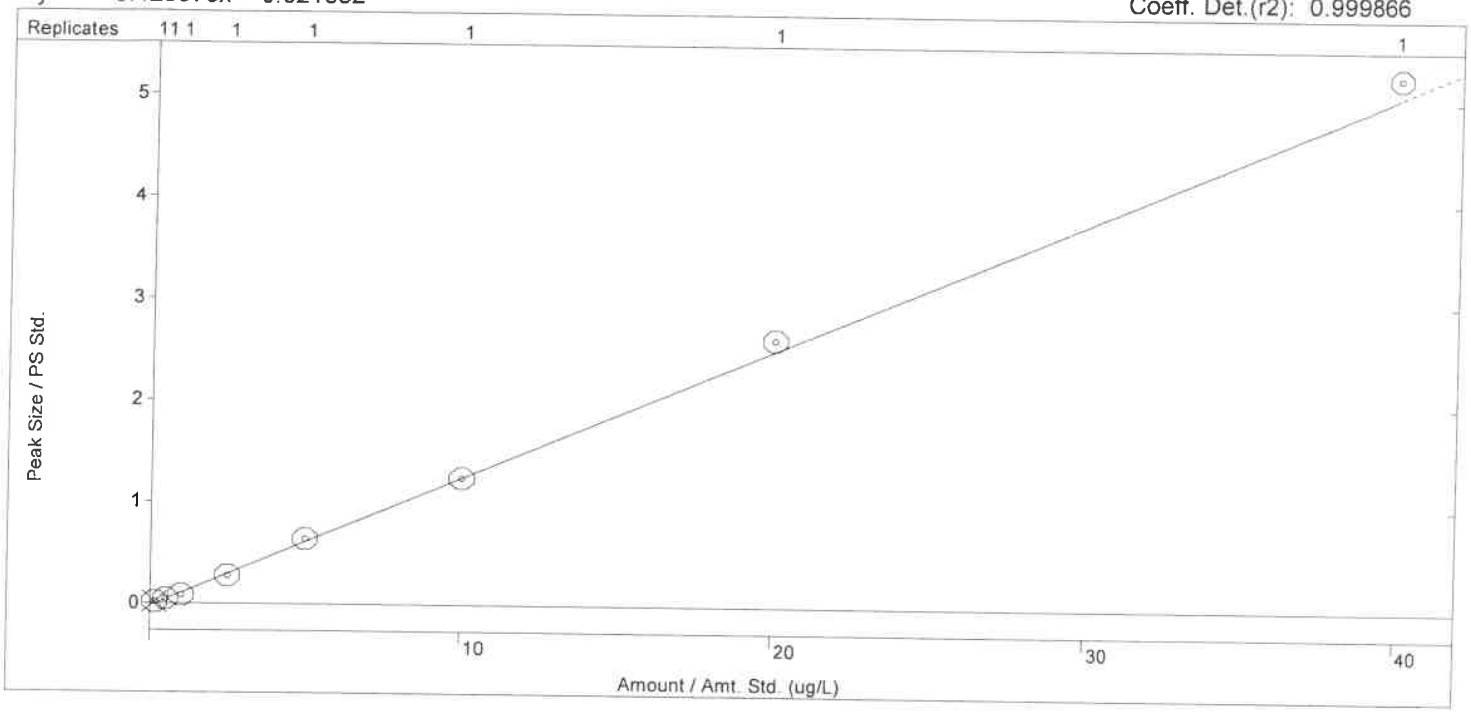
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

1,2 -Dichlorobenzene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.126970x -0.021352

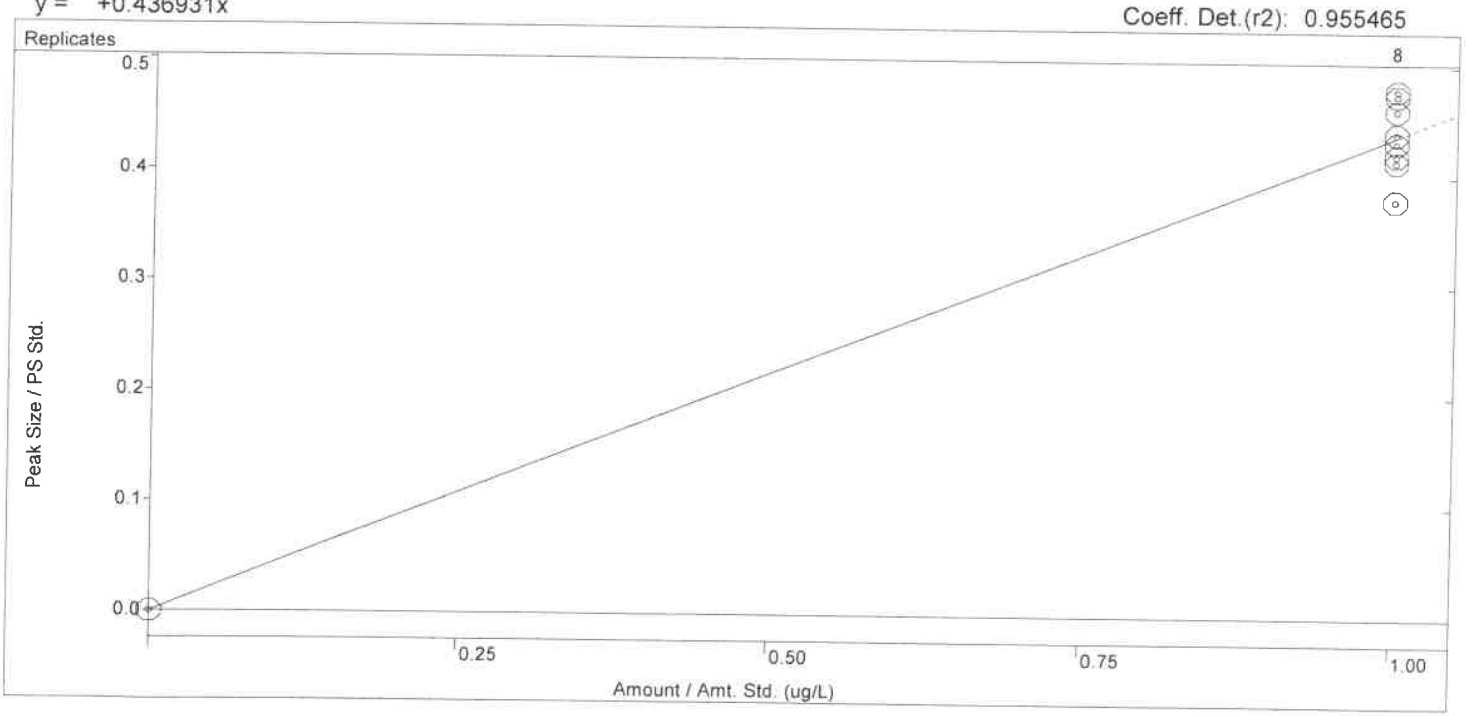
Resp. Fact. RSD: 15.97%
Coeff. Det.(r2): 0.999866



(S-2) 1,2-Dichlorobenzene-d4

Curve Fit: Linear, Origin: Force, Weight: 1/nX2
y = +0.436931x

Resp. Fact. RSD: 7.693%
Coeff. Det.(r2): 0.955465



Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

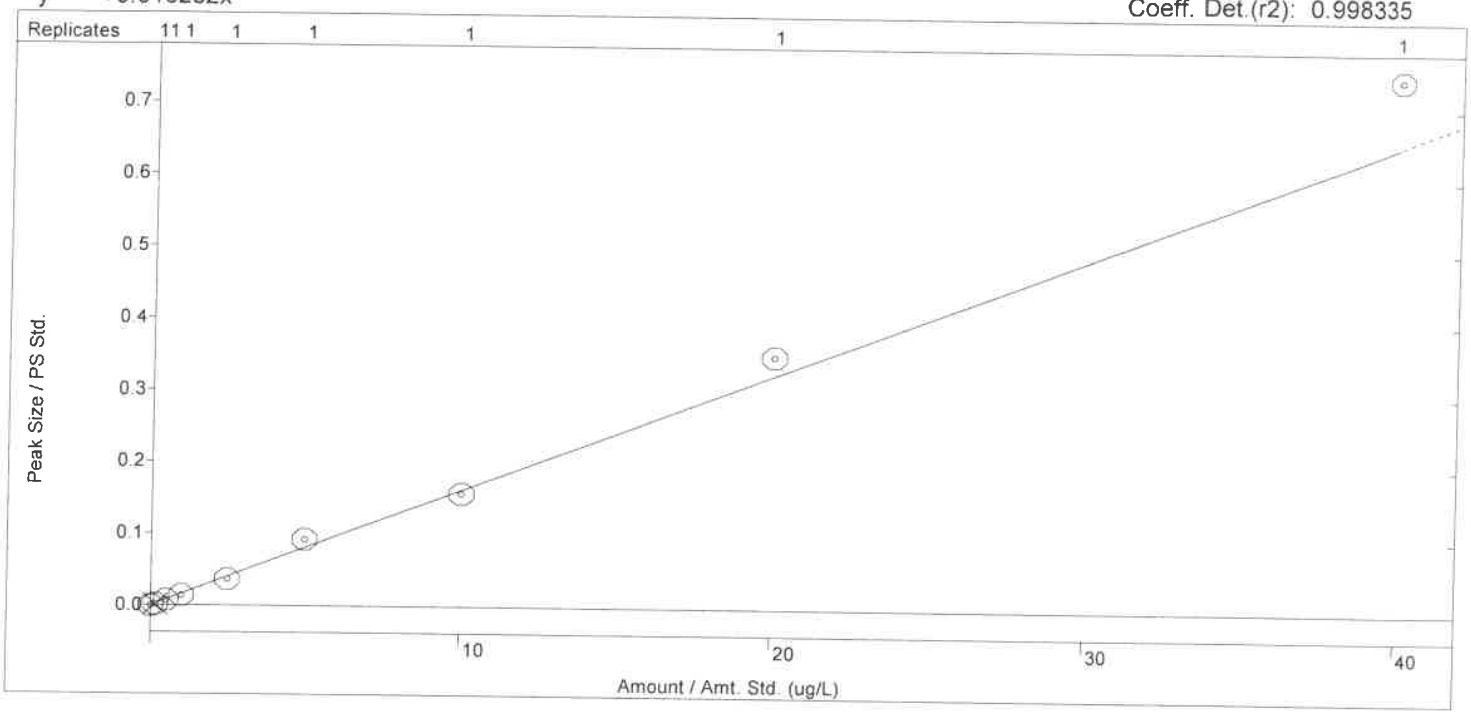
1,2-Dibromo-3-chloropropane (DBCP)

Curve Fit: Linear, Origin: Force (Edited), Weight: 1/nX2

y = +0.016262x

Resp. Fact. RSD: 11.86%

Coeff. Det.(r2): 0.998335



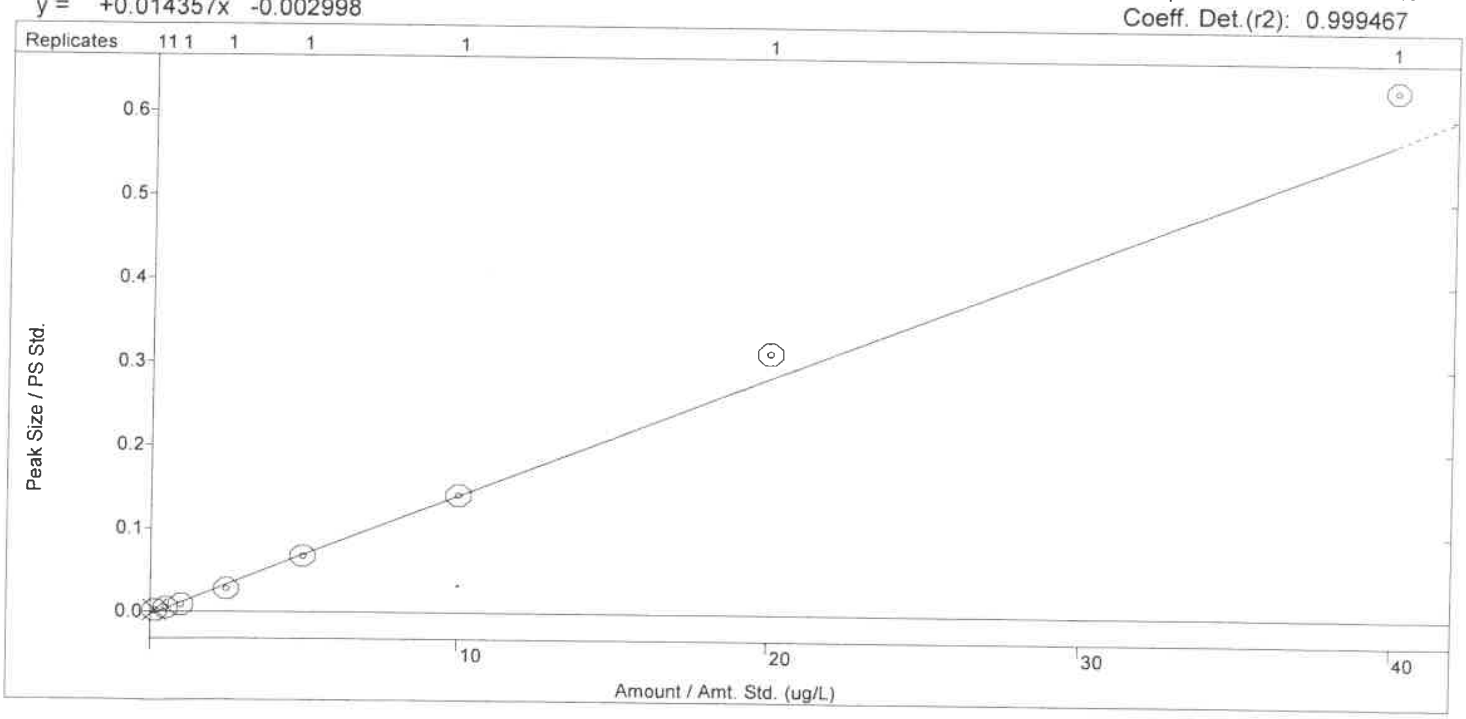
1,2,4-Trichlorobenzene

Curve Fit: Linear (Edited), Origin: Ignore, Weight: 1/nX2

y = +0.014357x -0.002998

Resp. Fact. RSD: 21.80%

Coeff. Det.(r2): 0.999467



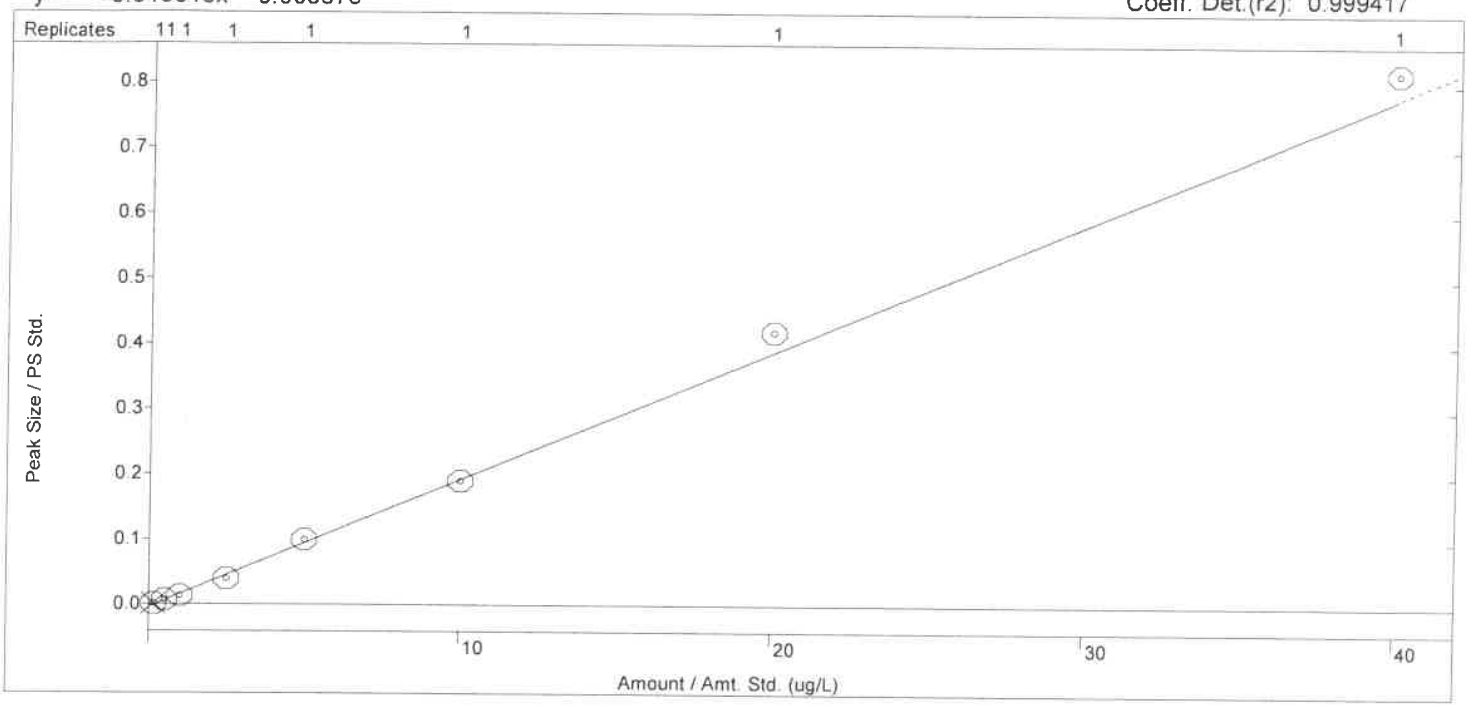
Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

Hexachlorobutadiene

Curve Fit: Linear, Origin: Ignore (Edited), Weight: 1/nX2
y = +0.019616x -0.003676

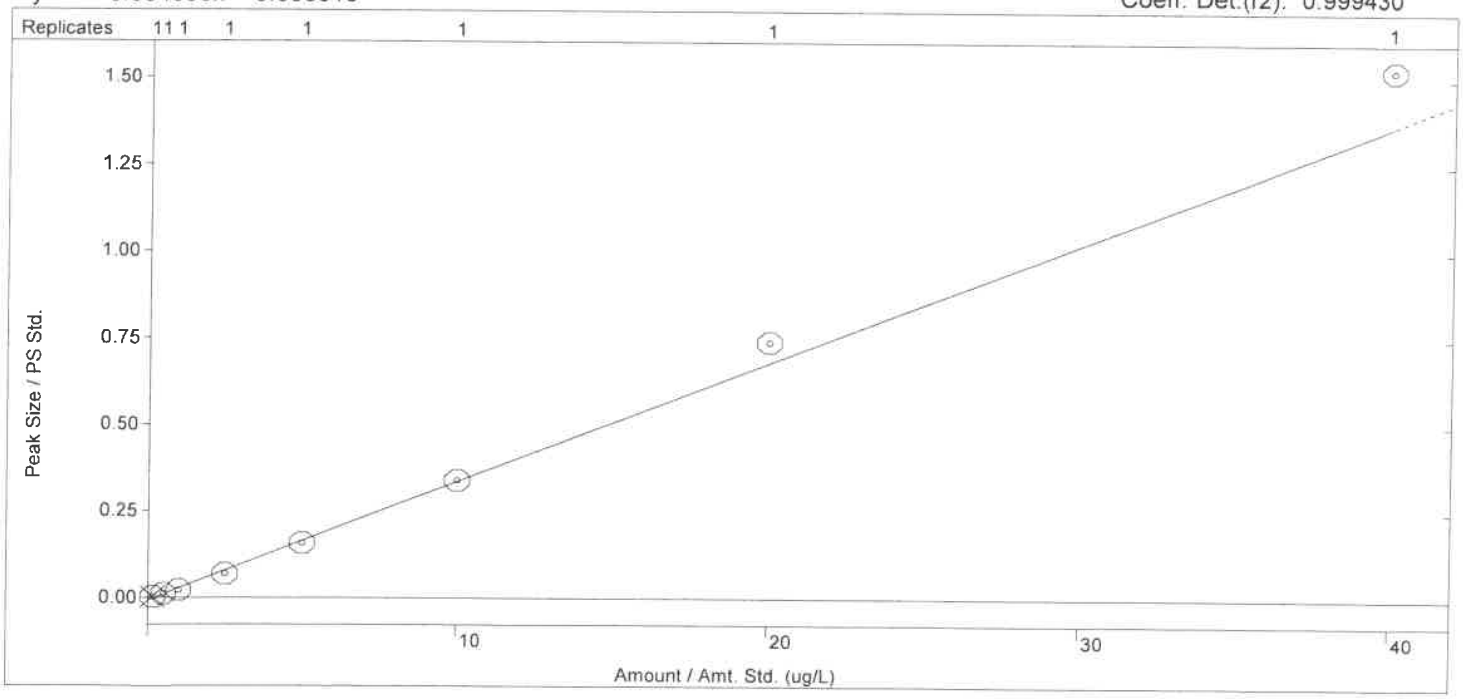
Resp. Fact. RSD: 18.37%
Coeff. Det.(r2): 0.999417



Naphthalene

Curve Fit: Linear (Edited), Origin: Ignore, Weight: 1/nX2
y = +0.034338x -0.006616

Resp. Fact. RSD: 19.83%
Coeff. Det.(r2): 0.999430



Calibration Curves Report

Method:	c:\saturnws\methods\524.2 october 08 2018.mth		
Recalc Method:	c:\... 524.2 oct	Last Calibration:	10/8/2018 5:15 PM
Sample List:	N/A	Cmpd. Table Updated:	10/12/2018 2:48 PM
Sequence:	N/A	Detector:	2000 Mass Spec
Saturn GC/MS Workstation		Workstation Version:	Version 5.52
Peak Measurement:	Area	Calibration Type:	Internal Standard Analysis

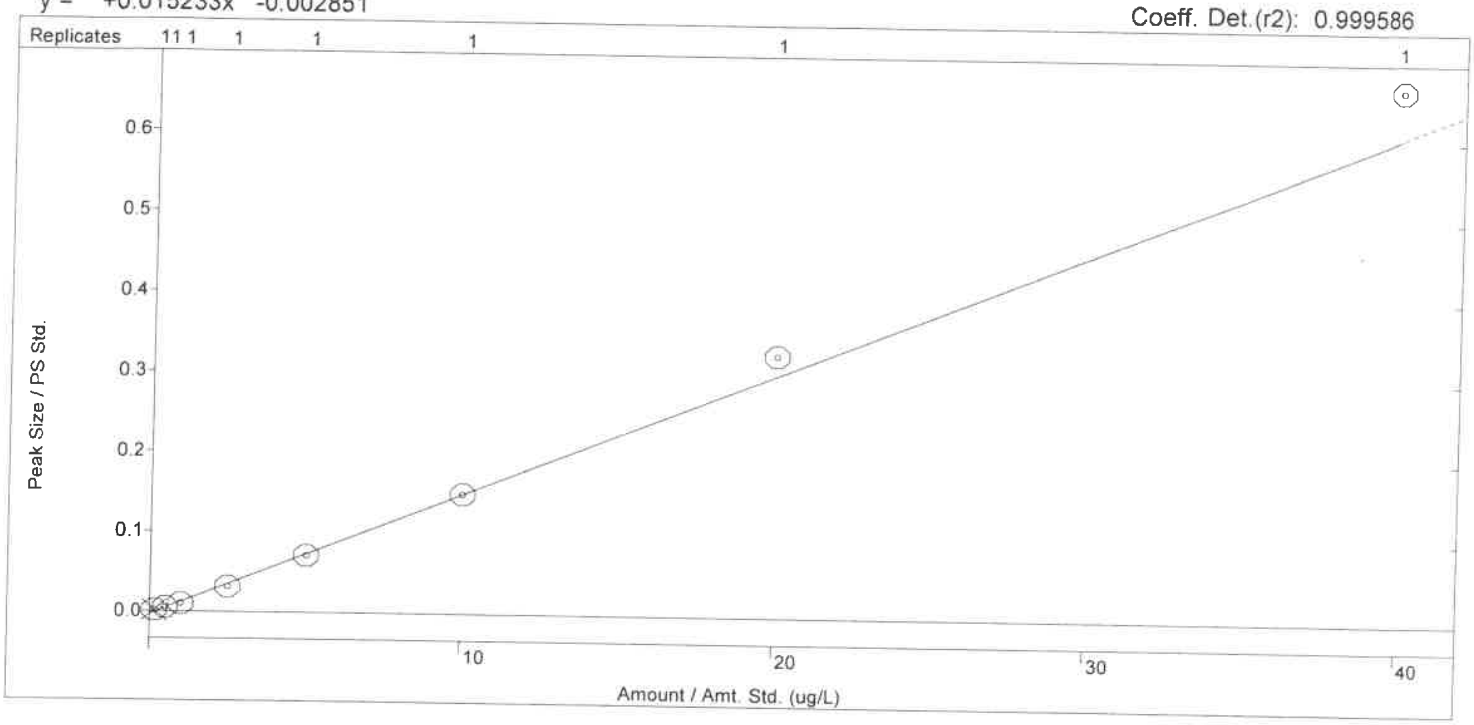
1,2,3 -Trichlorobenzene

Curve Fit: Linear (Edited), Origin: Ignore, Weight: 1/nX2

y = +0.015233x -0.002851

Resp. Fact. RSD: 18.75%

Coeff. Det.(r2): 0.999586



524.2 Batch QC

Date: October 24, 2018

Varian #1

Compound	Blank	RL @ 0.15/0.30 S-87805	RL @ 0.50 S-87806	CCal @ 5.0 S-87807	33006-01	33006-01 Duplicate	%RPD < 20%
Dichlorodifluoromethane	< 0.5		150.6	112.5	< PQL	< PQL	#VALUE!
Chloromethane	< 0.5		102.2	118.4	< PQL	< PQL	#VALUE!
Vinyl Chloride	< 0.5		140.4	108.6	< PQL	< PQL	#VALUE!
Bromomethane	< 0.5		133.8	101.7	< PQL	< PQL	#VALUE!
Chloroethane	< 0.5		116.4	108.0	< PQL	< PQL	#VALUE!
Trichlorofluoromethane	< 0.5		140.4	102.3	< PQL	< PQL	#VALUE!
1,1-Dichloroethene	< 0.5		107.6	89.6	< PQL	< PQL	#VALUE!
Methylene Chloride	< 0.5		119.4	80.8	< PQL	< PQL	#VALUE!
MTBE	< 0.5		96.8	107.0	< PQL	< PQL	#VALUE!
trans-1,2-Dichloroethene	< 0.5		76.4	74.2	< PQL	< PQL	#VALUE!
1,1-Dichloroethane	< 0.5		115.4	90.4	< PQL	< PQL	#VALUE!
2,2-Dichloropropane	< 0.5		115.4	88.4	< PQL	< PQL	#VALUE!
cis-1,2-Dichloroethene	< 0.5		118.6	98.3	< PQL	< PQL	#VALUE!
Bromochloromethane	< 0.5		120.2	97.0	< PQL	< PQL	#VALUE!
Chloroform	< 0.5		117.8	98.2	< PQL	< PQL	#VALUE!
1,1,1-Trichloroethane	< 0.5		109.4	92.0	< PQL	< PQL	#VALUE!
Carbon Tetrachloride	< 0.5		105.8	91.7	< PQL	< PQL	#VALUE!
1,1-Dichloro-1-propene	< 0.5		113.8	90.4	< PQL	< PQL	#VALUE!
Benzene	< 0.5		93.8	102.0	< PQL	< PQL	#VALUE!
1,2-Dichloroethane	< 0.5		113.0	97.6	< PQL	< PQL	#VALUE!
Trichloroethene	< 0.5		112.4	97.4	< PQL	< PQL	#VALUE!
1,2-Dichloropropane	< 0.5		122.4	95.3	< PQL	< PQL	#VALUE!
Dibromomethane	< 0.5		98.6	99.0	< PQL	< PQL	#VALUE!
Bromodichloromethane	< 0.5		122.6	92.5	< PQL	< PQL	#VALUE!
cis-1,3-Dichloro-1-propene	< 0.5		116.2	91.7	< PQL	< PQL	#VALUE!
Toluene	< 0.5		117.6	94.1	< PQL	< PQL	#VALUE!
trans-1,3-Dichloro-1-propene	< 0.5		115.6	93.4	< PQL	< PQL	#VALUE!
1,1,2-Trichloroethane	< 0.5		116.8	97.5	< PQL	< PQL	#VALUE!
Tetrachloroethene	< 0.5		108.6	91.1	< PQL	< PQL	#VALUE!
1,3-Dichloropropane	< 0.5		113.0	96.7	< PQL	< PQL	#VALUE!
Dibromochloromethane	< 0.5		116.4	99.7	< PQL	< PQL	#VALUE!
1,2-Dibromoethane (EDB)	< 0.5		112.0	96.5	< PQL	< PQL	#VALUE!
Ethylbenzene	< 0.5		115.6	90.0	< PQL	< PQL	#VALUE!
Chlorobenzene	< 0.5		117.4	93.8	< PQL	< PQL	#VALUE!
1,1,1,2-Tetrachloroethane	< 0.5		115.0	91.4	< PQL	< PQL	#VALUE!
m&p-Xylenes	< 0.3	121.0	87.6	95.5	< PQL	< PQL	#VALUE!
o-Xylene	< 0.2	126.7	92.8	98.0	< PQL	< PQL	#VALUE!
Styrene	< 0.5		117.2	90.7	< PQL	< PQL	#VALUE!
Bromoform	< 0.5		113.0	90.4	< PQL	< PQL	#VALUE!
Isopropyl benzene	< 0.5		112.8	90.4	< PQL	< PQL	#VALUE!
1,1,2,2-Tetrachlorethane	< 0.5		89.8	104.0	< PQL	< PQL	#VALUE!
n-Propylbenzene	< 0.5		108.8	87.1	< PQL	< PQL	#VALUE!
Bromobenzene	< 0.5		119.0	91.9	< PQL	< PQL	#VALUE!
1,2,3-Trichloropropane	< 0.5		92.2	98.9	< PQL	< PQL	#VALUE!
2-Chlorotoluene	< 0.5		109.6	88.8	< PQL	< PQL	#VALUE!
1,3,5-Trimethylbenzene	< 0.5		113.8	85.9	< PQL	< PQL	#VALUE!
4-Chlorotoluene	< 0.5		115.8	94.8	< PQL	< PQL	#VALUE!
tert-Butylbenzene	< 0.5		119.2	99.6	< PQL	< PQL	#VALUE!
1,2,4-Trimethylbenzene	< 0.5		121.4	94.9	< PQL	< PQL	#VALUE!
sec-Butylbenzene	< 0.5		105.6	85.9	< PQL	< PQL	#VALUE!
p-Isopropyltoluene	< 0.5		115.6	96.2	< PQL	< PQL	#VALUE!
1,3-Dichlorobenzene	< 0.5		114.0	91.8	< PQL	< PQL	#VALUE!
1,4-Dichlorobenzene	< 0.5		115.4	91.0	< PQL	< PQL	#VALUE!
n-Butylbenzene	< 0.5		111.6	86.7	< PQL	< PQL	#VALUE!
1,2-Dichlorobenzene	< 0.5		110.2	93.7	< PQL	< PQL	#VALUE!
1,2-Dibromo-3-chloropropane	< 0.5		89.4	104.2	< PQL	< PQL	#VALUE!
1,2,4-Trichlorobenzene	< 0.5		103.8	89.4	< PQL	< PQL	#VALUE!
Hexachlorobutadiene	< 0.5		96.6	85.3	< PQL	< PQL	#VALUE!
Naphthalene	< 0.5		105.4	83.7	< PQL	< PQL	#VALUE!
1,2,3-Trichlorobenzene	< 0.5		98.0	85.6	< PQL	< PQL	#VALUE!

Bromofluorobenzene	88.7	91.8	88.5	89.9	90.7	85.0	70 - 130%
1,2-Dichlorobenzene-d4	88.9	90.5	91.1	90.7	87.4	84.5	70 - 130%

524.2 INITIAL CALIBRATION TABLE REPORT

Date and Time Entered: 10/25/2018 at 3:33 PM

Tune Date & Time:
10/24/2018 @ 10:23

Method Name: 524.2 VARIAN #1

Calibration Date: 10/08/2018

Calibration Level:	1	2	3	4	5	6	7	8
Calibration Files:	S-87253	S-87254	S-87255	S-87256	S-87257	S-87258	S-87259	S-87260
Concentration :	0.15/0.30	0.50	1.0 ppb	2.5 ppb	5.0 ppb	10.0 ppb	20.0 ppb	40.0 ppb

Compounds:

	RF	RF	RF	RF	RF	RF	RF	RF		Mean	% RSD
Fluorobenzene (IS)	109251	110213	108899	105126	106022	107088	104516	105785		107113	1.97

SAMPLE ID:	IS Area	% Recovery w/respect to CCAI	% Recovery w/respect to Curve	pH check	Chlorine check
		70 - 130%	50 - 150%		
Reagent Number	----	----	----	R-27702	R-27649
Lab Blank	73827		68.9	<2	ND
S-87805 Xylene RL Check @ 0.15/0.30 ppb	80419		75.1	<2	ND
S-87806 RL Check @ 0.50 ppb	77519		72.4	<2	ND
S-87807 Ccal @ 5.0 ppb	81155		75.8	<2	ND
Rinse	78988	98.6	73.7	<2	ND
[redacted]	80093	100.0	74.8	<2	ND
33006-01	75323	94.0	70.3	<2	ND
33006-01 Dup	79532	99.3	74.3	<2	ND
33006-02	76126	95.0	71.1	<2	ND
33006-03	76175	95.1	71.1	<2	ND
33006-04	76137	95.1	71.1	<2	ND
33006-05	81228	101.4	75.8	<2	ND
33006-06	76070	95.0	71.0	<2	ND
[redacted]	75416	94.2	70.4	7	ND
[redacted]	74308	92.8	69.4	7	ND
[redacted]	73855	92.2	69.0	<2	ND
[redacted]	72232	90.2	67.4	4	ND
[redacted]	77372	96.6	72.2	7	ND

C:\VOC documents\524IS_Varian1_10242018.xls

Varian Star Workstation - Generic SampleList Thu Oct 25 08:20:57 2018

SampleList: C:\SaturnWS\524.2 October 24 2018.smp

Created: Wed Oct 24 08:42:03 2018
Modified: Wed Oct 24 19:40:33 2018

Line	Sample Type	Sample Name	Cal. Level	Inj.	Injection Notes
1	Activate Method	C:\SaturnWS\Methods\8260aq1.mth			
2	Analysis	V-01 S-87041		1	below
	Notes	524.2 BFB Tune Check			
3	Analysis	V-02 S-87041		1	below
	Notes	524.2 BFB Tune Check			
4	Analysis	V-03 S-87041		1	below
	Notes	524.2 BFB Tune Check			
5	Analysis	V-04 Lab Blank		1	below
	Notes	524.2 Lab Blank			
6	Analysis	V-05 S-87805		1	below
	Notes	524.2 Xylene RL Check @ 0.15/0.30 ppb			
7	Analysis	V-06 S-87806		1	below
	Notes	524.2 RL Check @ 0.50 ppb			
8	Analysis	V-07 S-87808		1	below
	Notes	524.2 CCal @ 5.0 ppb			
9	Analysis	V-08 Rinse		1	below
	Notes	524.2 Rinse with reagent water			
10	Analysis	V-09 [redacted]		1	below
	Notes	524.2 Regulated			
11	Analysis	V-10 33006-01		1	below
	Notes	524.2 Full List			
12	Analysis	V-11 33006-01 Dup		1	below
	Notes	524.2 Full List Duplicate			

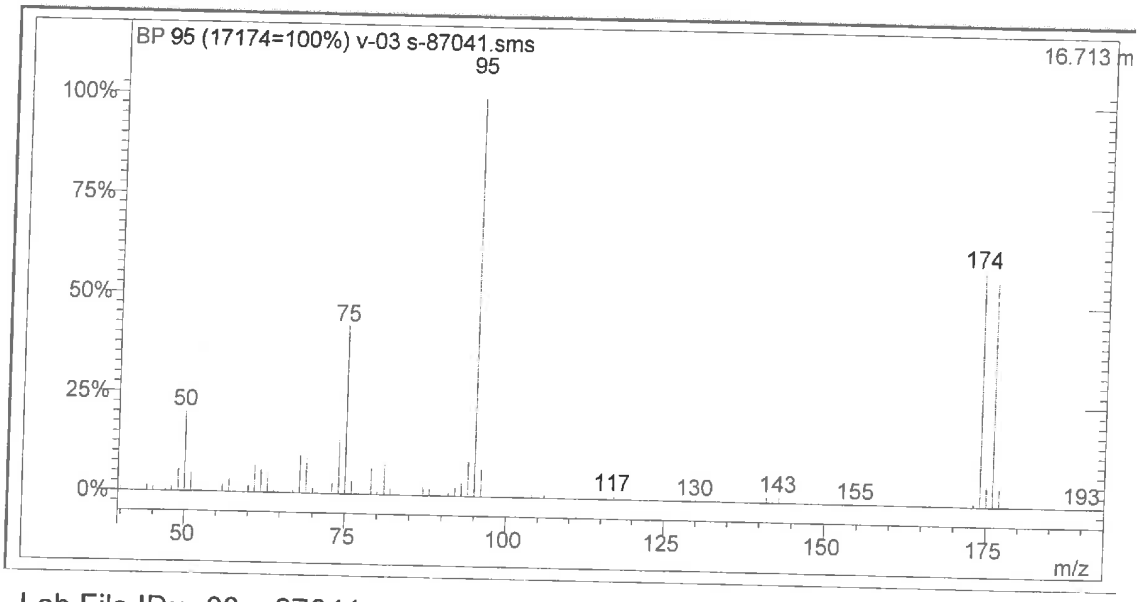
13	Analysis	V-12 33006-02		1	below
	Notes	524.2 Full List			
14	Analysis	V-13 33006-03		1	below
	Notes	524.2 Full List			
15	Analysis	V-14 33006-04		1	below
	Notes	524.2 Full List			
16	Analysis	V-15 33006-05		1	below
	Notes	524.2 Full List			
17	Analysis	V-16 33006-06		1	below
	Notes	524.2 Full List			
18	Analysis	V-17 [redacted]		1	below
	Notes	524.2 Regulated			
19	Analysis	V-18 [redacted]		1	below
	Notes	524.2 Regulated			
20	Analysis	V-19 [redacted]		1	below
	Notes	524.2 Full List for trip blank certification prepared 10/24/18			
21	Analysis	V-20 [redacted]		1	below
	Notes	524.2 TTHM (Ascorbic Acid + HCl)			
22	Analysis	V-21 [redacted]		1	below
	Notes	524.2 Full List			

Directory for Data Files: c:\saturnws\data\524.2 october 24 2018

Data File Names: %s

Create and update a new RecalcList: c:\saturnws\524.2 october 24 2018.rcl.

BFB 524.2 Report



Lab File ID: v-03 s-87041.sms

Injection Date: 10/24/2018

Injection Time: 10:23

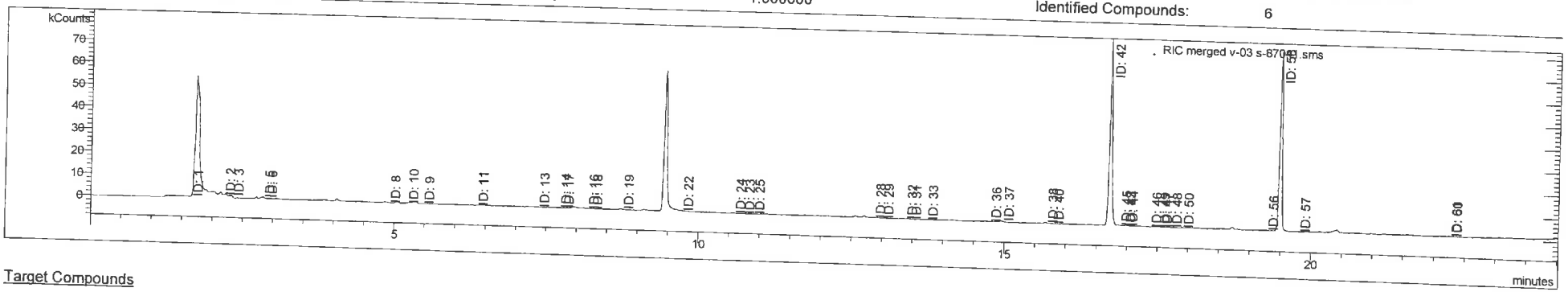
Mass	Acceptance Criterion	Value	Pass/Fail
50	15-40% of m/z 95	20.19	PASS
75	30-80% of m/z 95	42.26	PASS
95	base peak	100.00	PASS
96	5-9% of m/z 95	6.96	PASS
173	<2% of m/z 174	1.22	PASS
174	>50% of m/z 95	59.15	PASS
175	5-9% of m/z 174	8.60	PASS
176	>95% but <101% of m/z 174	95.33	PASS
177	5-9% of m/z 176	7.95	PASS

Print Date: 24 Oct 2018 12:51:38

524.2 VOA ANALYSES -- VARIAN #01

Sample Report for v-03 s-87041.sms

Sample ID:	V-03 S-87041	Operator:		Last Calibration:	10/8/2018 5:15 PM
Acquisition Date:	10/24/2018 10:23 AM	Calculation Date:	10/24/2018 12:48 PM	Method:	c:\... 524.2 october 08
Inj. Sample Notes:	524.2 BFB Tune Check			Header Time Date:	10/24/2018 12:51 PM
Data File:	c:\... \v-03 s-87041.sms	Multiplier:	1.000000	Identified Compounds:	6



Target Compounds

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
21	9.447	(IS-1) Fluorobenzene	S	96	81960	1.000	ug/L	999
1	1.637	Dichlorodifluoromethane	M	85	0	0.000	ug/L	445
2	2.172	Chloromethane	M	49+51	0	0.000	ug/L	N/A
3	2.310	Vinyl chloride	M	62	0	0.000	ug/L	725
4	2.726	Bromomethane		94+96	693	0.294	ug/L	N/A
5	2.816	Chloroethane		45+47	368	0.223	ug/L	N/A
6	2.861	Trichlorofluoromethane	M	101	0	0.000	ug/L	748
7	3.844	1,1-Dichloroethene		61+96	31	0.195	ug/L	551
8	4.891	Methylene chloride		49+84	86	0.346	ug/L	680
9	5.447	methyl-tert-butyl-ether (MTBE)	M	73	0	0.000	ug/L	N/A
10	5.190	trans-1,2-Dichloroethene	M	61+96	0	0.000	ug/L	815
11	6.336	1,1-Dichloroethane	M	63	0	0.000	ug/L	744
12	7.584	2,2-Dichloropropane		77+79	71	0.155	ug/L	639
13	7.342	cis-1,2-Dichloroethene	M	62+96	0	0.000	ug/L	628
14	7.694	Bromochloromethane	M	49+51+93	0	0.000	ug/L	310
15	7.831	Chloroform (THM)		83	44	0.164	ug/L	832
16	8.156	1,1,1-Trichloroethane	M	97	0	0.000	ug/L	459
17	7.741	Carbon tetrachloride	M	117	0	0.000	ug/L	337
18	8.213	1,1-Dichloro-1-propene	M	75	0	0.000	ug/L	466
19	8.731	Benzene	M	78	0	0.000	ug/L	889
20	9.101	1,2-Dichloroethane		62+64	36	0.164	ug/L	N/A
22	9.709	Trichloroethene (TCE)	M	130+132	0	0.000	ug/L	537
23	10.711	1,2-Dichloropropane	M	63	0	0.000	ug/L	485
24	10.563	Dibromomethane	M	95	0	0.000	ug/L	333
25	10.874	Bromodichloromethane (THM)	M	83	0	0.000	ug/L	588
26	11.727	cis-1,3-Dichloro-1-propene		75	32	0.170	ug/L	735
27	12.105	Toluene		91	290	0.191	ug/L	990
28	12.849	trans-1,3-Dichloro-1-propene	M	75	0	0.000	ug/L	420
29	12.984	1,1,2-Trichloroethane	M	83+61	0	0.000	ug/L	352
30	12.710	Tetrachloroethene (PCE)		166	274	0.199	ug/L	975
31	13.436	1,3-dichloropropane	M	41+76	0	0.000	ug/L	385
32	13.365	Dibromochloromethane (THM)	M	129	0	0.000	ug/L	617
33	13.710	1,2-Dibromomethane (EDB)	M	107+109+93	0	0.000	ug/L	425
34	14.686	Ethylbenzene		91	253	0.216	ug/L	958

524.2 VOA ANALYSES -- VARIAN #01

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
35	14.594	Chlorobenzene		112	47	0.192	ug/L	792
36	14.740	1,1,1,2-Tetrachloroethane	M	131	0	0.000	ug/L	236
37	14.944	m&p-Xylenes		91	647	0.088	ug/L	992
38	15.660	o-Xylene		91	670	0.051	ug/L	987
39	15.774	Styrene		104	105	0.232	ug/L	717
40	15.758	Bromoform (THM)	M	173	0	0.000	ug/L	716
41	16.217	Isopropylbenzene		105	33	0.205	ug/L	683
42	16.715	(S-1) Bromofluorobenzene (BFB)		95+174+176	123366	0.949	ug/L	992
43	16.932	1,1,2,2-Tetrachloroethane	M	83	0	0.000	ug/L	483
44	16.966	n-Propylbenzene	M	91	0	0.000	ug/L	904
45	16.863	Bromobenzene	M	77	0	0.000	ug/L	758
46	17.359	1,2,3-Trichloropropane	M	75+110+112	0	0.000	ug/L	555
47	17.532	2-Chlorotoluene	M	91	0	0.000	ug/L	700
48	17.691	1,3,5-Trimethylbenzene	M	77+120	0	0.000	ug/L	822
49	17.495	4-Chlorotoluene	M	91	0	0.000	ug/L	N/A
50	17.884	tert-Butylbenzene	M	119	0	0.000	ug/L	673
51	18.036	1,2,4-Trimethylbenzene		120	121	0.218	ug/L	927
52	18.022	sec-Butylbenzene		105	276	0.242	ug/L	770
53	18.499	p-Isopropyltoluene (4-Iso)		119	44	0.240	ug/L	877
54	18.556	1,3-Dichlorobenzene		111+75	33	0.207	ug/L	739
55	18.741	1,4-Dichlorobenzene		146	63	0.229	ug/L	655
56	19.261	n-Butylbenzene	M	91	0	0.000	ug/L	891
57	19.780	1,2 -Dichlorobenzene	M	146	0	0.000	ug/L	467
58	19.490	(S-2) 1,2-Dichlorobenzene-d4		152+154	31570	0.882	ug/L	461
59	20.872	1,2-Dibromo-3-chloropropane (DBCP)		157+155+159	8	0.006	ug/L	401
60	22.252	1,2,4-Trichlorobenzene	M	180	0	0.000	ug/L	447
61	22.241	Hexachlorobutadiene	M	225	0	0.000	ug/L	411
62	22.969	Naphthalene		128	48	0.210	ug/L	597
63	23.332	1,2,3 -Trichlorobenzene		180	14	0.198	ug/L	336

Status and Errors:

M : Missing peak.

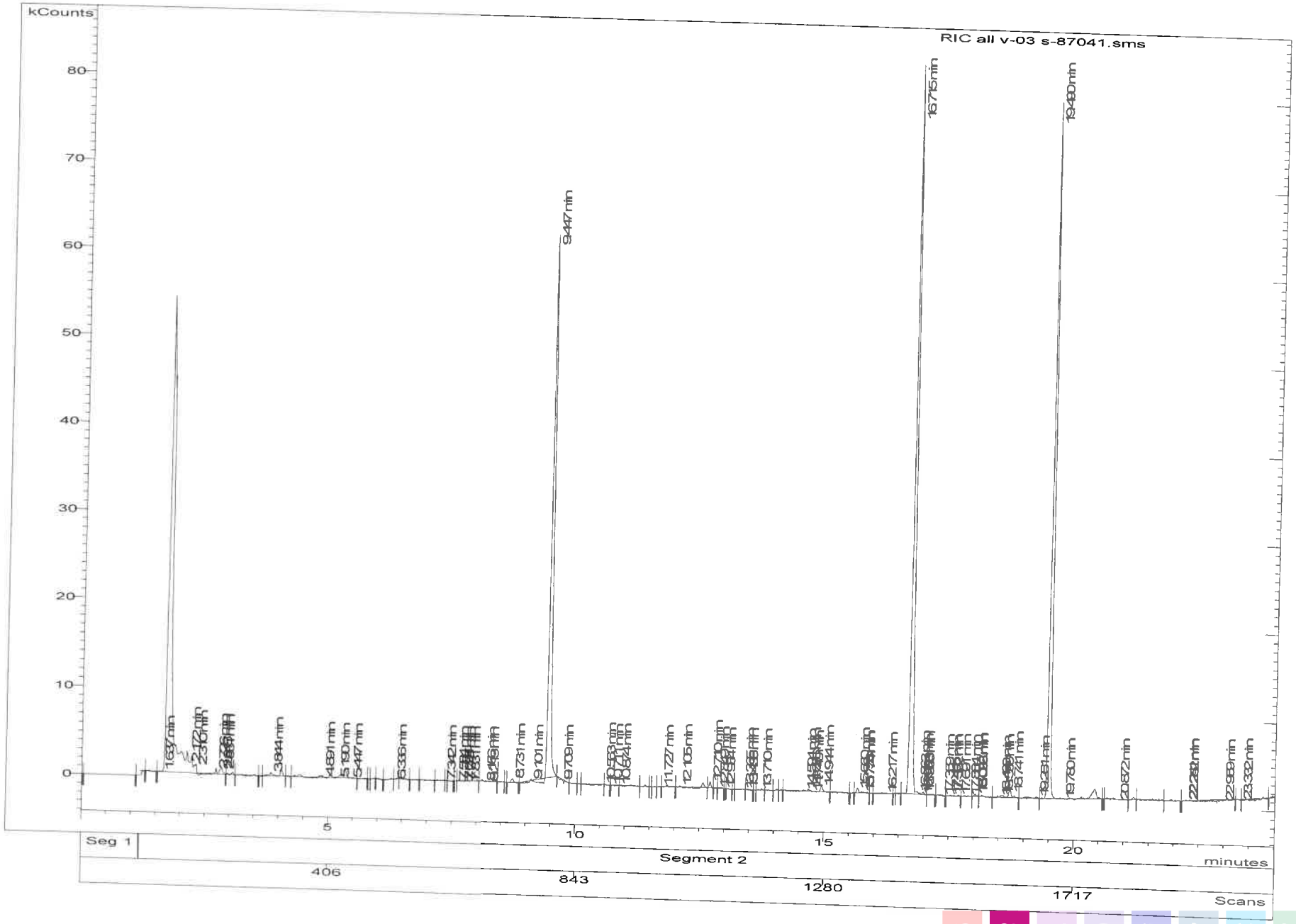
S : Internal Standard Peak.

Print Date: 24 Oct 2018 12:51:41

Chromatogram Plot

File: c:\saturnws\data\524.2 october 24 2018\v-03 s-87041.sms
Sample: V-03 S-87041
Scan Range: 1 - 2068 Time Range: 0.00 - 24.02 min.
Sample Notes: 524.2 BFB Tune Check

Operator: SKR
Date: 10/24/2018 10:23 AM

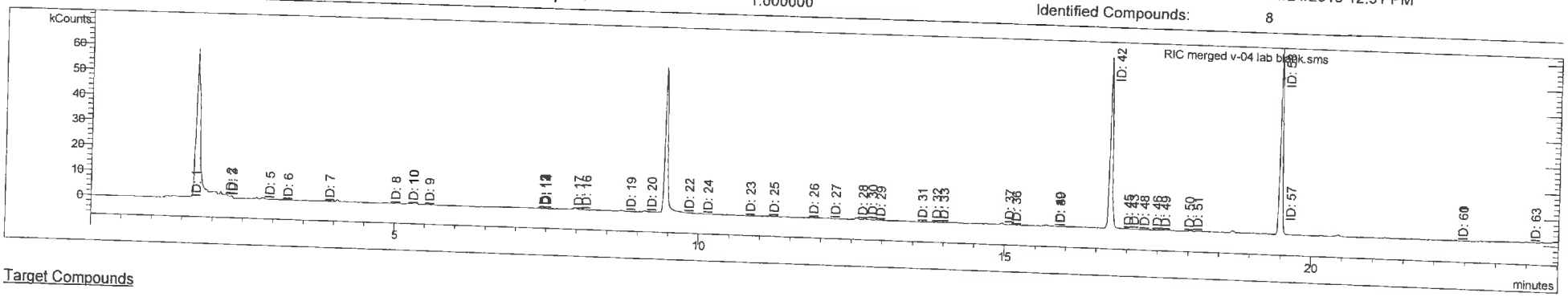


Print Date: 24 Oct 2018 12:51:23

524.2 VOA ANALYSES -- VARIAN #01

Sample Report for v-04 lab blank.sms

Sample ID:	V-04 Lab Blank	Operator:		Last Calibration:	10/8/2018 5:15 PM
Acquisition Date:	10/24/2018 10:54 AM	Calculation Date:	10/24/2018 12:51 PM	Method:	c:\... 524.2 october 08
Inj. Sample Notes:	524.2 Lab Blank			Header Time Date:	10/24/2018 12:51 PM
Data File:	c:\... v-04 lab blank.sm	Multiplier:	1.000000	Identified Compounds:	8



Target Compounds

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
21	9.452	(IS-1) Fluorobenzene	S	96	73827	1.000	ug/L	999
1	1.602	Dichlorodifluoromethane	M	85	0	0.000	ug/L	461
2	2.172	Chloromethane	M	49+51	0	0.000	ug/L	N/A
3	2.206	Vinyl chloride	M	62	0	0.000	ug/L	656
4	2.731	Bromomethane		94+96	644	0.305	ug/L	N/A
5	2.817	Chloroethane		45+47	330	0.219	ug/L	N/A
6	3.117	Trichlorofluoromethane	M	101	0	0.000	ug/L	568
7	3.801	1,1-Dichloroethene	M	61+96	0	0.000	ug/L	490
8	4.893	Methylene chloride		49+84	50	0.341	ug/L	720
9	5.447	methyl-tert-butyl-ether (MTBE)	M	73	0	0.000	ug/L	N/A
10	5.182	trans-1,2-Dichloroethene	M	61+96	0	0.000	ug/L	754
11	6.344	1,1-Dichloroethane		63	36	0.219	ug/L	567
12	7.353	2,2-Dichloropropane	M	77+79	0	0.000	ug/L	697
13	7.330	cis-1,2-Dichloroethene	M	62+96	0	0.000	ug/L	590
14	7.375	Bromochloromethane	M	49+51+93	0	0.000	ug/L	254
15	7.824	Chloroform (THM)		83	44	0.165	ug/L	749
16	8.023	1,1,1-Trichloroethane	M	97	0	0.000	ug/L	628
17	7.899	Carbon tetrachloride	M	117	0	0.000	ug/L	356
18	8.311	1,1-Dichloro-1-propene		75	36	0.160	ug/L	549
19	8.760	Benzene	M	78	0	0.000	ug/L	846
20	9.101	1,2-Dichloroethane	M	62+64	0	0.000	ug/L	N/A
22	9.714	Trichloroethene (TCE)	M	130+132	0	0.000	ug/L	439
23	10.716	1,2-Dichloropropane	M	63	0	0.000	ug/L	597
24	10.023	Dibromomethane	M	95	0	0.000	ug/L	338
25	11.102	Bromodichloromethane (THM)	M	83	0	0.000	ug/L	550
26	11.754	cis-1,3-Dichloro-1-propene	M	75	0	0.000	ug/L	482
27	12.108	Toluene		91	226	0.189	ug/L	962
28	12.549	trans-1,3-Dichloro-1-propene	M	75	0	0.000	ug/L	536
29	12.845	1,1,2-Trichloroethane	M	83+61	0	0.000	ug/L	325
30	12.708	Tetrachloroethene (PCE)	M	166	0	0.000	ug/L	945
31	13.523	1,3-dichloropropane	M	41+76	0	0.000	ug/L	641
32	13.763	Dibromochloromethane (THM)	M	129	0	0.000	ug/L	456
33	13.876	1,2-Dibromomethane (EDB)	M	107+109+93	0	0.000	ug/L	425
34	14.696	Ethylbenzene		91	244	0.217	ug/L	961

524.2 VOA ANALYSES -- VARIAN #01

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit	
35	14.598	Chlorobenzene		112	40	0.192	ug/L	720	
36	15.059	1,1,1,2-Tetrachloroethane	M	131	0	0.000	ug/L	327	
37	14.948	m&p-Xylenes	U	91	829	0.100	ug/L	993	
38	15.660	o-Xylene	U	91	663	0.054	ug/L	972	
39	15.783	Styrene		104	84	0.231	ug/L	729	
40	15.771	Bromoform (THM)	M	173	0	0.000	ug/L	753	
41	16.232	Isopropylbenzene		105	39	0.205	ug/L	520	
42	16.718	(S-1) Bromofluorobenzene (BFB)		95+174+176	103785	0.887	ug/L	992	88.7%
43	16.982	1,1,2,2-Tetrachloroethane	M	83	0	0.000	ug/L	408	
44	16.971	n-Propylbenzene		91	83	0.235	ug/L	890	
45	16.890	Bromobenzene	M	77	0	0.000	ug/L	499	
46	17.360	1,2,3-Trichloropropane	M	75+110+112	0	0.000	ug/L	638	
47	17.512	2-Chlorotoluene		91	95	0.200	ug/L	622	
48	17.153	1,3,5-Trimethylbenzene	M	77+120	0	0.000	ug/L	728	
49	17.495	4-Chlorotoluene	M	91	0	0.000	ug/L	N/A	
50	17.885	tert-Butylbenzene	M	119	0	0.000	ug/L	615	
51	18.024	1,2,4-Trimethylbenzene		120	117	0.219	ug/L	950	
52	18.223	sec-Butylbenzene		105	88	0.235	ug/L	761	
53	18.502	p-Isopropyltoluene (4-Iso)		119	34	0.240	ug/L	674	
54	18.577	1,3-Dichlorobenzene		111+75	78	0.212	ug/L	781	
55	18.736	1,4-Dichlorobenzene		146	41	0.228	ug/L	664	
56	19.272	n-Butylbenzene		91	133	0.291	ug/L	891	
57	19.536	1,2 -Dichlorobenzene	M	146	0	0.000	ug/L	285	
58	19.494	(S-2) 1,2-Dichlorobenzene-d4		152+154	28674	0.889	ug/L	445	88.9%
59	21.008	1,2-Dibromo-3-chloropropane (DBCP)		157+155+159	19	0.016	ug/L	451	
60	22.337	1,2,4-Trichlorobenzene	M	180	0	0.000	ug/L	539	
61	22.337	Hexachlorobutadiene	M	225	0	0.000	ug/L	501	
62	22.977	Naphthalene		128	45	0.211	ug/L	641	
63	23.513	1,2,3 -Trichlorobenzene	M	180	0	0.000	ug/L	509	

Status and Errors:

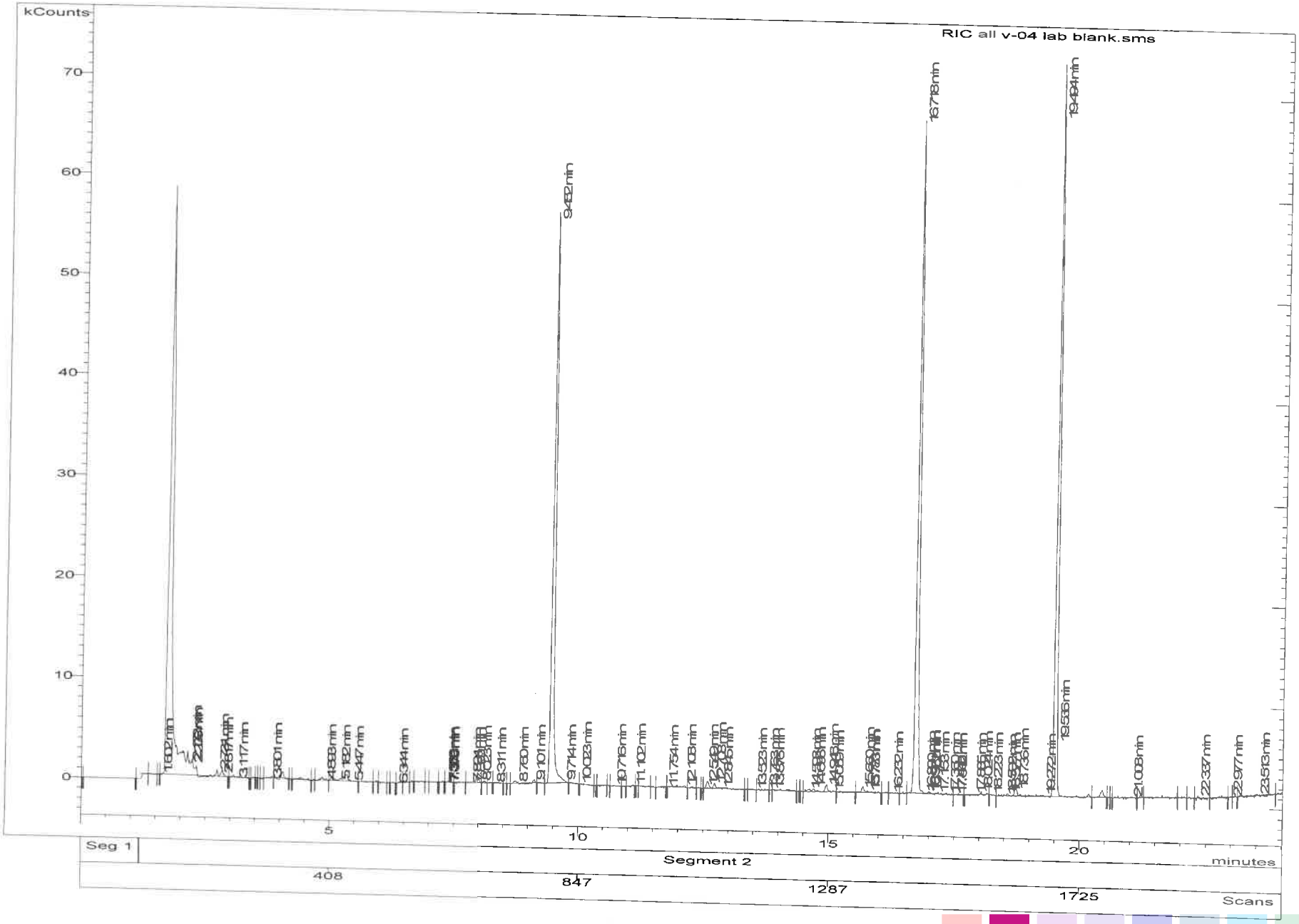
M : Missing peak.
S : Internal Standard Peak.
U : User defined end points.

Print Date: 24 Oct 2018 12:51:28

Chromatogram Plot

File: c:\saturnws\data\524.2 october 24 2018\v-04 lab blank.sms
Sample: V-04 Lab Blank
Scan Range: 1 - 2077 Time Range: 0.00 - 24.02 min.
Sample Notes: 524.2 Lab Blank

Operator: SKR
Date: 10/24/2018 10:54 AM

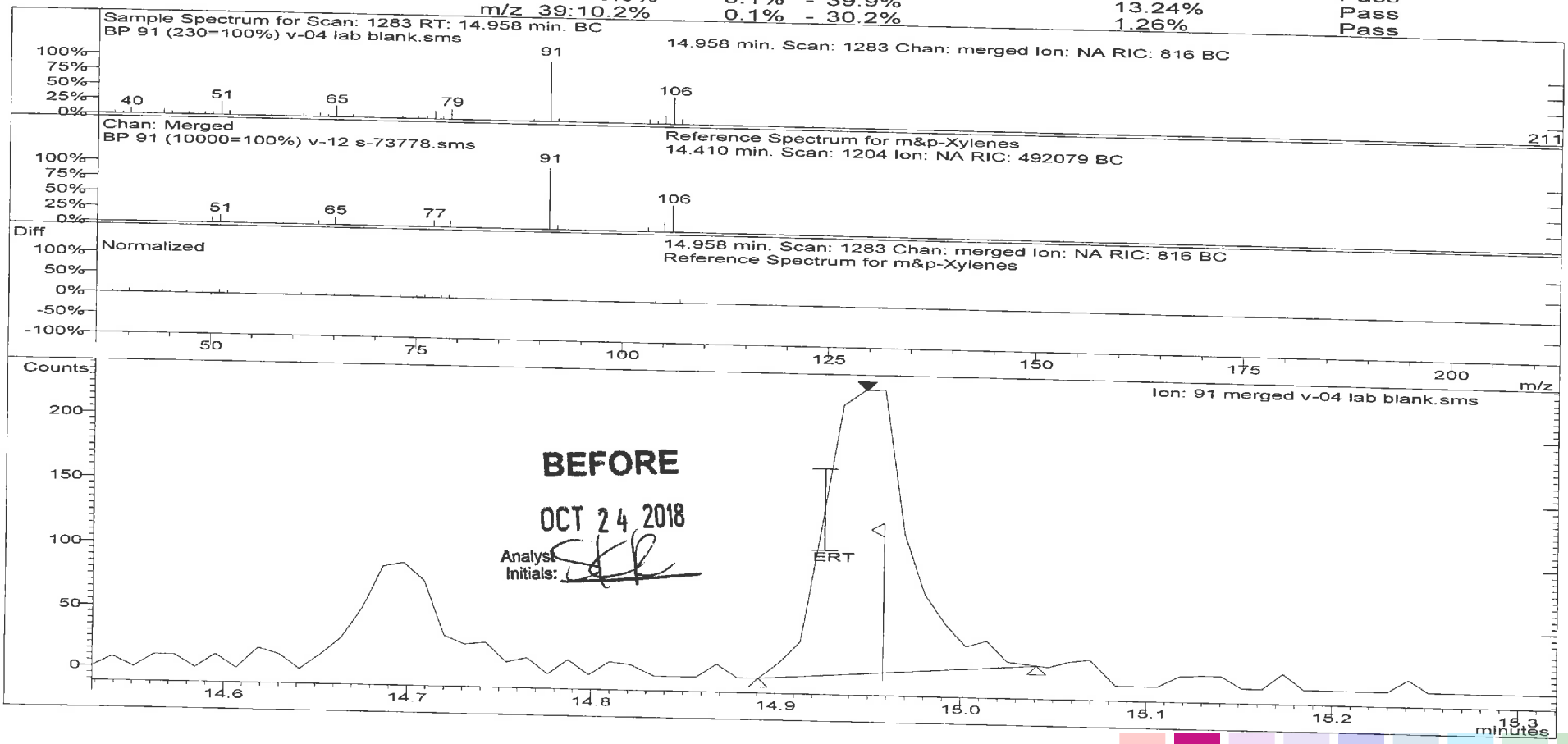


Print Date: 24 Oct 2018 12:50:48

Target Compound #37 from v-04 lab blank.sms

Sample ID:	V-04 Lab Blank	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 10:54 AM	Data File:	c:\... v-04 lab blank.
Calculation Date:	10/24/2018 11:39 AM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Lab Blank		

Parameter	Specification	Actual	Status
Compound Number		37	
Retention Time	14.926 +/- 0.400	14.948 min.	Pass
RT Offset		Δ0.02222 min.	
Peak Name		m&p-Xylenes	
CAS Number		106-42-3	
Status			
Quan Ions	91		
Area	>=30	723	
Height		223	Pass
Amount	>= 0.000 ug/L	0.095 ug/L	
Fit	>=500	993	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.2662x -0.0154	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 106:60.1% 40.1% - 80.1%	54.02%	Pass
	m/z 105:19.9% 0.1% - 39.9%	13.24%	Pass
	m/z 39:10.2% 0.1% - 30.2%	1.26%	Pass



BEFORE

OCT 24 2018

Analyst Initials:

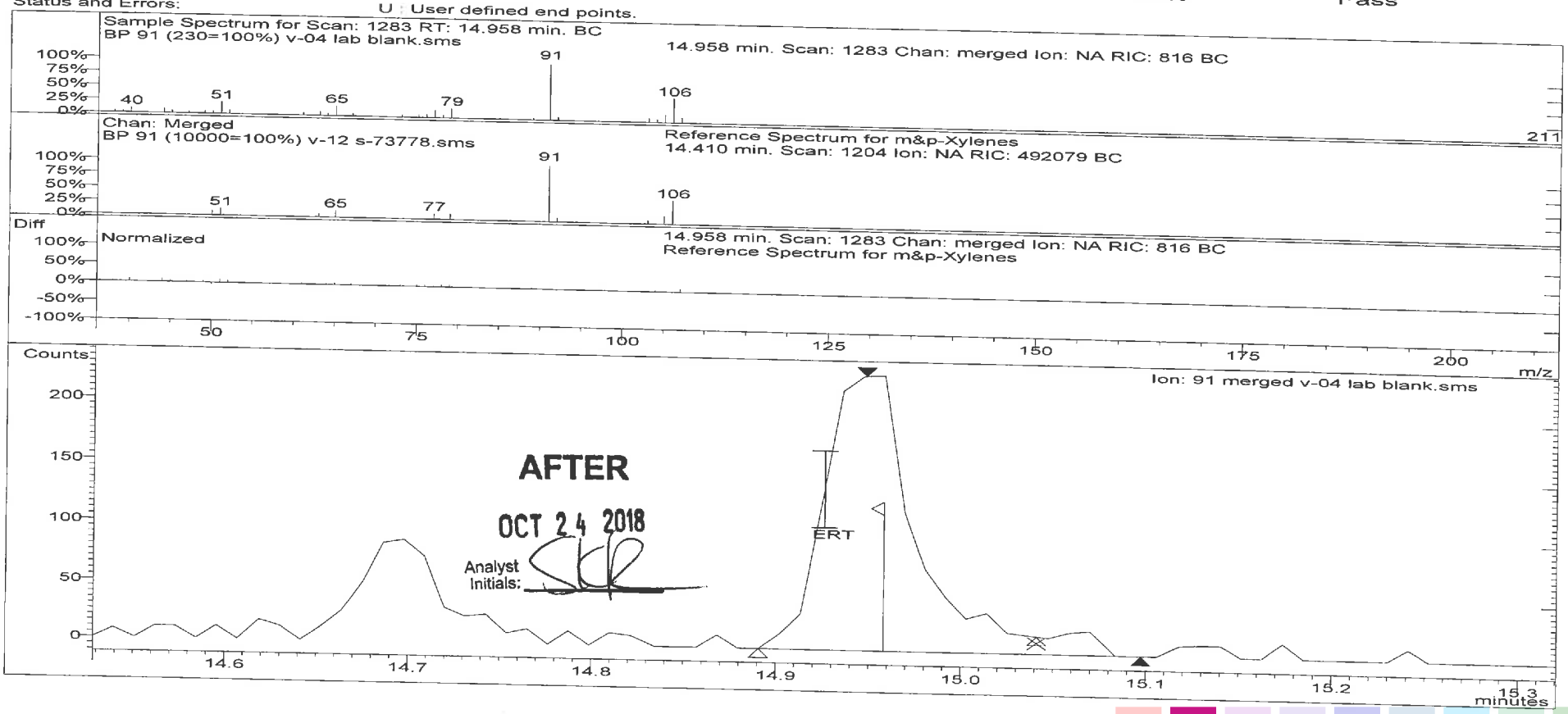
Print Date: 24 Oct 2018 12:50:53

Target Compound #37 from v-04 lab blank.sms

Sample ID:	V-04 Lab Blank	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 10:54 AM	Data File:	c:\... v-04 lab blank.
Calculation Date:	10/24/2018 12:50 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Lab Blank		

Parameter	Specification	Actual	Status
Compound Number		37	
Retention Time	14.926 +/- 0.400	14.948 min.	Pass
RT Offset		Δ0.02222 min.	
Peak Name		m&p-Xylenes	
CAS Number		106-42-3	
Status		U	
Quan Ions	91		
Area	>=30	829	
Height		229	Pass
Amount	>= 0.000 ug/L	0.100 ug/L	
Fit	>=500	993	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.2662x -0.0154	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 106:60.1% 40.1% - 80.1%	47.11%	Pass
	m/z 105:19.9% 0.1% - 39.9%	11.55%	Pass
	m/z 39:10.2% 0.1% - 30.2%	1.09%	Pass

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

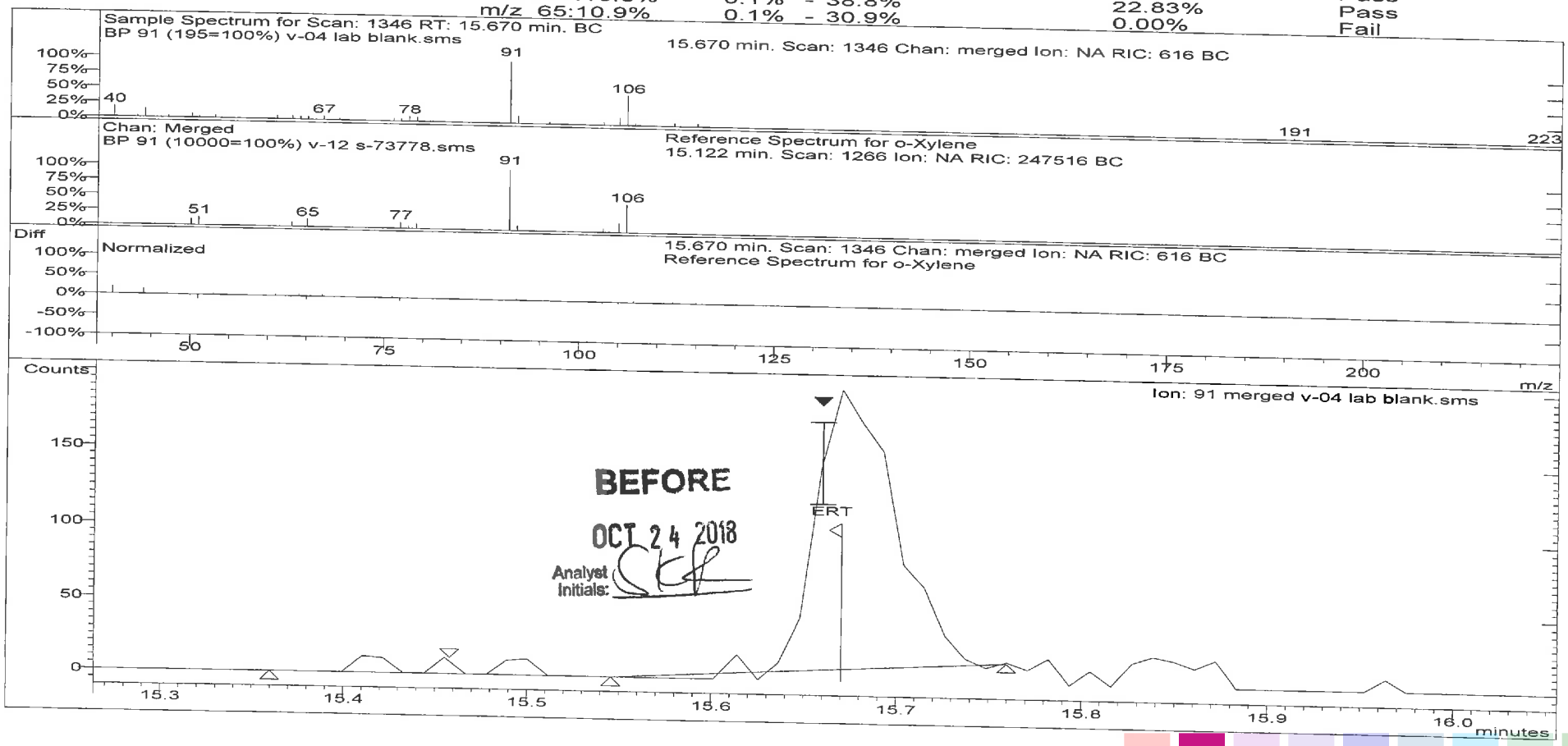
Analyst Initials: SCP

Print Date: 24 Oct 2018 12:51:00

Target Compound #38 from v-04 lab blank.sms

Sample ID:	V-04 Lab Blank	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 10:54 AM	Data File:	c:\... v-04 lab blank.
Calculation Date:	10/24/2018 12:50 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Lab Blank		

Parameter	Specification		Actual		Status
Compound Number			38		
Retention Time	15.660 +/- 0.400		15.660 min.		Pass
RT Offset			Δ 0.00024 min.		
Peak Name			o-Xylene		
CAS Number			95-47-6		
Status					
Quan Ions	91				
Area	>=30		550		
Height			177		Pass
Amount	>= 0.000 ug/L		0.049 ug/L		
Fit	>=500		972		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.2829x -0.0063		Pass
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 106:57.3%	37.3% - 77.3%		55.18%	Pass
	m/z 105:18.8%	0.1% - 38.8%		22.83%	Pass
	m/z 65:10.9%	0.1% - 30.9%		0.00%	Fail



BEFORE
OCT 24 2018
Analyst Initials:

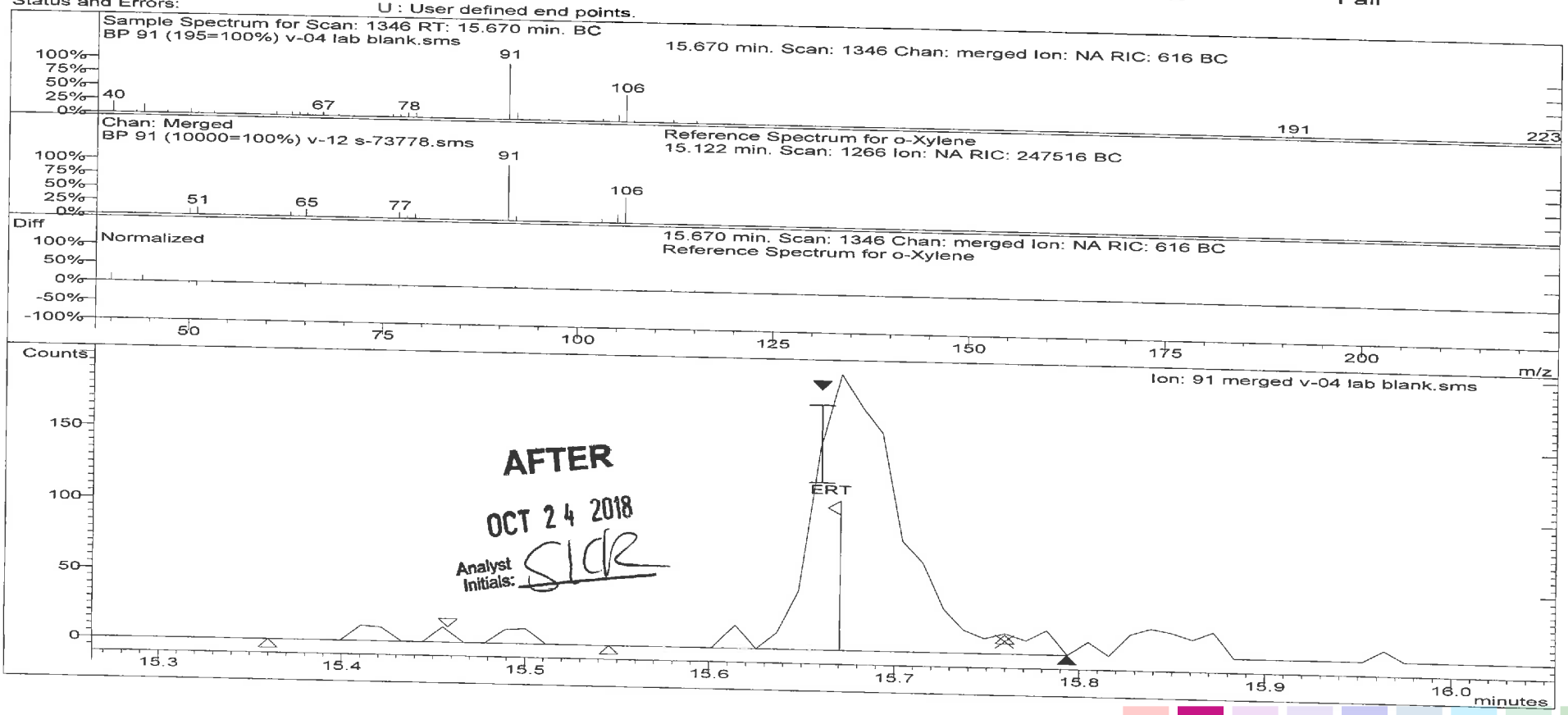
Print Date: 24 Oct 2018 12:51:06

Target Compound #38 from v-04 lab blank.sms

Sample ID:	V-04 Lab Blank	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 10:54 AM	Data File:	c:\... v-04 lab blank.
Calculation Date:	10/24/2018 12:51 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Lab Blank		

Parameter	Specification		Actual		Status
Compound Number			38		
Retention Time	15.660 +/- 0.400		15.660 min.		Pass
RT Offset			Δ 0.00024 min.		
Peak Name			o-Xylene		
CAS Number			95-47-6		
Status			U		
Quan Ions	91				
Area	>=30		663		Pass
Height			184		
Amount	>= 0.000 ug/L		0.054 ug/L		Pass
Fit	>=500		972		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.2829x -0.0063		
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 106:57.3%	37.3% - 77.3%		45.71%	Pass
	m/z 105:18.8%	0.1% - 38.8%		18.91%	Pass
	m/z 65:10.9%	0.1% - 30.9%		0.00%	Fail

Status and Errors: U : User defined end points.



AFTER
OCT 24 2018
Analyst Initials: SCR

LABORATORY CONTROL SAMPLE REPORT

Data File: c:\saturnws\data\524.2 october 24 2018\v-05 s-87805.sms **Acquisition Date:** 10/24/2018 11:25

Comment: 524.2 Xylene RL Check @ 0.15/0.30 ppb

SampleID: V-05 S-87805 **Analyst:** SKR

Calibration File: C:\SaturnWS\data\524.2 October 24 2018\V-03 S-87041.SMS

Calibration Dates: First: 10/8/2018 11:15 **Last:** 10/8/2018 14:53

	Compound	Conc	Units	Amount	Accuracy	Limits	Status
21)	* (IS-1) Fluorobenzene	1.00	ug/L	1.00	100 %	70 - 130	PASS
1)	Dichlorodifluoromethane	0.00	ug/L	0.15	0 %	50 - 150	FAIL
2)	Chloromethane	0.00	ug/L	0.15	0 %	50 - 150	FAIL
3)	Vinyl chloride	0.00	ug/L	0.15	0 %	50 - 150	FAIL
4)	Bromomethane	0.35	ug/L	0.15	235 %	50 - 150	FAIL
5)	Chloroethane	0.32	ug/L	0.15	210 %	50 - 150	FAIL
6)	Trichlorofluoromethane	0.00	ug/L	0.15	0 %	50 - 150	FAIL
7)	1,1-Dichloroethene	0.31	ug/L	0.15	208 %	50 - 150	FAIL
8)	Methylene chloride	0.43	ug/L	0.15	283 %	50 - 150	FAIL
9)	methyl-tert-butyl-ether (MTBE)	0.01	ug/L	0.15	5 %	50 - 150	FAIL
10)	trans-1,2-Dichloroethene	0.28	ug/L	0.15	188 %	50 - 150	FAIL
11)	1,1-Dichloroethane	0.33	ug/L	0.15	219 %	50 - 150	FAIL
12)	2,2-Dichloropropane	0.29	ug/L	0.15	191 %	50 - 150	FAIL
13)	cis-1,2-Dichloroethene	0.32	ug/L	0.15	215 %	50 - 150	FAIL
14)	Bromochloromethane	0.31	ug/L	0.15	208 %	50 - 150	FAIL
15)	Chloroform (THM)	0.30	ug/L	0.15	199 %	50 - 150	FAIL
16)	1,1,1-Trichloroethane	0.30	ug/L	0.15	199 %	50 - 150	FAIL
17)	Carbon tetrachloride	0.28	ug/L	0.15	183 %	50 - 150	FAIL
18)	1,1-Dichloro-1-propene	0.29	ug/L	0.15	195 %	50 - 150	FAIL
19)	Benzene	0.16	ug/L	0.15	108 %	50 - 150	PASS
20)	1,2-Dichloroethane	0.29	ug/L	0.15	191 %	50 - 150	FAIL
22)	Trichloroethene (TCE)	0.29	ug/L	0.15	191 %	50 - 150	FAIL
23)	1,2-Dichloropropane	0.29	ug/L	0.15	196 %	50 - 150	FAIL
24)	Dibromomethane	0.13	ug/L	0.15	87 %	50 - 150	PASS
25)	Bromodichloromethane (THM)	0.33	ug/L	0.15	221 %	50 - 150	FAIL
26)	cis-1,3-Dichloro-1-propene	0.30	ug/L	0.15	197 %	50 - 150	FAIL
27)	Toluene	0.33	ug/L	0.15	220 %	50 - 150	FAIL
28)	trans-1,3-Dichloro-1-propene	0.31	ug/L	0.15	209 %	50 - 150	FAIL
29)	1,1,2-Trichloroethane	0.33	ug/L	0.15	220 %	50 - 150	FAIL
30)	Tetrachloroethene (PCE)	0.29	ug/L	0.15	196 %	50 - 150	FAIL
31)	1,3-dichloropropane	0.33	ug/L	0.15	217 %	50 - 150	FAIL
32)	Dibromochloromethane (THM)	0.31	ug/L	0.15	206 %	50 - 150	FAIL
33)	1,2-Dibromomethane (EDB)	0.29	ug/L	0.15	191 %	50 - 150	FAIL
34)	Ethylbenzene	0.34	ug/L	0.15	223 %	50 - 150	FAIL
35)	Chlorobenzene	0.33	ug/L	0.15	221 %	50 - 150	FAIL
36)	1,1,1,2-Tetrachloroethane	0.33	ug/L	0.15	217 %	50 - 150	FAIL
37)	m&p-Xylenes	0.36	ug/L	0.30	121 %	50 - 150	PASS
38)	o-Xylene	0.19	ug/L	0.15	127 %	50 - 150	PASS
39)	Styrene	0.34	ug/L	0.15	229 %	50 - 150	FAIL
40)	Bromoform (THM)	0.31	ug/L	0.15	204 %	50 - 150	FAIL
41)	Isopropylbenzene	0.33	ug/L	0.15	219 %	50 - 150	FAIL

Ran for Xylenes only; both are good

10/24/2018 12:49

Page 1 of 2

	Compound	Conc	Units	Amount	Accuracy	Limits	Status
42)	(S-1) Bromofluorobenzene (BFB)	0.92	ug/L	1.00	92 %	70 - 130	PASS
43)	1,1,2,2-Tetrachloroethane	0.16	ug/L	0.15	107 %	50 - 150	PASS
44)	n-Propylbenzene	0.34	ug/L	0.15	230 %	50 - 150	FAIL
45)	Bromobenzene	0.33	ug/L	0.15	222 %	50 - 150	FAIL
46)	1,2,3-Trichloropropane	0.16	ug/L	0.15	108 %	50 - 150	PASS
47)	2-Chlorotoluene	0.32	ug/L	0.15	214 %	50 - 150	FAIL
48)	1,3,5-Trimethylbenzene	0.33	ug/L	0.15	223 %	50 - 150	FAIL
49)	4-Chlorotoluene	0.35	ug/L	0.15	231 %	50 - 150	FAIL
50)	tert-Butylbenzene	0.36	ug/L	0.15	240 %	50 - 150	FAIL
51)	1,2,4-Trimethylbenzene	0.34	ug/L	0.15	228 %	50 - 150	FAIL
52)	sec-Butylbenzene	0.34	ug/L	0.15	224 %	50 - 150	FAIL
53)	p-Isopropyltoluene (4-Iso)	0.36	ug/L	0.15	237 %	50 - 150	FAIL
54)	1,3-Dichlorobenzene	0.34	ug/L	0.15	226 %	50 - 150	FAIL
55)	1,4-Dichlorobenzene	0.33	ug/L	0.15	223 %	50 - 150	FAIL
56)	n-Butylbenzene	0.38	ug/L	0.15	251 %	50 - 150	FAIL
57)	1,2 -Dichlorobenzene	0.28	ug/L	0.15	187 %	50 - 150	FAIL
58)	(S-2) 1,2-Dichlorobenzene-d4	0.90	ug/L	1.00	90 %	70 - 130	PASS
59)	1,2-Dibromo-3-chloropropane (DBCP)	0.16	ug/L	0.15	104 %	50 - 150	PASS
60)	1,2,4-Trichlorobenzene	0.32	ug/L	0.15	213 %	50 - 150	FAIL
61)	Hexachlorobutadiene	0.35	ug/L	0.15	234 %	50 - 150	FAIL
62)	Naphthalene	0.31	ug/L	0.15	205 %	50 - 150	FAIL
63)	1,2,3 -Trichlorobenzene	0.30	ug/L	0.15	197 %	50 - 150	FAIL

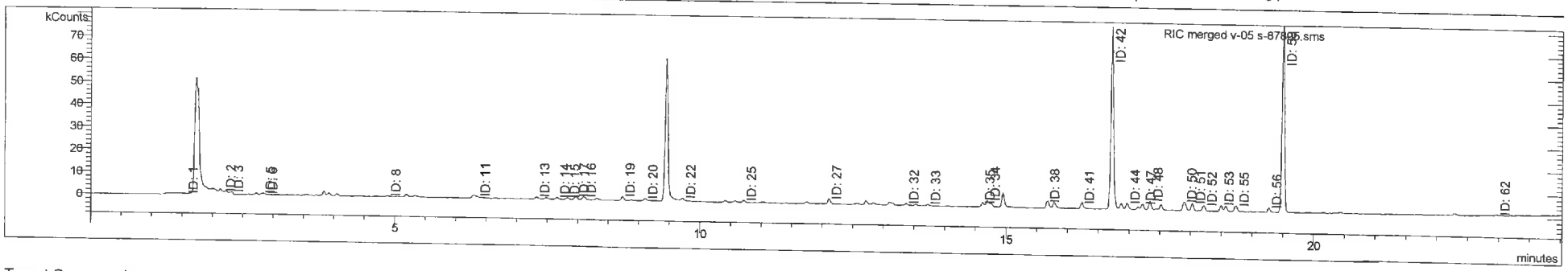
* indicates Internal Standard.

Print Date: 24 Oct 2018 12:49:22

524.2 VOA ANALYSES -- VARIAN #01

Sample Report for v-05 s-87805.sms

Sample ID:	V-05 S-87805	Operator:		Last Calibration:	10/8/2018 5:15 PM
Acquisition Date:	10/24/2018 11:25 AM	Calculation Date:	10/24/2018 12:49 PM	Method:	c:\... \v-05 s-87805.sms
Inj. Sample Notes:	524.2 Xylene RL Check @ 0.15/0.30 ppb			Header Time Date:	10/24/2018 12:49 PM
Data File:	c:\... \v-05 s-87805.sms	Multiplier:	1.000000	Identified Compounds:	31



Target Compounds

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
21	9.448	(IS-1) Fluorobenzene	S	96	80419	1.000	ug/L	999
1	1.559	Dichlorodifluoromethane	M	85	0	0.000	ug/L	331
2	2.172	Chloromethane	M	49+51	0	0.000	ug/L	N/A
3	2.301	Vinyl chloride	M	62	0	0.000	ug/L	791
4	2.725	Bromomethane		94+96	793	0.352	ug/L	N/A
5	2.820	Chloroethane		45+47	413	0.315	ug/L	N/A
6	2.863	Trichlorofluoromethane	M	101	0	0.000	ug/L	728
7	3.827	1,1-Dichloroethene		61+96	1237	0.313	ug/L	968
8	4.891	Methylene chloride		49+84	529	0.425	ug/L	924
9	5.440	methyl-tert-butyl-ether (MTBE)		73	82	0.007	ug/L	N/A
10	5.190	trans-1,2-Dichloroethene		61+96	1819	0.283	ug/L	937
11	6.355	1,1-Dichloroethane		63	1134	0.329	ug/L	997
12	7.481	2,2-Dichloropropane		77+79	1293	0.287	ug/L	992
13	7.328	cis-1,2-Dichloroethene		62+96	686	0.322	ug/L	993
14	7.660	Bromochloromethane		49+51+93	1035	0.313	ug/L	987
15	7.819	Chloroform (THM)		83	1055	0.298	ug/L	980
16	8.088	1,1,1-Trichloroethane		97	1239	0.299	ug/L	990
17	7.971	Carbon tetrachloride		117	813	0.275	ug/L	993
18	8.315	1,1-Dichloro-1-propene		75	615	0.293	ug/L	962
19	8.726	Benzene		78	1592	0.162	ug/L	991
20	9.101	1,2-Dichloroethane		62+64	1431	0.286	ug/L	N/A
22	9.717	Trichloroethene (TCE)		130+132	1023	0.286	ug/L	975
23	10.559	1,2-Dichloropropane		63	411	0.294	ug/L	947
24	10.393	Dibromomethane		95	372	0.130	ug/L	993
25	10.707	Bromodichloromethane (THM)		83	1082	0.331	ug/L	995
26	11.728	cis-1,3-Dichloro-1-propene		75	816	0.295	ug/L	992
27	12.099	Toluene		91	3553	0.330	ug/L	999
28	12.836	trans-1,3-Dichloro-1-propene		75	836	0.313	ug/L	946
29	13.095	1,1,2-Trichloroethane		83+61	1007	0.330	ug/L	958
30	12.713	Tetrachloroethene (PCE)		166	633	0.295	ug/L	988
31	13.519	1,3-dichloropropane		41+76	1127	0.326	ug/L	974
32	13.367	Dibromochloromethane (THM)		129	717	0.309	ug/L	988
33	13.719	1,2-Dibromomethane (EDB)		107+109+93	1467	0.287	ug/L	991
34	14.685	Ethylbenzene		91	3402	0.335	ug/L	997

524.2 VOA ANALYSES -- VARIAN #01

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
35	14.601	Chlorobenzene		112	1905	0.332	ug/L	997
36	14.742	1,1,1,2-Tetrachloroethane		131	931	0.326	ug/L	965
37	14.944	m&p-Xylenes		91	6536	0.363	ug/L	997
38	15.658	o-Xylene	U	91	3822	0.190	ug/L	998
39	15.778	Styrene		104	1689	0.343	ug/L	988
40	15.799	Bromoform (THM)		173	446	0.306	ug/L	988
41	16.219	Isopropylbenzene		105	3108	0.328	ug/L	996
42	16.711	(S-1) Bromofluorobenzene (BFB)		95+174+176	117079	0.918	ug/L	992 91.8%
43	17.144	1,1,2,2-Tetrachloroethane		83	749	0.161	ug/L	958
44	16.962	n-Propylbenzene		91	3150	0.344	ug/L	999
45	16.852	Bromobenzene		77	1300	0.333	ug/L	970
46	17.343	1,2,3-Trichloropropane		75+110+112	1133	0.162	ug/L	953
47	17.215	2-Chlorotoluene		91	2445	0.322	ug/L	994
48	17.334	1,3,5-Trimethylbenzene		77+120	2160	0.334	ug/L	993
49	17.515	4-Chlorotoluene		91	2405	0.347	ug/L	N/A
50	17.885	tert-Butylbenzene		119	3392	0.360	ug/L	978
51	18.025	1,2,4-Trimethylbenzene		120	1593	0.342	ug/L	997
52	18.211	sec-Butylbenzene		105	2577	0.336	ug/L	997
53	18.489	p-Isopropyltoluene (4-Iso)		119	2449	0.355	ug/L	996
54	18.568	1,3-Dichlorobenzene		111+75	1283	0.339	ug/L	988
55	18.737	1,4-Dichlorobenzene		146	1184	0.335	ug/L	977
56	19.265	n-Butylbenzene		91	1645	0.376	ug/L	998
57	19.506	1,2 -Dichlorobenzene		146	1150	0.281	ug/L	583
58	19.488	(S-2) 1,2-Dichlorobenzene-d4		152+154	31782	0.905	ug/L	730 90.5%
59	21.028	1,2-Dibromo-3-chloropropane (DBCP)		157+155+159	204	0.156	ug/L	775
60	22.317	1,2,4-Trichlorobenzene		180	128	0.319	ug/L	925
61	22.283	Hexachlorobutadiene		225	258	0.351	ug/L	908
62	22.974	Naphthalene		128	318	0.308	ug/L	883
63	23.325	1,2,3 -Trichlorobenzene		180	133	0.296	ug/L	932

Status and Errors:

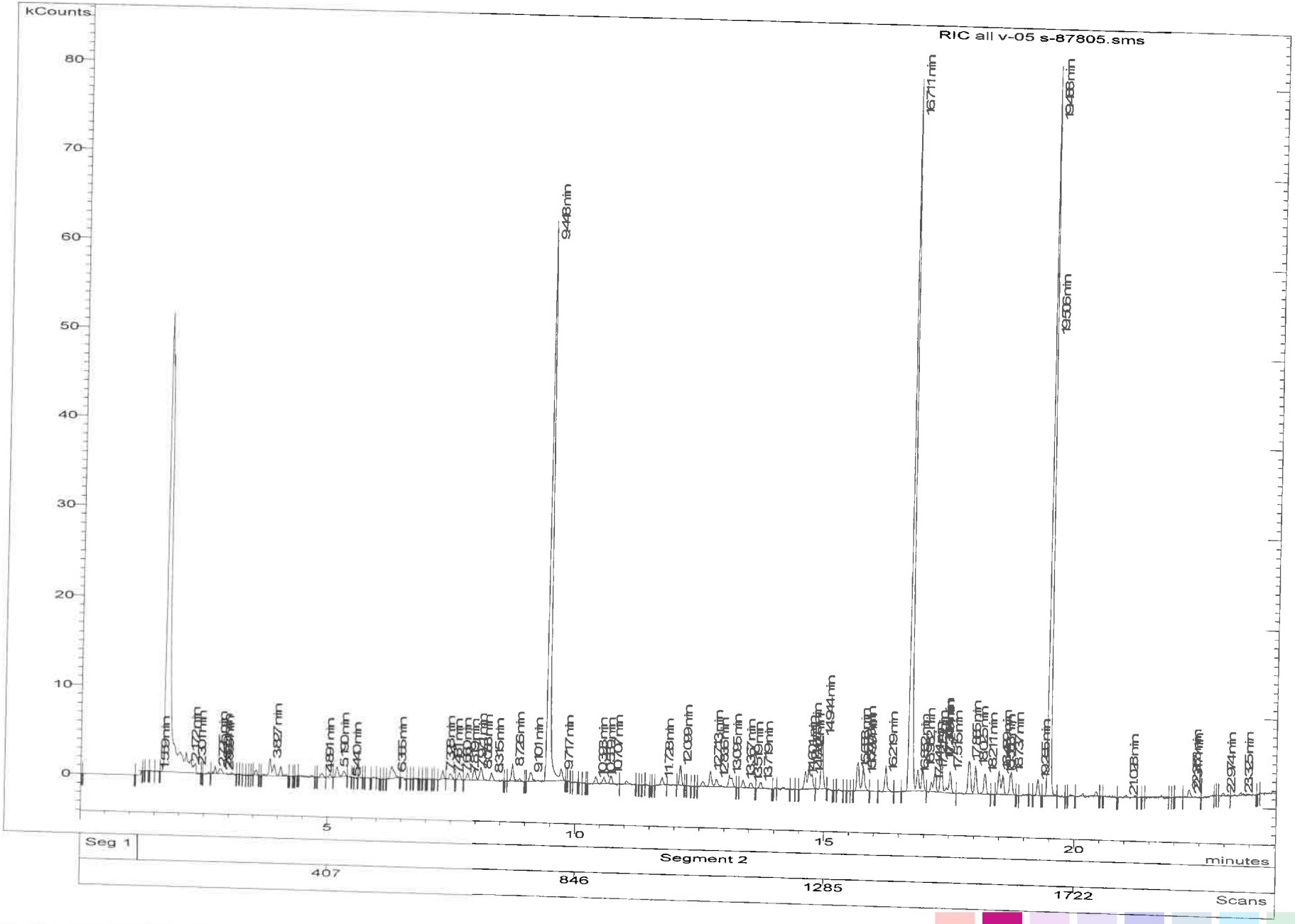
M : Missing peak.
S : Internal Standard Peak.
U : User defined end points.

Print Date: 24 Oct 2018 12:49:27

Chromatogram Plot

File: c:\saturnws\data\524.2 october 24 2018\v-05 s-87805.sms
Sample: V-05 S-87805
Scan Range: 1 - 2073 Time Range: 0.00 - 24.02 min.
Sample Notes: 524.2 Xylene RL Check @ 0.15/0.30 ppb

Operator: SKR
Date: 10/24/2018 11:25 AM

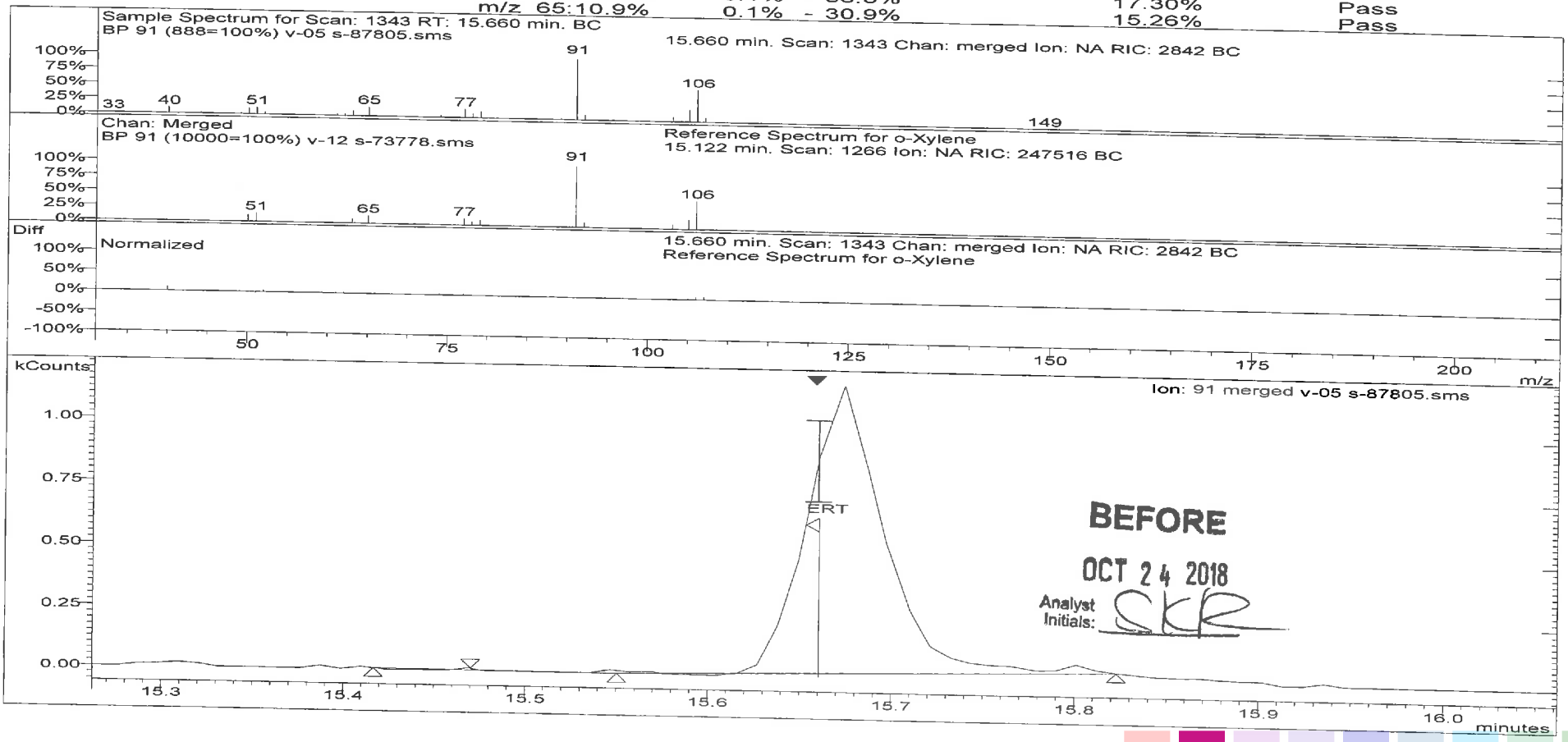


Print Date: 24 Oct 2018 12:49:06

Target Compound #38 from v-05 s-87805.sms

Sample ID:	V-05 S-87805	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:25 AM	Data File:	c:\... v-05 s-87805.sm
Calculation Date:	10/24/2018 12:49 PM	Method:	c:\... v-05 s-87805.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Xylene RL Check @ 0.15/0.30 ppb		

Parameter	Specification		Actual	Status
Compound Number			38	
Retention Time	15.660 +/- 0.400		15.658 min.	Pass
RT Offset			Δ0.00170 min.	
Peak Name			o-Xylene	
CAS Number			95-47-6	
Status				
Quan Ions	91			
Area	>=30		3416	Pass
Height			1160	
Amount	>= 0.000 ug/L		0.172 ug/L	Pass
Fit	>=500		998	Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.2829x -0.0063	
IS Peak Name			(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 106:57.3%	37.3% - 77.3%	49.34%	Pass
	m/z 105:18.8%	0.1% - 38.8%	17.30%	Pass
	m/z 65:10.9%	0.1% - 30.9%	15.26%	Pass



BEFORE

OCT 24 2018

Analyst Initials: SKR

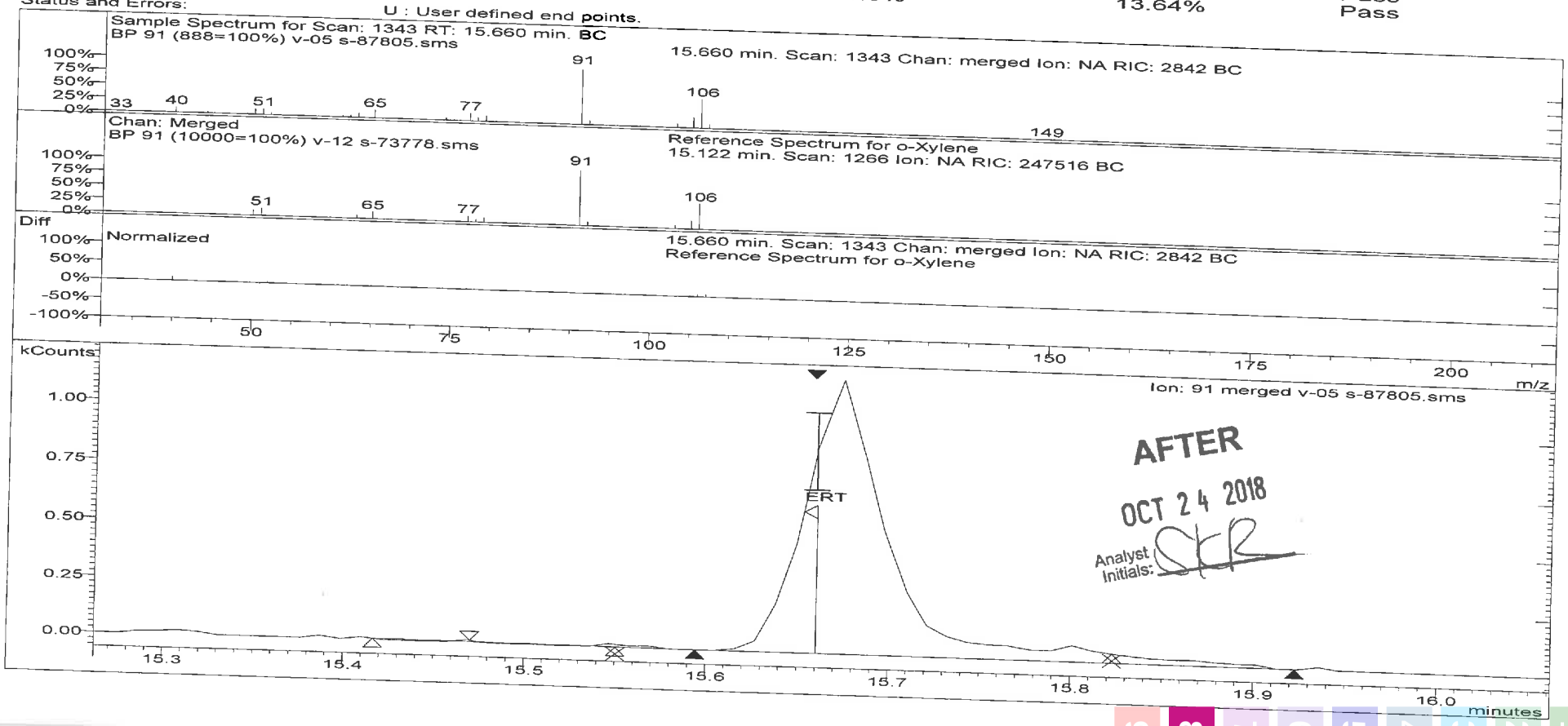
Print Date: 24 Oct 2018 12:49:11

Target Compound #38 from v-05 s-87805.sms

Sample ID:	V-05 S-87805	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:25 AM	Data File:	c:\... v-05 s-87805.sm
Calculation Date:	10/24/2018 12:49 PM	Method:	c:\... v-05 s-87805.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Xylene RL Check @ 0.15/0.30 ppb		

Parameter	Specification		Actual	Status
Compound Number			38	
Retention Time	15.660 +/- 0.400		15.658 min.	
RT Offset			Δ0.00170 min.	Pass
Peak Name			o-Xylene	
CAS Number			95-47-6	
Status			U	
Quan Ions	91			
Area	>=30		3822	
Height			1175	Pass
Amount	>= 0.000 ug/L		0.190 ug/L	
Fit	>=500		998	Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.2829x -0.0063	Pass
IS Peak Name			(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 106:57.3%	37.3% - 77.3%	44.09%	Pass
	m/z 105:18.8%	0.1% - 38.8%	15.46%	Pass
	m/z 65:10.9%	0.1% - 30.9%	13.64%	Pass

Status and Errors: U : User defined end points.



AFTER
OCT 24 2018
Analyst Initials: SKR

LABORATORY CONTROL SAMPLE REPORT

Data File: c:\saturnws\data\524.2 october 24 2018\v-06 s-87806.sms **Acquisition Date:** 10/24/2018 11:56

Comment: 524.2 RL Check @ 0.50 ppb

SampleID: V-06 S-87806 **Analyst:** SKR

Calibration File: C:\SaturnWS\data\524.2 October 24 2018\V-03 S-87041.SMS

Calibration Dates: First: 10/8/2018 11:15 **Last:** 10/8/2018 14:53

	Compound	Conc	Units	Amount	Accuracy	Limits	Status
21)	* (IS-1) Fluorobenzene	1.00	ug/L	1.00	100 %	70 - 130	PASS
1)	Dichlorodifluoromethane	0.75	ug/L	0.50	151 %	50 - 150	FAIL high
2)	Chloromethane	0.51	ug/L	0.50	102 %	50 - 150	PASS
3)	Vinyl chloride	0.70	ug/L	0.50	140 %	50 - 150	PASS
4)	Bromomethane	0.67	ug/L	0.50	134 %	50 - 150	PASS
5)	Chloroethane	0.58	ug/L	0.50	116 %	50 - 150	PASS
6)	Trichlorofluoromethane	0.70	ug/L	0.50	140 %	50 - 150	PASS
7)	1,1-Dichloroethene	0.54	ug/L	0.50	108 %	50 - 150	PASS
8)	Methylene chloride	0.60	ug/L	0.50	119 %	50 - 150	PASS
9)	methyl-tert-butyl-ether (MTBE)	0.48	ug/L	0.50	97 %	50 - 150	PASS
10)	trans-1,2-Dichloroethene	0.38	ug/L	0.50	76 %	50 - 150	PASS
11)	1,1-Dichloroethane	0.58	ug/L	0.50	115 %	50 - 150	PASS
12)	2,2-Dichloropropane	0.58	ug/L	0.50	115 %	50 - 150	PASS
13)	cis-1,2-Dichloroethene	0.59	ug/L	0.50	119 %	50 - 150	PASS
14)	Bromochloromethane	0.60	ug/L	0.50	120 %	50 - 150	PASS
15)	Chloroform (THM)	0.59	ug/L	0.50	118 %	50 - 150	PASS
16)	1,1,1-Trichloroethane	0.55	ug/L	0.50	109 %	50 - 150	PASS
17)	Carbon tetrachloride	0.53	ug/L	0.50	106 %	50 - 150	PASS
18)	1,1-Dichloro-1-propene	0.57	ug/L	0.50	114 %	50 - 150	PASS
19)	Benzene	0.47	ug/L	0.50	94 %	50 - 150	PASS
20)	1,2-Dichloroethane	0.56	ug/L	0.50	113 %	50 - 150	PASS
22)	Trichloroethene (TCE)	0.56	ug/L	0.50	112 %	50 - 150	PASS
23)	1,2-Dichloropropane	0.61	ug/L	0.50	122 %	50 - 150	PASS
24)	Dibromomethane	0.49	ug/L	0.50	99 %	50 - 150	PASS
25)	Bromodichloromethane (THM)	0.61	ug/L	0.50	123 %	50 - 150	PASS
26)	cis-1,3-Dichloro-1-propene	0.58	ug/L	0.50	116 %	50 - 150	PASS
27)	Toluene	0.59	ug/L	0.50	118 %	50 - 150	PASS
28)	trans-1,3-Dichloro-1-propene	0.58	ug/L	0.50	116 %	50 - 150	PASS
29)	1,1,2-Trichloroethane	0.58	ug/L	0.50	117 %	50 - 150	PASS
30)	Tetrachloroethene (PCE)	0.54	ug/L	0.50	109 %	50 - 150	PASS
31)	1,3-dichloropropane	0.57	ug/L	0.50	113 %	50 - 150	PASS
32)	Dibromochloromethane (THM)	0.58	ug/L	0.50	116 %	50 - 150	PASS
33)	1,2-Dibromomethane (EDB)	0.56	ug/L	0.50	112 %	50 - 150	PASS
34)	Ethylbenzene	0.58	ug/L	0.50	116 %	50 - 150	PASS
35)	Chlorobenzene	0.59	ug/L	0.50	117 %	50 - 150	PASS
36)	1,1,1,2-Tetrachloroethane	0.58	ug/L	0.50	115 %	50 - 150	PASS
37)	m&p-Xylenes	0.88	ug/L	1.00	88 %	70 - 130	PASS
38)	o-Xylene	0.46	ug/L	0.50	93 %	70 - 130	PASS
39)	Styrene	0.59	ug/L	0.50	117 %	50 - 150	PASS
40)	Bromoform (THM)	0.57	ug/L	0.50	113 %	50 - 150	PASS
41)	Isopropylbenzene	0.56	ug/L	0.50	113 %	50 - 150	PASS

	Compound	Conc	Units	Amount	Accuracy	Limits	Status
42)	(S-1) Bromofluorobenzene (BFB)	0.89	ug/L	1.00	89 %	70 - 130	PASS
43)	1,1,2,2-Tetrachloroethane	0.45	ug/L	0.50	90 %	50 - 150	PASS
44)	n-Propylbenzene	0.54	ug/L	0.50	109 %	50 - 150	PASS
45)	Bromobenzene	0.60	ug/L	0.50	119 %	50 - 150	PASS
46)	1,2,3-Trichloropropane	0.46	ug/L	0.50	92 %	50 - 150	PASS
47)	2-Chlorotoluene	0.55	ug/L	0.50	110 %	50 - 150	PASS
48)	1,3,5-Trimethylbenzene	0.57	ug/L	0.50	114 %	50 - 150	PASS
49)	4-Chlorotoluene	0.58	ug/L	0.50	116 %	50 - 150	PASS
50)	tert-Butylbenzene	0.60	ug/L	0.50	119 %	50 - 150	PASS
51)	1,2,4-Trimethylbenzene	0.61	ug/L	0.50	121 %	50 - 150	PASS
52)	sec-Butylbenzene	0.53	ug/L	0.50	106 %	50 - 150	PASS
53)	p-Isopropyltoluene (4-Iso)	0.58	ug/L	0.50	116 %	50 - 150	PASS
54)	1,3-Dichlorobenzene	0.57	ug/L	0.50	114 %	50 - 150	PASS
55)	1,4-Dichlorobenzene	0.58	ug/L	0.50	115 %	50 - 150	PASS
56)	n-Butylbenzene	0.56	ug/L	0.50	112 %	50 - 150	PASS
57)	1,2 -Dichlorobenzene	0.55	ug/L	0.50	110 %	50 - 150	PASS
58)	(S-2) 1,2-Dichlorobenzene-d4	0.91	ug/L	1.00	91 %	70 - 130	PASS
59)	1,2-Dibromo-3-chloropropane (DBCP)	0.45	ug/L	0.50	89 %	50 - 150	PASS
60)	1,2,4-Trichlorobenzene	0.52	ug/L	0.50	104 %	50 - 150	PASS
61)	Hexachlorobutadiene	0.48	ug/L	0.50	97 %	50 - 150	PASS
62)	Naphthalene	0.53	ug/L	0.50	105 %	50 - 150	PASS
63)	1,2,3 -Trichlorobenzene	0.49	ug/L	0.50	98 %	50 - 150	PASS

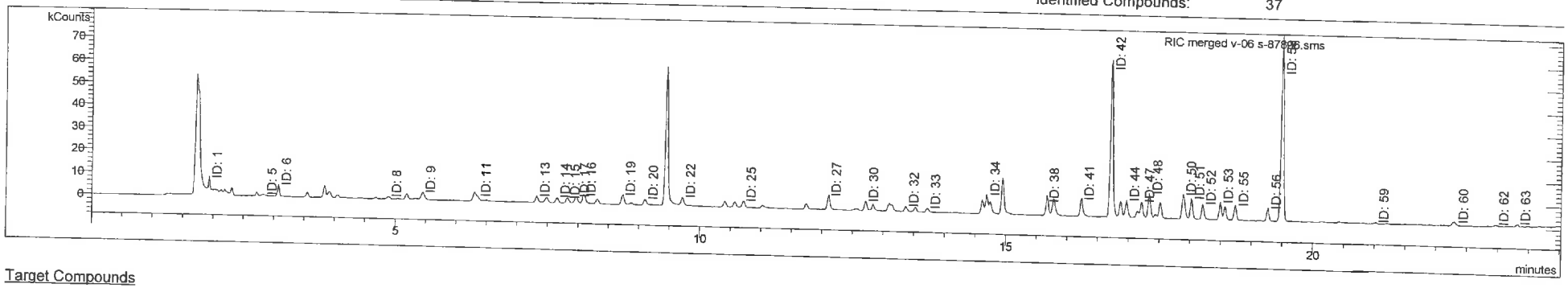
* indicates Internal Standard.

Print Date: 24 Oct 2018 12:47:46

524.2 VOA ANALYSES -- VARIAN #01

Sample Report for v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:		Last Calibration:	10/8/2018 5:15 PM
Acquisition Date:	10/24/2018 11:56 AM	Calculation Date:	10/24/2018 12:47 PM	Method:	c:\... \v-06 s-87806.sms
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb			Header Time Date:	10/24/2018 12:47 PM
Data File:	c:\... \v-06 s-87806.sms	Multiplier:	1.000000	Identified Compounds:	37



Target Compounds

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
21	9.443	(IS-1) Fluorobenzene	S	96	77519	1.000	ug/L	999
1	1.935	Dichlorodifluoromethane		85	4025	0.753	ug/L	929
2	2.192	Chloromethane		49+51	797	0.511	ug/L	N/A
3	2.305	Vinyl chloride		62	2386	0.702	ug/L	999
4	2.722	Bromomethane		94+96	1364	0.669	ug/L	N/A
5	2.839	Chloroethane	U	45+47	542	0.582	ug/L	N/A
6	3.077	Trichlorofluoromethane		101	5251	0.702	ug/L	1000
7	3.828	1,1-Dichloroethene	U	61+96	3422	0.538	ug/L	989
8	4.890	Methylene chloride		49+84	1449	0.597	ug/L	999
9	5.447	methyl-tert-butyl-ether (MTBE)	U	73	5655	0.484	ug/L	N/A
10	5.192	trans-1,2-Dichloroethene		61+96	3100	0.382	ug/L	983
11	6.354	1,1-Dichloroethane		63	3459	0.577	ug/L	1000
12	7.484	2,2-Dichloropropane		77+79	3843	0.577	ug/L	997
13	7.325	cis-1,2-Dichloroethene		62+96	1786	0.593	ug/L	997
14	7.660	Bromochloromethane		49+51+93	3298	0.601	ug/L	998
15	7.815	Chloroform (THM)		83	3131	0.589	ug/L	998
16	8.082	1,1,1-Trichloroethane		97	3240	0.547	ug/L	996
17	7.972	Carbon tetrachloride		117	2266	0.529	ug/L	999
18	8.302	1,1-Dichloro-1-propene	U	75	1741	0.569	ug/L	980
19	8.727	Benzene		78	4435	0.469	ug/L	997
20	9.099	1,2-Dichloroethane		62+64	4468	0.565	ug/L	N/A
22	9.709	Trichloroethene (TCE)	U	130+132	2926	0.562	ug/L	990
23	10.567	1,2-Dichloropropane	U	63	1482	0.612	ug/L	986
24	10.390	Dibromomethane	U	95	1354	0.493	ug/L	998
25	10.706	Bromodichloromethane (THM)		83	3130	0.613	ug/L	998
26	11.727	cis-1,3-Dichloro-1-propene		75	2516	0.581	ug/L	997
27	12.098	Toluene		91	9252	0.588	ug/L	1000
28	12.834	trans-1,3-Dichloro-1-propene		75	2409	0.578	ug/L	978
29	13.091	1,1,2-Trichloroethane		83+61	2822	0.584	ug/L	989
30	12.706	Tetrachloroethene (PCE)		166	1522	0.543	ug/L	995
31	13.516	1,3-dichloropropane		41+76	3068	0.565	ug/L	997
32	13.365	Dibromochloromethane (THM)		129	2077	0.582	ug/L	993
33	13.716	1,2-Dibromomethane (EDB)	U	107+109+93	4280	0.560	ug/L	999
34	14.685	Ethylbenzene		91	9490	0.578	ug/L	997

524.2 VOA ANALYSES -- VARIAN #01

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
35	14.603	Chlorobenzene		112	5103	0.587	ug/L	999
36	14.732	1,1,1,2-Tetrachloroethane		131	2432	0.575	ug/L	984
37	14.941	m&p-Xylenes		91	16889	0.876	ug/L	998
38	15.655	o-Xylene	U	91	9698	0.464	ug/L	999
39	15.774	Styrene		104	4973	0.586	ug/L	993
40	15.799	Bromoform (THM)		173	1214	0.565	ug/L	993
41	16.220	Isopropylbenzene		105	8692	0.564	ug/L	999
42	16.709	(S-1) Bromofluorobenzene (BFB)		95+174+176	108791	0.885	ug/L	996 88.5%
43	17.141	1,1,2,2-Tetrachloroethane		83	2010	0.449	ug/L	964
44	16.960	n-Propylbenzene		91	8422	0.544	ug/L	999
45	16.853	Bromobenzene	U	77	3683	0.595	ug/L	969
46	17.338	1,2,3-Trichloropropane		75+110+112	3106	0.461	ug/L	980
47	17.205	2-Chlorotoluene		91	6550	0.548	ug/L	998
48	17.330	1,3,5-Trimethylbenzene		77+120	6213	0.569	ug/L	991
49	17.511	4-Chlorotoluene		91	6790	0.579	ug/L	N/A
50	17.881	tert-Butylbenzene		119	8803	0.596	ug/L	978
51	18.020	1,2,4-Trimethylbenzene		120	4578	0.607	ug/L	998
52	18.203	sec-Butylbenzene		105	7019	0.528	ug/L	998
53	18.486	p-Isopropyltoluene (4-Iso)		119	6845	0.578	ug/L	999
54	18.564	1,3-Dichlorobenzene		111+75	3336	0.570	ug/L	991
55	18.736	1,4-Dichlorobenzene		146	3625	0.577	ug/L	989
56	19.261	n-Butylbenzene		91	4649	0.558	ug/L	998
57	19.497	1,2 -Dichlorobenzene		146	3767	0.551	ug/L	748
58	19.485	(S-2) 1,2-Dichlorobenzene-d4		152+154	30850	0.911	ug/L	879 91.1%
59	21.020	1,2-Dibromo-3-chloropropane (DBCP)		157+155+159	564	0.447	ug/L	916
60	22.311	1,2,4-Trichlorobenzene		180	345	0.519	ug/L	969
61	22.281	Hexachlorobutadiene		225	449	0.483	ug/L	976
62	22.967	Naphthalene		128	889	0.527	ug/L	994
63	23.320	1,2,3 -Trichlorobenzene		180	357	0.490	ug/L	972

Status and Errors:

S : Internal Standard Peak.

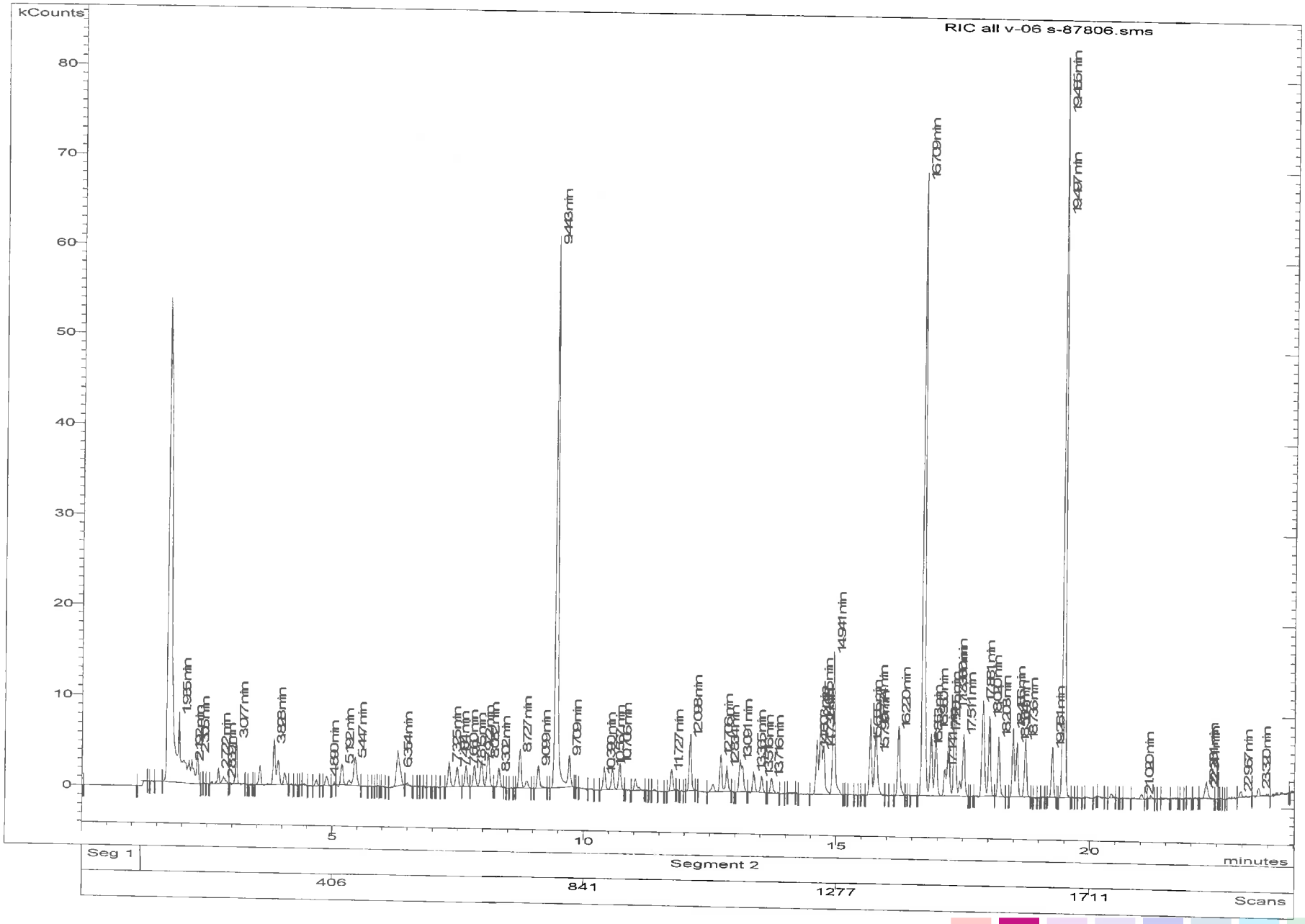
U : User defined end points.

Print Date: 24 Oct 2018 12:47:58

Chromatogram Plot

File: c:\saturnws\data\524.2 october 24 2018\v-06 s-87806.sms
Sample: V-06 S-87806
Scan Range: 1 - 2063 Time Range: 0.00 - 24.02 min.
Sample Notes: 524.2 RL Check @ 0.50 ppb

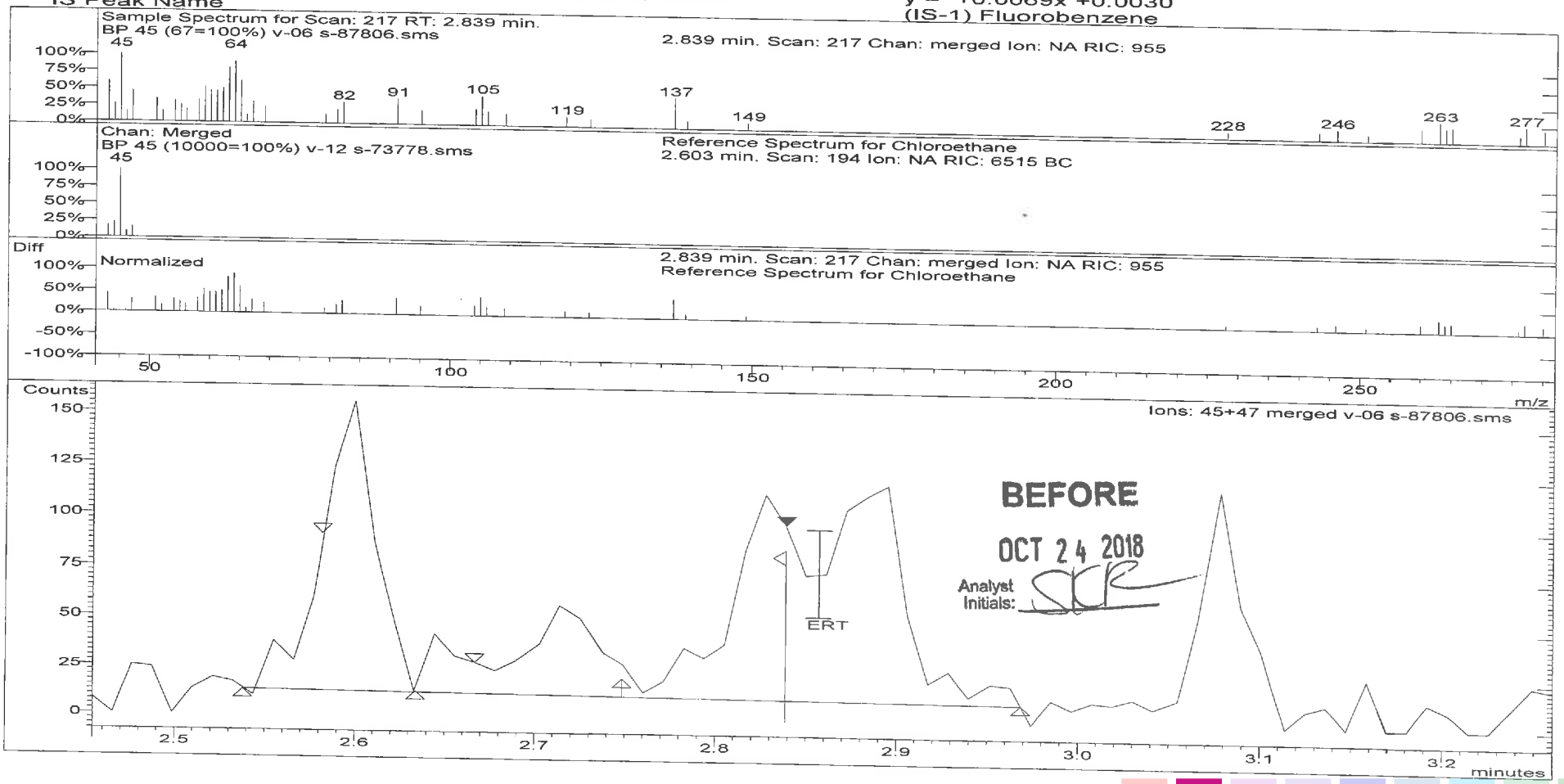
Operator: SKR
Date: 10/24/2018 11:56 AM



Target Compound #6 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:39 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification	Actual	Status
Compound Number		5	
Retention Time	2.857 +/- 0.400	2.839 min.	Pass
RT Offset		Δ0.01784 min.	
Peak Name		Chloroethane	
CAS Number		None	
Status			
Quan Ions	45+47		
Area	>=10	593	Pass
Height		87	
Amount	>= 0.000 ug/L	0.678 ug/L	Pass
Fit		N/A	
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.0069x +0.0030	
IS Peak Name		(IS-1) Fluorobenzene	



BEFORE

OCT 24 2018

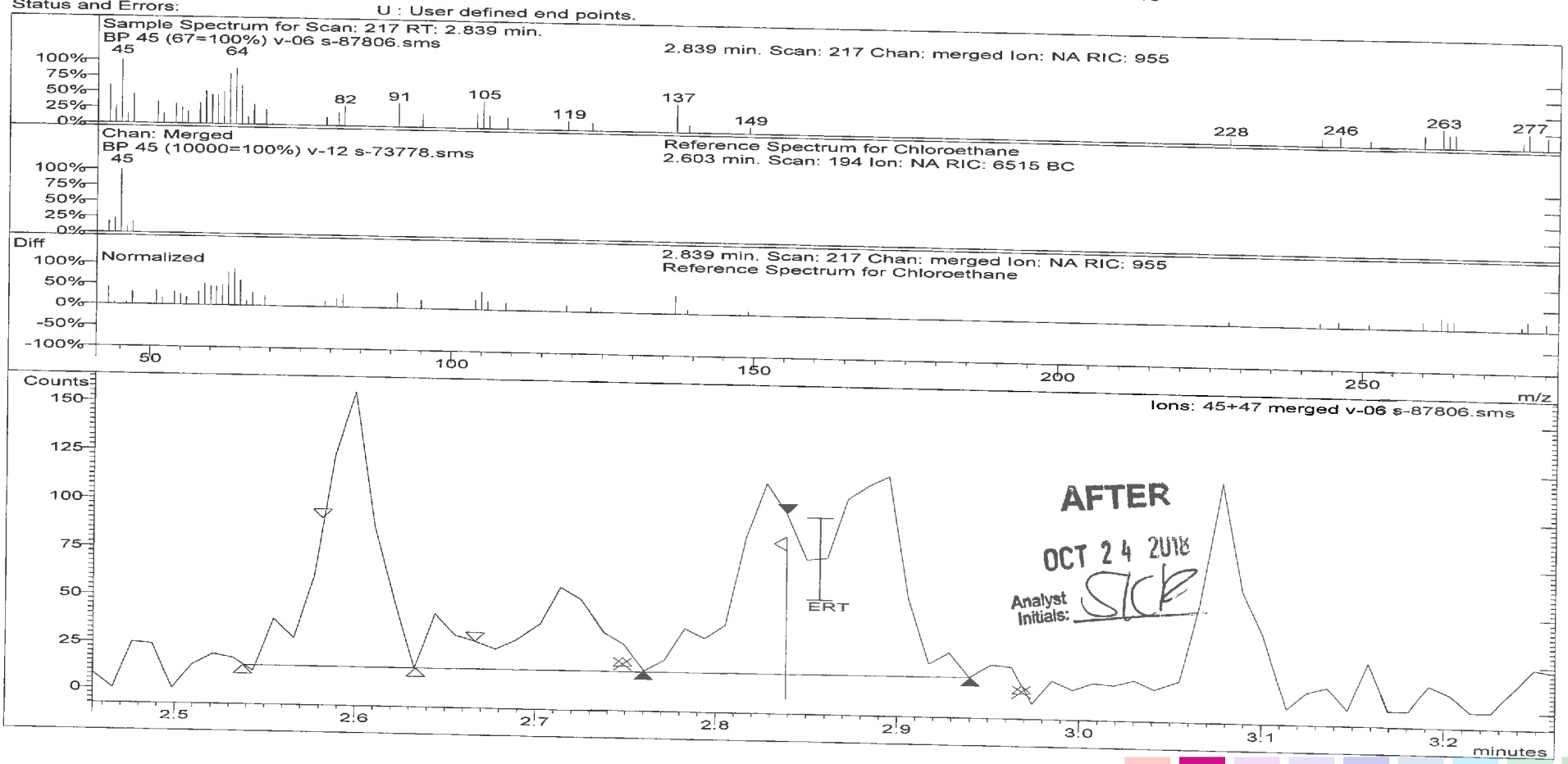
Analyst Initials: SCR

Target Compound #6 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:43 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification	Actual	Status
Compound Number		5	
Retention Time	2.857 +/- 0.400	2.839 min.	Pass
RT Offset		Δ0.01784 min.	
Peak Name		Chloroethane	
CAS Number		None	
Status		U	
Quan Ions	45+47		
Area	>=10	542	
Height		84	Pass
Amount	>= 0.000 ug/L	0.582 ug/L	
Fit		N/A	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.0069x +0.0030	
IS Peak Name		(IS-1) Fluorobenzene	

Status and Errors: U : User defined end points.



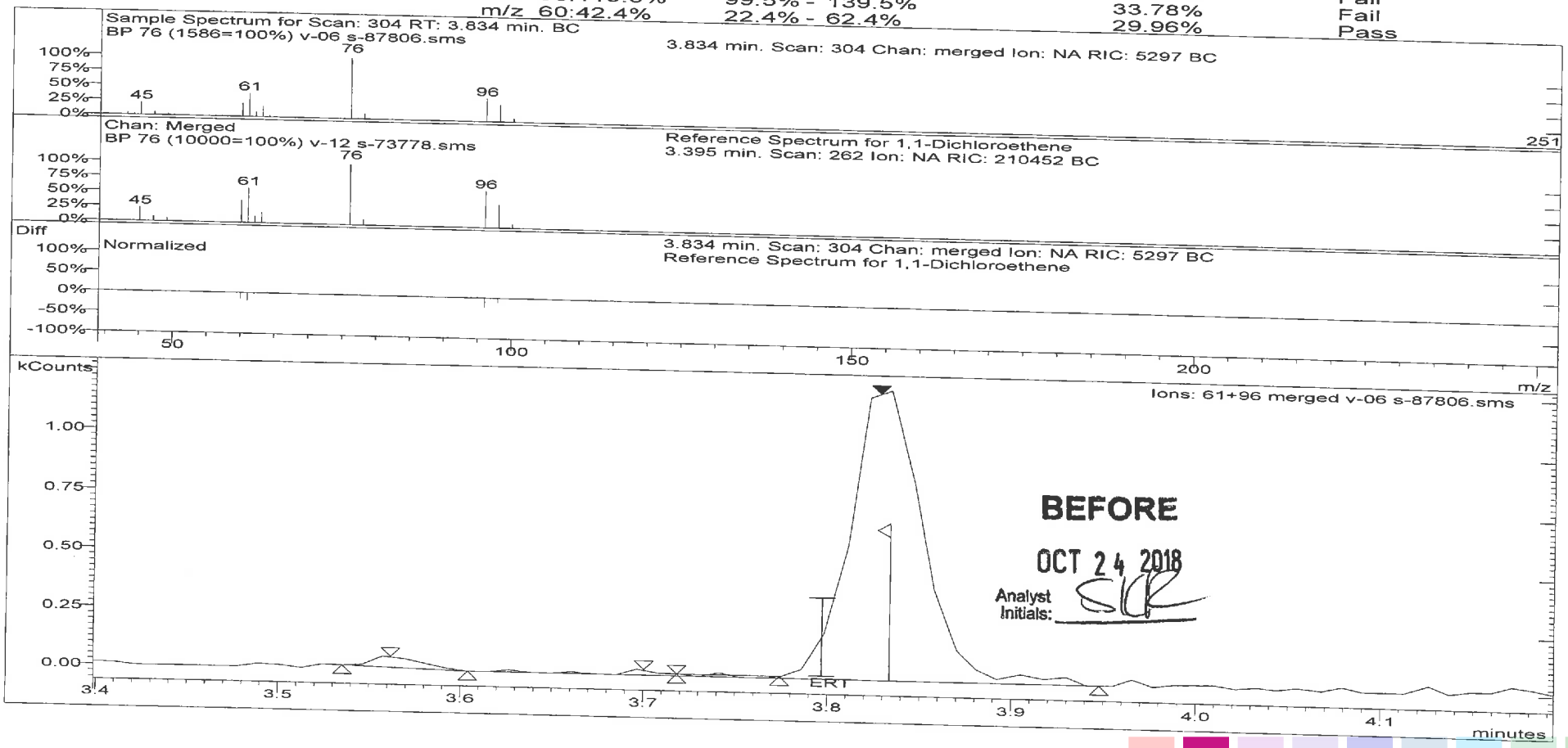
AFTER
OCT 24 2018
Analyst Initials: SCK

Print Date: 24 Oct 2018 12:44:04

Target Compound #8 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:43 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification	Actual	Status
Compound Number		7	
Retention Time	3.797 +/- 0.400	3.828 min.	Pass
RT Offset		Δ0.03078 min.	
Peak Name		1,1-Dichloroethene	
CAS Number		156-60-5	
Status			
Quan Ions	61+96		
Area	>=30	3420	Pass
Height		1213	
Amount	>= 0.000 ug/L	0.537 ug/L	
Fit	>=500	989	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.1278x -0.0246	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 96:183.1% 163.1% 203.1%	49.39%	Fail
	m/z 98:119.5% 99.5% - 139.5%	33.78%	Fail
	m/z 60:42.4% 22.4% - 62.4%	29.96%	Pass



BEFORE

OCT 24 2018

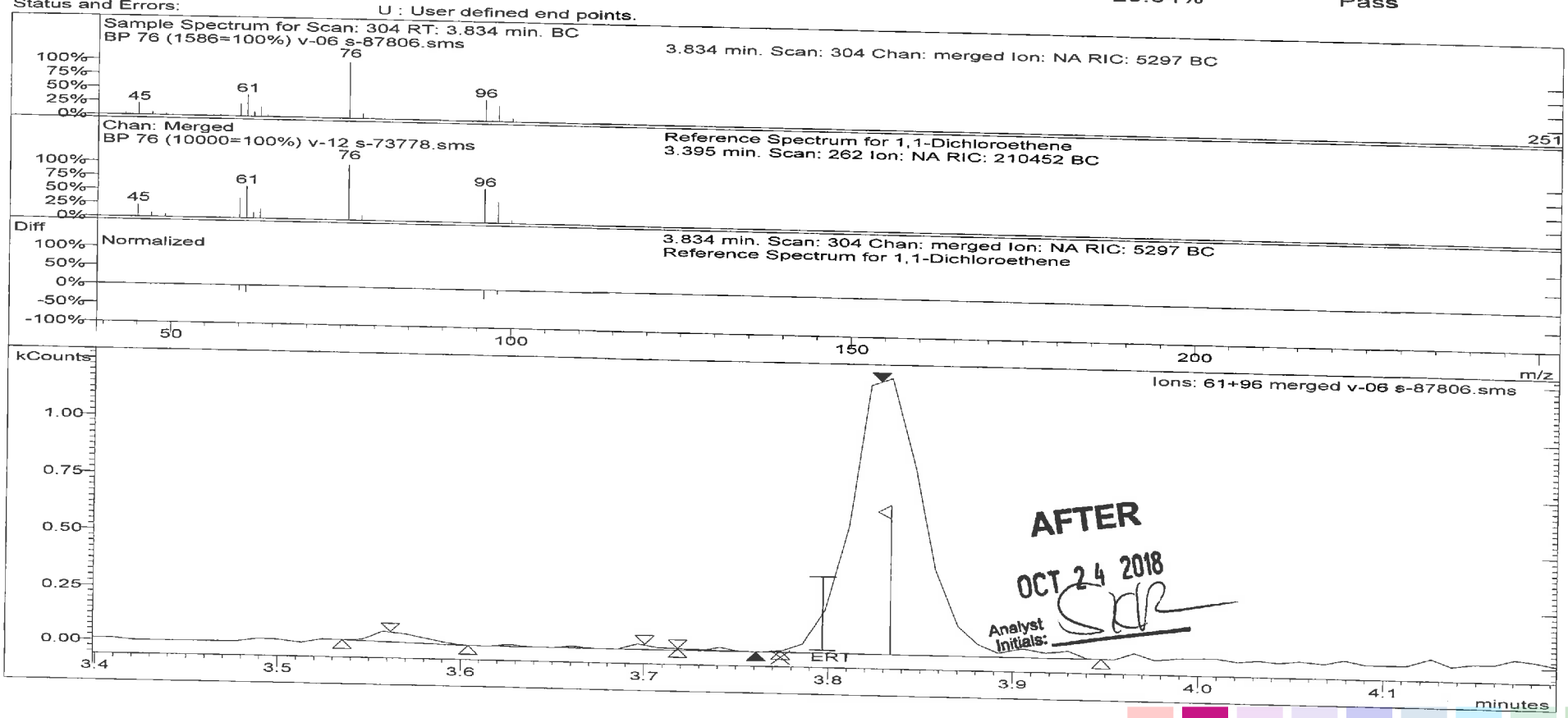
Analyst Initials: SCR

Target Compound #8 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:44 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification	Actual	Status
Compound Number		7	
Retention Time	3.797 +/- 0.400	3.828 min.	Pass
RT Offset		Δ0.03078 min.	
Peak Name		1,1-Dichloroethene	
CAS Number		156-60-5	
Status		U	
Quan Ions	61+96		
Area	>=30	3422	Pass
Height		1213	
Amount	>= 0.000 ug/L	0.538 ug/L	Pass
Fit	>=500	989	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.1278x -0.0246	
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 96:183.1% 163.1% 203.1%	49.35%	Fail
	m/z 98:119.5% 99.5% - 139.5%	33.76%	Fail
	m/z 60:42.4% 22.4% - 62.4%	29.94%	Pass

Status and Errors: U : User defined end points.



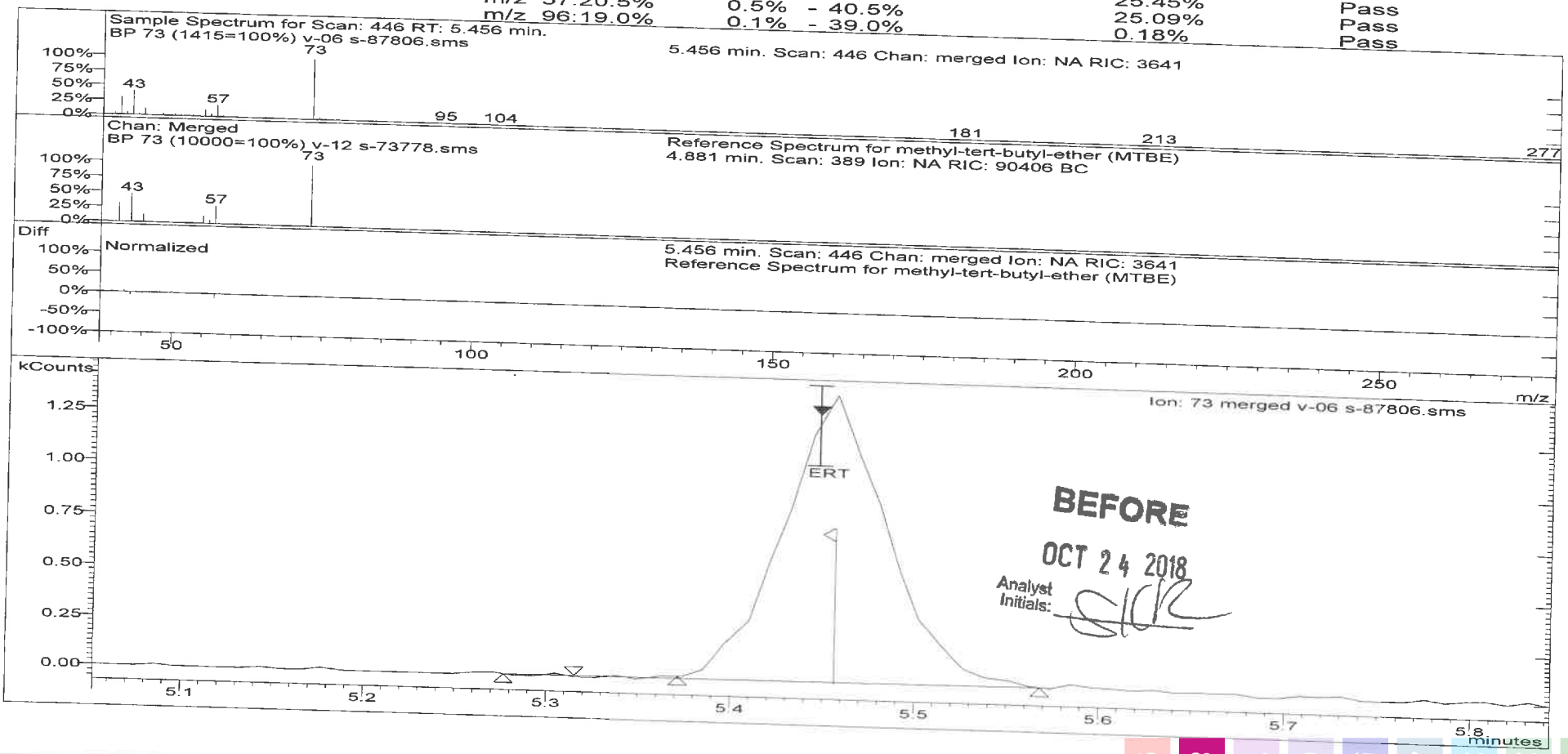
AFTER
OCT 24 2018
Analyst Initials: SCR

Print Date: 24 Oct 2018 12:44:16

Target Compound #10 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:44 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual		Status
Compound Number			9		
Retention Time	5.447 +/- 0.400		5.447 min.		Pass
RT Offset			△0.00044 min.		
Peak Name			methyl-tert-butyl-ether (MTBE)		
CAS Number			1634-04-4		
Status					
Quan Ions	73				
Area	>=30		5572		
Height			1303		Pass
Amount	>= 0.000 ug/L		0.477 ug/L		
Fit			N/A		Pass
Calibration Equation	Linear, Force, 1/nX2		y = +0.1507x		
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 61:35.6%	15.6% - 55.6%		25.45%	Pass
	m/z 57:20.5%	0.5% - 40.5%		25.09%	Pass
	m/z 96:19.0%	0.1% - 39.0%		0.18%	Pass



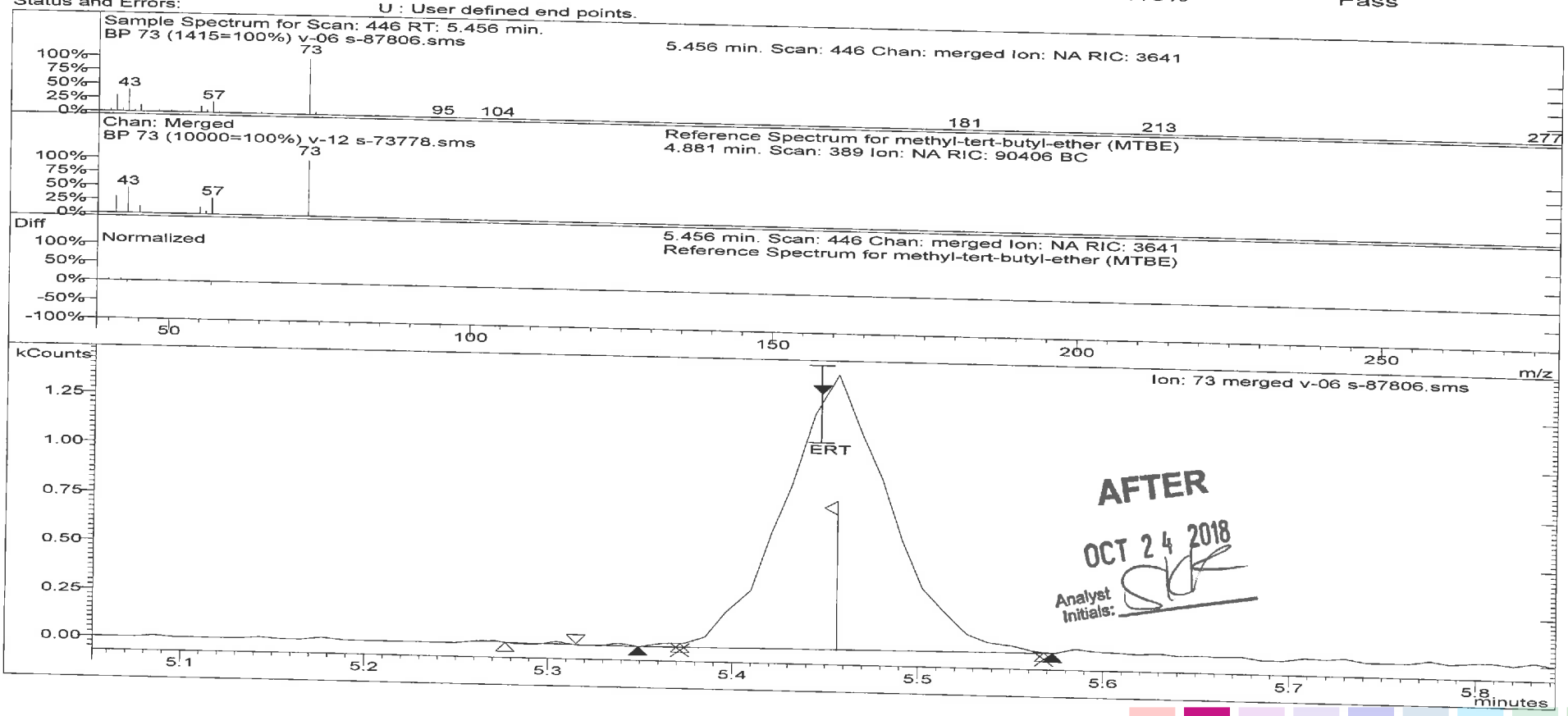
BEFORE
OCT 24 2018
Analyst Initials: SCR

Target Compound #10 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:44 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual		Status
Compound Number			9		
Retention Time	5.447 +/- 0.400		5.447 min.		Pass
RT Offset			Δ0.00044 min.		
Peak Name			methyl-tert-butyl-ether (MTBE)		
CAS Number			1634-04-4		
Status			U		
Quan Ions	73				
Area	>=30		5655		
Height			1309		Pass
Amount	>= 0.000 ug/L		0.484 ug/L		
Fit			N/A		Pass
Calibration Equation	Linear, Force, 1/nX2		y = +0.1507x		
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 61:35.6%	15.6% - 55.6%		25.08%	Pass
	m/z 57:20.5%	0.5% - 40.5%		24.72%	Pass
	m/z 96:19.0%	0.1% - 39.0%		0.18%	Pass

Status and Errors: U : User defined end points.



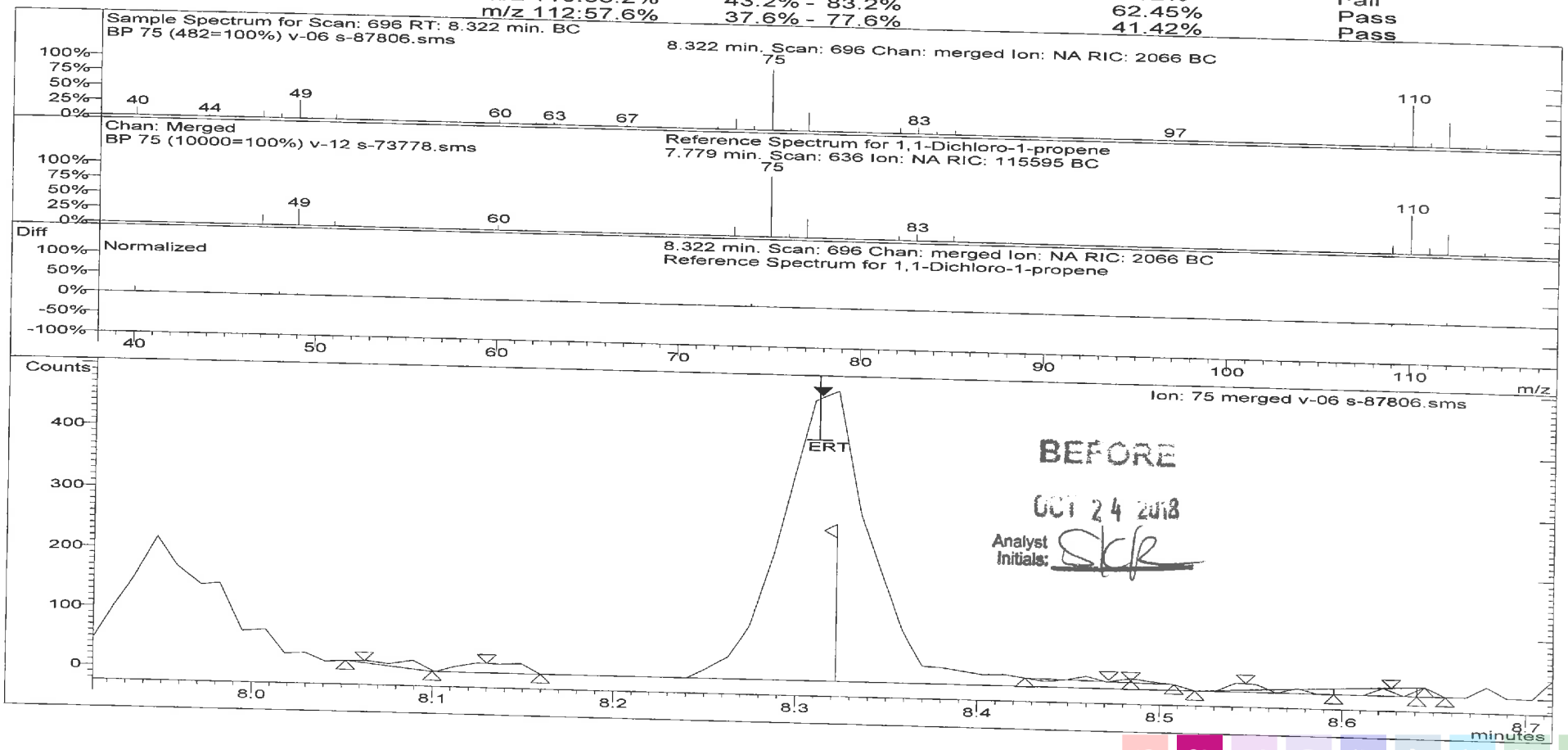
AFTER
OCT 24 2018
Analyst Initials:

Print Date: 24 Oct 2018 12:44:44

Target Compound #19 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:44 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual		Status
Compound Number			18		
Retention Time	8.312 +/- 0.400		8.313 min.		Pass
RT Offset			Δ0.00130 min.		
Peak Name			1,1-Dichloro-1-propene		
CAS Number			563-58-6		
Status					
Quan Ions	75				
Area	>=30		1738		
Height			473		Pass
Amount	>= 0.000 ug/L		0.568 ug/L		
Fit	>=500		980		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.0538x -0.0081		Pass
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 39:105.4%	85.4% - 125.4%		0.52%	Fail
	m/z 110:63.2%	43.2% - 83.2%		62.45%	Pass
	m/z 112:57.6%	37.6% - 77.6%		41.42%	Pass



BEFORE

OCT 24 2018

Analyst Initials: SCR

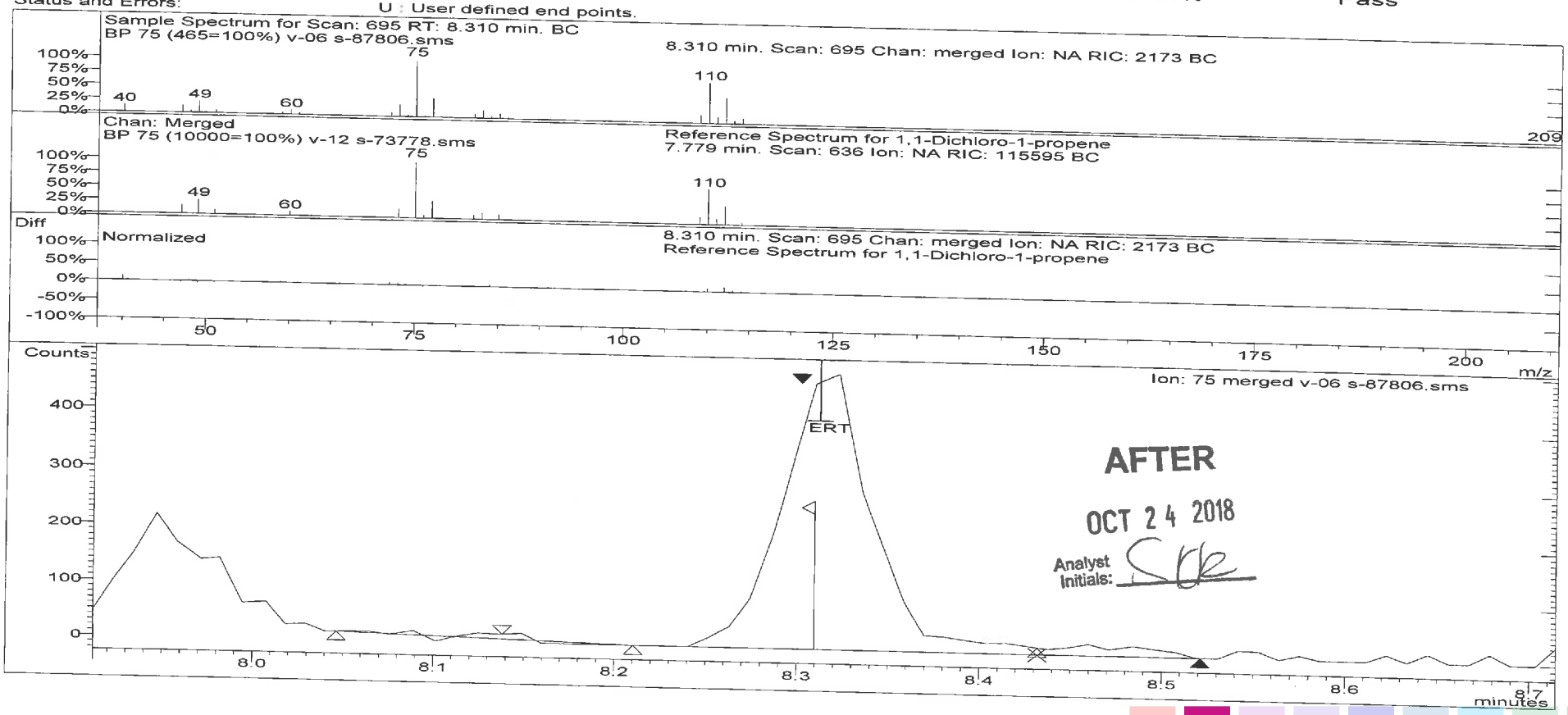
Print Date: 24 Oct 2018 12:45:06

Target Compound #19 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:45 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual		Status
Compound Number			18		
Retention Time	8.312 +/- 0.400		8.302 min.		Pass
RT Offset			Δ0.01036 min.		
Peak Name			1,1-Dichloro-1-propene		
CAS Number			563-58-6		
Status			U		
Quan Ions	75				
Area	>=30		1741		Pass
Height			465		
Amount	>= 0.000 ug/L		0.569 ug/L		
Fit	>=500		980		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.0538x -0.0081		Pass
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 39:105.4%	85.4% - 125.4%		0.52%	Fail
	m/z 110:63.2%	43.2% - 83.2%		62.56%	Pass
	m/z 112:57.6%	37.6% - 77.6%		42.54%	Pass

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

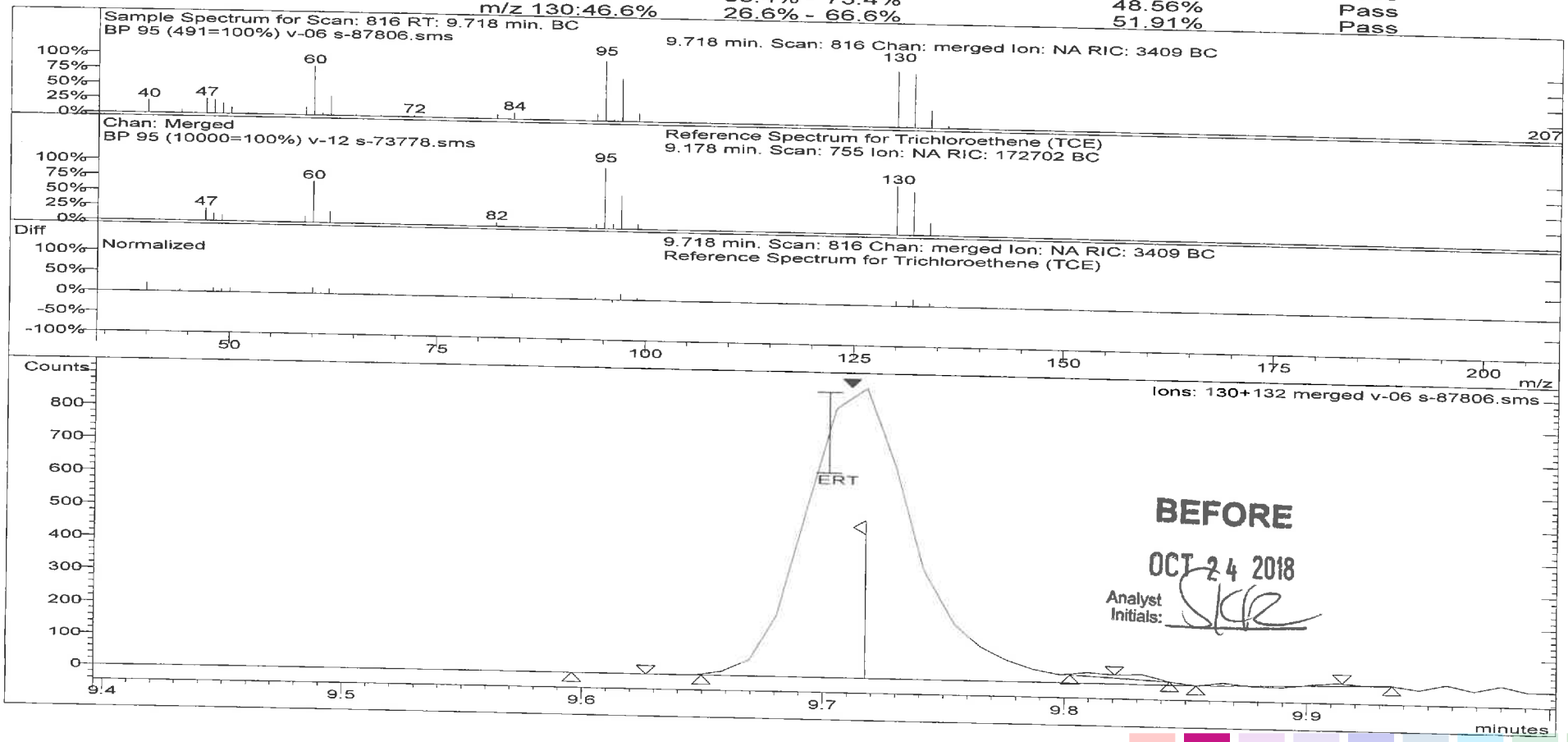
Analyst Initials: SR

Print Date: 24 Oct 2018 12:45:16

Target Compound #22 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:45 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual	Status
Compound Number			22	
Retention Time	9.702 +/- 0.300		9.711 min.	Pass
RT Offset			Δ0.00921 min.	
Peak Name			Trichloroethene (TCE)	
CAS Number			79-01-6	
Status				
Quan Ions	130+132			
Area	>=30		2901	Pass
Height			894	
Amount	>= 0.000 ug/L		0.558 ug/L	Pass
Fit	>=500		990	Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.0906x -0.0132	
IS Peak Name			(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 95:57.1%	37.1% - 77.1%	60.32%	Pass
	m/z 132:53.4%	33.4% - 73.4%	48.56%	Pass
	m/z 130:46.6%	26.6% - 66.6%	51.91%	Pass



BEFORE

OCT 24 2018

Analyst Initials: SCR

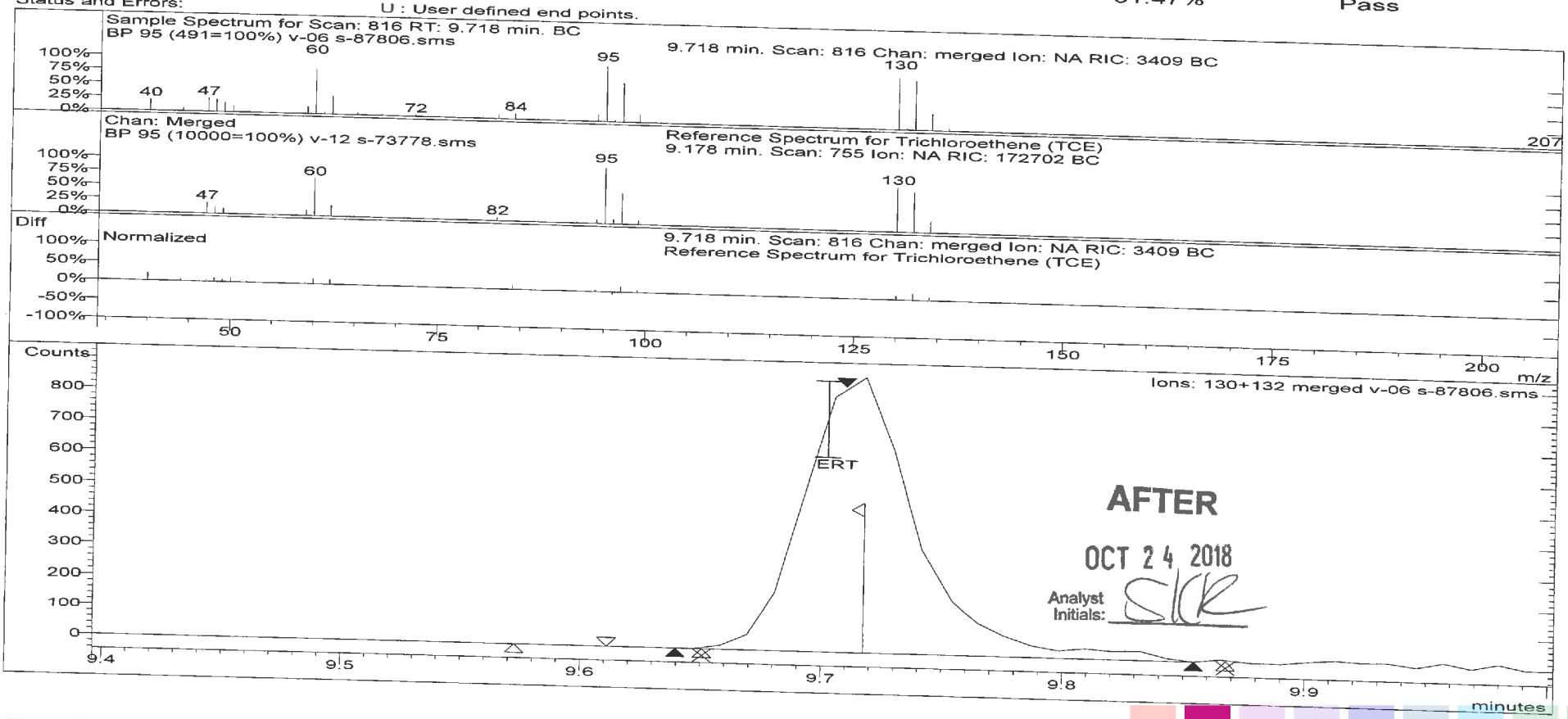
Print Date: 24 Oct 2018 12:45:32

Target Compound #22 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:45 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual	Status
Compound Number			22	
Retention Time	9.702 +/- 0.300		9.709 min.	Pass
RT Offset			Δ0.00725 min.	
Peak Name			Trichloroethene (TCE)	
CAS Number			79-01-6	
Status			U	
Quan Ions	130+132			
Area	>=30		2926	
Height			861	Pass
Amount	>= 0.000 ug/L		0.562 ug/L	
Fit	>=500		990	Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.0906x -0.0132	Pass
IS Peak Name			(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 95:57.1%	37.1% - 77.1%	57.39%	Pass
	m/z 132:53.4%	33.4% - 73.4%	48.09%	Pass
	m/z 130:46.6%	26.6% - 66.6%	51.47%	Pass

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

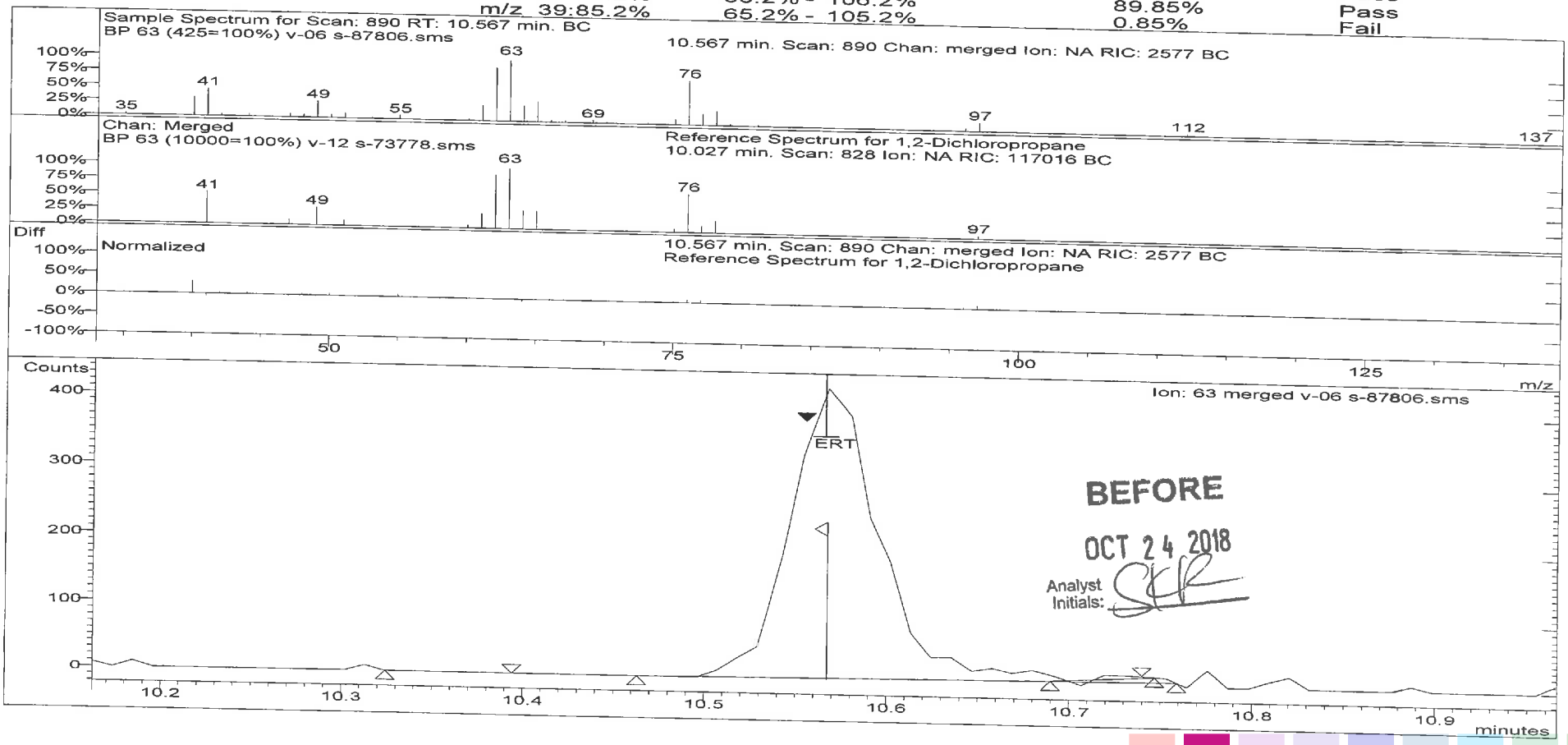
Analyst Initials: SCR

Print Date: 24 Oct 2018 12:45:37

Target Compound #23 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:45 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual		Status
Compound Number			23		
Retention Time	10.566 +/- 0.400		10.555 min.		Pass
RT Offset			Δ0.01073 min.		
Peak Name			1,2-Dichloropropane		
CAS Number			107-06-2		
Status					
Quan Ions	63				
Area	>=30		1461		Pass
Height			375		
Amount	>= 0.000 ug/L		0.606 ug/L		Pass
Fit	>=500		986		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.0440x -0.0078		
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 76:93.2%	73.2% - 113.2%		74.22%	Pass
	m/z 62:86.2%	66.2% - 106.2%		89.85%	Pass
	m/z 39:85.2%	65.2% - 105.2%		0.85%	Fail



BEFORE

OCT 24 2018

Analyst Initials: SCR

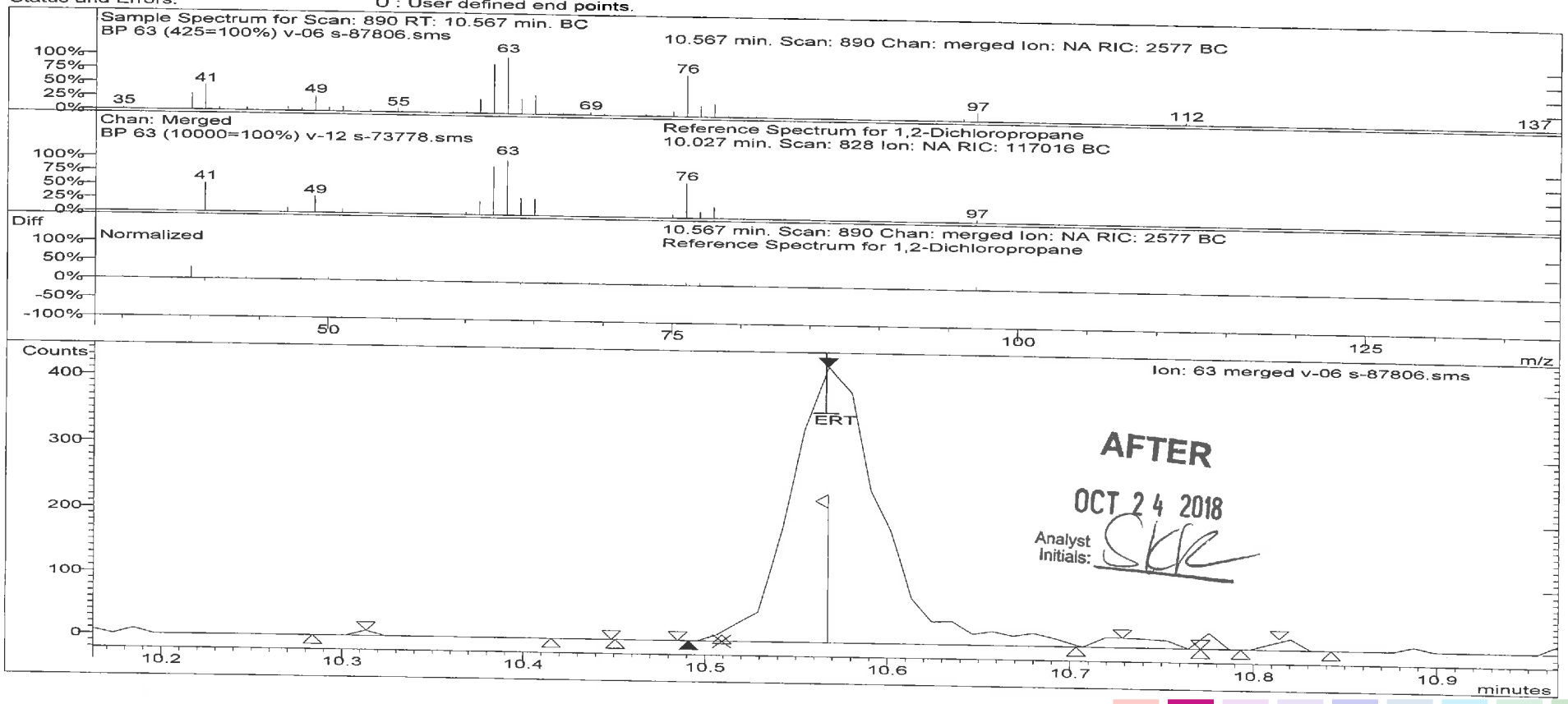
Print Date: 24 Oct 2018 12:45:50

Target Compound #23 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:45 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual		Status
Compound Number			23		
Retention Time	10.566 +/- 0.400		10.567 min.		Pass
RT Offset			Δ0.00110 min.		
Peak Name			1,2-Dichloropropane		
CAS Number			107-06-2		
Status			U		
Quan Ions	63				
Area	>=30		1482		Pass
Height			425		
Amount	>= 0.000 ug/L		0.612 ug/L		Pass
Fit	>=500		986		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.0440x -0.0078		
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 76:93.2%	73.2% - 113.2%		73.11%	Fail
	m/z 62:86.2%	66.2% - 106.2%		90.02%	Pass
	m/z 39:85.2%	65.2% - 105.2%		0.43%	Fail

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

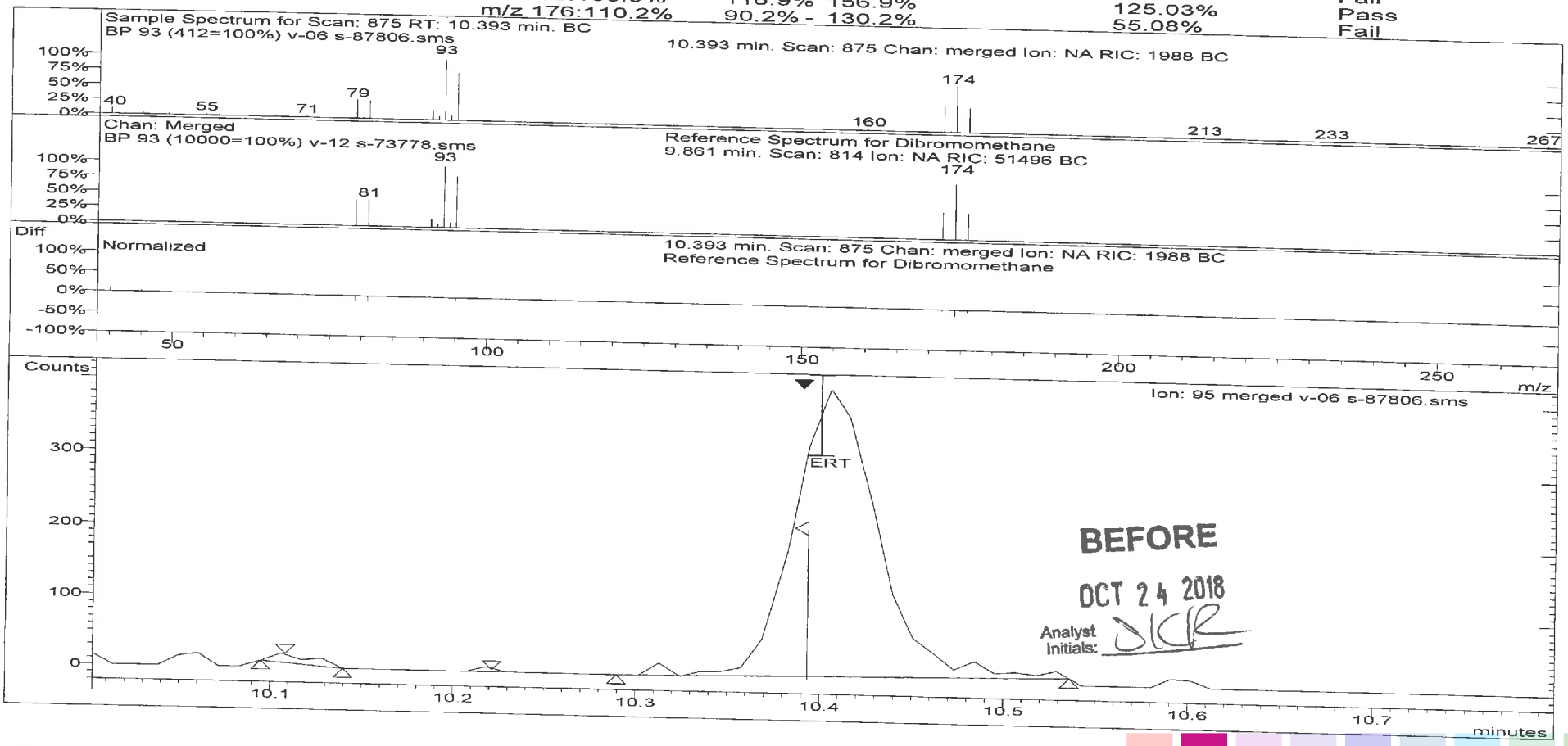
Analyst Initials:

Print Date: 24 Oct 2018 12:45:55

Target Compound #24 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:45 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual		Status
Compound Number			24		
Retention Time	10.400 +/- 0.400		10.390 min.		Pass
RT Offset			Δ0.00981 min.		
Peak Name			Dibromomethane		
CAS Number			74-95-3		
Status					
Quan Ions	95				
Area	>=30		1285		Pass
Height			400		
Amount	>= 0.000 ug/L		0.468 ug/L		Pass
Fit	>=500		998		Pass
Calibration Equation	Linear, Force, 1/nX2		y = +0.0354x		
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 174:204.3%	184.3% 224.3%		111.56%	Fail
	m/z 93:136.9%	116.9% 156.9%		125.03%	Pass
	m/z 176:110.2%	90.2% - 130.2%		55.08%	Fail



BEFORE

OCT 24 2018

Analyst Initials: DCR

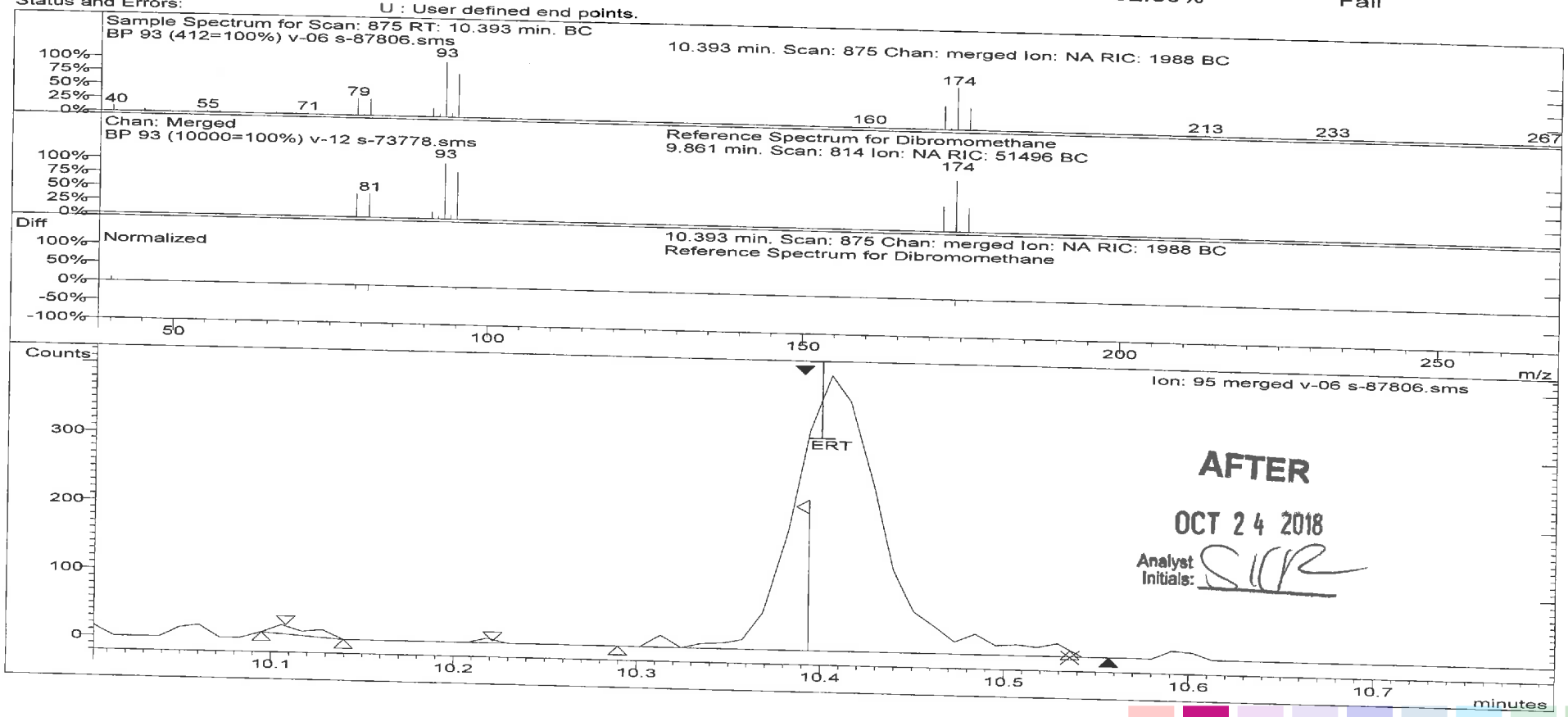
Print Date: 24 Oct 2018 12:46:00

Target Compound #24 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:45 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification	Actual	Status
Compound Number		24	
Retention Time	10.400 +/- 0.400	10.390 min.	Pass
RT Offset		Δ 0.00981 min.	
Peak Name		Dibromomethane	
CAS Number		74-95-3	
Status		U	
Quan Ions	95		
Area	>=30	1354	
Height		404	Pass
Amount	>= 0.000 ug/L	0.493 ug/L	
Fit	>=500	998	Pass
Calibration Equation	Linear, Force, 1/nX2	y = +0.0354x	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 174:204.3% 184.3% 224.3%	105.93%	Fail
	m/z 93:136.9% 116.9% 156.9%	118.72%	Pass
	m/z 176:110.2% 90.2% - 130.2%	52.30%	Fail

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

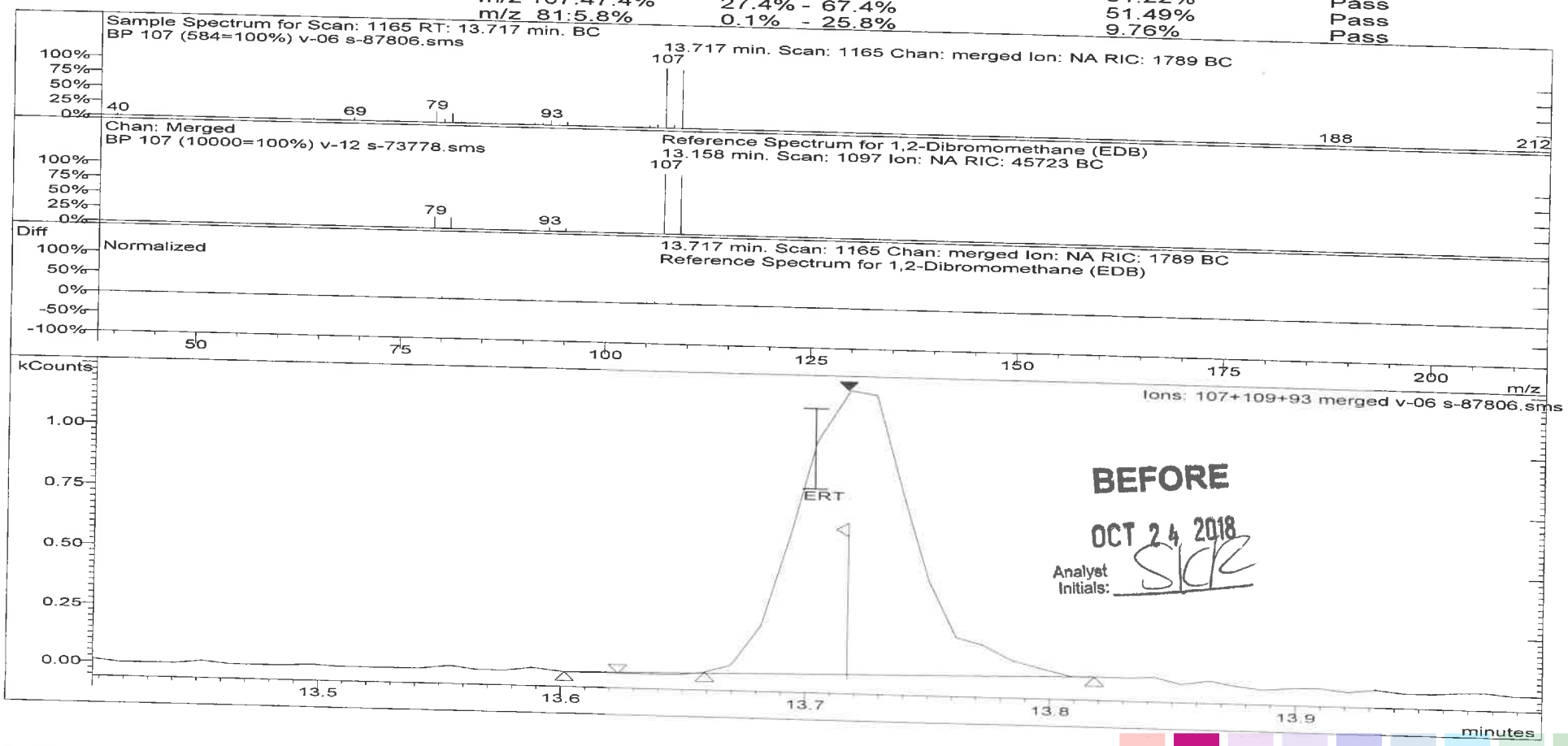
Analyst Initials: SLR

Print Date: 24 Oct 2018 12:46:17

Target Compound #33 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:45 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual		Status
Compound Number			33		
Retention Time	13.703 +/- 0.300		13.716 min.		Pass
RT Offset			Δ0.01318 min.		
Peak Name			1,2-Dibromomethane (EDB)		
CAS Number			106-93-4		
Status					
Quan Ions	107+109+93				
Area	>=500		3970		
Height			1189		Pass
Amount	>= 0.000 ug/L		0.530 ug/L		
Fit	>=700		999		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.1356x -0.0206		Pass
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 109:49.6%	29.6% - 69.6%		51.22%	Pass
	m/z 107:47.4%	27.4% - 67.4%		51.49%	Pass
	m/z 81:5.8%	0.1% - 25.8%		9.76%	Pass



BEFORE

OCT 24 2018

Analyst Initials: SCR

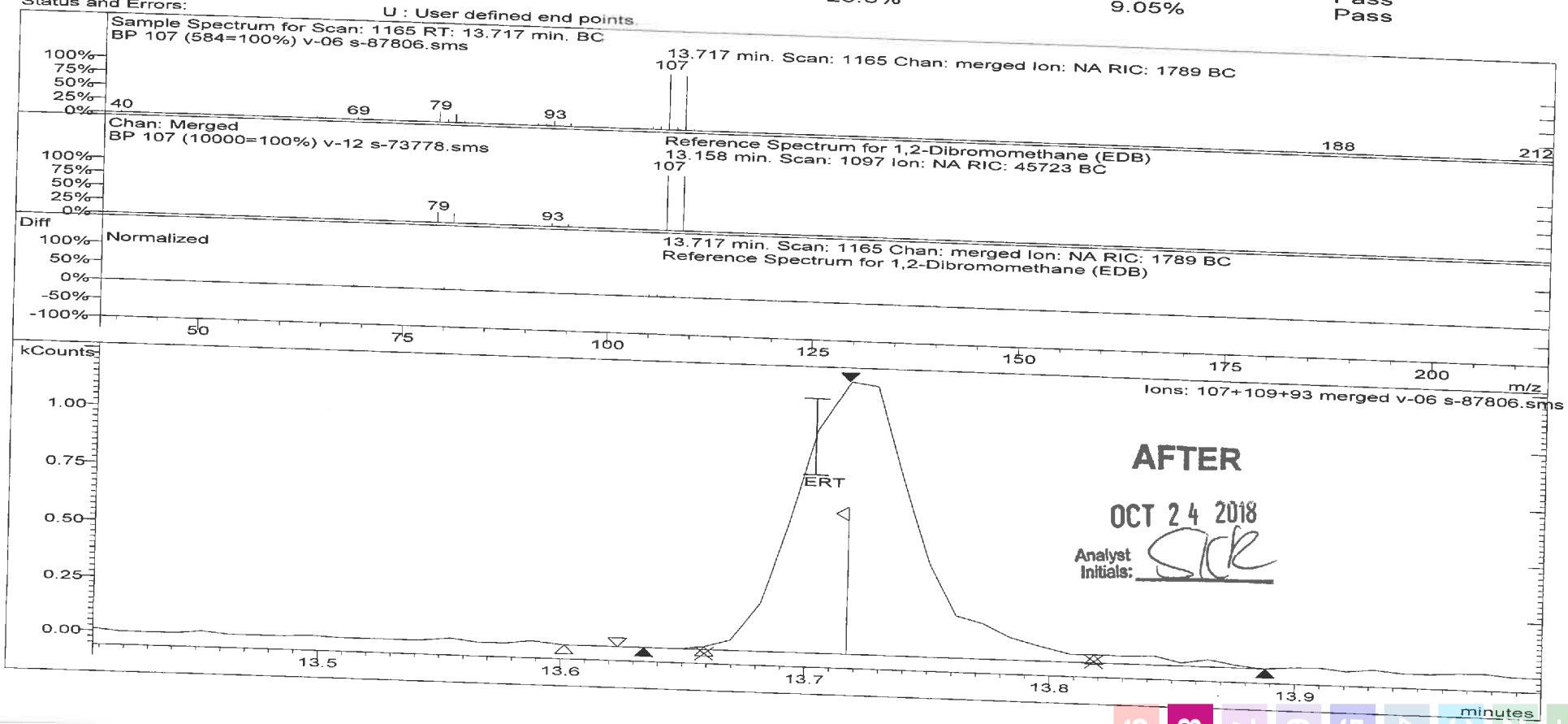
Print Date: 24 Oct 2018 12:46:25

Target Compound #33 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:46 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual	Status
Compound Number			33	
Retention Time	13.703 +/- 0.300		13.716 min.	
RT Offset			Δ0.01318 min.	Pass
Peak Name			1,2-Dibromomethane (EDB)	
CAS Number			106-93-4	
Status			U	
Quan Ions	107+109+93			
Area	>=500		4280	
Height			1207	Pass
Amount	>= 0.000 ug/L		0.560 ug/L	
Fit	>=700		999	Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.1356x -0.0206	Pass
IS Peak Name			(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 109:49.6%	29.6% - 69.6%	47.51%	Pass
	m/z 107:47.4%	27.4% - 67.4%	47.75%	Pass
	m/z 81:5.8%	0.1% - 25.8%	9.05%	Pass

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

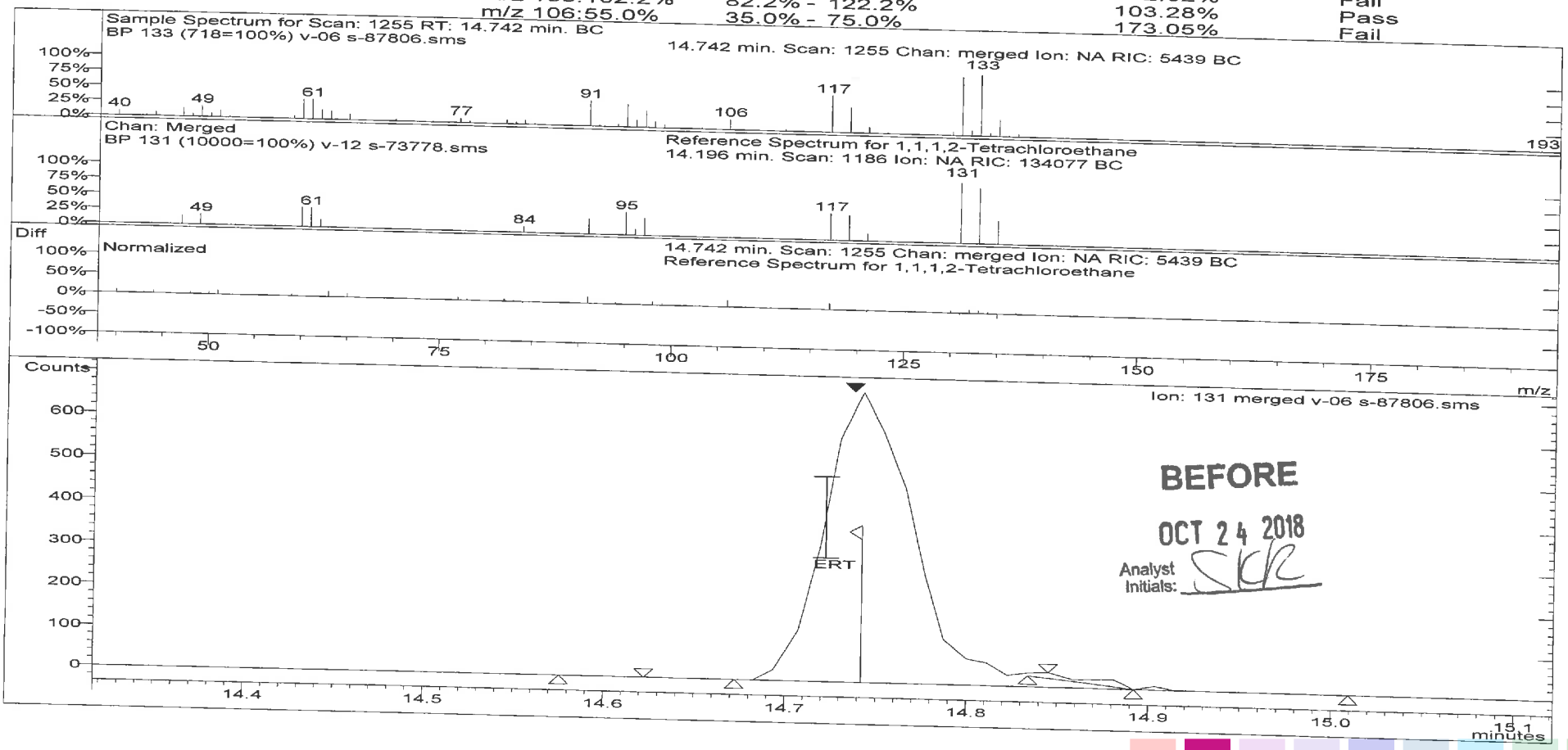
Analyst Initials: SCR

Print Date: 24 Oct 2018 12:46:31

Target Compound #36 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:46 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual		Status
Compound Number			36		
Retention Time	14.722 +/- 0.400		14.737 min.		Pass
RT Offset			Δ0.01497 min.		
Peak Name			1,1,1,2-Tetrachloroethane		
CAS Number			630-20-6		
Status					
Quan Ions	131				
Area	>=30		2398		
Height			689		Pass
Amount	>= 0.000 ug/L		0.570 ug/L		
Fit	>=500		984		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.0795x -0.0143		Pass
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 91:120.5%	100.5% 140.5%		392.02%	Fail
	m/z 133:102.2%	82.2% - 122.2%		103.28%	Pass
	m/z 106:55.0%	35.0% - 75.0%		173.05%	Fail



BEFORE

OCT 24 2018

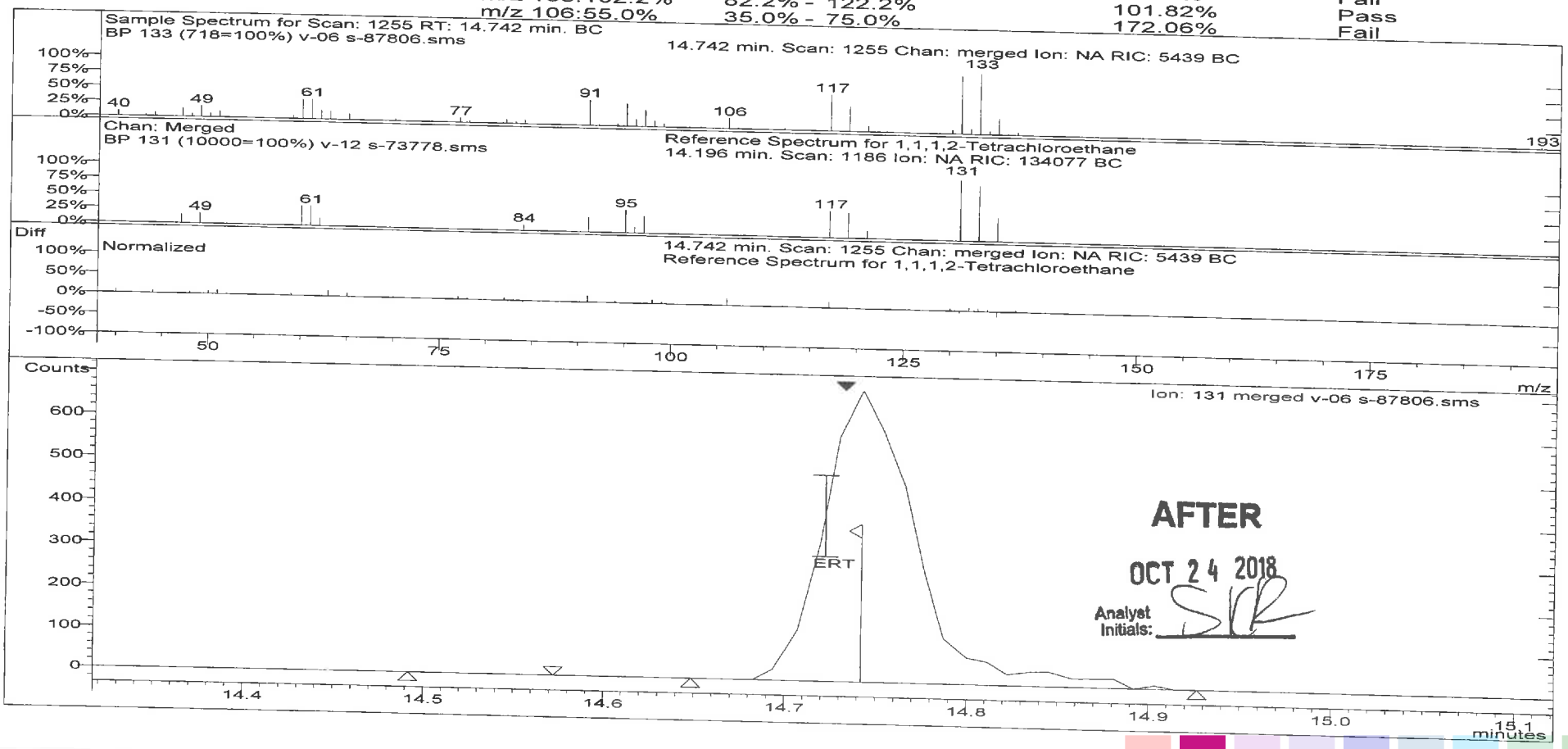
Analyst Initials: SKR

Print Date: 24 Oct 2018 12:46:40

Target Compound #36 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:46 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification	Actual	Status
Compound Number		36	
Retention Time	14.722 +/- 0.400	14.732 min.	Pass
RT Offset		Δ 0.01006 min.	
Peak Name		1,1,1,2-Tetrachloroethane	
CAS Number		630-20-6	
Status			
Quan Ions	131		
Area	>=30	2432	
Height		689	Pass
Amount	>= 0.000 ug/L	0.575 ug/L	
Fit	>=500	984	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.0795x -0.0143	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 91:120.5% 100.5% 140.5%	25.27%	Fail
	m/z 133:102.2% 82.2% - 122.2%	101.82%	Pass
	m/z 106:55.0% 35.0% - 75.0%	172.06%	Fail



AFTER

OCT 24 2018

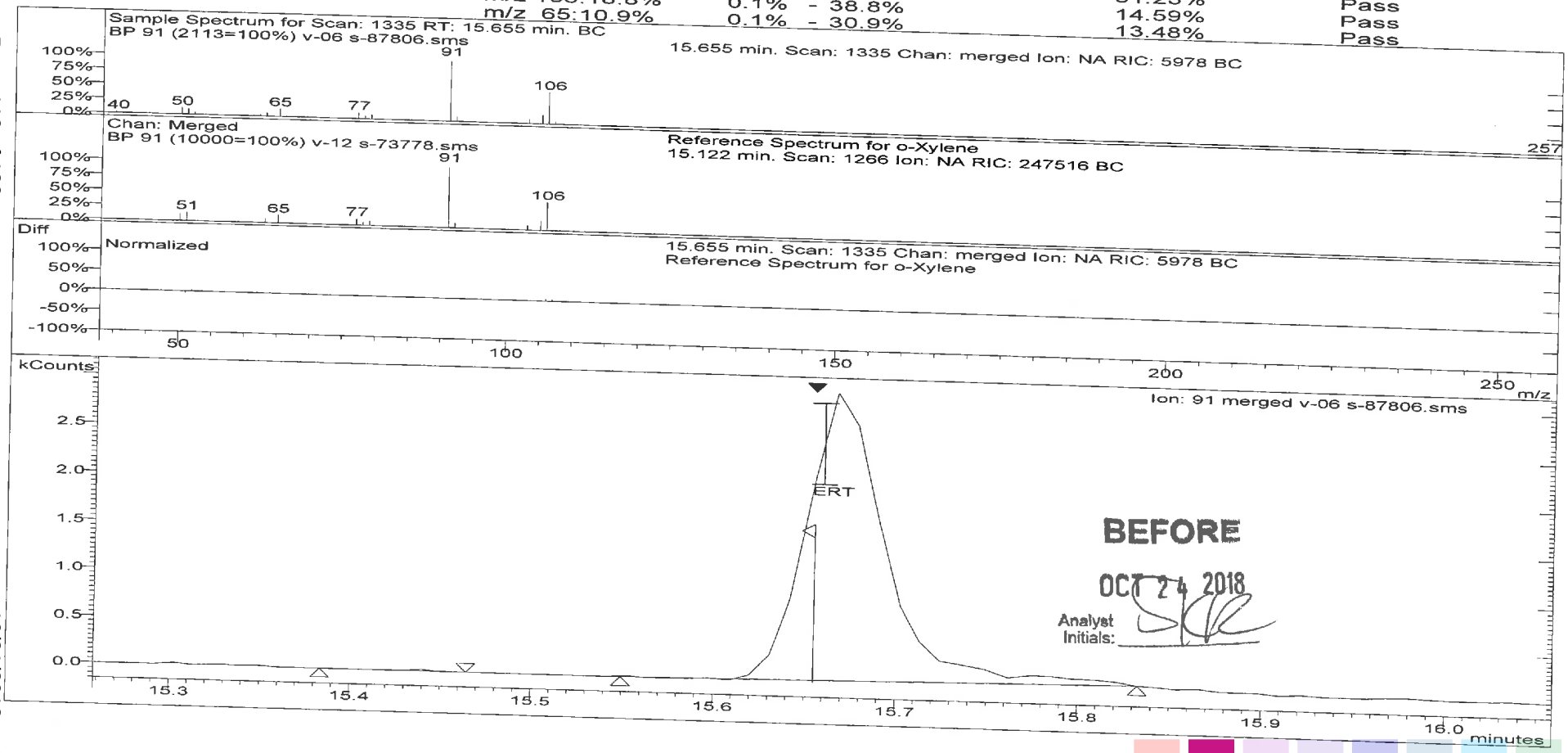
Analyst Initials: SR

Print Date: 24 Oct 2018 12:46:47

Target Compound #38 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:46 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual	Status
Compound Number			38	
Retention Time	15.660 +/- 0.400		15.655 min.	
RT Offset			Δ0.00512 min.	Pass
Peak Name			o-Xylene	
CAS Number			95-47-6	
Status				
Quan Ions	91			
Area	>=30		9104	
Height			2993	Pass
Amount	>= 0.000 ug/L		0.437 ug/L	
Fit	>=500		999	Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.2829x -0.0063	Pass
IS Peak Name			(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 106:57.3%	37.3% - 77.3%	51.23%	Pass
	m/z 105:18.8%	0.1% - 38.8%	14.59%	Pass
	m/z 65:10.9%	0.1% - 30.9%	13.48%	Pass



BEFORE

OCT 24 2018

Analyst Initials: _____

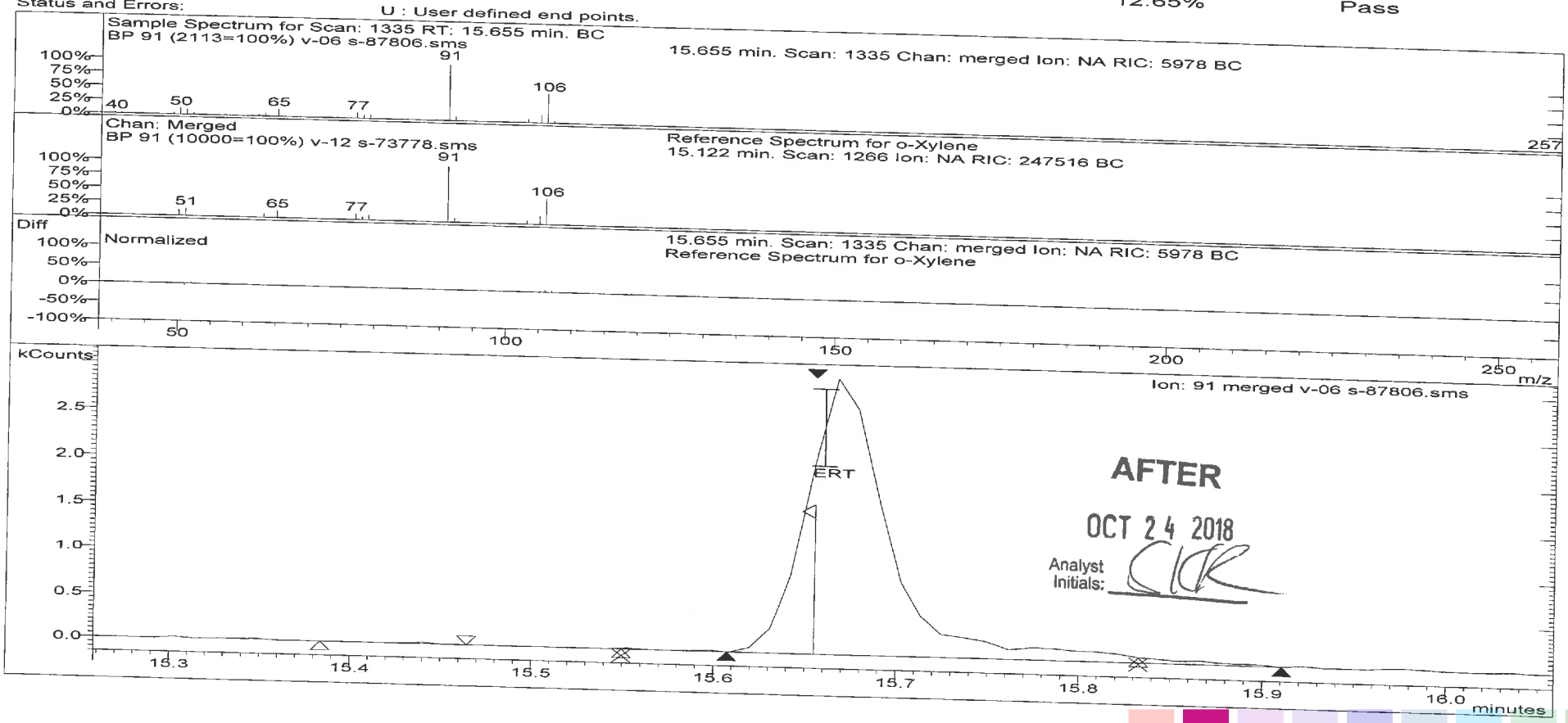
Print Date: 24 Oct 2018 12:46:55

Target Compound #38 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:46 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual	Status
Compound Number			38	
Retention Time	15.660 +/- 0.400		15.655 min.	
RT Offset			Δ 0.00512 min.	Pass
Peak Name			o-Xylene	
CAS Number			95-47-6	
Status			U	
Quan Ions	91			
Area	>=30		9698	
Height			3014	Pass
Amount	>= 0.000 ug/L		0.464 ug/L	
Fit	>=500		999	Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.2829x -0.0063	Pass
IS Peak Name			(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 106:57.3%	37.3% - 77.3%	48.09%	Pass
	m/z 105:18.8%	0.1% - 38.8%	13.70%	Pass
	m/z 65:10.9%	0.1% - 30.9%	12.65%	Pass

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

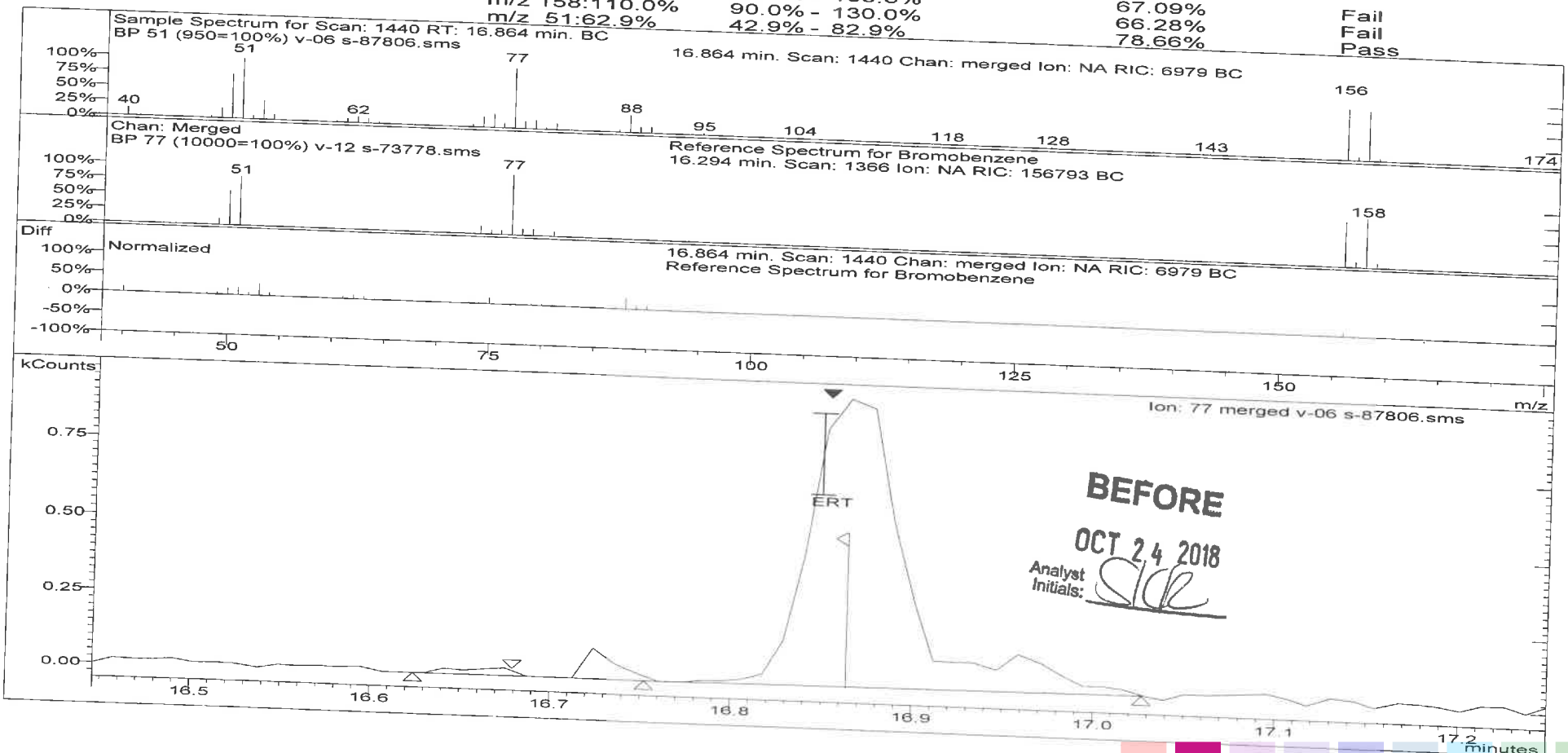
Analyst Initials: CK

Print Date: 24 Oct 2018 12:47:07

Target Compound #45 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:46 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual		Status
Compound Number			45		
Retention Time	16.849 +/- 0.400		16.853 min.		
RT Offset			Δ0.00361 min.		Pass
Peak Name			Bromobenzene		
CAS Number			108-86-1		
Status					
Quan Ions	77				
Area	>=30		3609		
Height			949		Pass
Amount	>= 0.000 ug/L		0.587 ug/L		
Fit	>=500		969		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.1194x -0.0236		Pass
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 156:115.3%	95.3% - 135.3%		67.09%	Fail
	m/z 158:110.0%	90.0% - 130.0%		66.28%	Fail
	m/z 51:62.9%	42.9% - 82.9%		78.66%	Pass



BEFORE
OCT 24 2018
Analyst Initials: SCR

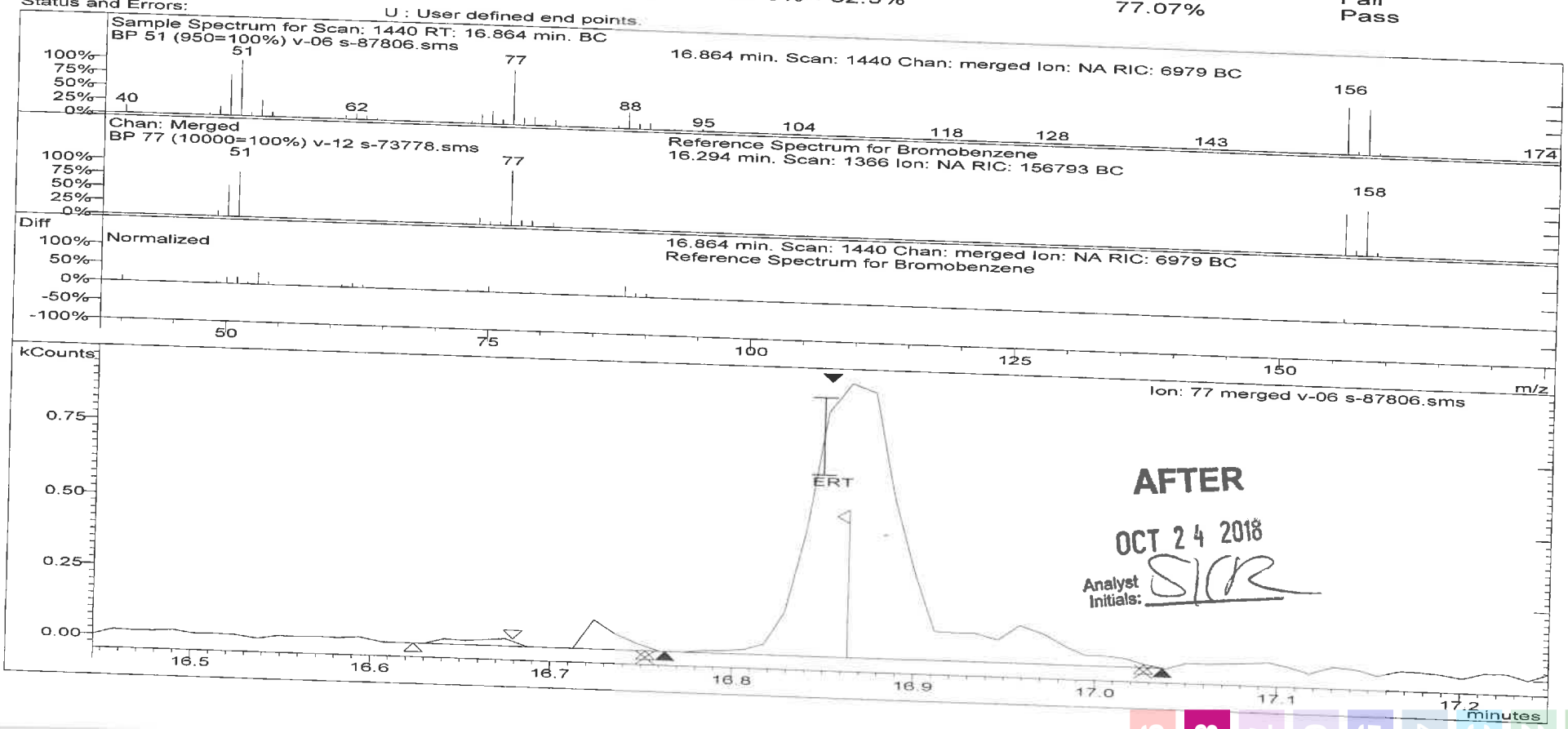
Print Date: 24 Oct 2018 12:47:14

Target Compound #45 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:47 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification	Actual	Status
Compound Number		45	
Retention Time	16.849 +/- 0.400	16.853 min.	Pass
RT Offset		Δ 0.00361 min.	
Peak Name		Bromobenzene	
CAS Number		108-86-1	
Status		U	
Quan Ions	77		
Area	>=30	3683	
Height		953	Pass
Amount	>= 0.000 ug/L	0.595 ug/L	
Fit	>=500	969	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.1194x -0.0236	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 156:115.3% 95.3% - 135.3%	65.74%	Fail
	m/z 158:110.0% 90.0% - 130.0%	64.94%	Fail
	m/z 51:62.9% 42.9% - 82.9%	77.07%	Pass

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

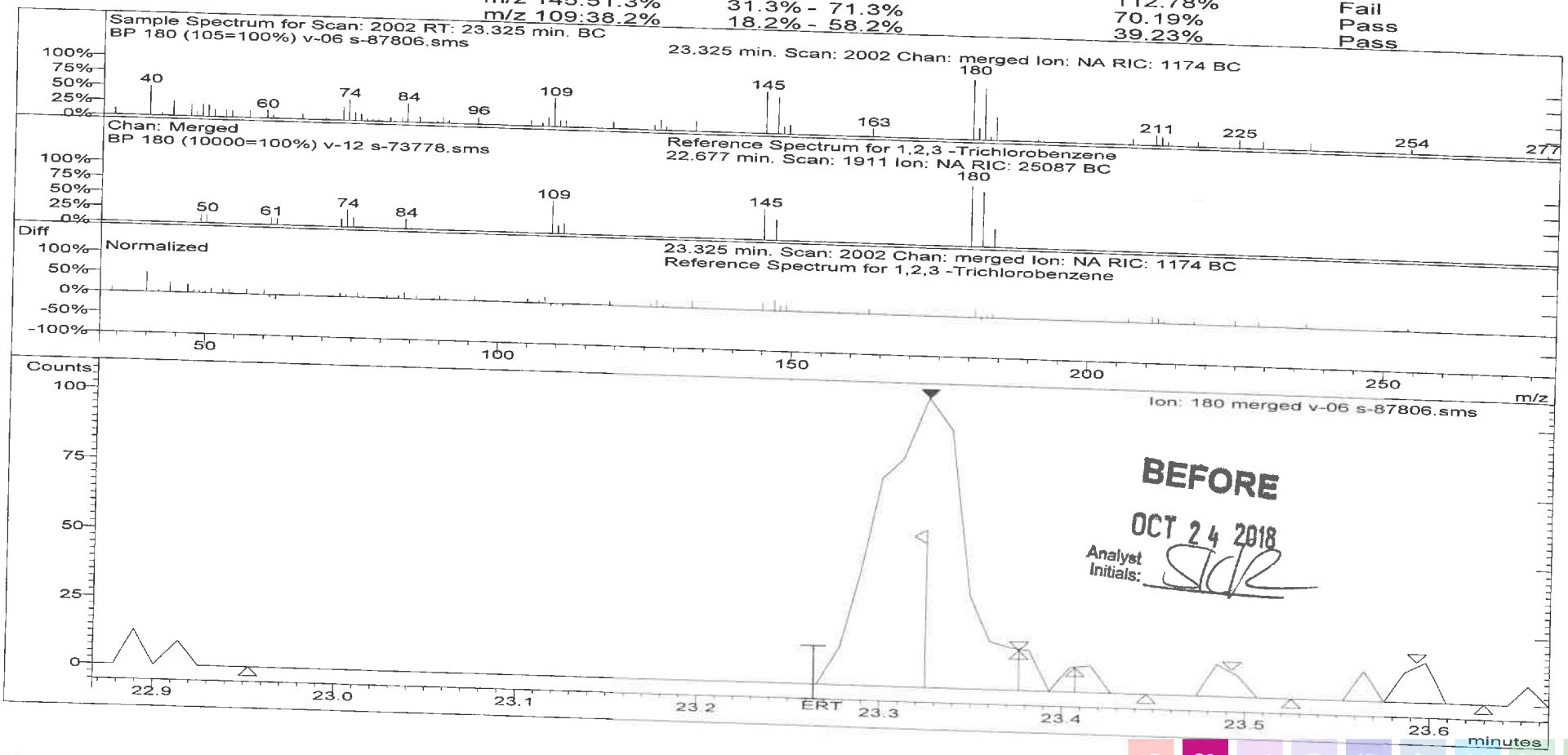
Analyst Initials: SCR

Print Date: 24 Oct 2018 12:47:30

Target Compound #63 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:47 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual		Status
Compound Number			63		
Retention Time	23.264 +/- 0.400		23.325 min.		
RT Offset			Δ0.06120 min.		Pass
Peak Name			1,2,3 -Trichlorobenzene		
CAS Number			87-61-6		
Status					
Quan Ions	180				
Area	>=10		346		
Height			105		Pass
Amount	>= 0.000 ug/L		0.480 ug/L		
Fit	>=0		972		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.0152x -0.0029		Pass
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 182:90.2%	70.2% - 110.2%		112.78%	Fail
	m/z 145:51.3%	31.3% - 71.3%		70.19%	Pass
	m/z 109:38.2%	18.2% - 58.2%		39.23%	Pass



BEFORE

OCT 24 2018

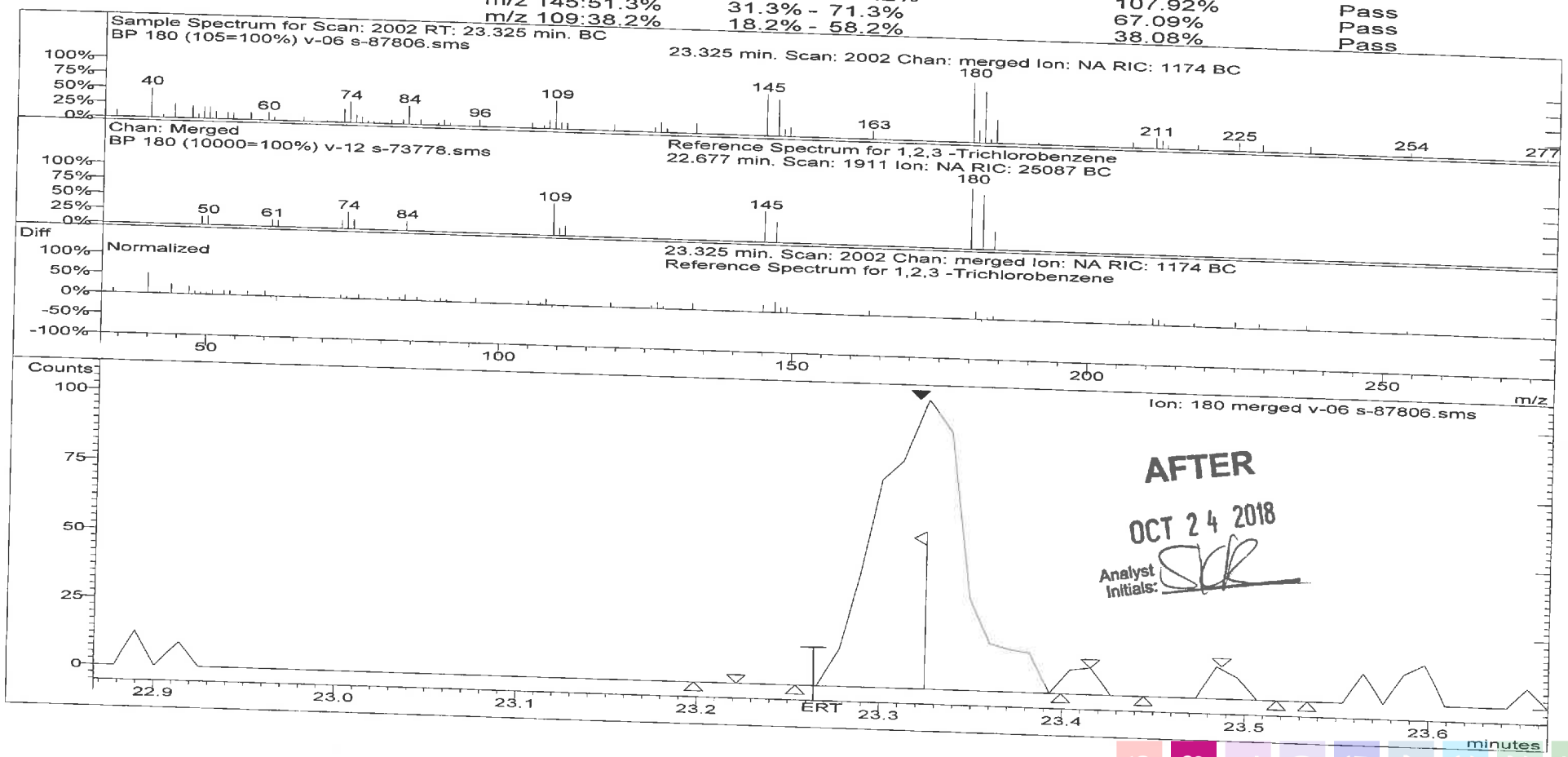
Analyst Initials: SCR

Print Date: 24 Oct 2018 12:47:38

Target Compound #63 from v-06 s-87806.sms

Sample ID:	V-06 S-87806	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 11:56 AM	Data File:	c:\... v-06 s-87806.sm
Calculation Date:	10/24/2018 12:47 PM	Method:	c:\... v-06 s-87806.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 RL Check @ 0.50 ppb		

Parameter	Specification		Actual		Status
Compound Number			63		
Retention Time	23.264 +/- 0.400		23.320 min.		Pass
RT Offset			Δ 0.05589 min.		
Peak Name			1,2,3 -Trichlorobenzene		
CAS Number			87-61-6		
Status					
Quan Ions	180				
Area	>=10		357		
Height			105		Pass
Amount	>= 0.000 ug/L		0.490 ug/L		
Fit	>=0		972		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.0152x -0.0029		Pass
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 182:90.2%	70.2% - 110.2%		107.92%	Pass
	m/z 145:51.3%	31.3% - 71.3%		67.09%	Pass
	m/z 109:38.2%	18.2% - 58.2%		38.08%	Pass



AFTER

OCT 24 2018

Analyst Initials: SCR

LABORATORY CONTROL SAMPLE REPORT

Data File: c:\saturnws\data\524.2 october 24 2018\v-07 s-87808.sms **Acquisition Date:** 10/24/2018 12:27

Comment: 524.2 CCal @ 5.0 ppb

SampleID: V-07 S-87808 **Analyst:** SKR

Calibration File: C:\SaturnWS\data\524.2 October 24 2018\V-03 S-87041.SMS

Calibration Dates: First: 10/8/2018 11:15 **Last:** 10/8/2018 14:53

	Compound	Conc	Units	Amount	Accuracy	Limits	Status
21)	* (IS-1) Fluorobenzene	1.00	ug/L	1.00	100 %	70 - 130	PASS
1)	Dichlorodifluoromethane	5.62	ug/L	5.00	112 %	70 - 130	PASS
2)	Chloromethane	5.92	ug/L	5.00	118 %	70 - 130	PASS
3)	Vinyl chloride	5.43	ug/L	5.00	109 %	70 - 130	PASS
4)	Bromomethane	5.09	ug/L	5.00	102 %	70 - 130	PASS
5)	Chloroethane	5.40	ug/L	5.00	108 %	70 - 130	PASS
6)	Trichlorofluoromethane	5.11	ug/L	5.00	102 %	70 - 130	PASS
7)	1,1-Dichloroethene	4.48	ug/L	5.00	90 %	70 - 130	PASS
8)	Methylene chloride	4.04	ug/L	5.00	81 %	70 - 130	PASS
9)	methyl-tert-butyl-ether (MTBE)	5.35	ug/L	5.00	107 %	70 - 130	PASS
10)	trans-1,2-Dichloroethene	3.71	ug/L	5.00	74 %	70 - 130	PASS
11)	1,1-Dichloroethane	4.52	ug/L	5.00	90 %	70 - 130	PASS
12)	2,2-Dichloropropane	4.42	ug/L	5.00	88 %	70 - 130	PASS
13)	cis-1,2-Dichloroethene	4.92	ug/L	5.00	98 %	70 - 130	PASS
14)	Bromochloromethane	4.85	ug/L	5.00	97 %	70 - 130	PASS
15)	Chloroform (THM)	4.91	ug/L	5.00	98 %	70 - 130	PASS
16)	1,1,1-Trichloroethane	4.60	ug/L	5.00	92 %	70 - 130	PASS
17)	Carbon tetrachloride	4.59	ug/L	5.00	92 %	70 - 130	PASS
18)	1,1-Dichloro-1-propene	4.52	ug/L	5.00	90 %	70 - 130	PASS
19)	Benzene	5.10	ug/L	5.00	102 %	70 - 130	PASS
20)	1,2-Dichloroethane	4.88	ug/L	5.00	98 %	70 - 130	PASS
22)	Trichloroethene (TCE)	4.87	ug/L	5.00	97 %	70 - 130	PASS
23)	1,2-Dichloropropane	4.76	ug/L	5.00	95 %	70 - 130	PASS
24)	Dibromomethane	4.95	ug/L	5.00	99 %	70 - 130	PASS
25)	Bromodichloromethane (THM)	4.62	ug/L	5.00	92 %	70 - 130	PASS
26)	cis-1,3-Dichloro-1-propene	4.59	ug/L	5.00	92 %	70 - 130	PASS
27)	Toluene	4.71	ug/L	5.00	94 %	70 - 130	PASS
28)	trans-1,3-Dichloro-1-propene	4.67	ug/L	5.00	93 %	70 - 130	PASS
29)	1,1,2-Trichloroethane	4.88	ug/L	5.00	98 %	70 - 130	PASS
30)	Tetrachloroethene (PCE)	4.56	ug/L	5.00	91 %	70 - 130	PASS
31)	1,3-dichloropropane	4.83	ug/L	5.00	97 %	70 - 130	PASS
32)	Dibromochloromethane (THM)	4.99	ug/L	5.00	100 %	70 - 130	PASS
33)	1,2-Dibromomethane (EDB)	4.83	ug/L	5.00	97 %	70 - 130	PASS
34)	Ethylbenzene	4.50	ug/L	5.00	90 %	70 - 130	PASS
35)	Chlorobenzene	4.69	ug/L	5.00	94 %	70 - 130	PASS
36)	1,1,1,2-Tetrachloroethane	4.57	ug/L	5.00	91 %	70 - 130	PASS
37)	m&p-Xylenes	9.55	ug/L	10.00	96 %	70 - 130	PASS
38)	o-Xylene	4.90	ug/L	5.00	98 %	70 - 130	PASS
39)	Styrene	4.54	ug/L	5.00	91 %	70 - 130	PASS
40)	Bromoform (THM)	4.52	ug/L	5.00	90 %	70 - 130	PASS
41)	Isopropylbenzene	4.52	ug/L	5.00	90 %	70 - 130	PASS

	Compound	Conc	Units	Amount	Accuracy	Limits	Status
43)	1,1,2,2-Tetrachloroethane	5.20	ug/L	5.00	104 %	70 - 130	PASS
44)	n-Propylbenzene	4.36	ug/L	5.00	87 %	70 - 130	PASS
45)	Bromobenzene	4.59	ug/L	5.00	92 %	70 - 130	PASS
46)	1,2,3-Trichloropropane	4.95	ug/L	5.00	99 %	70 - 130	PASS
47)	2-Chlorotoluene	4.44	ug/L	5.00	89 %	70 - 130	PASS
48)	1,3,5-Trimethylbenzene	4.29	ug/L	5.00	86 %	70 - 130	PASS
49)	4-Chlorotoluene	4.74	ug/L	5.00	95 %	70 - 130	PASS
50)	tert-Butylbenzene	4.98	ug/L	5.00	100 %	70 - 130	PASS
51)	1,2,4-Trimethylbenzene	4.75	ug/L	5.00	95 %	70 - 130	PASS
52)	sec-Butylbenzene	4.29	ug/L	5.00	86 %	70 - 130	PASS
53)	p-Isopropyltoluene (4-Iso)	4.81	ug/L	5.00	96 %	70 - 130	PASS
54)	1,3-Dichlorobenzene	4.59	ug/L	5.00	92 %	70 - 130	PASS
55)	1,4-Dichlorobenzene	4.55	ug/L	5.00	91 %	70 - 130	PASS
56)	n-Butylbenzene	4.34	ug/L	5.00	87 %	70 - 130	PASS
57)	1,2 -Dichlorobenzene	4.68	ug/L	5.00	94 %	70 - 130	PASS
59)	1,2-Dibromo-3-chloropropane (DBCP)	5.21	ug/L	5.00	104 %	70 - 130	PASS
60)	1,2,4-Trichlorobenzene	4.47	ug/L	5.00	89 %	70 - 130	PASS
61)	Hexachlorobutadiene	4.27	ug/L	5.00	85 %	70 - 130	PASS
62)	Naphthalene	4.19	ug/L	5.00	84 %	70 - 130	PASS
63)	1,2,3 -Trichlorobenzene	4.28	ug/L	5.00	86 %	70 - 130	PASS

* indicates Internal Standard.

VOLATILE CONTINUING CALIBRATION CHECK

EPA Method 524.2

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument ID: Continuing Calibration Date: 10/24/2018 Time: 12:27

Heated Purge (Y/N): No Initial Calibration Date: 10/8/2018 10/8/2018

GC Column: ID: (mm) Initial Calibration Time: 11:15 14:53

Initial Calibration File: C:\SaturnWS\data\524.2 October 24 2018\V-03 S-87041.SMS

Lab File ID: c:\saturnws\data\524.2 october 24 2018\v-07 s-87808.sms

RRF = (Area(sample)/Amount(sample))/(Area(standard)/Amount(standard))

Compound	AvgRRF	RRF	MinRRF	% D	Max %D	CCC	SPCC
Dichlorodifluoromethane	0.087	0.107	0.000	-23.1	30.0	PASS	
Chloromethane	0.020	0.024	0.000	-18.4	30.0	PASS	
Vinyl chloride	0.057	0.068	0.000	-18.6	30.0	PASS	
Bromomethane	0.029	0.027	0.000	8.6	30.0	PASS	
Chloroethane	0.009	0.008	0.000	8.0	30.0	PASS	
Trichlorofluoromethane	0.130	0.147	0.000	-12.6	30.0	PASS	
1,1-Dichloroethene	0.115	0.110	0.000	4.3	30.0	PASS	
Methylene chloride	0.058	0.052	0.000	9.7	30.0	PASS	
methyl-tert-butyl-ether (MTBE)	0.151	0.161	0.000	-7.0	30.0	PASS	
trans-1,2-Dichloroethene	0.160	0.124	0.000	22.4	30.0	PASS	
1,1-Dichloroethane	0.109	0.106	0.000	2.6	30.0	PASS	
2,2-Dichloropropane	0.106	0.099	0.000	7.2	30.0	PASS	
cis-1,2-Dichloroethene	0.049	0.051	0.000	-4.2	30.0	PASS	
Bromochloromethane	0.093	0.096	0.000	-3.8	30.0	PASS	
Chloroform (THM)	0.086	0.089	0.000	-3.9	30.0	PASS	
1,1,1-Trichloroethane	0.097	0.094	0.000	3.0	30.0	PASS	
Carbon tetrachloride	0.070	0.067	0.000	3.8	30.0	PASS	
1,1-Dichloro-1-propene	0.049	0.047	0.000	4.9	30.0	PASS	
Benzene	0.122	0.124	0.000	-2.0	30.0	PASS	
1,2-Dichloroethane	0.130	0.135	0.000	-3.3	30.0	PASS	
Trichloroethene (TCE)	0.084	0.086	0.000	-2.5	30.0	PASS	
1,2-Dichloropropane	0.040	0.040	0.000	-1.4	30.0	PASS	
Dibromomethane	0.035	0.035	0.000	1.0	30.0	PASS	
Bromodichloromethane (THM)	0.086	0.085	0.000	1.2	30.0	PASS	
cis-1,3-Dichloro-1-propene	0.071	0.069	0.000	2.9	30.0	PASS	
Toluene	0.264	0.264	0.000	-0.2	30.0	PASS	
trans-1,3-Dichloro-1-propene	0.071	0.070	0.000	0.6	30.0	PASS	
1,1,2-Trichloroethane	0.084	0.088	0.000	-4.7	30.0	PASS	
Tetrachloroethene (PCE)	0.044	0.042	0.000	4.8	30.0	PASS	
1,3-dichloropropane	0.095	0.099	0.000	-3.7	30.0	PASS	
Dibromochloromethane (THM)	0.059	0.063	0.000	-6.2	30.0	PASS	
1,2-Dibromomethane (EDB)	0.124	0.127	0.000	-1.9	30.0	PASS	
Ethylbenzene	0.293	0.283	0.000	3.4	30.0	PASS	
Chlorobenzene	0.148	0.149	0.000	-0.2	30.0	PASS	
1,1,1,2-Tetrachloroethane	0.072	0.070	0.000	2.7	30.0	PASS	
m&p-Xylenes	0.256	0.253	0.000	1.3	30.0	PASS	

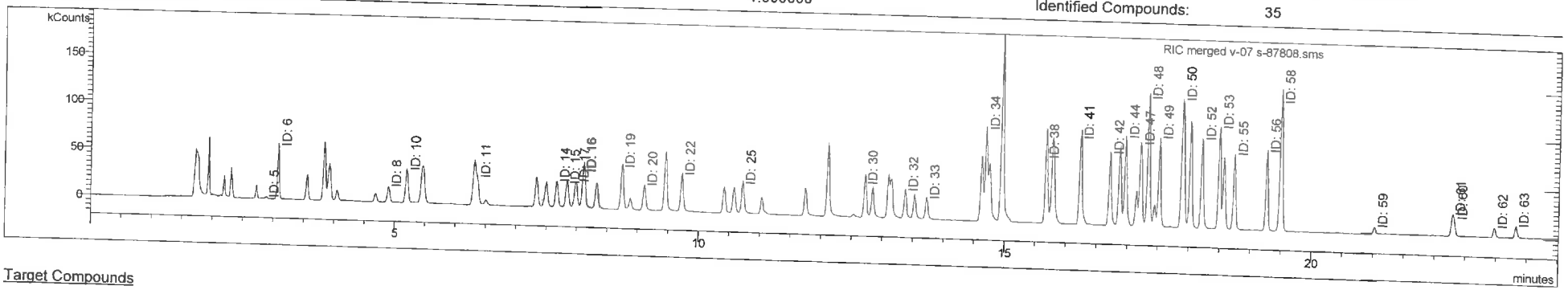
Compound	AvgRRF	RRF	MinRRF	% D	Max %D	CCC	SPCC
o-Xylene	0.275	0.276	0.000	-0.5	30.0	PASS	
Styrene	0.156	0.153	0.000	1.9	30.0	PASS	
Bromoform (THM)	0.036	0.034	0.000	4.4	30.0	PASS	
Isopropylbenzene	0.277	0.268	0.000	3.0	30.0	PASS	
(S-1) Bromofluorobenzene (BFB)	1.586	1.426	0.000	10.1	30.0	PASS	
1,1,2,2-Tetrachloroethane	0.058	0.060	0.000	-4.0	30.0	PASS	
n-Propylbenzene	0.305	0.288	0.000	5.7	30.0	PASS	
Bromobenzene	0.107	0.105	0.000	1.6	30.0	PASS	
1,2,3-Trichloropropane	0.087	0.086	0.000	1.1	30.0	PASS	
2-Chlorotoluene	0.214	0.203	0.000	5.2	30.0	PASS	
1,3,5-Trimethylbenzene	0.201	0.185	0.000	7.7	30.0	PASS	
4-Chlorotoluene	0.218	0.224	0.000	-2.8	30.0	PASS	
tert-Butylbenzene	0.266	0.288	0.000	-8.0	30.0	PASS	
1,2,4-Trimethylbenzene	0.131	0.134	0.000	-2.3	30.0	PASS	
sec-Butylbenzene	0.267	0.248	0.000	7.1	30.0	PASS	
p-Isopropyltoluene (4-Iso)	0.226	0.237	0.000	-4.9	30.0	PASS	
1,3-Dichlorobenzene	0.104	0.103	0.000	1.4	30.0	PASS	
1,4-Dichlorobenzene	0.116	0.115	0.000	1.6	30.0	PASS	
n-Butylbenzene	0.184	0.176	0.000	4.4	30.0	PASS	
1,2 -Dichlorobenzene	0.115	0.115	0.000	0.7	30.0	PASS	
(S-2) 1,2-Dichlorobenzene-d4	0.437	0.396	0.000	9.3	30.0	PASS	
1,2-Dibromo-3-chloropropane (DBCP)	0.016	0.017	0.000	-4.2	30.0	PASS	
1,2,4-Trichlorobenzene	0.013	0.012	0.000	4.0	30.0	PASS	
Hexachlorobutadiene	0.018	0.016	0.000	9.2	30.0	PASS	
Naphthalene	0.031	0.027	0.000	10.9	30.0	PASS	
1,2,3 -Trichlorobenzene	0.014	0.012	0.000	8.9	30.0	PASS	

Print Date: 24 Oct 2018 12:56:17

524.2 VOA ANALYSES -- VARIAN #01

Sample Report for v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:		Last Calibration:	10/8/2018 5:15 PM
Acquisition Date:	10/24/2018 12:27 PM	Calculation Date:	10/24/2018 12:55 PM	Method:	c:\... \v-07 s-87808.sms
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb			Header Time Date:	10/24/2018 12:56 PM
Data File:	c:\... \v-07 s-87808.sms	Multiplier:	1.000000	Identified Compounds:	35



Target Compounds

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
21	9.455	(IS-1) Fluorobenzene	S	96	81155	1.000	ug/L	999
1	1.937	Dichlorodifluoromethane		85	43460	5.624	ug/L	998
2	2.193	Chloromethane		49+51	9670	5.920	ug/L	N/A
3	2.309	Vinyl chloride		62	27403	5.428	ug/L	999
4	2.726	Bromomethane		94+96	10877	5.087	ug/L	N/A
5	2.881	Chloroethane	U	45+47	3277	5.401	ug/L	N/A
6	3.082	Trichlorofluoromethane		101	59603	5.114	ug/L	1000
7	3.835	1,1-Dichloroethene		61+96	44495	4.481	ug/L	997
8	4.895	Methylene chloride	U	49+84	21167	4.038	ug/L	997
9	5.453	methyl-tert-butyl-ether (MTBE)		73	65459	5.351	ug/L	N/A
10	5.200	trans-1,2-Dichloroethene		61+96	50310	3.711	ug/L	989
11	6.361	1,1-Dichloroethane		63	43069	4.519	ug/L	999
12	7.494	2,2-Dichloropropane		77+79	39993	4.421	ug/L	1000
13	7.331	cis-1,2-Dichloroethene		62+96	20612	4.917	ug/L	999
14	7.666	Bromochloromethane		49+51+93	38966	4.852	ug/L	999
15	7.827	Chloroform (THM)		83	36181	4.912	ug/L	999
16	8.093	1,1,1-Trichloroethane	U	97	38302	4.601	ug/L	998
17	7.981	Carbon tetrachloride		117	27221	4.586	ug/L	1000
18	8.323	1,1-Dichloro-1-propene		75	19058	4.520	ug/L	995
19	8.735	Benzene		78	50481	5.100	ug/L	999
20	9.106	1,2-Dichloroethane		62+64	54668	4.878	ug/L	N/A
22	9.721	Trichloroethene (TCE)		130+132	34738	4.869	ug/L	998
23	10.565	1,2-Dichloropropane	U	63	16388	4.763	ug/L	998
24	10.400	Dibromomethane	U	95	14235	4.949	ug/L	999
25	10.715	Bromodichloromethane (THM)		83	34366	4.625	ug/L	999
26	11.733	cis-1,3-Dichloro-1-propene		75	28022	4.587	ug/L	998
27	12.105	Toluene		91	107238	4.707	ug/L	1000
28	12.843	trans-1,3-Dichloro-1-propene		75	28450	4.668	ug/L	975
29	13.098	1,1,2-Trichloroethane		83+61	35733	4.877	ug/L	991
30	12.705	Tetrachloroethene (PCE)	U	166	16995	4.557	ug/L	996
31	13.523	1,3-dichloropropane	U	41+76	40122	4.834	ug/L	999
32	13.371	Dibromochloromethane (THM)		129	25619	4.985	ug/L	990
33	13.721	1,2-Dibromomethane (EDB)		107+109+93	51437	4.827	ug/L	1000
34	14.692	Ethylbenzene		91	114961	4.498	ug/L	999

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524.2 VOA ANALYSES -- VARIAN #01

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
35	14.610	Chlorobenzene		112	60360	4.688	ug/L	999
36	14.743	1,1,1,2-Tetrachloroethane		131	28317	4.570	ug/L	997
37	14.949	m&p-Xylenes		91	205072	9.551	ug/L	999
38	15.661	o-Xylene	U	91	112046	4.902	ug/L	999
39	15.779	Styrene		104	62037	4.535	ug/L	996
40	15.806	Bromoform (THM)		173	13804	4.519	ug/L	996
41	16.226	Isopropylbenzene		105	108857	4.519	ug/L	999
42	16.714	(S-1) Bromofluorobenzene (BFB)		95+174+176	115730	0.899	ug/L	991
43	17.146	1,1,2,2-Tetrachloroethane		83	24396	5.201	ug/L	984
44	16.967	n-Propylbenzene		91	116762	4.357	ug/L	1000
45	16.853	Bromobenzene	U	77	42607	4.594	ug/L	995
46	17.345	1,2,3-Trichloropropane		75+110+112	34928	4.947	ug/L	977
47	17.215	2-Chlorotoluene		91	82395	4.439	ug/L	998
48	17.334	1,3,5-Trimethylbenzene		77+120	75269	4.294	ug/L	998
49	17.518	4-Chlorotoluene		91	90900	4.738	ug/L	N/A
50	17.889	tert-Butylbenzene		119	116738	4.981	ug/L	993
51	18.024	1,2,4-Trimethylbenzene		120	54560	4.747	ug/L	999
52	18.212	sec-Butylbenzene		105	100581	4.295	ug/L	999
53	18.495	p-Isopropyltoluene (4-Iso)		119	96242	4.808	ug/L	999
54	18.573	1,3-Dichlorobenzene		111+75	41768	4.591	ug/L	997
55	18.743	1,4-Dichlorobenzene		146	46495	4.551	ug/L	991
56	19.269	n-Butylbenzene		91	71566	4.335	ug/L	999
57	19.509	1,2 -Dichlorobenzene		146	46533	4.684	ug/L	990
58	19.491	(S-2) 1,2-Dichlorobenzene-d4		152+154	32178	0.907	ug/L	989
59	21.030	1,2-Dibromo-3-chloropropane (DBCP)		157+155+159	6873	5.208	ug/L	997
60	22.319	1,2,4-Trichlorobenzene		180	4963	4.469	ug/L	981
61	22.290	Hexachlorobutadiene		225	6494	4.267	ug/L	977
62	22.975	Naphthalene		128	11128	4.186	ug/L	999
63	23.325	1,2,3 -Trichlorobenzene		180	5063	4.282	ug/L	997

89.9%

90.7%

Status and Errors:

S : Internal Standard Peak.

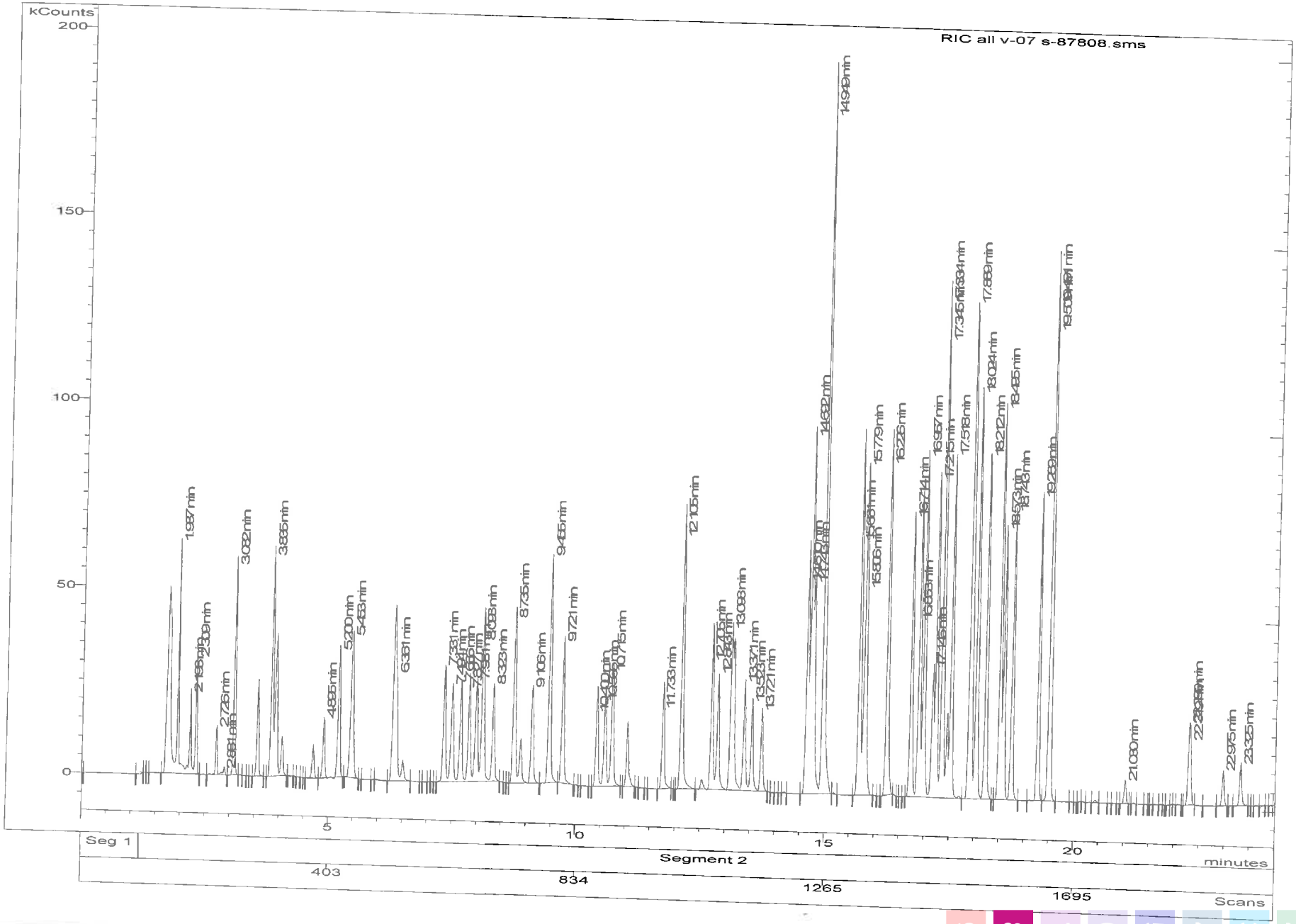
U : User defined end points.

Print Date: 24 Oct 2018 13:02:01

Chromatogram Plot

File: c:\saturnws\data\524.2 october 24 2018\v-07 s-87808.sms
Sample: V-07 S-87808
Scan Range: 1 - 2045 Time Range: 0.00 - 24.02 min.
Sample Notes: 524.2 CCal @ 5.0 ppb

Operator: SKR
Date: 10/24/2018 12:27 PM

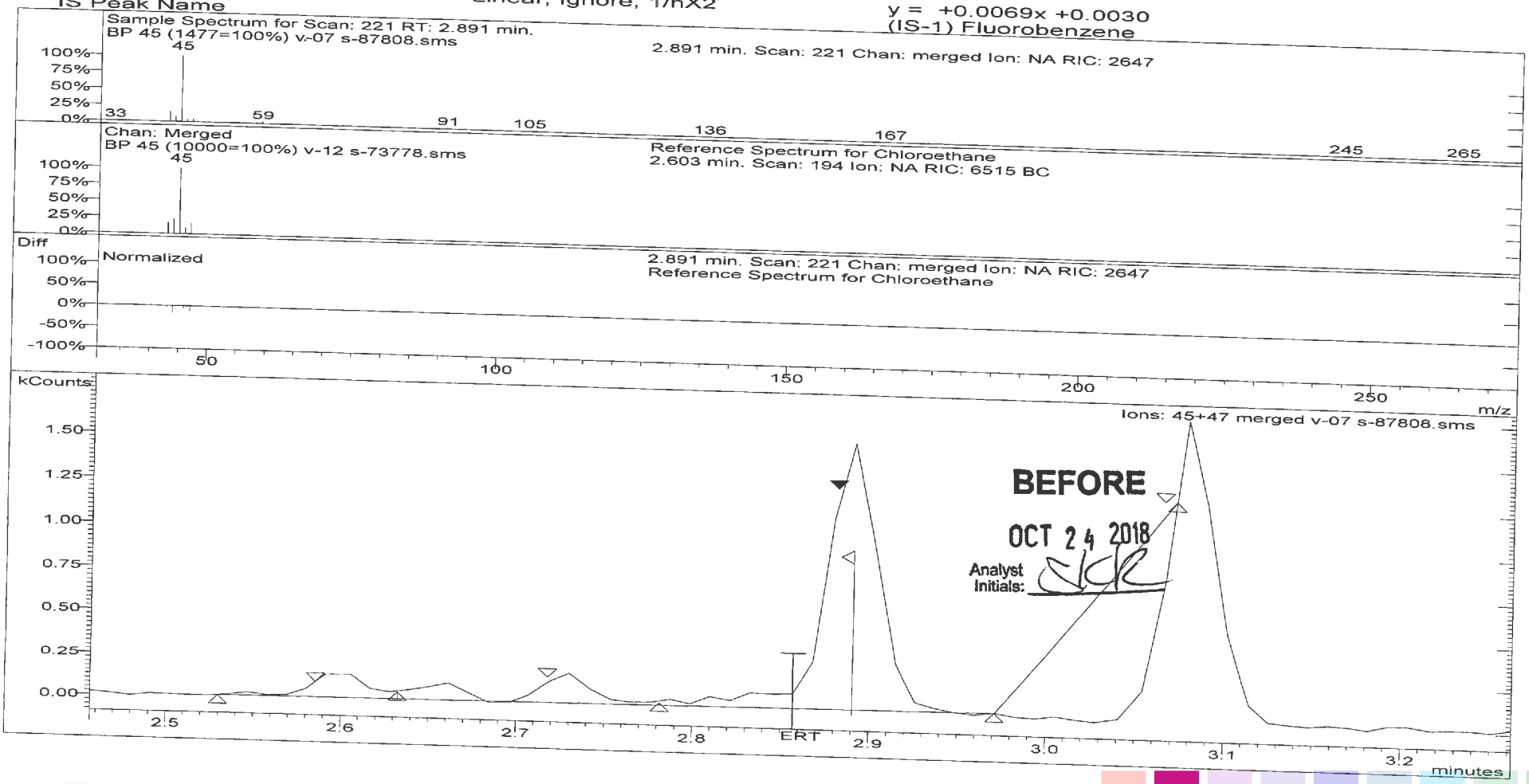


Print Date: 24 Oct 2018 12:52:27

Target Compound #6 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:52 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		5	
Retention Time	2.857 +/- 0.400	2.881 min.	Pass
RT Offset		Δ0.02427 min.	
Peak Name		Chloroethane	
CAS Number		None	
Status			
Quan Ions	45+47		
Area	>=10	3196	
Height		1263	Pass
Amount	>= 0.000 ug/L	5.257 ug/L	
Fit		N/A	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.0069x +0.0030	
IS Peak Name		(IS-1) Fluorobenzene	



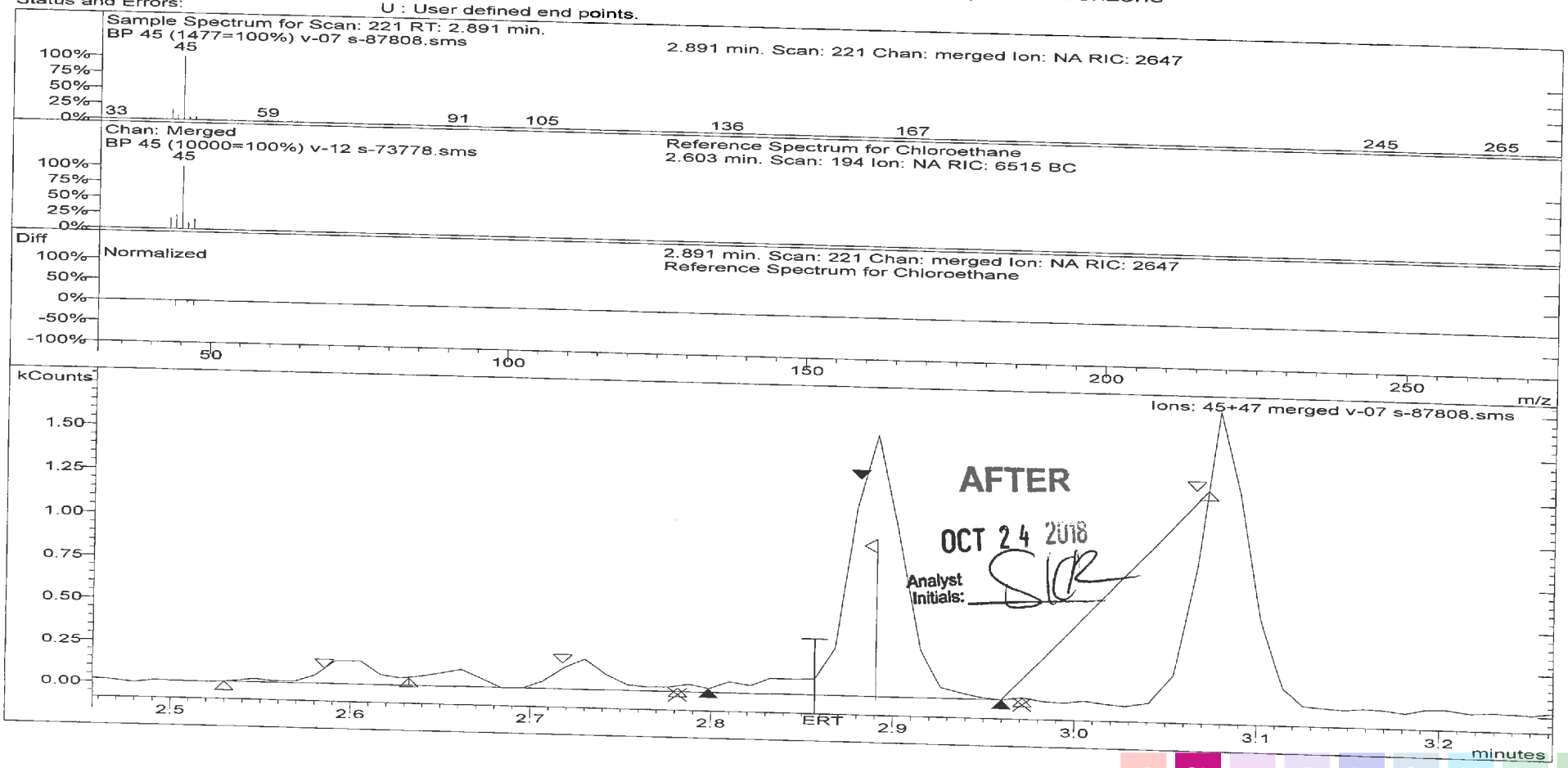
Print Date: 24 Oct 2018 12:52:34

Target Compound #6 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:52 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		5	
Retention Time	2.857 +/- 0.400	2.881 min.	Pass
RT Offset		Δ0.02427 min.	
Peak Name		Chloroethane	
CAS Number		None	
Status		U	
Quan Ions	45+47		
Area	>=10	3277	
Height		1274	Pass
Amount	>= 0.000 ug/L	5.401 ug/L	
Fit		N/A	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.0069x +0.0030	
IS Peak Name		(IS-1) Fluorobenzene	

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

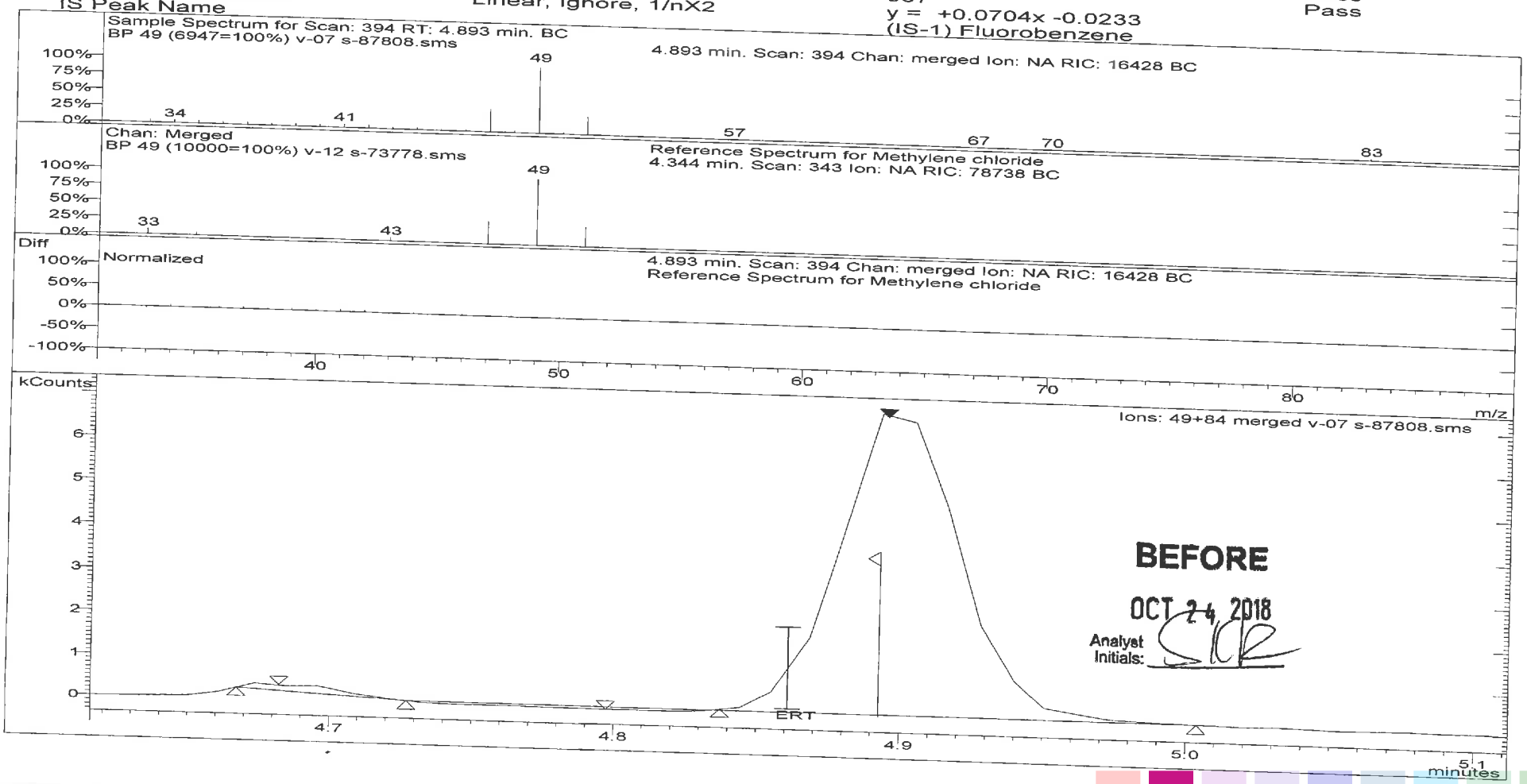
Analyst Initials: SCR

Print Date: 24 Oct 2018 12:52:44

Target Compound #9 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:52 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		8	
Retention Time	4.861 +/- 0.250	4.895 min.	Pass
RT Offset		Δ0.03370 min.	
Peak Name		Methylene chloride	
CAS Number		75-09-2	
Status			
Quan Ions	49+84		
Area	>=30	20767	
Height		6900	Pass
Amount	>= 0.000 ug/L	3.968 ug/L	
Fit	>=500	997	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.0704x -0.0233	Pass
IS Peak Name		(IS-1) Fluorobenzene	



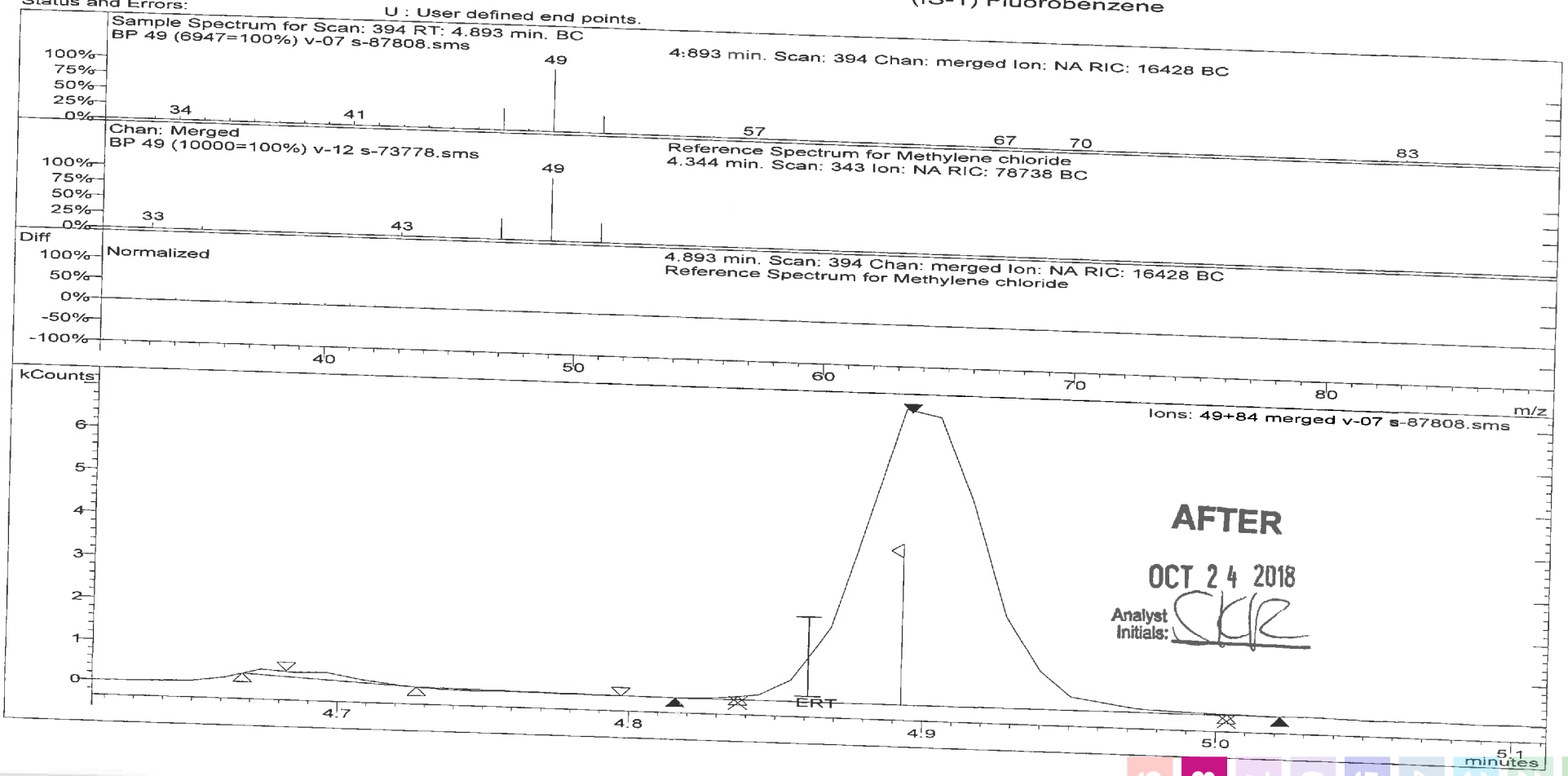
Print Date: 24 Oct 2018 12:52:52

Target Compound #9 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:52 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		8	
Retention Time	4.861 +/- 0.250	4.895 min.	
RT Offset		Δ0.03370 min.	Pass
Peak Name		Methylene chloride	
CAS Number		75-09-2	
Status		U	
Quan Ions	49+84		
Area	>=30	21167	
Height		6940	Pass
Amount	>= 0.000 ug/L	4.038 ug/L	
Fit	>=500	997	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.0704x -0.0233	Pass
IS Peak Name		(IS-1) Fluorobenzene	

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

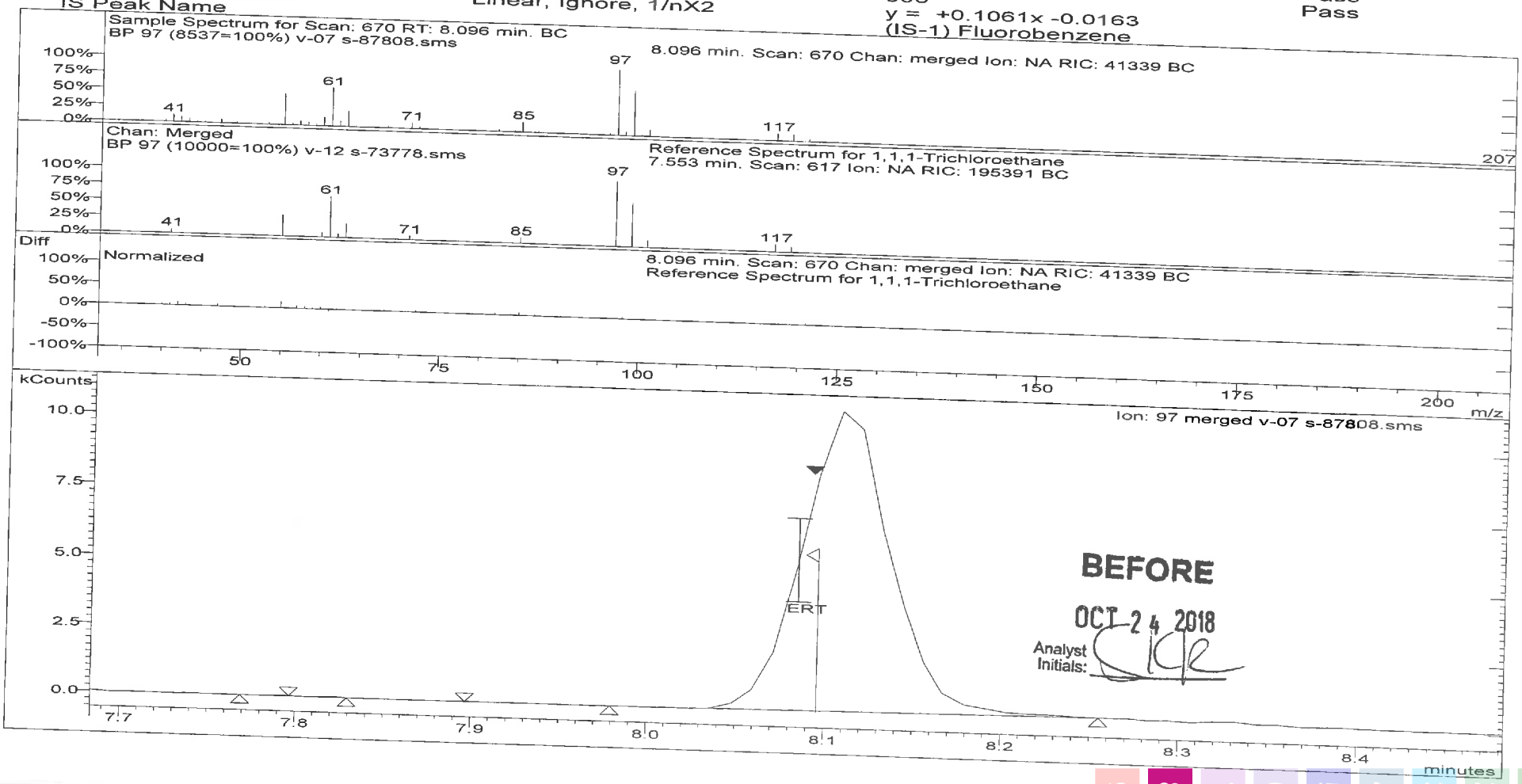
Analyst Initials: SKR

Print Date: 24 Oct 2018 12:53:52

Target Compound #17 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:52 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		16	
Retention Time	8.085 +/- 0.400	8.093 min.	Pass
RT Offset		Δ0.00800 min.	
Peak Name		1,1,1-Trichloroethane	
CAS Number		71-55-6	
Status			
Quan Ions	97		
Area	>=30	37536	
Height		8510	Pass
Amount	>= 0.000 ug/L	4.512 ug/L	
Fit	>=500	998	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.1061x -0.0163	Pass
IS Peak Name		(IS-1) Fluorobenzene	



BEFORE

OCT 24 2018

Analyst Initials:

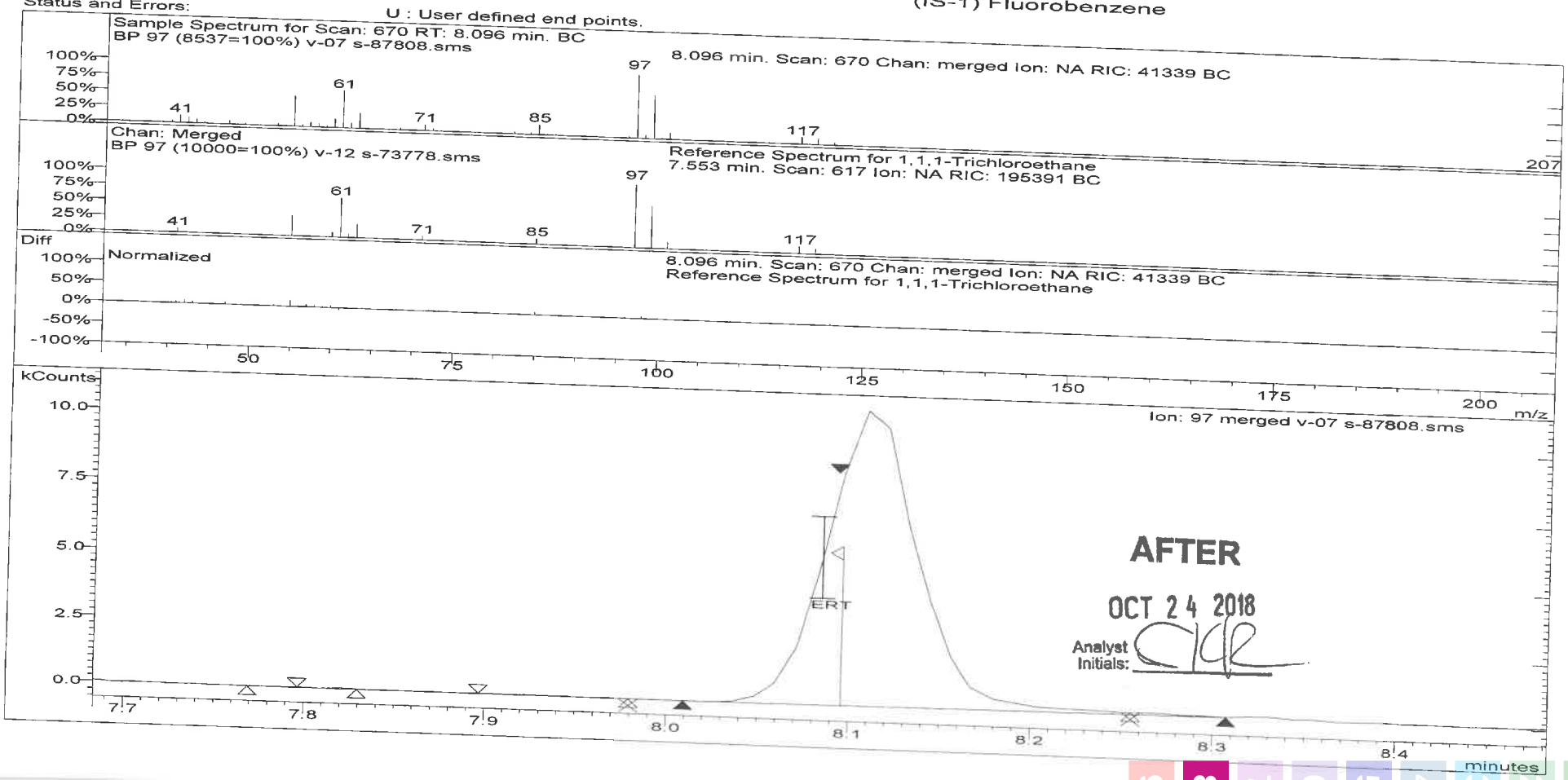
Print Date: 24 Oct 2018 12:53:59

Target Compound #17 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:53 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		16	
Retention Time	8.085 +/- 0.400	8.093 min.	
RT Offset		△0.00800 min.	Pass
Peak Name		1,1,1-Trichloroethane	
CAS Number		71-55-6	
Status		U	
Quan Ions			
Area	97	38302	
Height	>=30	8543	Pass
Amount	>= 0.000 ug/L	4.601 ug/L	
Fit	>=500	998	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.1061x -0.0163	Pass
IS Peak Name		(IS-1) Fluorobenzene	

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

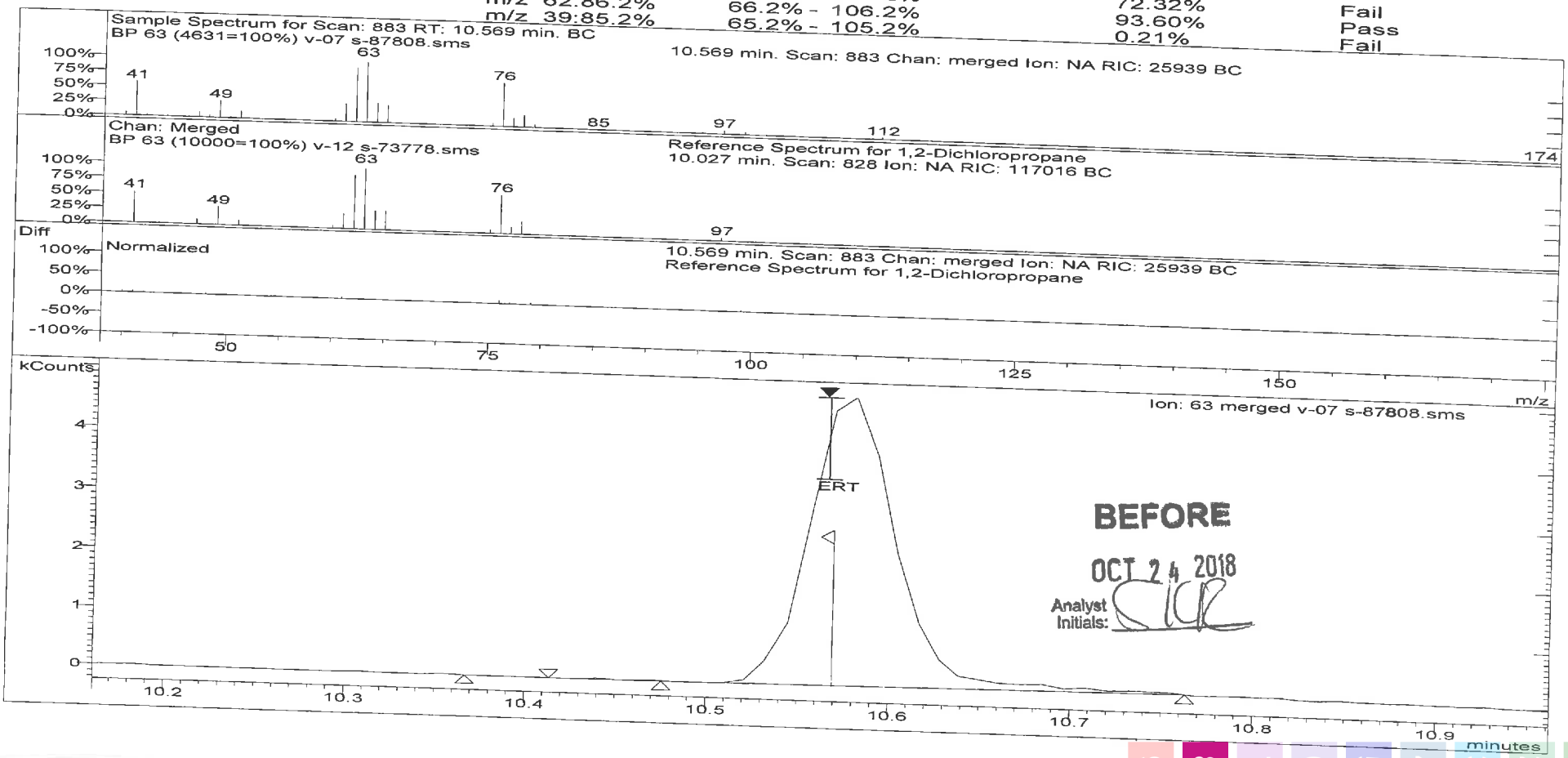
Analyst Initials: CLR

Print Date: 24 Oct 2018 12:54:09

Target Compound #23 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:53 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		23	
Retention Time	10.566 +/- 0.400	10.565 min.	
RT Offset		△0.00116 min.	Pass
Peak Name		1,2-Dichloropropane	
CAS Number		107-06-2	
Status			
Quan Ions	63		
Area	>=30	16186	
Height		4845	Pass
Amount	>= 0.000 ug/L	4.707 ug/L	
Fit	>=500	998	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.0440x -0.0078	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 76:93.2% 73.2% - 113.2%	72.32%	Fail
	m/z 62:86.2% 66.2% - 106.2%	93.60%	Pass
	m/z 39:85.2% 65.2% - 105.2%	0.21%	Fail



BEFORE

OCT 24 2018

Analyst Initials:

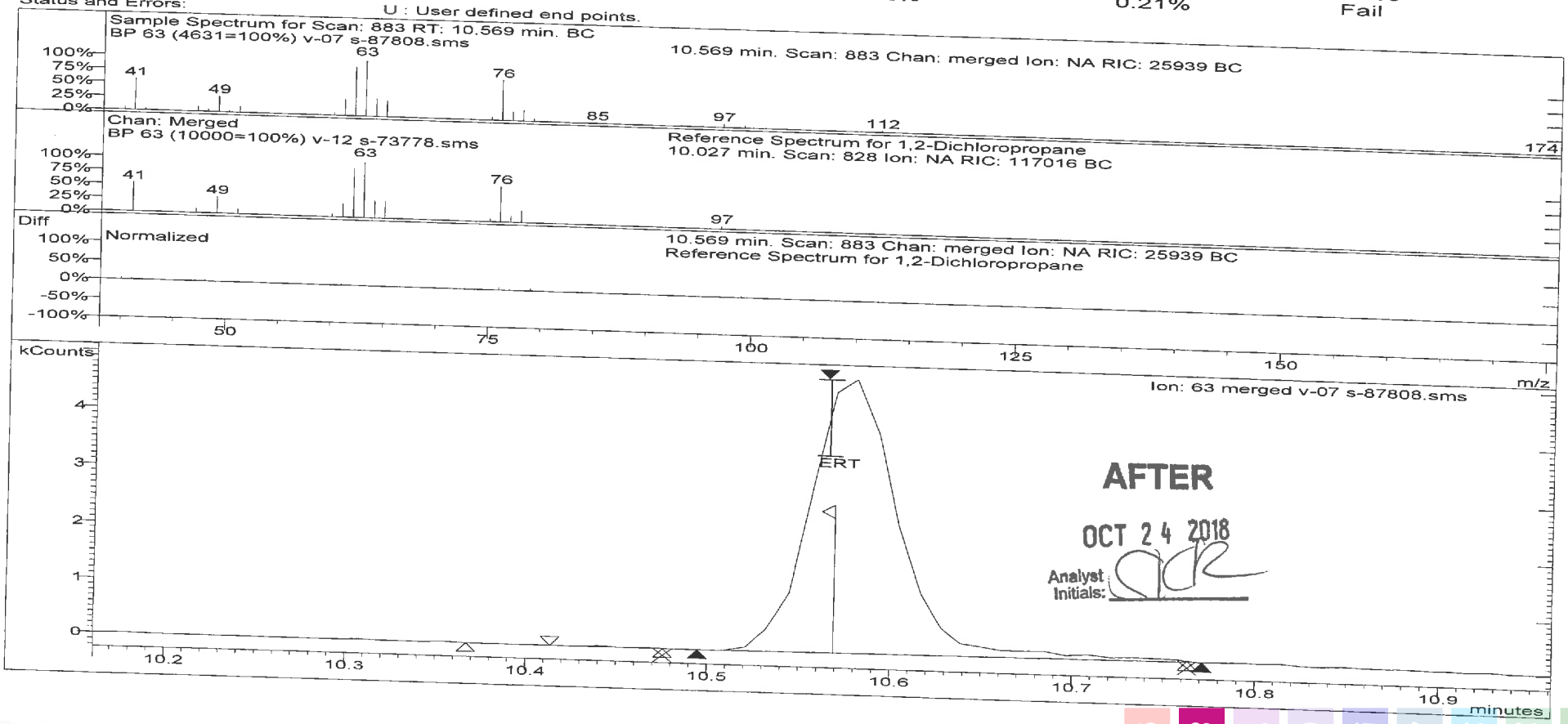
Print Date: 24 Oct 2018 12:54:17

Target Compound #23 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:54 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification		Actual		Status
Compound Number			23		
Retention Time	10.566 +/- 0.400		10.565 min.		Pass
RT Offset			Δ0.00116 min.		
Peak Name			1,2-Dichloropropane		
CAS Number			107-06-2		
Status			U		
Quan Ions	63				
Area	>=30		16388		
Height			4853		Pass
Amount	>= 0.000 ug/L		4.763 ug/L		
Fit	>=500		998		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.0440x -0.0078		Pass
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 76:93.2%	73.2% - 113.2%		71.43%	Fail
	m/z 62:86.2%	66.2% - 106.2%		92.45%	Pass
	m/z 39:85.2%	65.2% - 105.2%		0.21%	Fail

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

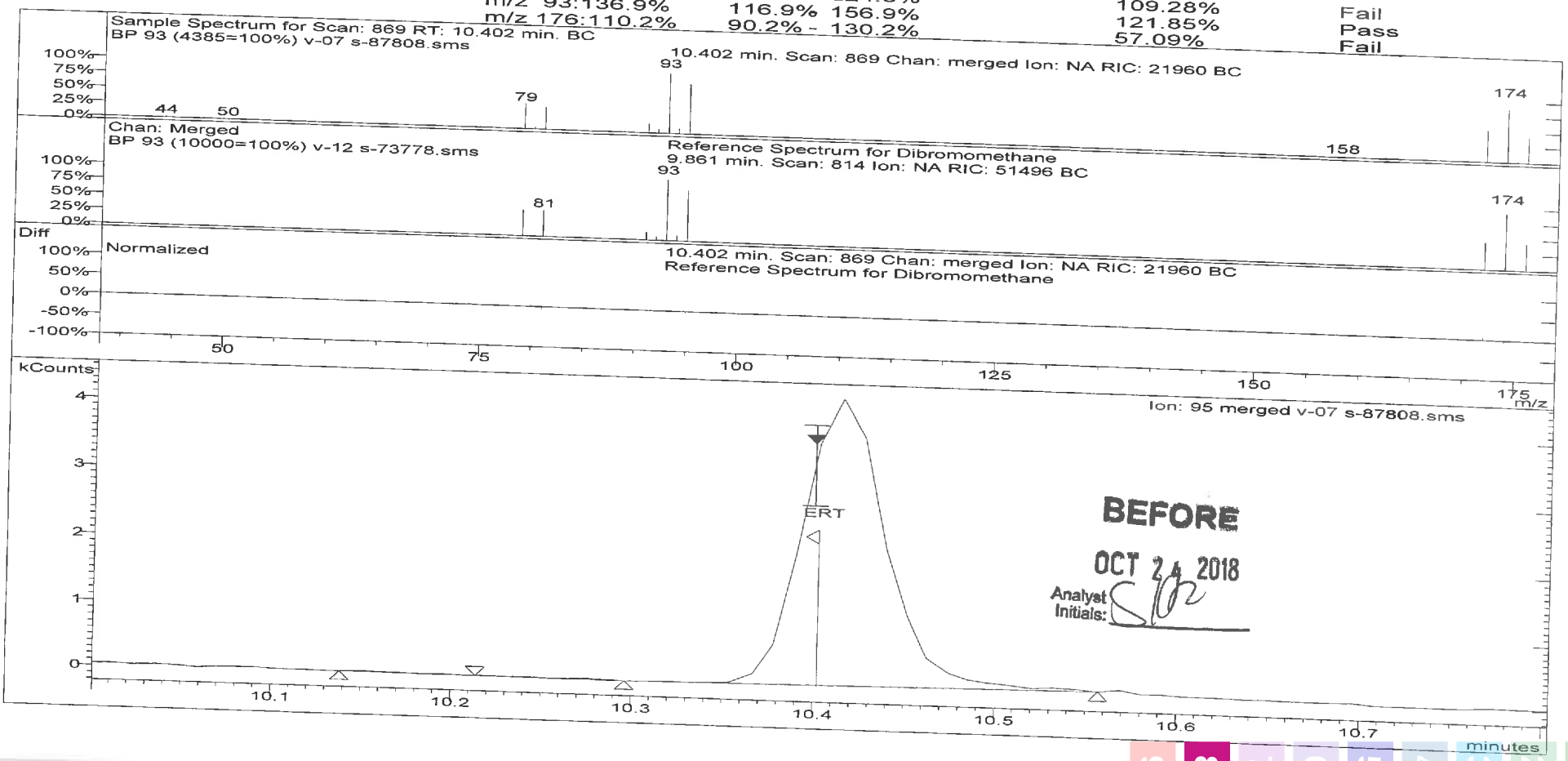
Analyst Initials:

Print Date: 24 Oct 2018 12:54:26

Target Compound #24 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:54 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		24	
Retention Time	10.400 +/- 0.400	10.400 min.	
RT Offset		△0.00019 min.	Pass
Peak Name		Dibromomethane	
CAS Number		74-95-3	
Status			
Quan Ions	95		
Area	>=30	13722	
Height		3613	Pass
Amount	>= 0.000 ug/L	4.770 ug/L	
Fit	>=500	999	Pass
Calibration Equation	Linear, Force, 1/nX2	y = +0.0354x	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 174:204.3% 184.3% 224.3%	109.28%	Fail
	m/z 93:136.9% 116.9% 156.9%	121.85%	Pass
	m/z 176:110.2% 90.2% - 130.2%	57.09%	Fail



BEFORE
OCT 24 2018
Analyst Initials:

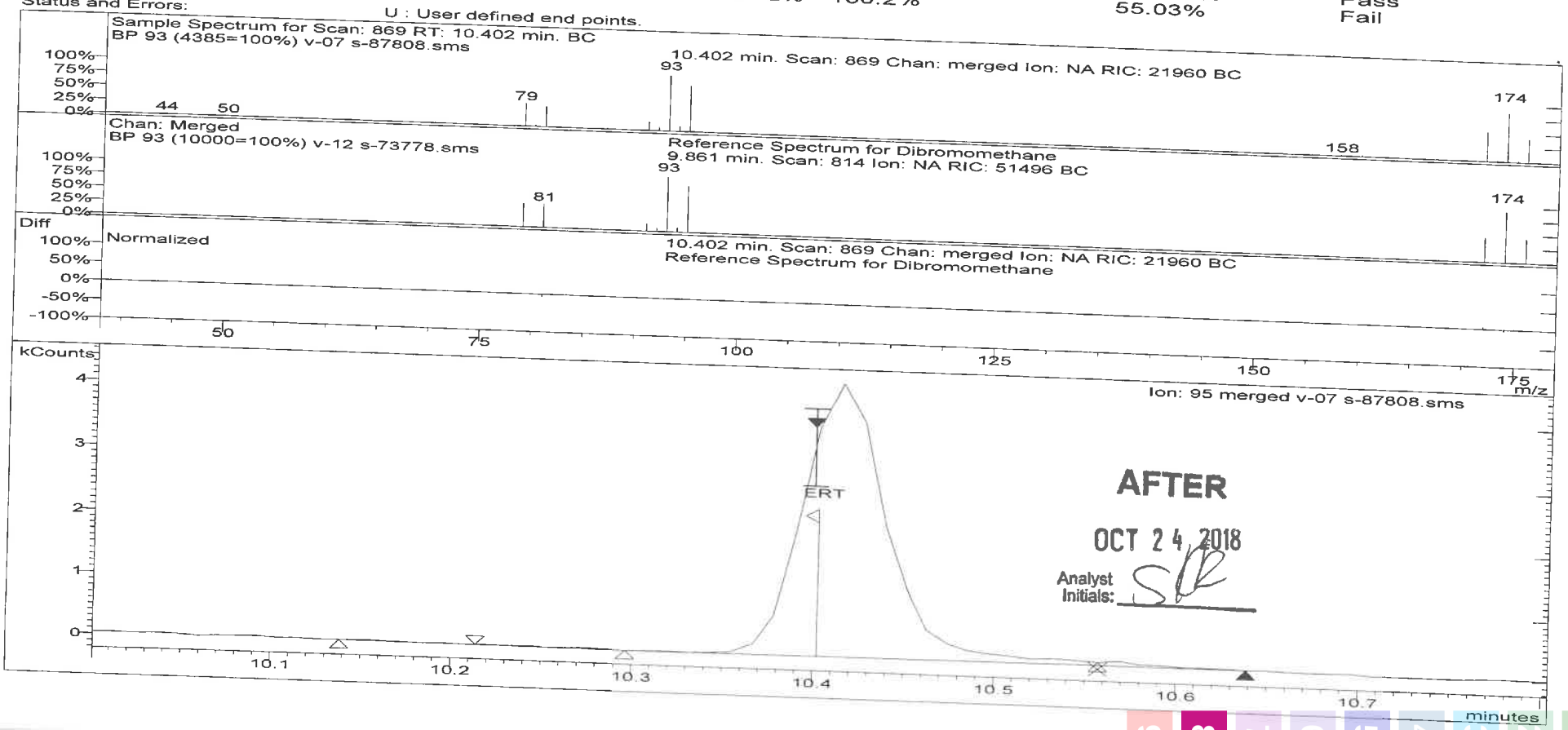
Print Date: 24 Oct 2018 12:54:33

Target Compound #24 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:54 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		24	
Retention Time	10.400 +/- 0.400	10.400 min.	
RT Offset		Δ0.00019 min.	Pass
Peak Name		Dibromomethane	
CAS Number		74-95-3	
Status		U	
Quan Ions			
Area	95	14235	
Height	>=30	3632	Pass
Amount	>= 0.000 ug/L	4.949 ug/L	
Fit	>=500	999	Pass
Calibration Equation	Linear, Force, 1/nX2	y = +0.0354x	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 174:204.3% 184.3% 224.3%	105.33%	Fail
	m/z 93:136.9% 116.9% 156.9%	117.45%	Pass
	m/z 176:110.2% 90.2% - 130.2%	55.03%	Fail

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

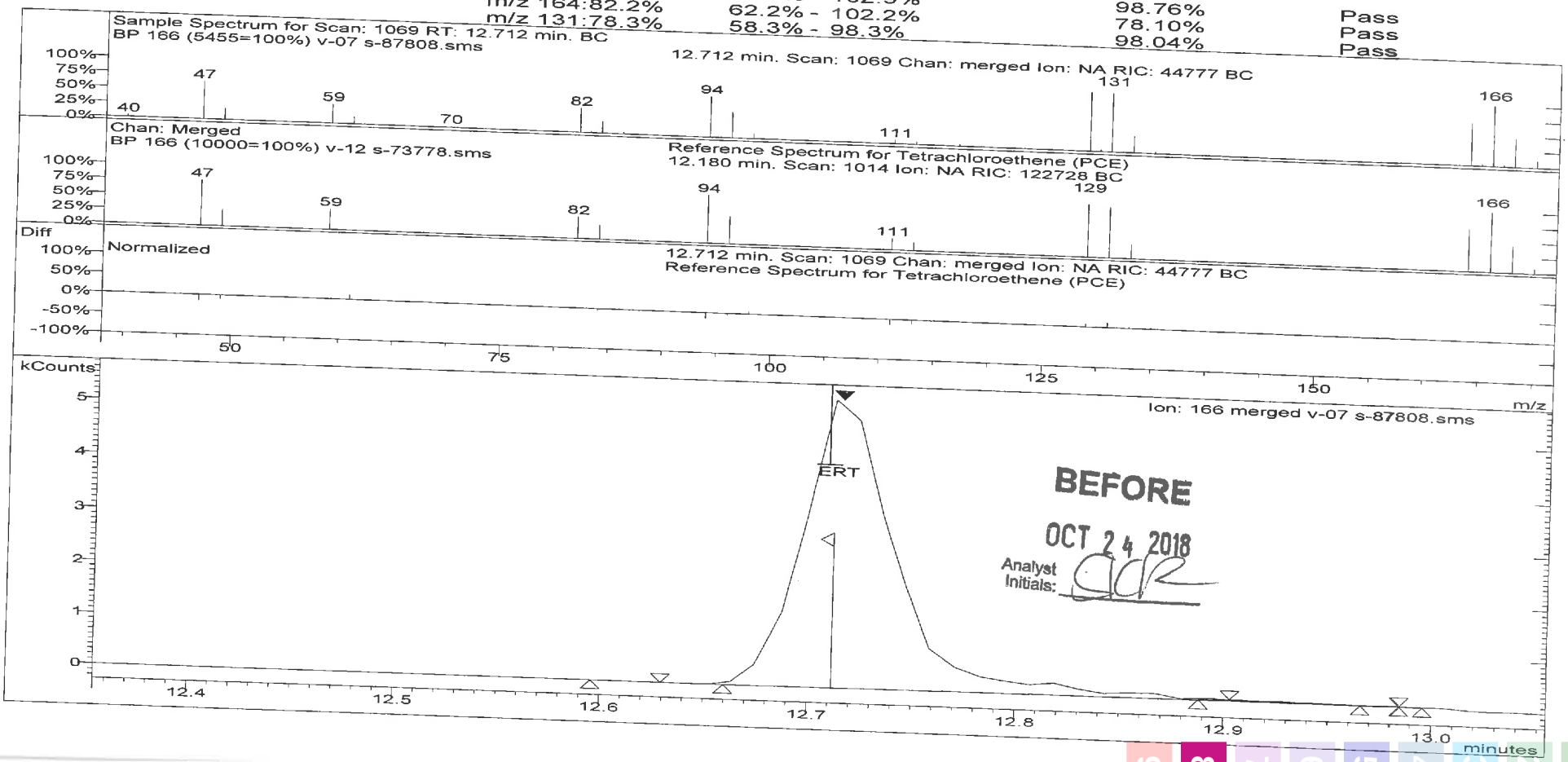
Analyst Initials: SR

Print Date: 24 Oct 2018 12:54:45

Target Compound #30 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:54 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification		Actual		Status
Compound Number			30		
Retention Time	12.709 +/- 0.350		12.715 min.		
RT Offset			Δ 0.00626 min.		Pass
Peak Name			Tetrachloroethene (PCE)		
CAS Number			127-18-4		
Status					
Quan Ions	166				
Area	>=200		17147		
Height			5449		Pass
Amount	>= 0.000 ug/L		4.597 ug/L		
Fit	>=700		996		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.0473x -0.0061		Pass
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 129:82.9%	62.9% - 102.9%		98.76%	Pass
	m/z 164:82.2%	62.2% - 102.2%		78.10%	Pass
	m/z 131:78.3%	58.3% - 98.3%		98.04%	Pass



BEFORE

OCT 24 2018

Analyst Initials: ACR

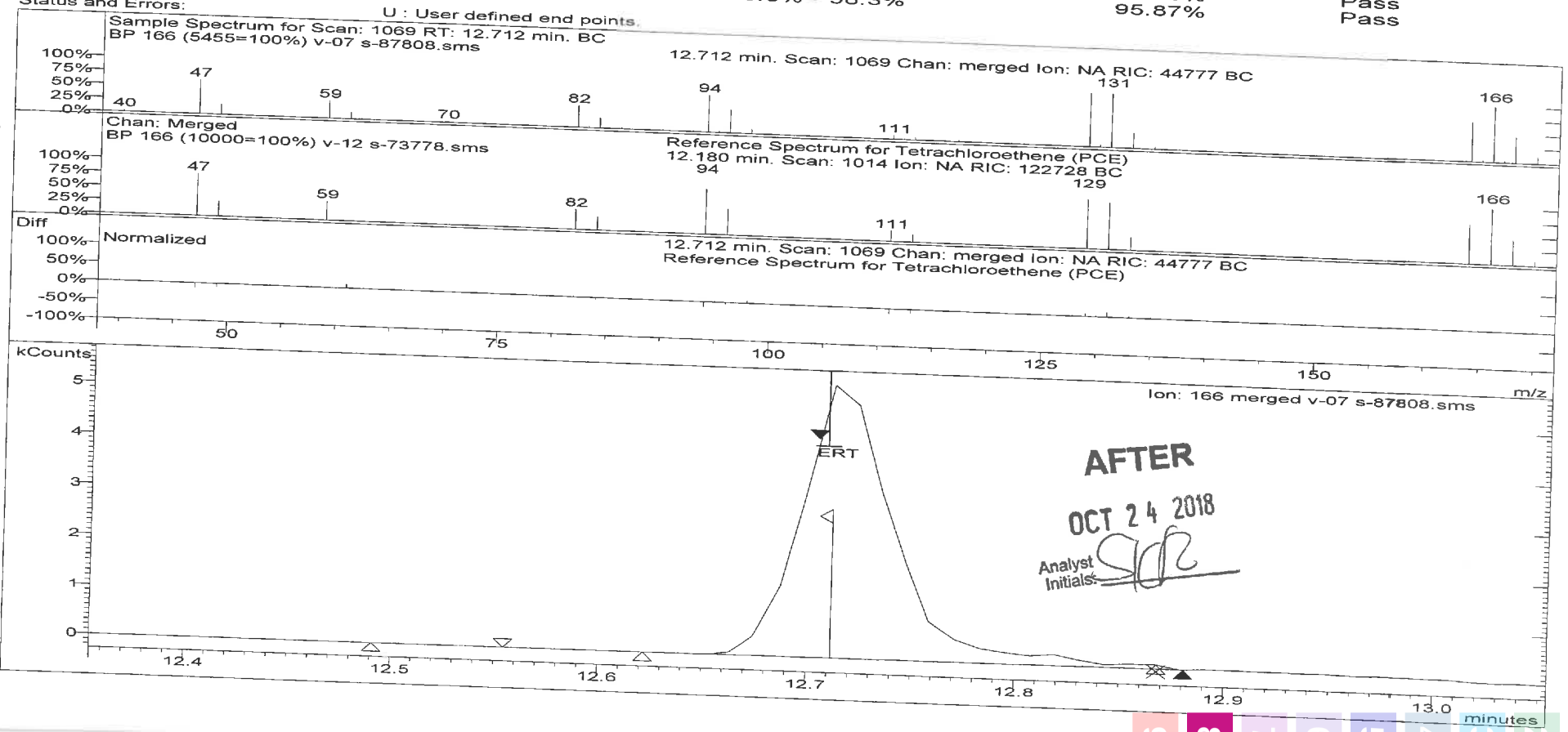
Print Date: 24 Oct 2018 12:54:59

Target Compound #30 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:54 PM	Method:	c:\... v-07 s-87808.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification		Actual		Status
Compound Number			30		
Retention Time	12.709 +/- 0.350		12.705 min.		
RT Offset			Δ0.00445 min.		Pass
Peak Name			Tetrachloroethene (PCE)		
CAS Number			127-18-4		
Status			U		
Quan Ions					
Area	166		16995		
Height	>=200		4372		Pass
Amount	>= 0.000 ug/L		4.557 ug/L		
Fit	>=700		996		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.0473x -0.0061		Pass
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 129:82.9%	62.9% - 102.9%		95.68%	Pass
	m/z 164:82.2%	62.2% - 102.2%		75.73%	Pass
	m/z 131:78.3%	58.3% - 98.3%		95.87%	Pass

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

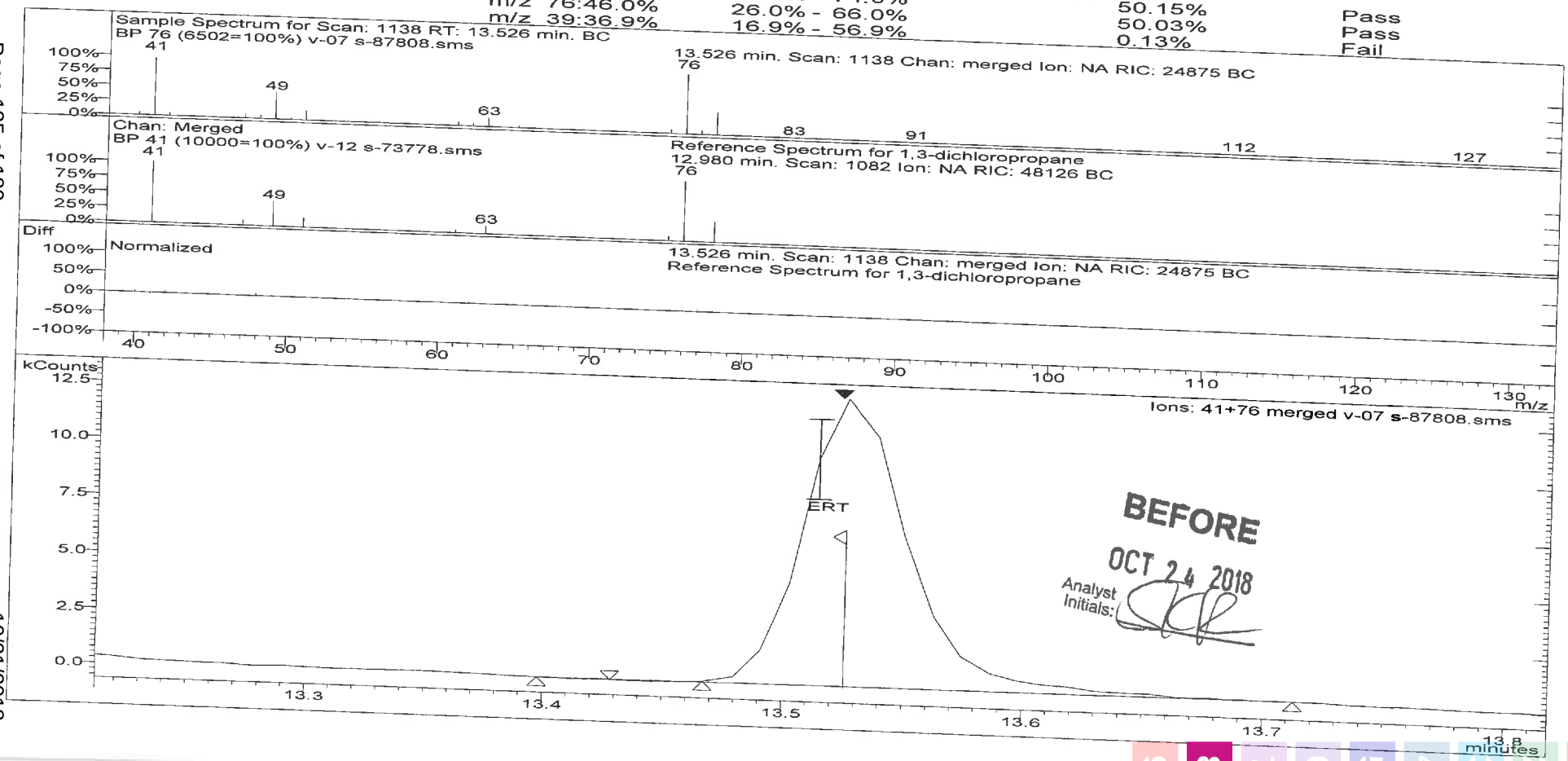
Analyst Initials: SCR

Print Date: 24 Oct 2018 12:55:08

Target Compound #31 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:54 PM	Method:	c:\... v-07 s-87808.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		31	
Retention Time	13.514 +/- 0.300	13.523 min.	
RT Offset		Δ 0.00936 min.	Pass
Peak Name		1,3-dichloropropane	
CAS Number		142-28-9	
Status			
Quan Ions	41+76		
Area	>=0	39216	
Height		12747	Pass
Amount	>= 0.000 ug/L	4.730 ug/L	
Fit	>=500	999	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.1065x -0.0207	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 41:54.0% 34.0% - 74.0%	50.15%	Pass
	m/z 76:46.0% 26.0% - 66.0%	50.03%	Pass
	m/z 39:36.9% 16.9% - 56.9%	0.13%	Fail



BEFORE
OCT 24 2018
Analyst Initials:

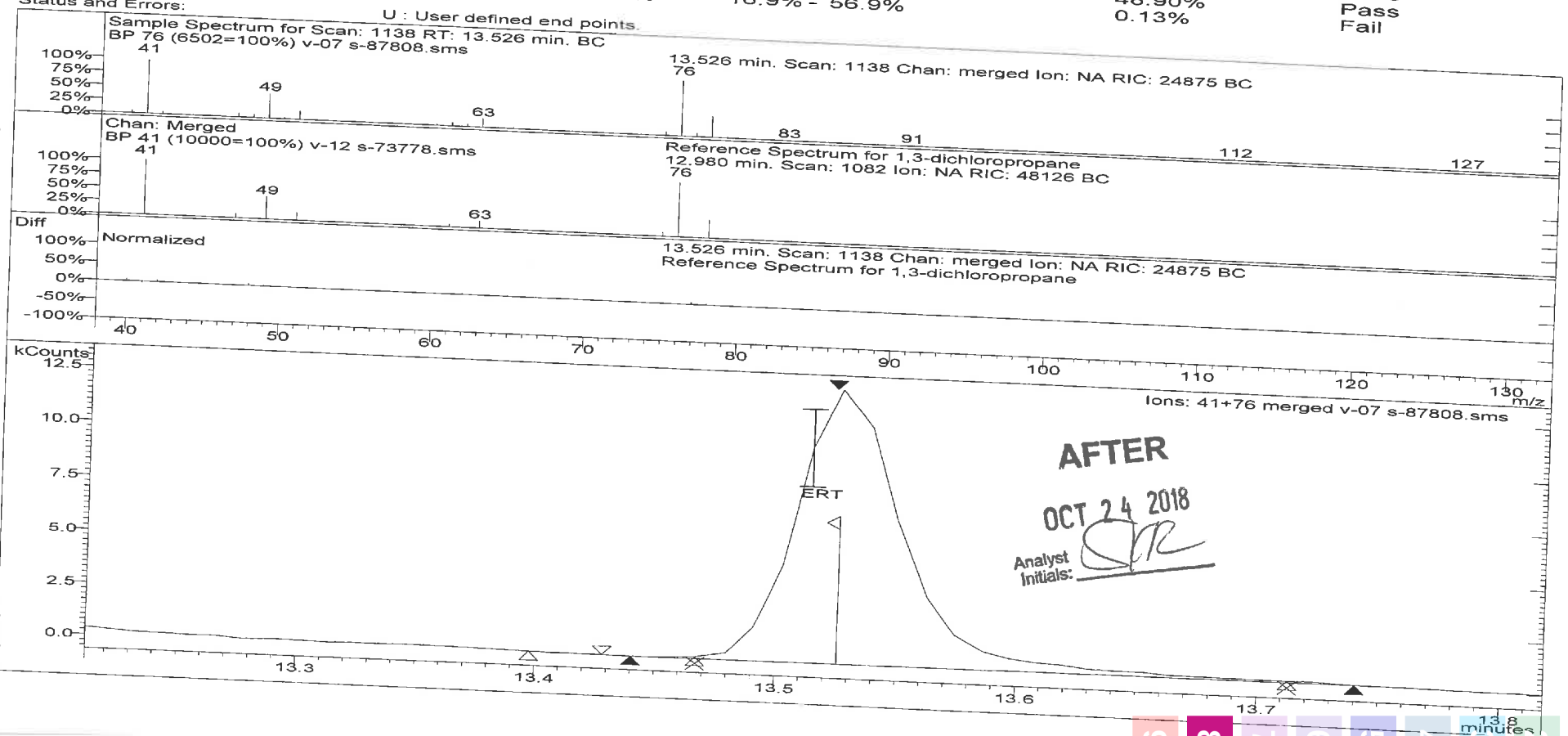
Print Date: 24 Oct 2018 12:55:17

Target Compound #31 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:55 PM	Method:	c:\... v-07 s-87808.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		31	
Retention Time	13.514 +/- 0.300	13.523 min.	
RT Offset		Δ0.00936 min.	Pass
Peak Name		1,3-dichloropropane	
CAS Number		142-28-9	
Status		U	
Quan Ions			
Area	41+76	40122	
Height	>=0	12797	Pass
Amount	>= 0.000 ug/L	4.834 ug/L	
Fit	>=500	999	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.1065x -0.0207	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 41:54.0% 34.0% - 74.0%	49.02%	Pass
	m/z 76:46.0% 26.0% - 66.0%	48.90%	Pass
	m/z 39:36.9% 16.9% - 56.9%	0.13%	Fail

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

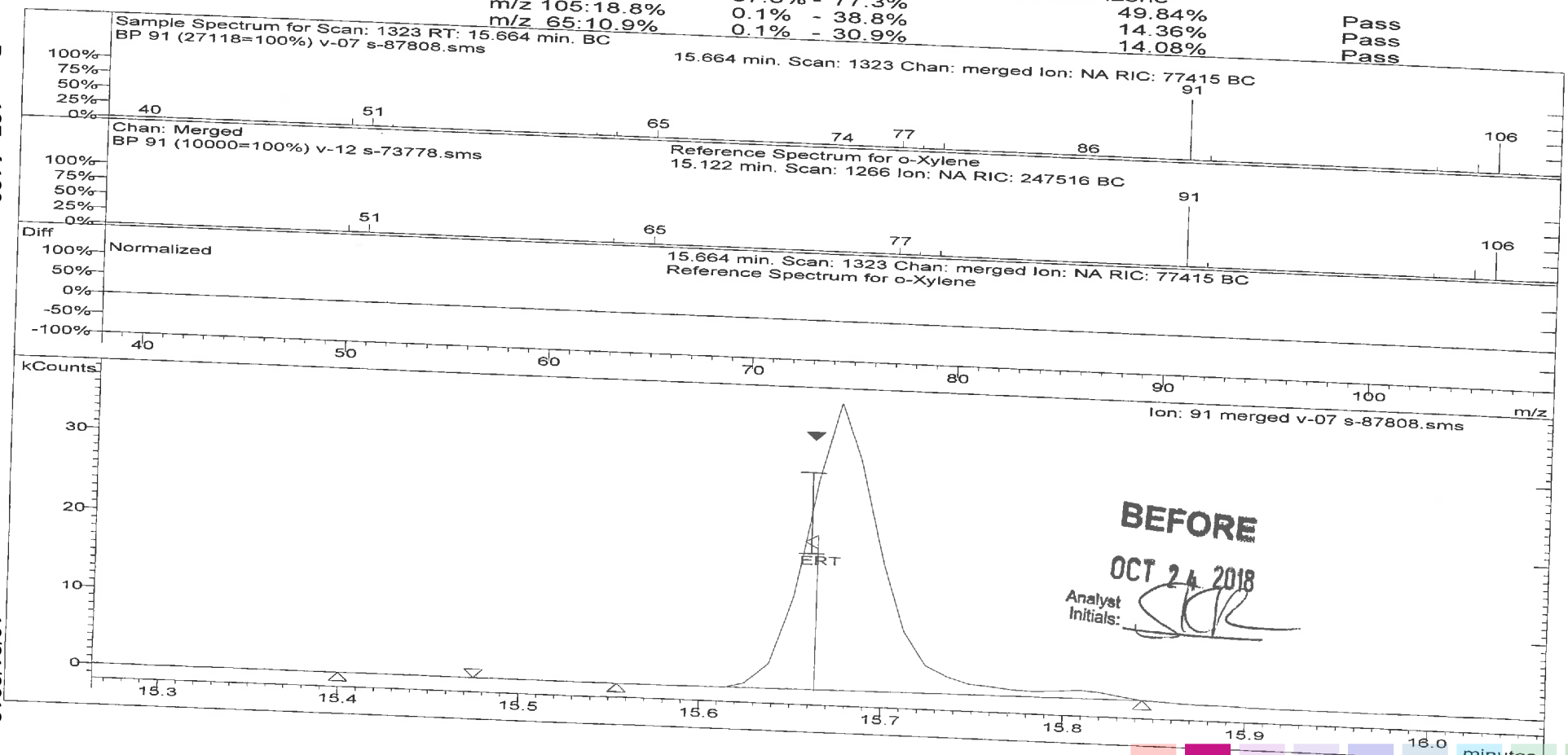
Analyst Initials: CR

Print Date: 24 Oct 2018 12:55:29

Target Compound #38 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:55 PM	Method:	c:\... v-07 s-87808.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		38	
Retention Time	15.660 +/- 0.400	15.661 min.	
RT Offset		△0.00078 min.	Pass
Peak Name		o-Xylene	
CAS Number		95-47-6	
Status			
Quan Ions			
Area	91	107501	
Height	>=30	31814	Pass
Amount	>= 0.000 ug/L	4.704 ug/L	
Fit	>=500	999	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.2829x -0.0063	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 106:57.3% 37.3% - 77.3%	49.84%	Pass
	m/z 105:18.8% 0.1% - 38.8%	14.36%	Pass
	m/z 65:10.9% 0.1% - 30.9%	14.08%	Pass



BEFORE

OCT 24 2018

Analyst Initials:

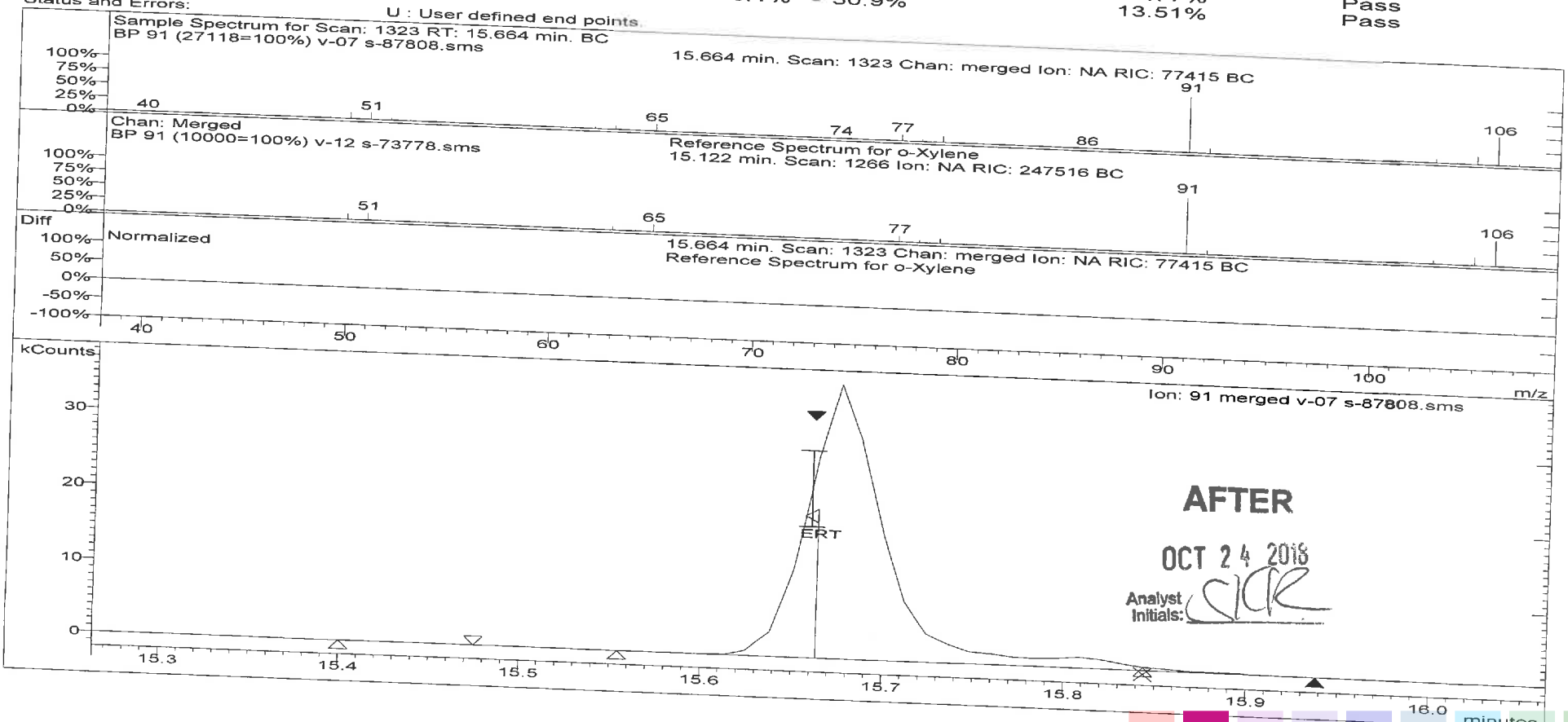
Print Date: 24 Oct 2018 12:55:34

Target Compound #38 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:55 PM	Method:	c:\... v-07 s-87808.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		38	
Retention Time	15.660 +/- 0.400	15.661 min.	
RT Offset		Δ0.00078 min.	Pass
Peak Name		o-Xylene	
CAS Number		95-47-6	
Status		U	
Quan Ions			
Area	91	112046	
Height	>=30	31975	Pass
Amount	>= 0.000 ug/L	4.902 ug/L	
Fit	>=500	999	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.2829x -0.0063	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 106:57.3% 37.3% - 77.3%	47.82%	Pass
	m/z 105:18.8% 0.1% - 38.8%	13.77%	Pass
	m/z 65:10.9% 0.1% - 30.9%	13.51%	Pass

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

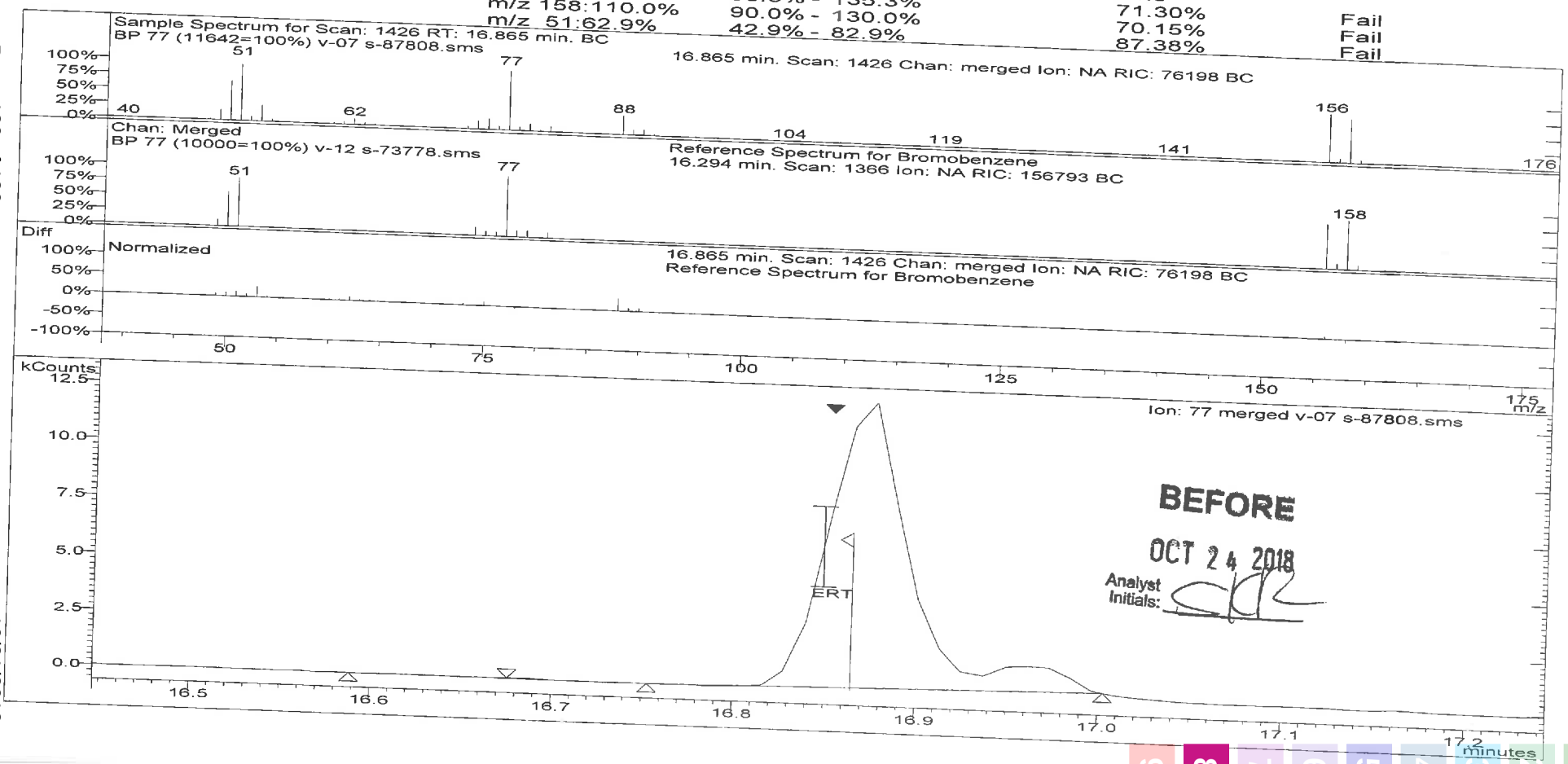
Analyst Initials: CICR

Print Date: 24 Oct 2018 12:55:43

Target Compound #45 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:55 PM	Method:	c:\... v-07 s-87808.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification	Actual	Status
Compound Number		45	
Retention Time	16.849 +/- 0.400	16.853 min.	
RT Offset		Δ 0.00395 min.	Pass
Peak Name		Bromobenzene	
CAS Number		108-86-1	
Status			
Quan Ions	77		
Area	>=30	40112	
Height		12082	Pass
Amount	>= 0.000 ug/L	4.337 ug/L	
Fit	>=500	995	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.1194x -0.0236	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 156:115.3% 95.3% - 135.3%	71.30%	Fail
	m/z 158:110.0% 90.0% - 130.0%	70.15%	Fail
	m/z 51:62.9% 42.9% - 82.9%	87.38%	Fail



BEFORE

OCT 24 2018

Analyst Initials:

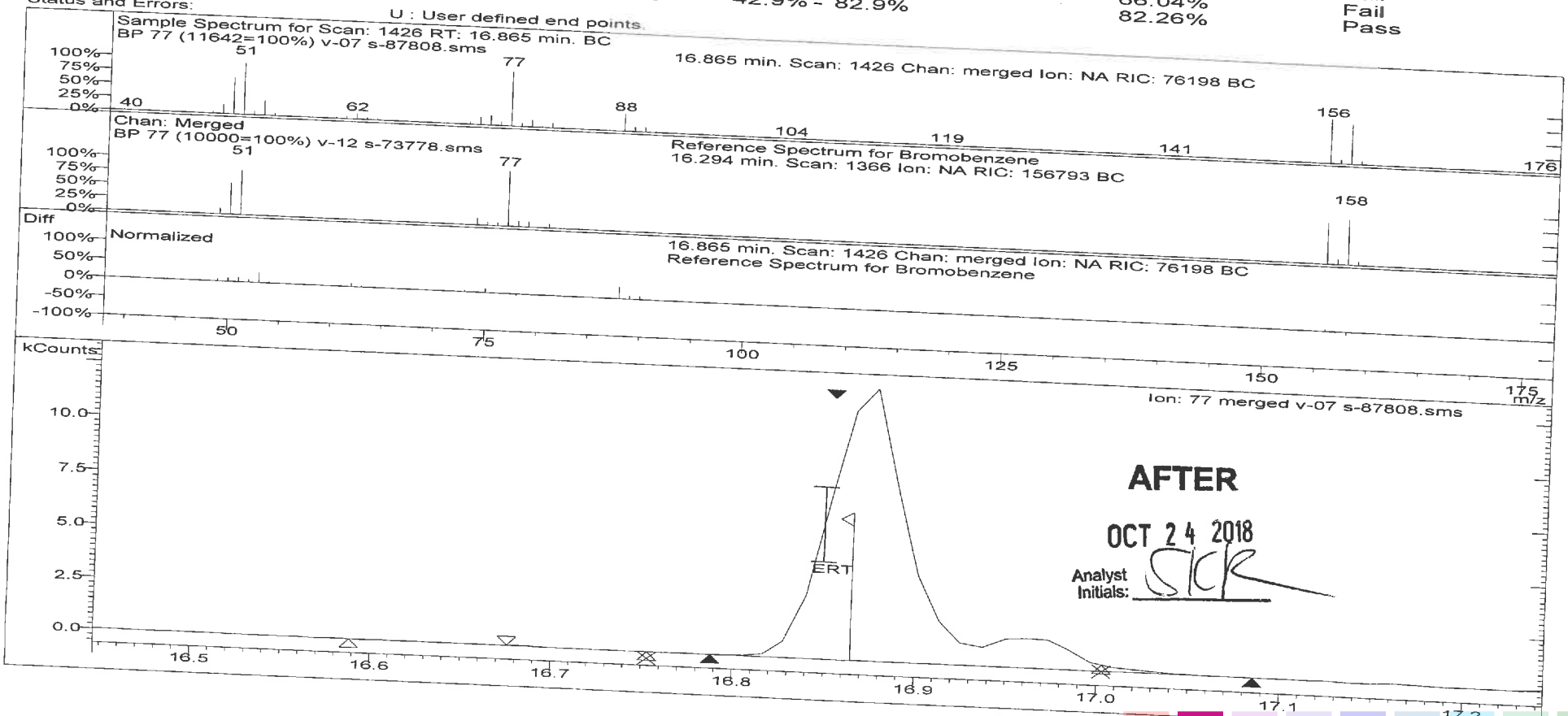
Print Date: 24 Oct 2018 12:55:49

Target Compound #45 from v-07 s-87808.sms

Sample ID:	V-07 S-87808	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 12:27 PM	Data File:	c:\... v-07 s-87808.sm
Calculation Date:	10/24/2018 12:55 PM	Method:	c:\... v-07 s-87808.sm
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 CCal @ 5.0 ppb		

Parameter	Specification		Actual		Status
Compound Number			45		
Retention Time	16.849 +/- 0.400		16.853 min.		
RT Offset			Δ0.00395 min.		Pass
Peak Name			Bromobenzene		
CAS Number			108-86-1		
Status			U		
Quan Ions					
Area	77		42607		
Height	>=30		12197		Pass
Amount	>= 0.000 ug/L		4.594 ug/L		
Fit	>=500		995		Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.1194x -0.0236		Pass
IS Peak Name			(IS-1) Fluorobenzene		
Qual. Ion Ratio (3 ions)	m/z 156:115.3%	95.3% - 135.3%		67.12%	Fail
	m/z 158:110.0%	90.0% - 130.0%		66.04%	Fail
	m/z 51:62.9%	42.9% - 82.9%		82.26%	Pass

Status and Errors: U : User defined end points.



AFTER

OCT 24 2018

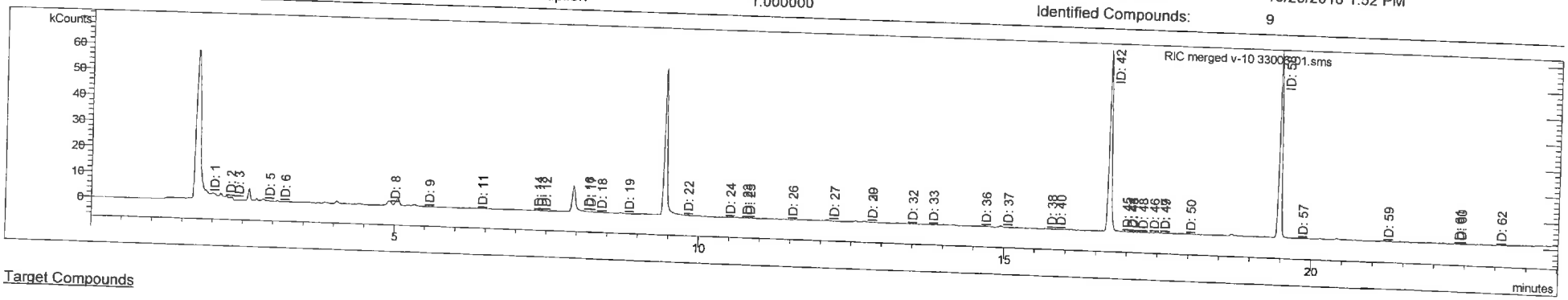
Analyst Initials: SCR

Print Date: 25 Oct 2018 13:52:05

524.2 VOA ANALYSES -- VARIAN #01

Sample Report for v-10 33006-01.sms

Sample ID:	V-10 33006-01	Operator:		Last Calibration:	10/8/2018 5:15 PM
Acquisition Date:	10/24/2018 2:00 PM	Calculation Date:	10/25/2018 1:51 PM	Method:	c:\... \v-10 33006-01.sms
Inj. Sample Notes:	524.2 Full List			Header Time Date:	10/25/2018 1:52 PM
Data File:	c:\... \v-10 33006-01.sms	Multiplier:	1.000000	Identified Compounds:	9



Target Compounds

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
21	9.436	(IS-1) Fluorobenzene	S	96	75323	1.000	ug/L	999
1	1.904	Dichlorodifluoromethane	M	85	0	0.000	ug/L	178
2	2.172	Chloromethane	M	49+51	0	0.000	ug/L	N/A
3	2.307	Vinyl chloride	M	62	0	0.000	ug/L	719
4	2.729	Bromomethane		94+96	760	0.362	ug/L	N/A
5	2.818	Chloroethane		45+47	289	0.128	ug/L	N/A
6	3.070	Trichlorofluoromethane	M	101	0	0.000	ug/L	929
7	3.858	1,1-Dichloroethene		61+96	43	0.197	ug/L	755
8	4.882	Methylene chloride		49+84	269	0.382	ug/L	853
9	5.447	methyl-tert-butyl-ether (MTBE)	M	73	0	0.000	ug/L	N/A
10	5.189	trans-1,2-Dichloroethene		61+96	63	0.158	ug/L	742
11	6.320	1,1-Dichloroethane	M	63	0	0.000	ug/L	754
12	7.365	2,2-Dichloropropane	M	77+79	0	0.000	ug/L	752
13	7.298	cis-1,2-Dichloroethene	M	62+96	0	0.000	ug/L	686
14	7.242	Bromochloromethane	M	49+51+93	0	0.000	ug/L	298
15	7.807	Chloroform (THM)		83	77	0.169	ug/L	770
16	8.067	1,1,1-Trichloroethane		97	172	0.175	ug/L	813
17	8.099	Carbon tetrachloride	M	117	0	0.000	ug/L	551
18	8.280	1,1-Dichloro-1-propene	M	75	0	0.000	ug/L	538
19	8.728	Benzene	M	78	0	0.000	ug/L	840
20	9.115	1,2-Dichloroethane		62+64	114	0.172	ug/L	N/A
22	9.697	Trichloroethene (TCE)	M	130+132	0	0.000	ug/L	514
23	10.660	1,2-Dichloropropane	M	63	0	0.000	ug/L	577
24	10.387	Dibromomethane	M	95	0	0.000	ug/L	453
25	10.707	Bromodichloromethane (THM)	M	83	0	0.000	ug/L	676
26	11.411	cis-1,3-Dichloro-1-propene	M	75	0	0.000	ug/L	557
27	12.090	Toluene		91	646	0.208	ug/L	990
28	12.844	trans-1,3-Dichloro-1-propene		75	39	0.187	ug/L	560
29	12.712	1,1,2-Trichloroethane	M	83+61	0	0.000	ug/L	286
30	12.712	Tetrachloroethene (PCE)	M	166	0	0.000	ug/L	927
31	13.688	1,3-dichloropropane		41+76	125	0.210	ug/L	641
32	13.371	Dibromochloromethane (THM)	M	129	0	0.000	ug/L	742
33	13.711	1,2-Dibromomethane (EDB)	M	107+109+93	0	0.000	ug/L	460
34	14.686	Ethylbenzene		91	128	0.212	ug/L	893

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524.2 VOA ANALYSES -- VARIAN #01

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
35	14.584	Chlorobenzene		112	60	0.194	ug/L	676
36	14.576	1,1,1,2-Tetrachloroethane	M	131	0	0.000	ug/L	253
37	14.932	m&p-Xylenes		91	476	0.082	ug/L	977
38	15.647	o-Xylene		91	257	0.034	ug/L	867
39	15.767	Styrene		104	59	0.229	ug/L	677
40	15.793	Bromoform (THM)	M	173	0	0.000	ug/L	696
41	16.210	Isopropylbenzene		105	73	0.207	ug/L	534
42	16.702	(S-1) Bromofluorobenzene (BFB)		95+174+176	108274	0.907	ug/L	993 90.7%
43	16.975	1,1,2,2-Tetrachloroethane	M	83	0	0.000	ug/L	405
44	16.952	n-Propylbenzene	M	91	0	0.000	ug/L	895
45	16.871	Bromobenzene	M	77	0	0.000	ug/L	581
46	17.316	1,2,3-Trichloropropane	M	75+110+112	0	0.000	ug/L	579
47	17.489	2-Chlorotoluene	M	91	0	0.000	ug/L	706
48	17.134	1,3,5-Trimethylbenzene	M	77+120	0	0.000	ug/L	791
49	17.495	4-Chlorotoluene	M	91	0	0.000	ug/L	N/A
50	17.909	tert-Butylbenzene	M	119	0	0.000	ug/L	542
51	18.003	1,2,4-Trimethylbenzene		120	104	0.217	ug/L	954
52	18.214	sec-Butylbenzene		105	81	0.235	ug/L	877
53	18.488	p-Isopropyltoluene (4-Iso)		119	94	0.243	ug/L	890
54	18.556	1,3-Dichlorobenzene		111+75	46	0.208	ug/L	799
55	18.733	1,4-Dichlorobenzene		146	72	0.231	ug/L	726
56	19.256	n-Butylbenzene		91	159	0.292	ug/L	949
57	19.737	1,2 -Dichlorobenzene	M	146	0	0.000	ug/L	332
58	19.477	(S-2) 1,2-Dichlorobenzene-d4		152+154	28750	0.874	ug/L	465 87.4%
59	21.125	1,2-Dibromo-3-chloropropane (DBCP)	M	157+155+159	0	0.000	ug/L	278
60	22.316	1,2,4-Trichlorobenzene	M	180	0	0.000	ug/L	366
61	22.280	Hexachlorobutadiene	M	225	0	0.000	ug/L	544
62	22.965	Naphthalene		128	116	0.238	ug/L	803
63	23.314	1,2,3 -Trichlorobenzene		180	15	0.200	ug/L	550

Status and Errors:

M : Missing peak.

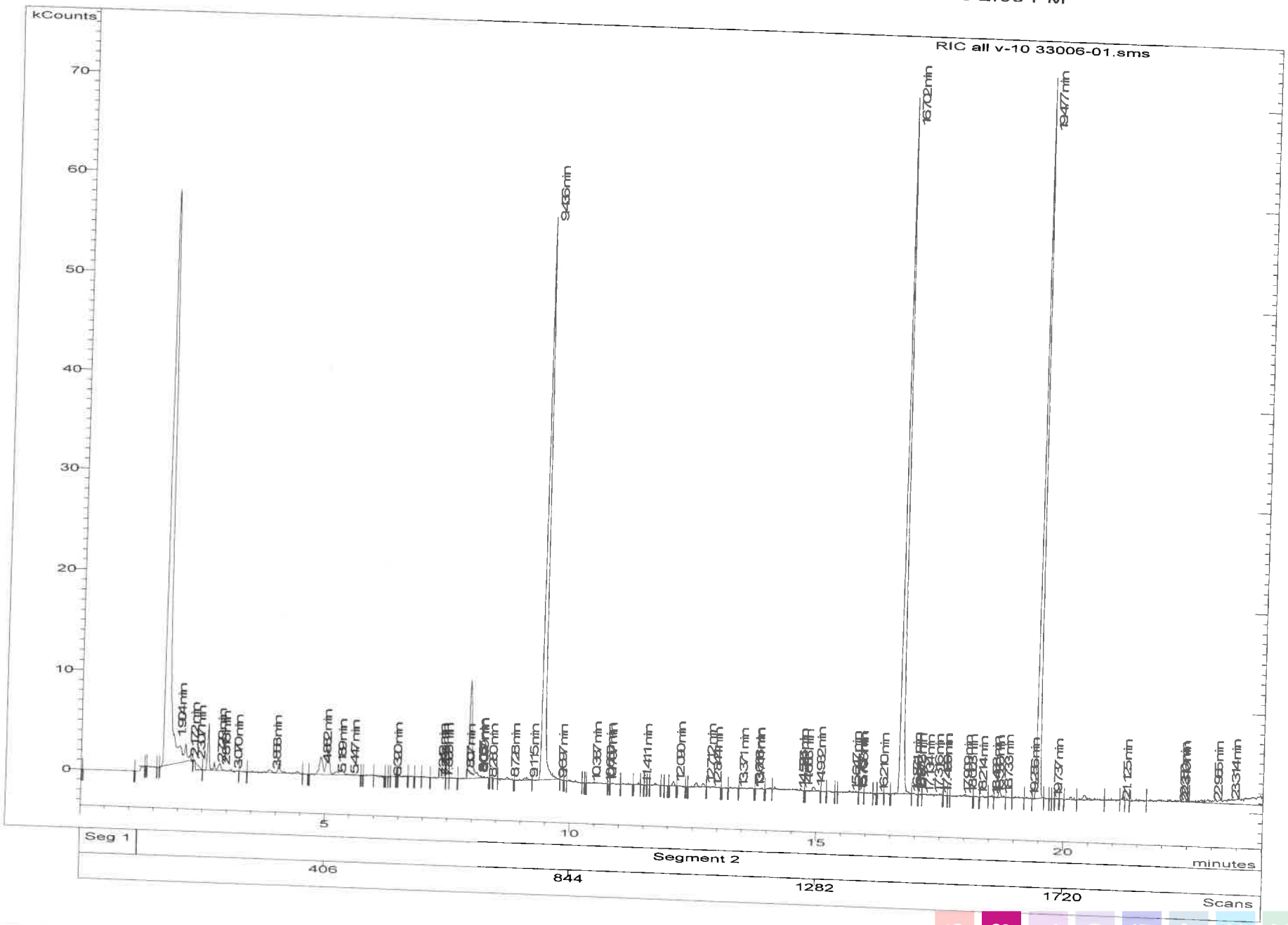
S : Internal Standard Peak.

Print Date: 25 Oct 2018 13:52:10

Chromatogram Plot

File: c:\saturnws\data\524.2 october 24 2018\v-10 33006-01.sms
Sample: V-10 33006-01
Scan Range: 1 - 2071 Time Range: 0.00 - 24.02 min.
Sample Notes: 524.2 Full List

Operator: SKR
Date: 10/24/2018 2:00 PM

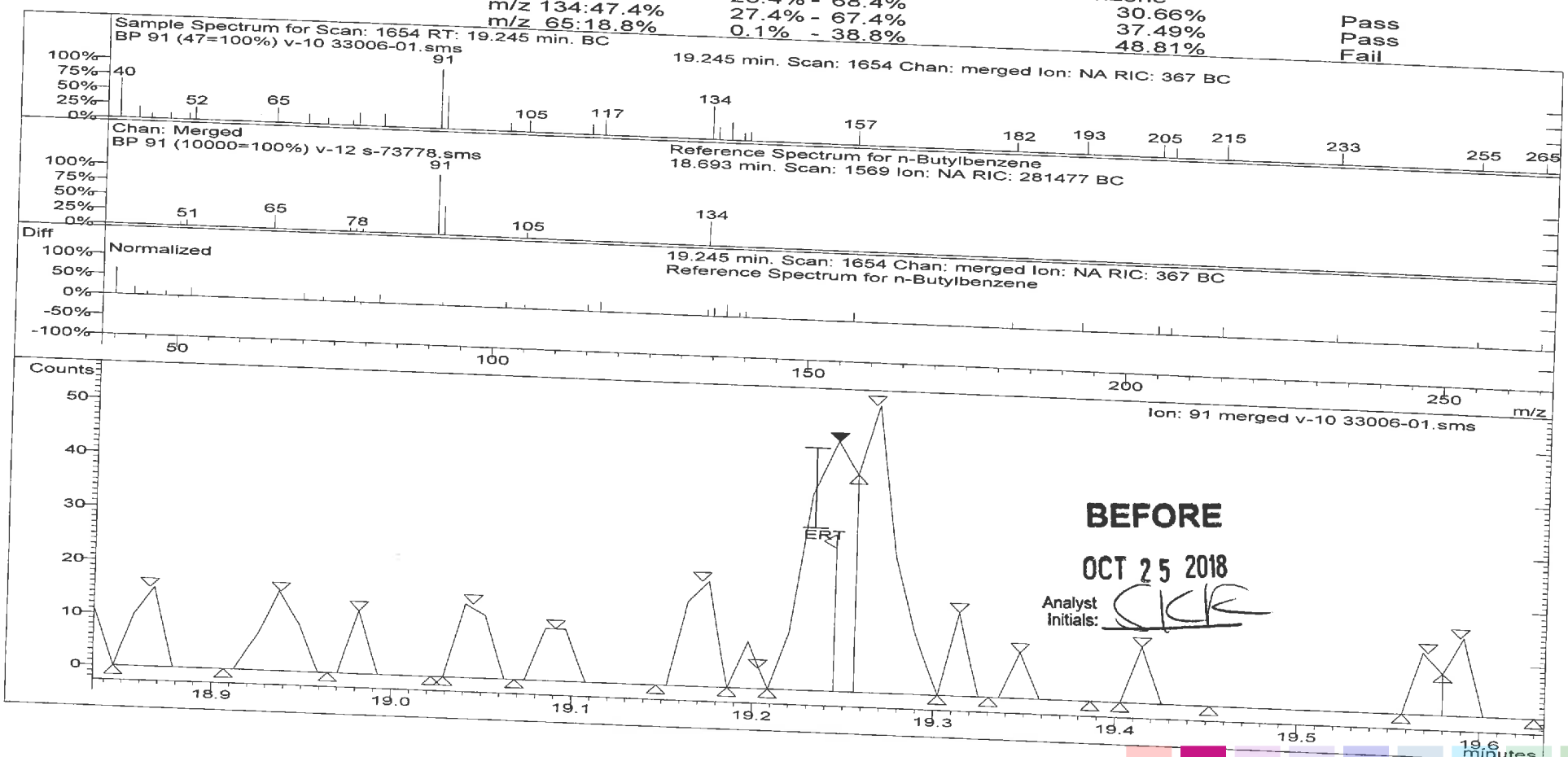


Print Date: 25 Oct 2018 13:51:47

Target Compound #56 from v-10 33006-01.sms

Sample ID:	V-10 33006-01	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 2:00 PM	Data File:	c:\... v-10 33006-01.s
Calculation Date:	10/24/2018 3:51 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List		

Parameter	Specification	Actual	Status
Compound Number		56	
Retention Time	19.233 +/- 0.400	19.245 min.	
RT Offset		Δ0.01216 min.	Pass
Peak Name		n-Butylbenzene	
CAS Number		104-51-8	
Status			
Quan Ions			
Area	91	84	
Height	>=30	47	Pass
Amount	>= 0.000 ug/L	0.288 ug/L	
Fit	>=500	949	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.2176x -0.0615	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 92:48.4% 28.4% - 68.4%	30.66%	Pass
	m/z 134:47.4% 27.4% - 67.4%	37.49%	Pass
	m/z 65:18.8% 0.1% - 38.8%	48.81%	Fail



BEFORE

OCT 25 2018

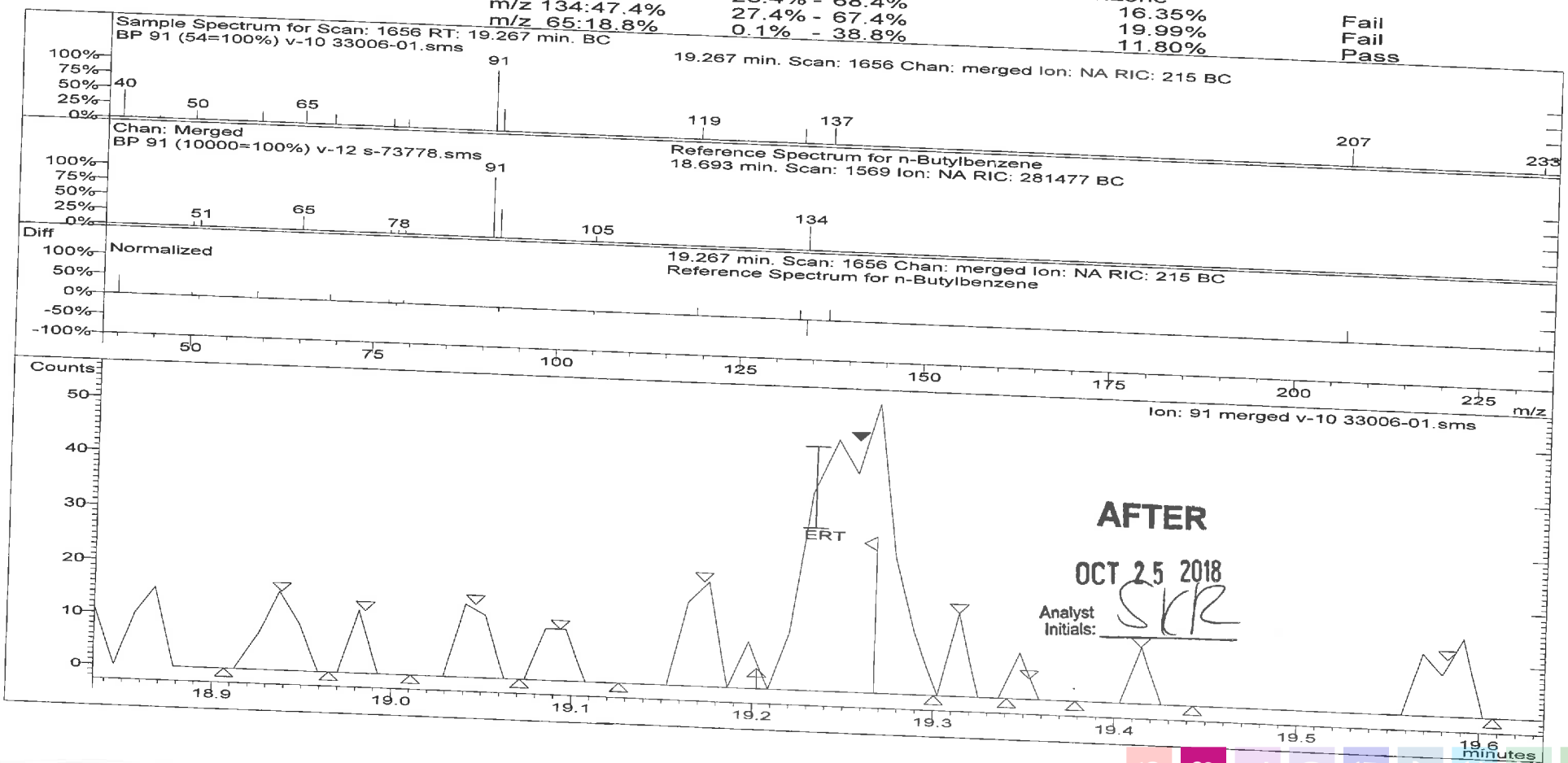
Analyst Initials: CKE

Print Date: 25 Oct 2018 13:51:55

Target Compound #56 from v-10 33006-01.sms

Sample ID:	V-10 33006-01	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 2:00 PM	Data File:	c:\... v-10 33006-01.s
Calculation Date:	10/25/2018 1:51 PM	Method:	c:\... v-10 33006-01.s
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List		

Parameter	Specification	Actual	Status
Compound Number		56	
Retention Time	19.233 +/- 0.400	19.256 min.	
RT Offset		Δ0.02340 min.	Pass
Peak Name		n-Butylbenzene	
CAS Number		104-51-8	
Status			
Quan Ions			
Area	91	159	
Height	>=30	47	Pass
Amount	>= 0.000 ug/L	0.292 ug/L	
Fit	>=500	949	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.2176x -0.0615	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 92:48.4% 28.4% - 68.4%	16.35%	Fail
	m/z 134:47.4% 27.4% - 67.4%	19.99%	Fail
	m/z 65:18.8% 0.1% - 38.8%	11.80%	Pass



AFTER

OCT 25 2018

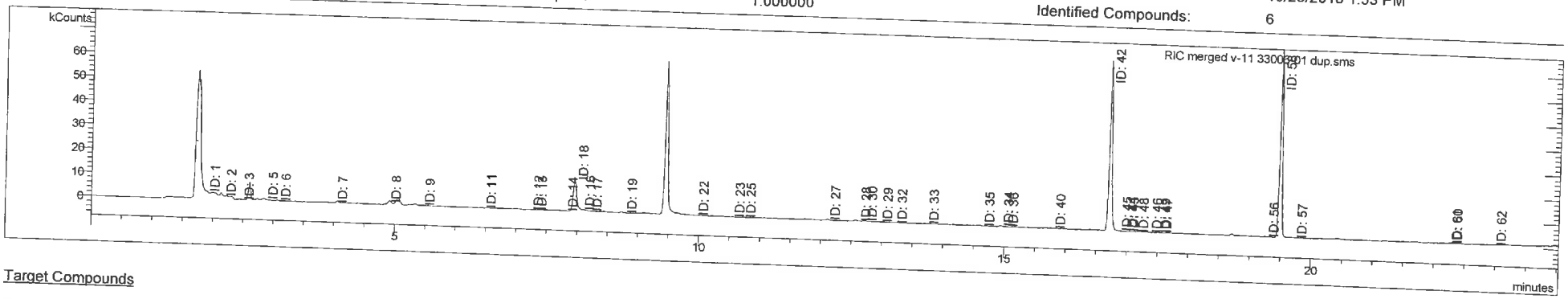
Analyst Initials: SKR

Print Date: 25 Oct 2018 13:53:34

524.2 VOA ANALYSES -- VARIAN #01

Sample Report for v-11 33006-01 dup.sms

Sample ID:	V-11 33006-01 Dup	Operator:		Last Calibration:	10/8/2018 5:15 PM
Acquisition Date:	10/24/2018 2:31 PM	Calculation Date:	10/25/2018 1:53 PM	Method:	c:\... 524.2 october 08
Inj. Sample Notes:	524.2 Full List Duplicate			Header Time Date:	10/25/2018 1:53 PM
Data File:	c:\... v-11 33006-01 dup	Multiplier:	1.000000	Identified Compounds:	6



Target Compounds

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
21	9.446	(IS-1) Fluorobenzene	S	96	79532	1.000	ug/L	999
1	1.901	Dichlorodifluoromethane	M	85	0	0.000	ug/L	168
2	2.172	Chloromethane	M	49+51	0	0.000	ug/L	N/A
3	2.466	Vinyl chloride	M	62	0	0.000	ug/L	608
4	2.729	Bromomethane		94+96	664	0.290	ug/L	N/A
5	2.857	Chloroethane	M	45+47	0	0.000	ug/L	N/A
6	3.073	Trichlorofluoromethane	M	101	0	0.000	ug/L	919
7	4.004	1,1-Dichloroethene	M	61+96	0	0.000	ug/L	623
8	4.888	Methylene chloride		49+84	266	0.379	ug/L	709
9	5.447	methyl-tert-butyl-ether (MTBE)	M	73	0	0.000	ug/L	N/A
10	5.195	trans-1,2-Dichloroethene		61+96	86	0.159	ug/L	632
11	6.458	1,1-Dichloroethane	M	63	0	0.000	ug/L	775
12	7.231	2,2-Dichloropropane	M	77+79	0	0.000	ug/L	681
13	7.287	cis-1,2-Dichloroethene	M	62+96	0	0.000	ug/L	582
14	7.794	Bromochloromethane	M	49+51+93	0	0.000	ug/L	327
15	7.822	Chloroform (THM)		83	64	0.167	ug/L	706
16	8.077	1,1,1-Trichloroethane		97	188	0.176	ug/L	787
17	8.197	Carbon tetrachloride	M	117	0	0.000	ug/L	366
18	7.957	1,1-Dichloro-1-propene	M	75	0	0.000	ug/L	380
19	8.767	Benzene	M	78	0	0.000	ug/L	807
20	9.058	1,2-Dichloroethane		62+64	32	0.164	ug/L	N/A
22	9.944	Trichloroethene (TCE)	M	130+132	0	0.000	ug/L	307
23	10.536	1,2-Dichloropropane	M	63	0	0.000	ug/L	401
24	10.395	Dibromomethane		95	31	0.011	ug/L	511
25	10.718	Bromodichloromethane (THM)	M	83	0	0.000	ug/L	479
26	11.506	cis-1,3-Dichloro-1-propene		75	38	0.171	ug/L	665
27	12.102	Toluene		91	661	0.207	ug/L	996
28	12.605	trans-1,3-Dichloro-1-propene	M	75	0	0.000	ug/L	484
29	12.959	1,1,2-Trichloroethane	M	83+61	0	0.000	ug/L	295
30	12.706	Tetrachloroethene (PCE)	M	166	0	0.000	ug/L	927
31	13.604	1,3-dichloropropane		41+76	60	0.201	ug/L	575
32	13.198	Dibromochloromethane (THM)	M	129	0	0.000	ug/L	307
33	13.718	1,2-Dibromomethane (EDB)	M	107+109+93	0	0.000	ug/L	845
34	14.938	Ethylbenzene	M	91	0	0.000	ug/L	960

524.2 VOA ANALYSES -- VARIAN #01

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit	
35	14.626	Chlorobenzene	M	112	0	0.000	ug/L	690	
36	15.017	1,1,1,2-Tetrachloroethane	M	131	0	0.000	ug/L	236	
37	14.942	m&p-Xylenes	U	91	512	0.082	ug/L	977	
38	15.655	o-Xylene	U	91	184	0.030	ug/L	847	
39	15.781	Styrene		104	65	0.229	ug/L	670	
40	15.784	Bromoform (THM)	M	173	0	0.000	ug/L	670	
41	16.229	Isopropylbenzene		105	50	0.205	ug/L	597	
42	16.712	(S-1) Bromofluorobenzene (BFB)		95+174+176	107177	0.850	ug/L	991	85.0%
43	16.985	1,1,2,2-Tetrachloroethane	M	83	0	0.000	ug/L	477	
44	16.956	n-Propylbenzene		91	59	0.234	ug/L	872	
45	16.871	Bromobenzene	M	77	0	0.000	ug/L	557	
46	17.361	1,2,3-Trichloropropane	M	75+110+112	0	0.000	ug/L	424	
47	17.522	2-Chlorotoluene	M	91	0	0.000	ug/L	734	
48	17.144	1,3,5-Trimethylbenzene	M	77+120	0	0.000	ug/L	787	
49	17.495	4-Chlorotoluene	M	91	0	0.000	ug/L	N/A	
50	17.883	tert-Butylbenzene		119	54	0.222	ug/L	632	
51	18.029	1,2,4-Trimethylbenzene		120	99	0.216	ug/L	883	
52	18.020	sec-Butylbenzene		105	190	0.239	ug/L	735	
53	18.497	p-Isopropyltoluene (4-Iso)		119	56	0.241	ug/L	603	
54	18.737	1,3-Dichlorobenzene		111+75	104	0.214	ug/L	765	
55	18.740	1,4-Dichlorobenzene		146	63	0.229	ug/L	758	
56	19.265	n-Butylbenzene	M	91	0	0.000	ug/L	933	
57	19.724	1,2 -Dichlorobenzene	M	146	0	0.000	ug/L	442	
58	19.488	(S-2) 1,2-Dichlorobenzene-d4		152+154	29349	0.845	ug/L	447	84.5%
59	20.926	1,2-Dibromo-3-chloropropane (DBCP)		157+155+159	25	0.020	ug/L	545	
60	22.256	1,2,4-Trichlorobenzene	M	180	0	0.000	ug/L	422	
61	22.243	Hexachlorobutadiene	M	225	0	0.000	ug/L	420	
62	22.968	Naphthalene	M	128	0	0.000	ug/L	581	
63	23.309	1,2,3 -Trichlorobenzene		180	12	0.197	ug/L	356	

Status and Errors:

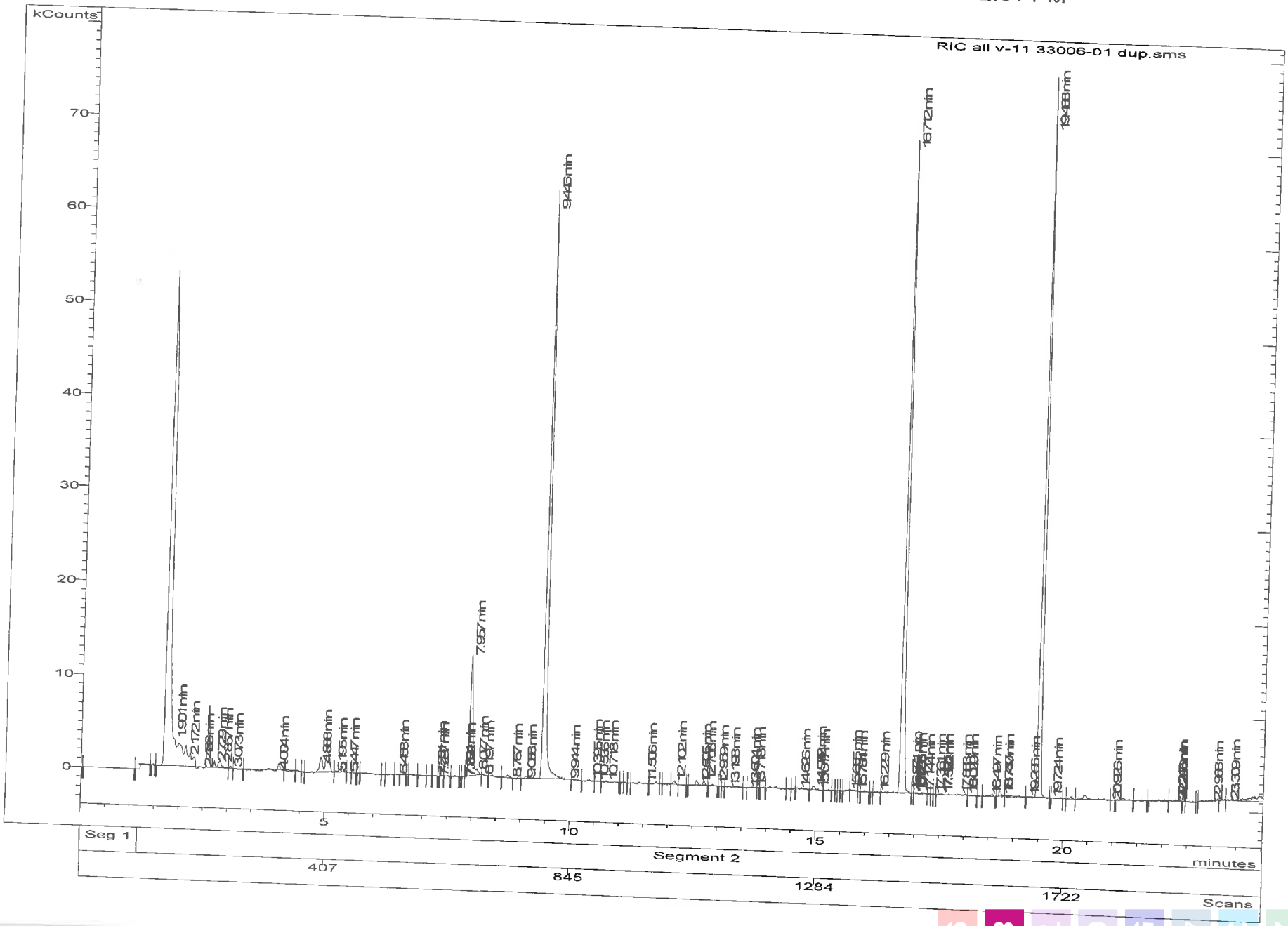
M : Missing peak.
S : Internal Standard Peak.
U : User defined end points.

Print Date: 25 Oct 2018 13:53:40

Chromatogram Plot

File: c:\saturnws\data\524.2 october 24 2018\v-11 33006-01 dup.sms
Sample: V-11 33006-01 Dup
Scan Range: 1 - 2075 Time Range: 0.00 - 24.03 min.
Sample Notes: 524.2 Full List Duplicate

Operator: SKR
Date: 10/24/2018 2:31 PM

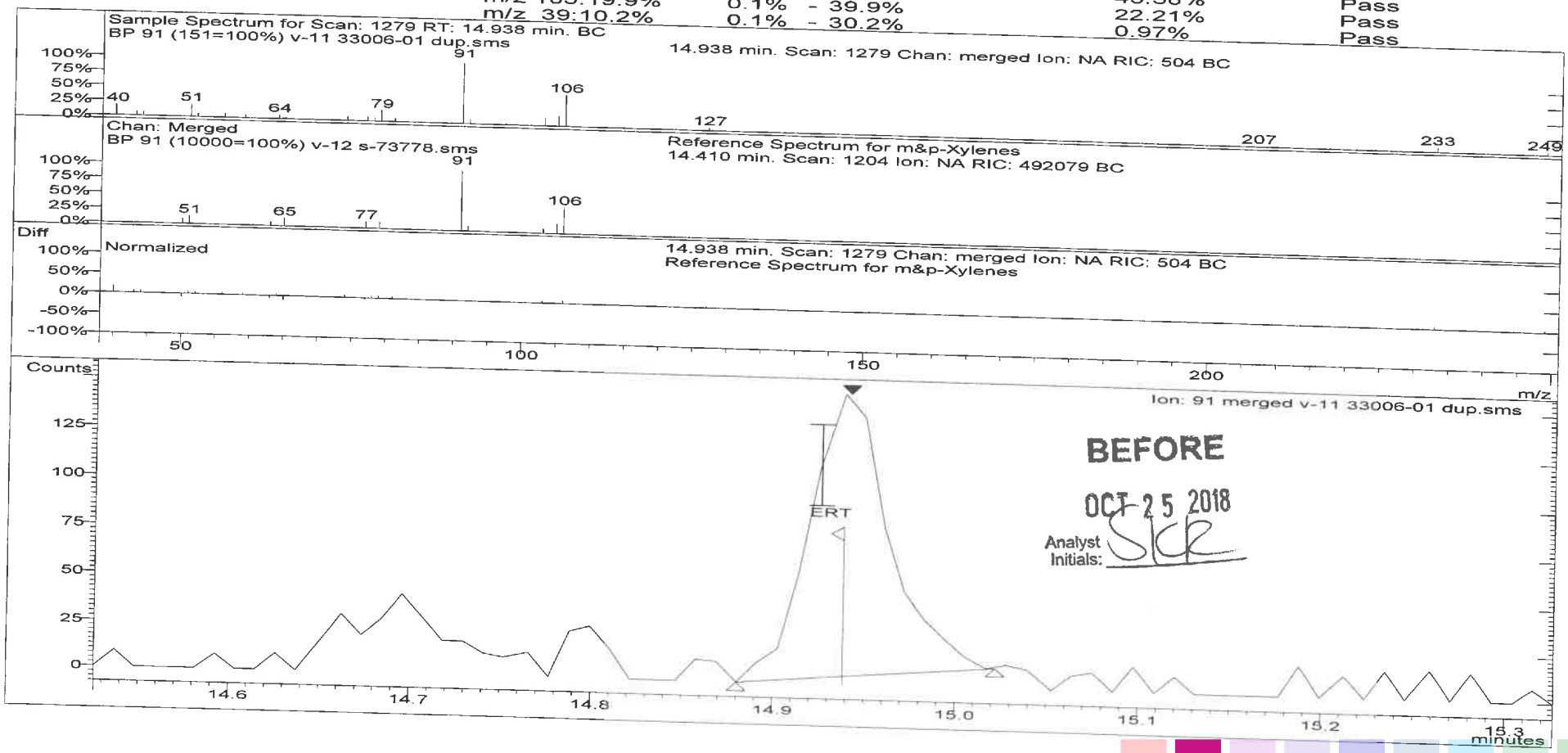


Print Date: 25 Oct 2018 13:52:49

Target Compound #37 from v-11 33006-01 dup.sms

Sample ID:	V-11 33006-01 Dup	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 2:31 PM	Data File:	c:\... v-11 33006-01 d
Calculation Date:	10/24/2018 3:52 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List Duplicate		

Parameter	Specification	Actual	Status
Compound Number		37	
Retention Time	14.926 +/- 0.400	14.942 min.	Pass
RT Offset		Δ0.01560 min.	
Peak Name		m&p-Xylenes	
CAS Number		106-42-3	
Status			
Quan Ions	91	449	
Area	>=30	146	Pass
Height		0.079 ug/L	
Amount	>= 0.000 ug/L	977	Pass
Fit	>=500	y = +0.2662x -0.0154	Pass
Calibration Equation	Linear, Ignore, 1/nX2	(IS-1) Fluorobenzene	
IS Peak Name		45.58%	Pass
Qual. Ion Ratio (3 ions)	m/z 106:60.1% 40.1% - 80.1%	22.21%	Pass
	m/z 105:19.9% 0.1% - 39.9%	0.97%	Pass
	m/z 39:10.2% 0.1% - 30.2%		



BEFORE

OCT 25 2018

Analyst Initials: SCR

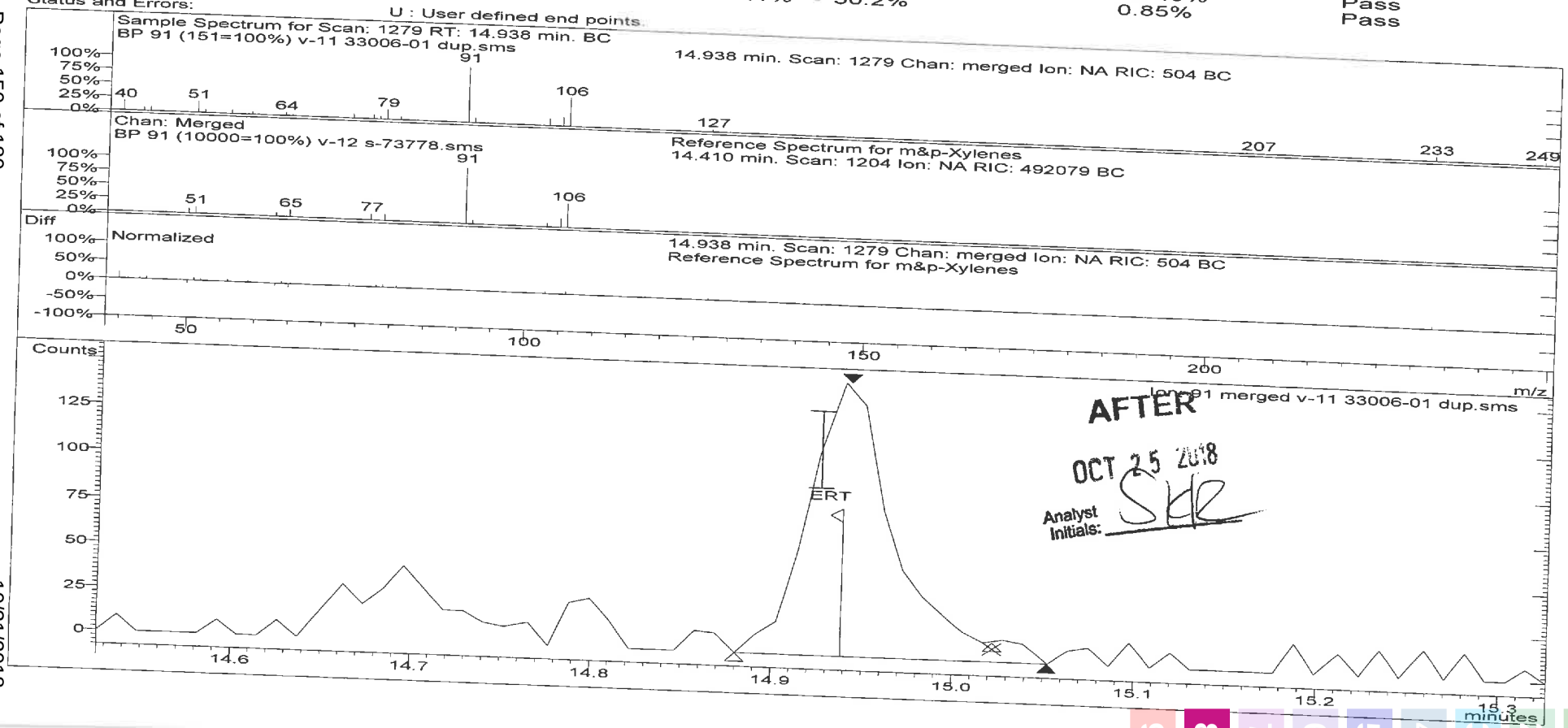
Print Date: 25 Oct 2018 13:52:57

Target Compound #37 from v-11 33006-01 dup.sms

Sample ID:	V-11 33006-01 Dup	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 2:31 PM	Data File:	c:\... v-11 33006-01 d
Calculation Date:	10/25/2018 1:52 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List Duplicate		

Parameter	Specification	Actual	Status
Compound Number		37	
Retention Time	14.926 +/- 0.400	14.942 min.	
RT Offset		Δ0.01560 min.	Pass
Peak Name		m&p-Xylenes	
CAS Number		106-42-3	
Status		U	
Quan Ions			
Area	91	512	
Height	>=30	151	Pass
Amount	>= 0.000 ug/L	0.082 ug/L	
Fit	>=500	977	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.2662x -0.0154	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 106:60.1% 40.1% - 80.1%	39.93%	Fail
	m/z 105:19.9% 0.1% - 39.9%	19.45%	Pass
	m/z 39:10.2% 0.1% - 30.2%	0.85%	Pass

Status and Errors: U : User defined end points.



AFTER

OCT 25 2018

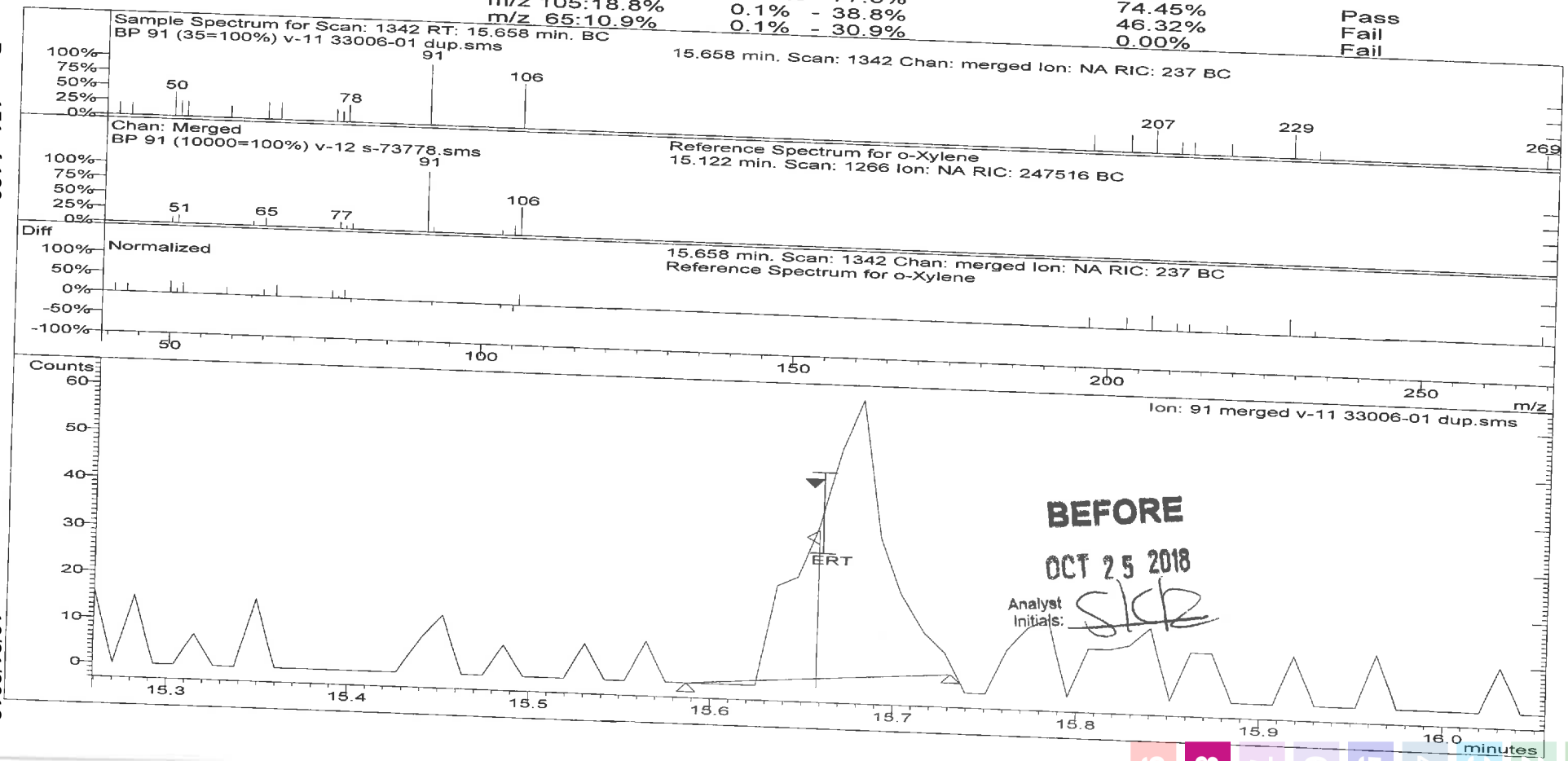
Analyst Initials: SKR

Print Date: 25 Oct 2018 13:53:01

Target Compound #38 from v-11 33006-01 dup.sms

Sample ID:	V-11 33006-01 Dup	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 2:31 PM	Data File:	c:\... v-11 33006-01 d
Calculation Date:	10/25/2018 1:52 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List Duplicate		

Parameter	Specification		Actual	Status
Compound Number			38	
Retention Time	15.660 +/- 0.400		15.655 min.	
RT Offset			Δ0.00535 min.	Pass
Peak Name			o-Xylene	
CAS Number			95-47-6	
Status				
Quan Ions	91		166	
Area	>=30		41	Pass
Height			0.030 ug/L	
Amount	>= 0.000 ug/L		847	Pass
Fit	>=500		y = +0.2829x -0.0063	Pass
Calibration Equation	Linear, Ignore, 1/nX2		(IS-1) Fluorobenzene	
IS Peak Name			74.45%	Pass
Qual. Ion Ratio (3 ions)	m/z 106:57.3%	37.3% - 77.3%	46.32%	Fail
	m/z 105:18.8%	0.1% - 38.8%	0.00%	Fail
	m/z 65:10.9%	0.1% - 30.9%		



BEFORE
OCT 25 2018
Analyst Initials: SCR

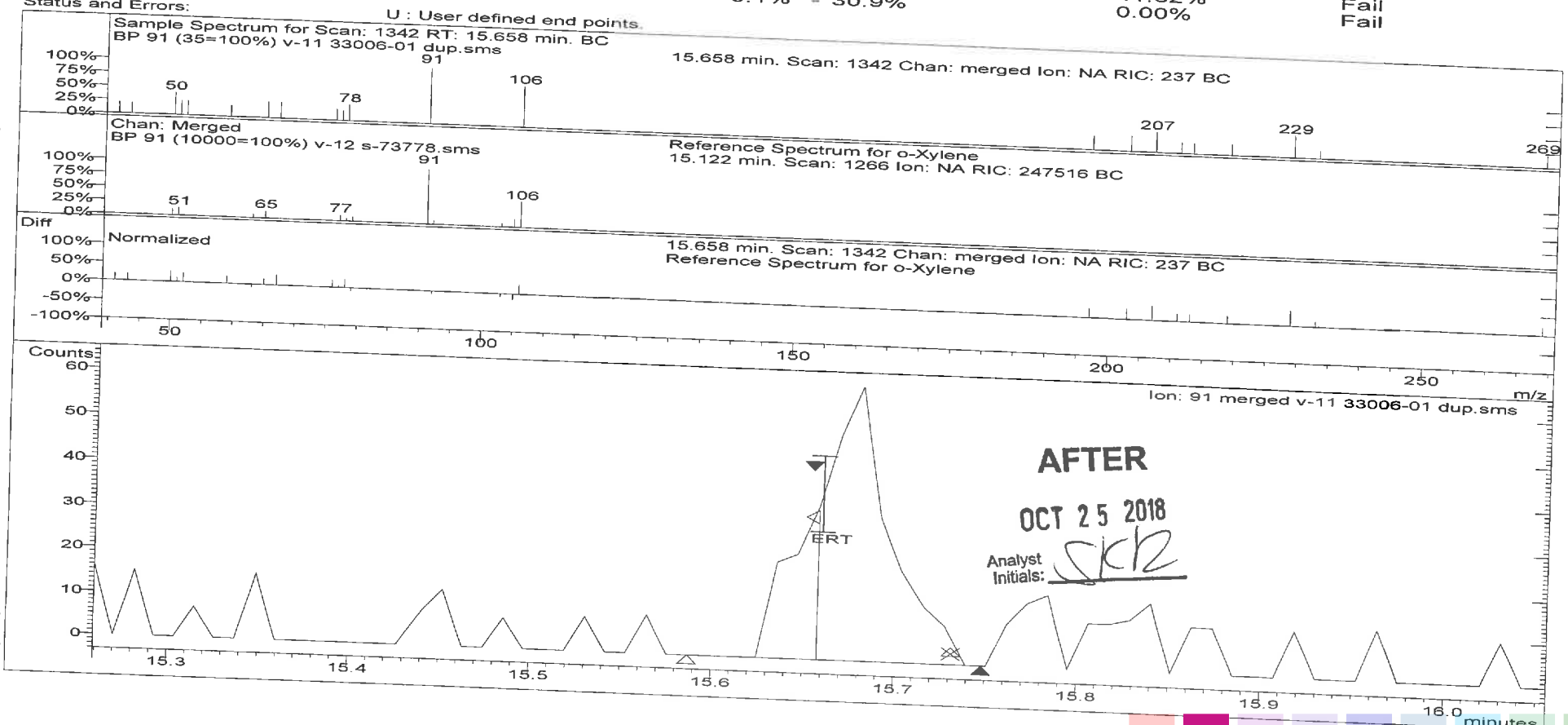
Print Date: 25 Oct 2018 13:53:08

Target Compound #38 from v-11 33006-01 dup.sms

Sample ID:	V-11 33006-01 Dup	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 2:31 PM	Data File:	c:\... v-11 33006-01 d
Calculation Date:	10/25/2018 1:53 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List Duplicate		

Parameter	Specification		Actual	Status
Compound Number			38	
Retention Time	15.660 +/- 0.400		15.655 min.	
RT Offset			Δ0.00535 min.	Pass
Peak Name			o-Xylene	
CAS Number			95-47-6	
Status			U	
Quan Ions				
Area	91		184	
Height	>=30		43	Pass
Amount	>= 0.000 ug/L		0.030 ug/L	
Fit	>=500		847	Pass
Calibration Equation	Linear, Ignore, 1/nX2		y = +0.2829x -0.0063	Pass
IS Peak Name			(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 106:57.3%	37.3% - 77.3%	66.89%	Pass
	m/z 105:18.8%	0.1% - 38.8%	41.62%	Fail
	m/z 65:10.9%	0.1% - 30.9%	0.00%	Fail

Status and Errors: U : User defined end points.



AFTER

OCT 25 2018

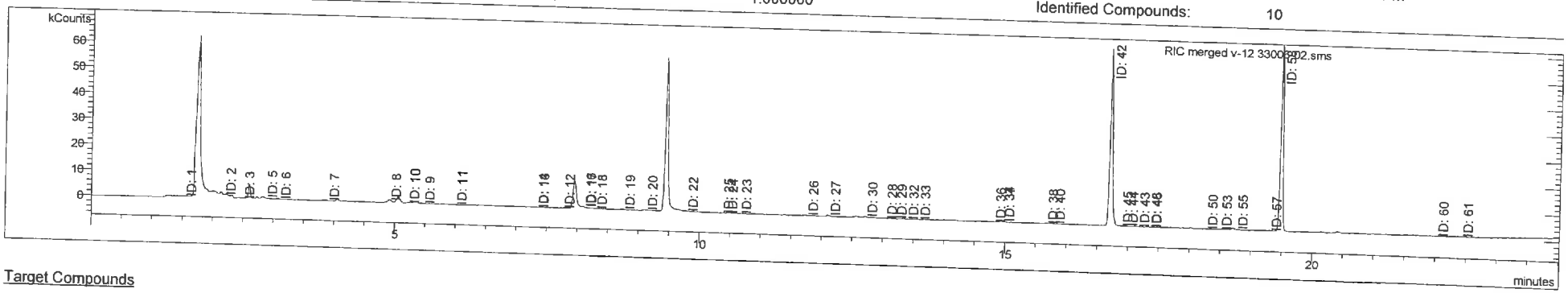
Analyst Initials: SKR

Print Date: 25 Oct 2018 13:54:40

524.2 VOA ANALYSES -- VARIAN #01

Sample Report for v-12 33006-02.sms

Sample ID:	V-12 33006-02	Operator:		Last Calibration:	10/8/2018 5:15 PM
Acquisition Date:	10/24/2018 3:02 PM	Calculation Date:	10/25/2018 1:54 PM	Method:	c:\... 524.2 october 08
Inj. Sample Notes:	524.2 Full List			Header Time Date:	10/25/2018 1:54 PM
Data File:	c:\... \v-12 33006-02.sms	Multiplier:	1.000000	Identified Compounds:	10



Target Compounds

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
21	9.445	(IS-1) Fluorobenzene	S	96	76126	1.000	ug/L	999
1	1.521	Dichlorodifluoromethane	M	85	0	0.000	ug/L	228
2	2.172	Chloromethane	M	49+51	0	0.000	ug/L	N/A
3	2.481	Vinyl chloride	M	62	0	0.000	ug/L	665
4	2.730	Bromomethane		94+96	637	0.291	ug/L	N/A
5	2.857	Chloroethane	M	45+47	0	0.000	ug/L	N/A
6	3.077	Trichlorofluoromethane	M	101	0	0.000	ug/L	937
7	3.877	1,1-Dichloroethene	M	61+96	0	0.000	ug/L	613
8	4.892	Methylene chloride		49+84	286	0.385	ug/L	893
9	5.447	methyl-tert-butyl-ether (MTBE)	M	73	0	0.000	ug/L	N/A
10	5.196	trans-1,2-Dichloroethene	M	61+96	0	0.000	ug/L	805
11	5.977	1,1-Dichloroethane	M	63	0	0.000	ug/L	734
12	7.746	2,2-Dichloropropane	M	77+79	0	0.000	ug/L	658
13	7.325	cis-1,2-Dichloroethene	M	62+96	0	0.000	ug/L	797
14	7.314	Bromochloromethane	M	49+51+93	0	0.000	ug/L	306
15	7.810	Chloroform (THM)		83	55	0.166	ug/L	756
16	8.089	1,1,1-Trichloroethane		97	234	0.183	ug/L	912
17	8.104	Carbon tetrachloride	M	117	0	0.000	ug/L	740
18	8.275	1,1-Dichloro-1-propene	M	75	0	0.000	ug/L	432
19	8.733	Benzene	M	78	0	0.000	ug/L	871
20	9.101	1,2-Dichloroethane	M	62+64	0	0.000	ug/L	N/A
22	9.765	Trichloroethene (TCE)	M	130+132	0	0.000	ug/L	322
23	10.640	1,2-Dichloropropane	M	63	0	0.000	ug/L	526
24	10.413	Dibromomethane	M	95	0	0.000	ug/L	413
25	10.346	Bromodichloromethane (THM)	M	83	0	0.000	ug/L	393
26	11.736	cis-1,3-Dichloro-1-propene	M	75	0	0.000	ug/L	606
27	12.095	Toluene		91	700	0.210	ug/L	988
28	13.022	trans-1,3-Dichloro-1-propene	M	75	0	0.000	ug/L	490
29	13.180	1,1,2-Trichloroethane	M	83+61	0	0.000	ug/L	415
30	12.702	Tetrachloroethene (PCE)	M	166	0	0.000	ug/L	937
31	13.385	1,3-dichloropropane		41+76	60	0.201	ug/L	609
32	13.373	Dibromochloromethane (THM)	M	129	0	0.000	ug/L	350
33	13.566	1,2-Dibromomethane (EDB)	M	107+109+93	0	0.000	ug/L	845
34	14.936	Ethylbenzene	M	91	0	0.000	ug/L	961

524.2 VOA ANALYSES -- VARIAN #01

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
35	14.591	Chlorobenzene		112	57	0.193	ug/L	857
36	14.799	1,1,1,2-Tetrachloroethane	M	131	0	0.000	ug/L	331
37	14.939	m&p-Xylenes	U	91	481	0.082	ug/L	981
38	15.651	o-Xylene		91	183	0.031	ug/L	814
39	15.767	Styrene		104	42	0.228	ug/L	727
40	15.767	Bromoform (THM)	M	173	0	0.000	ug/L	727
41	16.205	Isopropylbenzene		105	31	0.205	ug/L	569
42	16.708	(S-1) Bromofluorobenzene (BFB)		95+174+176	106974	0.886	ug/L	991 88.6%
43	17.140	1,1,2,2-Tetrachloroethane	M	83	0	0.000	ug/L	302
44	16.952	n-Propylbenzene		91	87	0.235	ug/L	836
45	16.866	Bromobenzene	M	77	0	0.000	ug/L	511
46	17.343	1,2,3-Trichloropropane	M	75+110+112	0	0.000	ug/L	567
47	16.952	2-Chlorotoluene		91	87	0.199	ug/L	630
48	17.332	1,3,5-Trimethylbenzene	M	77+120	0	0.000	ug/L	814
49	17.190	4-Chlorotoluene		91	45	0.228	ug/L	N/A
50	18.251	tert-Butylbenzene	M	119	0	0.000	ug/L	593
51	18.027	1,2,4-Trimethylbenzene		120	101	0.217	ug/L	878
52	18.015	sec-Butylbenzene		105	183	0.239	ug/L	714
53	18.481	p-Isopropyltoluene (4-Iso)		119	64	0.241	ug/L	644
54	18.551	1,3-Dichlorobenzene		111+75	46	0.208	ug/L	710
55	18.741	1,4-Dichlorobenzene		146	48	0.228	ug/L	652
56	19.260	n-Butylbenzene		91	93	0.288	ug/L	724
57	19.290	1,2 -Dichlorobenzene	M	146	0	0.000	ug/L	459
58	19.483	(S-2) 1,2-Dichlorobenzene-d4		152+154	28249	0.849	ug/L	491 84.9%
59	21.184	1,2-Dibromo-3-chloropropane (DBCP)		157+155+159	15	0.012	ug/L	366
60	22.007	1,2,4-Trichlorobenzene	M	180	0	0.000	ug/L	365
61	22.409	Hexachlorobutadiene	M	225	0	0.000	ug/L	350
62	22.946	Naphthalene		128	32	0.205	ug/L	620
63	23.296	1,2,3 -Trichlorobenzene		180	12	0.198	ug/L	345

Status and Errors:

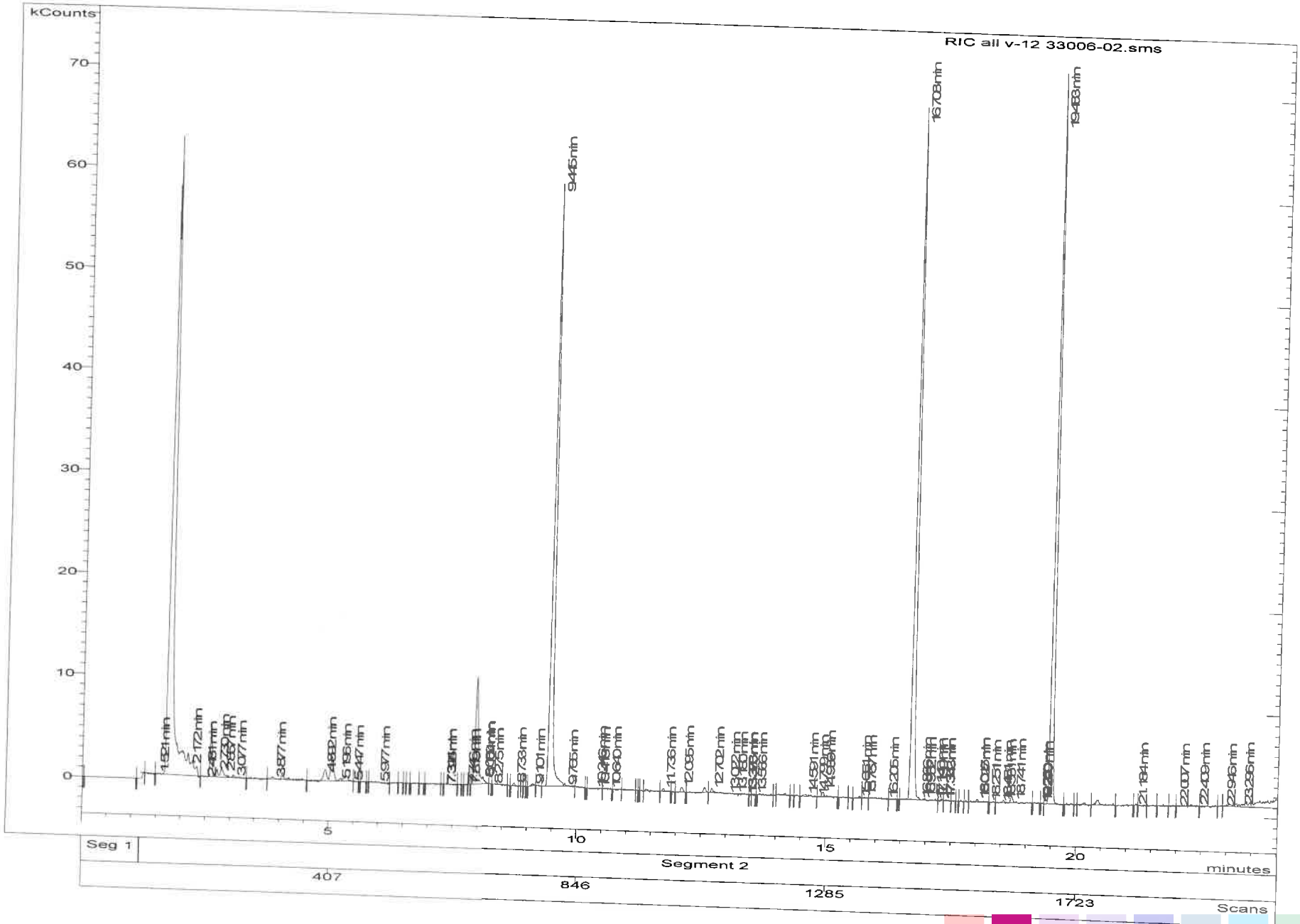
M : Missing peak.
S : Internal Standard Peak.
U : User defined end points.

Print Date: 25 Oct 2018 13:54:47

Chromatogram Plot

File: c:\saturnws\data\524.2 october 24 2018\v-12 33006-02.sms
Sample: V-12 33006-02
Scan Range: 1 - 2073 Time Range: 0.00 - 24.02 min.
Sample Notes: 524.2 Full List

Operator: SKR
Date: 10/24/2018 3:02 PM

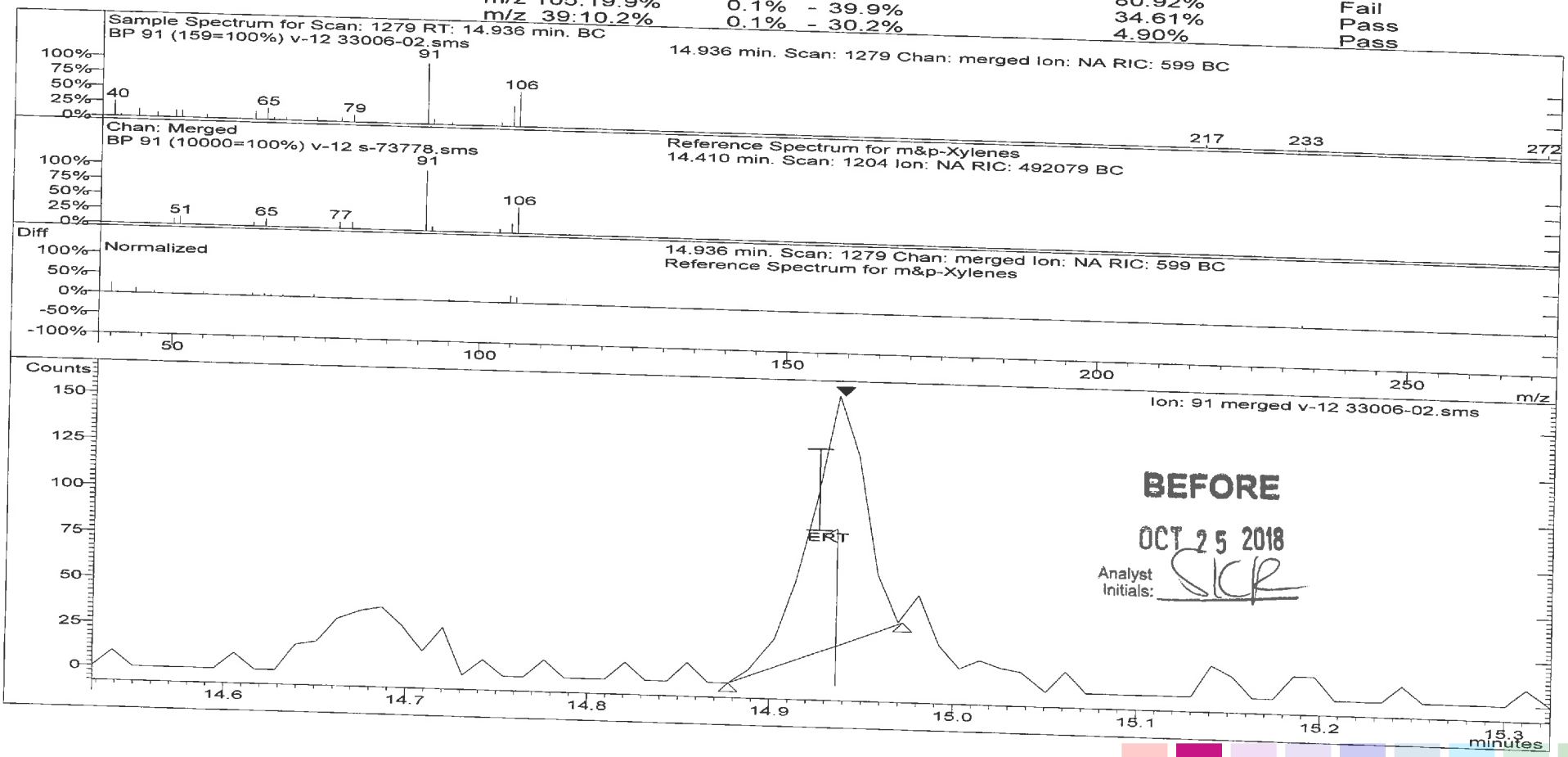


Print Date: 25 Oct 2018 13:54:14

Target Compound #37 from v-12 33006-02.sms

Sample ID:	V-12 33006-02	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 3:02 PM	Data File:	c:\... v-12 33006-02.s
Calculation Date:	10/24/2018 3:52 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List		

Parameter	Specification	Actual	Status
Compound Number		37	
Retention Time	14.926 +/- 0.400	14.939 min.	
RT Offset		Δ0.01307 min.	Pass
Peak Name		m&p-Xylenes	
CAS Number		106-42-3	
Status			
Quan Ions	91	281	
Area	>=30	135	Pass
Height		0.072 ug/L	
Amount	>= 0.000 ug/L	981	Pass
Fit	>=500	y = +0.2662x -0.0154	Pass
Calibration Equation	Linear, Ignore, 1/nX2	(IS-1) Fluorobenzene	
IS Peak Name		80.92%	Fail
Qual. Ion Ratio (3 ions)	m/z 106:60.1% 40.1% - 80.1%	34.61%	Pass
	m/z 105:19.9% 0.1% - 39.9%	4.90%	Pass
	m/z 39:10.2% 0.1% - 30.2%		



BEFORE

OCT 25 2018

Analyst Initials: SCR

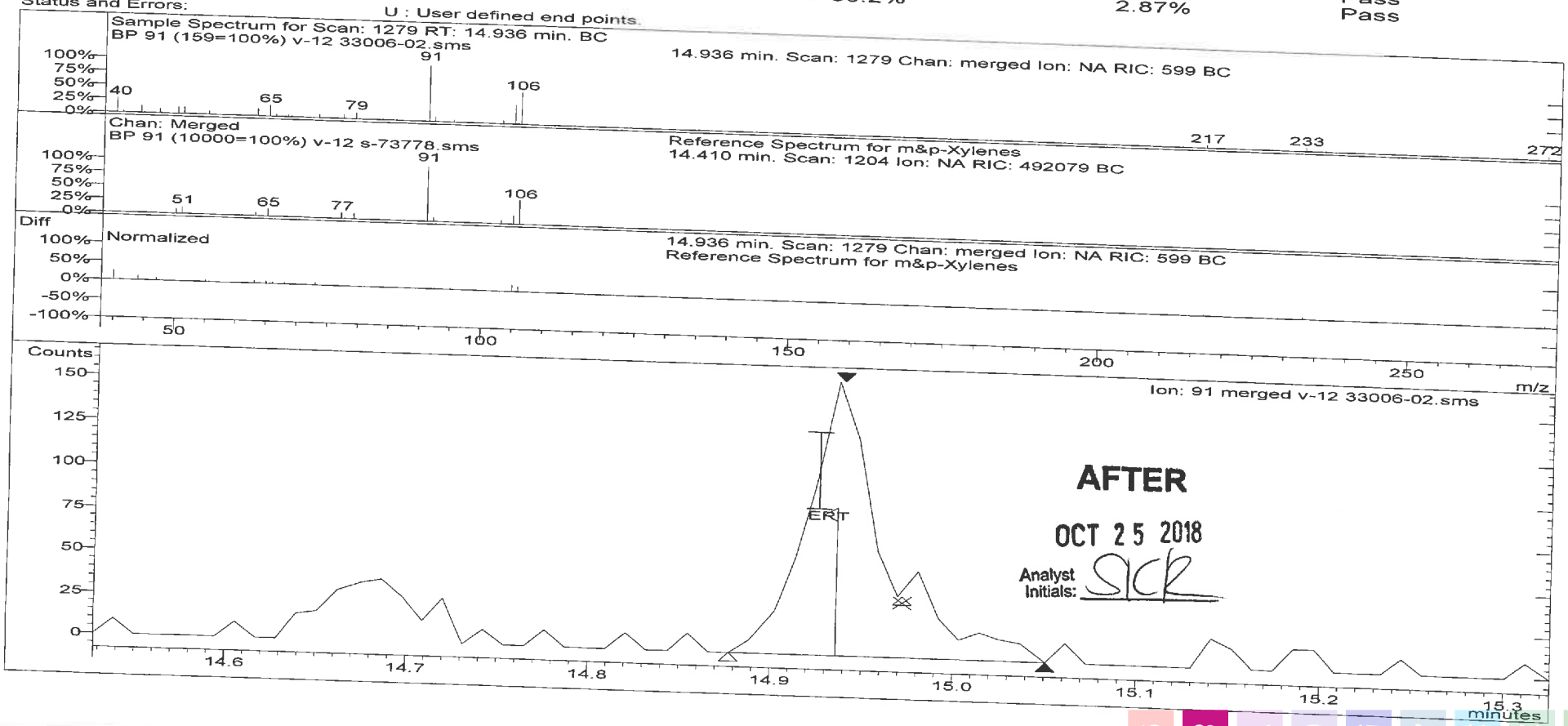
Print Date: 25 Oct 2018 13:54:22

Target Compound #37 from v-12 33006-02.sms

Sample ID:	V-12 33006-02	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 3:02 PM	Data File:	c:\... v-12 33006-02.s
Calculation Date:	10/25/2018 1:54 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List		

Parameter	Specification		Actual		Status
Compound Number			37		
Retention Time	14.926 +/- 0.400		14.939 min.		Pass
RT Offset			Δ0.01307 min.		
Peak Name			m&p-Xylenes		
CAS Number			106-42-3		
Status			U		
Quan Ions	91		481		
Area	>=30		159		Pass
Height			0.082 ug/L		
Amount	>= 0.000 ug/L		981		Pass
Fit	>=500		y = +0.2662x -0.0154		Pass
Calibration Equation	Linear, Ignore, 1/nX2		(IS-1) Fluorobenzene		
IS Peak Name				47.35%	Pass
Qual. Ion Ratio (3 ions)	m/z 106:60.1%	40.1% - 80.1%		20.25%	Pass
	m/z 105:19.9%	0.1% - 39.9%		2.87%	Pass
	m/z 39:10.2%	0.1% - 30.2%			

Status and Errors: U : User defined end points.



AFTER

OCT 25 2018

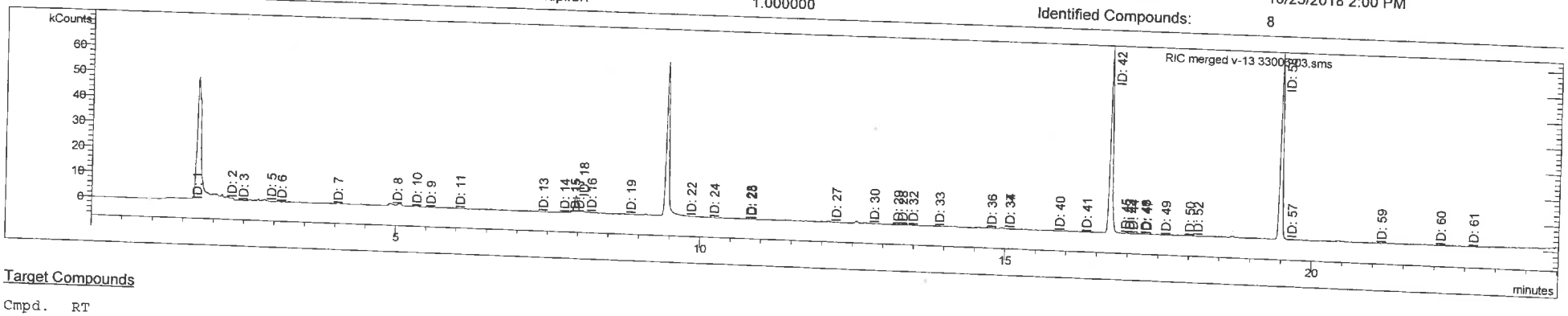
Analyst Initials: SCR

Print Date: 25 Oct 2018 14:00:05

524.2 VOA ANALYSES -- VARIAN #01

Sample Report for v-13 33006-03.sms

Sample ID:	V-13 33006-03	Operator:		Last Calibration:	10/8/2018 5:15 PM
Acquisition Date:	10/24/2018 3:33 PM	Calculation Date:	10/25/2018 1:59 PM	Method:	c:\... 524.2 october 08
Inj. Sample Notes:	524.2 Full List	Multiplier:	1.000000	Header Time Date:	10/25/2018 2:00 PM
Data File:	c:\... \v-13 33006-03.sms			Identified Compounds:	8



Target Compounds

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
21	9.447	(IS-1) Fluorobenzene	S	96	76175	1.000	ug/L	999
1	1.602	Dichlorodifluoromethane	M	85	0	0.000	ug/L	559
2	2.172	Chloromethane	M	49+51	0	0.000	ug/L	N/A
3	2.364	Vinyl chloride	M	62	0	0.000	ug/L	611
4	2.734	Bromomethane		94+96	569	0.254	ug/L	N/A
5	2.822	Chloroethane	U	45+47	281	0.105	ug/L	N/A
6	2.990	Trichlorofluoromethane	M	101	0	0.000	ug/L	462
7	3.916	1,1-Dichloroethene	M	61+96	0	0.000	ug/L	604
8	4.894	Methylene chloride		49+84	216	0.372	ug/L	911
9	5.447	methyl-tert-butyl-ether (MTBE)	M	73	0	0.000	ug/L	N/A
10	5.214	trans-1,2-Dichloroethene		61+96	41	0.156	ug/L	516
11	5.932	1,1-Dichloroethane	M	63	0	0.000	ug/L	721
12	7.331	2,2-Dichloropropane		77+79	97	0.158	ug/L	680
13	7.296	cis-1,2-Dichloroethene	M	62+96	0	0.000	ug/L	360
14	7.651	Bromochloromethane	M	49+51+93	0	0.000	ug/L	278
15	7.821	Chloroform (THM)	M	83	0	0.000	ug/L	705
16	8.089	1,1,1-Trichloroethane		97	103	0.166	ug/L	744
17	7.890	Carbon tetrachloride	M	117	0	0.000	ug/L	354
18	7.961	1,1-Dichloro-1-propene	M	75	0	0.000	ug/L	466
19	8.738	Benzene	M	78	0	0.000	ug/L	849
20	9.181	1,2-Dichloroethane		62+64	32	0.164	ug/L	N/A
22	9.727	Trichloroethene (TCE)	M	130+132	0	0.000	ug/L	436
23	10.697	1,2-Dichloropropane	M	63	0	0.000	ug/L	458
24	10.103	Dibromomethane	M	95	0	0.000	ug/L	255
25	10.720	Bromodichloromethane (THM)	M	83	0	0.000	ug/L	429
26	11.706	cis-1,3-Dichloro-1-propene		75	30	0.170	ug/L	525
27	12.100	Toluene		91	679	0.209	ug/L	994
28	13.191	trans-1,3-Dichloro-1-propene	M	75	0	0.000	ug/L	530
29	13.110	1,1,2-Trichloroethane	M	83+61	0	0.000	ug/L	324
30	12.725	Tetrachloroethene (PCE)	M	166	0	0.000	ug/L	937
31	13.671	1,3-dichloropropane		41+76	44	0.199	ug/L	514
32	13.361	Dibromochloromethane (THM)	M	129	0	0.000	ug/L	327
33	13.793	1,2-Dibromomethane (EDB)	M	107+109+93	0	0.000	ug/L	719
34	14.948	Ethylbenzene	M	91	0	0.000	ug/L	935

Print Date: 25 Oct 2018 14:00:05

524.2 VOA ANALYSES -- VARIAN #01

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
35	14.600	Chlorobenzene		112	33	0.191	ug/L	712
36	14.649	1,1,1,2-Tetrachloroethane	M	131	0	0.000	ug/L	271
37	14.946	m&p-Xylenes		91	411	0.078	ug/L	947
38	15.660	o-Xylene		91	244	0.034	ug/L	816
39	15.782	Styrene		104	51	0.228	ug/L	560
40	15.761	Bromoform (THM)	M	173	0	0.000	ug/L	559
41	16.205	Isopropylbenzene	M	105	0	0.000	ug/L	591
42	16.711	(S-1) Bromofluorobenzene (BFB)		95+174+176	110249	0.913	ug/L	995 91.3%
43	16.905	1,1,2,2-Tetrachloroethane	M	83	0	0.000	ug/L	256
44	16.961	n-Propylbenzene	M	91	0	0.000	ug/L	820
45	16.838	Bromobenzene	M	77	0	0.000	ug/L	731
46	17.163	1,2,3-Trichloropropane	M	75+110+112	0	0.000	ug/L	590
47	17.188	2-Chlorotoluene	M	91	0	0.000	ug/L	555
48	17.163	1,3,5-Trimethylbenzene	M	77+120	0	0.000	ug/L	743
49	17.495	4-Chlorotoluene	M	91	0	0.000	ug/L	N/A
50	17.884	tert-Butylbenzene	M	119	0	0.000	ug/L	526
51	18.031	1,2,4-Trimethylbenzene		120	79	0.215	ug/L	747
52	18.019	sec-Butylbenzene	M	105	0	0.000	ug/L	757
53	18.491	p-Isopropyltoluene (4-Iso)		119	54	0.241	ug/L	867
54	18.566	1,3-Dichlorobenzene		111+75	59	0.210	ug/L	790
55	18.731	1,4-Dichlorobenzene		146	62	0.230	ug/L	631
56	19.253	n-Butylbenzene		91	134	0.291	ug/L	818
57	19.549	1,2 -Dichlorobenzene	M	146	0	0.000	ug/L	291
58	19.484	(S-2) 1,2-Dichlorobenzene-d4		152+154	29491	0.886	ug/L	452 88.6%
59	21.008	1,2-Dibromo-3-chloropropane (DBCP)	M	157+155+159	0	0.000	ug/L	293
60	21.971	1,2,4-Trichlorobenzene	M	180	0	0.000	ug/L	309
61	22.505	Hexachlorobutadiene	M	225	0	0.000	ug/L	427
62	22.970	Naphthalene		128	40	0.208	ug/L	659
63	22.989	1,2,3 -Trichlorobenzene		180	13	0.199	ug/L	313

Status and Errors:

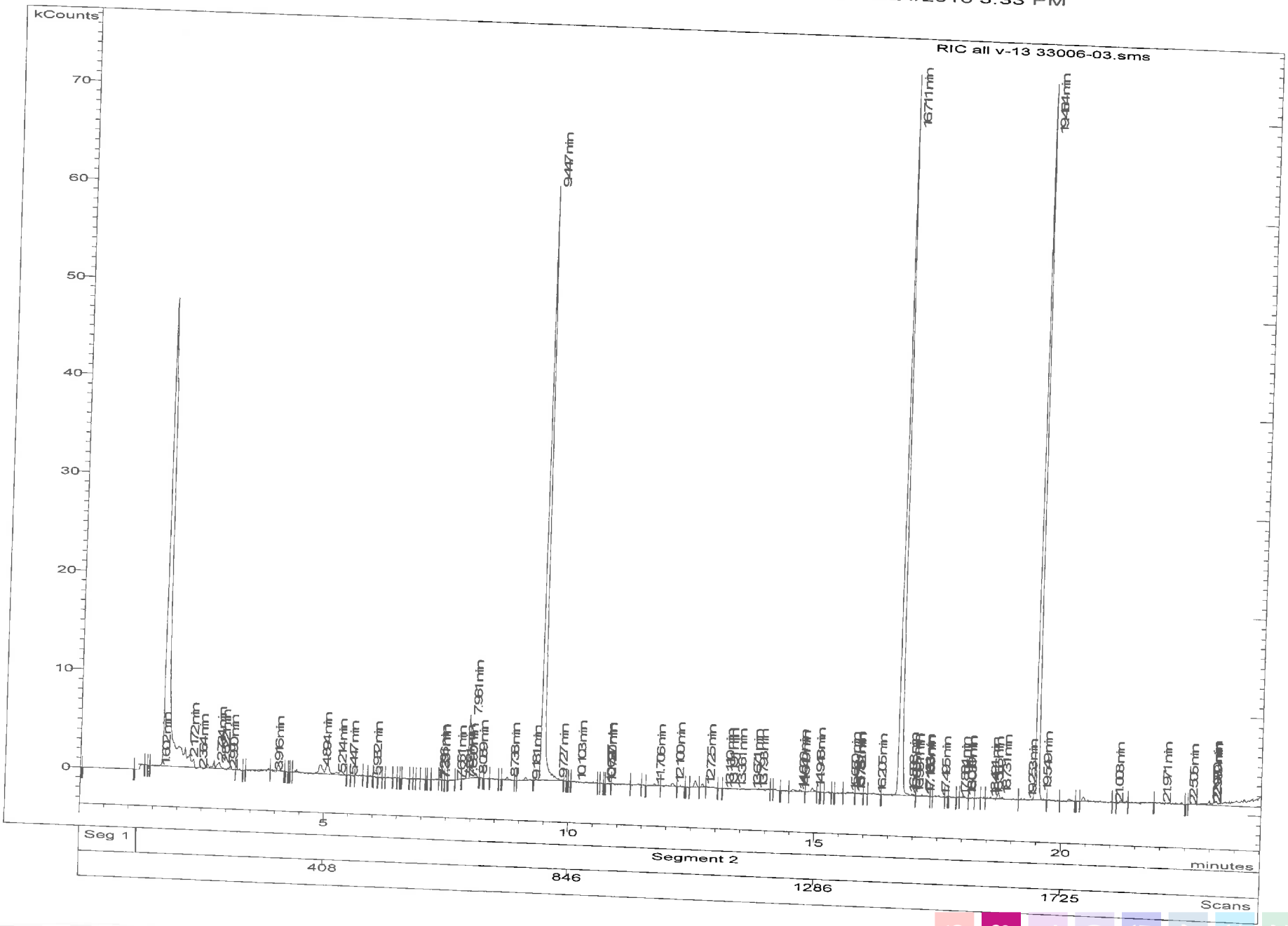
M : Missing peak.
S : Internal Standard Peak.
U : User defined end points.

Print Date: 25 Oct 2018 14:00:10

Chromatogram Plot

File: c:\saturnws\data\524.2 october 24 2018\v-13 33006-03.sms
Sample: V-13 33006-03
Scan Range: 1 - 2077 Time Range: 0.00 - 24.02 min.
Sample Notes: 524.2 Full List

Operator: SKR
Date: 10/24/2018 3:33 PM

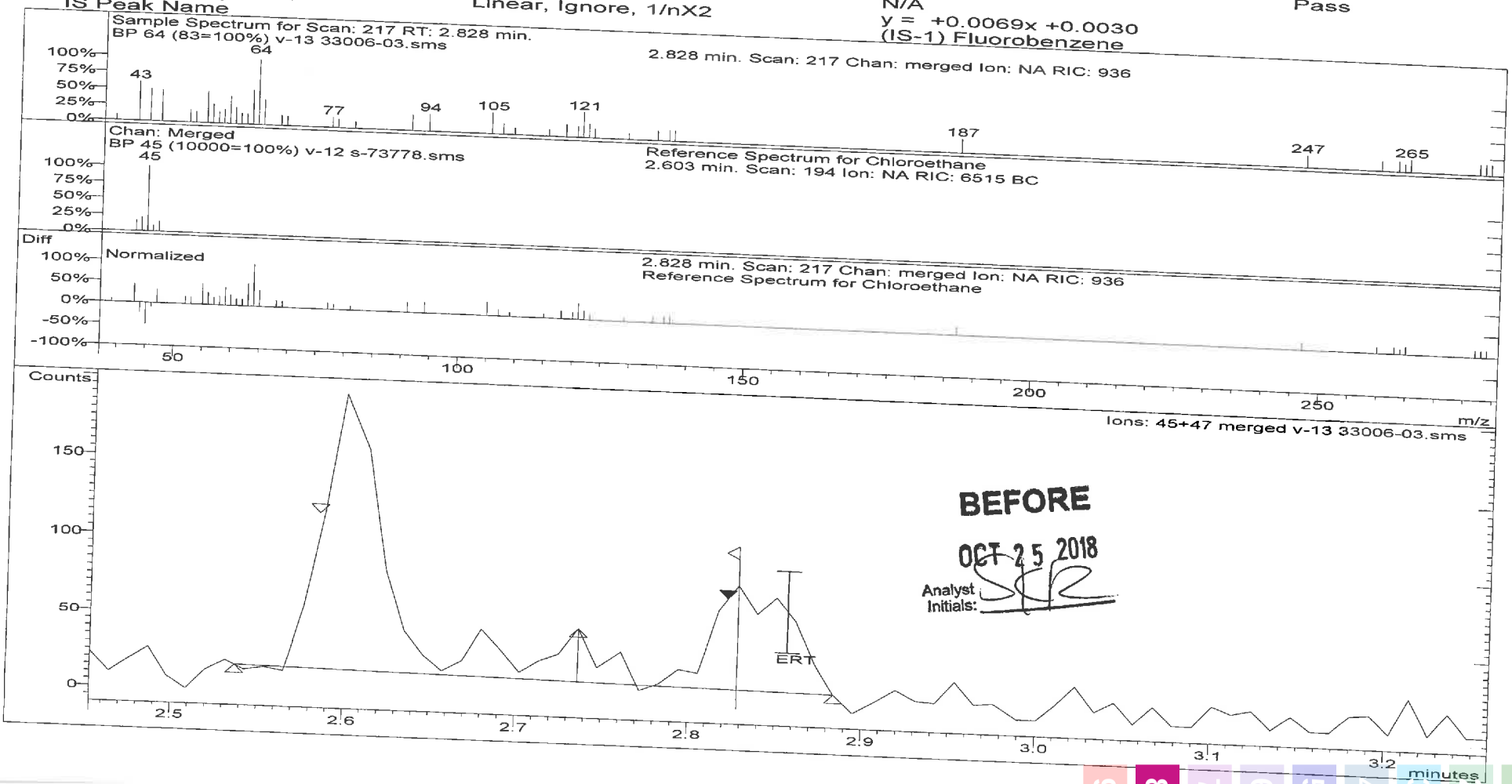


Print Date: 25 Oct 2018 13:59:16

Target Compound #6 from v-13 33006-03.sms

Sample ID:	V-13 33006-03	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 3:33 PM	Data File:	c:\... v-13 33006-03.s
Calculation Date:	10/24/2018 4:41 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List		

Parameter	Specification	Actual	Status
Compound Number		5	
Retention Time	2.857 +/- 0.400	2.822 min.	
RT Offset		Δ0.03481 min.	Pass
Peak Name		Chloroethane	
CAS Number		None	
Status			
Quan Ions	45+47		
Area	>=10	246	
Height		59	Pass
Amount	>= 0.000 ug/L	0.039 ug/L	
Fit		N/A	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.0069x +0.0030	
IS Peak Name		(IS-1) Fluorobenzene	



BEFORE

OCT 25 2018

Analyst Initials: SR

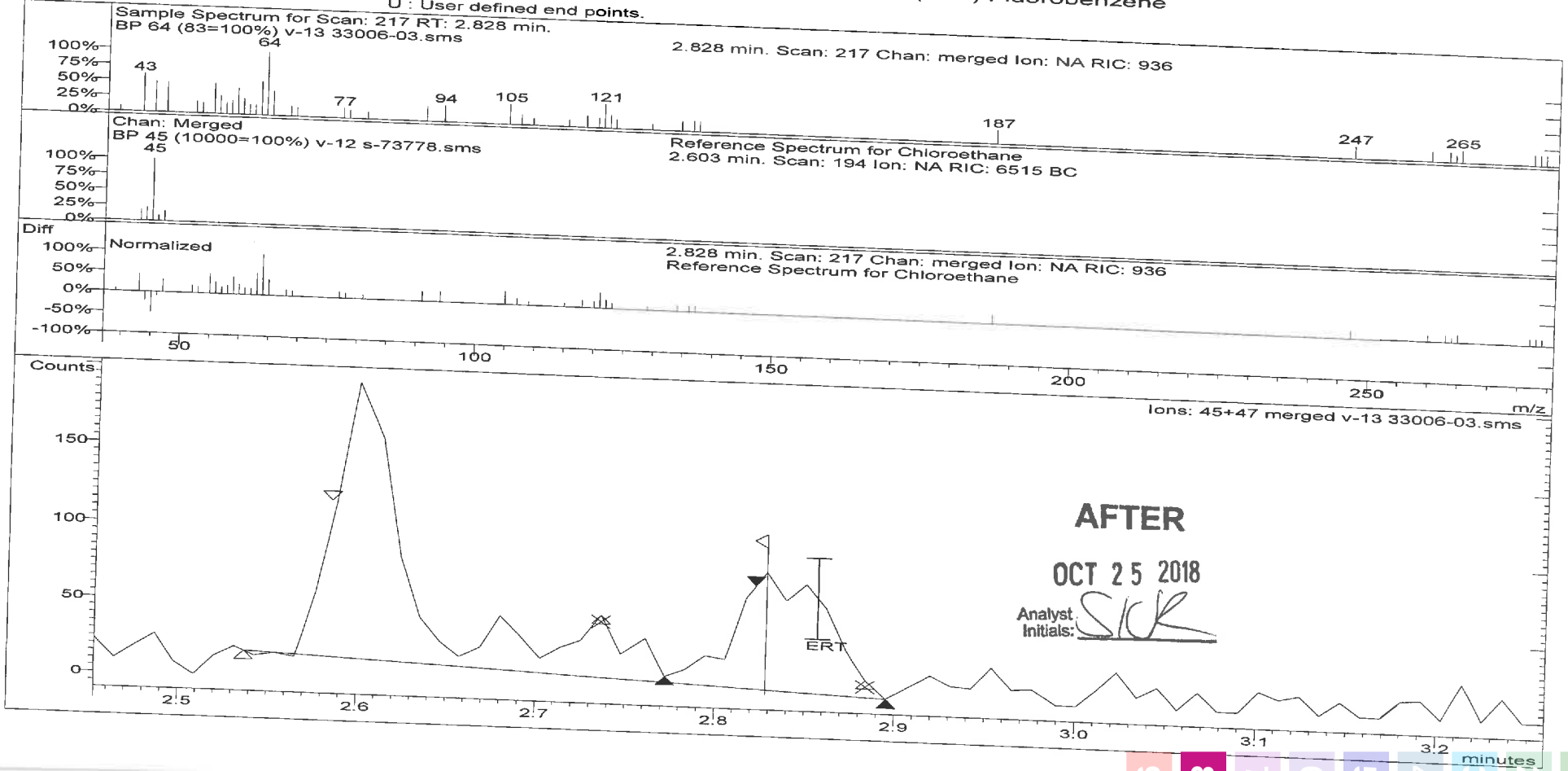
Print Date: 25 Oct 2018 13:59:24

Target Compound #6 from v-13 33006-03.sms

Sample ID:	V-13 33006-03	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 3:33 PM	Data File:	c:\... v-13 33006-03.s
Calculation Date:	10/25/2018 1:59 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List		

Parameter	Specification	Actual	Status
Compound Number		5	
Retention Time	2.857 +/- 0.400	2.822 min.	
RT Offset		Δ0.03481 min.	Pass
Peak Name		Chloroethane	
CAS Number		None	
Status		U	
Quan Ions	45+47		
Area	>=10	281	
Height		69	Pass
Amount	>= 0.000 ug/L	0.105 ug/L	
Fit		N/A	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.0069x +0.0030	
IS Peak Name		(IS-1) Fluorobenzene	

Status and Errors: U : User defined end points.



AFTER

OCT 25 2018

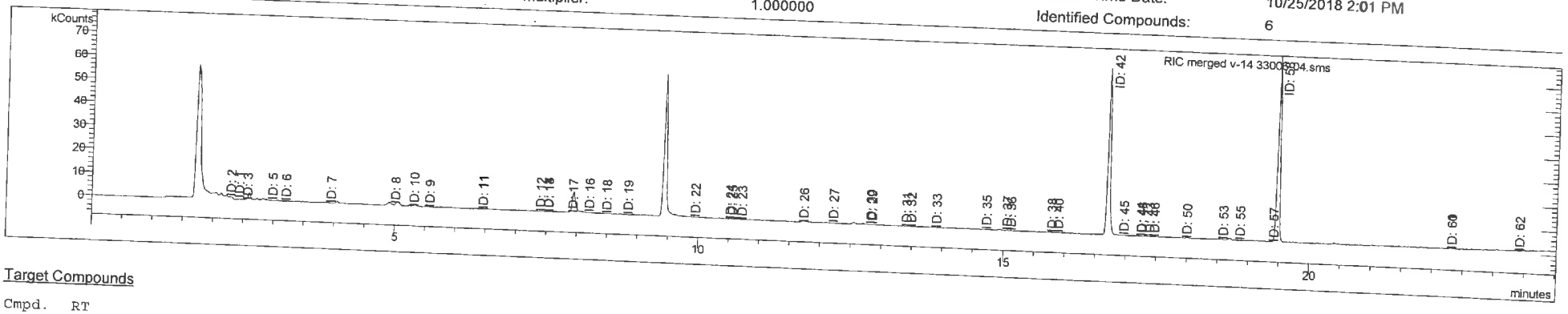
Analyst Initials: SCK

Print Date: 25 Oct 2018 14:01:05

524.2 VOA ANALYSES -- VARIAN #01

Sample Report for v-14 33006-04.sms

Sample ID:	V-14 33006-04	Operator:		Last Calibration:	10/8/2018 5:15 PM
Acquisition Date:	10/24/2018 4:04 PM	Calculation Date:	10/24/2018 4:41 PM	Method:	c:\... 524.2 october 08
Inj. Sample Notes:	524.2 Full List			Header Time Date:	10/25/2018 2:01 PM
Data File:	c:\... \v-14 33006-04.sms	Multiplier:	1.000000	Identified Compounds:	6



Target Compounds

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
21	9.436	(IS-1) Fluorobenzene	S	96	76137	1.000	ug/L	999
1	2.310	Dichlorodifluoromethane	M	85	0	0.000	ug/L	454
2	2.172	Chloromethane	M	49+51	0	0.000	ug/L	N/A
3	2.444	Vinyl chloride	M	62	0	0.000	ug/L	791
4	2.724	Bromomethane		94+96	535	0.236	ug/L	N/A
5	2.857	Chloroethane	M	45+47	0	0.000	ug/L	N/A
6	3.080	Trichlorofluoromethane	M	101	0	0.000	ug/L	892
7	3.825	1,1-Dichloroethene	M	61+96	0	0.000	ug/L	478
8	4.885	Methylene chloride		49+84	260	0.380	ug/L	894
9	5.447	methyl-tert-butyl-ether (MTBE)	M	73	0	0.000	ug/L	N/A
10	5.189	trans-1,2-Dichloroethene	M	61+96	0	0.000	ug/L	687
11	6.327	1,1-Dichloroethane	M	63	0	0.000	ug/L	715
12	7.280	2,2-Dichloropropane	M	77+79	0	0.000	ug/L	767
13	7.414	cis-1,2-Dichloroethene	M	62+96	0	0.000	ug/L	449
14	7.403	Bromochloromethane	M	49+51+93	0	0.000	ug/L	329
15	7.811	Chloroform (THM)		83	44	0.164	ug/L	596
16	8.080	1,1,1-Trichloroethane	M	97	0	0.000	ug/L	401
17	7.812	Carbon tetrachloride	M	117	0	0.000	ug/L	447
18	8.366	1,1-Dichloro-1-propene	M	75	0	0.000	ug/L	542
19	8.719	Benzene	M	78	0	0.000	ug/L	827
20	9.099	1,2-Dichloroethane		62+64	94	0.170	ug/L	N/A
22	9.824	Trichloroethene (TCE)	M	130+132	0	0.000	ug/L	306
23	10.588	1,2-Dichloropropane	M	63	0	0.000	ug/L	495
24	10.395	Dibromomethane	M	95	0	0.000	ug/L	654
25	10.428	Bromodichloromethane (THM)	M	83	0	0.000	ug/L	634
26	11.603	cis-1,3-Dichloro-1-propene	M	75	0	0.000	ug/L	569
27	12.091	Toluene		91	454	0.199	ug/L	988
28	12.827	trans-1,3-Dichloro-1-propene		75	33	0.186	ug/L	584
29	12.724	1,1,2-Trichloroethane	M	83+61	0	0.000	ug/L	383
30	12.700	Tetrachloroethene (PCE)	M	166	0	0.000	ug/L	911
31	13.285	1,3-dichloropropane	M	41+76	0	0.000	ug/L	685
32	13.364	Dibromochloromethane (THM)	M	129	0	0.000	ug/L	556
33	13.776	1,2-Dibromomethane (EDB)	M	107+109+93	0	0.000	ug/L	425
34	14.675	Ethylbenzene		91	100	0.211	ug/L	797

Print Date: 25 Oct 2018 14:01:06

524.2 VOA ANALYSES -- VARIAN #01

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit	
35	14.596	Chlorobenzene	M	112	0	0.000	ug/L	709	
36	14.994	1,1,1,2-Tetrachloroethane	M	131	0	0.000	ug/L	276	
37	14.932	m&p-Xylenes		91	321	0.074	ug/L	922	
38	15.665	o-Xylene	M	91	0	0.000	ug/L	772	
39	15.777	Styrene		104	42	0.228	ug/L	691	
40	15.767	Bromoform (THM)	M	173	0	0.000	ug/L	654	
41	16.210	Isopropylbenzene		105	60	0.206	ug/L	803	
42	16.701	(S-1) Bromofluorobenzene (BFB)		95+174+176	107526	0.891	ug/L	991	89.1%
43	17.261	1,1,2,2-Tetrachloroethane	M	83	0	0.000	ug/L	282	
44	17.124	n-Propylbenzene	M	91	0	0.000	ug/L	837	
45	16.841	Bromobenzene	M	77	0	0.000	ug/L	403	
46	17.340	1,2,3-Trichloropropane	M	75+110+112	0	0.000	ug/L	541	
47	17.500	2-Chlorotoluene		91	40	0.197	ug/L	501	
48	17.136	1,3,5-Trimethylbenzene	M	77+120	0	0.000	ug/L	734	
49	17.499	4-Chlorotoluene		91	37	0.228	ug/L	N/A	
50	17.874	tert-Butylbenzene	M	119	0	0.000	ug/L	631	
51	18.018	1,2,4-Trimethylbenzene		120	92	0.216	ug/L	873	
52	18.001	sec-Butylbenzene		105	156	0.238	ug/L	705	
53	18.468	p-Isopropyltoluene (4-Iso)		119	52	0.241	ug/L	856	
54	18.709	1,3-Dichlorobenzene		111+75	92	0.214	ug/L	645	
55	18.739	1,4-Dichlorobenzene	M	146	0	0.000	ug/L	628	
56	19.214	n-Butylbenzene		91	84	0.288	ug/L	799	
57	19.288	1,2 -Dichlorobenzene	M	146	0	0.000	ug/L	452	
58	19.471	(S-2) 1,2-Dichlorobenzene-d4		152+154	29971	0.901	ug/L	484	90.1%
59	20.861	1,2-Dibromo-3-chloropropane (DBCP)		157+155+159	14	0.011	ug/L	417	
60	22.195	1,2,4-Trichlorobenzene	M	180	0	0.000	ug/L	444	
61	22.195	Hexachlorobutadiene	M	225	0	0.000	ug/L	488	
62	23.300	Naphthalene	M	128	0	0.000	ug/L	601	
63	23.603	1,2,3 -Trichlorobenzene		180	10	0.196	ug/L	401	

Status and Errors:

M : Missing peak.

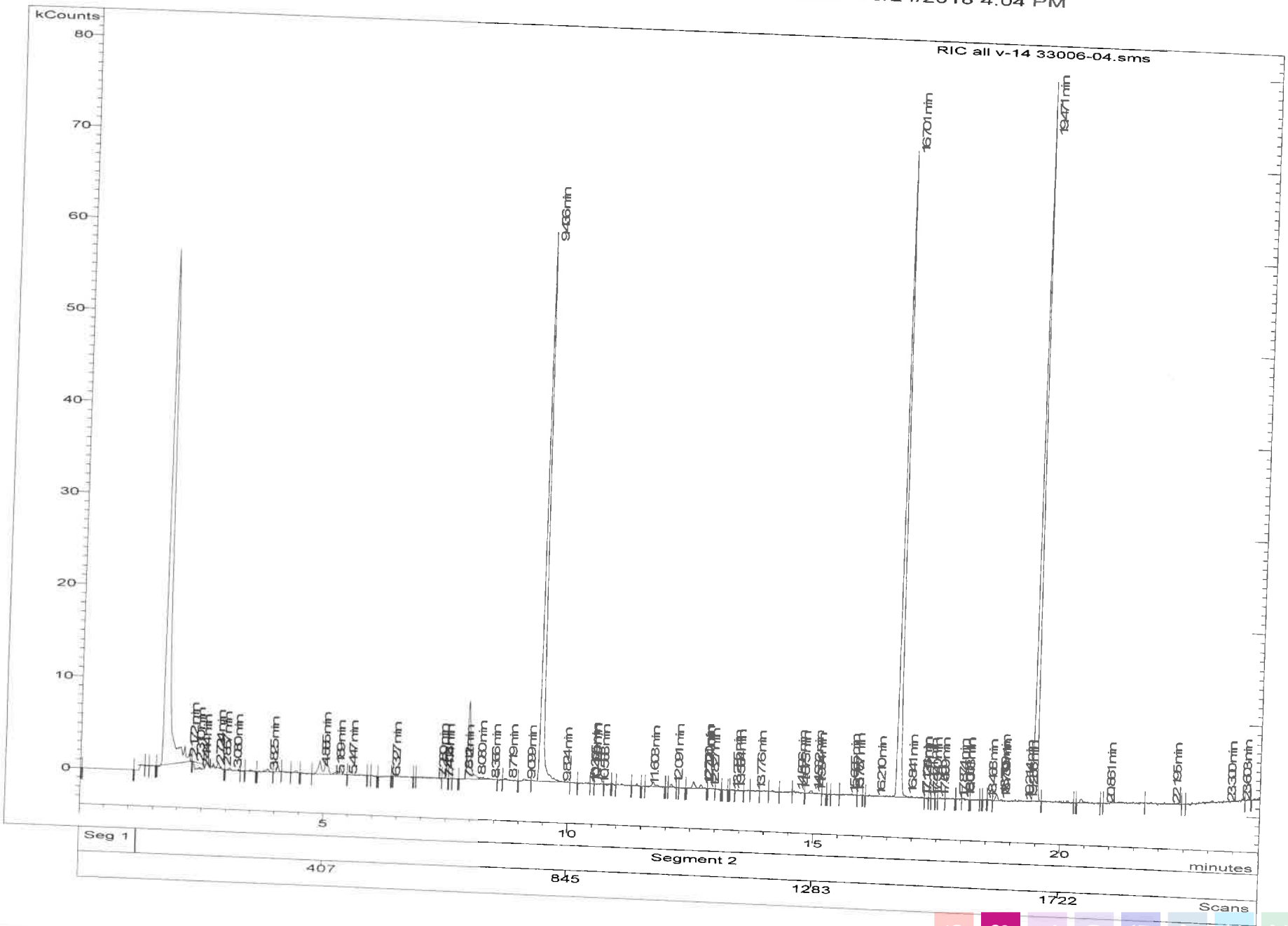
S : Internal Standard Peak.

Print Date: 25 Oct 2018 14:01:09

Chromatogram Plot

File: c:\saturnws\data\524.2 october 24 2018\v-14 33006-04.sms
Sample: V-14 33006-04
Scan Range: 1 - 2075 Time Range: 0.00 - 24.02 min.
Sample Notes: 524.2 Full List

Operator: SKR
Date: 10/24/2018 4:04 PM

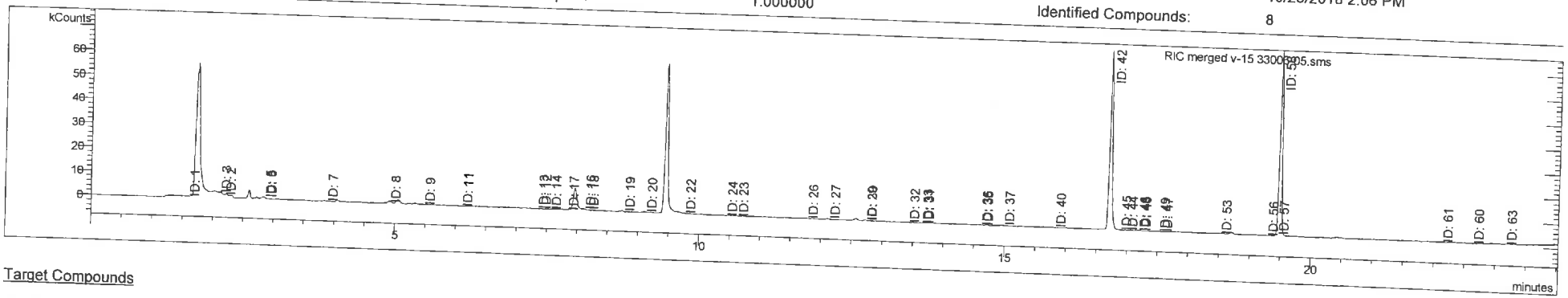


Print Date: 25 Oct 2018 14:06:33

524.2 VOA ANALYSES -- VARIAN #01

Sample Report for v-15 33006-05.sms

Sample ID:	V-15 33006-05	Operator:		Last Calibration:	10/8/2018 5:15 PM
Acquisition Date:	10/24/2018 4:36 PM	Calculation Date:	10/25/2018 2:06 PM	Method:	c:\... 524.2 october 08
Inj. Sample Notes:	524.2 Full List			Header Time Date:	10/25/2018 2:06 PM
Data File:	c:\... \v-15 33006-05.sms	Multiplier:	1.000000	Identified Compounds:	8



Target Compounds

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
21	9.448	(IS-1) Fluorobenzene	S	96	81228	1.000	ug/L	999
1	1.572	Dichlorodifluoromethane	M	85	0	0.000	ug/L	559
2	2.172	Chloromethane	M	49+51	0	0.000	ug/L	N/A
3	2.095	Vinyl chloride	M	62	0	0.000	ug/L	611
4	2.728	Bromomethane		94+96	527	0.213	ug/L	N/A
5	2.823	Chloroethane		45+47	298	0.104	ug/L	N/A
6	2.848	Trichlorofluoromethane	M	101	0	0.000	ug/L	781
7	3.852	1,1-Dichloroethene	M	61+96	0	0.000	ug/L	604
8	4.882	Methylene chloride		49+84	249	0.375	ug/L	886
9	5.447	methyl-tert-butyl-ether (MTBE)	M	73	0	0.000	ug/L	N/A
10	5.069	trans-1,2-Dichloroethene		61+96	203	0.167	ug/L	511
11	6.069	1,1-Dichloroethane	M	63	0	0.000	ug/L	744
12	7.359	2,2-Dichloropropane	M	77+79	0	0.000	ug/L	744
13	7.314	cis-1,2-Dichloroethene	M	62+96	0	0.000	ug/L	506
14	7.528	Bromochloromethane	M	49+51+93	0	0.000	ug/L	330
15	7.833	Chloroform (THM)		83	57	0.166	ug/L	824
16	8.087	1,1,1-Trichloroethane		97	94	0.164	ug/L	761
17	7.809	Carbon tetrachloride	M	117	0	0.000	ug/L	403
18	8.141	1,1-Dichloro-1-propene	M	75	0	0.000	ug/L	480
19	8.733	Benzene	M	78	0	0.000	ug/L	895
20	9.101	1,2-Dichloroethane	M	62+64	0	0.000	ug/L	N/A
22	9.732	Trichloroethene (TCE)	M	130+132	0	0.000	ug/L	262
23	10.601	1,2-Dichloropropane	M	63	0	0.000	ug/L	432
24	10.419	Dibromomethane	M	95	0	0.000	ug/L	623
25	10.708	Bromodichloromethane (THM)		83	31	0.194	ug/L	662
26	11.744	cis-1,3-Dichloro-1-propene	M	75	0	0.000	ug/L	651
27	12.105	Toluene		91	610	0.204	ug/L	992
28	12.587	trans-1,3-Dichloro-1-propene		75	37	0.186	ug/L	571
29	12.699	1,1,2-Trichloroethane	M	83+61	0	0.000	ug/L	513
30	12.710	Tetrachloroethene (PCE)	M	166	0	0.000	ug/L	925
31	13.637	1,3-dichloropropane	M	41+76	0	0.000	ug/L	591
32	13.402	Dibromochloromethane (THM)	M	129	0	0.000	ug/L	413
33	13.615	1,2-Dibromomethane (EDB)	M	107+109+93	0	0.000	ug/L	429
34	14.689	Ethylbenzene		91	143	0.212	ug/L	783

Print Date: 25 Oct 2018 14:06:33

524.2 VOA ANALYSES -- VARIAN #01

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
35	14.600	Chlorobenzene	M	112	0	0.000	ug/L	619
36	14.578	1,1,1,2-Tetrachloroethane	M	131	0	0.000	ug/L	328
37	14.952	m&p-Xylenes	U	91	412	0.077	ug/L	973
38	15.663	o-Xylene		91	178	0.030	ug/L	794
39	15.782	Styrene		104	31	0.227	ug/L	642
40	15.790	Bromoform (THM)	M	173	0	0.000	ug/L	626
41	16.214	Isopropylbenzene		105	66	0.206	ug/L	792
42	16.714	(S-1) Bromofluorobenzene (BFB)		95+174+176	110761	0.860	ug/L	998 86.0%
43	17.186	1,1,2,2-Tetrachloroethane	M	83	0	0.000	ug/L	485
44	16.965	n-Propylbenzene	M	91	0	0.000	ug/L	807
45	16.864	Bromobenzene	M	77	0	0.000	ug/L	439
46	17.152	1,2,3-Trichloropropane	M	75+110+112	0	0.000	ug/L	588
47	17.533	2-Chlorotoluene	M	91	0	0.000	ug/L	628
48	17.175	1,3,5-Trimethylbenzene	M	77+120	0	0.000	ug/L	778
49	17.495	4-Chlorotoluene	M	91	0	0.000	ug/L	N/A
50	17.887	tert-Butylbenzene		119	38	0.222	ug/L	705
51	18.020	1,2,4-Trimethylbenzene		120	98	0.216	ug/L	846
52	18.023	sec-Butylbenzene		105	178	0.238	ug/L	733
53	18.498	p-Isopropyltoluene (4-Iso)		119	47	0.240	ug/L	761
54	18.736	1,3-Dichlorobenzene		111+75	49	0.208	ug/L	669
55	18.735	1,4-Dichlorobenzene		146	67	0.230	ug/L	664
56	19.261	n-Butylbenzene	M	91	0	0.000	ug/L	894
57	19.431	1,2 -Dichlorobenzene	M	146	0	0.000	ug/L	307
58	19.488	(S-2) 1,2-Dichlorobenzene-d4		152+154	29493	0.831	ug/L	467 83.1%
59	21.030	1,2-Dibromo-3-chloropropane (DBCP)		157+155+159	16	0.012	ug/L	386
60	22.607	1,2,4-Trichlorobenzene	M	180	0	0.000	ug/L	295
61	22.105	Hexachlorobutadiene	M	225	0	0.000	ug/L	327
62	22.975	Naphthalene		128	42	0.208	ug/L	606
63	23.144	1,2,3 -Trichlorobenzene	M	180	0	0.000	ug/L	535

Status and Errors:

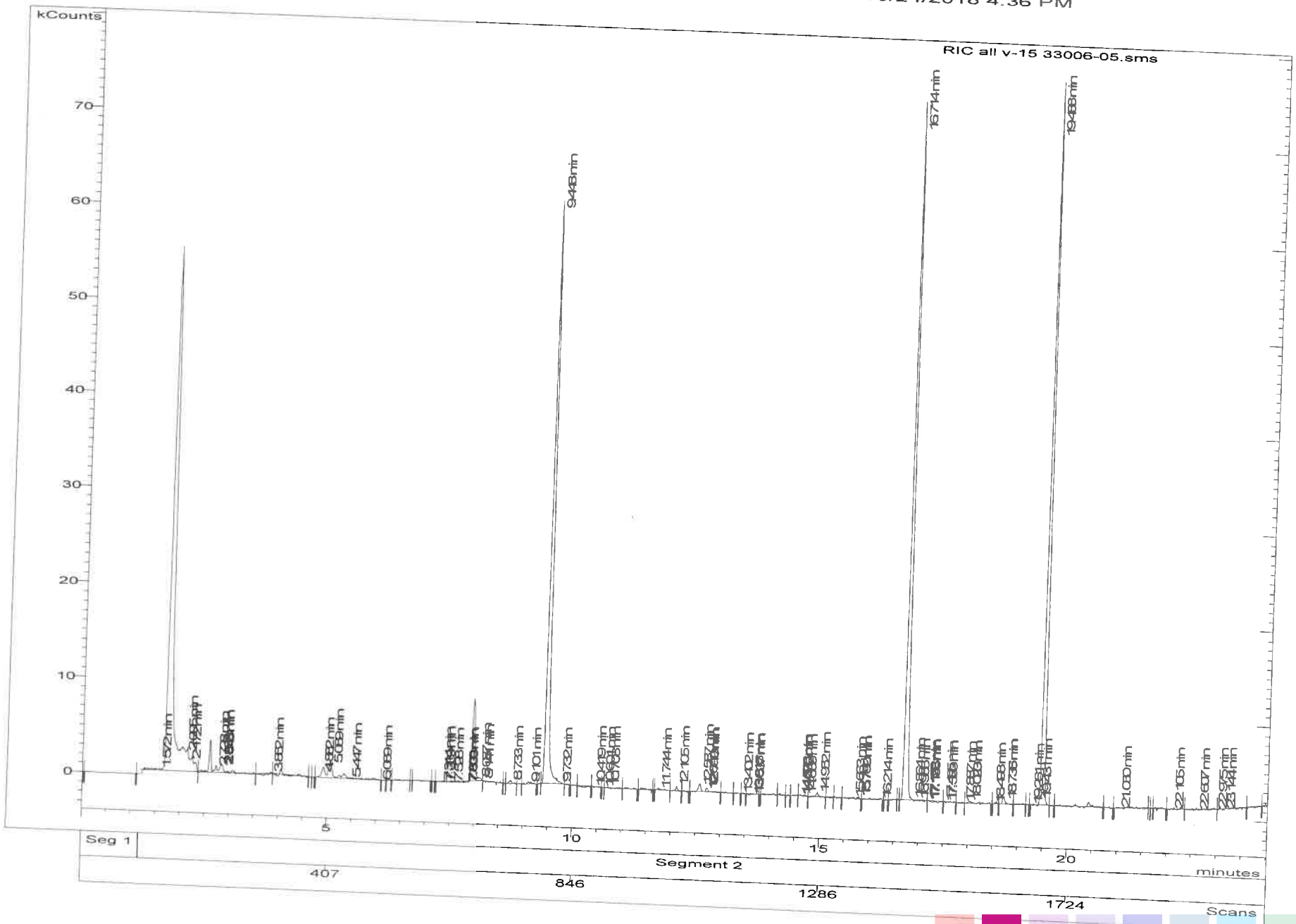
M : Missing peak.
S : Internal Standard Peak.
U : User defined end points.

Print Date: 25 Oct 2018 14:06:39

Chromatogram Plot

File: c:\saturnws\data\524.2 october 24 2018\v-15 33006-05.sms
Sample: V-15 33006-05
Scan Range: 1 - 2075 Time Range: 0.00 - 24.02 min.
Sample Notes: 524.2 Full List

Operator: SKR
Date: 10/24/2018 4:36 PM

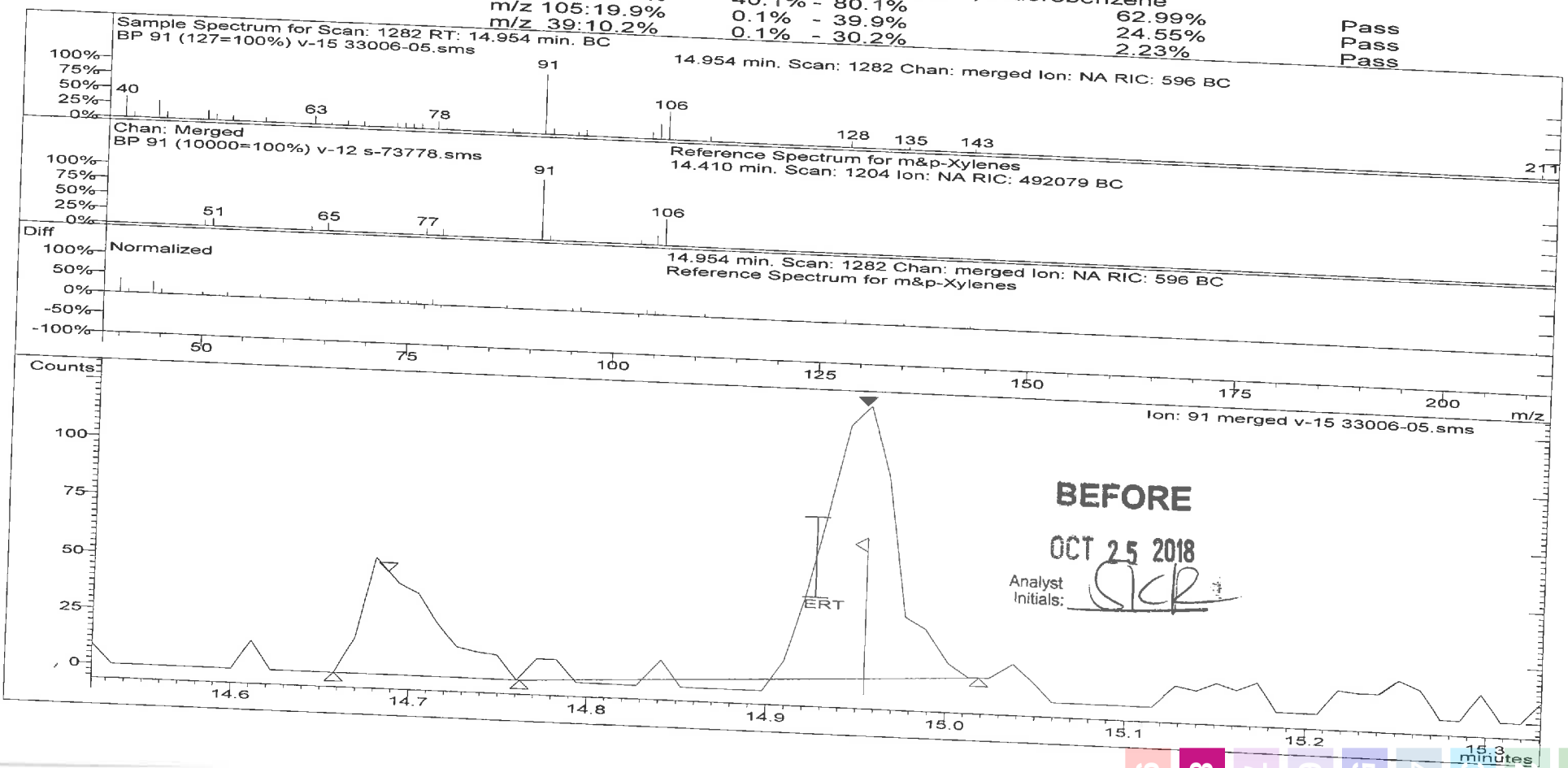


Print Date: 25 Oct 2018 14:06:08

Target Compound #37 from v-15 33006-05.sms

Sample ID:	V-15 33006-05	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 4:36 PM	Data File:	c:\... v-15 33006-05.s
Calculation Date:	10/25/2018 2:01 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List		

Parameter	Specification	Actual	Status
Compound Number		37	
Retention Time	14.926 +/- 0.400	14.952 min.	
RT Offset		Δ0.02595 min.	Pass
Peak Name		m&p-Xylenes	
CAS Number		106-42-3	
Status			
Quan Ions			
Area	91	332	
Height	>=30	120	Pass
Amount	>= 0.000 ug/L	0.073 ug/L	
Fit	>=500	973	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.2662x -0.0154	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 106:60.1% 40.1% - 80.1%	62.99%	Pass
	m/z 105:19.9% 0.1% - 39.9%	24.55%	Pass
	m/z 39:10.2% 0.1% - 30.2%	2.23%	Pass



BEFORE

OCT 25 2018

Analyst Initials: SCR

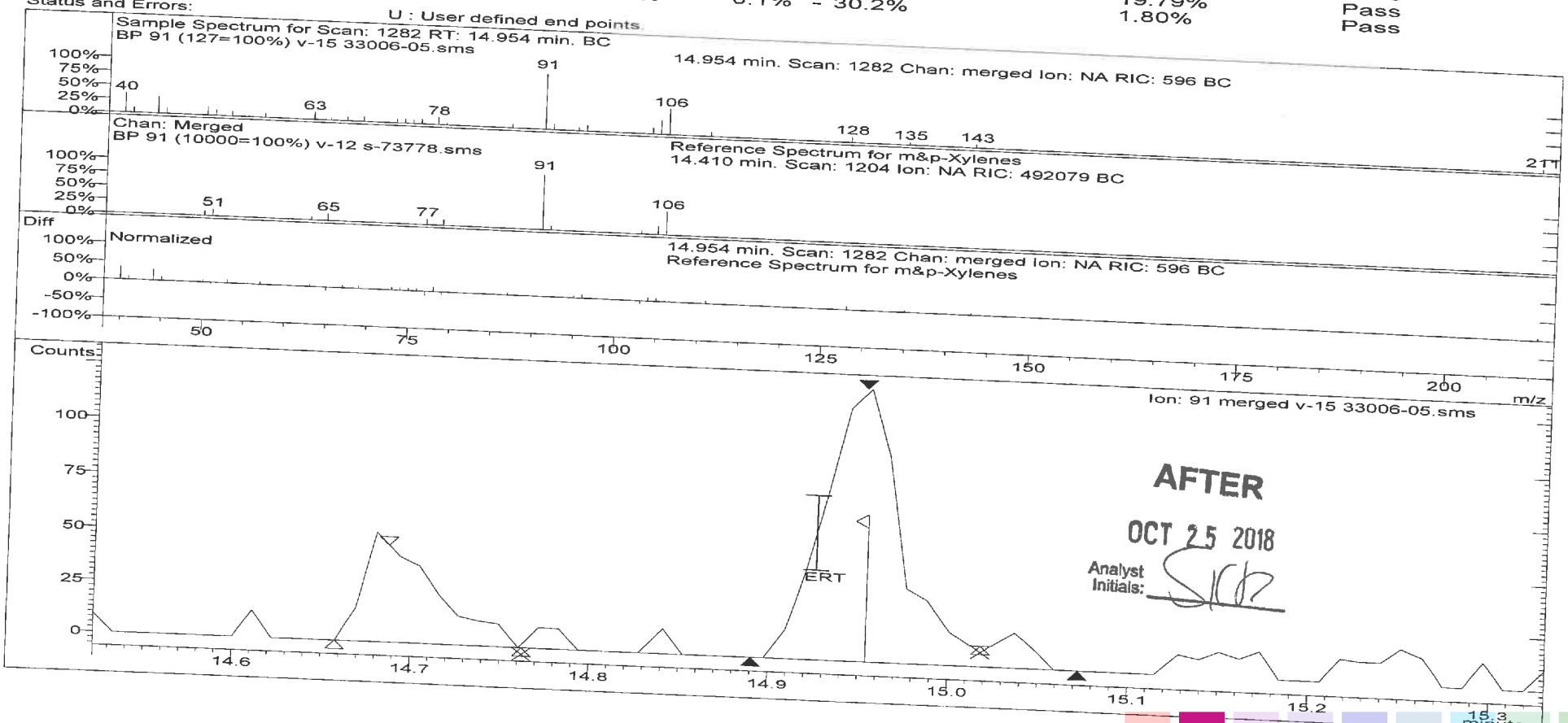
Print Date: 25 Oct 2018 14:06:15

Target Compound #37 from v-15 33006-05.sms

Sample ID:	V-15 33006-05	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 4:36 PM	Data File:	c:\... v-15 33006-05.s
Calculation Date:	10/25/2018 2:06 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List		

Parameter	Specification	Actual	Status
Compound Number		37	
Retention Time	14.926 +/- 0.400	14.952 min.	
RT Offset		Δ0.02595 min.	Pass
Peak Name		m&p-Xylenes	
CAS Number		106-42-3	
Status		U	
Quan Ions			
Area	91	412	
Height	>=30	127	Pass
Amount	>= 0.000 ug/L	0.077 ug/L	
Fit	>=500	973	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.2662x -0.0154	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 106:60.1% 40.1% - 80.1%	50.77%	Pass
	m/z 105:19.9% 0.1% - 39.9%	19.79%	Pass
	m/z 39:10.2% 0.1% - 30.2%	1.80%	Pass

Status and Errors: U : User defined end points.



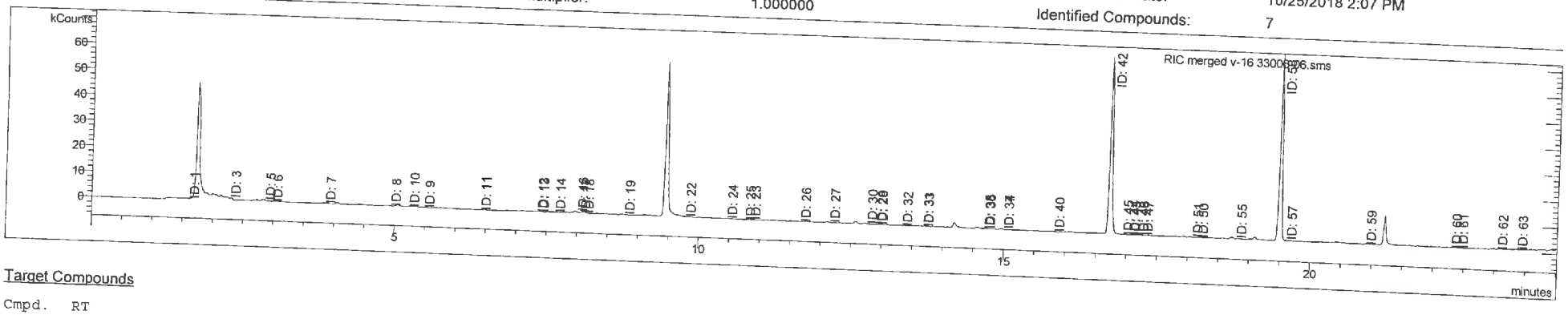
AFTER
OCT 25 2018
Analyst Initials: SCB

Print Date: 25 Oct 2018 14:07:59

524.2 VOA ANALYSES -- VARIAN #01

Sample Report for v-16 33006-06.sms

Sample ID:	V-16 33006-06	Operator:		Last Calibration:	10/8/2018 5:15 PM
Acquisition Date:	10/24/2018 5:07 PM	Calculation Date:	10/25/2018 2:07 PM	Method:	c:\... 524.2 october 08
Inj. Sample Notes:	524.2 Full List	Multiplier:	1.000000	Header Time Date:	10/25/2018 2:07 PM
Data File:	c:\... \v-16 33006-06.sms			Identified Compounds:	7



Target Compounds

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
21	9.455	(IS-1) Fluorobenzene	S	96	76070	1.000	ug/L	999
1	1.570	Dichlorodifluoromethane	M	85	0	0.000	ug/L	559
2	1.993	Chloromethane		49+51	292	0.191	ug/L	N/A
3	2.250	Vinyl chloride	M	62	0	0.000	ug/L	827
4	2.731	Bromomethane		94+96	547	0.242	ug/L	N/A
5	2.826	Chloroethane	U	45+47	282	0.108	ug/L	N/A
6	2.943	Trichlorofluoromethane	M	101	0	0.000	ug/L	937
7	3.818	1,1-Dichloroethene	M	61+96	0	0.000	ug/L	525
8	4.894	Methylene chloride		49+84	183	0.366	ug/L	920
9	5.447	methyl-tert-butyl-ether (MTBE)	M	73	0	0.000	ug/L	N/A
10	5.199	trans-1,2-Dichloroethene		61+96	34	0.155	ug/L	673
11	6.375	1,1-Dichloroethane	M	63	0	0.000	ug/L	847
12	7.306	2,2-Dichloropropane	M	77+79	0	0.000	ug/L	747
13	7.328	cis-1,2-Dichloroethene	M	62+96	0	0.000	ug/L	596
14	7.598	Bromochloromethane	M	49+51+93	0	0.000	ug/L	484
15	7.832	Chloroform (THM)		83	50	0.165	ug/L	761
16	7.964	1,1,1-Trichloroethane	M	97	0	0.000	ug/L	391
17	8.008	Carbon tetrachloride	M	117	0	0.000	ug/L	687
18	8.064	1,1-Dichloro-1-propene	M	75	0	0.000	ug/L	437
19	8.742	Benzene	M	78	0	0.000	ug/L	856
20	9.105	1,2-Dichloroethane		62+64	53	0.166	ug/L	N/A
22	9.742	Trichloroethene (TCE)	M	130+132	0	0.000	ug/L	496
23	10.808	1,2-Dichloropropane	M	63	0	0.000	ug/L	470
24	10.425	Dibromomethane	M	95	0	0.000	ug/L	615
25	10.718	Bromodichloromethane (THM)	M	83	0	0.000	ug/L	469
26	11.629	cis-1,3-Dichloro-1-propene	M	75	0	0.000	ug/L	531
27	12.110	Toluene		91	493	0.201	ug/L	987
28	12.875	trans-1,3-Dichloro-1-propene	M	75	0	0.000	ug/L	476
29	12.889	1,1,2-Trichloroethane	M	83+61	0	0.000	ug/L	420
30	12.718	Tetrachloroethene (PCE)	M	166	0	0.000	ug/L	944
31	13.633	1,3-dichloropropane	M	41+76	0	0.000	ug/L	605
32	13.294	Dibromochloromethane (THM)	M	129	0	0.000	ug/L	363
33	13.644	1,2-Dibromomethane (EDB)	M	107+109+93	0	0.000	ug/L	481
34	14.951	Ethylbenzene	M	91	0	0.000	ug/L	941

524.2 VOA ANALYSES -- VARIAN #01

Cmpd. Number	RT (min)	Peak Name	Status	Quan Ions	Area	Amount	Amount Units	Fit
35	14.632	Chlorobenzene	M	112	0	0.000	ug/L	656
36	14.655	1,1,1,2-Tetrachloroethane	M	131	0	0.000	ug/L	312
37	14.951	m&p-Xylenes	U	91	384	0.077	ug/L	980
38	15.669	o-Xylene		91	162	0.030	ug/L	769
39	15.786	Styrene		104	57	0.229	ug/L	724
40	15.778	Bromoform (THM)	M	173	0	0.000	ug/L	703
41	16.267	Isopropylbenzene		105	43	0.205	ug/L	541
42	16.725	(S-1) Bromofluorobenzene (BFB)		95+174+176	104238	0.864	ug/L	997
43	17.022	1,1,2,2-Tetrachloroethane	M	83	0	0.000	ug/L	454 86.4%
44	17.000	n-Propylbenzene	M	91	0	0.000	ug/L	724
45	16.898	Bromobenzene	M	77	0	0.000	ug/L	445
46	17.146	1,2,3-Trichloropropane	M	75+110+112	0	0.000	ug/L	569
47	17.224	2-Chlorotoluene	M	91	0	0.000	ug/L	672
48	17.157	1,3,5-Trimethylbenzene	M	77+120	0	0.000	ug/L	780
49	17.525	4-Chlorotoluene		91	33	0.228	ug/L	N/A
50	18.128	tert-Butylbenzene	M	119	0	0.000	ug/L	532
51	18.036	1,2,4-Trimethylbenzene	M	120	0	0.000	ug/L	796
52	18.029	sec-Butylbenzene		105	91	0.235	ug/L	660
53	18.505	p-Isopropyltoluene (4-Iso)		119	34	0.240	ug/L	589
54	18.737	1,3-Dichlorobenzene		111+75	57	0.210	ug/L	560
55	18.754	1,4-Dichlorobenzene	M	146	0	0.000	ug/L	548
56	19.280	n-Butylbenzene		91	76	0.287	ug/L	675
57	19.570	1,2 -Dichlorobenzene	M	146	0	0.000	ug/L	300
58	19.496	(S-2) 1,2-Dichlorobenzene-d4		152+154	27315	0.822	ug/L	446 82.2%
59	20.868	1,2-Dibromo-3-chloropropane (DBCP)	M	157+155+159	0	0.000	ug/L	273
60	22.256	1,2,4-Trichlorobenzene	M	180	0	0.000	ug/L	348
61	22.360	Hexachlorobutadiene	M	225	0	0.000	ug/L	387
62	23.002	Naphthalene	M	128	0	0.000	ug/L	670
63	23.331	1,2,3 -Trichlorobenzene	M	180	0	0.000	ug/L	446

Status and Errors:

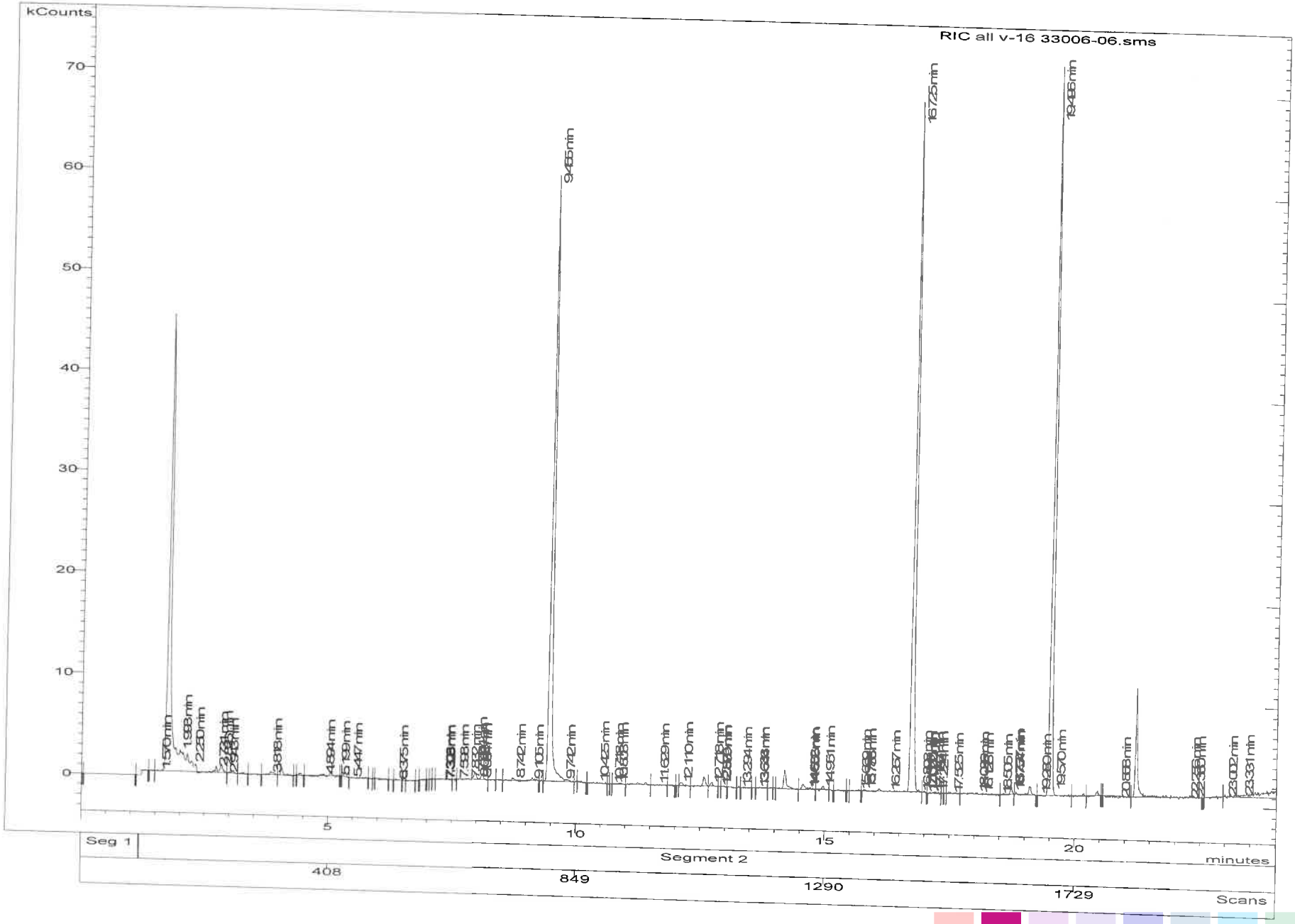
M : Missing peak.
S : Internal Standard Peak.
U : User defined end points.

Print Date: 25 Oct 2018 14:08:04

Chromatogram Plot

File: c:\saturnws\data\524.2 october 24 2018\v-16 33006-06.sms
Sample: V-16 33006-06
Scan Range: 1 - 2080 Time Range: 0.00 - 24.02 min.
Sample Notes: 524.2 Full List

Operator: SKR
Date: 10/24/2018 5:07 PM

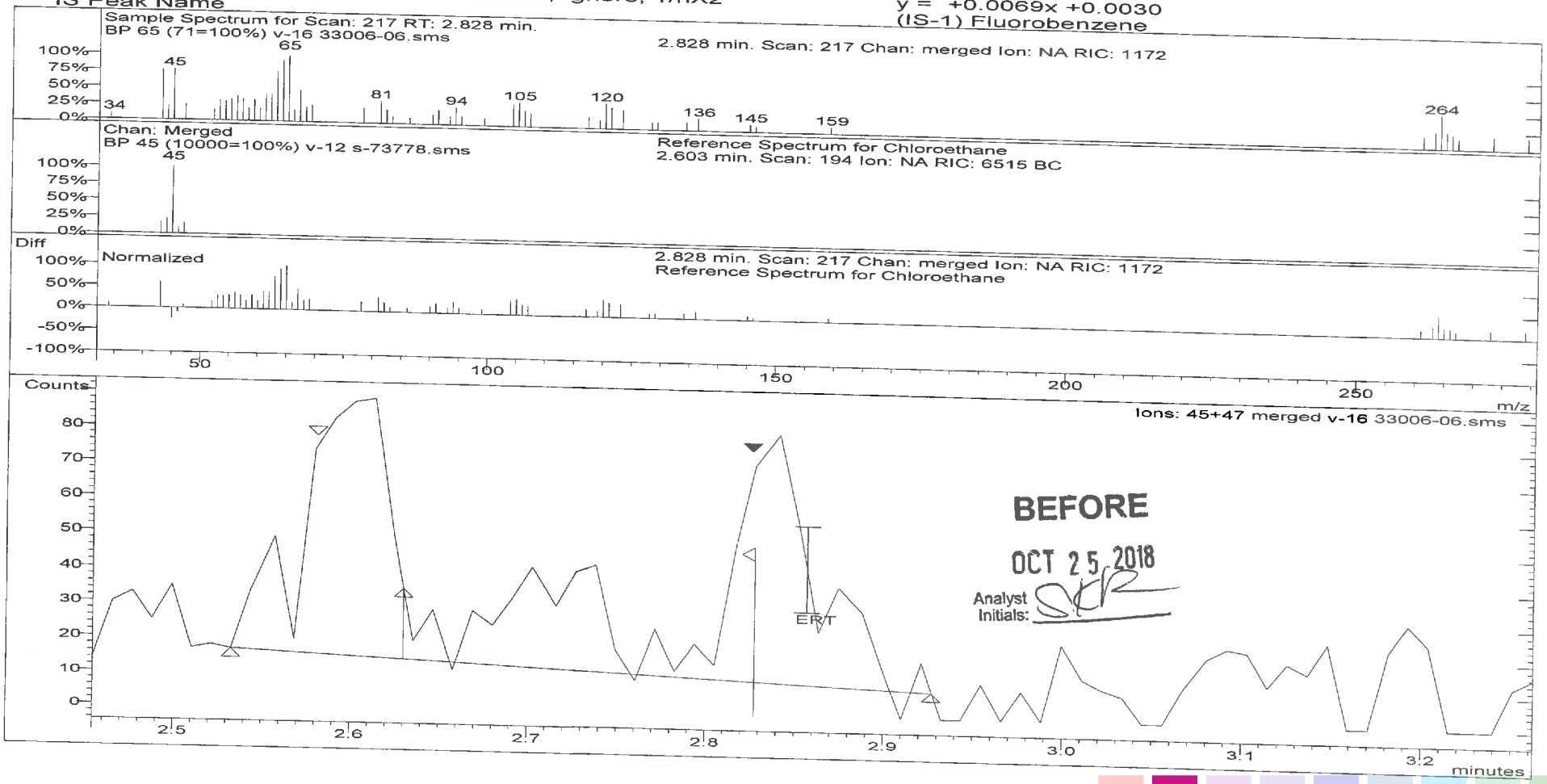


Print Date: 25 Oct 2018 14:07:05

Target Compound #6 from v-16 33006-06.sms

Sample ID:	V-16 33006-06	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 5:07 PM	Data File:	c:\... v-16 33006-06.s
Calculation Date:	10/25/2018 2:06 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List		

Parameter	Specification	Actual	Status
Compound Number		5	
Retention Time	2.857 +/- 0.400	2.826 min.	Pass
RT Offset		Δ 0.03126 min.	
Peak Name		Chloroethane	
CAS Number		None	
Status			
Quan Ions	45+47		
Area	>=10	345	
Height		66	Pass
Amount	>= 0.000 ug/L	0.229 ug/L	
Fit		N/A	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.0069x +0.0030	
IS Peak Name		(IS-1) Fluorobenzene	



BEFORE

OCT 25 2018

Analyst Initials: SCR

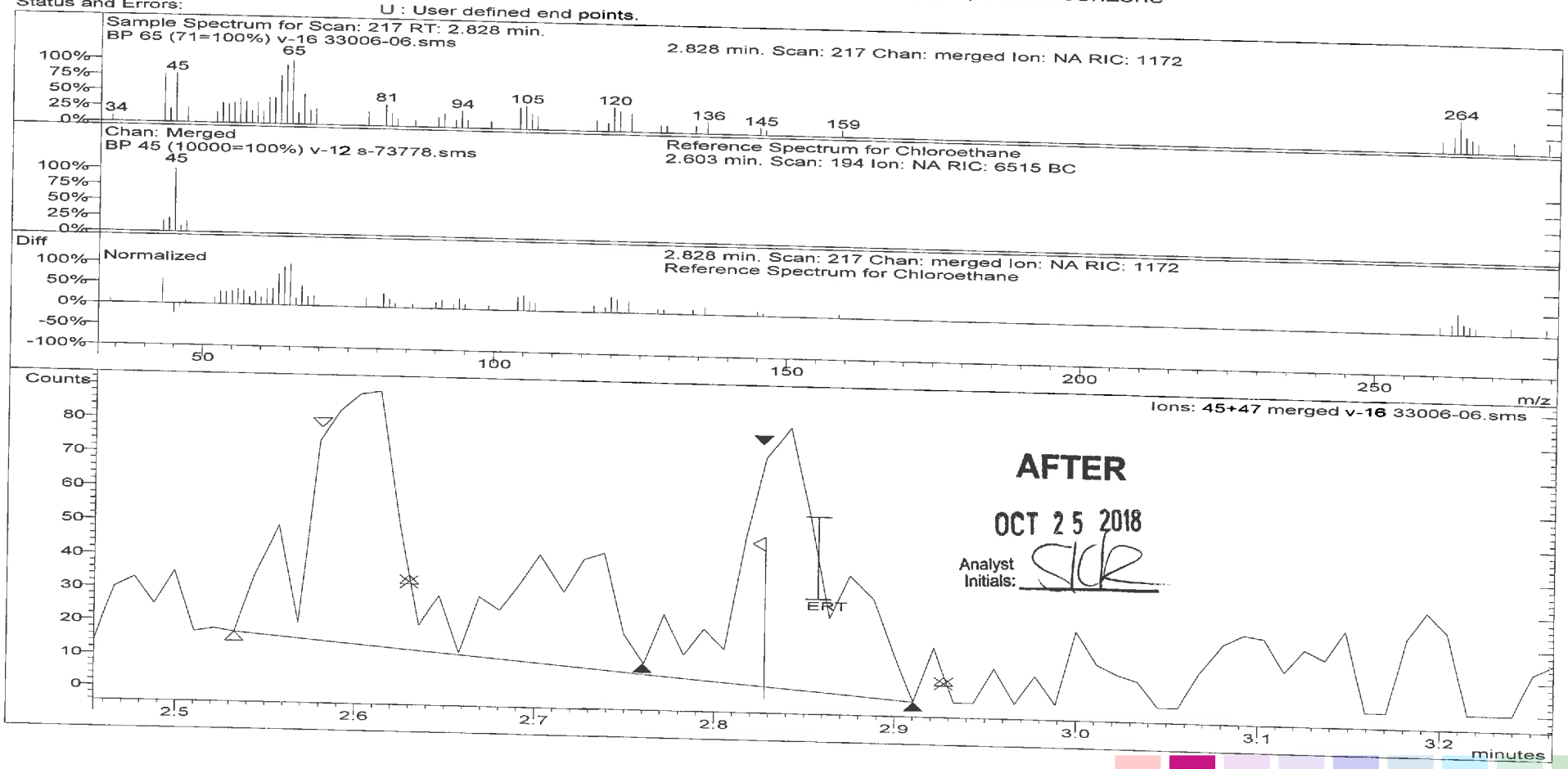
Print Date: 25 Oct 2018 14:07:16

Target Compound #6 from v-16 33006-06.sms

Sample ID:	V-16 33006-06	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 5:07 PM	Data File:	c:\... v-16 33006-06.s
Calculation Date:	10/25/2018 2:07 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List		

Parameter	Specification	Actual	Status
Compound Number		5	
Retention Time	2.857 +/- 0.400	2.826 min.	Pass
RT Offset		Δ0.03126 min.	
Peak Name		Chloroethane	
CAS Number		None	
Status		U	
Quan Ions	45+47		
Area	>=10	282	
Height		72	Pass
Amount	>= 0.000 ug/L	0.108 ug/L	
Fit		N/A	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.0069x +0.0030	
IS Peak Name		(IS-1) Fluorobenzene	

Status and Errors: U : User defined end points.



AFTER

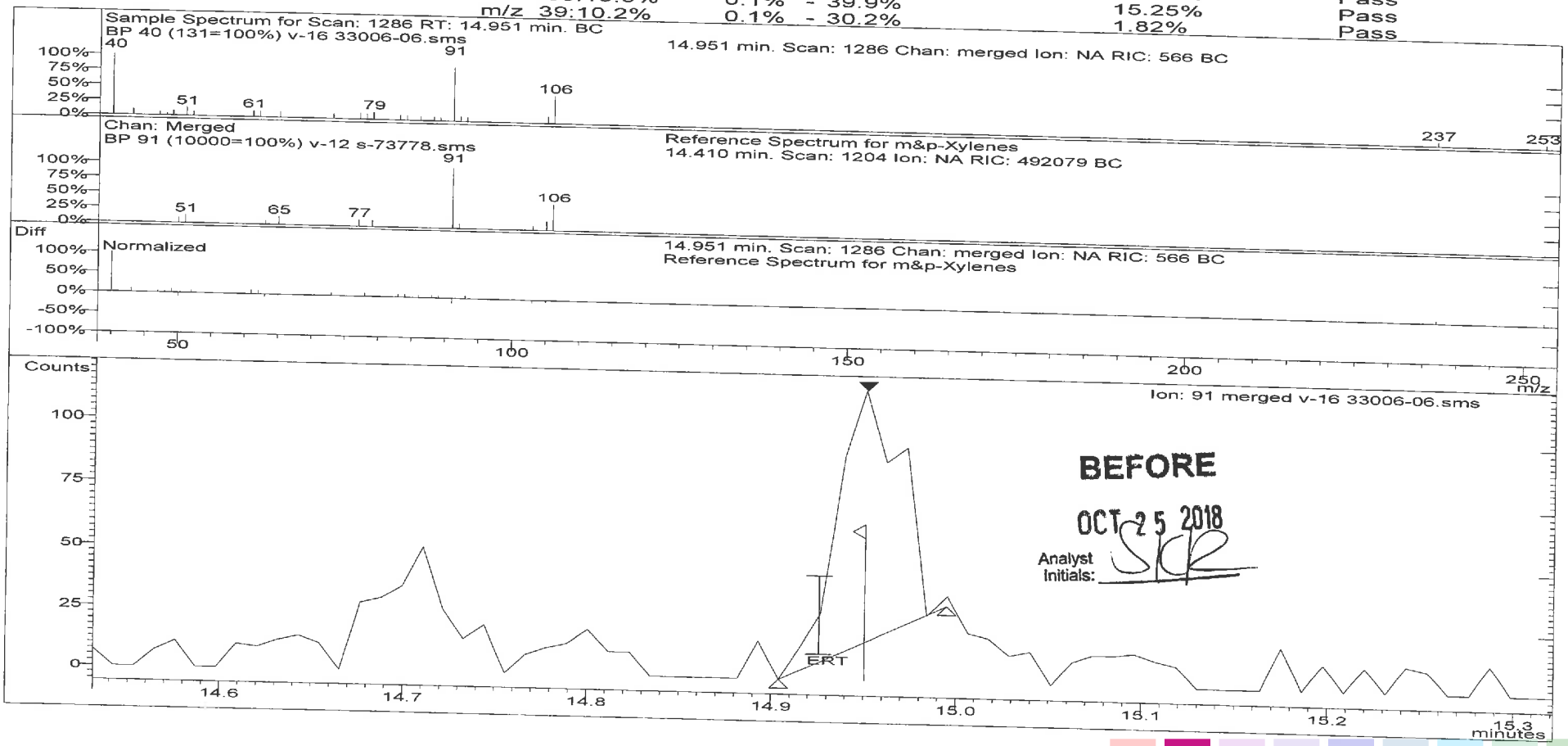
OCT 25 2018

Analyst Initials: SCR

Target Compound #37 from v-16 33006-06.sms

Sample ID:	V-16 33006-06	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 5:07 PM	Data File:	c:\... v-16 33006-06.s
Calculation Date:	10/25/2018 2:07 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List		

Parameter	Specification		Actual		Status
Compound Number			37		
Retention Time	14.926 +/- 0.400		14.951 min.		Pass
RT Offset			Δ 0.02506 min.		
Peak Name			m&p-Xylenes		
CAS Number			106-42-3		
Status					
Quan Ions	91		239		Pass
Area	>=30		100		
Height			0.070 ug/L		
Amount	>= 0.000 ug/L		980		Pass
Fit	>=500		y = +0.2662x -0.0154		Pass
Calibration Equation	Linear, Ignore, 1/nX2		(IS-1) Fluorobenzene		
IS Peak Name				75.71%	Pass
Qual. Ion Ratio (3 ions)	m/z 106:60.1%	40.1% - 80.1%		15.25%	Pass
	m/z 105:19.9%	0.1% - 39.9%		1.82%	Pass
	m/z 39:10.2%	0.1% - 30.2%			



BEFORE

OCT 25 2018

Analyst Initials: SCR

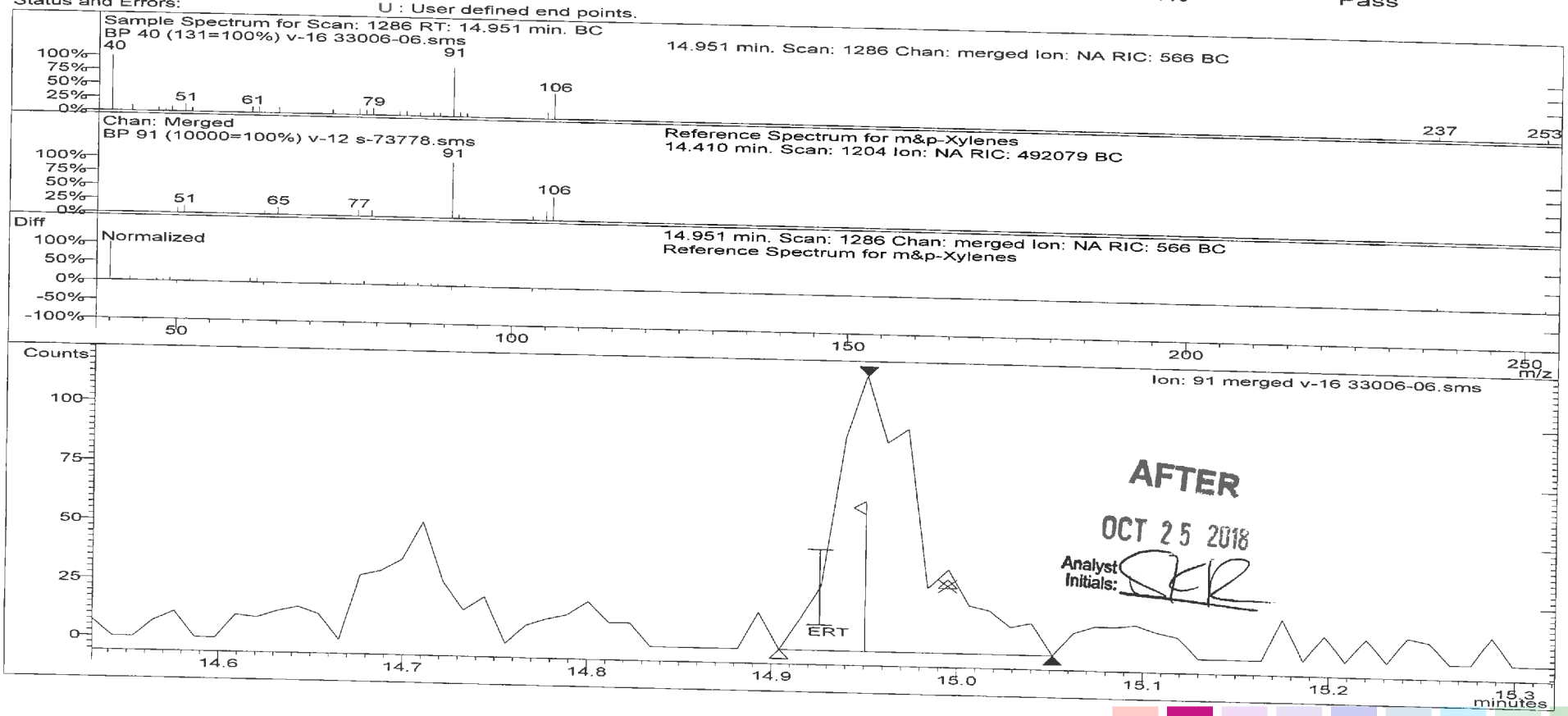
Print Date: 25 Oct 2018 14:07:43

Target Compound #37 from v-16 33006-06.sms

Sample ID:	V-16 33006-06	Operator:	
Instrument ID:		Last Calibration:	10/8/2018 5:15 PM
Measurement Type:	Area	Calibration Type:	Internal Standard
Acquisition Date:	10/24/2018 5:07 PM	Data File:	c:\... v-16 33006-06.s
Calculation Date:	10/25/2018 2:07 PM	Method:	c:\... 524.2 october 0
Sample Type:	Analysis		
Inj. Sample Notes:	524.2 Full List		

Parameter	Specification	Actual	Status
Compound Number		37	
Retention Time	14.926 +/- 0.400	14.951 min.	Pass
RT Offset		Δ0.02506 min.	
Peak Name		m&p-Xylenes	
CAS Number		106-42-3	
Status		U	
Quan Ions	91		
Area	>=30	384	
Height		117	Pass
Amount	>= 0.000 ug/L	0.077 ug/L	
Fit	>=500	980	Pass
Calibration Equation	Linear, Ignore, 1/nX2	y = +0.2662x -0.0154	Pass
IS Peak Name		(IS-1) Fluorobenzene	
Qual. Ion Ratio (3 ions)	m/z 106:60.1% 40.1% - 80.1%	47.24%	Pass
	m/z 105:19.9% 0.1% - 39.9%	9.51%	Pass
	m/z 39:10.2% 0.1% - 30.2%	1.14%	Pass

Status and Errors: U : User defined end points.



AFTER
OCT 25 2018
Analyst Initials:

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

111

Chain of Custody Record

[redacted]

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: McFadden, John	Carrier Tracking No(s):	COC No: 240-94427.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: john.mcfadden@testamericainc.com	State of Origin: Ohio	Page: Page 1 of 1
Company: Alloway Environmental Testing Services		Accreditations Required (See note):		Job #: 240-102995-1
Address: 1101 North Cole Street, ,	Due Date Requested: 10/31/2018			
City: Lima	TAT Requested (days):			
State, Zip: OH, 45805				
Phone:	PO #:			
Email:	WO #:			
Project Name: Mahle - Vandalia	Project #: 24019071			
Site:	SSOW#:			

Analysis Requested

Project: M18-33006

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
Dodecahydrate
one
A
I-5
(specify)

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (524.2 Rev. 4.1 Volatiles List)/ 524.2 Rev. 4.1 Volatiles List (CERTA)		Total N	Special Instructions/Note:
			Preservation Code:							
440-IN1-101718-1010 (240-102995-1)	10/17/18	10:10 Eastern		Water			X	1	3	01
440-IN1DUP-101718-1015 (240-102995-2)	10/17/18	10:25 Eastern		Water			X	AG	3	02
440-IN2-101718-1035 (240-102995-3)	10/17/18	10:35 Eastern		Water			X	10-19-18	3	03
440-OUT-101718-1045 (240-102995-4)	10/17/18	10:45 Eastern		Water			X		3	04
440-CWL-101718-1100 (240-102995-5)	10/17/18	11:00 Eastern		Water			X		3	05
TB-1-10-17-18 (240-102995-6)	10/17/18	Eastern		Water			X		1	06

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*			***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*		
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2		Special Instructions/QC Requirements:		
Empty Kit Relinquished by:	Date:	Time:		Method of Shipment:	
Relinquished by: R Robinson	Date/Time: 10/18/18 1718	Company TA; 240	Received by:	Date/Time: 10-19-18 1070	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 2.4°C		

0.2|C1.1

TestAmerica Canton
4101 Shuffel Street, N. W.

North Canton, OH 44720
phone 330.497.9396 fax 330.497.0772

24019071

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Chris Powers	Site Contact: Dennis Hudgel	Date: 10-17-18	COC No:
Chris Powers	Tel/Fax: 810-358-9920	Lab Contact:	Carrier:	1 of 1 COCs
250 Northwoods Blvd	Analysis Turnaround Time			Job No.
Vandalia, Ohio	Calendar (C) or Work Days (W)			
810-358-9920	TAT if different from Below NORMAL X ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day			SDG No.
Project Name: CERTA Site: Couch residence				Sampler: Dennis Hudgel

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Filtered Sample	EPA method 524.2 (Alloway)	Total number of containers	Sample Specific Notes:
440-IN1-101718- 1020	10/17/2018	1020	Grab	Water	No	X	3	
440-IN1DUP-101718- 1025	10/17/2018	1025	Grab	Water	No	X	3	
440-IN2-10-17-18- 1035	10/17/2018	1035	Grab	Water	No	X	3	
440-OUT-10-17-18- 1045	10/17/2018	1045	Grab	Water	No	X	3	
440-CWL-10-17-18- 1100	10/17/2018	1100	Grab	Water	No	X	3	
TB-1-10-17-18	10/17/2018	—	Grab	Water	No	X	1	
							16 total	

240-102995 Chain of Custody

210 Dayton

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☒ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments: REGULAR TURN AROUND TIME

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	CERTA	10/17/18 1150	ME Miley	TA	10-17-18 1150
ME Miley	TA	10-17-18	1600 / PAP	TAC	10-18-18 800

Form No. CA-C-WI-002, Rev. 3, dated 04/4/2012

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 102995
Canton Facility

Client CHRIS POWERS Site Name —
Cooler Received on 10-18-18 Opened on 10-18-18
Cooler unpacked by: PAP
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap Foam Plastic Bag None Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.9 °C) Observed Cooler Temp. 0.2 °C Corrected Cooler Temp. 1.1 °C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC849161**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Ø Yes No
16. Was a LL Hg or Me Hg trip blank present? ____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

18. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____.

WI-NC-099

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-103614-1
Client Project/Site: Mahle - Vandalia

For:
Institute of Ecolonomics (IOE)
901 S.County Road 31
Berthoud, Colorado 80513

Attn: Chris Powers

Authorized for release by:
11/8/2018 1:26:33 PM

John McFadden, Project Manager I
(330)497-9396
john.mcfadden@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

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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 ID: 240-103614-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Institute of Ecolonomics (IOE)

Project: Mahle - Vandalia

Report Number: 240-103614-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 10/27/2018 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.9º C.

The laboratory received only one vial per sample. Per client request the laboratory will pH, screen and analyze the samples from the single vial submitted for each sample.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples OBIN-102618 (240-103614-1), BRIN-102618 (240-103614-2), SSIN-102618 (240-103614-3), PREAS-102618 (240-103614-4), EFF-102618 (240-103614-5) and TRP-102618 (240-103614-6) were analyzed for volatile organic compounds (GCMS) in accordance with EPA Method 624. The samples were analyzed on 11/04/2018.

Samples OBIN-102618 (240-103614-1)[400X], BRIN-102618 (240-103614-2)[50X], SSIN-102618 (240-103614-3)[400X] and PREAS-102618 (240-103614-4)[100X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CAN

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-103614-1	OBIN-102618	Water	10/26/18 12:39	10/27/18 08:00
240-103614-2	BRIN-102618	Water	10/26/18 13:42	10/27/18 08:00
240-103614-3	SSIN-102618	Water	10/26/18 13:49	10/27/18 08:00
240-103614-4	PREAS-102618	Water	10/26/18 13:22	10/27/18 08:00
240-103614-5	EFF-102618	Water	10/26/18 13:30	10/27/18 08:00
240-103614-6	TRP-102618	Water	10/26/18 13:50	10/27/18 08:00

Detection Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

Client Sample ID: OBIN-102618 — Lab Sample ID: 240-103614-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	9970		400		ug/L	400		624	Total/NA
cis-1,2-Dichloroethene	1350		400		ug/L	400		624	Total/NA

Client Sample ID: BRIN-102618 — Lab Sample ID: 240-103614-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	2500		50.0		ug/L	50		624	Total/NA
cis-1,2-Dichloroethene	976		50.0		ug/L	50		624	Total/NA

Client Sample ID: SSIN-102618 — Lab Sample ID: 240-103614-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	12000		400		ug/L	400		624	Total/NA
cis-1,2-Dichloroethene	2990		400		ug/L	400		624	Total/NA

Client Sample ID: PREAS-102618 — Lab Sample ID: 240-103614-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	3760		100		ug/L	100		624	Total/NA
cis-1,2-Dichloroethene	1210		100		ug/L	100		624	Total/NA

Client Sample ID: EFF-102618 — Lab Sample ID: 240-103614-5

No Detections.

Client Sample ID: TRP-102618 — Lab Sample ID: 240-103614-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

Client Sample ID: OBIN-102618

Date Collected: 10/26/18 12:39
Date Received: 10/27/18 08:00

Lab Sample ID: 240-103614-1

Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<400		400		ug/L			11/04/18 11:25	400
1,1,1-Trichloroethane	<400		400		ug/L			11/04/18 11:25	400
Trichloroethene	**9970**		400		ug/L			11/04/18 11:25	400
cis-1,2-Dichloroethene	**1350**		400		ug/L			11/04/18 11:25	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*69 - 120*		*11/04/18 11:25*	*400*
1,2-Dichloroethane-d4 (Surr)	*95*		*61 - 138*		*11/04/18 11:25*	*400*
Toluene-d8 (Surr)	*91*		*73 - 120*		*11/04/18 11:25*	*400*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

Client Sample ID: BRIN-102618

Date Collected: 10/26/18 13:42
Date Received: 10/27/18 08:00

Lab Sample ID: 240-103614-2

Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<50.0		50.0		ug/L			11/04/18 11:49	50
1,1,1-Trichloroethane	<50.0		50.0		ug/L			11/04/18 11:49	50
Trichloroethene	**2500**		50.0		ug/L			11/04/18 11:49	50
cis-1,2-Dichloroethene	**976**		50.0		ug/L			11/04/18 11:49	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*69 - 120*		*11/04/18 11:49*	*50*
1,2-Dichloroethane-d4 (Surr)	*95*		*61 - 138*		*11/04/18 11:49*	*50*
Toluene-d8 (Surr)	*93*		*73 - 120*		*11/04/18 11:49*	*50*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

Client Sample ID: SSIN-102618

Date Collected: 10/26/18 13:49
Date Received: 10/27/18 08:00

Lab Sample ID: 240-103614-3

Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<400		400		ug/L			11/04/18 12:13	400
1,1,1-Trichloroethane	<400		400		ug/L			11/04/18 12:13	400
Trichloroethene	**12000**		400		ug/L			11/04/18 12:13	400
cis-1,2-Dichloroethene	**2990**		400		ug/L			11/04/18 12:13	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*69 - 120*		*11/04/18 12:13*	*400*
1,2-Dichloroethane-d4 (Surr)	*102*		*61 - 138*		*11/04/18 12:13*	*400*
Toluene-d8 (Surr)	*95*		*73 - 120*		*11/04/18 12:13*	*400*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

Client Sample ID: PREAS-102618

Lab Sample ID: 240-103614-4

Date Collected: 10/26/18 13:22

Matrix: Water

Date Received: 10/27/18 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<100		100		ug/L			11/04/18 12:37	100
1,1,1-Trichloroethane	<100		100		ug/L			11/04/18 12:37	100
Trichloroethene	**3760**		100		ug/L			11/04/18 12:37	100
cis-1,2-Dichloroethene	**1210**		100		ug/L			11/04/18 12:37	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*69 - 120*		*11/04/18 12:37*	*100*
1,2-Dichloroethane-d4 (Surr)	*96*		*61 - 138*		*11/04/18 12:37*	*100*
Toluene-d8 (Surr)	*92*		*73 - 120*		*11/04/18 12:37*	*100*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

Client Sample ID: EFF-102618

Lab Sample ID: 240-103614-5

Date Collected: 10/26/18 13:30

Matrix: Water

Date Received: 10/27/18 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<1.00		1.00		ug/L			11/04/18 13:01	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/04/18 13:01	1
Trichloroethene	<1.00		1.00		ug/L			11/04/18 13:01	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/04/18 13:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*69 - 120*		*11/04/18 13:01*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*61 - 138*		*11/04/18 13:01*	*1*
Toluene-d8 (Surr)	*96*		*73 - 120*		*11/04/18 13:01*	*1*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

Client Sample ID: TRP-102618

Lab Sample ID: 240-103614-6

Date Collected: 10/26/18 13:50
Matrix: Water
Date Received: 10/27/18 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<1.00		1.00		ug/L			11/04/18 13:25	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/04/18 13:25	1
Trichloroethene	<1.00		1.00		ug/L			11/04/18 13:25	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/04/18 13:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*69 - 120*		*11/04/18 13:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*61 - 138*		*11/04/18 13:25*	*1*
Toluene-d8 (Surr)	*91*		*73 - 120*		*11/04/18 13:25*	*1*

Surrogate Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DCA	TOL
Lab Sample ID	Client Sample ID	(69-120)	(61-138)	(73-120)
240-103614-1	OBIN-102618	86	95	91
240-103614-2	BRIN-102618	88	95	93
240-103614-3	SSIN-102618	90	102	95
240-103614-4	PREAS-102618	85	96	92
240-103614-5	EFF-102618	87	98	96
240-103614-6	TRP-102618	86	96	91
LCS 240-353527/6	Lab Control Sample	87	95	90
MB 240-353527/8	Method Blank	86	95	92

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-353527/8
Matrix: Water
Analysis Batch: 353527

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<1.00		1.00		ug/L			11/04/18 11:01	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/04/18 11:01	1
Trichloroethene	<1.00		1.00		ug/L			11/04/18 11:01	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/04/18 11:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*69 - 120*		*11/04/18 11:01*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*61 - 138*		*11/04/18 11:01*	*1*
Toluene-d8 (Surr)	*92*		*73 - 120*		*11/04/18 11:01*	*1*

Lab Sample ID: LCS 240-353527/6
Matrix: Water
Analysis Batch: 353527

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	20.0	22.29		ug/L		111	59 - 155
1,1,1-Trichloroethane	20.0	21.63		ug/L		108	52 - 162
Trichloroethene	20.0	20.83		ug/L		104	71 - 157

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*87*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*95*		*61 - 138*
Toluene-d8 (Surr)	*90*		*73 - 120*

QC Association Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

GC/MS VOA

Analysis Batch: 353527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-103614-1	OBIN-102618	Total/NA	Water	624	
240-103614-2	BRIN-102618	Total/NA	Water	624	
240-103614-3	SSIN-102618	Total/NA	Water	624	
240-103614-4	PREAS-102618	Total/NA	Water	624	
240-103614-5	EFF-102618	Total/NA	Water	624	
240-103614-6	TRP-102618	Total/NA	Water	624	
MB 240-353527/8	Method Blank	Total/NA	Water	624	
LCS 240-353527/6	Lab Control Sample	Total/NA	Water	624	

Lab Chronicle

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

Client Sample ID: OBIN-102618 — Lab Sample ID: 240-103614-1

Date Collected: 10/26/18 12:39 — **Matrix: Water**
Date Received: 10/27/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		400	353527	11/04/18 11:25	HMB	TAL CAN

Client Sample ID: BRIN-102618 — Lab Sample ID: 240-103614-2

Date Collected: 10/26/18 13:42 — **Matrix: Water**
Date Received: 10/27/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		50	353527	11/04/18 11:49	HMB	TAL CAN

Client Sample ID: SSIN-102618 — Lab Sample ID: 240-103614-3

Date Collected: 10/26/18 13:49 — **Matrix: Water**
Date Received: 10/27/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		400	353527	11/04/18 12:13	HMB	TAL CAN

Client Sample ID: PREAS-102618 — Lab Sample ID: 240-103614-4

Date Collected: 10/26/18 13:22 — **Matrix: Water**
Date Received: 10/27/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		100	353527	11/04/18 12:37	HMB	TAL CAN

Client Sample ID: EFF-102618 — Lab Sample ID: 240-103614-5

Date Collected: 10/26/18 13:30 — **Matrix: Water**
Date Received: 10/27/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	353527	11/04/18 13:01	HMB	TAL CAN

Client Sample ID: TRP-102618 — Lab Sample ID: 240-103614-6

Date Collected: 10/26/18 13:50 — **Matrix: Water**
Date Received: 10/27/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	353527	11/04/18 13:25	HMB	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-103614-1

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-17-9	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone (330) 497-9396 Fax (330) 497-0772

2.0/C2.9

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Chris Powers	Lab PM: McFadden, John	Carrier Tracking No(s):	COC No: 240-47397-20674.1
Client Contact: ~~Tim Schnieber~~ Chris Powers	Phone: 810 358 9920	E-Mail: john.mcfadden@testamericainc.com		Page: Page 1 of 1
Company: ~~Tetra Tech Inc.~~ IOE Institute of Ecolonomics (IOE)				Job #:
Address: ~~250 West Court Street Suite 200W~~ 901 SC RR 31	Due Date Requested:			
City: ~~Cincinnati~~ Berthoud	TAT Requested (days): All Test Standard			
State, Zip: ~~OH, 45202~~ CO, 80513				
Phone: ~~513-333-3081(Tel)~~	PO #: ~~1145018~~			
Email: ~~tim.schnieber@tetratech.com~~ Chris@wildgrowthag	WO #:			
Project Name: Mahle - Vandalia B 970 532 2103	Project #: ~~24019074~~			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	624_5ml - (MOD) Custom Sublist	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A		
OBIN - 102618	10/26/18	12:39	G	Water	N	N	X		
BRIN - 102618		1:42			N	N	X		
SSIN - 102618		1:49			N	N	X		
PREAS - 102618		1:22			N	N	X		
EFF - 102618		1:30			N	N	X		
~~TRIP Blank~~					~~N~~	~~N~~			
TRP - 102618		1:50			N	N	X		

240-103614 Chain of Custody

210 Dayton

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Chris Power	10/26/18 15:28	IOE	ME Miley	10-26-18 1528	TA
ME Miley	10-26-18 1600	TA	PBP	10-27-18 800	TAC

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Ver: 08/04/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 1036614
Canton Facility

Client IDE Site Name —
Cooler Received on 10-27-18 Opened on 10-27-18
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Cooler unpacked by: RP

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap Foam Plastic Bag None Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.9 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 2.9 °C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC849161**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Ø Yes No
16. Was a LL Hg or Me Hg trip blank present? ____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: JR

18. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____.

WI-NC-099

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-104354-1
Client Project/Site: Mahle - Vandalia

For:
Institute of Ecolonomics (IOE)
901 S.County Road 31
Berthoud, Colorado 80513

Attn: Chris Powers

Authorized for release by:
11/28/2018 1:42:46 PM

John McFadden, Project Manager I
(330)497-9396
john.mcfadden@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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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 ID: 240-104354-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Institute of Ecolonomics (IOE)

Project: Mahle - Vandalia

Report Number: 240-104354-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT
The samples were received on 11/14/2018 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)
Samples BRIN-111318 (240-104354-1), SSIN-111318 (240-104354-2), OBIN-111318 (240-104354-3), PREAS-111318 (240-104354-4) and EFF-111318 (240-104354-5) were analyzed for volatile organic compounds (GCMS) in accordance with EPA Method 624. The samples were analyzed on 11/17/2018.

Samples BRIN-111318 (240-104354-1)[50X], SSIN-111318 (240-104354-2)[400X], OBIN-111318 (240-104354-3)[400X] and PREAS-111318 (240-104354-4)[100X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-104354-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CAN

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-104354-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-104354-1	BRIN-111318	Water	11/13/18 12:54	11/14/18 08:00
240-104354-2	SSIN-111318	Water	11/13/18 12:57	11/14/18 08:00
240-104354-3	OBIN-111318	Water	11/13/18 12:50	11/14/18 08:00
240-104354-4	PREAS-111318	Water	11/13/18 12:30	11/14/18 08:00
240-104354-5	EFF-111318	Water	11/13/18 12:43	11/14/18 08:00

Detection Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-104354-1

Client Sample ID: BRIN-111318 — Lab Sample ID: 240-104354-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	2460		50.0		ug/L	50		624	Total/NA
cis-1,2-Dichloroethene	935		50.0		ug/L	50		624	Total/NA

Client Sample ID: SSIN-111318 — Lab Sample ID: 240-104354-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	11600		400		ug/L	400		624	Total/NA
cis-1,2-Dichloroethene	3020		400		ug/L	400		624	Total/NA

Client Sample ID: OBIN-111318 — Lab Sample ID: 240-104354-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	10300		400		ug/L	400		624	Total/NA
cis-1,2-Dichloroethene	1170		400		ug/L	400		624	Total/NA

Client Sample ID: PREAS-111318 — Lab Sample ID: 240-104354-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	4960		100		ug/L	100		624	Total/NA
cis-1,2-Dichloroethene	1260		100		ug/L	100		624	Total/NA

Client Sample ID: EFF-111318 — Lab Sample ID: 240-104354-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-104354-1

Client Sample ID: BRIN-111318

Date Collected: 11/13/18 12:54
Date Received: 11/14/18 08:00

Lab Sample ID: 240-104354-1

Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<50.0		50.0		ug/L			11/17/18 04:05	50
1,1,1-Trichloroethane	<50.0		50.0		ug/L			11/17/18 04:05	50
Trichloroethene	**2460**		50.0		ug/L			11/17/18 04:05	50
cis-1,2-Dichloroethene	**935**		50.0		ug/L			11/17/18 04:05	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*69 - 120*		*11/17/18 04:05*	*50*
1,2-Dichloroethane-d4 (Surr)	*102*		*61 - 138*		*11/17/18 04:05*	*50*
Toluene-d8 (Surr)	*90*		*73 - 120*		*11/17/18 04:05*	*50*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-104354-1

Client Sample ID: SSIN-111318

Date Collected: 11/13/18 12:57
Date Received: 11/14/18 08:00

Lab Sample ID: 240-104354-2

Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<400		400		ug/L			11/17/18 04:46	400
1,1,1-Trichloroethane	<400		400		ug/L			11/17/18 04:46	400
Trichloroethene	**11600**		400		ug/L			11/17/18 04:46	400
cis-1,2-Dichloroethene	**3020**		400		ug/L			11/17/18 04:46	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*76*		*69 - 120*		*11/17/18 04:46*	*400*
1,2-Dichloroethane-d4 (Surr)	*102*		*61 - 138*		*11/17/18 04:46*	*400*
Toluene-d8 (Surr)	*86*		*73 - 120*		*11/17/18 04:46*	*400*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-104354-1

Client Sample ID: OBIN-111318

Date Collected: 11/13/18 12:50
Date Received: 11/14/18 08:00

Lab Sample ID: 240-104354-3

Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<400		400		ug/L			11/17/18 05:10	400
1,1,1-Trichloroethane	<400		400		ug/L			11/17/18 05:10	400
Trichloroethene	**10300**		400		ug/L			11/17/18 05:10	400
cis-1,2-Dichloroethene	**1170**		400		ug/L			11/17/18 05:10	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*69 - 120*		*11/17/18 05:10*	*400*
1,2-Dichloroethane-d4 (Surr)	*102*		*61 - 138*		*11/17/18 05:10*	*400*
Toluene-d8 (Surr)	*86*		*73 - 120*		*11/17/18 05:10*	*400*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-104354-1

Client Sample ID: PREAS-111318

Lab Sample ID: 240-104354-4

Date Collected: 11/13/18 12:30
Matrix: Water
Date Received: 11/14/18 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<100		100		ug/L			11/17/18 05:34	100
1,1,1-Trichloroethane	<100		100		ug/L			11/17/18 05:34	100
Trichloroethene	**4960**		100		ug/L			11/17/18 05:34	100
cis-1,2-Dichloroethene	**1260**		100		ug/L			11/17/18 05:34	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*69 - 120*		*11/17/18 05:34*	*100*
1,2-Dichloroethane-d4 (Surr)	*100*		*61 - 138*		*11/17/18 05:34*	*100*
Toluene-d8 (Surr)	*87*		*73 - 120*		*11/17/18 05:34*	*100*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-104354-1

Client Sample ID: EFF-111318

Lab Sample ID: 240-104354-5

Date Collected: 11/13/18 12:43
Date Received: 11/14/18 08:00

Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<1.00		1.00		ug/L			11/17/18 05:58	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/17/18 05:58	1
Trichloroethene	<1.00		1.00		ug/L			11/17/18 05:58	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/17/18 05:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*75*		*69 - 120*		*11/17/18 05:58*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*61 - 138*		*11/17/18 05:58*	*1*
Toluene-d8 (Surr)	*89*		*73 - 120*		*11/17/18 05:58*	*1*

Surrogate Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-104354-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DCA	TOL
Lab Sample ID	**Client Sample ID**	**(69-120)**	**(61-138)**	**(73-120)**
240-104354-1	BRIN-111318	81	102	90
240-104354-2	SSIN-111318	76	102	86
240-104354-3	OBIN-111318	79	102	86
240-104354-4	PREAS-111318	84	100	87
240-104354-5	EFF-111318	75	98	89
LCS 240-355774/36	Lab Control Sample	83	104	89
MB 240-355774/35	Method Blank	77	103	89

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-104354-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-355774/35
Matrix: Water
Analysis Batch: 355774

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<1.00		1.00		ug/L			11/17/18 01:18	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/17/18 01:18	1
Trichloroethene	<1.00		1.00		ug/L			11/17/18 01:18	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/17/18 01:18	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*77*		*69 - 120*		*11/17/18 01:18*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*61 - 138*		*11/17/18 01:18*	*1*
Toluene-d8 (Surr)	*89*		*73 - 120*		*11/17/18 01:18*	*1*

Lab Sample ID: LCS 240-355774/36
Matrix: Water
Analysis Batch: 355774

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	20.0	21.51		ug/L		108	59 - 155
1,1,1-Trichloroethane	20.0	21.07		ug/L		105	52 - 162
Trichloroethene	20.0	21.00		ug/L		105	71 - 157

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*83*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*104*		*61 - 138*
Toluene-d8 (Surr)	*89*		*73 - 120*

QC Association Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-104354-1

GC/MS VOA

Analysis Batch: 355774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-104354-1	BRIN-111318	Total/NA	Water	624	
240-104354-2	SSIN-111318	Total/NA	Water	624	
240-104354-3	OBIN-111318	Total/NA	Water	624	
240-104354-4	PREAS-111318	Total/NA	Water	624	
240-104354-5	EFF-111318	Total/NA	Water	624	
MB 240-355774/35	Method Blank	Total/NA	Water	624	
LCS 240-355774/36	Lab Control Sample	Total/NA	Water	624	

Lab Chronicle

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-104354-1

Client Sample ID: BRIN-111318 — Lab Sample ID: 240-104354-1

Date Collected: 11/13/18 12:54 — **Matrix: Water**
Date Received: 11/14/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		50	355774	11/17/18 04:05	HMB	TAL CAN

Client Sample ID: SSIN-111318 — Lab Sample ID: 240-104354-2

Date Collected: 11/13/18 12:57 — **Matrix: Water**
Date Received: 11/14/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		400	355774	11/17/18 04:46	HMB	TAL CAN

Client Sample ID: OBIN-111318 — Lab Sample ID: 240-104354-3

Date Collected: 11/13/18 12:50 — **Matrix: Water**
Date Received: 11/14/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		400	355774	11/17/18 05:10	HMB	TAL CAN

Client Sample ID: PREAS-111318 — Lab Sample ID: 240-104354-4

Date Collected: 11/13/18 12:30 — **Matrix: Water**
Date Received: 11/14/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		100	355774	11/17/18 05:34	HMB	TAL CAN

Client Sample ID: EFF-111318 — Lab Sample ID: 240-104354-5

Date Collected: 11/13/18 12:43 — **Matrix: Water**
Date Received: 11/14/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	355774	11/17/18 05:58	HMB	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-104354-1

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

2.6 / C3.5

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

24019071

TestAmerica Laboratory location:
Regulatory program: ☐ DW ☑ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact

Company Name:	Client Project Manager:	Site Contact:	Lab Contact:	COC No:
Institute of Ecodynamics IOE	Chris Powers	Dennis Hudgel	John McFadden	
Address: 901 S CO 31 RD	Telephone: 810 358 9920	Telephone: 937 242 0518	Telephone:	____ of ____ COCs
City/State/Zip: Berthoud / CO /	Email: chris@wildgrowth.org			
Phone: 303 810 6365				
Project Name: CERTA / MAHLE VANDALIA	Method of Shipment/Carrier:			
Project Number:	Shipping/Tracking No:			
PO #				

Analysis Turnaround Time (in BUS days)
TAT if different from below ____
☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day

Analyses

For lab use only: ☐ Walk-in client ☐ Lab pickup ☐ Lab sampling
Job/SDG No:

240-104354 Chain of Custody

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	VOC's	pH	Sample Specific Notes / Special Instructions:
BRIN - 11 13 18 1	11/13/18	G 12:34		X						X						G	X		
SSIN - 11 13 18 1		12:57																	
OBIN - 11 13 18 1		12:50																	
PREAS - 11 13 18 1		12:35																X	
EFF - 11 13 18 1		12:40																X	
BRIN - 11 13 18 2		12:55																	
SSIN - 11 13 18 2		12:58																	
OBIN - 11 13 18 2		12:52																	
PREAS - 11 13 18 2		12:34																	
EFF - 11 13 18 2		12:45																	

210
Dayton

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☑ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:
All Samples Standard

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	IOE	11/13/18 1:40pm	[signature]	TA	11-13-18 1340
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: ME Miley	Company: TA	Date/Time: 11-13-18 1600	Received in Laboratory by: [signature]	Company: TAC	Date/Time: 11-14-18 800

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TAL-0018 (1008)

TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 164354

Client INSTITUTE OF ECO. Site Name —

Cooler Received on 11-14-18 Opened on 11-14-18

Cooler unpacked by: BOP

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.9 °C) Observed Cooler Temp. 2.6 °C Corrected Cooler Temp. 3.5 °C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC850248**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #____ Yes No
16. Was a LL Hg or Me Hg trip blank present? ____ Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: POP

DID NOT RECENE UP VOLUME FOR PH

18. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.

Sample(s) ____ were received in a broken container.

Sample(s) SS/N -111318 1 11/13/18 @ 1257 1X40 were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.

Time preserved: ____ Preservative(s) added/Lot number(s): ____.

WI-NC-099

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-105715-1
Client Project/Site: Mahle - Vandalia

For:
Institute of Ecolonomics (IOE)
901 S.County Road 31
Berthoud, Colorado 80513

Attn: Chris Powers

Authorized for release by:
12/28/2018 9:55:08 AM

John McFadden, Project Manager I
(330)497-9396
john.mcfadden@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.

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 ID: 240-105715-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Institute of Ecolonomics (IOE)

Project: Mahle - Vandalia

Report Number: 240-105715-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 12/13/2018 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.4º C and 1.4º C.

The laboratory received a trip blank sample that is not listed on the Chain of Custody. The laboratory will perform VOCs on the trip blank sample.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples PREAS 121218 (240-105715-1), BRIN 121218 (240-105716-1), EFF 121218 (240-105715-2), SS 121218 (240-105716-2), OBIN 121218 (240-105716-3) and TRIP BLANK (240-105716-4) were analyzed for volatile organic compounds (GCMS) in accordance with EPA Method 624. The samples were analyzed on 12/18/2018 and 12/19/2018.

Samples PREAS 121218 (240-105715-1)[100X], BRIN 121218 (240-105715-1)[50X], SS 121218 (240-105715-2)[400X] and OBIN 121218 (240-105715-3)[400X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CAN

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-105715-1	PREAS 121218	Water	12/12/18 11:58	12/13/18 08:00
240-105715-2	EFF 121218	Water	12/12/18 12:01	12/13/18 08:00
240-105716-1	BRIN 121218	Water	12/12/18 11:40	12/13/18 08:00
240-105716-2	SS 121218	Water	12/12/18 11:44	12/13/18 08:00
240-105716-3	OBIN 121218	Water	12/12/18 11:49	12/13/18 08:00
240-105716-4	TRIP BLANK	Water	12/12/18 00:00	12/13/18 08:00

Detection Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Client Sample ID: PREAS 121218 — Lab Sample ID: 240-105715-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	3320	F1	100		ug/L	100		624	Total/NA
cis-1,2-Dichloroethene	1080		100		ug/L	100		624	Total/NA

Client Sample ID: EFF 121218 — Lab Sample ID: 240-105715-2

No Detections.

Client Sample ID: BRIN 121218 — Lab Sample ID: 240-105716-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1970		50.0		ug/L	50		624	Total/NA
cis-1,2-Dichloroethene	786		50.0		ug/L	50		624	Total/NA

Client Sample ID: SS 121218 — Lab Sample ID: 240-105716-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	8940		400		ug/L	400		624	Total/NA
cis-1,2-Dichloroethene	2460		400		ug/L	400		624	Total/NA

Client Sample ID: OBIN 121218 — Lab Sample ID: 240-105716-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	10800		400		ug/L	400		624	Total/NA
cis-1,2-Dichloroethene	1310		400		ug/L	400		624	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-105716-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Client Sample ID: PREAS 121218

Lab Sample ID: 240-105715-1

Date Collected: 12/12/18 11:58

Matrix: Water

Date Received: 12/13/18 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<100		100		ug/L			12/18/18 23:05	100
1,1,1-Trichloroethane	<100		100		ug/L			12/18/18 23:05	100
Trichloroethene	**3320**	**F1**	100		ug/L			12/18/18 23:05	100
cis-1,2-Dichloroethene	**1080**		100		ug/L			12/18/18 23:05	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*69 - 120*		*12/18/18 23:05*	*100*
1,2-Dichloroethane-d4 (Surr)	*97*		*61 - 138*		*12/18/18 23:05*	*100*
Toluene-d8 (Surr)	*101*		*73 - 120*		*12/18/18 23:05*	*100*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Client Sample ID: EFF 121218

Lab Sample ID: 240-105715-2

Date Collected: 12/12/18 12:01
Date Received: 12/13/18 08:00

Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<1.00		1.00		ug/L			12/18/18 23:30	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			12/18/18 23:30	1
Trichloroethene	<1.00		1.00		ug/L			12/18/18 23:30	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			12/18/18 23:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*69 - 120*		*12/18/18 23:30*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*61 - 138*		*12/18/18 23:30*	*1*
Toluene-d8 (Surr)	*97*		*73 - 120*		*12/18/18 23:30*	*1*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Client Sample ID: BRIN 121218

Lab Sample ID: 240-105716-1

Date Collected: 12/12/18 11:40
Matrix: Water
Date Received: 12/13/18 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<50.0		50.0		ug/L			12/18/18 23:54	50
1,1,1-Trichloroethane	<50.0		50.0		ug/L			12/18/18 23:54	50
Trichloroethene	**1970**		50.0		ug/L			12/18/18 23:54	50
cis-1,2-Dichloroethene	**786**		50.0		ug/L			12/18/18 23:54	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*69 - 120*		*12/18/18 23:54*	*50*
1,2-Dichloroethane-d4 (Surr)	*93*		*61 - 138*		*12/18/18 23:54*	*50*
Toluene-d8 (Surr)	*99*		*73 - 120*		*12/18/18 23:54*	*50*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Client Sample ID: SS 121218

Lab Sample ID: 240-105716-2

Date Collected: 12/12/18 11:44
Matrix: Water
Date Received: 12/13/18 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<400		400		ug/L			12/19/18 00:18	400
1,1,1-Trichloroethane	<400		400		ug/L			12/19/18 00:18	400
Trichloroethene	**8940**		400		ug/L			12/19/18 00:18	400
cis-1,2-Dichloroethene	**2460**		400		ug/L			12/19/18 00:18	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*69 - 120*		*12/19/18 00:18*	*400*
1,2-Dichloroethane-d4 (Surr)	*98*		*61 - 138*		*12/19/18 00:18*	*400*
Toluene-d8 (Surr)	*101*		*73 - 120*		*12/19/18 00:18*	*400*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Client Sample ID: OBIN 121218

Lab Sample ID: 240-105716-3

Date Collected: 12/12/18 11:49
Matrix: Water
Date Received: 12/13/18 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<400		400		ug/L			12/19/18 00:43	400
1,1,1-Trichloroethane	<400		400		ug/L			12/19/18 00:43	400
Trichloroethene	**10800**		400		ug/L			12/19/18 00:43	400
cis-1,2-Dichloroethene	**1310**		400		ug/L			12/19/18 00:43	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*69 - 120*		*12/19/18 00:43*	*400*
1,2-Dichloroethane-d4 (Surr)	*98*		*61 - 138*		*12/19/18 00:43*	*400*
Toluene-d8 (Surr)	*102*		*73 - 120*		*12/19/18 00:43*	*400*

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-105716-4

Date Collected: 12/12/18 00:00
Date Received: 12/13/18 08:00

Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<1.00		1.00		ug/L			12/19/18 01:08	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			12/19/18 01:08	1
Trichloroethene	<1.00		1.00		ug/L			12/19/18 01:08	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			12/19/18 01:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*69 - 120*		*12/19/18 01:08*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*61 - 138*		*12/19/18 01:08*	*1*
Toluene-d8 (Surr)	*108*		*73 - 120*		*12/19/18 01:08*	*1*

Surrogate Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DCA	TOL
Lab Sample ID	Client Sample ID	(69-120)	(61-138)	(73-120)
240-105715-1	PREAS 121218	104	97	101
240-105715-1 MS	PREAS 121218	101	101	98
240-105715-1 MSD	PREAS 121218	116	105	111
240-105715-2	EFF 121218	98	96	97
240-105716-1	BRIN 121218	98	93	99
240-105716-2	SS 121218	102	98	101
240-105716-3	OBIN 121218	101	98	102
240-105716-4	TRIP BLANK	109	106	108
LCS 240-360522/33	Lab Control Sample	103	93	98
MB 240-360522/32	Method Blank	98	93	99

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-360522/32
Matrix: Water
Analysis Batch: 360522

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<1.00		1.00		ug/L			12/18/18 21:28	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			12/18/18 21:28	1
Trichloroethene	<1.00		1.00		ug/L			12/18/18 21:28	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			12/18/18 21:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*69 - 120*		*12/18/18 21:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*61 - 138*		*12/18/18 21:28*	*1*
Toluene-d8 (Surr)	*99*		*73 - 120*		*12/18/18 21:28*	*1*

Lab Sample ID: LCS 240-360522/33
Matrix: Water
Analysis Batch: 360522

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	20.0	17.23		ug/L		86	59 - 155
1,1,1-Trichloroethane	20.0	16.93		ug/L		85	52 - 162
Trichloroethene	20.0	16.35		ug/L		82	71 - 157

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*93*		*61 - 138*
Toluene-d8 (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-105715-1 MS
Matrix: Water
Analysis Batch: 360522

Client Sample ID: PREAS 121218
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	<100		2000	1807		ug/L		88	59 - 155
1,1,1-Trichloroethane	<100		2000	1733		ug/L		87	52 - 162
Trichloroethene	3320	F1	2000	4653	F1	ug/L		67	71 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*101*		*61 - 138*
Toluene-d8 (Surr)	*98*		*73 - 120*

Lab Sample ID: 240-105715-1 MSD
Matrix: Water
Analysis Batch: 360522

Client Sample ID: PREAS 121218
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethane	<100		2000	2094		ug/L		102	59 - 155	15	35
1,1,1-Trichloroethane	<100		2000	2001		ug/L		100	52 - 162	14	35
Trichloroethene	3320	F1	2000	5302		ug/L		99	71 - 157	13	35

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-105715-1 MSD
Matrix: Water
Analysis Batch: 360522

Client Sample ID: PREAS 121218
Prep Type: Total/NA

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*116*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*105*		*61 - 138*
Toluene-d8 (Surr)	*111*		*73 - 120*

QC Association Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

GC/MS VOA

Analysis Batch: 360522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-105715-1	PREAS 121218	Total/NA	Water	624	
240-105715-2	EFF 121218	Total/NA	Water	624	
240-105716-1	BRIN 121218	Total/NA	Water	624	
240-105716-2	SS 121218	Total/NA	Water	624	
240-105716-3	OBIN 121218	Total/NA	Water	624	
240-105716-4	TRIP BLANK	Total/NA	Water	624	
MB 240-360522/32	Method Blank	Total/NA	Water	624	
LCS 240-360522/33	Lab Control Sample	Total/NA	Water	624	
240-105715-1 MS	PREAS 121218	Total/NA	Water	624	
240-105715-1 MSD	PREAS 121218	Total/NA	Water	624	

Lab Chronicle

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Client Sample ID: PREAS 121218
Lab Sample ID: 240-105715-1
Date Collected: 12/12/18 11:58
Matrix: Water
Date Received: 12/13/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		100	360522	12/18/18 23:05	HMB	TAL CAN

Client Sample ID: EFF 121218
Lab Sample ID: 240-105715-2
Date Collected: 12/12/18 12:01
Matrix: Water
Date Received: 12/13/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	360522	12/18/18 23:30	HMB	TAL CAN

Client Sample ID: BRIN 121218
Lab Sample ID: 240-105716-1
Date Collected: 12/12/18 11:40
Matrix: Water
Date Received: 12/13/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		50	360522	12/18/18 23:54	HMB	TAL CAN

Client Sample ID: SS 121218
Lab Sample ID: 240-105716-2
Date Collected: 12/12/18 11:44
Matrix: Water
Date Received: 12/13/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		400	360522	12/19/18 00:18	HMB	TAL CAN

Client Sample ID: OBIN 121218
Lab Sample ID: 240-105716-3
Date Collected: 12/12/18 11:49
Matrix: Water
Date Received: 12/13/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		400	360522	12/19/18 00:43	HMB	TAL CAN

Client Sample ID: TRIP BLANK
Lab Sample ID: 240-105716-4
Date Collected: 12/12/18 00:00
Matrix: Water
Date Received: 12/13/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	360522	12/19/18 01:08	HMB	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105715-1

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19 *
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19 *
Kentucky (UST)	State Program	4	58	02-23-19 *
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19 *
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19 *
West Virginia DEP	State Program	3	210	12-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

24019071

Chain of Custody Record

1.4/<1.4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location:
Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: IOE	Client Project Manager: Shawn Ford	Site Contact: Chris Power	Lab Contact: John McFadden	COC No:
Address: 901 S CR 31	Telephone: 740 503 8004	Telephone: 810 358 9920	Telephone:	___ of ___ COCs
City/State/Zip: Berthoud CO 80513	Email: chris@wildgrowth.org	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: 810 358 9920		TAT if different from below ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: CERTA Vandalia	Method of Shipment/Carrier:			
Project Number:	Shipping/Tracking No:			Job/SDG No
P O #				

240-105715 Chain of Custody

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	VOCs
PREAS 121218 1	12/12/18	1157														✓	
PREAS 121218 2		1158															
PREAS 121218 3		1158															
EFF 121218 1		1200															
EFF 121218 2		1201															
EFF 121218 3		1201															

210 Dayton

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☒ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments: Standard Processing

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	IOE	12/12/18 13:45	[signature]	TA	12-12-18 1345
[signature]	TA	12-12-18 1600	Received in Laboratory by: [signature]	TA	12/13/18 800

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TAL-0018 (1008)

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 105715
Canton Facility

Client IOE Site Name _____ Cooler unpacked by:
Cooler Received on 12/13/18 Opened on 12/13/18
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 18 Foam Box Client Cooler Box Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None

☐ See Multiple Cooler Form

1. Cooler temperature upon receipt
   IR GUN# IR-8 (CF -0.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #36 (CF +0°C) Observed Cooler Temp. 1.4 °C Corrected Cooler Temp. 1.4 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC854592**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: RC

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____.

WI-NC-099

24019071

Chain of Custody Record

1.4 | C1.4

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location:

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact			
Company Name: IDE	Client Project Manager: Shawn Ford	Site Contact: Chris Powell	Lab Contact: John McFadden
Address: 901 S CR 31	Telephone: 740 503 8004	Telephone: 810 358 9920	Telephone:
City/State/Zip: Bartlett / CO / 80513	Email: chris@wildyouth.org	Analysis Turnaround Time (in BUS days)	Analyses
Phone: 810 358 9920		TAT if different from below ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day	
Project Name: CERTA Vandalia	Method of Shipment/Carrier:		
Project Number:	Shipping/Tracking No:		
PO #			

COC No: ____ of ____ COCs

For lab use only: Walk-in client ☐ Lab pickup ☐ Lab sampling ☐ Job/SDG No:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C/Grab=G	VOC's	Sample Specific Notes / Special Instructions:
BRIN 121218-1	12/12	11:40														G		
BRIN 121218-2		11:40																
BRIN 121218-3		11:40																
SS 121218-1		11:43																
SS 121218-2		11:44																
SS 121218-3		11:44																
OBIN 121218-1		11:48																
OBIN 121218-2		11:49																
OBIN 121218-3		11:49																

240-105716 Chain of Custody

210 Dayton

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☒ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	IDE	12/12/18 13:45	[signature]	TA	12-12-18 1345
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: [signature]	Company: TA	Date/Time: 12-12-18 1600	Received in Laboratory by: [signature]	Company: TA	Date/Time: 12/13/18 8:20

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TAL-0018 (1008)

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 105716
Canton Facility

Client 10E Site Name _____ Cooler unpacked by:
Cooler Received on 12/13/18 Opened on 12/13/18
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 1A Foam Box Client Cooler Box Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #36 (CF +0°C) Observed Cooler Temp. 1.4 °C Corrected Cooler Temp. 1.4 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC854592**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: RC

Received triplblank not on CoC, will log at end

18. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION
Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____.

WI-NC-099

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-105717-1
Client Project/Site: Mahle - Vandalia

For:
Institute of Ecolonomics (IOE)
901 S.County Road 31
Berthoud, Colorado 80513

Attn: Chris Powers

Authorized for release by:
12/28/2018 9:57:41 AM

John McFadden, Project Manager I
(330)497-9396
john.mcfadden@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.

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 ID: 240-105717-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Institute of Ecolonomics (IOE)

Project: Mahle - Vandalia

Report Number: 240-105717-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT
The samples were received on 12/13/2018 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.4º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)
Samples SW01 121218 (240-105717-1) and SW04 121218 (240-105717-2) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 12/22/2018.

The laboratory control sample (LCS) for 361385 recovered outside control limits for one or multiple analytes: Carbon tetrachloride and Chloroform. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.SW01 121218 (240-105717-1), SW04 121218 (240-105717-2) and (LCS 240-361385/4)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-105717-1	SW01 121218	Water	12/12/18 12:37	12/13/18 08:00
240-105717-2	SW04 121218	Water	12/12/18 13:05	12/13/18 08:00

Detection Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

Client Sample ID: SW01 121218 — Lab Sample ID: 240-105717-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	4.01		1.00		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	1.88		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: SW04 121218 — Lab Sample ID: 240-105717-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	31.3		1.00		ug/L	1		8260B	Total/NA
Vinyl chloride	1.39		1.00		ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	2.37		1.00		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	14.2		1.00		ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

Client Sample ID: SW01 121218

Date Collected: 12/12/18 12:37
Date Received: 12/13/18 08:00

Lab Sample ID: 240-105717-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			12/22/18 13:16	1
Benzene	<1.00		1.00		ug/L			12/22/18 13:16	1
Dichlorobromomethane	<1.00		1.00		ug/L			12/22/18 13:16	1
Bromoform	<1.00		1.00		ug/L			12/22/18 13:16	1
Bromomethane	<1.00		1.00		ug/L			12/22/18 13:16	1
2-Butanone (MEK)	<10.0		10.0		ug/L			12/22/18 13:16	1
Carbon disulfide	<1.00		1.00		ug/L			12/22/18 13:16	1
Carbon tetrachloride	<1.00	*	1.00		ug/L			12/22/18 13:16	1
Chlorobenzene	<1.00		1.00		ug/L			12/22/18 13:16	1
Chloroethane	<1.00		1.00		ug/L			12/22/18 13:16	1
Chloroform	<1.00	*	1.00		ug/L			12/22/18 13:16	1
Chloromethane	<1.00		1.00		ug/L			12/22/18 13:16	1
1,1-Dichloroethane	<1.00		1.00		ug/L			12/22/18 13:16	1
1,2-Dichloroethane	<1.00		1.00		ug/L			12/22/18 13:16	1
1,1-Dichloroethene	<1.00		1.00		ug/L			12/22/18 13:16	1
1,2-Dichloropropane	<1.00		1.00		ug/L			12/22/18 13:16	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			12/22/18 13:16	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			12/22/18 13:16	1
Ethylbenzene	<1.00		1.00		ug/L			12/22/18 13:16	1
2-Hexanone	<10.0		10.0		ug/L			12/22/18 13:16	1
Methylene Chloride	<5.00		5.00		ug/L			12/22/18 13:16	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			12/22/18 13:16	1
Styrene	<1.00		1.00		ug/L			12/22/18 13:16	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			12/22/18 13:16	1
Tetrachloroethene	<1.00		1.00		ug/L			12/22/18 13:16	1
Toluene	<1.00		1.00		ug/L			12/22/18 13:16	1
Trichloroethene	**4.01**		1.00		ug/L			12/22/18 13:16	1
Vinyl chloride	<1.00		1.00		ug/L			12/22/18 13:16	1
Xylenes, Total	<2.00		2.00		ug/L			12/22/18 13:16	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			12/22/18 13:16	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			12/22/18 13:16	1
Cyclohexane	<1.00		1.00		ug/L			12/22/18 13:16	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			12/22/18 13:16	1
Ethylene Dibromide	<1.00		1.00		ug/L			12/22/18 13:16	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			12/22/18 13:16	1
cis-1,2-Dichloroethene	**1.88**		1.00		ug/L			12/22/18 13:16	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			12/22/18 13:16	1
Isopropylbenzene	<1.00		1.00		ug/L			12/22/18 13:16	1
Methyl acetate	<10.0		10.0		ug/L			12/22/18 13:16	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			12/22/18 13:16	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			12/22/18 13:16	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			12/22/18 13:16	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			12/22/18 13:16	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			12/22/18 13:16	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			12/22/18 13:16	1
Trichlorofluoromethane	<1.00		1.00		ug/L			12/22/18 13:16	1
Chlorodibromomethane	<1.00		1.00		ug/L			12/22/18 13:16	1
Methylcyclohexane	<1.00		1.00		ug/L			12/22/18 13:16	1

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

Client Sample ID: SW01 121218

Date Collected: 12/12/18 12:37
Date Received: 12/13/18 08:00

Lab Sample ID: 240-105717-1

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		70 - 121		12/22/18 13:16	1
4-Bromofluorobenzene (Surr)	75		59 - 120		12/22/18 13:16	1
Toluene-d8 (Surr)	77		70 - 123		12/22/18 13:16	1
Dibromofluoromethane (Surr)	108		75 - 128		12/22/18 13:16	1

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

Client Sample ID: SW04 121218

Date Collected: 12/12/18 13:05
Date Received: 12/13/18 08:00

Lab Sample ID: 240-105717-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			12/22/18 13:38	1
Benzene	<1.00		1.00		ug/L			12/22/18 13:38	1
Dichlorobromomethane	<1.00		1.00		ug/L			12/22/18 13:38	1
Bromoform	<1.00		1.00		ug/L			12/22/18 13:38	1
Bromomethane	<1.00		1.00		ug/L			12/22/18 13:38	1
2-Butanone (MEK)	<10.0		10.0		ug/L			12/22/18 13:38	1
Carbon disulfide	<1.00		1.00		ug/L			12/22/18 13:38	1
Carbon tetrachloride	<1.00	*	1.00		ug/L			12/22/18 13:38	1
Chlorobenzene	<1.00		1.00		ug/L			12/22/18 13:38	1
Chloroethane	<1.00		1.00		ug/L			12/22/18 13:38	1
Chloroform	<1.00	*	1.00		ug/L			12/22/18 13:38	1
Chloromethane	<1.00		1.00		ug/L			12/22/18 13:38	1
1,1-Dichloroethane	<1.00		1.00		ug/L			12/22/18 13:38	1
1,2-Dichloroethane	<1.00		1.00		ug/L			12/22/18 13:38	1
1,1-Dichloroethene	<1.00		1.00		ug/L			12/22/18 13:38	1
1,2-Dichloropropane	<1.00		1.00		ug/L			12/22/18 13:38	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			12/22/18 13:38	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			12/22/18 13:38	1
Ethylbenzene	<1.00		1.00		ug/L			12/22/18 13:38	1
2-Hexanone	<10.0		10.0		ug/L			12/22/18 13:38	1
Methylene Chloride	<5.00		5.00		ug/L			12/22/18 13:38	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			12/22/18 13:38	1
Styrene	<1.00		1.00		ug/L			12/22/18 13:38	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			12/22/18 13:38	1
Tetrachloroethene	<1.00		1.00		ug/L			12/22/18 13:38	1
Toluene	<1.00		1.00		ug/L			12/22/18 13:38	1
Trichloroethene	**31.3**		1.00		ug/L			12/22/18 13:38	1
Vinyl chloride	**1.39**		1.00		ug/L			12/22/18 13:38	1
Xylenes, Total	<2.00		2.00		ug/L			12/22/18 13:38	1
1,1,1-Trichloroethane	**2.37**		1.00		ug/L			12/22/18 13:38	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			12/22/18 13:38	1
Cyclohexane	<1.00		1.00		ug/L			12/22/18 13:38	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			12/22/18 13:38	1
Ethylene Dibromide	<1.00		1.00		ug/L			12/22/18 13:38	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			12/22/18 13:38	1
cis-1,2-Dichloroethene	**14.2**		1.00		ug/L			12/22/18 13:38	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			12/22/18 13:38	1
Isopropylbenzene	<1.00		1.00		ug/L			12/22/18 13:38	1
Methyl acetate	<10.0		10.0		ug/L			12/22/18 13:38	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			12/22/18 13:38	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			12/22/18 13:38	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			12/22/18 13:38	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			12/22/18 13:38	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			12/22/18 13:38	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			12/22/18 13:38	1
Trichlorofluoromethane	<1.00		1.00		ug/L			12/22/18 13:38	1
Chlorodibromomethane	<1.00		1.00		ug/L			12/22/18 13:38	1
Methylcyclohexane	<1.00		1.00		ug/L			12/22/18 13:38	1

Client Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

Client Sample ID: SW04 121218

Date Collected: 12/12/18 13:05
Date Received: 12/13/18 08:00

Lab Sample ID: 240-105717-2

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		70 - 121		12/22/18 13:38	1
4-Bromofluorobenzene (Surr)	79		59 - 120		12/22/18 13:38	1
Toluene-d8 (Surr)	80		70 - 123		12/22/18 13:38	1
Dibromofluoromethane (Surr)	109		75 - 128		12/22/18 13:38	1

Surrogate Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	**Client Sample ID**	**(70-121)**	**(59-120)**	**(70-123)**	**(75-128)**
240-105717-1	SW01 121218	114	75	77	108
240-105717-1 MS	SW01 121218	109	83	83	106
240-105717-1 MSD	SW01 121218	110	83	81	101
240-105717-2	SW04 121218	111	79	80	109
LCS 240-361385/4	Lab Control Sample	113	84	84	113
MB 240-361385/6	Method Blank	117	80	80	114

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

QC Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-361385/6
Matrix: Water
Analysis Batch: 361385

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			12/22/18 12:32	1
Benzene	<1.00		1.00		ug/L			12/22/18 12:32	1
Dichlorobromomethane	<1.00		1.00		ug/L			12/22/18 12:32	1
Bromoform	<1.00		1.00		ug/L			12/22/18 12:32	1
Bromomethane	<1.00		1.00		ug/L			12/22/18 12:32	1
2-Butanone (MEK)	<10.0		10.0		ug/L			12/22/18 12:32	1
Carbon disulfide	<1.00		1.00		ug/L			12/22/18 12:32	1
Carbon tetrachloride	<1.00		1.00		ug/L			12/22/18 12:32	1
Chlorobenzene	<1.00		1.00		ug/L			12/22/18 12:32	1
Chloroethane	<1.00		1.00		ug/L			12/22/18 12:32	1
Chloroform	<1.00		1.00		ug/L			12/22/18 12:32	1
Chloromethane	<1.00		1.00		ug/L			12/22/18 12:32	1
1,1-Dichloroethane	<1.00		1.00		ug/L			12/22/18 12:32	1
1,2-Dichloroethane	<1.00		1.00		ug/L			12/22/18 12:32	1
1,1-Dichloroethene	<1.00		1.00		ug/L			12/22/18 12:32	1
1,2-Dichloropropane	<1.00		1.00		ug/L			12/22/18 12:32	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			12/22/18 12:32	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			12/22/18 12:32	1
Ethylbenzene	<1.00		1.00		ug/L			12/22/18 12:32	1
2-Hexanone	<10.0		10.0		ug/L			12/22/18 12:32	1
Methylene Chloride	<5.00		5.00		ug/L			12/22/18 12:32	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			12/22/18 12:32	1
Styrene	<1.00		1.00		ug/L			12/22/18 12:32	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			12/22/18 12:32	1
Tetrachloroethene	<1.00		1.00		ug/L			12/22/18 12:32	1
Toluene	<1.00		1.00		ug/L			12/22/18 12:32	1
Trichloroethene	<1.00		1.00		ug/L			12/22/18 12:32	1
Vinyl chloride	<1.00		1.00		ug/L			12/22/18 12:32	1
Xylenes, Total	<2.00		2.00		ug/L			12/22/18 12:32	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			12/22/18 12:32	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			12/22/18 12:32	1
Cyclohexane	<1.00		1.00		ug/L			12/22/18 12:32	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			12/22/18 12:32	1
Ethylene Dibromide	<1.00		1.00		ug/L			12/22/18 12:32	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			12/22/18 12:32	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			12/22/18 12:32	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			12/22/18 12:32	1
Isopropylbenzene	<1.00		1.00		ug/L			12/22/18 12:32	1
Methyl acetate	<10.0		10.0		ug/L			12/22/18 12:32	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			12/22/18 12:32	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			12/22/18 12:32	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			12/22/18 12:32	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			12/22/18 12:32	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			12/22/18 12:32	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			12/22/18 12:32	1
Trichlorofluoromethane	<1.00		1.00		ug/L			12/22/18 12:32	1
Chlorodibromomethane	<1.00		1.00		ug/L			12/22/18 12:32	1
Methylcyclohexane	<1.00		1.00		ug/L			12/22/18 12:32	1

QC Sample Results

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		70 - 121		12/22/18 12:32	1
4-Bromofluorobenzene (Surr)	80		59 - 120		12/22/18 12:32	1
Toluene-d8 (Surr)	80		70 - 123		12/22/18 12:32	1
Dibromofluoromethane (Surr)	114		75 - 128		12/22/18 12:32	1

Lab Sample ID: LCS 240-361385/4
Matrix: Water
Analysis Batch: 361385

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	26.90		ug/L		134	21 - 162
Benzene	10.0	10.43		ug/L		104	80 - 123
Dichlorobromomethane	10.0	11.73		ug/L		117	77 - 125
Bromoform	10.0	12.34		ug/L		123	49 - 141
Bromomethane	10.0	8.272		ug/L		83	41 - 175
2-Butanone (MEK)	20.0	17.88		ug/L		89	39 - 163
Carbon disulfide	10.0	10.96		ug/L		110	60 - 138
Carbon tetrachloride	10.0	14.69	*	ug/L		147	63 - 140
Chlorobenzene	10.0	9.345		ug/L		93	80 - 121
Chloroethane	10.0	7.743		ug/L		77	33 - 173
Chloroform	10.0	13.18	*	ug/L		132	79 - 127
Chloromethane	10.0	12.32		ug/L		123	54 - 143
1,1-Dichloroethane	10.0	11.57		ug/L		116	75 - 133
1,2-Dichloroethane	10.0	12.83		ug/L		128	71 - 135
1,1-Dichloroethene	10.0	10.55		ug/L		105	65 - 139
1,2-Dichloropropane	10.0	9.835		ug/L		98	78 - 133
cis-1,3-Dichloropropene	10.0	9.604		ug/L		96	64 - 132
trans-1,3-Dichloropropene	10.0	8.880		ug/L		89	55 - 128
Ethylbenzene	10.0	9.177		ug/L		92	80 - 120
2-Hexanone	20.0	15.09		ug/L		75	43 - 148
Methylene Chloride	10.0	12.32		ug/L		123	70 - 134
4-Methyl-2-pentanone (MIBK)	20.0	17.77		ug/L		89	49 - 143
Styrene	10.0	9.105		ug/L		91	79 - 120
1,1,2,2-Tetrachloroethane	10.0	8.352		ug/L		84	65 - 139
Tetrachloroethene	10.0	11.30		ug/L		113	74 - 130
Toluene	10.0	9.134		ug/L		91	78 - 129
Trichloroethene	10.0	11.61		ug/L		116	76 - 125
Vinyl chloride	10.0	6.708		ug/L		67	58 - 143
Xylenes, Total	20.0	18.81		ug/L		94	80 - 120
1,1,1-Trichloroethane	10.0	13.05		ug/L		130	69 - 134
1,1,2-Trichloroethane	10.0	8.925		ug/L		89	78 - 133
Cyclohexane	10.0	9.842		ug/L		98	58 - 145
1,2-Dibromo-3-Chloropropane	10.0	9.886		ug/L		99	46 - 132
Ethylene Dibromide	10.0	9.343		ug/L		93	77 - 123
Dichlorodifluoromethane	10.0	6.831		ug/L		68	29 - 148
cis-1,2-Dichloroethene	10.0	10.97		ug/L		110	76 - 128
trans-1,2-Dichloroethene	10.0	11.52		ug/L		115	78 - 133
Isopropylbenzene	10.0	9.183		ug/L		92	74 - 120
Methyl acetate	20.0	20.72		ug/L		104	52 - 145
Methyl tert-butyl ether	10.0	10.02		ug/L		100	51 - 133
1,1,2-Trichloro-1,2,2-trifluoroetha ne	10.0	11.88		ug/L		119	50 - 156
1,2,4-Trichlorobenzene	10.0	9.312		ug/L		93	42 - 133
1,2-Dichlorobenzene	10.0	9.695		ug/L		97	78 - 120

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-361385/4
Matrix: Water
Analysis Batch: 361385

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,3-Dichlorobenzene	10.0	9.537		ug/L		95	78 - 120
1,4-Dichlorobenzene	10.0	9.481		ug/L		95	78 - 120
Trichlorofluoromethane	10.0	7.135		ug/L		71	51 - 164
Chlorodibromomethane	10.0	10.95		ug/L		109	70 - 132
Methylcyclohexane	10.0	8.704		ug/L		87	60 - 125
m-Xylene & p-Xylene	10.0	9.221		ug/L		92	80 - 120
o-Xylene	10.0	9.585		ug/L		96	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*113*		*70 - 121*
4-Bromofluorobenzene (Surr)	*84*		*59 - 120*
Toluene-d8 (Surr)	*84*		*70 - 123*
Dibromofluoromethane (Surr)	*113*		*75 - 128*

Lab Sample ID: 240-105717-1 MS
Matrix: Water
Analysis Batch: 361385

Client Sample ID: SW01 121218
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	<10.0		20.0	23.62		ug/L		118	10 - 168
Benzene	<1.00		10.0	9.360		ug/L		94	71 - 122
Dichlorobromomethane	<1.00		10.0	10.28		ug/L		103	64 - 125
Bromoform	<1.00		10.0	11.77		ug/L		118	44 - 129
Bromomethane	<1.00		10.0	7.447		ug/L		74	19 - 187
2-Butanone (MEK)	<10.0		20.0	16.68		ug/L		83	37 - 156
Carbon disulfide	<1.00		10.0	8.984		ug/L		90	43 - 144
Carbon tetrachloride	<1.00	*	10.0	11.46		ug/L		115	41 - 143
Chlorobenzene	<1.00		10.0	9.031		ug/L		90	70 - 123
Chloroethane	<1.00		10.0	6.916		ug/L		69	11 - 189
Chloroform	<1.00	*	10.0	10.67		ug/L		107	68 - 130
Chloromethane	<1.00		10.0	7.729		ug/L		77	31 - 154
1,1-Dichloroethane	<1.00		10.0	10.25		ug/L		103	63 - 136
1,2-Dichloroethane	<1.00		10.0	11.38		ug/L		114	65 - 135
1,1-Dichloroethene	<1.00		10.0	9.228		ug/L		92	53 - 140
1,2-Dichloropropane	<1.00		10.0	8.984		ug/L		90	70 - 132
cis-1,3-Dichloropropene	<1.00		10.0	8.614		ug/L		86	48 - 127
trans-1,3-Dichloropropene	<1.00		10.0	8.401		ug/L		84	40 - 125
Ethylbenzene	<1.00		10.0	8.302		ug/L		83	66 - 120
2-Hexanone	<10.0		20.0	14.06		ug/L		70	42 - 150
Methylene Chloride	<5.00		10.0	9.883		ug/L		99	61 - 130
4-Methyl-2-pentanone (MIBK)	<10.0		20.0	15.82		ug/L		79	44 - 143
Styrene	<1.00		10.0	8.457		ug/L		85	68 - 120
1,1,2,2-Tetrachloroethane	<1.00		10.0	7.850		ug/L		79	60 - 137
Tetrachloroethene	<1.00		10.0	9.995		ug/L		100	51 - 136
Toluene	<1.00		10.0	8.507		ug/L		85	62 - 132
Trichloroethene	4.01		10.0	14.30		ug/L		103	55 - 131
Vinyl chloride	<1.00		10.0	7.511		ug/L		75	43 - 154
Xylenes, Total	<2.00		20.0	17.29		ug/L		86	67 - 120

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-105717-1 MS
Matrix: Water
Analysis Batch: 361385

Client Sample ID: SW01 121218
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	<1.00		10.0	11.80		ug/L		118	51 - 138
1,1,2-Trichloroethane	<1.00		10.0	8.763		ug/L		88	76 - 132
Cyclohexane	<1.00		10.0	7.787		ug/L		78	42 - 135
1,2-Dibromo-3-Chloropropane	<2.00		10.0	8.515		ug/L		85	38 - 124
Ethylene Dibromide	<1.00		10.0	8.984		ug/L		90	71 - 123
Dichlorodifluoromethane	<1.00		10.0	10.01		ug/L		100	28 - 136
cis-1,2-Dichloroethene	1.88		10.0	11.79		ug/L		99	64 - 130
trans-1,2-Dichloroethene	<1.00		10.0	10.14		ug/L		101	68 - 133
Isopropylbenzene	<1.00		10.0	8.417		ug/L		84	59 - 120
Methyl acetate	<10.0		20.0	17.77		ug/L		89	41 - 142
Methyl tert-butyl ether	<1.00		10.0	8.568		ug/L		86	41 - 136
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		10.0	9.745		ug/L		97	31 - 156
1,2,4-Trichlorobenzene	<1.00		10.0	8.234		ug/L		82	30 - 126
1,2-Dichlorobenzene	<1.00		10.0	9.123		ug/L		91	64 - 120
1,3-Dichlorobenzene	<1.00		10.0	8.879		ug/L		89	62 - 120
1,4-Dichlorobenzene	<1.00		10.0	9.094		ug/L		91	63 - 120
Trichlorofluoromethane	<1.00		10.0	9.566		ug/L		96	37 - 174
Chlorodibromomethane	<1.00		10.0	9.944		ug/L		99	60 - 129
Methylcyclohexane	<1.00		10.0	6.863		ug/L		69	37 - 123
m-Xylene & p-Xylene	<2.00		10.0	8.786		ug/L		88	63 - 121
o-Xylene	<1.00		10.0	8.503		ug/L		85	69 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 121*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*
Toluene-d8 (Surr)	*83*		*70 - 123*
Dibromofluoromethane (Surr)	*106*		*75 - 128*

Lab Sample ID: 240-105717-1 MSD
Matrix: Water
Analysis Batch: 361385

Client Sample ID: SW01 121218
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	<10.0		20.0	24.20		ug/L		121	10 - 168	2	35
Benzene	<1.00		10.0	9.328		ug/L		93	71 - 122	0	22
Dichlorobromomethane	<1.00		10.0	10.55		ug/L		106	64 - 125	3	27
Bromoform	<1.00		10.0	11.41		ug/L		114	44 - 129	3	28
Bromomethane	<1.00		10.0	6.978		ug/L		70	19 - 187	6	35
2-Butanone (MEK)	<10.0		20.0	18.01		ug/L		90	37 - 156	8	35
Carbon disulfide	<1.00		10.0	9.090		ug/L		91	43 - 144	1	33
Carbon tetrachloride	<1.00	*	10.0	11.96		ug/L		120	41 - 143	4	30
Chlorobenzene	<1.00		10.0	8.965		ug/L		90	70 - 123	1	23
Chloroethane	<1.00		10.0	6.852		ug/L		69	11 - 189	1	35
Chloroform	<1.00	*	10.0	10.48		ug/L		105	68 - 130	2	23
Chloromethane	<1.00		10.0	7.091		ug/L		71	31 - 154	9	35
1,1-Dichloroethane	<1.00		10.0	9.747		ug/L		97	63 - 136	5	23
1,2-Dichloroethane	<1.00		10.0	11.63		ug/L		116	65 - 135	2	24

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-105717-1 MSD
Matrix: Water
Analysis Batch: 361385

Client Sample ID: SW01 121218
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	<1.00		10.0	9.213		ug/L		92	53 - 140	0	35
1,2-Dichloropropane	<1.00		10.0	8.934		ug/L		89	70 - 132	1	26
cis-1,3-Dichloropropene	<1.00		10.0	9.257		ug/L		93	48 - 127	7	30
trans-1,3-Dichloropropene	<1.00		10.0	8.341		ug/L		83	40 - 125	1	27
Ethylbenzene	<1.00		10.0	7.969		ug/L		80	66 - 120	4	24
2-Hexanone	<10.0		20.0	15.91		ug/L		80	42 - 150	12	35
Methylene Chloride	<5.00		10.0	9.282		ug/L		93	61 - 130	6	29
4-Methyl-2-pentanone (MIBK)	<10.0		20.0	17.36		ug/L		87	44 - 143	9	35
Styrene	<1.00		10.0	8.577		ug/L		86	68 - 120	1	26
1,1,2,2-Tetrachloroethane	<1.00		10.0	7.845		ug/L		78	60 - 137	0	31
Tetrachloroethene	<1.00		10.0	10.61		ug/L		106	51 - 136	6	23
Toluene	<1.00		10.0	8.695		ug/L		87	62 - 132	2	23
Trichloroethene	4.01		10.0	14.29		ug/L		103	55 - 131	0	23
Vinyl chloride	<1.00		10.0	7.448		ug/L		74	43 - 154	1	29
Xylenes, Total	<2.00		20.0	17.08		ug/L		85	67 - 120	1	25
1,1,1-Trichloroethane	<1.00		10.0	12.71		ug/L		127	51 - 138	7	27
1,1,2-Trichloroethane	<1.00		10.0	8.742		ug/L		87	76 - 132	0	25
Cyclohexane	<1.00		10.0	8.284		ug/L		83	42 - 135	6	35
1,2-Dibromo-3-Chloropropane	<2.00		10.0	8.330		ug/L		83	38 - 124	2	35
Ethylene Dibromide	<1.00		10.0	9.278		ug/L		93	71 - 123	3	27
Dichlorodifluoromethane	<1.00		10.0	9.723		ug/L		97	28 - 136	3	35
cis-1,2-Dichloroethene	1.88		10.0	11.28		ug/L		94	64 - 130	4	21
trans-1,2-Dichloroethene	<1.00		10.0	9.965		ug/L		100	68 - 133	2	24
Isopropylbenzene	<1.00		10.0	8.499		ug/L		85	59 - 120	1	31
Methyl acetate	<10.0		20.0	18.17		ug/L		91	41 - 142	2	35
Methyl tert-butyl ether	<1.00		10.0	8.677		ug/L		87	41 - 136	1	29
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		10.0	10.92		ug/L		109	31 - 156	11	35
1,2,4-Trichlorobenzene	<1.00		10.0	8.047		ug/L		80	30 - 126	2	35
1,2-Dichlorobenzene	<1.00		10.0	8.974		ug/L		90	64 - 120	2	30
1,3-Dichlorobenzene	<1.00		10.0	8.687		ug/L		87	62 - 120	2	31
1,4-Dichlorobenzene	<1.00		10.0	8.889		ug/L		89	63 - 120	2	28
Trichlorofluoromethane	<1.00		10.0	9.685		ug/L		97	37 - 174	1	35
Chlorodibromomethane	<1.00		10.0	10.20		ug/L		102	60 - 129	3	26
Methylcyclohexane	<1.00		10.0	7.617		ug/L		76	37 - 123	10	35
m-Xylene & p-Xylene	<2.00		10.0	8.411		ug/L		84	63 - 121	4	25
o-Xylene	<1.00		10.0	8.666		ug/L		87	69 - 120	2	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 121*
4-Bromofluorobenzene (Surr)	*83*		*59 - 120*
Toluene-d8 (Surr)	*81*		*70 - 123*
Dibromofluoromethane (Surr)	*101*		*75 - 128*

QC Association Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

GC/MS VOA

Analysis Batch: 361385

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-105717-1	SW01 121218	Total/NA	Water	8260B	
240-105717-2	SW04 121218	Total/NA	Water	8260B	
MB 240-361385/6	Method Blank	Total/NA	Water	8260B	
LCS 240-361385/4	Lab Control Sample	Total/NA	Water	8260B	
240-105717-1 MS	SW01 121218	Total/NA	Water	8260B	
240-105717-1 MSD	SW01 121218	Total/NA	Water	8260B	

Lab Chronicle

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

Client Sample ID: SW01 121218

Lab Sample ID: 240-105717-1
Date Collected: 12/12/18 12:37
Matrix: Water
Date Received: 12/13/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	361385	12/22/18 13:16	LEE	TAL CAN

Client Sample ID: SW04 121218

Lab Sample ID: 240-105717-2
Date Collected: 12/12/18 13:05
Matrix: Water
Date Received: 12/13/18 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	361385	12/22/18 13:38	LEE	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Institute of Ecolonomics (IOE)
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-105717-1

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19 *
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19 *
Kentucky (UST)	State Program	4	58	02-23-19 *
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19 *
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19 *
West Virginia DEP	State Program	3	210	12-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

240/9071

Chain of Custody Record

1.4/C1.4

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THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location:

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: IOE	Client Project Manager: Shawn Ford	Site Contact: Chris Powers	Lab Contact: John McFadden	COC No:
Address: 901 S CR 31	Telephone: 740 503 8004	Telephone: 810 358 9920	Telephone:	___ of ___ COCs
City/State/Zip: Berthoud, CO, 80513	Email: SmFord01@gmail.com	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: 810 358 9920		TAT if different from below ___ ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: Mahla/CERTA Vandalia	Method of Shipment/Carrier:			
Project Number:	Shipping/Tracking No:			Job/SDG No:
P O #				

240-105717 Chain of Custody

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y / N)	Composite=C / Grab=G	VOC
SW01 121218-1	12/12/18	12:37														G	
SW01 121218-2		12:37															
SW01 121218-3		12:37															
SW04 121218-1		1:02															
SW04 121218-2		1:03															
SW04 121218-3		1:05															

210 Dayton

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☒ Disposal By Lab ☐ Archive For ___ Months

Special Instructions/QC Requirements & Comments: Standard Processing

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	DOE	12/12/18 13:45	[signature]	TA	12-12-18 1345
[signature]	TA	12-12-18 1600	Received in Laboratory by: [signature]	TA	12/13/18 800

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TAL-0018 (1008)

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 105717
Canton Facility

Client IDE Site Name _____ Cooler unpacked by: [illegible]
Cooler Received on 12/13/18 Opened on 12/13/18
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 18 Foam Box Client Cooler Box Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #36 (CF **+0**°C) Observed Cooler Temp. 1.4 °C Corrected Cooler Temp. 1.4 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC854592**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: RC

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____.

WI-NC-099

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THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-106587-1
Client Project/Site: Mahle - Vandalia

For:
Institute of Ecolonomics
901 S County Rd 31
Berthoud, Colorado 80513

Attn: Chris Powers

Authorized for release by:
1/15/2019 11:28:33 AM

John McFadden, Project Manager I
(330)497-9396
john.mcfadden@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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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 ID: 240-106587-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Institute of Ecolonomics (IOE)

Project: Mahle - Vandalia

Report Number: 240-106587-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT
The samples were received on 1/5/2019 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.5º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)
Samples SW01 010419-1,2,3 (240-106587-1) and SW04 010419-1,2,3 (240-106587-2) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 01/09/2019 and 01/11/2019.

Sample SW04 010419-1,2,3 (240-106587-2)[6.67X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The following samples were submitted for volatile analysis with insufficient preservation (pH>2). Sample SW04 010419-1,2,3 (240-106587-2) had a pH of 6.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-106587-1	SW01 010419-1,2,3	Water	01/04/19 11:38	01/05/19 09:50
240-106587-2	SW04 010419-1,2,3	Water	01/04/19 11:48	01/05/19 09:50

Detection Summary

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

Client Sample ID: SW01 010419-1,2,3 — Lab Sample ID: 240-106587-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	21.8		1.00		ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	1.45		1.00		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	8.92		1.00		ug/L	1		8260B	Total/NA
1,2,4-Trichlorobenzene	1.19		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: SW04 010419-1,2,3 — Lab Sample ID: 240-106587-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	113		6.67		ug/L	6.67		8260B	Total/NA
1,1,1-Trichloroethane	6.84		6.67		ug/L	6.67		8260B	Total/NA
cis-1,2-Dichloroethene	34.1		6.67		ug/L	6.67		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

Client Sample ID: SW01 010419-1,2,3

Lab Sample ID: 240-106587-1

Date Collected: 01/04/19 11:38

Matrix: Water

Date Received: 01/05/19 09:50

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			01/11/19 18:33	1
Benzene	<1.00		1.00		ug/L			01/11/19 18:33	1
Dichlorobromomethane	<1.00		1.00		ug/L			01/11/19 18:33	1
Bromoform	<1.00		1.00		ug/L			01/11/19 18:33	1
Bromomethane	<1.00		1.00		ug/L			01/11/19 18:33	1
2-Butanone (MEK)	<10.0		10.0		ug/L			01/11/19 18:33	1
Carbon disulfide	<1.00		1.00		ug/L			01/11/19 18:33	1
Carbon tetrachloride	<1.00		1.00		ug/L			01/11/19 18:33	1
Chlorobenzene	<1.00		1.00		ug/L			01/11/19 18:33	1
Chloroethane	<1.00		1.00		ug/L			01/11/19 18:33	1
Chloroform	<1.00		1.00		ug/L			01/11/19 18:33	1
Chloromethane	<1.00		1.00		ug/L			01/11/19 18:33	1
1,1-Dichloroethane	<1.00		1.00		ug/L			01/11/19 18:33	1
1,2-Dichloroethane	<1.00		1.00		ug/L			01/11/19 18:33	1
1,1-Dichloroethene	<1.00		1.00		ug/L			01/11/19 18:33	1
1,2-Dichloropropane	<1.00		1.00		ug/L			01/11/19 18:33	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			01/11/19 18:33	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			01/11/19 18:33	1
Ethylbenzene	<1.00		1.00		ug/L			01/11/19 18:33	1
2-Hexanone	<10.0		10.0		ug/L			01/11/19 18:33	1
Methylene Chloride	<5.00		5.00		ug/L			01/11/19 18:33	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			01/11/19 18:33	1
Styrene	<1.00		1.00		ug/L			01/11/19 18:33	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			01/11/19 18:33	1
Tetrachloroethene	<1.00		1.00		ug/L			01/11/19 18:33	1
Toluene	<1.00		1.00		ug/L			01/11/19 18:33	1
Trichloroethene	**21.8**		1.00		ug/L			01/11/19 18:33	1
Vinyl chloride	<1.00		1.00		ug/L			01/11/19 18:33	1
Xylenes, Total	<2.00		2.00		ug/L			01/11/19 18:33	1
1,1,1-Trichloroethane	**1.45**		1.00		ug/L			01/11/19 18:33	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			01/11/19 18:33	1
Cyclohexane	<1.00		1.00		ug/L			01/11/19 18:33	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			01/11/19 18:33	1
Ethylene Dibromide	<1.00		1.00		ug/L			01/11/19 18:33	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			01/11/19 18:33	1
cis-1,2-Dichloroethene	**8.92**		1.00		ug/L			01/11/19 18:33	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			01/11/19 18:33	1
Isopropylbenzene	<1.00		1.00		ug/L			01/11/19 18:33	1
Methyl acetate	<10.0		10.0		ug/L			01/11/19 18:33	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			01/11/19 18:33	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			01/11/19 18:33	1
1,2,4-Trichlorobenzene	**1.19**		1.00		ug/L			01/11/19 18:33	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			01/11/19 18:33	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			01/11/19 18:33	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			01/11/19 18:33	1
Trichlorofluoromethane	<1.00		1.00		ug/L			01/11/19 18:33	1
Chlorodibromomethane	<1.00		1.00		ug/L			01/11/19 18:33	1
Methylcyclohexane	<1.00		1.00		ug/L			01/11/19 18:33	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

Client Sample ID: SW01 010419-1,2,3

Lab Sample ID: 240-106587-1

Date Collected: 01/04/19 11:38

Matrix: Water

Date Received: 01/05/19 09:50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	88		70 - 121		01/11/19 18:33	1
4-Bromofluorobenzene (Surr)	100		59 - 120		01/11/19 18:33	1
Toluene-d8 (Surr)	99		70 - 123		01/11/19 18:33	1
Dibromofluoromethane (Surr)	102		75 - 128		01/11/19 18:33	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

Client Sample ID: SW04 010419-1,2,3

Lab Sample ID: 240-106587-2

Date Collected: 01/04/19 11:48

Matrix: Water

Date Received: 01/05/19 09:50

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<66.7		66.7		ug/L			01/09/19 18:54	6.67
Benzene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Dichlorobromomethane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Bromoform	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Bromomethane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
2-Butanone (MEK)	<66.7		66.7		ug/L			01/09/19 18:54	6.67
Carbon disulfide	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Carbon tetrachloride	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Chlorobenzene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Chloroethane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Chloroform	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Chloromethane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
1,1-Dichloroethane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
1,2-Dichloroethane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
1,1-Dichloroethene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
1,2-Dichloropropane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
cis-1,3-Dichloropropene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
trans-1,3-Dichloropropene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Ethylbenzene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
2-Hexanone	<66.7		66.7		ug/L			01/09/19 18:54	6.67
Methylene Chloride	<33.4		33.4		ug/L			01/09/19 18:54	6.67
4-Methyl-2-pentanone (MIBK)	<66.7		66.7		ug/L			01/09/19 18:54	6.67
Styrene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
1,1,2,2-Tetrachloroethane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Tetrachloroethene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Toluene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Trichloroethene	**113**		6.67		ug/L			01/09/19 18:54	6.67
Vinyl chloride	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Xylenes, Total	<13.3		13.3		ug/L			01/09/19 18:54	6.67
1,1,1-Trichloroethane	**6.84**		6.67		ug/L			01/09/19 18:54	6.67
1,1,2-Trichloroethane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Cyclohexane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
1,2-Dibromo-3-Chloropropane	<13.3		13.3		ug/L			01/09/19 18:54	6.67
Ethylene Dibromide	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Dichlorodifluoromethane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
cis-1,2-Dichloroethene	**34.1**		6.67		ug/L			01/09/19 18:54	6.67
trans-1,2-Dichloroethene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Isopropylbenzene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Methyl acetate	<66.7		66.7		ug/L			01/09/19 18:54	6.67
Methyl tert-butyl ether	<6.67		6.67		ug/L			01/09/19 18:54	6.67
1,1,2-Trichloro-1,2,2-trifluoroethane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
1,2,4-Trichlorobenzene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
1,2-Dichlorobenzene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
1,3-Dichlorobenzene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
1,4-Dichlorobenzene	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Trichlorofluoromethane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Chlorodibromomethane	<6.67		6.67		ug/L			01/09/19 18:54	6.67
Methylcyclohexane	<6.67		6.67		ug/L			01/09/19 18:54	6.67

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

Client Sample ID: SW04 010419-1,2,3

Lab Sample ID: 240-106587-2

Date Collected: 01/04/19 11:48

Matrix: Water

Date Received: 01/05/19 09:50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		70 - 121		01/09/19 18:54	6.67
4-Bromofluorobenzene (Surr)	78		59 - 120		01/09/19 18:54	6.67
Toluene-d8 (Surr)	75		70 - 123		01/09/19 18:54	6.67
Dibromofluoromethane (Surr)	111		75 - 128		01/09/19 18:54	6.67

Surrogate Summary

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(70-121)	(59-120)	(70-123)	(75-128)
240-106587-1	SW01 010419-1,2,3	88	100	99	102
240-106587-2	SW04 010419-1,2,3	113	78	75	111
240-106587-2 MS	SW04 010419-1,2,3	114	85	81	115
240-106587-2 MSD	SW04 010419-1,2,3	113	81	76	106
LCS 240-363362/4	Lab Control Sample	109	90	81	115
LCS 240-363669/4	Lab Control Sample	95	99	97	91
MB 240-363362/6	Method Blank	117	76	78	118
MB 240-363669/6	Method Blank	91	97	90	95

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

QC Sample Results

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-363362/6
Matrix: Water
Analysis Batch: 363362

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			01/09/19 11:10	1
Benzene	<1.00		1.00		ug/L			01/09/19 11:10	1
Dichlorobromomethane	<1.00		1.00		ug/L			01/09/19 11:10	1
Bromoform	<1.00		1.00		ug/L			01/09/19 11:10	1
Bromomethane	<1.00		1.00		ug/L			01/09/19 11:10	1
2-Butanone (MEK)	<10.0		10.0		ug/L			01/09/19 11:10	1
Carbon disulfide	<1.00		1.00		ug/L			01/09/19 11:10	1
Carbon tetrachloride	<1.00		1.00		ug/L			01/09/19 11:10	1
Chlorobenzene	<1.00		1.00		ug/L			01/09/19 11:10	1
Chloroethane	<1.00		1.00		ug/L			01/09/19 11:10	1
Chloroform	<1.00		1.00		ug/L			01/09/19 11:10	1
Chloromethane	<1.00		1.00		ug/L			01/09/19 11:10	1
1,1-Dichloroethane	<1.00		1.00		ug/L			01/09/19 11:10	1
1,2-Dichloroethane	<1.00		1.00		ug/L			01/09/19 11:10	1
1,1-Dichloroethene	<1.00		1.00		ug/L			01/09/19 11:10	1
1,2-Dichloropropane	<1.00		1.00		ug/L			01/09/19 11:10	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			01/09/19 11:10	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			01/09/19 11:10	1
Ethylbenzene	<1.00		1.00		ug/L			01/09/19 11:10	1
2-Hexanone	<10.0		10.0		ug/L			01/09/19 11:10	1
Methylene Chloride	<5.00		5.00		ug/L			01/09/19 11:10	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			01/09/19 11:10	1
Styrene	<1.00		1.00		ug/L			01/09/19 11:10	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			01/09/19 11:10	1
Tetrachloroethene	<1.00		1.00		ug/L			01/09/19 11:10	1
Toluene	<1.00		1.00		ug/L			01/09/19 11:10	1
Trichloroethene	<1.00		1.00		ug/L			01/09/19 11:10	1
Vinyl chloride	<1.00		1.00		ug/L			01/09/19 11:10	1
Xylenes, Total	<2.00		2.00		ug/L			01/09/19 11:10	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			01/09/19 11:10	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			01/09/19 11:10	1
Cyclohexane	<1.00		1.00		ug/L			01/09/19 11:10	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			01/09/19 11:10	1
Ethylene Dibromide	<1.00		1.00		ug/L			01/09/19 11:10	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			01/09/19 11:10	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			01/09/19 11:10	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			01/09/19 11:10	1
Isopropylbenzene	<1.00		1.00		ug/L			01/09/19 11:10	1
Methyl acetate	<10.0		10.0		ug/L			01/09/19 11:10	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			01/09/19 11:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			01/09/19 11:10	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			01/09/19 11:10	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			01/09/19 11:10	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			01/09/19 11:10	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			01/09/19 11:10	1
Trichlorofluoromethane	<1.00		1.00		ug/L			01/09/19 11:10	1
Chlorodibromomethane	<1.00		1.00		ug/L			01/09/19 11:10	1
Methylcyclohexane	<1.00		1.00		ug/L			01/09/19 11:10	1

QC Sample Results

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		70 - 121		01/09/19 11:10	1
4-Bromofluorobenzene (Surr)	76		59 - 120		01/09/19 11:10	1
Toluene-d8 (Surr)	78		70 - 123		01/09/19 11:10	1
Dibromofluoromethane (Surr)	118		75 - 128		01/09/19 11:10	1

Lab Sample ID: LCS 240-363362/4
Matrix: Water
Analysis Batch: 363362

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	21.78		ug/L		109	21 - 162
Benzene	10.0	10.29		ug/L		103	80 - 123
Dichlorobromomethane	10.0	12.29		ug/L		123	77 - 125
Bromoform	10.0	13.60		ug/L		136	49 - 141
Bromomethane	10.0	9.115		ug/L		91	41 - 175
2-Butanone (MEK)	20.0	17.70		ug/L		88	39 - 163
Carbon disulfide	10.0	10.13		ug/L		101	60 - 138
Carbon tetrachloride	10.0	14.03		ug/L		140	63 - 140
Chlorobenzene	10.0	10.62		ug/L		106	80 - 121
Chloroethane	10.0	8.556		ug/L		86	33 - 173
Chloroform	10.0	12.24		ug/L		122	79 - 127
Chloromethane	10.0	7.991		ug/L		80	54 - 143
1,1-Dichloroethane	10.0	11.48		ug/L		115	75 - 133
1,2-Dichloroethane	10.0	12.53		ug/L		125	71 - 135
1,1-Dichloroethene	10.0	10.34		ug/L		103	65 - 139
1,2-Dichloropropane	10.0	9.743		ug/L		97	78 - 133
cis-1,3-Dichloropropene	10.0	10.56		ug/L		106	64 - 132
trans-1,3-Dichloropropene	10.0	9.191		ug/L		92	55 - 128
Ethylbenzene	10.0	9.417		ug/L		94	80 - 120
2-Hexanone	20.0	13.59		ug/L		68	43 - 148
Methylene Chloride	10.0	11.36		ug/L		114	70 - 134
4-Methyl-2-pentanone (MIBK)	20.0	16.93		ug/L		85	49 - 143
Styrene	10.0	9.475		ug/L		95	79 - 120
1,1,2,2-Tetrachloroethane	10.0	7.930		ug/L		79	65 - 139
Tetrachloroethene	10.0	12.21		ug/L		122	74 - 130
Toluene	10.0	9.302		ug/L		93	78 - 129
Trichloroethene	10.0	11.60		ug/L		116	76 - 125
Vinyl chloride	10.0	7.992		ug/L		80	58 - 143
Xylenes, Total	20.0	19.43		ug/L		97	80 - 120
1,1,1-Trichloroethane	10.0	13.00		ug/L		130	69 - 134
1,1,2-Trichloroethane	10.0	10.05		ug/L		100	78 - 133
Cyclohexane	10.0	9.584		ug/L		96	58 - 145
1,2-Dibromo-3-Chloropropane	10.0	9.130		ug/L		91	46 - 132
Ethylene Dibromide	10.0	10.36		ug/L		104	77 - 123
Dichlorodifluoromethane	10.0	10.50		ug/L		105	29 - 148
cis-1,2-Dichloroethene	10.0	11.06		ug/L		111	76 - 128
trans-1,2-Dichloroethene	10.0	11.25		ug/L		113	78 - 133
Isopropylbenzene	10.0	9.356		ug/L		94	74 - 120
Methyl acetate	20.0	19.15		ug/L		96	52 - 145
Methyl tert-butyl ether	10.0	10.46		ug/L		105	51 - 133
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	13.47		ug/L		135	50 - 156
1,2,4-Trichlorobenzene	10.0	8.411		ug/L		84	42 - 133
1,2-Dichlorobenzene	10.0	10.03		ug/L		100	78 - 120

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-363362/4
Matrix: Water
Analysis Batch: 363362

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,3-Dichlorobenzene	10.0	9.972		ug/L		100	78 - 120
1,4-Dichlorobenzene	10.0	9.622		ug/L		96	78 - 120
Trichlorofluoromethane	10.0	9.977		ug/L		100	51 - 164
Chlorodibromomethane	10.0	11.99		ug/L		120	70 - 132
Methylcyclohexane	10.0	8.623		ug/L		86	60 - 125
m-Xylene & p-Xylene	10.0	9.679		ug/L		97	80 - 120
o-Xylene	10.0	9.754		ug/L		98	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 121*
4-Bromofluorobenzene (Surr)	*90*		*59 - 120*
Toluene-d8 (Surr)	*81*		*70 - 123*
Dibromofluoromethane (Surr)	*115*		*75 - 128*

Lab Sample ID: 240-106587-2 MS
Matrix: Water
Analysis Batch: 363362

Client Sample ID: SW04 010419-1,2,3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	<66.7		133	116.8		ug/L		88	10 - 168
Benzene	<6.67		66.7	53.23		ug/L		80	71 - 122
Dichlorobromomethane	<6.67		66.7	61.47		ug/L		92	64 - 125
Bromoform	<6.67		66.7	65.78		ug/L		99	44 - 129
Bromomethane	<6.67		66.7	48.71		ug/L		73	19 - 187
2-Butanone (MEK)	<66.7		133	85.70		ug/L		64	37 - 156
Carbon disulfide	<6.67		66.7	54.46		ug/L		82	43 - 144
Carbon tetrachloride	<6.67		66.7	72.83		ug/L		109	41 - 143
Chlorobenzene	<6.67		66.7	53.49		ug/L		80	70 - 123
Chloroethane	<6.67		66.7	41.67		ug/L		62	11 - 189
Chloroform	<6.67		66.7	67.52		ug/L		101	68 - 130
Chloromethane	<6.67		66.7	46.46		ug/L		70	31 - 154
1,1-Dichloroethane	<6.67		66.7	59.83		ug/L		90	63 - 136
1,2-Dichloroethane	<6.67		66.7	67.57		ug/L		101	65 - 135
1,1-Dichloroethene	<6.67		66.7	56.48		ug/L		85	53 - 140
1,2-Dichloropropane	<6.67		66.7	53.05		ug/L		80	70 - 132
cis-1,3-Dichloropropene	<6.67		66.7	46.28		ug/L		69	48 - 127
trans-1,3-Dichloropropene	<6.67		66.7	45.45		ug/L		68	40 - 125
Ethylbenzene	<6.67		66.7	45.11		ug/L		68	66 - 120
2-Hexanone	<66.7		133	<66.7		ug/L		49	42 - 150
Methylene Chloride	<33.4		66.7	65.03		ug/L		97	61 - 130
4-Methyl-2-pentanone (MIBK)	<66.7		133	79.97		ug/L		60	44 - 143
Styrene	<6.67		66.7	47.24		ug/L		71	68 - 120
1,1,2,2-Tetrachloroethane	<6.67		66.7	43.37		ug/L		65	60 - 137
Tetrachloroethene	<6.67		66.7	58.63		ug/L		88	51 - 136
Toluene	<6.67		66.7	48.19		ug/L		72	62 - 132
Trichloroethene	113		66.7	175.5		ug/L		94	55 - 131
Vinyl chloride	<6.67		66.7	48.18		ug/L		72	43 - 154
Xylenes, Total	<13.3		133	96.30		ug/L		72	67 - 120

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-106587-2 MS
Matrix: Water
Analysis Batch: 363362

Client Sample ID: SW04 010419-1,2,3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	6.84		66.7	75.24		ug/L		103	51 - 138
1,1,2-Trichloroethane	<6.67		66.7	50.82		ug/L		76	76 - 132
Cyclohexane	<6.67		66.7	43.92		ug/L		66	42 - 135
1,2-Dibromo-3-Chloropropane	<13.3		66.7	44.75		ug/L		67	38 - 124
Ethylene Dibromide	<6.67		66.7	53.46		ug/L		80	71 - 123
Dichlorodifluoromethane	<6.67		66.7	54.95		ug/L		82	28 - 136
cis-1,2-Dichloroethene	34.1		66.7	92.05		ug/L		87	64 - 130
trans-1,2-Dichloroethene	<6.67		66.7	60.55		ug/L		91	68 - 133
Isopropylbenzene	<6.67		66.7	44.70		ug/L		67	59 - 120
Methyl acetate	<66.7		133	96.38		ug/L		72	41 - 142
Methyl tert-butyl ether	<6.67		66.7	55.13		ug/L		83	41 - 136
1,1,2-Trichloro-1,2,2-trifluoroethane	<6.67		66.7	63.52		ug/L		95	31 - 156
1,2,4-Trichlorobenzene	<6.67		66.7	41.83		ug/L		63	30 - 126
1,2-Dichlorobenzene	<6.67		66.7	52.13		ug/L		78	64 - 120
1,3-Dichlorobenzene	<6.67		66.7	49.40		ug/L		74	62 - 120
1,4-Dichlorobenzene	<6.67		66.7	50.58		ug/L		76	63 - 120
Trichlorofluoromethane	<6.67		66.7	58.90		ug/L		88	37 - 174
Chlorodibromomethane	<6.67		66.7	59.92		ug/L		90	60 - 129
Methylcyclohexane	<6.67		66.7	41.13		ug/L		62	37 - 123
m-Xylene & p-Xylene	<13.3		66.7	46.83		ug/L		70	63 - 121
o-Xylene	<6.67		66.7	49.47		ug/L		74	69 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*114*		*70 - 121*
4-Bromofluorobenzene (Surr)	*85*		*59 - 120*
Toluene-d8 (Surr)	*81*		*70 - 123*
Dibromofluoromethane (Surr)	*115*		*75 - 128*

Lab Sample ID: 240-106587-2 MSD
Matrix: Water
Analysis Batch: 363362

Client Sample ID: SW04 010419-1,2,3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	<66.7		133	136.9		ug/L		103	10 - 168	16	35
Benzene	<6.67		66.7	62.46		ug/L		94	71 - 122	16	22
Dichlorobromomethane	<6.67		66.7	74.07		ug/L		111	64 - 125	19	27
Bromoform	<6.67		66.7	78.53		ug/L		118	44 - 129	18	28
Bromomethane	<6.67		66.7	57.42		ug/L		86	19 - 187	16	35
2-Butanone (MEK)	<66.7		133	103.4		ug/L		78	37 - 156	19	35
Carbon disulfide	<6.67		66.7	61.27		ug/L		92	43 - 144	12	33
Carbon tetrachloride	<6.67		66.7	79.82		ug/L		120	41 - 143	9	30
Chlorobenzene	<6.67		66.7	59.42		ug/L		89	70 - 123	10	23
Chloroethane	<6.67		66.7	48.25		ug/L		72	11 - 189	15	35
Chloroform	<6.67		66.7	72.78		ug/L		109	68 - 130	8	23
Chloromethane	<6.67		66.7	54.32		ug/L		81	31 - 154	16	35
1,1-Dichloroethane	<6.67		66.7	66.16		ug/L		99	63 - 136	10	23
1,2-Dichloroethane	<6.67		66.7	75.30		ug/L		113	65 - 135	11	24

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-106587-2 MSD
Matrix: Water
Analysis Batch: 363362

Client Sample ID: SW04 010419-1,2,3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	<6.67		66.7	60.71		ug/L		91	53 - 140	7	35
1,2-Dichloropropane	<6.67		66.7	60.14		ug/L		90	70 - 132	13	26
cis-1,3-Dichloropropene	<6.67		66.7	60.24		ug/L		90	48 - 127	26	30
trans-1,3-Dichloropropene	<6.67		66.7	51.77		ug/L		78	40 - 125	13	27
Ethylbenzene	<6.67		66.7	50.64		ug/L		76	66 - 120	12	24
2-Hexanone	<66.7		133	86.80		ug/L		65	42 - 150	28	35
Methylene Chloride	<33.4		66.7	69.79		ug/L		105	61 - 130	7	29
4-Methyl-2-pentanone (MIBK)	<66.7		133	102.0		ug/L		76	44 - 143	24	35
Styrene	<6.67		66.7	53.05		ug/L		80	68 - 120	12	26
1,1,2,2-Tetrachloroethane	<6.67		66.7	47.92		ug/L		72	60 - 137	10	31
Tetrachloroethene	<6.67		66.7	66.32		ug/L		99	51 - 136	12	23
Toluene	<6.67		66.7	53.84		ug/L		81	62 - 132	11	23
Trichloroethene	113		66.7	182.0		ug/L		104	55 - 131	4	23
Vinyl chloride	<6.67		66.7	56.17		ug/L		84	43 - 154	15	29
Xylenes, Total	<13.3		133	99.89		ug/L		75	67 - 120	4	25
1,1,1-Trichloroethane	6.84		66.7	83.04		ug/L		114	51 - 138	10	27
1,1,2-Trichloroethane	<6.67		66.7	56.45		ug/L		85	76 - 132	10	25
Cyclohexane	<6.67		66.7	51.43		ug/L		77	42 - 135	16	35
1,2-Dibromo-3-Chloropropane	<13.3		66.7	53.51		ug/L		80	38 - 124	18	35
Ethylene Dibromide	<6.67		66.7	59.89		ug/L		90	71 - 123	11	27
Dichlorodifluoromethane	<6.67		66.7	72.36		ug/L		108	28 - 136	27	35
cis-1,2-Dichloroethene	34.1		66.7	96.64		ug/L		94	64 - 130	5	21
trans-1,2-Dichloroethene	<6.67		66.7	66.32		ug/L		99	68 - 133	9	24
Isopropylbenzene	<6.67		66.7	51.23		ug/L		77	59 - 120	14	31
Methyl acetate	<66.7		133	111.4		ug/L		84	41 - 142	14	35
Methyl tert-butyl ether	<6.67		66.7	60.13		ug/L		90	41 - 136	9	29
1,1,2-Trichloro-1,2,2-trifluoroethane	<6.67		66.7	75.49		ug/L		113	31 - 156	17	35
1,2,4-Trichlorobenzene	<6.67		66.7	44.88		ug/L		67	30 - 126	7	35
1,2-Dichlorobenzene	<6.67		66.7	57.58		ug/L		86	64 - 120	10	30
1,3-Dichlorobenzene	<6.67		66.7	55.82		ug/L		84	62 - 120	12	31
1,4-Dichlorobenzene	<6.67		66.7	55.49		ug/L		83	63 - 120	9	28
Trichlorofluoromethane	<6.67		66.7	65.54		ug/L		98	37 - 174	11	35
Chlorodibromomethane	<6.67		66.7	65.74		ug/L		99	60 - 129	9	26
Methylcyclohexane	<6.67		66.7	48.76		ug/L		73	37 - 123	17	35
m-Xylene & p-Xylene	<13.3		66.7	50.36		ug/L		75	63 - 121	7	25
o-Xylene	<6.67		66.7	49.53		ug/L		74	69 - 120	0	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*113*		*70 - 121*
4-Bromofluorobenzene (Surr)	*81*		*59 - 120*
Toluene-d8 (Surr)	*76*		*70 - 123*
Dibromofluoromethane (Surr)	*106*		*75 - 128*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-363669/6
Matrix: Water
Analysis Batch: 363669

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			01/11/19 12:13	1
Benzene	<1.00		1.00		ug/L			01/11/19 12:13	1
Dichlorobromomethane	<1.00		1.00		ug/L			01/11/19 12:13	1
Bromoform	<1.00		1.00		ug/L			01/11/19 12:13	1
Bromomethane	<1.00		1.00		ug/L			01/11/19 12:13	1
2-Butanone (MEK)	<10.0		10.0		ug/L			01/11/19 12:13	1
Carbon disulfide	<1.00		1.00		ug/L			01/11/19 12:13	1
Carbon tetrachloride	<1.00		1.00		ug/L			01/11/19 12:13	1
Chlorobenzene	<1.00		1.00		ug/L			01/11/19 12:13	1
Chloroethane	<1.00		1.00		ug/L			01/11/19 12:13	1
Chloroform	<1.00		1.00		ug/L			01/11/19 12:13	1
Chloromethane	<1.00		1.00		ug/L			01/11/19 12:13	1
1,1-Dichloroethane	<1.00		1.00		ug/L			01/11/19 12:13	1
1,2-Dichloroethane	<1.00		1.00		ug/L			01/11/19 12:13	1
1,1-Dichloroethene	<1.00		1.00		ug/L			01/11/19 12:13	1
1,2-Dichloropropane	<1.00		1.00		ug/L			01/11/19 12:13	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			01/11/19 12:13	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			01/11/19 12:13	1
Ethylbenzene	<1.00		1.00		ug/L			01/11/19 12:13	1
2-Hexanone	<10.0		10.0		ug/L			01/11/19 12:13	1
Methylene Chloride	<5.00		5.00		ug/L			01/11/19 12:13	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			01/11/19 12:13	1
Styrene	<1.00		1.00		ug/L			01/11/19 12:13	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			01/11/19 12:13	1
Tetrachloroethene	<1.00		1.00		ug/L			01/11/19 12:13	1
Toluene	<1.00		1.00		ug/L			01/11/19 12:13	1
Trichloroethene	<1.00		1.00		ug/L			01/11/19 12:13	1
Vinyl chloride	<1.00		1.00		ug/L			01/11/19 12:13	1
Xylenes, Total	<2.00		2.00		ug/L			01/11/19 12:13	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			01/11/19 12:13	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			01/11/19 12:13	1
Cyclohexane	<1.00		1.00		ug/L			01/11/19 12:13	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			01/11/19 12:13	1
Ethylene Dibromide	<1.00		1.00		ug/L			01/11/19 12:13	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			01/11/19 12:13	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			01/11/19 12:13	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			01/11/19 12:13	1
Isopropylbenzene	<1.00		1.00		ug/L			01/11/19 12:13	1
Methyl acetate	<10.0		10.0		ug/L			01/11/19 12:13	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			01/11/19 12:13	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			01/11/19 12:13	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			01/11/19 12:13	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			01/11/19 12:13	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			01/11/19 12:13	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			01/11/19 12:13	1
Trichlorofluoromethane	<1.00		1.00		ug/L			01/11/19 12:13	1
Chlorodibromomethane	<1.00		1.00		ug/L			01/11/19 12:13	1
Methylcyclohexane	<1.00		1.00		ug/L			01/11/19 12:13	1

QC Sample Results

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		70 - 121		01/11/19 12:13	1
4-Bromofluorobenzene (Surr)	97		59 - 120		01/11/19 12:13	1
Toluene-d8 (Surr)	90		70 - 123		01/11/19 12:13	1
Dibromofluoromethane (Surr)	95		75 - 128		01/11/19 12:13	1

Lab Sample ID: LCS 240-363669/4
Matrix: Water
Analysis Batch: 363669

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	23.69		ug/L		118	21 - 162
Benzene	10.0	10.50		ug/L		105	80 - 123
Dichlorobromomethane	10.0	9.991		ug/L		100	77 - 125
Bromoform	10.0	8.551		ug/L		86	49 - 141
Bromomethane	10.0	10.14		ug/L		101	41 - 175
2-Butanone (MEK)	20.0	26.27		ug/L		131	39 - 163
Carbon disulfide	10.0	9.843		ug/L		98	60 - 138
Carbon tetrachloride	10.0	9.353		ug/L		94	63 - 140
Chlorobenzene	10.0	9.981		ug/L		100	80 - 121
Chloroethane	10.0	11.15		ug/L		112	33 - 173
Chloroform	10.0	10.93		ug/L		109	79 - 127
Chloromethane	10.0	12.43		ug/L		124	54 - 143
1,1-Dichloroethane	10.0	11.61		ug/L		116	75 - 133
1,2-Dichloroethane	10.0	10.37		ug/L		104	71 - 135
1,1-Dichloroethene	10.0	10.38		ug/L		104	65 - 139
1,2-Dichloropropane	10.0	11.16		ug/L		112	78 - 133
cis-1,3-Dichloropropene	10.0	10.13		ug/L		101	64 - 132
trans-1,3-Dichloropropene	10.0	10.08		ug/L		101	55 - 128
Ethylbenzene	10.0	9.692		ug/L		97	80 - 120
2-Hexanone	20.0	28.84		ug/L		144	43 - 148
Methylene Chloride	10.0	9.915		ug/L		99	70 - 134
4-Methyl-2-pentanone (MIBK)	20.0	24.91		ug/L		125	49 - 143
Styrene	10.0	9.406		ug/L		94	79 - 120
1,1,2,2-Tetrachloroethane	10.0	11.59		ug/L		116	65 - 139
Tetrachloroethene	10.0	8.788		ug/L		88	74 - 130
Toluene	10.0	10.75		ug/L		107	78 - 129
Trichloroethene	10.0	9.197		ug/L		92	76 - 125
Vinyl chloride	10.0	10.90		ug/L		109	58 - 143
Xylenes, Total	20.0	19.50		ug/L		98	80 - 120
1,1,1-Trichloroethane	10.0	9.454		ug/L		95	69 - 134
1,1,2-Trichloroethane	10.0	10.28		ug/L		103	78 - 133
Cyclohexane	10.0	11.11		ug/L		111	58 - 145
1,2-Dibromo-3-Chloropropane	10.0	8.625		ug/L		86	46 - 132
Ethylene Dibromide	10.0	10.19		ug/L		102	77 - 123
Dichlorodifluoromethane	10.0	8.148		ug/L		81	29 - 148
cis-1,2-Dichloroethene	10.0	10.94		ug/L		109	76 - 128
trans-1,2-Dichloroethene	10.0	10.69		ug/L		107	78 - 133
Isopropylbenzene	10.0	9.449		ug/L		94	74 - 120
Methyl acetate	20.0	26.35		ug/L		132	52 - 145
Methyl tert-butyl ether	10.0	9.739		ug/L		97	51 - 133
1,1,2-Trichloro-1,2,2-trifluoroetha ne	10.0	9.430		ug/L		94	50 - 156
1,2,4-Trichlorobenzene	10.0	8.049		ug/L		80	42 - 133
1,2-Dichlorobenzene	10.0	9.784		ug/L		98	78 - 120

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-363669/4
Matrix: Water
Analysis Batch: 363669

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,3-Dichlorobenzene	10.0	9.837		ug/L		98	78 - 120
1,4-Dichlorobenzene	10.0	9.640		ug/L		96	78 - 120
Trichlorofluoromethane	10.0	9.863		ug/L		99	51 - 164
Chlorodibromomethane	10.0	9.762		ug/L		98	70 - 132
Methylcyclohexane	10.0	8.764		ug/L		88	60 - 125
m-Xylene & p-Xylene	10.0	9.795		ug/L		98	80 - 120
o-Xylene	10.0	9.709		ug/L		97	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 121*
4-Bromofluorobenzene (Surr)	*99*		*59 - 120*
Toluene-d8 (Surr)	*97*		*70 - 123*
Dibromofluoromethane (Surr)	*91*		*75 - 128*

QC Association Summary

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

GC/MS VOA

Analysis Batch: 363362

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-106587-2	SW04 010419-1,2,3	Total/NA	Water	8260B	
MB 240-363362/6	Method Blank	Total/NA	Water	8260B	
LCS 240-363362/4	Lab Control Sample	Total/NA	Water	8260B	
240-106587-2 MS	SW04 010419-1,2,3	Total/NA	Water	8260B	
240-106587-2 MSD	SW04 010419-1,2,3	Total/NA	Water	8260B	

Analysis Batch: 363669

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-106587-1	SW01 010419-1,2,3	Total/NA	Water	8260B	
MB 240-363669/6	Method Blank	Total/NA	Water	8260B	
LCS 240-363669/4	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

Client Sample ID: SW01 010419-1,2,3

Lab Sample ID: 240-106587-1
Date Collected: 01/04/19 11:38
Matrix: Water
Date Received: 01/05/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	363669	01/11/19 18:33	LRW	TAL CAN

Client Sample ID: SW04 010419-1,2,3

Lab Sample ID: 240-106587-2
Date Collected: 01/04/19 11:48
Matrix: Water
Date Received: 01/05/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		6.67	363362	01/09/19 18:54	LEE	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-1

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19 *
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19
Kentucky (UST)	State Program	4	58	02-23-19 *
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19 *
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Canton
4101 Shuffel Street, N. W.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

1.5/C1.5

Chain of Custody Record

24019071 150098

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: Chris Powers ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact			
Company Name: FOE	Project Manager: ~~Shawn M. Ford~~	Site Contact: Shawn M. Ford	Date: 01/04/2019
Address: 901 S Co Rd 31	Tel/Fax: sford01@gmail.com	Lab Contact: John McPhaul	Carrier:
City/State/Zip: Berthoud, CO 80513	Analysis Turnaround Time		
Phone: 801-358-9920	☐ CALENDAR DAYS ☐ WORKING DAYS		
Fax:	TAT if different from Below _____		
Project Name: Vandalia	☐ 2 weeks		
Site:	☐ 1 week		
P O #	☐ 2 days		
	☐ 1 day		

COC No: _____ of _____ COCs
Sampler:
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOC	Sample Specific Notes:
SW01 010419-1	01/04	11:39	G	W	1				
SW01 010419-2		11:39							
SW01 010419-3		11:39							
SW04 010419-1		11:48							
SW04 010419-2		11:49							
SW04 010419-3		11:50							
BRIN 010419-1		10:52							
BRIN 010419-2		10:52							
BRIN 010419-3		10:51							
SS 010419-1		11:09							
SS 010419-2		11:09							
SS 010419-3		11:10							

240-106587 Chain of Custody

210 Dayton

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 2

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Shawn M. Ford	FOE	1/4/19 12:17	[signature]	TA	1-4-19 12:50
[signature]	TA	1-4-19 15:00	[signature]	TAC	1-5-19 ~~TAC~~ 950
			Received in Laboratory by:		

TestAmerica Canton
4101 Shuffel Street, N. W.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

24019071 150097

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact			
Company Name: IOE	Project Manager: Shawn M. Ford	Site Contact: Shawn M. Ford	Date: 01/04/2019
Address: 901 S CR 31	Tel/Fax: 801-358-9920	Lab Contact: John McFadden	Carrier:
City/State/Zip: Berthoud, CO 80513	Analysis Turnaround Time		
Phone: 801-358-9920	☐ CALENDAR DAYS ☐ WORKING DAYS		
Fax:	TAT if different from Below _____		
Project Name: Vonaulia	☐ 2 weeks		
Site:	☐ 1 week		
P O #	☐ 2 days		
	☐ 1 day		

COC No: _____ of _____ COCs
Sampler:
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	~~EDB~~ VOC	Sample Specific Notes:
OBIN 010419-1	01/04	11:00	G	W	1				
OBIN 010419-2		11:01							
OBIN 010419-3		11:01							
PREAS 010419-1		11:58							
PREAS 010419-2		11:59							
PREAS 010419-3		11:59							
EFF 010419-1		11:05							
EFF 010419-2		11:05							
EFF 010419-3		11:04							

210 Dayton

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 2

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Shawn M. Ford	IOE	12:47	Teresa Daniels	TA	1-4-19 1250
Teresa Daniels	TA	1-4-19 15:00	[signature]	TAC	1-5-19 950
			Received in Laboratory by:		

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 106587
Canton Facility

Client IOE Site Name _____ Cooler unpacked by: MJD

Cooler Received on 1-5-19 Opened on 1-5-19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #36 (CF +0°C) Observed Cooler Temp. 1.5 °C Corrected Cooler Temp. 1.5 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC854592**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____.

WI-NC-099

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-106587-2
Client Project/Site: Mahle - Vandalia

For:
Institute of Ecolonomics
901 S County Rd 31
Berthoud, Colorado 80513

Attn: Chris Powers

Authorized for release by:
1/15/2019 11:32:32 AM

John McFadden, Project Manager I
(330)497-9396
john.mcfadden@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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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 ID: 240-106587-2

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Institute of Ecolonomics (IOE)

Project: Mahle - Vandalia

Report Number: 240-106587-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT
The samples were received on 1/5/2019 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.5º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)
Samples BRIN 010419-1,2,3 (240-106587-3), SS 010419-1,2,3 (240-106587-4), OBIN 010419-1,2,3 (240-106587-5), PREAS 010419-1,2,3 (240-106587-6) and EFF 010419-1,2,3 (240-106587-7) were analyzed for volatile organic compounds (GCMS) in accordance with EPA Method 624. The samples were analyzed on 01/09/2019.

Samples BRIN 010419-1,2,3 (240-106587-3)[50X], SS 010419-1,2,3 (240-106587-4)[400X], OBIN 010419-1,2,3 (240-106587-5)[400X] and PREAS 010419-1,2,3 (240-106587-6)[100X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-2

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CAN

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-106587-3	BRIN 010419-1,2,3	Water	01/04/19 10:52	01/05/19 09:50
240-106587-4	SS 010419-1,2,3	Water	01/04/19 11:09	01/05/19 09:50
240-106587-5	OBIN 010419-1,2,3	Water	01/04/19 11:00	01/05/19 09:50
240-106587-6	PREAS 010419-1,2,3	Water	01/04/19 11:58	01/05/19 09:50
240-106587-7	EFF 010419-1,2,3	Water	01/04/19 11:05	01/05/19 09:50

Detection Summary

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-2

Client Sample ID: BRIN 010419-1,2,3 — Lab Sample ID: 240-106587-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	2410		50.0		ug/L	50		624	Total/NA
cis-1,2-Dichloroethene	979		50.0		ug/L	50		624	Total/NA

Client Sample ID: SS 010419-1,2,3 — Lab Sample ID: 240-106587-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	10200		400		ug/L	400		624	Total/NA
cis-1,2-Dichloroethene	2850		400		ug/L	400		624	Total/NA

Client Sample ID: OBIN 010419-1,2,3 — Lab Sample ID: 240-106587-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,1-Trichloroethane	401		400		ug/L	400		624	Total/NA
Trichloroethene	13700		400		ug/L	400		624	Total/NA
cis-1,2-Dichloroethene	1410		400		ug/L	400		624	Total/NA

Client Sample ID: PREAS 010419-1,2,3 — Lab Sample ID: 240-106587-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	5520		100		ug/L	100		624	Total/NA
cis-1,2-Dichloroethene	1320		100		ug/L	100		624	Total/NA

Client Sample ID: EFF 010419-1,2,3 — Lab Sample ID: 240-106587-7

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-2

Client Sample ID: BRIN 010419-1,2,3

Lab Sample ID: 240-106587-3

Date Collected: 01/04/19 10:52
Matrix: Water
Date Received: 01/05/19 09:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<50.0		50.0		ug/L			01/09/19 18:17	50
1,1,1-Trichloroethane	<50.0		50.0		ug/L			01/09/19 18:17	50
Trichloroethene	**2410**		50.0		ug/L			01/09/19 18:17	50
cis-1,2-Dichloroethene	**979**		50.0		ug/L			01/09/19 18:17	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*112*		*69 - 120*		*01/09/19 18:17*	*50*
1,2-Dichloroethane-d4 (Surr)	*103*		*61 - 138*		*01/09/19 18:17*	*50*
Toluene-d8 (Surr)	*102*		*73 - 120*		*01/09/19 18:17*	*50*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-2

Client Sample ID: SS 010419-1,2,3

Lab Sample ID: 240-106587-4

Date Collected: 01/04/19 11:09

Matrix: Water

Date Received: 01/05/19 09:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<400		400		ug/L			01/09/19 18:42	400
1,1,1-Trichloroethane	<400		400		ug/L			01/09/19 18:42	400
Trichloroethene	**10200**		400		ug/L			01/09/19 18:42	400
cis-1,2-Dichloroethene	**2850**		400		ug/L			01/09/19 18:42	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*115*		*69 - 120*		*01/09/19 18:42*	*400*
1,2-Dichloroethane-d4 (Surr)	*104*		*61 - 138*		*01/09/19 18:42*	*400*
Toluene-d8 (Surr)	*104*		*73 - 120*		*01/09/19 18:42*	*400*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-2

Client Sample ID: OBIN 010419-1,2,3

Lab Sample ID: 240-106587-5

Date Collected: 01/04/19 11:00

Matrix: Water

Date Received: 01/05/19 09:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<400		400		ug/L			01/09/19 19:06	400
1,1,1-Trichloroethane	**401**		400		ug/L			01/09/19 19:06	400
Trichloroethene	**13700**		400		ug/L			01/09/19 19:06	400
cis-1,2-Dichloroethene	**1410**		400		ug/L			01/09/19 19:06	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*120*		*69 - 120*		*01/09/19 19:06*	*400*
1,2-Dichloroethane-d4 (Surr)	*109*		*61 - 138*		*01/09/19 19:06*	*400*
Toluene-d8 (Surr)	*110*		*73 - 120*		*01/09/19 19:06*	*400*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-2

Client Sample ID: PREAS 010419-1,2,3

Lab Sample ID: 240-106587-6

Date Collected: 01/04/19 11:58
Matrix: Water
Date Received: 01/05/19 09:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<100		100		ug/L			01/09/19 19:30	100
1,1,1-Trichloroethane	<100		100		ug/L			01/09/19 19:30	100
Trichloroethene	**5520**		100		ug/L			01/09/19 19:30	100
cis-1,2-Dichloroethene	**1320**		100		ug/L			01/09/19 19:30	100

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*120*		*69 - 120*		*01/09/19 19:30*	*100*
1,2-Dichloroethane-d4 (Surr)	*109*		*61 - 138*		*01/09/19 19:30*	*100*
Toluene-d8 (Surr)	*107*		*73 - 120*		*01/09/19 19:30*	*100*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-2

Client Sample ID: EFF 010419-1,2,3

Lab Sample ID: 240-106587-7

Date Collected: 01/04/19 11:05

Matrix: Water

Date Received: 01/05/19 09:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<1.00		1.00		ug/L			01/09/19 19:55	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			01/09/19 19:55	1
Trichloroethene	<1.00		1.00		ug/L			01/09/19 19:55	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			01/09/19 19:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*69 - 120*		*01/09/19 19:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*61 - 138*		*01/09/19 19:55*	*1*
Toluene-d8 (Surr)	*91*		*73 - 120*		*01/09/19 19:55*	*1*

Surrogate Summary

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-2

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DCA	TOL
Lab Sample ID	Client Sample ID	(69-120)	(61-138)	(73-120)
240-106587-3	BRIN 010419-1,2,3	112	103	102
240-106587-4	SS 010419-1,2,3	115	104	104
240-106587-5	OBIN 010419-1,2,3	120	109	110
240-106587-6	PREAS 010419-1,2,3	120	109	107
240-106587-7	EFF 010419-1,2,3	103	95	91
LCS 240-363341/4	Lab Control Sample	103	96	93
MB 240-363341/7	Method Blank	104	94	93

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-2

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-363341/7
Matrix: Water
Analysis Batch: 363341

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<1.00		1.00		ug/L			01/09/19 10:00	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			01/09/19 10:00	1
Trichloroethene	<1.00		1.00		ug/L			01/09/19 10:00	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			01/09/19 10:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*69 - 120*		*01/09/19 10:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*61 - 138*		*01/09/19 10:00*	*1*
Toluene-d8 (Surr)	*93*		*73 - 120*		*01/09/19 10:00*	*1*

Lab Sample ID: LCS 240-363341/4
Matrix: Water
Analysis Batch: 363341

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	20.0	19.52		ug/L		98	59 - 155
1,1,1-Trichloroethane	20.0	20.75		ug/L		104	52 - 162
Trichloroethene	20.0	19.77		ug/L		99	71 - 157

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*96*		*61 - 138*
Toluene-d8 (Surr)	*93*		*73 - 120*

QC Association Summary

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-2

GC/MS VOA

Analysis Batch: 363341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-106587-3	BRIN 010419-1,2,3	Total/NA	Water	624	
240-106587-4	SS 010419-1,2,3	Total/NA	Water	624	
240-106587-5	OBIN 010419-1,2,3	Total/NA	Water	624	
240-106587-6	PREAS 010419-1,2,3	Total/NA	Water	624	
240-106587-7	EFF 010419-1,2,3	Total/NA	Water	624	
MB 240-363341/7	Method Blank	Total/NA	Water	624	
LCS 240-363341/4	Lab Control Sample	Total/NA	Water	624	

Lab Chronicle

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-2

Client Sample ID: BRIN 010419-1,2,3 — Lab Sample ID: 240-106587-3

Date Collected: 01/04/19 10:52 — **Matrix: Water**
Date Received: 01/05/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		50	363341	01/09/19 18:17	HMB	TAL CAN

Client Sample ID: SS 010419-1,2,3 — Lab Sample ID: 240-106587-4

Date Collected: 01/04/19 11:09 — **Matrix: Water**
Date Received: 01/05/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		400	363341	01/09/19 18:42	HMB	TAL CAN

Client Sample ID: OBIN 010419-1,2,3 — Lab Sample ID: 240-106587-5

Date Collected: 01/04/19 11:00 — **Matrix: Water**
Date Received: 01/05/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		400	363341	01/09/19 19:06	HMB	TAL CAN

Client Sample ID: PREAS 010419-1,2,3 — Lab Sample ID: 240-106587-6

Date Collected: 01/04/19 11:58 — **Matrix: Water**
Date Received: 01/05/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		100	363341	01/09/19 19:30	HMB	TAL CAN

Client Sample ID: EFF 010419-1,2,3 — Lab Sample ID: 240-106587-7

Date Collected: 01/04/19 11:05 — **Matrix: Water**
Date Received: 01/05/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	363341	01/09/19 19:55	HMB	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Institute of Ecolonomics
Project/Site: Mahle - Vandalia

TestAmerica Job ID: 240-106587-2

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19 *
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19
Kentucky (UST)	State Program	4	58	02-23-19 *
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19 *
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Canton
4101 Shuffel Street, N. W.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

1.5/C1.5

Chain of Custody Record

24019071 150098

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: Chris Powers ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact			
Company Name: FOE	Project Manager: ~~Shawn M. Ford~~	Site Contact: Shawn M. Ford	Date: 01/04/2019
Address: 901 S Co Rd 31	Tel/Fax: sford01@gmail.com	Lab Contact: John McPhaul	Carrier:
City/State/Zip: Berthoud, CO 80513	Analysis Turnaround Time		
Phone: 801-358-9920	☐ CALENDAR DAYS ☐ WORKING DAYS		
Fax:	TAT if different from Below _____		
Project Name: Vandalia	☐ 2 weeks		
Site:	☐ 1 week		
P O #	☐ 2 days		
	☐ 1 day		

COC No: _____ of _____ COCs
Sampler:
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOC	Sample Specific Notes:
SW01 010419-1	01/04	11:39	G	W	1				
SW01 010419-2		11:39							
SW01 010419-3		11:39							
SW04 010419-1		11:48							
SW04 010419-2		11:49							
SW04 010419-3		11:50							
BRIN 010419-1		10:52							
BRIN 010419-2		10:52							
BRIN 010419-3		10:51							
SS 010419-1		11:09							
SS 010419-2		11:09							
SS 010419-3		11:10							

240-106587 Chain of Custody

210 Dayton

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 2

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Shawn M. Ford	FOE	1/4/19 12:17	Tuesday [signature]	TA	1-4-19 12:50
Tuesday [signature]	TA	1-4-19 15:00	[signature]	TAC	1-5-19 ~~TAC~~ 950
			Received in Laboratory by:		

TestAmerica Canton
4101 Shuffel Street, N. W.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

24019071 150097

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Shannon Ford	Site Contact: Shannon M. Ford	Date: 01/04/2019	COC No:
Company Name: IDE	Tel/Fax: 801-358-9920	Lab Contact: John McPadden	Carrier:	____ of ____ COCs
Address: 9015 CR 31	Analysis Turnaround Time			Sampler:
City/State/Zip: Berthoud, CO 80513	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 801-358-9920	TAT if different from Below ____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: Venuana	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOC	Sample Specific Notes:
OBIN 010419-1	01/04	11:00	G	W	1				
OBEN 010419-2		11:01							
OBEN 010419-3		11:01							
PREAS 010419-1		11:58							
PREAS 010419-2		11:59							
PREAS 010419-3		11:59							
EFF 010419-1		11:05							
EFF 010419-2		11:05							
EFF 010419-3		11:04							

210 Dayton

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 2

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ | Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Shn M. Ford	IDE	12:47	Teresa Daniel	TA	1-4-19 12:50
Relinquished by: Teresa Daniel	Company: TA	Date/Time: 1-4-19 15:00	Received by:	Company: TAC	Date/Time: 1-5-19 .950
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 106587
Canton Facility

Client IOE Site Name _____ Cooler unpacked by: MJD

Cooler Received on 1-5-19 Opened on 1-5-19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #36 (CF +0°C) Observed Cooler Temp. 1.5 °C Corrected Cooler Temp. 1.5 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC854592**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____.

WI-NC-099

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-108626-1
Client Project/Site: CERTA - Vandalia

For:
Institute of Ecolonomics
901 S County Rd 31
Berthoud, Colorado 80513

Attn: Chris Powers

Authorized for release by:
3/6/2019 11:06:40 AM

John McFadden, Project Manager I
(330)497-9396
john.mcfadden@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at:
www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.

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 ID: 240-108626-1

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Institute of Ecolonomics

Project: CERTA - Vandalia

Report Number: 240-108626-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT
The samples were received on 2/28/2019 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)
Samples PREAS 022719 (240-108626-1), EFF 022719 (240-108626-2), BRIN 022719 (240-108626-5), SS 022719 (240-108626-6) and OBIN 022719 (240-108626-7) were analyzed for volatile organic compounds (GCMS) in accordance with EPA Method 624. The samples were analyzed on 03/01/2019 and 03/05/2019.

Samples PREAS 022719 (240-108626-1)[200X], BRIN 022719 (240-108626-5)[200X], SS 022719 (240-108626-6)[200X] and OBIN 022719 (240-108626-7)[400X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CAN

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-108626-1	PREAS 022719	Water	02/27/19 12:06	02/28/19 08:00
240-108626-2	EFF 022719	Water	02/27/19 12:00	02/28/19 08:00
240-108626-5	BRIN 022719	Water	02/27/19 11:56	02/28/19 08:00
240-108626-6	SS 022719	Water	02/27/19 11:52	02/28/19 08:00
240-108626-7	OBIN 022719	Water	02/27/19 12:03	02/28/19 08:00

Detection Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

Client Sample ID: PREAS 022719 — Lab Sample ID: 240-108626-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,1-Trichloroethane	484		200		ug/L	200		624	Total/NA
Trichloroethene	15100	F1	200		ug/L	200		624	Total/NA
cis-1,2-Dichloroethene	1490		200		ug/L	200		624	Total/NA

Client Sample ID: EFF 022719 — Lab Sample ID: 240-108626-2

No Detections.

Client Sample ID: BRIN 022719 — Lab Sample ID: 240-108626-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	267		200		ug/L	200		624	Total/NA
Trichloroethene	11300		200		ug/L	200		624	Total/NA
cis-1,2-Dichloroethene	3120		200		ug/L	200		624	Total/NA

Client Sample ID: SS 022719 — Lab Sample ID: 240-108626-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	251		200		ug/L	200		624	Total/NA
Trichloroethene	11200		200		ug/L	200		624	Total/NA
cis-1,2-Dichloroethene	3080		200		ug/L	200		624	Total/NA

Client Sample ID: OBIN 022719 — Lab Sample ID: 240-108626-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,1-Trichloroethane	539		400		ug/L	400		624	Total/NA
Trichloroethene	15900		400		ug/L	400		624	Total/NA
cis-1,2-Dichloroethene	1630		400		ug/L	400		624	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

Client Sample ID: PREAS 022719

Lab Sample ID: 240-108626-1

Date Collected: 02/27/19 12:06

Matrix: Water

Date Received: 02/28/19 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<200		200		ug/L			03/05/19 00:19	200
1,1,1-Trichloroethane	**484**		200		ug/L			03/05/19 00:19	200
Trichloroethene	**15100**	**F1**	200		ug/L			03/05/19 00:19	200
cis-1,2-Dichloroethene	**1490**		200		ug/L			03/05/19 00:19	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*69 - 120*		*03/05/19 00:19*	*200*
1,2-Dichloroethane-d4 (Surr)	*109*		*61 - 138*		*03/05/19 00:19*	*200*
Toluene-d8 (Surr)	*102*		*73 - 120*		*03/05/19 00:19*	*200*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

Client Sample ID: EFF 022719

Lab Sample ID: 240-108626-2

Date Collected: 02/27/19 12:00

Matrix: Water

Date Received: 02/28/19 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<1.00		1.00		ug/L			03/01/19 22:31	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			03/01/19 22:31	1
Trichloroethene	<1.00		1.00		ug/L			03/01/19 22:31	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			03/01/19 22:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*69 - 120*		*03/01/19 22:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*61 - 138*		*03/01/19 22:31*	*1*
Toluene-d8 (Surr)	*91*		*73 - 120*		*03/01/19 22:31*	*1*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

Client Sample ID: BRIN 022719

Lab Sample ID: 240-108626-5

Date Collected: 02/27/19 11:56

Matrix: Water

Date Received: 02/28/19 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**267**		200		ug/L			03/05/19 00:43	200
1,1,1-Trichloroethane	<200		200		ug/L			03/05/19 00:43	200
Trichloroethene	**11300**		200		ug/L			03/05/19 00:43	200
cis-1,2-Dichloroethene	**3120**		200		ug/L			03/05/19 00:43	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*69 - 120*		*03/05/19 00:43*	*200*
1,2-Dichloroethane-d4 (Surr)	*111*		*61 - 138*		*03/05/19 00:43*	*200*
Toluene-d8 (Surr)	*101*		*73 - 120*		*03/05/19 00:43*	*200*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

Client Sample ID: SS 022719

Lab Sample ID: 240-108626-6

Date Collected: 02/27/19 11:52

Matrix: Water

Date Received: 02/28/19 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	**251**		200		ug/L			03/05/19 01:08	200
1,1,1-Trichloroethane	<200		200		ug/L			03/05/19 01:08	200
Trichloroethene	**11200**		200		ug/L			03/05/19 01:08	200
cis-1,2-Dichloroethene	**3080**		200		ug/L			03/05/19 01:08	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*69 - 120*		*03/05/19 01:08*	*200*
1,2-Dichloroethane-d4 (Surr)	*112*		*61 - 138*		*03/05/19 01:08*	*200*
Toluene-d8 (Surr)	*101*		*73 - 120*		*03/05/19 01:08*	*200*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

Client Sample ID: OBIN 022719

Lab Sample ID: 240-108626-7

Date Collected: 02/27/19 12:03

Matrix: Water

Date Received: 02/28/19 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<400		400		ug/L			03/01/19 23:45	400
1,1,1-Trichloroethane	**539**		400		ug/L			03/01/19 23:45	400
Trichloroethene	**15900**		400		ug/L			03/01/19 23:45	400
cis-1,2-Dichloroethene	**1630**		400		ug/L			03/01/19 23:45	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*69 - 120*		*03/01/19 23:45*	*400*
1,2-Dichloroethane-d4 (Surr)	*109*		*61 - 138*		*03/01/19 23:45*	*400*
Toluene-d8 (Surr)	*96*		*73 - 120*		*03/01/19 23:45*	*400*

Surrogate Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DCA	TOL
Lab Sample ID	Client Sample ID	(69-120)	(61-138)	(73-120)
240-108626-1	PREAS 022719	106	109	102
240-108626-1 MS	PREAS 022719	107	105	101
240-108626-1 MSD	PREAS 022719	104	101	99
240-108626-2	EFF 022719	100	103	91
240-108626-5	BRIN 022719	107	111	101
240-108626-6	SS 022719	107	112	101
240-108626-7	OBIN 022719	102	109	96
240-108626-7 MS	OBIN 022719	104	102	99
240-108626-7 MSD	OBIN 022719	101	102	97
LCS 240-369921/5	Lab Control Sample	106	107	101
LCS 240-370138/52	Lab Control Sample	111	107	103
MB 240-369921/7	Method Blank	107	112	100
MB 240-370138/51	Method Blank	108	110	102

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

QC Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-369921/7
Matrix: Water
Analysis Batch: 369921

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<1.00		1.00		ug/L			03/01/19 12:24	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			03/01/19 12:24	1
Trichloroethene	<1.00		1.00		ug/L			03/01/19 12:24	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			03/01/19 12:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*69 - 120*		*03/01/19 12:24*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*61 - 138*		*03/01/19 12:24*	*1*
Toluene-d8 (Surr)	*100*		*73 - 120*		*03/01/19 12:24*	*1*

Lab Sample ID: LCS 240-369921/5
Matrix: Water
Analysis Batch: 369921

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	20.0	20.10		ug/L		101	59 - 155
1,1,1-Trichloroethane	20.0	19.70		ug/L		99	52 - 162
Trichloroethene	20.0	19.91		ug/L		100	71 - 157

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*106*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*107*		*61 - 138*
Toluene-d8 (Surr)	*101*		*73 - 120*

Lab Sample ID: 240-108626-7 MS
Matrix: Water
Analysis Batch: 369921

Client Sample ID: OBIN 022719
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	<400		8000	8353		ug/L		103	59 - 155
1,1,1-Trichloroethane	539		8000	8519		ug/L		100	52 - 162
Trichloroethene	15900		8000	21720		ug/L		73	71 - 157

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*102*		*61 - 138*
Toluene-d8 (Surr)	*99*		*73 - 120*

Lab Sample ID: 240-108626-7 MSD
Matrix: Water
Analysis Batch: 369921

Client Sample ID: OBIN 022719
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethane	<400		8000	8359		ug/L		103	59 - 155	0	35
1,1,1-Trichloroethane	539		8000	8560		ug/L		100	52 - 162	0	35
Trichloroethene	15900		8000	22390		ug/L		82	71 - 157	3	35

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-108626-7 MSD — **Client Sample ID: OBIN 022719**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 369921

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		69 - 120
1,2-Dichloroethane-d4 (Surr)	102		61 - 138
Toluene-d8 (Surr)	97		73 - 120

Lab Sample ID: MB 240-370138/51 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 370138

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	<1.00		1.00		ug/L			03/04/19 23:29	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			03/04/19 23:29	1
Trichloroethene	<1.00		1.00		ug/L			03/04/19 23:29	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			03/04/19 23:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	108		69 - 120		03/04/19 23:29	1
1,2-Dichloroethane-d4 (Surr)	110		61 - 138		03/04/19 23:29	1
Toluene-d8 (Surr)	102		73 - 120		03/04/19 23:29	1

Lab Sample ID: LCS 240-370138/52 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 370138

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	20.0	20.83		ug/L		104	59 - 155
1,1,1-Trichloroethane	20.0	20.92		ug/L		105	52 - 162
Trichloroethene	20.0	21.26		ug/L		106	71 - 157

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	111		69 - 120
1,2-Dichloroethane-d4 (Surr)	107		61 - 138
Toluene-d8 (Surr)	103		73 - 120

Lab Sample ID: 240-108626-1 MS — **Client Sample ID: PREAS 022719**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 370138

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	<200		4000	4433		ug/L		109	59 - 155
1,1,1-Trichloroethane	484		4000	4834		ug/L		109	52 - 162
Trichloroethene	15100	F1	4000	18430		ug/L		83	71 - 157

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	107		69 - 120
1,2-Dichloroethane-d4 (Surr)	105		61 - 138
Toluene-d8 (Surr)	101		73 - 120

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-108626-1 MSD
Matrix: Water
Analysis Batch: 370138

Client Sample ID: PREAS 022719
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethane	<200		4000	4044		ug/L		99	59 - 155	9	35
1,1,1-Trichloroethane	484		4000	4328		ug/L		96	52 - 162	11	35
Trichloroethene	15100	F1	4000	16780	F1	ug/L		42	71 - 157	9	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*101*		*61 - 138*
Toluene-d8 (Surr)	*99*		*73 - 120*

QC Association Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

GC/MS VOA

Analysis Batch: 369921

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-108626-2	EFF 022719	Total/NA	Water	624	
240-108626-7	OBIN 022719	Total/NA	Water	624	
MB 240-369921/7	Method Blank	Total/NA	Water	624	
LCS 240-369921/5	Lab Control Sample	Total/NA	Water	624	
240-108626-7 MS	OBIN 022719	Total/NA	Water	624	
240-108626-7 MSD	OBIN 022719	Total/NA	Water	624	

Analysis Batch: 370138

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-108626-1	PREAS 022719	Total/NA	Water	624	
240-108626-5	BRIN 022719	Total/NA	Water	624	
240-108626-6	SS 022719	Total/NA	Water	624	
MB 240-370138/51	Method Blank	Total/NA	Water	624	
LCS 240-370138/52	Lab Control Sample	Total/NA	Water	624	
240-108626-1 MS	PREAS 022719	Total/NA	Water	624	
240-108626-1 MSD	PREAS 022719	Total/NA	Water	624	

Lab Chronicle

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

Client Sample ID: PREAS 022719 — Lab Sample ID: 240-108626-1

Date Collected: 02/27/19 12:06 — **Matrix: Water**
Date Received: 02/28/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		200	370138	03/05/19 00:19	HMB	TAL CAN

Client Sample ID: EFF 022719 — Lab Sample ID: 240-108626-2

Date Collected: 02/27/19 12:00 — **Matrix: Water**
Date Received: 02/28/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	369921	03/01/19 22:31	HMB	TAL CAN

Client Sample ID: BRIN 022719 — Lab Sample ID: 240-108626-5

Date Collected: 02/27/19 11:56 — **Matrix: Water**
Date Received: 02/28/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		200	370138	03/05/19 00:43	HMB	TAL CAN

Client Sample ID: SS 022719 — Lab Sample ID: 240-108626-6

Date Collected: 02/27/19 11:52 — **Matrix: Water**
Date Received: 02/28/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		200	370138	03/05/19 01:08	HMB	TAL CAN

Client Sample ID: OBIN 022719 — Lab Sample ID: 240-108626-7

Date Collected: 02/27/19 12:03 — **Matrix: Water**
Date Received: 02/28/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		400	369921	03/01/19 23:45	HMB	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-1

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19 *
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19 *
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Canton
4101 Shuffel Street, N. N.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

24019071

150101

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☑ NPDES ☑ RCRA ☐ Other:

Client Contact	Project Manager: Shawn Ford	Site Contact:	Date: 2/27/19	COC No:
Company Name: FOE	Tel/Fax: 740-503-8004	Lab Contact: John McFadden	Carrier:	____ of ____ COCs
Address:	Analysis Turnaround Time			Sampler:
City/State/Zip:	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone:	TAT if different from Below ____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: Certa-Vinchelia	☐ 1 week			
Site: 203 Nagumowes Blvd	☐ 2 days			Job / SDG No.:
PO #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOC	Sample Specific Notes:
PREAS 022719-1	2/27/19	12:06	G	W		N	N		
PREAS 022719-2		↓							
PREAS 022719-3									
Eff 022719-1		12:00							
Eff 022719-2		↓							
Eff 022719-3									
SW01 022719-1		12:38							
SW01 022719-2		↓							
SW01 022719-3									
SW04 022719-1		12:44							
SW04 022719-2		↓							
SW04 022719-3									

240-108626 Chain of Custody

210
Dayton

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ | Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Shawn M. Ford	FOE	2/27/19 1336	MC Miley	TA	2-27-19 1336
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: MC Miley	Company: TA	Date/Time: 2-27-19 1600	Received in Laboratory by:	Company: TA	Date/Time: 2/28/19 800

TestAmerica Canton
4101 Shuffel Street, N. N.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

24019071

150100

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☑ NPDES ☑ RCRA ☐ Other:

Client Contact	Project Manager: Shawn M. Ford	Site Contact:	Date: 2/27/19	COC No:
Company Name: IOE	Tel/Fax: 740-503-8004	Lab Contact: John McFarlin	Carrier:	____ of ____ COCs
Address:	Analysis Turnaround Time			Sampler:
City/State/Zip:	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone:	TAT if different from Below ____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: ~~Akron~~ SPRTA - Vandalia	☐ 1 week			
Site: 203 Northwood Blvd	☐ 2 days			Job / SDG No.:
PO#	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOC	Sample Specific Notes:
BRIN 022719-1	2/27/19	11:56	G	W		N	N		
BRIN 022719-2	↓	↓	↓	↓		↓	↓	↓	
BRIN 022719-3		↓							
SS 022719-1		11:52							
SS 022719-2		↓							
SS 022719-3		↓							
OBIN 022719-1		12:03							
OBIN 022719-2		↓							
OBIN 022719-3	↓	↓	↓	↓		↓	↓	↓	

210
Dayton

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ | Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Shawn M. Ford	IOE	2/27/19 13:36	[illegible]	TA	2.27.19 1336
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: [illegible]	Company: TA	Date/Time: 2-27-19 1600	Received in Laboratory by: [illegible]	Company: TA	Date/Time: 2/28/19 800

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 108626
Canton Facility

Client IOC Site Name _____ Cooler unpacked by: SL

Cooler Received on 2/28/19 Opened on 2/28/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #36 (CF **+0.7**°C) Observed Cooler Temp. 2.7 °C Corrected Cooler Temp. 2.4 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC861525**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 58088 Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: RC

Rec'd 1x40 TB not on COC w/ Log.

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-108626-2
Client Project/Site: CERTA - Vandalia

For:
Institute of Ecolonomics
901 S County Rd 31
Berthoud, Colorado 80513

Attn: Chris Powers

Authorized for release by:
3/7/2019 4:32:28 PM

John McFadden, Project Manager I
(330)497-9396
john.mcfadden@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at:
www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.

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 ID: 240-108626-2

Laboratory: TestAmerica Canton

Narrative

CASE NARRATIVE

Client: Institute of Ecolonomics

Project: CERTA - Vandalia

Report Number: 240-108626-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 2/28/2019 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4º C.

The laboratory received one trip blank sample that was not listed on the Chain of Custody. The laboratory will analyze the trip blank for VOCs per volume received.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples SW01 022719 (240-108626-3), SW04 022719 (240-108626-4) and TRIP BLANK (240-108626-8) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 03/05/2019 and 03/06/2019.

Sample SW04 022719 (240-108626-4)[4X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The laboratory control sample (LCS) for analytical batch 240-370294 recovered outside control limits for multiple analytes: 4-Methyl-2-pentanone (MIBK) and Methyl acetate. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported. SW01 022719 (240-108626-3), SW04 022719 (240-108626-4), TRIP BLANK (240-108626-8) and (LCS 240-370294/4)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Job ID: 240-108626-2 (Continued)

Laboratory: TestAmerica Canton (Continued)

Method Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-108626-3	SW01 022719	Water	02/27/19 12:38	02/28/19 08:00
240-108626-4	SW04 022719	Water	02/27/19 12:44	02/28/19 08:00
240-108626-8	TRIP BLANK	Water	02/27/19 00:00	02/28/19 08:00

Detection Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Client Sample ID: SW01 022719 — Lab Sample ID: 240-108626-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	19.9		1.00		ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	1.12		1.00		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	7.47		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: SW04 022719 — Lab Sample ID: 240-108626-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	101		4.00		ug/L	4		8260B	Total/NA
Vinyl chloride	2.15		1.00		ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	5.32		1.00		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	33.4		1.00		ug/L	1		8260B	Total/NA
Trichlorofluoromethane	1.25		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-108626-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Client Sample ID: SW01 022719

Lab Sample ID: 240-108626-3

Date Collected: 02/27/19 12:38
Matrix: Water
Date Received: 02/28/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			03/05/19 15:49	1
Benzene	<1.00		1.00		ug/L			03/05/19 15:49	1
Dichlorobromomethane	<1.00		1.00		ug/L			03/05/19 15:49	1
Bromoform	<1.00		1.00		ug/L			03/05/19 15:49	1
Bromomethane	<1.00		1.00		ug/L			03/05/19 15:49	1
2-Butanone (MEK)	<10.0		10.0		ug/L			03/05/19 15:49	1
Carbon disulfide	<1.00		1.00		ug/L			03/05/19 15:49	1
Carbon tetrachloride	<1.00		1.00		ug/L			03/05/19 15:49	1
Chlorobenzene	<1.00		1.00		ug/L			03/05/19 15:49	1
Chloroethane	<1.00		1.00		ug/L			03/05/19 15:49	1
Chloroform	<1.00		1.00		ug/L			03/05/19 15:49	1
Chloromethane	<1.00		1.00		ug/L			03/05/19 15:49	1
1,1-Dichloroethane	<1.00		1.00		ug/L			03/05/19 15:49	1
1,2-Dichloroethane	<1.00		1.00		ug/L			03/05/19 15:49	1
1,1-Dichloroethene	<1.00		1.00		ug/L			03/05/19 15:49	1
1,2-Dichloropropane	<1.00		1.00		ug/L			03/05/19 15:49	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			03/05/19 15:49	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			03/05/19 15:49	1
Ethylbenzene	<1.00		1.00		ug/L			03/05/19 15:49	1
2-Hexanone	<10.0		10.0		ug/L			03/05/19 15:49	1
Methylene Chloride	<5.00		5.00		ug/L			03/05/19 15:49	1
4-Methyl-2-pentanone (MIBK)	<10.0	*	10.0		ug/L			03/05/19 15:49	1
Styrene	<1.00		1.00		ug/L			03/05/19 15:49	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			03/05/19 15:49	1
Tetrachloroethene	<1.00		1.00		ug/L			03/05/19 15:49	1
Toluene	<1.00		1.00		ug/L			03/05/19 15:49	1
Trichloroethene	**19.9**		1.00		ug/L			03/05/19 15:49	1
Vinyl chloride	<1.00		1.00		ug/L			03/05/19 15:49	1
Xylenes, Total	<2.00		2.00		ug/L			03/05/19 15:49	1
1,1,1-Trichloroethane	**1.12**		1.00		ug/L			03/05/19 15:49	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			03/05/19 15:49	1
Cyclohexane	<1.00		1.00		ug/L			03/05/19 15:49	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			03/05/19 15:49	1
Ethylene Dibromide	<1.00		1.00		ug/L			03/05/19 15:49	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			03/05/19 15:49	1
cis-1,2-Dichloroethene	**7.47**		1.00		ug/L			03/05/19 15:49	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			03/05/19 15:49	1
Isopropylbenzene	<1.00		1.00		ug/L			03/05/19 15:49	1
Methyl acetate	<10.0	*	10.0		ug/L			03/05/19 15:49	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			03/05/19 15:49	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			03/05/19 15:49	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			03/05/19 15:49	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			03/05/19 15:49	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			03/05/19 15:49	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			03/05/19 15:49	1
Trichlorofluoromethane	<1.00		1.00		ug/L			03/05/19 15:49	1
Chlorodibromomethane	<1.00		1.00		ug/L			03/05/19 15:49	1
Methylcyclohexane	<1.00		1.00		ug/L			03/05/19 15:49	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Client Sample ID: SW01 022719

Lab Sample ID: 240-108626-3

Date Collected: 02/27/19 12:38

Matrix: Water

Date Received: 02/28/19 08:00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		70 - 121		03/05/19 15:49	1
4-Bromofluorobenzene (Surr)	86		59 - 120		03/05/19 15:49	1
Toluene-d8 (Surr)	93		70 - 123		03/05/19 15:49	1
Dibromofluoromethane (Surr)	103		75 - 128		03/05/19 15:49	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Client Sample ID: SW04 022719

Date Collected: 02/27/19 12:44
Date Received: 02/28/19 08:00

Lab Sample ID: 240-108626-4

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			03/05/19 16:13	1
Benzene	<1.00		1.00		ug/L			03/05/19 16:13	1
Dichlorobromomethane	<1.00		1.00		ug/L			03/05/19 16:13	1
Bromoform	<1.00		1.00		ug/L			03/05/19 16:13	1
Bromomethane	<1.00		1.00		ug/L			03/05/19 16:13	1
2-Butanone (MEK)	<10.0		10.0		ug/L			03/05/19 16:13	1
Carbon disulfide	<1.00		1.00		ug/L			03/05/19 16:13	1
Carbon tetrachloride	<1.00		1.00		ug/L			03/05/19 16:13	1
Chlorobenzene	<1.00		1.00		ug/L			03/05/19 16:13	1
Chloroethane	<1.00		1.00		ug/L			03/05/19 16:13	1
Chloroform	<1.00		1.00		ug/L			03/05/19 16:13	1
Chloromethane	<1.00		1.00		ug/L			03/05/19 16:13	1
1,1-Dichloroethane	<1.00		1.00		ug/L			03/05/19 16:13	1
1,2-Dichloroethane	<1.00		1.00		ug/L			03/05/19 16:13	1
1,1-Dichloroethene	<1.00		1.00		ug/L			03/05/19 16:13	1
1,2-Dichloropropane	<1.00		1.00		ug/L			03/05/19 16:13	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			03/05/19 16:13	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			03/05/19 16:13	1
Ethylbenzene	<1.00		1.00		ug/L			03/05/19 16:13	1
2-Hexanone	<10.0		10.0		ug/L			03/05/19 16:13	1
Methylene Chloride	<5.00		5.00		ug/L			03/05/19 16:13	1
4-Methyl-2-pentanone (MIBK)	<10.0	*	10.0		ug/L			03/05/19 16:13	1
Styrene	<1.00		1.00		ug/L			03/05/19 16:13	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			03/05/19 16:13	1
Tetrachloroethene	<1.00		1.00		ug/L			03/05/19 16:13	1
Toluene	<1.00		1.00		ug/L			03/05/19 16:13	1
Trichloroethene	**101**		4.00		ug/L			03/06/19 22:16	4
Vinyl chloride	**2.15**		1.00		ug/L			03/05/19 16:13	1
Xylenes, Total	<2.00		2.00		ug/L			03/05/19 16:13	1
1,1,1-Trichloroethane	**5.32**		1.00		ug/L			03/05/19 16:13	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			03/05/19 16:13	1
Cyclohexane	<1.00		1.00		ug/L			03/05/19 16:13	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			03/05/19 16:13	1
Ethylene Dibromide	<1.00		1.00		ug/L			03/05/19 16:13	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			03/05/19 16:13	1
cis-1,2-Dichloroethene	**33.4**		1.00		ug/L			03/05/19 16:13	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			03/05/19 16:13	1
Isopropylbenzene	<1.00		1.00		ug/L			03/05/19 16:13	1
Methyl acetate	<10.0	*	10.0		ug/L			03/05/19 16:13	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			03/05/19 16:13	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			03/05/19 16:13	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			03/05/19 16:13	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			03/05/19 16:13	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			03/05/19 16:13	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			03/05/19 16:13	1
Trichlorofluoromethane	**1.25**		1.00		ug/L			03/05/19 16:13	1
Chlorodibromomethane	<1.00		1.00		ug/L			03/05/19 16:13	1
Methylcyclohexane	<1.00		1.00		ug/L			03/05/19 16:13	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Client Sample ID: SW04 022719

Lab Sample ID: 240-108626-4

Date Collected: 02/27/19 12:44

Matrix: Water

Date Received: 02/28/19 08:00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		70 - 121		03/05/19 16:13	1
1,2-Dichloroethane-d4 (Surr)	120		70 - 121		03/06/19 22:16	4
4-Bromofluorobenzene (Surr)	89		59 - 120		03/05/19 16:13	1
4-Bromofluorobenzene (Surr)	87		59 - 120		03/06/19 22:16	4
Toluene-d8 (Surr)	94		70 - 123		03/05/19 16:13	1
Toluene-d8 (Surr)	91		70 - 123		03/06/19 22:16	4
Dibromofluoromethane (Surr)	99		75 - 128		03/05/19 16:13	1
Dibromofluoromethane (Surr)	104		75 - 128		03/06/19 22:16	4

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-108626-8

Date Collected: 02/27/19 00:00
Matrix: Water
Date Received: 02/28/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			03/05/19 16:42	1
Benzene	<1.00		1.00		ug/L			03/05/19 16:42	1
Dichlorobromomethane	<1.00		1.00		ug/L			03/05/19 16:42	1
Bromoform	<1.00		1.00		ug/L			03/05/19 16:42	1
Bromomethane	<1.00		1.00		ug/L			03/05/19 16:42	1
2-Butanone (MEK)	<10.0		10.0		ug/L			03/05/19 16:42	1
Carbon disulfide	<1.00		1.00		ug/L			03/05/19 16:42	1
Carbon tetrachloride	<1.00		1.00		ug/L			03/05/19 16:42	1
Chlorobenzene	<1.00		1.00		ug/L			03/05/19 16:42	1
Chloroethane	<1.00		1.00		ug/L			03/05/19 16:42	1
Chloroform	<1.00		1.00		ug/L			03/05/19 16:42	1
Chloromethane	<1.00		1.00		ug/L			03/05/19 16:42	1
1,1-Dichloroethane	<1.00		1.00		ug/L			03/05/19 16:42	1
1,2-Dichloroethane	<1.00		1.00		ug/L			03/05/19 16:42	1
1,1-Dichloroethene	<1.00		1.00		ug/L			03/05/19 16:42	1
1,2-Dichloropropane	<1.00		1.00		ug/L			03/05/19 16:42	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			03/05/19 16:42	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			03/05/19 16:42	1
Ethylbenzene	<1.00		1.00		ug/L			03/05/19 16:42	1
2-Hexanone	<10.0		10.0		ug/L			03/05/19 16:42	1
Methylene Chloride	<5.00		5.00		ug/L			03/05/19 16:42	1
4-Methyl-2-pentanone (MIBK)	<10.0	*	10.0		ug/L			03/05/19 16:42	1
Styrene	<1.00		1.00		ug/L			03/05/19 16:42	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			03/05/19 16:42	1
Tetrachloroethene	<1.00		1.00		ug/L			03/05/19 16:42	1
Toluene	<1.00		1.00		ug/L			03/05/19 16:42	1
Trichloroethene	<1.00		1.00		ug/L			03/05/19 16:42	1
Vinyl chloride	<1.00		1.00		ug/L			03/05/19 16:42	1
Xylenes, Total	<2.00		2.00		ug/L			03/05/19 16:42	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			03/05/19 16:42	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			03/05/19 16:42	1
Cyclohexane	<1.00		1.00		ug/L			03/05/19 16:42	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			03/05/19 16:42	1
Ethylene Dibromide	<1.00		1.00		ug/L			03/05/19 16:42	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			03/05/19 16:42	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			03/05/19 16:42	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			03/05/19 16:42	1
Isopropylbenzene	<1.00		1.00		ug/L			03/05/19 16:42	1
Methyl acetate	<10.0	*	10.0		ug/L			03/05/19 16:42	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			03/05/19 16:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			03/05/19 16:42	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			03/05/19 16:42	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			03/05/19 16:42	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			03/05/19 16:42	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			03/05/19 16:42	1
Trichlorofluoromethane	<1.00		1.00		ug/L			03/05/19 16:42	1
Chlorodibromomethane	<1.00		1.00		ug/L			03/05/19 16:42	1
Methylcyclohexane	<1.00		1.00		ug/L			03/05/19 16:42	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-108626-8

Date Collected: 02/27/19 00:00

Matrix: Water

Date Received: 02/28/19 08:00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	116		70 - 121		03/05/19 16:42	1
4-Bromofluorobenzene (Surr)	86		59 - 120		03/05/19 16:42	1
Toluene-d8 (Surr)	91		70 - 123		03/05/19 16:42	1
Dibromofluoromethane (Surr)	103		75 - 128		03/05/19 16:42	1

Surrogate Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(70-121)	(59-120)	(70-123)	(75-128)
240-108626-3	SW01 022719	114	86	93	103
240-108626-4	SW04 022719	113	89	94	99
240-108626-4	SW04 022719	120	87	91	104
240-108626-8	TRIP BLANK	116	86	91	103
LCS 240-370294/4	Lab Control Sample	98	108	99	89
LCS 240-370494/4	Lab Control Sample	99	110	98	90
MB 240-370294/6	Method Blank	111	88	93	101
MB 240-370494/6	Method Blank	114	86	92	100

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

QC Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-370294/6
Matrix: Water
Analysis Batch: 370294

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			03/05/19 12:54	1
Benzene	<1.00		1.00		ug/L			03/05/19 12:54	1
Dichlorobromomethane	<1.00		1.00		ug/L			03/05/19 12:54	1
Bromoform	<1.00		1.00		ug/L			03/05/19 12:54	1
Bromomethane	<1.00		1.00		ug/L			03/05/19 12:54	1
2-Butanone (MEK)	<10.0		10.0		ug/L			03/05/19 12:54	1
Carbon disulfide	<1.00		1.00		ug/L			03/05/19 12:54	1
Carbon tetrachloride	<1.00		1.00		ug/L			03/05/19 12:54	1
Chlorobenzene	<1.00		1.00		ug/L			03/05/19 12:54	1
Chloroethane	<1.00		1.00		ug/L			03/05/19 12:54	1
Chloroform	<1.00		1.00		ug/L			03/05/19 12:54	1
Chloromethane	<1.00		1.00		ug/L			03/05/19 12:54	1
1,1-Dichloroethane	<1.00		1.00		ug/L			03/05/19 12:54	1
1,2-Dichloroethane	<1.00		1.00		ug/L			03/05/19 12:54	1
1,1-Dichloroethene	<1.00		1.00		ug/L			03/05/19 12:54	1
1,2-Dichloropropane	<1.00		1.00		ug/L			03/05/19 12:54	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			03/05/19 12:54	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			03/05/19 12:54	1
Ethylbenzene	<1.00		1.00		ug/L			03/05/19 12:54	1
2-Hexanone	<10.0		10.0		ug/L			03/05/19 12:54	1
Methylene Chloride	<5.00		5.00		ug/L			03/05/19 12:54	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			03/05/19 12:54	1
Styrene	<1.00		1.00		ug/L			03/05/19 12:54	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			03/05/19 12:54	1
Tetrachloroethene	<1.00		1.00		ug/L			03/05/19 12:54	1
Toluene	<1.00		1.00		ug/L			03/05/19 12:54	1
Trichloroethene	<1.00		1.00		ug/L			03/05/19 12:54	1
Vinyl chloride	<1.00		1.00		ug/L			03/05/19 12:54	1
Xylenes, Total	<2.00		2.00		ug/L			03/05/19 12:54	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			03/05/19 12:54	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			03/05/19 12:54	1
Cyclohexane	<1.00		1.00		ug/L			03/05/19 12:54	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			03/05/19 12:54	1
Ethylene Dibromide	<1.00		1.00		ug/L			03/05/19 12:54	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			03/05/19 12:54	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			03/05/19 12:54	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			03/05/19 12:54	1
Isopropylbenzene	<1.00		1.00		ug/L			03/05/19 12:54	1
Methyl acetate	<10.0		10.0		ug/L			03/05/19 12:54	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			03/05/19 12:54	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			03/05/19 12:54	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			03/05/19 12:54	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			03/05/19 12:54	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			03/05/19 12:54	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			03/05/19 12:54	1
Trichlorofluoromethane	<1.00		1.00		ug/L			03/05/19 12:54	1
Chlorodibromomethane	<1.00		1.00		ug/L			03/05/19 12:54	1
Methylcyclohexane	<1.00		1.00		ug/L			03/05/19 12:54	1

QC Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		70 - 121		03/05/19 12:54	1
4-Bromofluorobenzene (Surr)	88		59 - 120		03/05/19 12:54	1
Toluene-d8 (Surr)	93		70 - 123		03/05/19 12:54	1
Dibromofluoromethane (Surr)	101		75 - 128		03/05/19 12:54	1

Lab Sample ID: LCS 240-370294/4
Matrix: Water
Analysis Batch: 370294

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	22.49		ug/L		112	21 - 162
Benzene	10.0	10.93		ug/L		109	80 - 123
Dichlorobromomethane	10.0	9.093		ug/L		91	77 - 125
Bromoform	10.0	8.132		ug/L		81	49 - 141
Bromomethane	10.0	7.375		ug/L		74	41 - 175
2-Butanone (MEK)	20.0	28.95		ug/L		145	39 - 163
Carbon disulfide	10.0	10.07		ug/L		101	60 - 138
Carbon tetrachloride	10.0	8.170		ug/L		82	63 - 140
Chlorobenzene	10.0	9.296		ug/L		93	80 - 121
Chloroethane	10.0	8.035		ug/L		80	33 - 173
Chloroform	10.0	9.771		ug/L		98	79 - 127
Chloromethane	10.0	12.91		ug/L		129	54 - 143
1,1-Dichloroethane	10.0	11.36		ug/L		114	75 - 133
1,2-Dichloroethane	10.0	10.24		ug/L		102	71 - 135
1,1-Dichloroethene	10.0	9.961		ug/L		100	65 - 139
1,2-Dichloropropane	10.0	12.29		ug/L		123	78 - 133
cis-1,3-Dichloropropene	10.0	10.15		ug/L		101	64 - 132
trans-1,3-Dichloropropene	10.0	9.396		ug/L		94	55 - 128
Ethylbenzene	10.0	9.364		ug/L		94	80 - 120
2-Hexanone	20.0	29.32		ug/L		147	43 - 148
Methylene Chloride	10.0	11.79		ug/L		118	70 - 134
4-Methyl-2-pentanone (MIBK)	20.0	29.67	*	ug/L		148	49 - 143
Styrene	10.0	9.340		ug/L		93	79 - 120
1,1,2,2-Tetrachloroethane	10.0	11.43		ug/L		114	65 - 139
Tetrachloroethene	10.0	9.036		ug/L		90	74 - 130
Toluene	10.0	10.29		ug/L		103	78 - 129
Trichloroethene	10.0	8.520		ug/L		85	76 - 125
Vinyl chloride	10.0	9.955		ug/L		100	58 - 143
Xylenes, Total	20.0	19.17		ug/L		96	80 - 120
1,1,1-Trichloroethane	10.0	8.569		ug/L		86	69 - 134
1,1,2-Trichloroethane	10.0	10.81		ug/L		108	78 - 133
Cyclohexane	10.0	12.18		ug/L		122	58 - 145
1,2-Dibromo-3-Chloropropane	10.0	8.211		ug/L		82	46 - 132
Ethylene Dibromide	10.0	9.995		ug/L		100	77 - 123
Dichlorodifluoromethane	10.0	8.036		ug/L		80	29 - 148
cis-1,2-Dichloroethene	10.0	9.724		ug/L		97	76 - 128
trans-1,2-Dichloroethene	10.0	10.04		ug/L		100	78 - 133
Isopropylbenzene	10.0	9.119		ug/L		91	74 - 120
Methyl acetate	20.0	32.72	*	ug/L		164	52 - 145
Methyl tert-butyl ether	10.0	9.883		ug/L		99	51 - 133
1,1,2-Trichloro-1,2,2-trifluoroetha ne	10.0	8.651		ug/L		87	50 - 156
1,2,4-Trichlorobenzene	10.0	7.513		ug/L		75	42 - 133
1,2-Dichlorobenzene	10.0	8.803		ug/L		88	78 - 120

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-370294/4
Matrix: Water
Analysis Batch: 370294

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,3-Dichlorobenzene	10.0	8.720		ug/L		87	78 - 120
1,4-Dichlorobenzene	10.0	8.688		ug/L		87	78 - 120
Trichlorofluoromethane	10.0	7.807		ug/L		78	51 - 164
Chlorodibromomethane	10.0	8.492		ug/L		85	70 - 132
Methylcyclohexane	10.0	9.146		ug/L		91	60 - 125
m-Xylene & p-Xylene	10.0	9.741		ug/L		97	80 - 120
o-Xylene	10.0	9.426		ug/L		94	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 121*
4-Bromofluorobenzene (Surr)	*108*		*59 - 120*
Toluene-d8 (Surr)	*99*		*70 - 123*
Dibromofluoromethane (Surr)	*89*		*75 - 128*

Lab Sample ID: MB 240-370494/6
Matrix: Water
Analysis Batch: 370494

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	<1.00		1.00		ug/L			03/06/19 13:47	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*70 - 121*		*03/06/19 13:47*	*1*
4-Bromofluorobenzene (Surr)	*86*		*59 - 120*		*03/06/19 13:47*	*1*
Toluene-d8 (Surr)	*92*		*70 - 123*		*03/06/19 13:47*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 128*		*03/06/19 13:47*	*1*

Lab Sample ID: LCS 240-370494/4
Matrix: Water
Analysis Batch: 370494

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Trichloroethene	10.0	8.890		ug/L		89	76 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 121*
4-Bromofluorobenzene (Surr)	*110*		*59 - 120*
Toluene-d8 (Surr)	*98*		*70 - 123*
Dibromofluoromethane (Surr)	*90*		*75 - 128*

QC Association Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

GC/MS VOA

Analysis Batch: 370294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-108626-3	SW01 022719	Total/NA	Water	8260B	
240-108626-4	SW04 022719	Total/NA	Water	8260B	
240-108626-8	TRIP BLANK	Total/NA	Water	8260B	
MB 240-370294/6	Method Blank	Total/NA	Water	8260B	
LCS 240-370294/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 370494

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-108626-4	SW04 022719	Total/NA	Water	8260B	
MB 240-370494/6	Method Blank	Total/NA	Water	8260B	
LCS 240-370494/4	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Client Sample ID: SW01 022719
Lab Sample ID: 240-108626-3
Date Collected: 02/27/19 12:38
Matrix: Water
Date Received: 02/28/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	370294	03/05/19 15:49	LRW	TAL CAN

Client Sample ID: SW04 022719
Lab Sample ID: 240-108626-4
Date Collected: 02/27/19 12:44
Matrix: Water
Date Received: 02/28/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	370294	03/05/19 16:13	LRW	TAL CAN
Total/NA	Analysis	8260B		4	370494	03/06/19 22:16	LRW	TAL CAN

Client Sample ID: TRIP BLANK
Lab Sample ID: 240-108626-8
Date Collected: 02/27/19 00:00
Matrix: Water
Date Received: 02/28/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	370294	03/05/19 16:42	LRW	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

TestAmerica Job ID: 240-108626-2

Laboratory: TestAmerica Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19 *
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19 *
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Canton
4101 Shuffel Street, N. W.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

24019071

Chain of Custody Record

150101

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☑ NPDES ☑ RCRA ☐ Other:

Client Contact	Project Manager: Shawn Ford	Site Contact:	Date: 2/27/19	COC No:
Company Name: IOE	Tel/Fax: 740-503-8004	Lab Contact: John McFadden	Carrier:	____ of ____ COCs
Address:	Analysis Turnaround Time			Sampler:
City/State/Zip:	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone:	TAT if different from Below ____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: Certa-Vandalia	☐ 1 week			
Site: 203 Nutwoods Blvd	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOC	Sample Specific Notes:
PREAS 022719-1	2/27/19	12:06	G	W		N	N		
PREAS 022719-2									
PREAS 022719-3									
Eff 022719-1		12:00							
Eff 022719-2									
Eff 022719-3									
SW01 022719-1		12:38							
SW01 022719-2									
SW01 022719-3									
SW04 022719-1		12:44							
SW04 022719-2									
SW04 022719-3									

240-108626 Chain of Custody

210 Dayton

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Shawn M Ford	IOE	2/27/19 1336	[signature]	TA	2-27-19 1336
[signature]	TA	2-27-19 1600	[signature]	TA	2/28/19 800

TestAmerica Canton
4101 Shuffel Street, N. W.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

24019071

Chain of Custody Record

150100

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☑ NPDES ☑ RCRA ☐ Other:

Client Contact	Project Manager: Sharon M. Ford	Site Contact:	Date: 2/27/19	COC No:
Company Name: IOE	Tel/Fax: 740-503-8004	Lab Contact: John McFadden	Carrier:	____ of ____ COCs
Address:	Analysis Turnaround Time			Sampler:
City/State/Zip:	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone:	TAT if different from Below ____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: ~~Mahto~~ CERTA - Vandalia	☐ 1 week			
Site: 203 Northwood Blvd	☐ 2 days			Job / SDG No.:
PO#	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOC	Sample Specific Notes:
BRIN 022719-1	2/27/19	11:56	G	W		N	N		
BRIN 022719-2	↓	↓	↓	↓		↓	↓	↓	
BRIN 022719-3	↓	↓	↓	↓		↓	↓	↓	
SS 022719-1	↓	11:52	↓	↓		↓	↓	↓	
SS 022719-2	↓	↓	↓	↓		↓	↓	↓	
SS 022719-3	↓	↓	↓	↓		↓	↓	↓	
OBIN 022719-1	↓	12:03	↓	↓		↓	↓	↓	
OBIN 022719-2	↓	↓	↓	↓		↓	↓	↓	
OBIN 022719-3	↓	↓	↓	↓		↓	↓	↓	

210 Dayton

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Sharon M. Ford	IOE	2/27/19 1336	[signature]	TA	2-27-19 1336
[signature]	TA	2-27-19 1600	[signature]	TA	2/28/19 800

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 108626
Canton Facility

Client IOC Site Name _____ Cooler unpacked by: [illegible]

Cooler Received on 2/28/19 Opened on 2/28/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
   IR GUN #36 (CF **+0.7**°C) Observed Cooler Temp. 2.7 °C Corrected Cooler Temp. 2.4 °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC861525**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 58088 Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: RC

Rec'd 1x40 TB not on COC w/ Log.

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-109800-1
Client Project/Site: CERTA Vandalia

For:
Institute of Ecolonomics
901 S County Rd 31
Berthoud, Colorado 80513

Attn: Chris Powers

Authorized for release by:
4/5/2019 4:43:01 PM

John McFadden, Project Manager I
(330)497-9396
john.mcfadden@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
E	Result exceeded calibration range.
F1	MS and/or MSD Recovery is outside acceptance limits.
X	Surrogate is outside control limits

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 ID: 240-109800-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: Institute of Ecolonomics

Project: CERTA Vandalia

Report Number: 240-109800-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 3/22/2019 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples 420D (240-109800-1), 420M (240-109800-2), 417D (240-109800-3), 418D (240-109800-4), 425S (240-109800-5), 741 (240-109800-6), 800 (240-109800-7), 775 (240-109800-8), 759 (240-109800-9), 740 (240-109800-10), 776 (240-109800-11), 730 (240-109800-12), 717 (240-109800-13), 731 (240-109800-14), 732 (240-109800-15), 725 (240-109800-16), 743 (240-109800-17), 605 (240-109800-18), 810 (240-109800-19), 806 (240-109800-20), 607 (240-109800-21) and 806 DUP (240-109800-22) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/03/2019 and 04/04/2019.

cis-1,2-Dichloroethene was detected in method blank MB 240-374533/8 at a level exceeding the reporting limit. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Samples 420D (240-109800-1)[5X], 420M (240-109800-2)[25X], 425S (240-109800-5)[50X], 759 (240-109800-9)[2X], 806 (240-109800-20)[1250X] and 806 DUP (240-109800-22)[1250X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The laboratory control sample (LCS) for analytical batch 240-374533 recovered outside control limits for the following analyte: Benzene. This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data has been reported. 810

Job ID: 240-109800-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

(240-109800-19), 607 (240-109800-21) and (LCS 240-374533/4)

The method blank for preparation batch analytical batch 240-374533 contained cis-1,2-Dichloroethene above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed. 810 (240-109800-19) and (MB 240-374533/8)

The MS/MSD for batch 240-374533 was not analyzed due to an instrument malfunction. Batch included samples 810 (240-109800-19) and 607 (240-109800-21)

Surrogate recovery for the following samples were outside the upper control limit: 810 (240-109800-19), 607 (240-109800-21) and (MB 240-374533/8). These samples did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Sample 420M (240-109800-2) had a reanalysis that had different results than the original analysis. This is most likely due to non-homogeneity in the sample. Both runs are reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-109800-1	420D	Water	03/21/19 10:10	03/22/19 08:00
240-109800-2	420M	Water	03/21/19 10:10	03/22/19 08:00
240-109800-3	417D	Water	03/21/19 10:39	03/22/19 08:00
240-109800-4	418D	Water	03/21/19 11:00	03/22/19 08:00
240-109800-5	425S	Water	03/21/19 11:24	03/22/19 08:00
240-109800-6	741	Water	03/21/19 11:30	03/22/19 08:00
240-109800-7	800	Water	03/21/19 11:47	03/22/19 08:00
240-109800-8	775	Water	03/21/19 11:55	03/22/19 08:00
240-109800-9	759	Water	03/21/19 12:06	03/22/19 08:00
240-109800-10	740	Water	03/21/19 12:20	03/22/19 08:00
240-109800-11	776	Water	03/21/19 12:30	03/22/19 08:00
240-109800-12	730	Water	03/21/19 12:45	03/22/19 08:00
240-109800-13	717	Water	03/21/19 13:57	03/22/19 08:00
240-109800-14	731	Water	03/21/19 14:07	03/22/19 08:00
240-109800-15	732	Water	03/21/19 15:20	03/22/19 08:00
240-109800-16	725	Water	03/21/19 14:30	03/22/19 08:00
240-109800-17	743	Water	03/21/19 14:19	03/22/19 08:00
240-109800-18	605	Water	03/21/19 15:11	03/22/19 08:00
240-109800-19	810	Water	03/21/19 16:00	03/22/19 08:00
240-109800-20	806	Water	03/21/19 15:39	03/22/19 08:00
240-109800-21	607	Water	03/21/19 15:00	03/22/19 08:00
240-109800-22	806 DUP	Water	03/21/19 00:00	03/22/19 08:00

Detection Summary

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 420D — Lab Sample ID: 240-109800-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	111		5.00		ug/L	5		8260B	Total/NA
Vinyl chloride	110		5.00		ug/L	5		8260B	Total/NA
cis-1,2-Dichloroethene	186		5.00		ug/L	5		8260B	Total/NA

Client Sample ID: 420M — Lab Sample ID: 240-109800-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethene - RA	1.23		1.00		ug/L	1		8260B	Total/NA
Trichloroethene - RA	327	E	1.00		ug/L	1		8260B	Total/NA
Vinyl chloride - RA	39.0		1.00		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene - RA	563	E	1.00		ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene - RA	8.92		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: 417D — Lab Sample ID: 240-109800-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	12.9		1.00		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	8.41		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: 418D — Lab Sample ID: 240-109800-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	1.20		1.00		ug/L	1		8260B	Total/NA
Vinyl chloride	20.3		1.00		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	2.03		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: 425S — Lab Sample ID: 240-109800-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1170		50.0		ug/L	50		8260B	Total/NA
cis-1,2-Dichloroethene	881		50.0		ug/L	50		8260B	Total/NA

Client Sample ID: 741 — Lab Sample ID: 240-109800-6

No Detections.

Client Sample ID: 800 — Lab Sample ID: 240-109800-7

No Detections.

Client Sample ID: 775 — Lab Sample ID: 240-109800-8

No Detections.

Client Sample ID: 759 — Lab Sample ID: 240-109800-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	6.63		2.00		ug/L	2		8260B	Total/NA
Vinyl chloride	71.4		2.00		ug/L	2		8260B	Total/NA
cis-1,2-Dichloroethene	66.8		2.00		ug/L	2		8260B	Total/NA
trans-1,2-Dichloroethene	3.28		2.00		ug/L	2		8260B	Total/NA

Client Sample ID: 740 — Lab Sample ID: 240-109800-10

No Detections.

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 776 — Lab Sample ID: 240-109800-11

No Detections.

Client Sample ID: 730 — Lab Sample ID: 240-109800-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	2.11		1.00		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	2.14		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: 717 — Lab Sample ID: 240-109800-13

No Detections.

Client Sample ID: 731 — Lab Sample ID: 240-109800-14

No Detections.

Client Sample ID: 732 — Lab Sample ID: 240-109800-15

No Detections.

Client Sample ID: 725 — Lab Sample ID: 240-109800-16

No Detections.

Client Sample ID: 743 — Lab Sample ID: 240-109800-17

No Detections.

Client Sample ID: 605 — Lab Sample ID: 240-109800-18

No Detections.

Client Sample ID: 810 — Lab Sample ID: 240-109800-19

No Detections.

Client Sample ID: 806 — Lab Sample ID: 240-109800-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	11100		1250		ug/L	1250		8260B	Total/NA
cis-1,2-Dichloroethene	22200	F1	1250		ug/L	1250		8260B	Total/NA

Client Sample ID: 607 — Lab Sample ID: 240-109800-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	7.27		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: 806 DUP — Lab Sample ID: 240-109800-22

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	10400		1250		ug/L	1250		8260B	Total/NA
cis-1,2-Dichloroethene	20800		1250		ug/L	1250		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 420D

Date Collected: 03/21/19 10:10
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<50.0		50.0		ug/L			04/03/19 15:47	5
Benzene	<5.00		5.00		ug/L			04/03/19 15:47	5
Dichlorobromomethane	<5.00		5.00		ug/L			04/03/19 15:47	5
Bromoform	<5.00		5.00		ug/L			04/03/19 15:47	5
Bromomethane	<5.00		5.00		ug/L			04/03/19 15:47	5
2-Butanone (MEK)	<50.0		50.0		ug/L			04/03/19 15:47	5
Carbon disulfide	<5.00		5.00		ug/L			04/03/19 15:47	5
Carbon tetrachloride	<5.00		5.00		ug/L			04/03/19 15:47	5
Chlorobenzene	<5.00		5.00		ug/L			04/03/19 15:47	5
Chloroethane	<5.00		5.00		ug/L			04/03/19 15:47	5
Chloroform	<5.00		5.00		ug/L			04/03/19 15:47	5
Chloromethane	<5.00		5.00		ug/L			04/03/19 15:47	5
1,1-Dichloroethane	<5.00		5.00		ug/L			04/03/19 15:47	5
1,2-Dichloroethane	<5.00		5.00		ug/L			04/03/19 15:47	5
1,1-Dichloroethene	<5.00		5.00		ug/L			04/03/19 15:47	5
1,2-Dichloropropane	<5.00		5.00		ug/L			04/03/19 15:47	5
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			04/03/19 15:47	5
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			04/03/19 15:47	5
Ethylbenzene	<5.00		5.00		ug/L			04/03/19 15:47	5
2-Hexanone	<50.0		50.0		ug/L			04/03/19 15:47	5
Methylene Chloride	<25.0		25.0		ug/L			04/03/19 15:47	5
4-Methyl-2-pentanone (MIBK)	<50.0		50.0		ug/L			04/03/19 15:47	5
Styrene	<5.00		5.00		ug/L			04/03/19 15:47	5
1,1,2,2-Tetrachloroethane	<5.00		5.00		ug/L			04/03/19 15:47	5
Tetrachloroethene	<5.00		5.00		ug/L			04/03/19 15:47	5
Toluene	<5.00		5.00		ug/L			04/03/19 15:47	5
Trichloroethene	**111**		5.00		ug/L			04/03/19 15:47	5
Vinyl chloride	**110**		5.00		ug/L			04/03/19 15:47	5
Xylenes, Total	<10.0		10.0		ug/L			04/03/19 15:47	5
1,1,1-Trichloroethane	<5.00		5.00		ug/L			04/03/19 15:47	5
1,1,2-Trichloroethane	<5.00		5.00		ug/L			04/03/19 15:47	5
Cyclohexane	<5.00		5.00		ug/L			04/03/19 15:47	5
1,2-Dibromo-3-Chloropropane	<10.0		10.0		ug/L			04/03/19 15:47	5
Ethylene Dibromide	<5.00		5.00		ug/L			04/03/19 15:47	5
Dichlorodifluoromethane	<5.00		5.00		ug/L			04/03/19 15:47	5
cis-1,2-Dichloroethene	**186**		5.00		ug/L			04/03/19 15:47	5
trans-1,2-Dichloroethene	<5.00		5.00		ug/L			04/03/19 15:47	5
Isopropylbenzene	<5.00		5.00		ug/L			04/03/19 15:47	5
Methyl acetate	<50.0		50.0		ug/L			04/03/19 15:47	5
Methyl tert-butyl ether	<5.00		5.00		ug/L			04/03/19 15:47	5
1,1,2-Trichloro-1,2,2-trifluoroethane	<5.00		5.00		ug/L			04/03/19 15:47	5
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			04/03/19 15:47	5
1,2-Dichlorobenzene	<5.00		5.00		ug/L			04/03/19 15:47	5
1,3-Dichlorobenzene	<5.00		5.00		ug/L			04/03/19 15:47	5
1,4-Dichlorobenzene	<5.00		5.00		ug/L			04/03/19 15:47	5
Trichlorofluoromethane	<5.00		5.00		ug/L			04/03/19 15:47	5
Chlorodibromomethane	<5.00		5.00		ug/L			04/03/19 15:47	5
Methylcyclohexane	<5.00		5.00		ug/L			04/03/19 15:47	5

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 420D

Date Collected: 03/21/19 10:10
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-1

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		70 - 121		04/03/19 15:47	5
4-Bromofluorobenzene (Surr)	81		59 - 120		04/03/19 15:47	5
Toluene-d8 (Surr)	96		70 - 123		04/03/19 15:47	5
Dibromofluoromethane (Surr)	107		75 - 128		04/03/19 15:47	5

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 420M

Date Collected: 03/21/19 10:10
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<250		250		ug/L			04/03/19 16:15	25
Benzene	<25.0		25.0		ug/L			04/03/19 16:15	25
Dichlorobromomethane	<25.0		25.0		ug/L			04/03/19 16:15	25
Bromoform	<25.0		25.0		ug/L			04/03/19 16:15	25
Bromomethane	<25.0		25.0		ug/L			04/03/19 16:15	25
2-Butanone (MEK)	<250		250		ug/L			04/03/19 16:15	25
Carbon disulfide	<25.0		25.0		ug/L			04/03/19 16:15	25
Carbon tetrachloride	<25.0		25.0		ug/L			04/03/19 16:15	25
Chlorobenzene	<25.0		25.0		ug/L			04/03/19 16:15	25
Chloroethane	<25.0		25.0		ug/L			04/03/19 16:15	25
Chloroform	<25.0		25.0		ug/L			04/03/19 16:15	25
Chloromethane	<25.0		25.0		ug/L			04/03/19 16:15	25
1,1-Dichloroethane	<25.0		25.0		ug/L			04/03/19 16:15	25
1,2-Dichloroethane	<25.0		25.0		ug/L			04/03/19 16:15	25
1,1-Dichloroethene	<25.0		25.0		ug/L			04/03/19 16:15	25
1,2-Dichloropropane	<25.0		25.0		ug/L			04/03/19 16:15	25
cis-1,3-Dichloropropene	<25.0		25.0		ug/L			04/03/19 16:15	25
trans-1,3-Dichloropropene	<25.0		25.0		ug/L			04/03/19 16:15	25
Ethylbenzene	<25.0		25.0		ug/L			04/03/19 16:15	25
2-Hexanone	<250		250		ug/L			04/03/19 16:15	25
Methylene Chloride	<125		125		ug/L			04/03/19 16:15	25
4-Methyl-2-pentanone (MIBK)	<250		250		ug/L			04/03/19 16:15	25
Styrene	<25.0		25.0		ug/L			04/03/19 16:15	25
1,1,2,2-Tetrachloroethane	<25.0		25.0		ug/L			04/03/19 16:15	25
Tetrachloroethene	<25.0		25.0		ug/L			04/03/19 16:15	25
Toluene	<25.0		25.0		ug/L			04/03/19 16:15	25
Trichloroethene	<25.0		25.0		ug/L			04/03/19 16:15	25
Vinyl chloride	<25.0		25.0		ug/L			04/03/19 16:15	25
Xylenes, Total	<50.0		50.0		ug/L			04/03/19 16:15	25
1,1,1-Trichloroethane	<25.0		25.0		ug/L			04/03/19 16:15	25
1,1,2-Trichloroethane	<25.0		25.0		ug/L			04/03/19 16:15	25
Cyclohexane	<25.0		25.0		ug/L			04/03/19 16:15	25
1,2-Dibromo-3-Chloropropane	<50.0		50.0		ug/L			04/03/19 16:15	25
Ethylene Dibromide	<25.0		25.0		ug/L			04/03/19 16:15	25
Dichlorodifluoromethane	<25.0		25.0		ug/L			04/03/19 16:15	25
cis-1,2-Dichloroethene	<25.0		25.0		ug/L			04/03/19 16:15	25
trans-1,2-Dichloroethene	<25.0		25.0		ug/L			04/03/19 16:15	25
Isopropylbenzene	<25.0		25.0		ug/L			04/03/19 16:15	25
Methyl acetate	<250		250		ug/L			04/03/19 16:15	25
Methyl tert-butyl ether	<25.0		25.0		ug/L			04/03/19 16:15	25
1,1,2-Trichloro-1,2,2-trifluoroethane	<25.0		25.0		ug/L			04/03/19 16:15	25
1,2,4-Trichlorobenzene	<25.0		25.0		ug/L			04/03/19 16:15	25
1,2-Dichlorobenzene	<25.0		25.0		ug/L			04/03/19 16:15	25
1,3-Dichlorobenzene	<25.0		25.0		ug/L			04/03/19 16:15	25
1,4-Dichlorobenzene	<25.0		25.0		ug/L			04/03/19 16:15	25
Trichlorofluoromethane	<25.0		25.0		ug/L			04/03/19 16:15	25
Chlorodibromomethane	<25.0		25.0		ug/L			04/03/19 16:15	25
Methylcyclohexane	<25.0		25.0		ug/L			04/03/19 16:15	25

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 420M

Date Collected: 03/21/19 10:10
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-2

Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 121*		*04/03/19 16:15*	*25*
4-Bromofluorobenzene (Surr)	*78*		*59 - 120*		*04/03/19 16:15*	*25*
Toluene-d8 (Surr)	*93*		*70 - 123*		*04/03/19 16:15*	*25*
Dibromofluoromethane (Surr)	*111*		*75 - 128*		*04/03/19 16:15*	*25*

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/04/19 21:23	1
Benzene	<1.00		1.00		ug/L			04/04/19 21:23	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/04/19 21:23	1
Bromoform	<1.00		1.00		ug/L			04/04/19 21:23	1
Bromomethane	<1.00		1.00		ug/L			04/04/19 21:23	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/04/19 21:23	1
Carbon disulfide	<1.00		1.00		ug/L			04/04/19 21:23	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/04/19 21:23	1
Chlorobenzene	<1.00		1.00		ug/L			04/04/19 21:23	1
Chloroethane	<1.00		1.00		ug/L			04/04/19 21:23	1
Chloroform	<1.00		1.00		ug/L			04/04/19 21:23	1
Chloromethane	<1.00		1.00		ug/L			04/04/19 21:23	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/04/19 21:23	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/04/19 21:23	1
1,1-Dichloroethene	**1.23**		1.00		ug/L			04/04/19 21:23	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/04/19 21:23	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/04/19 21:23	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/04/19 21:23	1
Ethylbenzene	<1.00		1.00		ug/L			04/04/19 21:23	1
2-Hexanone	<10.0		10.0		ug/L			04/04/19 21:23	1
Methylene Chloride	<5.00		5.00		ug/L			04/04/19 21:23	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/04/19 21:23	1
Styrene	<1.00		1.00		ug/L			04/04/19 21:23	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/04/19 21:23	1
Tetrachloroethene	<1.00		1.00		ug/L			04/04/19 21:23	1
Toluene	<1.00		1.00		ug/L			04/04/19 21:23	1
Trichloroethene	**327**	**E**	1.00		ug/L			04/04/19 21:23	1
Vinyl chloride	**39.0**		1.00		ug/L			04/04/19 21:23	1
Xylenes, Total	<2.00		2.00		ug/L			04/04/19 21:23	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/04/19 21:23	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/04/19 21:23	1
Cyclohexane	<1.00		1.00		ug/L			04/04/19 21:23	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/04/19 21:23	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/04/19 21:23	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/04/19 21:23	1
cis-1,2-Dichloroethene	**563**	**E**	1.00		ug/L			04/04/19 21:23	1
trans-1,2-Dichloroethene	**8.92**		1.00		ug/L			04/04/19 21:23	1
Isopropylbenzene	<1.00		1.00		ug/L			04/04/19 21:23	1
Methyl acetate	<10.0		10.0		ug/L			04/04/19 21:23	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/04/19 21:23	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/04/19 21:23	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/04/19 21:23	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 21:23	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 420M

Lab Sample ID: 240-109800-2

Date Collected: 03/21/19 10:10

Matrix: Water

Date Received: 03/22/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 21:23	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 21:23	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/04/19 21:23	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/04/19 21:23	1
Methylcyclohexane	<1.00		1.00		ug/L			04/04/19 21:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 121*		*04/04/19 21:23*	*1*
4-Bromofluorobenzene (Surr)	*81*		*59 - 120*		*04/04/19 21:23*	*1*
Toluene-d8 (Surr)	*98*		*70 - 123*		*04/04/19 21:23*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 128*		*04/04/19 21:23*	*1*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 417D

Date Collected: 03/21/19 10:39
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-3

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 16:39	1
Benzene	<1.00		1.00		ug/L			04/03/19 16:39	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 16:39	1
Bromoform	<1.00		1.00		ug/L			04/03/19 16:39	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 16:39	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 16:39	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 16:39	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 16:39	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 16:39	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 16:39	1
Chloroform	<1.00		1.00		ug/L			04/03/19 16:39	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 16:39	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 16:39	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 16:39	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 16:39	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 16:39	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 16:39	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 16:39	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 16:39	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 16:39	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 16:39	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 16:39	1
Styrene	<1.00		1.00		ug/L			04/03/19 16:39	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 16:39	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 16:39	1
Toluene	<1.00		1.00		ug/L			04/03/19 16:39	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 16:39	1
Vinyl chloride	**12.9**		1.00		ug/L			04/03/19 16:39	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 16:39	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 16:39	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 16:39	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 16:39	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 16:39	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 16:39	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 16:39	1
cis-1,2-Dichloroethene	**8.41**		1.00		ug/L			04/03/19 16:39	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 16:39	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 16:39	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 16:39	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 16:39	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 16:39	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 16:39	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 16:39	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 16:39	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 16:39	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 16:39	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 16:39	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 16:39	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 417D

Date Collected: 03/21/19 10:39
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-3

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		70 - 121		04/03/19 16:39	1
4-Bromofluorobenzene (Surr)	79		59 - 120		04/03/19 16:39	1
Toluene-d8 (Surr)	94		70 - 123		04/03/19 16:39	1
Dibromofluoromethane (Surr)	111		75 - 128		04/03/19 16:39	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 418D

Date Collected: 03/21/19 11:00
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-4

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 17:10	1
Benzene	<1.00		1.00		ug/L			04/03/19 17:10	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 17:10	1
Bromoform	<1.00		1.00		ug/L			04/03/19 17:10	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 17:10	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 17:10	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 17:10	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 17:10	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 17:10	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 17:10	1
Chloroform	<1.00		1.00		ug/L			04/03/19 17:10	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 17:10	1
1,1-Dichloroethane	**1.20**		1.00		ug/L			04/03/19 17:10	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 17:10	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 17:10	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 17:10	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 17:10	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 17:10	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 17:10	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 17:10	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 17:10	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 17:10	1
Styrene	<1.00		1.00		ug/L			04/03/19 17:10	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 17:10	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 17:10	1
Toluene	<1.00		1.00		ug/L			04/03/19 17:10	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 17:10	1
Vinyl chloride	**20.3**		1.00		ug/L			04/03/19 17:10	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 17:10	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 17:10	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 17:10	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 17:10	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 17:10	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 17:10	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 17:10	1
cis-1,2-Dichloroethene	**2.03**		1.00		ug/L			04/03/19 17:10	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 17:10	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 17:10	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 17:10	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 17:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 17:10	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 17:10	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 17:10	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 17:10	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 17:10	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 17:10	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 17:10	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 17:10	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 418D

Date Collected: 03/21/19 11:00
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-4

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		70 - 121		04/03/19 17:10	1
4-Bromofluorobenzene (Surr)	78		59 - 120		04/03/19 17:10	1
Toluene-d8 (Surr)	94		70 - 123		04/03/19 17:10	1
Dibromofluoromethane (Surr)	111		75 - 128		04/03/19 17:10	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 425S

Date Collected: 03/21/19 11:24
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-5

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<500		500		ug/L			04/03/19 17:43	50
Benzene	<50.0		50.0		ug/L			04/03/19 17:43	50
Dichlorobromomethane	<50.0		50.0		ug/L			04/03/19 17:43	50
Bromoform	<50.0		50.0		ug/L			04/03/19 17:43	50
Bromomethane	<50.0		50.0		ug/L			04/03/19 17:43	50
2-Butanone (MEK)	<500		500		ug/L			04/03/19 17:43	50
Carbon disulfide	<50.0		50.0		ug/L			04/03/19 17:43	50
Carbon tetrachloride	<50.0		50.0		ug/L			04/03/19 17:43	50
Chlorobenzene	<50.0		50.0		ug/L			04/03/19 17:43	50
Chloroethane	<50.0		50.0		ug/L			04/03/19 17:43	50
Chloroform	<50.0		50.0		ug/L			04/03/19 17:43	50
Chloromethane	<50.0		50.0		ug/L			04/03/19 17:43	50
1,1-Dichloroethane	<50.0		50.0		ug/L			04/03/19 17:43	50
1,2-Dichloroethane	<50.0		50.0		ug/L			04/03/19 17:43	50
1,1-Dichloroethene	<50.0		50.0		ug/L			04/03/19 17:43	50
1,2-Dichloropropane	<50.0		50.0		ug/L			04/03/19 17:43	50
cis-1,3-Dichloropropene	<50.0		50.0		ug/L			04/03/19 17:43	50
trans-1,3-Dichloropropene	<50.0		50.0		ug/L			04/03/19 17:43	50
Ethylbenzene	<50.0		50.0		ug/L			04/03/19 17:43	50
2-Hexanone	<500		500		ug/L			04/03/19 17:43	50
Methylene Chloride	<250		250		ug/L			04/03/19 17:43	50
4-Methyl-2-pentanone (MIBK)	<500		500		ug/L			04/03/19 17:43	50
Styrene	<50.0		50.0		ug/L			04/03/19 17:43	50
1,1,2,2-Tetrachloroethane	<50.0		50.0		ug/L			04/03/19 17:43	50
Tetrachloroethene	<50.0		50.0		ug/L			04/03/19 17:43	50
Toluene	<50.0		50.0		ug/L			04/03/19 17:43	50
Trichloroethene	**1170**		50.0		ug/L			04/03/19 17:43	50
Vinyl chloride	<50.0		50.0		ug/L			04/03/19 17:43	50
Xylenes, Total	<100		100		ug/L			04/03/19 17:43	50
1,1,1-Trichloroethane	<50.0		50.0		ug/L			04/03/19 17:43	50
1,1,2-Trichloroethane	<50.0		50.0		ug/L			04/03/19 17:43	50
Cyclohexane	<50.0		50.0		ug/L			04/03/19 17:43	50
1,2-Dibromo-3-Chloropropane	<100		100		ug/L			04/03/19 17:43	50
Ethylene Dibromide	<50.0		50.0		ug/L			04/03/19 17:43	50
Dichlorodifluoromethane	<50.0		50.0		ug/L			04/03/19 17:43	50
cis-1,2-Dichloroethene	**881**		50.0		ug/L			04/03/19 17:43	50
trans-1,2-Dichloroethene	<50.0		50.0		ug/L			04/03/19 17:43	50
Isopropylbenzene	<50.0		50.0		ug/L			04/03/19 17:43	50
Methyl acetate	<500		500		ug/L			04/03/19 17:43	50
Methyl tert-butyl ether	<50.0		50.0		ug/L			04/03/19 17:43	50
1,1,2-Trichloro-1,2,2-trifluoroethane	<50.0		50.0		ug/L			04/03/19 17:43	50
1,2,4-Trichlorobenzene	<50.0		50.0		ug/L			04/03/19 17:43	50
1,2-Dichlorobenzene	<50.0		50.0		ug/L			04/03/19 17:43	50
1,3-Dichlorobenzene	<50.0		50.0		ug/L			04/03/19 17:43	50
1,4-Dichlorobenzene	<50.0		50.0		ug/L			04/03/19 17:43	50
Trichlorofluoromethane	<50.0		50.0		ug/L			04/03/19 17:43	50
Chlorodibromomethane	<50.0		50.0		ug/L			04/03/19 17:43	50
Methylcyclohexane	<50.0		50.0		ug/L			04/03/19 17:43	50

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 425S

Date Collected: 03/21/19 11:24
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-5

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		70 - 121		04/03/19 17:43	50
4-Bromofluorobenzene (Surr)	78		59 - 120		04/03/19 17:43	50
Toluene-d8 (Surr)	94		70 - 123		04/03/19 17:43	50
Dibromofluoromethane (Surr)	113		75 - 128		04/03/19 17:43	50

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 741

Date Collected: 03/21/19 11:30
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-6

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 18:16	1
Benzene	<1.00		1.00		ug/L			04/03/19 18:16	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 18:16	1
Bromoform	<1.00		1.00		ug/L			04/03/19 18:16	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 18:16	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 18:16	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 18:16	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 18:16	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 18:16	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 18:16	1
Chloroform	<1.00		1.00		ug/L			04/03/19 18:16	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 18:16	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 18:16	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 18:16	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 18:16	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 18:16	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 18:16	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 18:16	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 18:16	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 18:16	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 18:16	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 18:16	1
Styrene	<1.00		1.00		ug/L			04/03/19 18:16	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 18:16	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 18:16	1
Toluene	<1.00		1.00		ug/L			04/03/19 18:16	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 18:16	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 18:16	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 18:16	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 18:16	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 18:16	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 18:16	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 18:16	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 18:16	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 18:16	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 18:16	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 18:16	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 18:16	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 18:16	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 18:16	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 18:16	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 18:16	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 18:16	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 18:16	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 18:16	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 18:16	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 18:16	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 18:16	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 741

Date Collected: 03/21/19 11:30
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-6

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		70 - 121		04/03/19 18:16	1
4-Bromofluorobenzene (Surr)	78		59 - 120		04/03/19 18:16	1
Toluene-d8 (Surr)	93		70 - 123		04/03/19 18:16	1
Dibromofluoromethane (Surr)	115		75 - 128		04/03/19 18:16	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 800

Date Collected: 03/21/19 11:47
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-7

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 18:49	1
Benzene	<1.00		1.00		ug/L			04/03/19 18:49	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 18:49	1
Bromoform	<1.00		1.00		ug/L			04/03/19 18:49	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 18:49	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 18:49	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 18:49	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 18:49	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 18:49	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 18:49	1
Chloroform	<1.00		1.00		ug/L			04/03/19 18:49	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 18:49	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 18:49	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 18:49	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 18:49	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 18:49	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 18:49	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 18:49	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 18:49	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 18:49	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 18:49	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 18:49	1
Styrene	<1.00		1.00		ug/L			04/03/19 18:49	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 18:49	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 18:49	1
Toluene	<1.00		1.00		ug/L			04/03/19 18:49	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 18:49	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 18:49	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 18:49	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 18:49	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 18:49	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 18:49	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 18:49	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 18:49	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 18:49	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 18:49	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 18:49	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 18:49	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 18:49	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 18:49	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 18:49	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 18:49	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 18:49	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 18:49	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 18:49	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 18:49	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 18:49	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 18:49	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 800

Date Collected: 03/21/19 11:47
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-7

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		70 - 121		04/03/19 18:49	1
4-Bromofluorobenzene (Surr)	77		59 - 120		04/03/19 18:49	1
Toluene-d8 (Surr)	91		70 - 123		04/03/19 18:49	1
Dibromofluoromethane (Surr)	113		75 - 128		04/03/19 18:49	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 775

Date Collected: 03/21/19 11:55
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-8

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 19:12	1
Benzene	<1.00		1.00		ug/L			04/03/19 19:12	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 19:12	1
Bromoform	<1.00		1.00		ug/L			04/03/19 19:12	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 19:12	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 19:12	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 19:12	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 19:12	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 19:12	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 19:12	1
Chloroform	<1.00		1.00		ug/L			04/03/19 19:12	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 19:12	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 19:12	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 19:12	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 19:12	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 19:12	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 19:12	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 19:12	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 19:12	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 19:12	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 19:12	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 19:12	1
Styrene	<1.00		1.00		ug/L			04/03/19 19:12	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 19:12	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 19:12	1
Toluene	<1.00		1.00		ug/L			04/03/19 19:12	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 19:12	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 19:12	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 19:12	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 19:12	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 19:12	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 19:12	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 19:12	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 19:12	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 19:12	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 19:12	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 19:12	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 19:12	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 19:12	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 19:12	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 19:12	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 19:12	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 19:12	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 19:12	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 19:12	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 19:12	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 19:12	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 19:12	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 775

Date Collected: 03/21/19 11:55
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-8

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		70 - 121		04/03/19 19:12	1
4-Bromofluorobenzene (Surr)	78		59 - 120		04/03/19 19:12	1
Toluene-d8 (Surr)	91		70 - 123		04/03/19 19:12	1
Dibromofluoromethane (Surr)	113		75 - 128		04/03/19 19:12	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 759

Date Collected: 03/21/19 12:06
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-9

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<20.0		20.0		ug/L			04/03/19 19:36	2
Benzene	<2.00		2.00		ug/L			04/03/19 19:36	2
Dichlorobromomethane	<2.00		2.00		ug/L			04/03/19 19:36	2
Bromoform	<2.00		2.00		ug/L			04/03/19 19:36	2
Bromomethane	<2.00		2.00		ug/L			04/03/19 19:36	2
2-Butanone (MEK)	<20.0		20.0		ug/L			04/03/19 19:36	2
Carbon disulfide	<2.00		2.00		ug/L			04/03/19 19:36	2
Carbon tetrachloride	<2.00		2.00		ug/L			04/03/19 19:36	2
Chlorobenzene	<2.00		2.00		ug/L			04/03/19 19:36	2
Chloroethane	<2.00		2.00		ug/L			04/03/19 19:36	2
Chloroform	<2.00		2.00		ug/L			04/03/19 19:36	2
Chloromethane	<2.00		2.00		ug/L			04/03/19 19:36	2
1,1-Dichloroethane	<2.00		2.00		ug/L			04/03/19 19:36	2
1,2-Dichloroethane	<2.00		2.00		ug/L			04/03/19 19:36	2
1,1-Dichloroethene	<2.00		2.00		ug/L			04/03/19 19:36	2
1,2-Dichloropropane	<2.00		2.00		ug/L			04/03/19 19:36	2
cis-1,3-Dichloropropene	<2.00		2.00		ug/L			04/03/19 19:36	2
trans-1,3-Dichloropropene	<2.00		2.00		ug/L			04/03/19 19:36	2
Ethylbenzene	<2.00		2.00		ug/L			04/03/19 19:36	2
2-Hexanone	<20.0		20.0		ug/L			04/03/19 19:36	2
Methylene Chloride	<10.0		10.0		ug/L			04/03/19 19:36	2
4-Methyl-2-pentanone (MIBK)	<20.0		20.0		ug/L			04/03/19 19:36	2
Styrene	<2.00		2.00		ug/L			04/03/19 19:36	2
1,1,2,2-Tetrachloroethane	<2.00		2.00		ug/L			04/03/19 19:36	2
Tetrachloroethene	<2.00		2.00		ug/L			04/03/19 19:36	2
Toluene	<2.00		2.00		ug/L			04/03/19 19:36	2
Trichloroethene	**6.63**		2.00		ug/L			04/03/19 19:36	2
Vinyl chloride	**71.4**		2.00		ug/L			04/03/19 19:36	2
Xylenes, Total	<4.00		4.00		ug/L			04/03/19 19:36	2
1,1,1-Trichloroethane	<2.00		2.00		ug/L			04/03/19 19:36	2
1,1,2-Trichloroethane	<2.00		2.00		ug/L			04/03/19 19:36	2
Cyclohexane	<2.00		2.00		ug/L			04/03/19 19:36	2
1,2-Dibromo-3-Chloropropane	<4.00		4.00		ug/L			04/03/19 19:36	2
Ethylene Dibromide	<2.00		2.00		ug/L			04/03/19 19:36	2
Dichlorodifluoromethane	<2.00		2.00		ug/L			04/03/19 19:36	2
cis-1,2-Dichloroethene	**66.8**		2.00		ug/L			04/03/19 19:36	2
trans-1,2-Dichloroethene	**3.28**		2.00		ug/L			04/03/19 19:36	2
Isopropylbenzene	<2.00		2.00		ug/L			04/03/19 19:36	2
Methyl acetate	<20.0		20.0		ug/L			04/03/19 19:36	2
Methyl tert-butyl ether	<2.00		2.00		ug/L			04/03/19 19:36	2
1,1,2-Trichloro-1,2,2-trifluoroethane	<2.00		2.00		ug/L			04/03/19 19:36	2
1,2,4-Trichlorobenzene	<2.00		2.00		ug/L			04/03/19 19:36	2
1,2-Dichlorobenzene	<2.00		2.00		ug/L			04/03/19 19:36	2
1,3-Dichlorobenzene	<2.00		2.00		ug/L			04/03/19 19:36	2
1,4-Dichlorobenzene	<2.00		2.00		ug/L			04/03/19 19:36	2
Trichlorofluoromethane	<2.00		2.00		ug/L			04/03/19 19:36	2
Chlorodibromomethane	<2.00		2.00		ug/L			04/03/19 19:36	2
Methylcyclohexane	<2.00		2.00		ug/L			04/03/19 19:36	2

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 759

Date Collected: 03/21/19 12:06
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-9

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		70 - 121		04/03/19 19:36	2
4-Bromofluorobenzene (Surr)	78		59 - 120		04/03/19 19:36	2
Toluene-d8 (Surr)	95		70 - 123		04/03/19 19:36	2
Dibromofluoromethane (Surr)	110		75 - 128		04/03/19 19:36	2

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 740

Date Collected: 03/21/19 12:20
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-10

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 19:59	1
Benzene	<1.00		1.00		ug/L			04/03/19 19:59	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 19:59	1
Bromoform	<1.00		1.00		ug/L			04/03/19 19:59	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 19:59	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 19:59	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 19:59	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 19:59	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 19:59	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 19:59	1
Chloroform	<1.00		1.00		ug/L			04/03/19 19:59	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 19:59	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 19:59	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 19:59	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 19:59	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 19:59	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 19:59	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 19:59	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 19:59	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 19:59	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 19:59	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 19:59	1
Styrene	<1.00		1.00		ug/L			04/03/19 19:59	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 19:59	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 19:59	1
Toluene	<1.00		1.00		ug/L			04/03/19 19:59	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 19:59	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 19:59	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 19:59	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 19:59	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 19:59	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 19:59	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 19:59	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 19:59	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 19:59	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 19:59	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 19:59	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 19:59	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 19:59	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 19:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 19:59	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 19:59	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 19:59	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 19:59	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 19:59	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 19:59	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 19:59	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 19:59	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 740

Date Collected: 03/21/19 12:20
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-10

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		70 - 121		04/03/19 19:59	1
4-Bromofluorobenzene (Surr)	78		59 - 120		04/03/19 19:59	1
Toluene-d8 (Surr)	91		70 - 123		04/03/19 19:59	1
Dibromofluoromethane (Surr)	115		75 - 128		04/03/19 19:59	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 776

Date Collected: 03/21/19 12:30
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-11

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 20:23	1
Benzene	<1.00		1.00		ug/L			04/03/19 20:23	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 20:23	1
Bromoform	<1.00		1.00		ug/L			04/03/19 20:23	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 20:23	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 20:23	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 20:23	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 20:23	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 20:23	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 20:23	1
Chloroform	<1.00		1.00		ug/L			04/03/19 20:23	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 20:23	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 20:23	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 20:23	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 20:23	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 20:23	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 20:23	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 20:23	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 20:23	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 20:23	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 20:23	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 20:23	1
Styrene	<1.00		1.00		ug/L			04/03/19 20:23	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 20:23	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 20:23	1
Toluene	<1.00		1.00		ug/L			04/03/19 20:23	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 20:23	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 20:23	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 20:23	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 20:23	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 20:23	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 20:23	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 20:23	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 20:23	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 20:23	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 20:23	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 20:23	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 20:23	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 20:23	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 20:23	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 20:23	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 20:23	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 20:23	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 20:23	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 20:23	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 20:23	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 20:23	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 20:23	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 776

Date Collected: 03/21/19 12:30
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-11

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		70 - 121		04/03/19 20:23	1
4-Bromofluorobenzene (Surr)	79		59 - 120		04/03/19 20:23	1
Toluene-d8 (Surr)	92		70 - 123		04/03/19 20:23	1
Dibromofluoromethane (Surr)	114		75 - 128		04/03/19 20:23	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 730

Date Collected: 03/21/19 12:45
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-12

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 20:47	1
Benzene	<1.00		1.00		ug/L			04/03/19 20:47	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 20:47	1
Bromoform	<1.00		1.00		ug/L			04/03/19 20:47	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 20:47	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 20:47	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 20:47	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 20:47	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 20:47	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 20:47	1
Chloroform	<1.00		1.00		ug/L			04/03/19 20:47	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 20:47	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 20:47	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 20:47	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 20:47	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 20:47	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 20:47	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 20:47	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 20:47	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 20:47	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 20:47	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 20:47	1
Styrene	<1.00		1.00		ug/L			04/03/19 20:47	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 20:47	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 20:47	1
Toluene	<1.00		1.00		ug/L			04/03/19 20:47	1
Trichloroethene	**2.11**		1.00		ug/L			04/03/19 20:47	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 20:47	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 20:47	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 20:47	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 20:47	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 20:47	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 20:47	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 20:47	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 20:47	1
cis-1,2-Dichloroethene	**2.14**		1.00		ug/L			04/03/19 20:47	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 20:47	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 20:47	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 20:47	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 20:47	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 20:47	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 20:47	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 20:47	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 20:47	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 20:47	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 20:47	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 20:47	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 20:47	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 730

Date Collected: 03/21/19 12:45
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-12

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		70 - 121		04/03/19 20:47	1
4-Bromofluorobenzene (Surr)	79		59 - 120		04/03/19 20:47	1
Toluene-d8 (Surr)	94		70 - 123		04/03/19 20:47	1
Dibromofluoromethane (Surr)	116		75 - 128		04/03/19 20:47	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 717

Date Collected: 03/21/19 13:57
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-13

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 21:11	1
Benzene	<1.00		1.00		ug/L			04/03/19 21:11	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 21:11	1
Bromoform	<1.00		1.00		ug/L			04/03/19 21:11	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 21:11	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 21:11	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 21:11	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 21:11	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 21:11	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 21:11	1
Chloroform	<1.00		1.00		ug/L			04/03/19 21:11	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 21:11	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 21:11	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 21:11	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 21:11	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 21:11	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 21:11	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 21:11	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 21:11	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 21:11	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 21:11	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 21:11	1
Styrene	<1.00		1.00		ug/L			04/03/19 21:11	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 21:11	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 21:11	1
Toluene	<1.00		1.00		ug/L			04/03/19 21:11	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 21:11	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 21:11	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 21:11	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 21:11	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 21:11	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 21:11	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 21:11	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 21:11	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 21:11	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 21:11	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 21:11	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 21:11	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 21:11	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 21:11	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 21:11	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 21:11	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 21:11	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 21:11	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 21:11	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 21:11	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 21:11	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 21:11	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 717

Date Collected: 03/21/19 13:57
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-13

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	116		70 - 121		04/03/19 21:11	1
4-Bromofluorobenzene (Surr)	79		59 - 120		04/03/19 21:11	1
Toluene-d8 (Surr)	93		70 - 123		04/03/19 21:11	1
Dibromofluoromethane (Surr)	118		75 - 128		04/03/19 21:11	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 731

Date Collected: 03/21/19 14:07
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-14

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 21:35	1
Benzene	<1.00		1.00		ug/L			04/03/19 21:35	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 21:35	1
Bromoform	<1.00		1.00		ug/L			04/03/19 21:35	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 21:35	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 21:35	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 21:35	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 21:35	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 21:35	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 21:35	1
Chloroform	<1.00		1.00		ug/L			04/03/19 21:35	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 21:35	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 21:35	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 21:35	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 21:35	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 21:35	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 21:35	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 21:35	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 21:35	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 21:35	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 21:35	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 21:35	1
Styrene	<1.00		1.00		ug/L			04/03/19 21:35	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 21:35	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 21:35	1
Toluene	<1.00		1.00		ug/L			04/03/19 21:35	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 21:35	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 21:35	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 21:35	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 21:35	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 21:35	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 21:35	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 21:35	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 21:35	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 21:35	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 21:35	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 21:35	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 21:35	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 21:35	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 21:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 21:35	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 21:35	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 21:35	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 21:35	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 21:35	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 21:35	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 21:35	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 21:35	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 731

Date Collected: 03/21/19 14:07
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-14

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	116		70 - 121		04/03/19 21:35	1
4-Bromofluorobenzene (Surr)	76		59 - 120		04/03/19 21:35	1
Toluene-d8 (Surr)	91		70 - 123		04/03/19 21:35	1
Dibromofluoromethane (Surr)	117		75 - 128		04/03/19 21:35	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 732

Date Collected: 03/21/19 15:20
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 21:59	1
Benzene	<1.00		1.00		ug/L			04/03/19 21:59	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 21:59	1
Bromoform	<1.00		1.00		ug/L			04/03/19 21:59	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 21:59	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 21:59	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 21:59	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 21:59	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 21:59	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 21:59	1
Chloroform	<1.00		1.00		ug/L			04/03/19 21:59	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 21:59	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 21:59	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 21:59	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 21:59	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 21:59	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 21:59	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 21:59	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 21:59	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 21:59	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 21:59	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 21:59	1
Styrene	<1.00		1.00		ug/L			04/03/19 21:59	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 21:59	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 21:59	1
Toluene	<1.00		1.00		ug/L			04/03/19 21:59	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 21:59	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 21:59	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 21:59	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 21:59	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 21:59	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 21:59	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 21:59	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 21:59	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 21:59	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 21:59	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 21:59	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 21:59	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 21:59	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 21:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 21:59	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 21:59	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 21:59	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 21:59	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 21:59	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 21:59	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 21:59	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 21:59	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 732

Date Collected: 03/21/19 15:20
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-15

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	120		70 - 121		04/03/19 21:59	1
4-Bromofluorobenzene (Surr)	79		59 - 120		04/03/19 21:59	1
Toluene-d8 (Surr)	93		70 - 123		04/03/19 21:59	1
Dibromofluoromethane (Surr)	121		75 - 128		04/03/19 21:59	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 725

Date Collected: 03/21/19 14:30
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-16

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 22:22	1
Benzene	<1.00		1.00		ug/L			04/03/19 22:22	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 22:22	1
Bromoform	<1.00		1.00		ug/L			04/03/19 22:22	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 22:22	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 22:22	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 22:22	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 22:22	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 22:22	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 22:22	1
Chloroform	<1.00		1.00		ug/L			04/03/19 22:22	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 22:22	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 22:22	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 22:22	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 22:22	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 22:22	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 22:22	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 22:22	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 22:22	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 22:22	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 22:22	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 22:22	1
Styrene	<1.00		1.00		ug/L			04/03/19 22:22	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 22:22	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 22:22	1
Toluene	<1.00		1.00		ug/L			04/03/19 22:22	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 22:22	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 22:22	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 22:22	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 22:22	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 22:22	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 22:22	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 22:22	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 22:22	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 22:22	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 22:22	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 22:22	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 22:22	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 22:22	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 22:22	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 22:22	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 22:22	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 22:22	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 22:22	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 22:22	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 22:22	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 22:22	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 22:22	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 725

Date Collected: 03/21/19 14:30
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-16

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	116		70 - 121		04/03/19 22:22	1
4-Bromofluorobenzene (Surr)	79		59 - 120		04/03/19 22:22	1
Toluene-d8 (Surr)	92		70 - 123		04/03/19 22:22	1
Dibromofluoromethane (Surr)	116		75 - 128		04/03/19 22:22	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 743

Date Collected: 03/21/19 14:19
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-17

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 22:46	1
Benzene	<1.00		1.00		ug/L			04/03/19 22:46	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 22:46	1
Bromoform	<1.00		1.00		ug/L			04/03/19 22:46	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 22:46	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 22:46	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 22:46	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 22:46	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 22:46	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 22:46	1
Chloroform	<1.00		1.00		ug/L			04/03/19 22:46	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 22:46	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 22:46	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 22:46	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 22:46	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 22:46	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 22:46	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 22:46	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 22:46	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 22:46	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 22:46	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 22:46	1
Styrene	<1.00		1.00		ug/L			04/03/19 22:46	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 22:46	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 22:46	1
Toluene	<1.00		1.00		ug/L			04/03/19 22:46	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 22:46	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 22:46	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 22:46	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 22:46	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 22:46	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 22:46	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 22:46	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 22:46	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 22:46	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 22:46	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 22:46	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 22:46	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 22:46	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 22:46	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 22:46	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 22:46	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 22:46	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 22:46	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 22:46	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 22:46	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 22:46	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 22:46	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 743

Date Collected: 03/21/19 14:19
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-17

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	118		70 - 121		04/03/19 22:46	1
4-Bromofluorobenzene (Surr)	78		59 - 120		04/03/19 22:46	1
Toluene-d8 (Surr)	91		70 - 123		04/03/19 22:46	1
Dibromofluoromethane (Surr)	117		75 - 128		04/03/19 22:46	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 605

Date Collected: 03/21/19 15:11
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-18

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 23:10	1
Benzene	<1.00		1.00		ug/L			04/03/19 23:10	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 23:10	1
Bromoform	<1.00		1.00		ug/L			04/03/19 23:10	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 23:10	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 23:10	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 23:10	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 23:10	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 23:10	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 23:10	1
Chloroform	<1.00		1.00		ug/L			04/03/19 23:10	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 23:10	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 23:10	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 23:10	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 23:10	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 23:10	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 23:10	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 23:10	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 23:10	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 23:10	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 23:10	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 23:10	1
Styrene	<1.00		1.00		ug/L			04/03/19 23:10	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 23:10	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 23:10	1
Toluene	<1.00		1.00		ug/L			04/03/19 23:10	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 23:10	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 23:10	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 23:10	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 23:10	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 23:10	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 23:10	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 23:10	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 23:10	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 23:10	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 23:10	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 23:10	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 23:10	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 23:10	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 23:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 23:10	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 23:10	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 23:10	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 23:10	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 23:10	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 23:10	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 23:10	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 23:10	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 605

Date Collected: 03/21/19 15:11
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-18

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		70 - 121		04/03/19 23:10	1
4-Bromofluorobenzene (Surr)	76		59 - 120		04/03/19 23:10	1
Toluene-d8 (Surr)	93		70 - 123		04/03/19 23:10	1
Dibromofluoromethane (Surr)	118		75 - 128		04/03/19 23:10	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 810

Date Collected: 03/21/19 16:00
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-19

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 16:21	1
Benzene	<1.00	*	1.00		ug/L			04/03/19 16:21	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 16:21	1
Bromoform	<1.00		1.00		ug/L			04/03/19 16:21	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 16:21	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 16:21	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 16:21	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 16:21	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 16:21	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 16:21	1
Chloroform	<1.00		1.00		ug/L			04/03/19 16:21	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 16:21	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 16:21	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 16:21	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 16:21	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 16:21	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 16:21	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 16:21	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 16:21	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 16:21	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 16:21	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 16:21	1
Styrene	<1.00		1.00		ug/L			04/03/19 16:21	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 16:21	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 16:21	1
Toluene	<1.00		1.00		ug/L			04/03/19 16:21	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 16:21	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 16:21	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 16:21	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 16:21	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 16:21	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 16:21	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 16:21	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 16:21	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 16:21	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 16:21	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 16:21	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 16:21	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 16:21	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 16:21	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 16:21	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 16:21	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 16:21	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 16:21	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 16:21	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 16:21	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 16:21	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 16:21	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 810

Date Collected: 03/21/19 16:00
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-19

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	140	X	70 - 121		04/03/19 16:21	1
4-Bromofluorobenzene (Surr)	136	X	59 - 120		04/03/19 16:21	1
Toluene-d8 (Surr)	130	X	70 - 123		04/03/19 16:21	1
Dibromofluoromethane (Surr)	141	X	75 - 128		04/03/19 16:21	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 806

Date Collected: 03/21/19 15:39
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-20

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<12500		12500		ug/L			04/04/19 15:42	1250
Benzene	<1250		1250		ug/L			04/04/19 15:42	1250
Dichlorobromomethane	<1250		1250		ug/L			04/04/19 15:42	1250
Bromoform	<1250		1250		ug/L			04/04/19 15:42	1250
Bromomethane	<1250		1250		ug/L			04/04/19 15:42	1250
2-Butanone (MEK)	<12500		12500		ug/L			04/04/19 15:42	1250
Carbon disulfide	<1250		1250		ug/L			04/04/19 15:42	1250
Carbon tetrachloride	<1250		1250		ug/L			04/04/19 15:42	1250
Chlorobenzene	<1250		1250		ug/L			04/04/19 15:42	1250
Chloroethane	<1250		1250		ug/L			04/04/19 15:42	1250
Chloroform	<1250		1250		ug/L			04/04/19 15:42	1250
Chloromethane	<1250		1250		ug/L			04/04/19 15:42	1250
1,1-Dichloroethane	<1250		1250		ug/L			04/04/19 15:42	1250
1,2-Dichloroethane	<1250		1250		ug/L			04/04/19 15:42	1250
1,1-Dichloroethene	<1250		1250		ug/L			04/04/19 15:42	1250
1,2-Dichloropropane	<1250		1250		ug/L			04/04/19 15:42	1250
cis-1,3-Dichloropropene	<1250		1250		ug/L			04/04/19 15:42	1250
trans-1,3-Dichloropropene	<1250		1250		ug/L			04/04/19 15:42	1250
Ethylbenzene	<1250		1250		ug/L			04/04/19 15:42	1250
2-Hexanone	<12500		12500		ug/L			04/04/19 15:42	1250
Methylene Chloride	<6250		6250		ug/L			04/04/19 15:42	1250
4-Methyl-2-pentanone (MIBK)	<12500		12500		ug/L			04/04/19 15:42	1250
Styrene	<1250		1250		ug/L			04/04/19 15:42	1250
1,1,2,2-Tetrachloroethane	<1250		1250		ug/L			04/04/19 15:42	1250
Tetrachloroethene	<1250		1250		ug/L			04/04/19 15:42	1250
Toluene	<1250		1250		ug/L			04/04/19 15:42	1250
Trichloroethene	**11100**		1250		ug/L			04/04/19 15:42	1250
Vinyl chloride	<1250		1250		ug/L			04/04/19 15:42	1250
Xylenes, Total	<2500		2500		ug/L			04/04/19 15:42	1250
1,1,1-Trichloroethane	<1250		1250		ug/L			04/04/19 15:42	1250
1,1,2-Trichloroethane	<1250		1250		ug/L			04/04/19 15:42	1250
Cyclohexane	<1250		1250		ug/L			04/04/19 15:42	1250
1,2-Dibromo-3-Chloropropane	<2500		2500		ug/L			04/04/19 15:42	1250
Ethylene Dibromide	<1250		1250		ug/L			04/04/19 15:42	1250
Dichlorodifluoromethane	<1250		1250		ug/L			04/04/19 15:42	1250
cis-1,2-Dichloroethene	**22200**	**F1**	1250		ug/L			04/04/19 15:42	1250
trans-1,2-Dichloroethene	<1250		1250		ug/L			04/04/19 15:42	1250
Isopropylbenzene	<1250		1250		ug/L			04/04/19 15:42	1250
Methyl acetate	<12500		12500		ug/L			04/04/19 15:42	1250
Methyl tert-butyl ether	<1250		1250		ug/L			04/04/19 15:42	1250
1,1,2-Trichloro-1,2,2-trifluoroethane	<1250		1250		ug/L			04/04/19 15:42	1250
1,2,4-Trichlorobenzene	<1250		1250		ug/L			04/04/19 15:42	1250
1,2-Dichlorobenzene	<1250		1250		ug/L			04/04/19 15:42	1250
1,3-Dichlorobenzene	<1250		1250		ug/L			04/04/19 15:42	1250
1,4-Dichlorobenzene	<1250		1250		ug/L			04/04/19 15:42	1250
Trichlorofluoromethane	<1250		1250		ug/L			04/04/19 15:42	1250
Chlorodibromomethane	<1250		1250		ug/L			04/04/19 15:42	1250
Methylcyclohexane	<1250		1250		ug/L			04/04/19 15:42	1250

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 806

Date Collected: 03/21/19 15:39
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-20

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		70 - 121		04/04/19 15:42	1250
4-Bromofluorobenzene (Surr)	78		59 - 120		04/04/19 15:42	1250
Toluene-d8 (Surr)	95		70 - 123		04/04/19 15:42	1250
Dibromofluoromethane (Surr)	110		75 - 128		04/04/19 15:42	1250

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 607

Date Collected: 03/21/19 15:00
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-21

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 16:44	1
Benzene	<1.00	*	1.00		ug/L			04/03/19 16:44	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 16:44	1
Bromoform	<1.00		1.00		ug/L			04/03/19 16:44	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 16:44	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 16:44	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 16:44	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 16:44	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 16:44	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 16:44	1
Chloroform	<1.00		1.00		ug/L			04/03/19 16:44	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 16:44	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 16:44	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 16:44	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 16:44	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 16:44	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 16:44	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 16:44	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 16:44	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 16:44	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 16:44	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 16:44	1
Styrene	<1.00		1.00		ug/L			04/03/19 16:44	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 16:44	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 16:44	1
Toluene	<1.00		1.00		ug/L			04/03/19 16:44	1
Trichloroethene	**7.27**		1.00		ug/L			04/04/19 15:19	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 16:44	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 16:44	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 16:44	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 16:44	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 16:44	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 16:44	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 16:44	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 16:44	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/04/19 15:19	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 16:44	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 16:44	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 16:44	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 16:44	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 16:44	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 16:44	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 16:44	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 16:44	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 16:44	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 16:44	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 16:44	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 16:44	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 607

Date Collected: 03/21/19 15:00
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-21

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	135	X	70 - 121		04/03/19 16:44	1
1,2-Dichloroethane-d4 (Surr)	105		70 - 121		04/04/19 15:19	1
4-Bromofluorobenzene (Surr)	131	X	59 - 120		04/03/19 16:44	1
4-Bromofluorobenzene (Surr)	80		59 - 120		04/04/19 15:19	1
Toluene-d8 (Surr)	127	X	70 - 123		04/03/19 16:44	1
Toluene-d8 (Surr)	95		70 - 123		04/04/19 15:19	1
Dibromofluoromethane (Surr)	134	X	75 - 128		04/03/19 16:44	1
Dibromofluoromethane (Surr)	106		75 - 128		04/04/19 15:19	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 806 DUP

Date Collected: 03/21/19 00:00
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-22

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<12500		12500		ug/L			04/04/19 16:06	1250
Benzene	<1250		1250		ug/L			04/04/19 16:06	1250
Dichlorobromomethane	<1250		1250		ug/L			04/04/19 16:06	1250
Bromoform	<1250		1250		ug/L			04/04/19 16:06	1250
Bromomethane	<1250		1250		ug/L			04/04/19 16:06	1250
2-Butanone (MEK)	<12500		12500		ug/L			04/04/19 16:06	1250
Carbon disulfide	<1250		1250		ug/L			04/04/19 16:06	1250
Carbon tetrachloride	<1250		1250		ug/L			04/04/19 16:06	1250
Chlorobenzene	<1250		1250		ug/L			04/04/19 16:06	1250
Chloroethane	<1250		1250		ug/L			04/04/19 16:06	1250
Chloroform	<1250		1250		ug/L			04/04/19 16:06	1250
Chloromethane	<1250		1250		ug/L			04/04/19 16:06	1250
1,1-Dichloroethane	<1250		1250		ug/L			04/04/19 16:06	1250
1,2-Dichloroethane	<1250		1250		ug/L			04/04/19 16:06	1250
1,1-Dichloroethene	<1250		1250		ug/L			04/04/19 16:06	1250
1,2-Dichloropropane	<1250		1250		ug/L			04/04/19 16:06	1250
cis-1,3-Dichloropropene	<1250		1250		ug/L			04/04/19 16:06	1250
trans-1,3-Dichloropropene	<1250		1250		ug/L			04/04/19 16:06	1250
Ethylbenzene	<1250		1250		ug/L			04/04/19 16:06	1250
2-Hexanone	<12500		12500		ug/L			04/04/19 16:06	1250
Methylene Chloride	<6250		6250		ug/L			04/04/19 16:06	1250
4-Methyl-2-pentanone (MIBK)	<12500		12500		ug/L			04/04/19 16:06	1250
Styrene	<1250		1250		ug/L			04/04/19 16:06	1250
1,1,2,2-Tetrachloroethane	<1250		1250		ug/L			04/04/19 16:06	1250
Tetrachloroethene	<1250		1250		ug/L			04/04/19 16:06	1250
Toluene	<1250		1250		ug/L			04/04/19 16:06	1250
Trichloroethene	**10400**		1250		ug/L			04/04/19 16:06	1250
Vinyl chloride	<1250		1250		ug/L			04/04/19 16:06	1250
Xylenes, Total	<2500		2500		ug/L			04/04/19 16:06	1250
1,1,1-Trichloroethane	<1250		1250		ug/L			04/04/19 16:06	1250
1,1,2-Trichloroethane	<1250		1250		ug/L			04/04/19 16:06	1250
Cyclohexane	<1250		1250		ug/L			04/04/19 16:06	1250
1,2-Dibromo-3-Chloropropane	<2500		2500		ug/L			04/04/19 16:06	1250
Ethylene Dibromide	<1250		1250		ug/L			04/04/19 16:06	1250
Dichlorodifluoromethane	<1250		1250		ug/L			04/04/19 16:06	1250
cis-1,2-Dichloroethene	**20800**		1250		ug/L			04/04/19 16:06	1250
trans-1,2-Dichloroethene	<1250		1250		ug/L			04/04/19 16:06	1250
Isopropylbenzene	<1250		1250		ug/L			04/04/19 16:06	1250
Methyl acetate	<12500		12500		ug/L			04/04/19 16:06	1250
Methyl tert-butyl ether	<1250		1250		ug/L			04/04/19 16:06	1250
1,1,2-Trichloro-1,2,2-trifluoroethane	<1250		1250		ug/L			04/04/19 16:06	1250
1,2,4-Trichlorobenzene	<1250		1250		ug/L			04/04/19 16:06	1250
1,2-Dichlorobenzene	<1250		1250		ug/L			04/04/19 16:06	1250
1,3-Dichlorobenzene	<1250		1250		ug/L			04/04/19 16:06	1250
1,4-Dichlorobenzene	<1250		1250		ug/L			04/04/19 16:06	1250
Trichlorofluoromethane	<1250		1250		ug/L			04/04/19 16:06	1250
Chlorodibromomethane	<1250		1250		ug/L			04/04/19 16:06	1250
Methylcyclohexane	<1250		1250		ug/L			04/04/19 16:06	1250

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 806 DUP

Date Collected: 03/21/19 00:00
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-22

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		70 - 121		04/04/19 16:06	1250
4-Bromofluorobenzene (Surr)	79		59 - 120		04/04/19 16:06	1250
Toluene-d8 (Surr)	94		70 - 123		04/04/19 16:06	1250
Dibromofluoromethane (Surr)	109		75 - 128		04/04/19 16:06	1250

Surrogate Summary

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	**Client Sample ID**	**(70-121)**	**(59-120)**	**(70-123)**	**(75-128)**
240-109800-1	420D	104	81	96	107
240-109800-2	420M	110	78	93	111
240-109800-2 - RA	420M	106	81	98	106
240-109800-3	417D	109	79	94	111
240-109800-4	418D	113	78	94	111
240-109800-5	425S	112	78	94	113
240-109800-6	741	114	78	93	115
240-109800-7	800	110	77	91	113
240-109800-8	775	115	78	91	113
240-109800-9	759	111	78	95	110
240-109800-10	740	113	78	91	115
240-109800-11	776	113	79	92	114
240-109800-12	730	115	79	94	116
240-109800-13	717	116	79	93	118
240-109800-14	731	116	76	91	117
240-109800-15	732	120	79	93	121
240-109800-16	725	116	79	92	116
240-109800-17	743	118	78	91	117
240-109800-18	605	114	76	93	118
240-109800-19	810	140 X	136 X	130 X	141 X
240-109800-20	806	108	78	95	110
240-109800-20 MS	806	91	105	105	96
240-109800-20 MSD	806	93	104	103	96
240-109800-21	607	135 X	131 X	127 X	134 X
240-109800-21	607	105	80	95	106
240-109800-22	806 DUP	105	79	94	109
LCS 240-374531/4	Lab Control Sample	92	105	103	96
LCS 240-374533/4	Lab Control Sample	117	104	103	117
LCS 240-374729/4	Lab Control Sample	90	104	103	95
MB 240-374531/6	Method Blank	108	77	91	107
MB 240-374533/8	Method Blank	134 X	131 X	126 X	135 X
MB 240-374729/6	Method Blank	102	80	94	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-374531/6
Matrix: Water
Analysis Batch: 374531

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 14:28	1
Benzene	<1.00		1.00		ug/L			04/03/19 14:28	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 14:28	1
Bromoform	<1.00		1.00		ug/L			04/03/19 14:28	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 14:28	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 14:28	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 14:28	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 14:28	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 14:28	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 14:28	1
Chloroform	<1.00		1.00		ug/L			04/03/19 14:28	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 14:28	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 14:28	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 14:28	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 14:28	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 14:28	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 14:28	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 14:28	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 14:28	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 14:28	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 14:28	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 14:28	1
Styrene	<1.00		1.00		ug/L			04/03/19 14:28	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 14:28	1
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 14:28	1
Toluene	<1.00		1.00		ug/L			04/03/19 14:28	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 14:28	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 14:28	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 14:28	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 14:28	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 14:28	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 14:28	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 14:28	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 14:28	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 14:28	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 14:28	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 14:28	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 14:28	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 14:28	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 14:28	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 14:28	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 14:28	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 14:28	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 14:28	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 14:28	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 14:28	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 14:28	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 14:28	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-374531/6
Matrix: Water
Analysis Batch: 374531

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		70 - 121		04/03/19 14:28	1
4-Bromofluorobenzene (Surr)	77		59 - 120		04/03/19 14:28	1
Toluene-d8 (Surr)	91		70 - 123		04/03/19 14:28	1
Dibromofluoromethane (Surr)	107		75 - 128		04/03/19 14:28	1

Lab Sample ID: LCS 240-374531/4
Matrix: Water
Analysis Batch: 374531

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	13.91		ug/L		70	21 - 162
Benzene	10.0	9.947		ug/L		99	80 - 123
Dichlorobromomethane	10.0	9.040		ug/L		90	77 - 125
Bromoform	10.0	9.193		ug/L		92	49 - 141
Bromomethane	10.0	7.718		ug/L		77	41 - 175
2-Butanone (MEK)	20.0	17.29		ug/L		86	39 - 163
Carbon disulfide	10.0	9.999		ug/L		100	60 - 138
Carbon tetrachloride	10.0	10.09		ug/L		101	63 - 140
Chlorobenzene	10.0	10.07		ug/L		101	80 - 121
Chloroethane	10.0	7.071		ug/L		71	33 - 173
Chloroform	10.0	9.787		ug/L		98	79 - 127
Chloromethane	10.0	10.45		ug/L		105	54 - 143
1,1-Dichloroethane	10.0	9.876		ug/L		99	75 - 133
1,2-Dichloroethane	10.0	9.215		ug/L		92	71 - 135
1,1-Dichloroethene	10.0	10.10		ug/L		101	65 - 139
1,2-Dichloropropane	10.0	10.08		ug/L		101	78 - 133
cis-1,3-Dichloropropene	10.0	8.872		ug/L		89	64 - 132
trans-1,3-Dichloropropene	10.0	9.094		ug/L		91	55 - 128
Ethylbenzene	10.0	10.14		ug/L		101	80 - 120
2-Hexanone	20.0	16.49		ug/L		82	43 - 148
Methylene Chloride	10.0	11.74		ug/L		117	70 - 134
4-Methyl-2-pentanone (MIBK)	20.0	15.95		ug/L		80	49 - 143
Styrene	10.0	9.918		ug/L		99	79 - 120
1,1,2,2-Tetrachloroethane	10.0	9.772		ug/L		98	65 - 139
Tetrachloroethene	10.0	10.40		ug/L		104	74 - 130
Toluene	10.0	10.65		ug/L		107	78 - 129
Trichloroethene	10.0	9.026		ug/L		90	76 - 125
Vinyl chloride	10.0	9.399		ug/L		94	58 - 143
Xylenes, Total	20.0	20.26		ug/L		101	80 - 120
1,1,1-Trichloroethane	10.0	10.11		ug/L		101	69 - 134
1,1,2-Trichloroethane	10.0	10.85		ug/L		109	78 - 133
Cyclohexane	10.0	10.13		ug/L		101	58 - 145
1,2-Dibromo-3-Chloropropane	10.0	7.646		ug/L		76	46 - 132
Ethylene Dibromide	10.0	9.831		ug/L		98	77 - 123
Dichlorodifluoromethane	10.0	9.244		ug/L		92	29 - 148
cis-1,2-Dichloroethene	10.0	9.706		ug/L		97	76 - 128
trans-1,2-Dichloroethene	10.0	9.987		ug/L		100	78 - 133
Isopropylbenzene	10.0	9.751		ug/L		98	74 - 120

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-374531/4
Matrix: Water
Analysis Batch: 374531

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl acetate	20.0	18.37		ug/L		92	52 - 145
Methyl tert-butyl ether	10.0	6.320		ug/L		63	51 - 133
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	10.03		ug/L		100	50 - 156
1,2,4-Trichlorobenzene	10.0	7.581		ug/L		76	42 - 133
1,2-Dichlorobenzene	10.0	9.958		ug/L		100	78 - 120
1,3-Dichlorobenzene	10.0	9.749		ug/L		97	78 - 120
1,4-Dichlorobenzene	10.0	9.633		ug/L		96	78 - 120
Trichlorofluoromethane	10.0	10.16		ug/L		102	51 - 164
Chlorodibromomethane	10.0	9.517		ug/L		95	70 - 132
Methylcyclohexane	10.0	9.194		ug/L		92	60 - 125
m-Xylene & p-Xylene	10.0	10.35		ug/L		104	80 - 120
o-Xylene	10.0	9.908		ug/L		99	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 121*
4-Bromofluorobenzene (Surr)	*105*		*59 - 120*
Toluene-d8 (Surr)	*103*		*70 - 123*
Dibromofluoromethane (Surr)	*96*		*75 - 128*

Lab Sample ID: MB 240-374533/8
Matrix: Water
Analysis Batch: 374533

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/03/19 15:12	1
Benzene	<1.00		1.00		ug/L			04/03/19 15:12	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/03/19 15:12	1
Bromoform	<1.00		1.00		ug/L			04/03/19 15:12	1
Bromomethane	<1.00		1.00		ug/L			04/03/19 15:12	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/03/19 15:12	1
Carbon disulfide	<1.00		1.00		ug/L			04/03/19 15:12	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/03/19 15:12	1
Chlorobenzene	<1.00		1.00		ug/L			04/03/19 15:12	1
Chloroethane	<1.00		1.00		ug/L			04/03/19 15:12	1
Chloroform	<1.00		1.00		ug/L			04/03/19 15:12	1
Chloromethane	<1.00		1.00		ug/L			04/03/19 15:12	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/03/19 15:12	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/03/19 15:12	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/03/19 15:12	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/03/19 15:12	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 15:12	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/03/19 15:12	1
Ethylbenzene	<1.00		1.00		ug/L			04/03/19 15:12	1
2-Hexanone	<10.0		10.0		ug/L			04/03/19 15:12	1
Methylene Chloride	<5.00		5.00		ug/L			04/03/19 15:12	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/03/19 15:12	1
Styrene	<1.00		1.00		ug/L			04/03/19 15:12	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/03/19 15:12	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-374533/8
Matrix: Water
Analysis Batch: 374533

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			04/03/19 15:12	1
Toluene	<1.00		1.00		ug/L			04/03/19 15:12	1
Trichloroethene	<1.00		1.00		ug/L			04/03/19 15:12	1
Vinyl chloride	<1.00		1.00		ug/L			04/03/19 15:12	1
Xylenes, Total	<2.00		2.00		ug/L			04/03/19 15:12	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/03/19 15:12	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/03/19 15:12	1
Cyclohexane	<1.00		1.00		ug/L			04/03/19 15:12	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/03/19 15:12	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/03/19 15:12	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/03/19 15:12	1
cis-1,2-Dichloroethene	1.161		1.00		ug/L			04/03/19 15:12	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/03/19 15:12	1
Isopropylbenzene	<1.00		1.00		ug/L			04/03/19 15:12	1
Methyl acetate	<10.0		10.0		ug/L			04/03/19 15:12	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/03/19 15:12	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/03/19 15:12	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/03/19 15:12	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 15:12	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 15:12	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/03/19 15:12	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/03/19 15:12	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/03/19 15:12	1
Methylcyclohexane	<1.00		1.00		ug/L			04/03/19 15:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*134*	*X*	*70 - 121*		*04/03/19 15:12*	*1*
4-Bromofluorobenzene (Surr)	*131*	*X*	*59 - 120*		*04/03/19 15:12*	*1*
Toluene-d8 (Surr)	*126*	*X*	*70 - 123*		*04/03/19 15:12*	*1*
Dibromofluoromethane (Surr)	*135*	*X*	*75 - 128*		*04/03/19 15:12*	*1*

Lab Sample ID: LCS 240-374533/4
Matrix: Water
Analysis Batch: 374533

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	40.0	50.48		ug/L		126	21 - 162
Benzene	20.0	24.98	*	ug/L		125	80 - 123
Dichlorobromomethane	20.0	24.84		ug/L		124	77 - 125
Bromoform	20.0	22.66		ug/L		113	49 - 141
Bromomethane	20.0	21.85		ug/L		109	41 - 175
2-Butanone (MEK)	40.0	52.95		ug/L		132	39 - 163
Carbon disulfide	20.0	24.83		ug/L		124	60 - 138
Carbon tetrachloride	20.0	26.40		ug/L		132	63 - 140
Chlorobenzene	20.0	22.19		ug/L		111	80 - 121
Chloroethane	20.0	22.79		ug/L		114	33 - 173
Chloroform	20.0	24.76		ug/L		124	79 - 127
Chloromethane	20.0	20.83		ug/L		104	54 - 143

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-374533/4
Matrix: Water
Analysis Batch: 374533

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	20.0	24.96		ug/L		125	75 - 133
1,2-Dichloroethane	20.0	25.22		ug/L		126	71 - 135
1,1-Dichloroethene	20.0	23.62		ug/L		118	65 - 139
1,2-Dichloropropane	20.0	26.11		ug/L		131	78 - 133
cis-1,3-Dichloropropene	20.0	26.26		ug/L		131	64 - 132
trans-1,3-Dichloropropene	20.0	20.63		ug/L		103	55 - 128
Ethylbenzene	20.0	22.76		ug/L		114	80 - 120
2-Hexanone	40.0	40.66		ug/L		102	43 - 148
Methylene Chloride	20.0	23.80		ug/L		119	70 - 134
4-Methyl-2-pentanone (MIBK)	40.0	46.32		ug/L		116	49 - 143
Styrene	20.0	21.46		ug/L		107	79 - 120
1,1,2,2-Tetrachloroethane	20.0	21.89		ug/L		109	65 - 139
Tetrachloroethene	20.0	21.70		ug/L		109	74 - 130
Toluene	20.0	21.90		ug/L		110	78 - 129
Trichloroethene	20.0	24.42		ug/L		122	76 - 125
Vinyl chloride	20.0	22.42		ug/L		112	58 - 143
Xylenes, Total	40.0	45.86		ug/L		115	80 - 120
1,1,1-Trichloroethane	20.0	26.11		ug/L		131	69 - 134
1,1,2-Trichloroethane	20.0	22.18		ug/L		111	78 - 133
Cyclohexane	20.0	25.15		ug/L		126	58 - 145
1,2-Dibromo-3-Chloropropane	20.0	23.49		ug/L		117	46 - 132
Ethylene Dibromide	20.0	22.11		ug/L		111	77 - 123
Dichlorodifluoromethane	20.0	20.44		ug/L		102	29 - 148
cis-1,2-Dichloroethene	20.0	25.18		ug/L		126	76 - 128
trans-1,2-Dichloroethene	20.0	24.34		ug/L		122	78 - 133
Isopropylbenzene	20.0	23.23		ug/L		116	74 - 120
Methyl acetate	40.0	47.83		ug/L		120	52 - 145
Methyl tert-butyl ether	20.0	24.58		ug/L		123	51 - 133
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	25.56		ug/L		128	50 - 156
1,2,4-Trichlorobenzene	20.0	23.55		ug/L		118	42 - 133
1,2-Dichlorobenzene	20.0	22.66		ug/L		113	78 - 120
1,3-Dichlorobenzene	20.0	21.70		ug/L		108	78 - 120
1,4-Dichlorobenzene	20.0	21.58		ug/L		108	78 - 120
Trichlorofluoromethane	20.0	24.06		ug/L		120	51 - 164
Chlorodibromomethane	20.0	22.20		ug/L		111	70 - 132
Methylcyclohexane	20.0	23.70		ug/L		119	60 - 125
m-Xylene & p-Xylene	20.0	22.77		ug/L		114	80 - 120
o-Xylene	20.0	23.09		ug/L		115	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*117*		*70 - 121*
4-Bromofluorobenzene (Surr)	*104*		*59 - 120*
Toluene-d8 (Surr)	*103*		*70 - 123*
Dibromofluoromethane (Surr)	*117*		*75 - 128*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-374729/6
Matrix: Water
Analysis Batch: 374729

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/04/19 14:55	1
Benzene	<1.00		1.00		ug/L			04/04/19 14:55	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/04/19 14:55	1
Bromoform	<1.00		1.00		ug/L			04/04/19 14:55	1
Bromomethane	<1.00		1.00		ug/L			04/04/19 14:55	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/04/19 14:55	1
Carbon disulfide	<1.00		1.00		ug/L			04/04/19 14:55	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/04/19 14:55	1
Chlorobenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
Chloroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
Chloroform	<1.00		1.00		ug/L			04/04/19 14:55	1
Chloromethane	<1.00		1.00		ug/L			04/04/19 14:55	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/04/19 14:55	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/04/19 14:55	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/04/19 14:55	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/04/19 14:55	1
Ethylbenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
2-Hexanone	<10.0		10.0		ug/L			04/04/19 14:55	1
Methylene Chloride	<5.00		5.00		ug/L			04/04/19 14:55	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/04/19 14:55	1
Styrene	<1.00		1.00		ug/L			04/04/19 14:55	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
Tetrachloroethene	<1.00		1.00		ug/L			04/04/19 14:55	1
Toluene	<1.00		1.00		ug/L			04/04/19 14:55	1
Trichloroethene	<1.00		1.00		ug/L			04/04/19 14:55	1
Vinyl chloride	<1.00		1.00		ug/L			04/04/19 14:55	1
Xylenes, Total	<2.00		2.00		ug/L			04/04/19 14:55	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
Cyclohexane	<1.00		1.00		ug/L			04/04/19 14:55	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/04/19 14:55	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/04/19 14:55	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/04/19 14:55	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/04/19 14:55	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/04/19 14:55	1
Isopropylbenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
Methyl acetate	<10.0		10.0		ug/L			04/04/19 14:55	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/04/19 14:55	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/04/19 14:55	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/04/19 14:55	1
Methylcyclohexane	<1.00		1.00		ug/L			04/04/19 14:55	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-374729/6
Matrix: Water
Analysis Batch: 374729

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		70 - 121		04/04/19 14:55	1
4-Bromofluorobenzene (Surr)	80		59 - 120		04/04/19 14:55	1
Toluene-d8 (Surr)	94		70 - 123		04/04/19 14:55	1
Dibromofluoromethane (Surr)	104		75 - 128		04/04/19 14:55	1

Lab Sample ID: LCS 240-374729/4
Matrix: Water
Analysis Batch: 374729

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	13.22		ug/L		66	21 - 162
Benzene	10.0	9.936		ug/L		99	80 - 123
Dichlorobromomethane	10.0	8.877		ug/L		89	77 - 125
Bromoform	10.0	9.138		ug/L		91	49 - 141
Bromomethane	10.0	7.796		ug/L		78	41 - 175
2-Butanone (MEK)	20.0	16.78		ug/L		84	39 - 163
Carbon disulfide	10.0	10.00		ug/L		100	60 - 138
Carbon tetrachloride	10.0	9.860		ug/L		99	63 - 140
Chlorobenzene	10.0	10.19		ug/L		102	80 - 121
Chloroethane	10.0	7.029		ug/L		70	33 - 173
Chloroform	10.0	9.597		ug/L		96	79 - 127
Chloromethane	10.0	10.13		ug/L		101	54 - 143
1,1-Dichloroethane	10.0	9.842		ug/L		98	75 - 133
1,2-Dichloroethane	10.0	9.106		ug/L		91	71 - 135
1,1-Dichloroethene	10.0	10.09		ug/L		101	65 - 139
1,2-Dichloropropane	10.0	10.10		ug/L		101	78 - 133
cis-1,3-Dichloropropene	10.0	9.074		ug/L		91	64 - 132
trans-1,3-Dichloropropene	10.0	9.047		ug/L		90	55 - 128
Ethylbenzene	10.0	10.16		ug/L		102	80 - 120
2-Hexanone	20.0	16.22		ug/L		81	43 - 148
Methylene Chloride	10.0	10.96		ug/L		110	70 - 134
4-Methyl-2-pentanone (MIBK)	20.0	16.03		ug/L		80	49 - 143
Styrene	10.0	9.993		ug/L		100	79 - 120
1,1,2,2-Tetrachloroethane	10.0	9.699		ug/L		97	65 - 139
Tetrachloroethene	10.0	10.35		ug/L		104	74 - 130
Toluene	10.0	10.61		ug/L		106	78 - 129
Trichloroethene	10.0	9.166		ug/L		92	76 - 125
Vinyl chloride	10.0	9.249		ug/L		92	58 - 143
Xylenes, Total	20.0	20.45		ug/L		102	80 - 120
1,1,1-Trichloroethane	10.0	10.05		ug/L		101	69 - 134
1,1,2-Trichloroethane	10.0	10.83		ug/L		108	78 - 133
Cyclohexane	10.0	10.05		ug/L		100	58 - 145
1,2-Dibromo-3-Chloropropane	10.0	7.775		ug/L		78	46 - 132
Ethylene Dibromide	10.0	10.08		ug/L		101	77 - 123
Dichlorodifluoromethane	10.0	9.099		ug/L		91	29 - 148
cis-1,2-Dichloroethene	10.0	9.738		ug/L		97	76 - 128
trans-1,2-Dichloroethene	10.0	9.979		ug/L		100	78 - 133
Isopropylbenzene	10.0	9.930		ug/L		99	74 - 120

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-374729/4
Matrix: Water
Analysis Batch: 374729

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl acetate	20.0	18.37		ug/L		92	52 - 145
Methyl tert-butyl ether	10.0	6.460		ug/L		65	51 - 133
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	10.05		ug/L		100	50 - 156
1,2,4-Trichlorobenzene	10.0	7.758		ug/L		78	42 - 133
1,2-Dichlorobenzene	10.0	9.871		ug/L		99	78 - 120
1,3-Dichlorobenzene	10.0	9.598		ug/L		96	78 - 120
1,4-Dichlorobenzene	10.0	9.456		ug/L		95	78 - 120
Trichlorofluoromethane	10.0	10.03		ug/L		100	51 - 164
Chlorodibromomethane	10.0	9.466		ug/L		95	70 - 132
Methylcyclohexane	10.0	9.136		ug/L		91	60 - 125
m-Xylene & p-Xylene	10.0	10.39		ug/L		104	80 - 120
o-Xylene	10.0	10.06		ug/L		101	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 121*
4-Bromofluorobenzene (Surr)	*104*		*59 - 120*
Toluene-d8 (Surr)	*103*		*70 - 123*
Dibromofluoromethane (Surr)	*95*		*75 - 128*

Lab Sample ID: 240-109800-20 MS
Matrix: Water
Analysis Batch: 374729

Client Sample ID: 806
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	<12500		25000	19110		ug/L		76	10 - 168
Benzene	<1250		12500	12360		ug/L		99	71 - 122
Dichlorobromomethane	<1250		12500	11530		ug/L		92	64 - 125
Bromoform	<1250		12500	11350		ug/L		91	44 - 129
Bromomethane	<1250		12500	9067		ug/L		73	19 - 187
2-Butanone (MEK)	<12500		25000	19330		ug/L		77	37 - 156
Carbon disulfide	<1250		12500	12220		ug/L		98	43 - 144
Carbon tetrachloride	<1250		12500	12590		ug/L		101	41 - 143
Chlorobenzene	<1250		12500	12970		ug/L		104	70 - 123
Chloroethane	<1250		12500	7912		ug/L		63	11 - 189
Chloroform	<1250		12500	12320		ug/L		99	68 - 130
Chloromethane	<1250		12500	11830		ug/L		95	31 - 154
1,1-Dichloroethane	<1250		12500	12680		ug/L		98	63 - 136
1,2-Dichloroethane	<1250		12500	11560		ug/L		92	65 - 135
1,1-Dichloroethene	<1250		12500	12580		ug/L		101	53 - 140
1,2-Dichloropropane	<1250		12500	12610		ug/L		101	70 - 132
cis-1,3-Dichloropropene	<1250		12500	10530		ug/L		84	48 - 127
trans-1,3-Dichloropropene	<1250		12500	11120		ug/L		89	40 - 125
Ethylbenzene	<1250		12500	12630		ug/L		101	66 - 120
2-Hexanone	<12500		25000	21470		ug/L		86	42 - 150
Methylene Chloride	<6250		12500	15510		ug/L		124	61 - 130
4-Methyl-2-pentanone (MIBK)	<12500		25000	19690		ug/L		79	44 - 143
Styrene	<1250		12500	12580		ug/L		101	68 - 120
1,1,2,2-Tetrachloroethane	<1250		12500	12260		ug/L		98	60 - 137

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-109800-20 MS
Matrix: Water
Analysis Batch: 374729

Client Sample ID: 806
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Tetrachloroethene	<1250		12500	12740		ug/L		102	51 - 136
Toluene	<1250		12500	13420		ug/L		107	62 - 132
Trichloroethene	11100		12500	20270		ug/L		73	55 - 131
Vinyl chloride	<1250		12500	11120		ug/L		89	43 - 154
Xylenes, Total	<2500		25000	25710		ug/L		103	67 - 120
1,1,1-Trichloroethane	<1250		12500	12930		ug/L		103	51 - 138
1,1,2-Trichloroethane	<1250		12500	14160		ug/L		113	76 - 132
Cyclohexane	<1250		12500	11520		ug/L		92	42 - 135
1,2-Dibromo-3-Chloropropane	<2500		12500	9507		ug/L		76	38 - 124
Ethylene Dibromide	<1250		12500	12720		ug/L		102	71 - 123
Dichlorodifluoromethane	<1250		12500	10320		ug/L		83	28 - 136
cis-1,2-Dichloroethene	22200	F1	12500	29850	F1	ug/L		61	64 - 130
trans-1,2-Dichloroethene	<1250		12500	13520		ug/L		103	68 - 133
Isopropylbenzene	<1250		12500	12200		ug/L		98	59 - 120
Methyl acetate	<12500		25000	22720		ug/L		91	41 - 142
Methyl tert-butyl ether	<1250		12500	7866		ug/L		63	41 - 136
1,1,2-Trichloro-1,2,2-trifluoroethane	<1250		12500	11640		ug/L		93	31 - 156
1,2,4-Trichlorobenzene	<1250		12500	9164		ug/L		73	30 - 126
1,2-Dichlorobenzene	<1250		12500	12140		ug/L		97	64 - 120
1,3-Dichlorobenzene	<1250		12500	11880		ug/L		95	62 - 120
1,4-Dichlorobenzene	<1250		12500	11670		ug/L		93	63 - 120
Trichlorofluoromethane	<1250		12500	11930		ug/L		95	37 - 174
Chlorodibromomethane	<1250		12500	12120		ug/L		97	60 - 129
Methylcyclohexane	<1250		12500	10260		ug/L		82	37 - 123
m-Xylene & p-Xylene	<2500		12500	13060		ug/L		104	63 - 121
o-Xylene	<1250		12500	12650		ug/L		101	69 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*70 - 121*
4-Bromofluorobenzene (Surr)	*105*		*59 - 120*
Toluene-d8 (Surr)	*105*		*70 - 123*
Dibromofluoromethane (Surr)	*96*		*75 - 128*

Lab Sample ID: 240-109800-20 MSD
Matrix: Water
Analysis Batch: 374729

Client Sample ID: 806
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	<12500		25000	19020		ug/L		76	10 - 168	0	35
Benzene	<1250		12500	12230		ug/L		98	71 - 122	1	22
Dichlorobromomethane	<1250		12500	11130		ug/L		89	64 - 125	4	27
Bromoform	<1250		12500	10850		ug/L		87	44 - 129	5	28
Bromomethane	<1250		12500	8795		ug/L		70	19 - 187	3	35
2-Butanone (MEK)	<12500		25000	18870		ug/L		75	37 - 156	2	35
Carbon disulfide	<1250		12500	11920		ug/L		95	43 - 144	3	33
Carbon tetrachloride	<1250		12500	12190		ug/L		98	41 - 143	3	30
Chlorobenzene	<1250		12500	12350		ug/L		99	70 - 123	5	23
Chloroethane	<1250		12500	7841		ug/L		63	11 - 189	1	35

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-109800-20 MSD
Matrix: Water
Analysis Batch: 374729

Client Sample ID: 806
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloroform	<1250		12500	12110		ug/L		97	68 - 130	2	23
Chloromethane	<1250		12500	12200		ug/L		98	31 - 154	3	35
1,1-Dichloroethane	<1250		12500	12300		ug/L		95	63 - 136	3	23
1,2-Dichloroethane	<1250		12500	11580		ug/L		93	65 - 135	0	24
1,1-Dichloroethene	<1250		12500	12170		ug/L		97	53 - 140	3	35
1,2-Dichloropropane	<1250		12500	12500		ug/L		100	70 - 132	1	26
cis-1,3-Dichloropropene	<1250		12500	10430		ug/L		83	48 - 127	1	30
trans-1,3-Dichloropropene	<1250		12500	10720		ug/L		86	40 - 125	4	27
Ethylbenzene	<1250		12500	12050		ug/L		96	66 - 120	5	24
2-Hexanone	<12500		25000	21000		ug/L		84	42 - 150	2	35
Methylene Chloride	<6250		12500	15600		ug/L		125	61 - 130	1	29
4-Methyl-2-pentanone (MIBK)	<12500		25000	20620		ug/L		82	44 - 143	5	35
Styrene	<1250		12500	11850		ug/L		95	68 - 120	6	26
1,1,2,2-Tetrachloroethane	<1250		12500	12090		ug/L		97	60 - 137	1	31
Tetrachloroethene	<1250		12500	12410		ug/L		99	51 - 136	3	23
Toluene	<1250		12500	13020		ug/L		104	62 - 132	3	23
Trichloroethene	11100		12500	21470		ug/L		83	55 - 131	6	23
Vinyl chloride	<1250		12500	10840		ug/L		87	43 - 154	3	29
Xylenes, Total	<2500		25000	24640		ug/L		99	67 - 120	4	25
1,1,1-Trichloroethane	<1250		12500	12300		ug/L		98	51 - 138	5	27
1,1,2-Trichloroethane	<1250		12500	13340		ug/L		107	76 - 132	6	25
Cyclohexane	<1250		12500	11230		ug/L		90	42 - 135	3	35
1,2-Dibromo-3-Chloropropane	<2500		12500	9769		ug/L		78	38 - 124	3	35
Ethylene Dibromide	<1250		12500	12290		ug/L		98	71 - 123	3	27
Dichlorodifluoromethane	<1250		12500	10270		ug/L		82	28 - 136	0	35
cis-1,2-Dichloroethene	22200	F1	12500	32580		ug/L		83	64 - 130	9	21
trans-1,2-Dichloroethene	<1250		12500	12980		ug/L		98	68 - 133	4	24
Isopropylbenzene	<1250		12500	11630		ug/L		93	59 - 120	5	31
Methyl acetate	<12500		25000	23770		ug/L		95	41 - 142	5	35
Methyl tert-butyl ether	<1250		12500	8004		ug/L		64	41 - 136	2	29
1,1,2-Trichloro-1,2,2-trifluoroetha ne	<1250		12500	10850		ug/L		87	31 - 156	7	35
1,2,4-Trichlorobenzene	<1250		12500	9272		ug/L		74	30 - 126	1	35
1,2-Dichlorobenzene	<1250		12500	11870		ug/L		95	64 - 120	2	30
1,3-Dichlorobenzene	<1250		12500	11590		ug/L		93	62 - 120	2	31
1,4-Dichlorobenzene	<1250		12500	11540		ug/L		92	63 - 120	1	28
Trichlorofluoromethane	<1250		12500	11730		ug/L		94	37 - 174	2	35
Chlorodibromomethane	<1250		12500	11510		ug/L		92	60 - 129	5	26
Methylcyclohexane	<1250		12500	10090		ug/L		81	37 - 123	2	35
m-Xylene & p-Xylene	<2500		12500	12380		ug/L		99	63 - 121	5	25
o-Xylene	<1250		12500	12260		ug/L		98	69 - 120	3	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 121*
4-Bromofluorobenzene (Surr)	*104*		*59 - 120*
Toluene-d8 (Surr)	*103*		*70 - 123*
Dibromofluoromethane (Surr)	*96*		*75 - 128*

QC Association Summary

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

GC/MS VOA

Analysis Batch: 374531

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-109800-1	420D	Total/NA	Water	8260B	
240-109800-2	420M	Total/NA	Water	8260B	
240-109800-3	417D	Total/NA	Water	8260B	
240-109800-4	418D	Total/NA	Water	8260B	
240-109800-5	425S	Total/NA	Water	8260B	
240-109800-6	741	Total/NA	Water	8260B	
240-109800-7	800	Total/NA	Water	8260B	
240-109800-8	775	Total/NA	Water	8260B	
240-109800-9	759	Total/NA	Water	8260B	
240-109800-10	740	Total/NA	Water	8260B	
240-109800-11	776	Total/NA	Water	8260B	
240-109800-12	730	Total/NA	Water	8260B	
240-109800-13	717	Total/NA	Water	8260B	
240-109800-14	731	Total/NA	Water	8260B	
240-109800-15	732	Total/NA	Water	8260B	
240-109800-16	725	Total/NA	Water	8260B	
240-109800-17	743	Total/NA	Water	8260B	
240-109800-18	605	Total/NA	Water	8260B	
MB 240-374531/6	Method Blank	Total/NA	Water	8260B	
LCS 240-374531/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 374533

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-109800-19	810	Total/NA	Water	8260B	
240-109800-21	607	Total/NA	Water	8260B	
MB 240-374533/8	Method Blank	Total/NA	Water	8260B	
LCS 240-374533/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 374729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-109800-2 - RA	420M	Total/NA	Water	8260B	
240-109800-20	806	Total/NA	Water	8260B	
240-109800-21	607	Total/NA	Water	8260B	
240-109800-22	806 DUP	Total/NA	Water	8260B	
MB 240-374729/6	Method Blank	Total/NA	Water	8260B	
LCS 240-374729/4	Lab Control Sample	Total/NA	Water	8260B	
240-109800-20 MS	806	Total/NA	Water	8260B	
240-109800-20 MSD	806	Total/NA	Water	8260B	

Lab Chronicle

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 420D — Lab Sample ID: 240-109800-1

Date Collected: 03/21/19 10:10
Date Received: 03/22/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		5	374531	04/03/19 15:47	LRW	TAL CAN

Client Sample ID: 420M — Lab Sample ID: 240-109800-2

Date Collected: 03/21/19 10:10
Date Received: 03/22/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		25	374531	04/03/19 16:15	LRW	TAL CAN
Total/NA	Analysis	8260B	RA	1	374729	04/04/19 21:23	LRW	TAL CAN

Client Sample ID: 417D — Lab Sample ID: 240-109800-3

Date Collected: 03/21/19 10:39
Date Received: 03/22/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 16:39	LRW	TAL CAN

Client Sample ID: 418D — Lab Sample ID: 240-109800-4

Date Collected: 03/21/19 11:00
Date Received: 03/22/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 17:10	LRW	TAL CAN

Client Sample ID: 425S — Lab Sample ID: 240-109800-5

Date Collected: 03/21/19 11:24
Date Received: 03/22/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		50	374531	04/03/19 17:43	LRW	TAL CAN

Client Sample ID: 741 — Lab Sample ID: 240-109800-6

Date Collected: 03/21/19 11:30
Date Received: 03/22/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 18:16	LRW	TAL CAN

Client Sample ID: 800 — Lab Sample ID: 240-109800-7

Date Collected: 03/21/19 11:47
Date Received: 03/22/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 18:49	LRW	TAL CAN

Lab Chronicle

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 775
Lab Sample ID: 240-109800-8
Date Collected: 03/21/19 11:55
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 19:12	LRW	TAL CAN

Client Sample ID: 759
Lab Sample ID: 240-109800-9
Date Collected: 03/21/19 12:06
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2	374531	04/03/19 19:36	LRW	TAL CAN

Client Sample ID: 740
Lab Sample ID: 240-109800-10
Date Collected: 03/21/19 12:20
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 19:59	LRW	TAL CAN

Client Sample ID: 776
Lab Sample ID: 240-109800-11
Date Collected: 03/21/19 12:30
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 20:23	LRW	TAL CAN

Client Sample ID: 730
Lab Sample ID: 240-109800-12
Date Collected: 03/21/19 12:45
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 20:47	LRW	TAL CAN

Client Sample ID: 717
Lab Sample ID: 240-109800-13
Date Collected: 03/21/19 13:57
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 21:11	LRW	TAL CAN

Client Sample ID: 731
Lab Sample ID: 240-109800-14
Date Collected: 03/21/19 14:07
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 21:35	LRW	TAL CAN

Lab Chronicle

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 732
Lab Sample ID: 240-109800-15
Date Collected: 03/21/19 15:20
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 21:59	LRW	TAL CAN

Client Sample ID: 725
Lab Sample ID: 240-109800-16
Date Collected: 03/21/19 14:30
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 22:22	LRW	TAL CAN

Client Sample ID: 743
Lab Sample ID: 240-109800-17
Date Collected: 03/21/19 14:19
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 22:46	LRW	TAL CAN

Client Sample ID: 605
Lab Sample ID: 240-109800-18
Date Collected: 03/21/19 15:11
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374531	04/03/19 23:10	LRW	TAL CAN

Client Sample ID: 810
Lab Sample ID: 240-109800-19
Date Collected: 03/21/19 16:00
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374533	04/03/19 16:21	LRW	TAL CAN

Client Sample ID: 806
Lab Sample ID: 240-109800-20
Date Collected: 03/21/19 15:39
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1250	374729	04/04/19 15:42	LRW	TAL CAN

Client Sample ID: 607
Lab Sample ID: 240-109800-21
Date Collected: 03/21/19 15:00
Matrix: Water
Date Received: 03/22/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374729	04/04/19 15:19	LRW	TAL CAN
Total/NA	Analysis	8260B		1	374533	04/03/19 16:44	LRW	TAL CAN

Lab Chronicle

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Client Sample ID: 806 DUP

Date Collected: 03/21/19 00:00
Date Received: 03/22/19 08:00

Lab Sample ID: 240-109800-22

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1250	374729	04/04/19 16:06	LRW	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Institute of Ecolonomics
Project/Site: CERTA Vandalia

Job ID: 240-109800-1

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19 *
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Canton
4101 Shuffel Street, N. H.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

~~220~~ 24019071 1.2/C1.0 150102

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: C	Site Contact: Chris Powers	Date: 3/21/19	COC No:
Company Name: IOE	Tel/Fax:	Lab Contact: John McFadden	Carrier:	____ of ____ COCs
Address: 901 S. CR 31	Analysis Turnaround Time			Sampler:
City/State/Zip: Berthoud / CO	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 810 358 9920	TAT if different from Below ____			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: CERTA Vandalia	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	8260B	Sample Specific Notes:
~~419D~~ 420D	3/21/19	10:10	G	GW	3			X	
420M	3/21/19	10:10							
~~419D~~ 417D		10:39							
418D		11:00							
425S		11:24							
741		11:30							
800		11:47							
775		11:55							
759		12:06							
740		12:20							
776		12:30							
730		12:45							

240-109800 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☒ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Chris Powers	IOE	3/21 16:47	ME Lilly	TA	3-21-19 1647
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: ME Lilly	Company: TA	Date/Time: 3-21-19 1700	Received in Laboratory by:	Company: TAC	Date/Time: 3-22-19 800

TestAmerica Canton
4101 Shuffel Street, N. N.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

Chain of Custody Record

24019071

150103

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager:	Site Contact: Chris Powers	Date: 3/21/19	COC No:
Company Name:	Tel/Fax:	Lab Contact:	Carrier:	____ of ____ COCs
Address:	Analysis Turnaround Time			Sampler:
City/State/Zip:	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone:	TAT if different from Below ____			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name:	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	8260B	Sample Specific Notes:
717	3/19/19	13:57	G	GW	3			X	
731		14:07							
732		15:20							
725		14:30							
743		14:19							
605		15:11							
810		16:00							
806		15:39							
607		15:00							

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ Therm ID No.: ____

	Company	Date/Time		Company	Date/Time
Relinquished by: [signature]	TOE	3/21 16:57	Received by: [signature]	TA	3-21-19 1647
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: [signature]	TA	3-21-19 1700	Received in Laboratory by: [signature]	TAC	3-22-19 800

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 109800
Canton Facility

Client LOE Site Name _____ Cooler unpacked by: [illegible]
Cooler Received on 3-22-19 Opened on 3-22-19
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 74 Foam Box Client Cooler Box Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp. 1.2 °C Corrected Cooler Temp. 1.0 °C
   IR GUN #36 (CF **+0.7**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 7 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC861525**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: MS

received extra 3 samples 806 Dup will at at end of CoC

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-109849-1
Client Project/Site: CERTA - Vandalia

For:
Institute of Ecolonomics
901 S County Rd 31
Berthoud, Colorado 80513

Attn: Chris Powers

Authorized for release by:
4/9/2019 11:16:02 AM

John McFadden, Project Manager I
(330)497-9396
john.mcfadden@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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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 ID: 240-109849-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: Institute of Ecolonomics

Project: CERTA - Vandalia

Report Number: 240-109849-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT
The samples were received on 3/23/2019 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)
Samples 001-3/22/19 (240-109849-1), 002-3/22/19 (240-109849-2), 003-3/22/19 (240-109849-3), 004-3/22/19 (240-109849-4), 005-3/22/19 (240-109849-5), 006-3/22/19 (240-109849-6), 007-3/22/19 (240-109849-7) and TRIP BLANK (240-109849-8) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/04/2019 and 04/05/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-109849-1	001-3/22/19	Water	03/22/19 12:05	03/23/19 08:00
240-109849-2	002-3/22/19	Water	03/22/19 12:30	03/23/19 08:00
240-109849-3	003-3/22/19	Water	03/22/19 12:45	03/23/19 08:00
240-109849-4	004-3/22/19	Water	03/22/19 13:07	03/23/19 08:00
240-109849-5	005-3/22/19	Water	03/22/19 13:30	03/23/19 08:00
240-109849-6	006-3/22/19	Water	03/22/19 13:40	03/23/19 08:00
240-109849-7	007-3/22/19	Water	03/22/19 14:32	03/23/19 08:00
240-109849-8	TRIP BLANK	Water	03/22/19 00:00	03/23/19 08:00

Detection Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 001-3/22/19 — Lab Sample ID: 240-109849-1

No Detections.

Client Sample ID: 002-3/22/19 — Lab Sample ID: 240-109849-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	18.0		1.00		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	3.51		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: 003-3/22/19 — Lab Sample ID: 240-109849-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	17.3		1.00		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	1.47		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: 004-3/22/19 — Lab Sample ID: 240-109849-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	3.53		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: 005-3/22/19 — Lab Sample ID: 240-109849-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	22.8		1.00		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	4.32		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: 006-3/22/19 — Lab Sample ID: 240-109849-6

No Detections.

Client Sample ID: 007-3/22/19 — Lab Sample ID: 240-109849-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroform	6.24		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-109849-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 001-3/22/19

Date Collected: 03/22/19 12:05
Date Received: 03/23/19 08:00

Lab Sample ID: 240-109849-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/05/19 14:37	1
Benzene	<1.00		1.00		ug/L			04/05/19 14:37	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/05/19 14:37	1
Bromoform	<1.00		1.00		ug/L			04/05/19 14:37	1
Bromomethane	<1.00		1.00		ug/L			04/05/19 14:37	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/05/19 14:37	1
Carbon disulfide	<1.00		1.00		ug/L			04/05/19 14:37	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/05/19 14:37	1
Chlorobenzene	<1.00		1.00		ug/L			04/05/19 14:37	1
Chloroethane	<1.00		1.00		ug/L			04/05/19 14:37	1
Chloroform	<1.00		1.00		ug/L			04/05/19 14:37	1
Chloromethane	<1.00		1.00		ug/L			04/05/19 14:37	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/05/19 14:37	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/05/19 14:37	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/05/19 14:37	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/05/19 14:37	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 14:37	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 14:37	1
Ethylbenzene	<1.00		1.00		ug/L			04/05/19 14:37	1
2-Hexanone	<10.0		10.0		ug/L			04/05/19 14:37	1
Methylene Chloride	<5.00		5.00		ug/L			04/05/19 14:37	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/05/19 14:37	1
Styrene	<1.00		1.00		ug/L			04/05/19 14:37	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/05/19 14:37	1
Tetrachloroethene	<1.00		1.00		ug/L			04/05/19 14:37	1
Toluene	<1.00		1.00		ug/L			04/05/19 14:37	1
Trichloroethene	<1.00		1.00		ug/L			04/05/19 14:37	1
Vinyl chloride	<1.00		1.00		ug/L			04/05/19 14:37	1
Xylenes, Total	<2.00		2.00		ug/L			04/05/19 14:37	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/05/19 14:37	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/05/19 14:37	1
Cyclohexane	<1.00		1.00		ug/L			04/05/19 14:37	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/05/19 14:37	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/05/19 14:37	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/05/19 14:37	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/05/19 14:37	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/05/19 14:37	1
Isopropylbenzene	<1.00		1.00		ug/L			04/05/19 14:37	1
Methyl acetate	<10.0		10.0		ug/L			04/05/19 14:37	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/05/19 14:37	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/05/19 14:37	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/05/19 14:37	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 14:37	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 14:37	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 14:37	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/05/19 14:37	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/05/19 14:37	1
Methylcyclohexane	<1.00		1.00		ug/L			04/05/19 14:37	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 001-3/22/19

Date Collected: 03/22/19 12:05
Date Received: 03/23/19 08:00

Lab Sample ID: 240-109849-1

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		70 - 121		04/05/19 14:37	1
4-Bromofluorobenzene (Surr)	80		59 - 120		04/05/19 14:37	1
Toluene-d8 (Surr)	90		70 - 123		04/05/19 14:37	1
Dibromofluoromethane (Surr)	98		75 - 128		04/05/19 14:37	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 002-3/22/19

Date Collected: 03/22/19 12:30
Date Received: 03/23/19 08:00

Lab Sample ID: 240-109849-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/05/19 14:59	1
Benzene	<1.00		1.00		ug/L			04/05/19 14:59	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/05/19 14:59	1
Bromoform	<1.00		1.00		ug/L			04/05/19 14:59	1
Bromomethane	<1.00		1.00		ug/L			04/05/19 14:59	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/05/19 14:59	1
Carbon disulfide	<1.00		1.00		ug/L			04/05/19 14:59	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/05/19 14:59	1
Chlorobenzene	<1.00		1.00		ug/L			04/05/19 14:59	1
Chloroethane	<1.00		1.00		ug/L			04/05/19 14:59	1
Chloroform	<1.00		1.00		ug/L			04/05/19 14:59	1
Chloromethane	<1.00		1.00		ug/L			04/05/19 14:59	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/05/19 14:59	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/05/19 14:59	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/05/19 14:59	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/05/19 14:59	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 14:59	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 14:59	1
Ethylbenzene	<1.00		1.00		ug/L			04/05/19 14:59	1
2-Hexanone	<10.0		10.0		ug/L			04/05/19 14:59	1
Methylene Chloride	<5.00		5.00		ug/L			04/05/19 14:59	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/05/19 14:59	1
Styrene	<1.00		1.00		ug/L			04/05/19 14:59	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/05/19 14:59	1
Tetrachloroethene	<1.00		1.00		ug/L			04/05/19 14:59	1
Toluene	<1.00		1.00		ug/L			04/05/19 14:59	1
Trichloroethene	**18.0**		1.00		ug/L			04/05/19 14:59	1
Vinyl chloride	<1.00		1.00		ug/L			04/05/19 14:59	1
Xylenes, Total	<2.00		2.00		ug/L			04/05/19 14:59	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/05/19 14:59	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/05/19 14:59	1
Cyclohexane	<1.00		1.00		ug/L			04/05/19 14:59	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/05/19 14:59	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/05/19 14:59	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/05/19 14:59	1
cis-1,2-Dichloroethene	**3.51**		1.00		ug/L			04/05/19 14:59	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/05/19 14:59	1
Isopropylbenzene	<1.00		1.00		ug/L			04/05/19 14:59	1
Methyl acetate	<10.0		10.0		ug/L			04/05/19 14:59	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/05/19 14:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/05/19 14:59	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/05/19 14:59	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 14:59	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 14:59	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 14:59	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/05/19 14:59	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/05/19 14:59	1
Methylcyclohexane	<1.00		1.00		ug/L			04/05/19 14:59	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 002-3/22/19

Date Collected: 03/22/19 12:30
Date Received: 03/23/19 08:00

Lab Sample ID: 240-109849-2

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		70 - 121		04/05/19 14:59	1
4-Bromofluorobenzene (Surr)	84		59 - 120		04/05/19 14:59	1
Toluene-d8 (Surr)	93		70 - 123		04/05/19 14:59	1
Dibromofluoromethane (Surr)	99		75 - 128		04/05/19 14:59	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 003-3/22/19

Date Collected: 03/22/19 12:45
Date Received: 03/23/19 08:00

Lab Sample ID: 240-109849-3

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/05/19 15:21	1
Benzene	<1.00		1.00		ug/L			04/05/19 15:21	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/05/19 15:21	1
Bromoform	<1.00		1.00		ug/L			04/05/19 15:21	1
Bromomethane	<1.00		1.00		ug/L			04/05/19 15:21	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/05/19 15:21	1
Carbon disulfide	<1.00		1.00		ug/L			04/05/19 15:21	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/05/19 15:21	1
Chlorobenzene	<1.00		1.00		ug/L			04/05/19 15:21	1
Chloroethane	<1.00		1.00		ug/L			04/05/19 15:21	1
Chloroform	<1.00		1.00		ug/L			04/05/19 15:21	1
Chloromethane	<1.00		1.00		ug/L			04/05/19 15:21	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/05/19 15:21	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/05/19 15:21	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/05/19 15:21	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/05/19 15:21	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 15:21	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 15:21	1
Ethylbenzene	<1.00		1.00		ug/L			04/05/19 15:21	1
2-Hexanone	<10.0		10.0		ug/L			04/05/19 15:21	1
Methylene Chloride	<5.00		5.00		ug/L			04/05/19 15:21	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/05/19 15:21	1
Styrene	<1.00		1.00		ug/L			04/05/19 15:21	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/05/19 15:21	1
Tetrachloroethene	<1.00		1.00		ug/L			04/05/19 15:21	1
Toluene	<1.00		1.00		ug/L			04/05/19 15:21	1
Trichloroethene	**17.3**		1.00		ug/L			04/05/19 15:21	1
Vinyl chloride	<1.00		1.00		ug/L			04/05/19 15:21	1
Xylenes, Total	<2.00		2.00		ug/L			04/05/19 15:21	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/05/19 15:21	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/05/19 15:21	1
Cyclohexane	<1.00		1.00		ug/L			04/05/19 15:21	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/05/19 15:21	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/05/19 15:21	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/05/19 15:21	1
cis-1,2-Dichloroethene	**1.47**		1.00		ug/L			04/05/19 15:21	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/05/19 15:21	1
Isopropylbenzene	<1.00		1.00		ug/L			04/05/19 15:21	1
Methyl acetate	<10.0		10.0		ug/L			04/05/19 15:21	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/05/19 15:21	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/05/19 15:21	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/05/19 15:21	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 15:21	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 15:21	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 15:21	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/05/19 15:21	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/05/19 15:21	1
Methylcyclohexane	<1.00		1.00		ug/L			04/05/19 15:21	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 003-3/22/19

Date Collected: 03/22/19 12:45
Date Received: 03/23/19 08:00

Lab Sample ID: 240-109849-3

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		70 - 121		04/05/19 15:21	1
4-Bromofluorobenzene (Surr)	84		59 - 120		04/05/19 15:21	1
Toluene-d8 (Surr)	96		70 - 123		04/05/19 15:21	1
Dibromofluoromethane (Surr)	107		75 - 128		04/05/19 15:21	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 004-3/22/19

Date Collected: 03/22/19 13:07
Date Received: 03/23/19 08:00

Lab Sample ID: 240-109849-4

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/05/19 15:44	1
Benzene	<1.00		1.00		ug/L			04/05/19 15:44	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/05/19 15:44	1
Bromoform	<1.00		1.00		ug/L			04/05/19 15:44	1
Bromomethane	<1.00		1.00		ug/L			04/05/19 15:44	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/05/19 15:44	1
Carbon disulfide	<1.00		1.00		ug/L			04/05/19 15:44	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/05/19 15:44	1
Chlorobenzene	<1.00		1.00		ug/L			04/05/19 15:44	1
Chloroethane	<1.00		1.00		ug/L			04/05/19 15:44	1
Chloroform	<1.00		1.00		ug/L			04/05/19 15:44	1
Chloromethane	<1.00		1.00		ug/L			04/05/19 15:44	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/05/19 15:44	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/05/19 15:44	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/05/19 15:44	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/05/19 15:44	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 15:44	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 15:44	1
Ethylbenzene	<1.00		1.00		ug/L			04/05/19 15:44	1
2-Hexanone	<10.0		10.0		ug/L			04/05/19 15:44	1
Methylene Chloride	<5.00		5.00		ug/L			04/05/19 15:44	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/05/19 15:44	1
Styrene	<1.00		1.00		ug/L			04/05/19 15:44	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/05/19 15:44	1
Tetrachloroethene	<1.00		1.00		ug/L			04/05/19 15:44	1
Toluene	<1.00		1.00		ug/L			04/05/19 15:44	1
Trichloroethene	**3.53**		1.00		ug/L			04/05/19 15:44	1
Vinyl chloride	<1.00		1.00		ug/L			04/05/19 15:44	1
Xylenes, Total	<2.00		2.00		ug/L			04/05/19 15:44	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/05/19 15:44	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/05/19 15:44	1
Cyclohexane	<1.00		1.00		ug/L			04/05/19 15:44	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/05/19 15:44	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/05/19 15:44	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/05/19 15:44	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/05/19 15:44	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/05/19 15:44	1
Isopropylbenzene	<1.00		1.00		ug/L			04/05/19 15:44	1
Methyl acetate	<10.0		10.0		ug/L			04/05/19 15:44	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/05/19 15:44	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/05/19 15:44	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/05/19 15:44	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 15:44	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 15:44	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 15:44	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/05/19 15:44	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/05/19 15:44	1
Methylcyclohexane	<1.00		1.00		ug/L			04/05/19 15:44	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 004-3/22/19

Date Collected: 03/22/19 13:07
Date Received: 03/23/19 08:00

Lab Sample ID: 240-109849-4

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		70 - 121		04/05/19 15:44	1
4-Bromofluorobenzene (Surr)	80		59 - 120		04/05/19 15:44	1
Toluene-d8 (Surr)	91		70 - 123		04/05/19 15:44	1
Dibromofluoromethane (Surr)	98		75 - 128		04/05/19 15:44	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 005-3/22/19

Date Collected: 03/22/19 13:30
Date Received: 03/23/19 08:00

Lab Sample ID: 240-109849-5

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/05/19 16:06	1
Benzene	<1.00		1.00		ug/L			04/05/19 16:06	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/05/19 16:06	1
Bromoform	<1.00		1.00		ug/L			04/05/19 16:06	1
Bromomethane	<1.00		1.00		ug/L			04/05/19 16:06	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/05/19 16:06	1
Carbon disulfide	<1.00		1.00		ug/L			04/05/19 16:06	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/05/19 16:06	1
Chlorobenzene	<1.00		1.00		ug/L			04/05/19 16:06	1
Chloroethane	<1.00		1.00		ug/L			04/05/19 16:06	1
Chloroform	<1.00		1.00		ug/L			04/05/19 16:06	1
Chloromethane	<1.00		1.00		ug/L			04/05/19 16:06	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/05/19 16:06	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/05/19 16:06	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/05/19 16:06	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/05/19 16:06	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 16:06	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 16:06	1
Ethylbenzene	<1.00		1.00		ug/L			04/05/19 16:06	1
2-Hexanone	<10.0		10.0		ug/L			04/05/19 16:06	1
Methylene Chloride	<5.00		5.00		ug/L			04/05/19 16:06	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/05/19 16:06	1
Styrene	<1.00		1.00		ug/L			04/05/19 16:06	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/05/19 16:06	1
Tetrachloroethene	<1.00		1.00		ug/L			04/05/19 16:06	1
Toluene	<1.00		1.00		ug/L			04/05/19 16:06	1
Trichloroethene	**22.8**		1.00		ug/L			04/05/19 16:06	1
Vinyl chloride	<1.00		1.00		ug/L			04/05/19 16:06	1
Xylenes, Total	<2.00		2.00		ug/L			04/05/19 16:06	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/05/19 16:06	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/05/19 16:06	1
Cyclohexane	<1.00		1.00		ug/L			04/05/19 16:06	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/05/19 16:06	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/05/19 16:06	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/05/19 16:06	1
cis-1,2-Dichloroethene	**4.32**		1.00		ug/L			04/05/19 16:06	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/05/19 16:06	1
Isopropylbenzene	<1.00		1.00		ug/L			04/05/19 16:06	1
Methyl acetate	<10.0		10.0		ug/L			04/05/19 16:06	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/05/19 16:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/05/19 16:06	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/05/19 16:06	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 16:06	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 16:06	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 16:06	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/05/19 16:06	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/05/19 16:06	1
Methylcyclohexane	<1.00		1.00		ug/L			04/05/19 16:06	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 005-3/22/19

Lab Sample ID: 240-109849-5

Date Collected: 03/22/19 13:30

Matrix: Water

Date Received: 03/23/19 08:00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		70 - 121		04/05/19 16:06	1
4-Bromofluorobenzene (Surr)	81		59 - 120		04/05/19 16:06	1
Toluene-d8 (Surr)	93		70 - 123		04/05/19 16:06	1
Dibromofluoromethane (Surr)	108		75 - 128		04/05/19 16:06	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 006-3/22/19

Lab Sample ID: 240-109849-6

Date Collected: 03/22/19 13:40

Matrix: Water

Date Received: 03/23/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/05/19 16:28	1
Benzene	<1.00		1.00		ug/L			04/05/19 16:28	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/05/19 16:28	1
Bromoform	<1.00		1.00		ug/L			04/05/19 16:28	1
Bromomethane	<1.00		1.00		ug/L			04/05/19 16:28	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/05/19 16:28	1
Carbon disulfide	<1.00		1.00		ug/L			04/05/19 16:28	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/05/19 16:28	1
Chlorobenzene	<1.00		1.00		ug/L			04/05/19 16:28	1
Chloroethane	<1.00		1.00		ug/L			04/05/19 16:28	1
Chloroform	<1.00		1.00		ug/L			04/05/19 16:28	1
Chloromethane	<1.00		1.00		ug/L			04/05/19 16:28	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/05/19 16:28	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/05/19 16:28	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/05/19 16:28	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/05/19 16:28	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 16:28	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 16:28	1
Ethylbenzene	<1.00		1.00		ug/L			04/05/19 16:28	1
2-Hexanone	<10.0		10.0		ug/L			04/05/19 16:28	1
Methylene Chloride	<5.00		5.00		ug/L			04/05/19 16:28	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/05/19 16:28	1
Styrene	<1.00		1.00		ug/L			04/05/19 16:28	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/05/19 16:28	1
Tetrachloroethene	<1.00		1.00		ug/L			04/05/19 16:28	1
Toluene	<1.00		1.00		ug/L			04/05/19 16:28	1
Trichloroethene	<1.00		1.00		ug/L			04/05/19 16:28	1
Vinyl chloride	<1.00		1.00		ug/L			04/05/19 16:28	1
Xylenes, Total	<2.00		2.00		ug/L			04/05/19 16:28	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/05/19 16:28	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/05/19 16:28	1
Cyclohexane	<1.00		1.00		ug/L			04/05/19 16:28	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/05/19 16:28	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/05/19 16:28	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/05/19 16:28	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/05/19 16:28	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/05/19 16:28	1
Isopropylbenzene	<1.00		1.00		ug/L			04/05/19 16:28	1
Methyl acetate	<10.0		10.0		ug/L			04/05/19 16:28	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/05/19 16:28	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/05/19 16:28	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/05/19 16:28	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 16:28	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 16:28	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 16:28	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/05/19 16:28	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/05/19 16:28	1
Methylcyclohexane	<1.00		1.00		ug/L			04/05/19 16:28	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 006-3/22/19

Lab Sample ID: 240-109849-6

Date Collected: 03/22/19 13:40

Matrix: Water

Date Received: 03/23/19 08:00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	111		70 - 121		04/05/19 16:28	1
4-Bromofluorobenzene (Surr)	75		59 - 120		04/05/19 16:28	1
Toluene-d8 (Surr)	93		70 - 123		04/05/19 16:28	1
Dibromofluoromethane (Surr)	105		75 - 128		04/05/19 16:28	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 007-3/22/19

Lab Sample ID: 240-109849-7

Date Collected: 03/22/19 14:32

Matrix: Water

Date Received: 03/23/19 08:00

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/04/19 22:35	1
Benzene	<1.00		1.00		ug/L			04/04/19 22:35	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/04/19 22:35	1
Bromoform	<1.00		1.00		ug/L			04/04/19 22:35	1
Bromomethane	<1.00		1.00		ug/L			04/04/19 22:35	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/04/19 22:35	1
Carbon disulfide	<1.00		1.00		ug/L			04/04/19 22:35	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/04/19 22:35	1
Chlorobenzene	<1.00		1.00		ug/L			04/04/19 22:35	1
Chloroethane	<1.00		1.00		ug/L			04/04/19 22:35	1
Chloroform	**6.24**		1.00		ug/L			04/04/19 22:35	1
Chloromethane	<1.00		1.00		ug/L			04/04/19 22:35	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/04/19 22:35	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/04/19 22:35	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/04/19 22:35	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/04/19 22:35	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/04/19 22:35	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/04/19 22:35	1
Ethylbenzene	<1.00		1.00		ug/L			04/04/19 22:35	1
2-Hexanone	<10.0		10.0		ug/L			04/04/19 22:35	1
Methylene Chloride	<5.00		5.00		ug/L			04/04/19 22:35	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/04/19 22:35	1
Styrene	<1.00		1.00		ug/L			04/04/19 22:35	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/04/19 22:35	1
Tetrachloroethene	<1.00		1.00		ug/L			04/04/19 22:35	1
Toluene	<1.00		1.00		ug/L			04/04/19 22:35	1
Trichloroethene	<1.00		1.00		ug/L			04/04/19 22:35	1
Vinyl chloride	<1.00		1.00		ug/L			04/04/19 22:35	1
Xylenes, Total	<2.00		2.00		ug/L			04/04/19 22:35	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/04/19 22:35	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/04/19 22:35	1
Cyclohexane	<1.00		1.00		ug/L			04/04/19 22:35	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/04/19 22:35	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/04/19 22:35	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/04/19 22:35	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/04/19 22:35	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/04/19 22:35	1
Isopropylbenzene	<1.00		1.00		ug/L			04/04/19 22:35	1
Methyl acetate	<10.0		10.0		ug/L			04/04/19 22:35	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/04/19 22:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/04/19 22:35	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/04/19 22:35	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 22:35	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 22:35	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 22:35	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/04/19 22:35	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/04/19 22:35	1
Methylcyclohexane	<1.00		1.00		ug/L			04/04/19 22:35	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 007-3/22/19

Lab Sample ID: 240-109849-7

Date Collected: 03/22/19 14:32

Matrix: Water

Date Received: 03/23/19 08:00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	113		70 - 121		04/04/19 22:35	1
4-Bromofluorobenzene (Surr)	77		59 - 120		04/04/19 22:35	1
Toluene-d8 (Surr)	92		70 - 123		04/04/19 22:35	1
Dibromofluoromethane (Surr)	115		75 - 128		04/04/19 22:35	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-109849-8

Date Collected: 03/22/19 00:00
Date Received: 03/23/19 08:00

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/04/19 23:07	1
Benzene	<1.00		1.00		ug/L			04/04/19 23:07	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/04/19 23:07	1
Bromoform	<1.00		1.00		ug/L			04/04/19 23:07	1
Bromomethane	<1.00		1.00		ug/L			04/04/19 23:07	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/04/19 23:07	1
Carbon disulfide	<1.00		1.00		ug/L			04/04/19 23:07	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/04/19 23:07	1
Chlorobenzene	<1.00		1.00		ug/L			04/04/19 23:07	1
Chloroethane	<1.00		1.00		ug/L			04/04/19 23:07	1
Chloroform	<1.00		1.00		ug/L			04/04/19 23:07	1
Chloromethane	<1.00		1.00		ug/L			04/04/19 23:07	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/04/19 23:07	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/04/19 23:07	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/04/19 23:07	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/04/19 23:07	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/04/19 23:07	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/04/19 23:07	1
Ethylbenzene	<1.00		1.00		ug/L			04/04/19 23:07	1
2-Hexanone	<10.0		10.0		ug/L			04/04/19 23:07	1
Methylene Chloride	<5.00		5.00		ug/L			04/04/19 23:07	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/04/19 23:07	1
Styrene	<1.00		1.00		ug/L			04/04/19 23:07	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/04/19 23:07	1
Tetrachloroethene	<1.00		1.00		ug/L			04/04/19 23:07	1
Toluene	<1.00		1.00		ug/L			04/04/19 23:07	1
Trichloroethene	<1.00		1.00		ug/L			04/04/19 23:07	1
Vinyl chloride	<1.00		1.00		ug/L			04/04/19 23:07	1
Xylenes, Total	<2.00		2.00		ug/L			04/04/19 23:07	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/04/19 23:07	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/04/19 23:07	1
Cyclohexane	<1.00		1.00		ug/L			04/04/19 23:07	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/04/19 23:07	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/04/19 23:07	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/04/19 23:07	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/04/19 23:07	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/04/19 23:07	1
Isopropylbenzene	<1.00		1.00		ug/L			04/04/19 23:07	1
Methyl acetate	<10.0		10.0		ug/L			04/04/19 23:07	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/04/19 23:07	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/04/19 23:07	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/04/19 23:07	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 23:07	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 23:07	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 23:07	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/04/19 23:07	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/04/19 23:07	1
Methylcyclohexane	<1.00		1.00		ug/L			04/04/19 23:07	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-109849-8

Date Collected: 03/22/19 00:00

Matrix: Water

Date Received: 03/23/19 08:00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		70 - 121		04/04/19 23:07	1
4-Bromofluorobenzene (Surr)	78		59 - 120		04/04/19 23:07	1
Toluene-d8 (Surr)	93		70 - 123		04/04/19 23:07	1
Dibromofluoromethane (Surr)	115		75 - 128		04/04/19 23:07	1

Surrogate Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	**Client Sample ID**	**(70-121)**	**(59-120)**	**(70-123)**	**(75-128)**
240-109849-1	001-3/22/19	109	80	90	98
240-109849-2	002-3/22/19	111	84	93	99
240-109849-3	003-3/22/19	113	84	96	107
240-109849-4	004-3/22/19	114	80	91	98
240-109849-5	005-3/22/19	114	81	93	108
240-109849-6	006-3/22/19	111	75	93	105
240-109849-7	007-3/22/19	113	77	92	115
240-109849-8	TRIP BLANK	117	78	93	115
LCS 240-374729/4	Lab Control Sample	90	104	103	95
LCS 240-374895/4	Lab Control Sample	110	88	102	107
MB 240-374729/6	Method Blank	102	80	94	104
MB 240-374895/6	Method Blank	116	87	96	107

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-374729/6
Matrix: Water
Analysis Batch: 374729

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/04/19 14:55	1
Benzene	<1.00		1.00		ug/L			04/04/19 14:55	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/04/19 14:55	1
Bromoform	<1.00		1.00		ug/L			04/04/19 14:55	1
Bromomethane	<1.00		1.00		ug/L			04/04/19 14:55	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/04/19 14:55	1
Carbon disulfide	<1.00		1.00		ug/L			04/04/19 14:55	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/04/19 14:55	1
Chlorobenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
Chloroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
Chloroform	<1.00		1.00		ug/L			04/04/19 14:55	1
Chloromethane	<1.00		1.00		ug/L			04/04/19 14:55	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/04/19 14:55	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/04/19 14:55	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/04/19 14:55	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/04/19 14:55	1
Ethylbenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
2-Hexanone	<10.0		10.0		ug/L			04/04/19 14:55	1
Methylene Chloride	<5.00		5.00		ug/L			04/04/19 14:55	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/04/19 14:55	1
Styrene	<1.00		1.00		ug/L			04/04/19 14:55	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
Tetrachloroethene	<1.00		1.00		ug/L			04/04/19 14:55	1
Toluene	<1.00		1.00		ug/L			04/04/19 14:55	1
Trichloroethene	<1.00		1.00		ug/L			04/04/19 14:55	1
Vinyl chloride	<1.00		1.00		ug/L			04/04/19 14:55	1
Xylenes, Total	<2.00		2.00		ug/L			04/04/19 14:55	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
Cyclohexane	<1.00		1.00		ug/L			04/04/19 14:55	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/04/19 14:55	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/04/19 14:55	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/04/19 14:55	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/04/19 14:55	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/04/19 14:55	1
Isopropylbenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
Methyl acetate	<10.0		10.0		ug/L			04/04/19 14:55	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/04/19 14:55	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/04/19 14:55	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/04/19 14:55	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/04/19 14:55	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/04/19 14:55	1
Methylcyclohexane	<1.00		1.00		ug/L			04/04/19 14:55	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-374729/6
Matrix: Water
Analysis Batch: 374729

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	102		70 - 121		04/04/19 14:55	1
4-Bromofluorobenzene (Surr)	80		59 - 120		04/04/19 14:55	1
Toluene-d8 (Surr)	94		70 - 123		04/04/19 14:55	1
Dibromofluoromethane (Surr)	104		75 - 128		04/04/19 14:55	1

Lab Sample ID: LCS 240-374729/4
Matrix: Water
Analysis Batch: 374729

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	13.22		ug/L		66	21 - 162
Benzene	10.0	9.936		ug/L		99	80 - 123
Dichlorobromomethane	10.0	8.877		ug/L		89	77 - 125
Bromoform	10.0	9.138		ug/L		91	49 - 141
Bromomethane	10.0	7.796		ug/L		78	41 - 175
2-Butanone (MEK)	20.0	16.78		ug/L		84	39 - 163
Carbon disulfide	10.0	10.00		ug/L		100	60 - 138
Carbon tetrachloride	10.0	9.860		ug/L		99	63 - 140
Chlorobenzene	10.0	10.19		ug/L		102	80 - 121
Chloroethane	10.0	7.029		ug/L		70	33 - 173
Chloroform	10.0	9.597		ug/L		96	79 - 127
Chloromethane	10.0	10.13		ug/L		101	54 - 143
1,1-Dichloroethane	10.0	9.842		ug/L		98	75 - 133
1,2-Dichloroethane	10.0	9.106		ug/L		91	71 - 135
1,1-Dichloroethene	10.0	10.09		ug/L		101	65 - 139
1,2-Dichloropropane	10.0	10.10		ug/L		101	78 - 133
cis-1,3-Dichloropropene	10.0	9.074		ug/L		91	64 - 132
trans-1,3-Dichloropropene	10.0	9.047		ug/L		90	55 - 128
Ethylbenzene	10.0	10.16		ug/L		102	80 - 120
2-Hexanone	20.0	16.22		ug/L		81	43 - 148
Methylene Chloride	10.0	10.96		ug/L		110	70 - 134
4-Methyl-2-pentanone (MIBK)	20.0	16.03		ug/L		80	49 - 143
Styrene	10.0	9.993		ug/L		100	79 - 120
1,1,2,2-Tetrachloroethane	10.0	9.699		ug/L		97	65 - 139
Tetrachloroethene	10.0	10.35		ug/L		104	74 - 130
Toluene	10.0	10.61		ug/L		106	78 - 129
Trichloroethene	10.0	9.166		ug/L		92	76 - 125
Vinyl chloride	10.0	9.249		ug/L		92	58 - 143
Xylenes, Total	20.0	20.45		ug/L		102	80 - 120
1,1,1-Trichloroethane	10.0	10.05		ug/L		101	69 - 134
1,1,2-Trichloroethane	10.0	10.83		ug/L		108	78 - 133
Cyclohexane	10.0	10.05		ug/L		100	58 - 145
1,2-Dibromo-3-Chloropropane	10.0	7.775		ug/L		78	46 - 132
Ethylene Dibromide	10.0	10.08		ug/L		101	77 - 123
Dichlorodifluoromethane	10.0	9.099		ug/L		91	29 - 148
cis-1,2-Dichloroethene	10.0	9.738		ug/L		97	76 - 128
trans-1,2-Dichloroethene	10.0	9.979		ug/L		100	78 - 133
Isopropylbenzene	10.0	9.930		ug/L		99	74 - 120

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-374729/4
Matrix: Water
Analysis Batch: 374729

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl acetate	20.0	18.37		ug/L		92	52 - 145
Methyl tert-butyl ether	10.0	6.460		ug/L		65	51 - 133
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	10.05		ug/L		100	50 - 156
1,2,4-Trichlorobenzene	10.0	7.758		ug/L		78	42 - 133
1,2-Dichlorobenzene	10.0	9.871		ug/L		99	78 - 120
1,3-Dichlorobenzene	10.0	9.598		ug/L		96	78 - 120
1,4-Dichlorobenzene	10.0	9.456		ug/L		95	78 - 120
Trichlorofluoromethane	10.0	10.03		ug/L		100	51 - 164
Chlorodibromomethane	10.0	9.466		ug/L		95	70 - 132
Methylcyclohexane	10.0	9.136		ug/L		91	60 - 125
m-Xylene & p-Xylene	10.0	10.39		ug/L		104	80 - 120
o-Xylene	10.0	10.06		ug/L		101	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 121*
4-Bromofluorobenzene (Surr)	*104*		*59 - 120*
Toluene-d8 (Surr)	*103*		*70 - 123*
Dibromofluoromethane (Surr)	*95*		*75 - 128*

Lab Sample ID: MB 240-374895/6
Matrix: Water
Analysis Batch: 374895

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/05/19 10:26	1
Benzene	<1.00		1.00		ug/L			04/05/19 10:26	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/05/19 10:26	1
Bromoform	<1.00		1.00		ug/L			04/05/19 10:26	1
Bromomethane	<1.00		1.00		ug/L			04/05/19 10:26	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/05/19 10:26	1
Carbon disulfide	<1.00		1.00		ug/L			04/05/19 10:26	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/05/19 10:26	1
Chlorobenzene	<1.00		1.00		ug/L			04/05/19 10:26	1
Chloroethane	<1.00		1.00		ug/L			04/05/19 10:26	1
Chloroform	<1.00		1.00		ug/L			04/05/19 10:26	1
Chloromethane	<1.00		1.00		ug/L			04/05/19 10:26	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/05/19 10:26	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/05/19 10:26	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/05/19 10:26	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/05/19 10:26	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 10:26	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/05/19 10:26	1
Ethylbenzene	<1.00		1.00		ug/L			04/05/19 10:26	1
2-Hexanone	<10.0		10.0		ug/L			04/05/19 10:26	1
Methylene Chloride	<5.00		5.00		ug/L			04/05/19 10:26	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/05/19 10:26	1
Styrene	<1.00		1.00		ug/L			04/05/19 10:26	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/05/19 10:26	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-374895/6
Matrix: Water
Analysis Batch: 374895

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			04/05/19 10:26	1
Toluene	<1.00		1.00		ug/L			04/05/19 10:26	1
Trichloroethene	<1.00		1.00		ug/L			04/05/19 10:26	1
Vinyl chloride	<1.00		1.00		ug/L			04/05/19 10:26	1
Xylenes, Total	<2.00		2.00		ug/L			04/05/19 10:26	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/05/19 10:26	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/05/19 10:26	1
Cyclohexane	<1.00		1.00		ug/L			04/05/19 10:26	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/05/19 10:26	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/05/19 10:26	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/05/19 10:26	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/05/19 10:26	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/05/19 10:26	1
Isopropylbenzene	<1.00		1.00		ug/L			04/05/19 10:26	1
Methyl acetate	<10.0		10.0		ug/L			04/05/19 10:26	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/05/19 10:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/05/19 10:26	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/05/19 10:26	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 10:26	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 10:26	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/05/19 10:26	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/05/19 10:26	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/05/19 10:26	1
Methylcyclohexane	<1.00		1.00		ug/L			04/05/19 10:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*70 - 121*		*04/05/19 10:26*	*1*
4-Bromofluorobenzene (Surr)	*87*		*59 - 120*		*04/05/19 10:26*	*1*
Toluene-d8 (Surr)	*96*		*70 - 123*		*04/05/19 10:26*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 128*		*04/05/19 10:26*	*1*

Lab Sample ID: LCS 240-374895/4
Matrix: Water
Analysis Batch: 374895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	19.19		ug/L		96	21 - 162
Benzene	10.0	9.959		ug/L		100	80 - 123
Dichlorobromomethane	10.0	10.62		ug/L		106	77 - 125
Bromoform	10.0	9.123		ug/L		91	49 - 141
Bromomethane	10.0	8.680		ug/L		87	41 - 175
2-Butanone (MEK)	20.0	19.83		ug/L		99	39 - 163
Carbon disulfide	10.0	10.01		ug/L		100	60 - 138
Carbon tetrachloride	10.0	11.79		ug/L		118	63 - 140
Chlorobenzene	10.0	9.639		ug/L		96	80 - 121
Chloroethane	10.0	9.911		ug/L		99	33 - 173
Chloroform	10.0	10.69		ug/L		107	79 - 127
Chloromethane	10.0	8.496		ug/L		85	54 - 143

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-374895/4
Matrix: Water
Analysis Batch: 374895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	10.0	10.03		ug/L		100	75 - 133
1,2-Dichloroethane	10.0	11.12		ug/L		111	71 - 135
1,1-Dichloroethene	10.0	11.59		ug/L		116	65 - 139
1,2-Dichloropropane	10.0	10.06		ug/L		101	78 - 133
cis-1,3-Dichloropropene	10.0	10.87		ug/L		109	64 - 132
trans-1,3-Dichloropropene	10.0	9.552		ug/L		96	55 - 128
Ethylbenzene	10.0	9.177		ug/L		92	80 - 120
2-Hexanone	20.0	18.51		ug/L		93	43 - 148
Methylene Chloride	10.0	13.21		ug/L		132	70 - 134
4-Methyl-2-pentanone (MIBK)	20.0	18.43		ug/L		92	49 - 143
Styrene	10.0	9.455		ug/L		95	79 - 120
1,1,2,2-Tetrachloroethane	10.0	10.57		ug/L		106	65 - 139
Tetrachloroethene	10.0	10.26		ug/L		103	74 - 130
Toluene	10.0	10.07		ug/L		101	78 - 129
Trichloroethene	10.0	10.37		ug/L		104	76 - 125
Vinyl chloride	10.0	8.087		ug/L		81	58 - 143
Xylenes, Total	20.0	20.12		ug/L		101	80 - 120
1,1,1-Trichloroethane	10.0	10.78		ug/L		108	69 - 134
1,1,2-Trichloroethane	10.0	9.857		ug/L		99	78 - 133
Cyclohexane	10.0	9.780		ug/L		98	58 - 145
1,2-Dibromo-3-Chloropropane	10.0	8.813		ug/L		88	46 - 132
Ethylene Dibromide	10.0	9.792		ug/L		98	77 - 123
Dichlorodifluoromethane	10.0	7.667		ug/L		77	29 - 148
cis-1,2-Dichloroethene	10.0	10.36		ug/L		104	76 - 128
trans-1,2-Dichloroethene	10.0	10.44		ug/L		104	78 - 133
Isopropylbenzene	10.0	9.430		ug/L		94	74 - 120
Methyl acetate	20.0	17.94		ug/L		90	52 - 145
Methyl tert-butyl ether	10.0	8.650		ug/L		87	51 - 133
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	10.42		ug/L		104	50 - 156
1,2,4-Trichlorobenzene	10.0	6.914		ug/L		69	42 - 133
1,2-Dichlorobenzene	10.0	9.431		ug/L		94	78 - 120
1,3-Dichlorobenzene	10.0	9.350		ug/L		93	78 - 120
1,4-Dichlorobenzene	10.0	8.872		ug/L		89	78 - 120
Trichlorofluoromethane	10.0	10.06		ug/L		101	51 - 164
Chlorodibromomethane	10.0	9.600		ug/L		96	70 - 132
Methylcyclohexane	10.0	9.943		ug/L		99	60 - 125
m-Xylene & p-Xylene	10.0	10.14		ug/L		101	80 - 120
o-Xylene	10.0	9.983		ug/L		100	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*70 - 121*
4-Bromofluorobenzene (Surr)	*88*		*59 - 120*
Toluene-d8 (Surr)	*102*		*70 - 123*
Dibromofluoromethane (Surr)	*107*		*75 - 128*

QC Association Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

GC/MS VOA

Analysis Batch: 374729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-109849-7	007-3/22/19	Total/NA	Water	8260B	
240-109849-8	TRIP BLANK	Total/NA	Water	8260B	
MB 240-374729/6	Method Blank	Total/NA	Water	8260B	
LCS 240-374729/4	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 374895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-109849-1	001-3/22/19	Total/NA	Water	8260B	
240-109849-2	002-3/22/19	Total/NA	Water	8260B	
240-109849-3	003-3/22/19	Total/NA	Water	8260B	
240-109849-4	004-3/22/19	Total/NA	Water	8260B	
240-109849-5	005-3/22/19	Total/NA	Water	8260B	
240-109849-6	006-3/22/19	Total/NA	Water	8260B	
MB 240-374895/6	Method Blank	Total/NA	Water	8260B	
LCS 240-374895/4	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: 001-3/22/19 — Lab Sample ID: 240-109849-1

Date Collected: 03/22/19 12:05
Date Received: 03/23/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374895	04/05/19 14:37	LEE	TAL CAN

Client Sample ID: 002-3/22/19 — Lab Sample ID: 240-109849-2

Date Collected: 03/22/19 12:30
Date Received: 03/23/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374895	04/05/19 14:59	LEE	TAL CAN

Client Sample ID: 003-3/22/19 — Lab Sample ID: 240-109849-3

Date Collected: 03/22/19 12:45
Date Received: 03/23/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374895	04/05/19 15:21	LEE	TAL CAN

Client Sample ID: 004-3/22/19 — Lab Sample ID: 240-109849-4

Date Collected: 03/22/19 13:07
Date Received: 03/23/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374895	04/05/19 15:44	LEE	TAL CAN

Client Sample ID: 005-3/22/19 — Lab Sample ID: 240-109849-5

Date Collected: 03/22/19 13:30
Date Received: 03/23/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374895	04/05/19 16:06	LEE	TAL CAN

Client Sample ID: 006-3/22/19 — Lab Sample ID: 240-109849-6

Date Collected: 03/22/19 13:40
Date Received: 03/23/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374895	04/05/19 16:28	LEE	TAL CAN

Client Sample ID: 007-3/22/19 — Lab Sample ID: 240-109849-7

Date Collected: 03/22/19 14:32
Date Received: 03/23/19 08:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374729	04/04/19 22:35	LRW	TAL CAN

Lab Chronicle

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-109849-8

Date Collected: 03/22/19 00:00
Date Received: 03/23/19 08:00

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	374729	04/04/19 23:07	LRW	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109849-1

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19 *
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Canton
4101 Shuffel Street, N. H.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

1,2/Ch,o
24019071

Chain of Custody Record

150279

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: John McFadden	Site Contact: Chris Powers	Date: 3/22/19	COC No:
Company Name: IDE	Tel/Fax:	Lab Contact:	Carrier:	____ of ____ COCs
Address: 901 S Cr Rd 31	Analysis Turnaround Time			Sampler:
City/State/Zip: Berthoud / CO / 80513	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: 810 8358 9920	TAT if different from Below ____			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: CERTA Vandalia	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	8260B	Sample Specific Notes:
001 - 3/22/19	3/22/19	12:05	G	Water	3			X	
002 - 3/22/19	↓	12:30	↓	↓	↓			↓	
003 - 3/22/19		12:45							
004 - 3/22/19		13:07							
005 - 3/22/19		13:30							
006 - 3/22/19		13:40							
007 - 3/22/19	↓	14:32	↓	↓	↓			↓	

240-109849 Chain of Custody

210
Dayton

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☒ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ | Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	IDE	3/22/19	[signature]	TA	3-22-19 1625
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: [signature]	Company: TA	Date/Time: 3-22-19 1635	Received in Laboratory by: [signature]	Company: TAC	Date/Time: 3-23-19 800

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 109844
Canton Facility

Client IOE Site Name _____ Cooler unpacked by: MJ

Cooler Received on 3-23-19 Opened on 3-23-19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 7A Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp. 1.2 °C Corrected Cooler Temp. 1.0 °C
   IR GUN #36 (CF **+0.7**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC861525**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 58088 Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: MS

Received 2x HCL Trip Blanks not on Col. will log last.

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-109977-1
Client Project/Site: CERTA - Vandalia

For:
Institute of Ecolonomics
901 S County Rd 31
Berthoud, Colorado 80513

Attn: Chris Powers

Authorized for release by:
4/9/2019 3:24:55 PM

John McFadden, Project Manager I
(330)497-9396
john.mcfadden@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.

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 ID: 240-109977-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: Institute of Ecolonomics

Project: CERTA - Vandalia

Report Number: 240-109977-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT
The samples were received on 3/27/2019 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.4º C and 1.6º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)
Samples EFF (240-109977-1), SSIN (240-109977-2), OBIN (240-109977-3), BRIN (240-109977-4) and PRE (240-109977-5) were analyzed for volatile organic compounds (GCMS) in accordance with EPA Method 624. The samples were analyzed on 04/02/2019 and 04/03/2019.

Samples SSIN (240-109977-2)[400X], OBIN (240-109977-3)[400X], BRIN (240-109977-4)[200X] and PRE (240-109977-5)[200X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The MS/MSD for batch 374274 was not reported because the parent sample needed a further dilution. Batch included samples EFF (240-109977-1), SSIN (240-109977-2) and OBIN (240-109977-3)

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOLATILE ORGANIC COMPOUNDS (GCMS)
Sample 413D (240-109977-6) was analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/08/2019.

Job ID: 240-109977-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

Sample 413D (240-109977-6)[333.33X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The laboratory control sample (LCS) for 375210 recovered outside control limits for multiple analytes. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.413D (240-109977-6) and (LCS 240-375210/4)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CAN
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-109977-1	EFF	Water	03/26/19 11:09	03/27/19 08:00
240-109977-2	SSIN	Water	03/26/19 11:15	03/27/19 08:00
240-109977-3	OBIN	Water	03/26/19 11:18	03/27/19 08:00
240-109977-4	BRIN	Water	03/26/19 11:13	03/27/19 08:00
240-109977-5	PRE	Water	03/26/19 11:14	03/27/19 08:00
240-109977-6	413D	Water	03/26/19 12:12	03/27/19 08:00

Detection Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Client Sample ID: EFF — Lab Sample ID: 240-109977-1

No Detections.

Client Sample ID: SSIN — Lab Sample ID: 240-109977-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	7920		400		ug/L	400		624	Total/NA

Client Sample ID: OBIN — Lab Sample ID: 240-109977-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	7870		400		ug/L	400		624	Total/NA

Client Sample ID: BRIN — Lab Sample ID: 240-109977-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	8150		200		ug/L	200		624	Total/NA

Client Sample ID: PRE — Lab Sample ID: 240-109977-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	8490		200		ug/L	200		624	Total/NA

Client Sample ID: 413D — Lab Sample ID: 240-109977-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	10700		333		ug/L	333.33		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Client Sample ID: EFF

Lab Sample ID: 240-109977-1

Date Collected: 03/26/19 11:09

Matrix: Water

Date Received: 03/27/19 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	<1.00		1.00		ug/L			04/02/19 23:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*69 - 120*		*04/02/19 23:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*92*		*61 - 138*		*04/02/19 23:21*	*1*
Toluene-d8 (Surr)	*101*		*73 - 120*		*04/02/19 23:21*	*1*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Client Sample ID: SSIN

Lab Sample ID: 240-109977-2

Date Collected: 03/26/19 11:15

Matrix: Water

Date Received: 03/27/19 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	**7920**		400		ug/L			04/02/19 23:43	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*69 - 120*		*04/02/19 23:43*	*400*
1,2-Dichloroethane-d4 (Surr)	*89*		*61 - 138*		*04/02/19 23:43*	*400*
Toluene-d8 (Surr)	*99*		*73 - 120*		*04/02/19 23:43*	*400*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Client Sample ID: OBIN

Lab Sample ID: 240-109977-3

Date Collected: 03/26/19 11:18

Matrix: Water

Date Received: 03/27/19 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	**7870**		400		ug/L			04/03/19 00:05	400

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*69 - 120*		*04/03/19 00:05*	*400*
1,2-Dichloroethane-d4 (Surr)	*89*		*61 - 138*		*04/03/19 00:05*	*400*
Toluene-d8 (Surr)	*99*		*73 - 120*		*04/03/19 00:05*	*400*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Client Sample ID: BRIN

Date Collected: 03/26/19 11:13
Date Received: 03/27/19 08:00

Lab Sample ID: 240-109977-4

Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	**8150**		200		ug/L			04/03/19 22:34	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*69 - 120*		*04/03/19 22:34*	*200*
1,2-Dichloroethane-d4 (Surr)	*89*		*61 - 138*		*04/03/19 22:34*	*200*
Toluene-d8 (Surr)	*96*		*73 - 120*		*04/03/19 22:34*	*200*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Client Sample ID: PRE

Lab Sample ID: 240-109977-5

Date Collected: 03/26/19 11:14

Matrix: Water

Date Received: 03/27/19 08:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	**8490**		200		ug/L			04/03/19 22:57	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*69 - 120*		*04/03/19 22:57*	*200*
1,2-Dichloroethane-d4 (Surr)	*88*		*61 - 138*		*04/03/19 22:57*	*200*
Toluene-d8 (Surr)	*98*		*73 - 120*		*04/03/19 22:57*	*200*

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Client Sample ID: 413D

Date Collected: 03/26/19 12:12
Date Received: 03/27/19 08:00

Lab Sample ID: 240-109977-6

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	**10700**		333		ug/L			04/08/19 11:56	333.33

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*70 - 121*		*04/08/19 11:56*	*333.33*
4-Bromofluorobenzene (Surr)	*73*		*59 - 120*		*04/08/19 11:56*	*333.33*
Toluene-d8 (Surr)	*90*		*70 - 123*		*04/08/19 11:56*	*333.33*
Dibromofluoromethane (Surr)	*127*		*75 - 128*		*04/08/19 11:56*	*333.33*

Surrogate Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DCA	TOL
Lab Sample ID	Client Sample ID	(69-120)	(61-138)	(73-120)
240-109977-1	EFF	90	92	101
240-109977-2	SSIN	87	89	99
240-109977-3	OBIN	92	89	99
240-109977-4	BRIN	91	89	96
240-109977-5	PRE	92	88	98
LCS 240-374274/34	Lab Control Sample	94	83	99
LCS 240-374461/33	Lab Control Sample	96	88	98
MB 240-374274/33	Method Blank	89	90	98
MB 240-374461/32	Method Blank	87	88	97

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(70-121)	(59-120)	(70-123)	(75-128)
240-109977-6	413D	115	73	90	127
LCS 240-375210/4	Lab Control Sample	89	86	89	106
MB 240-375210/6	Method Blank	112	71	85	124

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-374274/33
Matrix: Water
Analysis Batch: 374274

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	<1.00		1.00		ug/L			04/02/19 22:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*69 - 120*		*04/02/19 22:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*90*		*61 - 138*		*04/02/19 22:36*	*1*
Toluene-d8 (Surr)	*98*		*73 - 120*		*04/02/19 22:36*	*1*

Lab Sample ID: LCS 240-374274/34
Matrix: Water
Analysis Batch: 374274

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	20.0	19.01		ug/L		95	59 - 155
1,1,1-Trichloroethane	20.0	16.16		ug/L		81	52 - 162
Trichloroethene	20.0	16.82		ug/L		84	71 - 157

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*83*		*61 - 138*
Toluene-d8 (Surr)	*99*		*73 - 120*

Lab Sample ID: MB 240-374461/32
Matrix: Water
Analysis Batch: 374461

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	<1.00		1.00		ug/L			04/03/19 21:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*69 - 120*		*04/03/19 21:50*	*1*
1,2-Dichloroethane-d4 (Surr)	*88*		*61 - 138*		*04/03/19 21:50*	*1*
Toluene-d8 (Surr)	*97*		*73 - 120*		*04/03/19 21:50*	*1*

Lab Sample ID: LCS 240-374461/33
Matrix: Water
Analysis Batch: 374461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethane	20.0	19.03		ug/L		95	59 - 155
1,1,1-Trichloroethane	20.0	16.00		ug/L		80	52 - 162
Trichloroethene	20.0	16.05		ug/L		80	71 - 157

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*69 - 120*
1,2-Dichloroethane-d4 (Surr)	*88*		*61 - 138*
Toluene-d8 (Surr)	*98*		*73 - 120*

QC Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-375210/6
Matrix: Water
Analysis Batch: 375210

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	<1.00		1.00		ug/L			04/08/19 10:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*70 - 121*		*04/08/19 10:40*	*1*
4-Bromofluorobenzene (Surr)	*71*		*59 - 120*		*04/08/19 10:40*	*1*
Toluene-d8 (Surr)	*85*		*70 - 123*		*04/08/19 10:40*	*1*
Dibromofluoromethane (Surr)	*124*		*75 - 128*		*04/08/19 10:40*	*1*

Lab Sample ID: LCS 240-375210/4
Matrix: Water
Analysis Batch: 375210

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	14.69		ug/L		73	21 - 162
Benzene	10.0	11.63		ug/L		116	80 - 123
Dichlorobromomethane	10.0	10.11		ug/L		101	77 - 125
Bromoform	10.0	6.347		ug/L		63	49 - 141
Bromomethane	10.0	9.463		ug/L		95	41 - 175
2-Butanone (MEK)	20.0	12.53		ug/L		63	39 - 163
Carbon disulfide	10.0	9.976		ug/L		100	60 - 138
Carbon tetrachloride	10.0	12.85		ug/L		128	63 - 140
Chlorobenzene	10.0	10.65		ug/L		107	80 - 121
Chloroethane	10.0	9.081		ug/L		91	33 - 173
Chloroform	10.0	12.75	*	ug/L		128	79 - 127
Chloromethane	10.0	9.639		ug/L		96	54 - 143
1,1-Dichloroethane	10.0	12.40		ug/L		124	75 - 133
1,2-Dichloroethane	10.0	10.92		ug/L		109	71 - 135
1,1-Dichloroethene	10.0	10.44		ug/L		104	65 - 139
1,2-Dichloropropane	10.0	11.05		ug/L		111	78 - 133
cis-1,3-Dichloropropene	10.0	8.288		ug/L		83	64 - 132
trans-1,3-Dichloropropene	10.0	6.901		ug/L		69	55 - 128
Ethylbenzene	10.0	10.12		ug/L		101	80 - 120
2-Hexanone	20.0	10.61		ug/L		53	43 - 148
Methylene Chloride	10.0	11.26		ug/L		113	70 - 134
4-Methyl-2-pentanone (MIBK)	20.0	11.11		ug/L		56	49 - 143
Styrene	10.0	9.930		ug/L		99	79 - 120
1,1,2,2-Tetrachloroethane	10.0	6.547		ug/L		65	65 - 139
Tetrachloroethene	10.0	11.51		ug/L		115	74 - 130
Toluene	10.0	10.71		ug/L		107	78 - 129
Trichloroethene	10.0	10.93		ug/L		109	76 - 125
Vinyl chloride	10.0	10.99		ug/L		110	58 - 143
Xylenes, Total	20.0	20.79		ug/L		104	80 - 120
1,1,1-Trichloroethane	10.0	13.92	*	ug/L		139	69 - 134
1,1,2-Trichloroethane	10.0	9.386		ug/L		94	78 - 133
Cyclohexane	10.0	11.17		ug/L		112	58 - 145
1,2-Dibromo-3-Chloropropane	10.0	4.157	*	ug/L		42	46 - 132
Ethylene Dibromide	10.0	7.944		ug/L		79	77 - 123
Dichlorodifluoromethane	10.0	11.79		ug/L		118	29 - 148

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-375210/4
Matrix: Water
Analysis Batch: 375210

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	10.0	11.87		ug/L		119	76 - 128
trans-1,2-Dichloroethene	10.0	13.03		ug/L		130	78 - 133
Isopropylbenzene	10.0	10.22		ug/L		102	74 - 120
Methyl acetate	20.0	13.67		ug/L		68	52 - 145
Methyl tert-butyl ether	10.0	7.595		ug/L		76	51 - 133
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	12.24		ug/L		122	50 - 156
1,2,4-Trichlorobenzene	10.0	7.914		ug/L		79	42 - 133
1,2-Dichlorobenzene	10.0	9.760		ug/L		98	78 - 120
1,3-Dichlorobenzene	10.0	9.485		ug/L		95	78 - 120
1,4-Dichlorobenzene	10.0	9.708		ug/L		97	78 - 120
Trichlorofluoromethane	10.0	11.35		ug/L		114	51 - 164
Chlorodibromomethane	10.0	8.576		ug/L		86	70 - 132
Methylcyclohexane	10.0	10.14		ug/L		101	60 - 125
m-Xylene & p-Xylene	10.0	10.52		ug/L		105	80 - 120
o-Xylene	10.0	10.27		ug/L		103	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*89*		*70 - 121*
4-Bromofluorobenzene (Surr)	*86*		*59 - 120*
Toluene-d8 (Surr)	*89*		*70 - 123*
Dibromofluoromethane (Surr)	*106*		*75 - 128*

QC Association Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

GC/MS VOA

Analysis Batch: 374274

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-109977-1	EFF	Total/NA	Water	624	
240-109977-2	SSIN	Total/NA	Water	624	
240-109977-3	OBIN	Total/NA	Water	624	
MB 240-374274/33	Method Blank	Total/NA	Water	624	
LCS 240-374274/34	Lab Control Sample	Total/NA	Water	624	

Analysis Batch: 374461

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-109977-4	BRIN	Total/NA	Water	624	
240-109977-5	PRE	Total/NA	Water	624	
MB 240-374461/32	Method Blank	Total/NA	Water	624	
LCS 240-374461/33	Lab Control Sample	Total/NA	Water	624	

Analysis Batch: 375210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-109977-6	413D	Total/NA	Water	8260B	
MB 240-375210/6	Method Blank	Total/NA	Water	8260B	
LCS 240-375210/4	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Client Sample ID: EFF
Lab Sample ID: 240-109977-1
Date Collected: 03/26/19 11:09
Matrix: Water
Date Received: 03/27/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	374274	04/02/19 23:21	HMB	TAL CAN

Client Sample ID: SSIN
Lab Sample ID: 240-109977-2
Date Collected: 03/26/19 11:15
Matrix: Water
Date Received: 03/27/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		400	374274	04/02/19 23:43	HMB	TAL CAN

Client Sample ID: OBIN
Lab Sample ID: 240-109977-3
Date Collected: 03/26/19 11:18
Matrix: Water
Date Received: 03/27/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		400	374274	04/03/19 00:05	HMB	TAL CAN

Client Sample ID: BRIN
Lab Sample ID: 240-109977-4
Date Collected: 03/26/19 11:13
Matrix: Water
Date Received: 03/27/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		200	374461	04/03/19 22:34	HMB	TAL CAN

Client Sample ID: PRE
Lab Sample ID: 240-109977-5
Date Collected: 03/26/19 11:14
Matrix: Water
Date Received: 03/27/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		200	374461	04/03/19 22:57	HMB	TAL CAN

Client Sample ID: 413D
Lab Sample ID: 240-109977-6
Date Collected: 03/26/19 12:12
Matrix: Water
Date Received: 03/27/19 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		333.33	375210	04/08/19 11:56	LEE	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-109977-1

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19 *
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19 *
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Canton
4101 Shuffel Street, N. N.

North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

1.5 / C1.6
1.6 / C1.4
24019071

Chain of Custody Record

150099

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☒ RCRA ☐ Other:

Client Contact	Project Manager: Chris Powers	Site Contact: Chris Powers	Date: 3/26/19	COC No: 1
Company Name: ~~CERTA~~ CERTA/IOE	Tel/Fax: 810-358-9920	Lab Contact:	Carrier:	1 of 1 COCs
Address:	Analysis Turnaround Time			Sampler:
City/State/Zip: Vandalia OH	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: 810-358-9920	TAT if different from Below _____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: CERTA Vandalia	☒ 1 week			
Site: Vandalia	☐ 2 days			Job / SDG No.:
PO #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	TCE	TCE	Sample Specific Notes:
EFF	3/26	11:09	G	W	3	N	N	X	X	
SSIN		11:15			3			X	X	
OBIN		11:18			3			X	X	
BRIN		11:13			3			X	X	
PRE		11:14			3			X	X	
413D		12:12			3			X	X	

240-109977 Chain of Custody

210 Dayton

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 4 2

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	IOE	3/26/19 1337	ME Miley	TA	3-26-19 1337
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: ME Miley	Company: TA	Date/Time: 3-26-19 1600	Received in Laboratory by: [signature]	Company: TA	Date/Time: 3/27/19 ECO

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 109977
Canton Facility

Client _____ Site Name _____ Cooler unpacked by:
Cooler Received on 3/27/19 Opened on 3/27/19
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #36 (CF **+0.7**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC861525**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: JR

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 109977

TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description	IR Gun #	Observed Temp °C	Corrected Temp °C	Coolant
TA	8	1.8	1.6	Ice
		1.6	1.4	

☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-110121-1
Client Project/Site: CERTA - Vandalia

For:
Institute of Ecolonomics
901 S County Rd 31
Berthoud, Colorado 80513

Attn: Chris Powers

Authorized for release by:
4/11/2019 1:27:28 PM

John McFadden, Project Manager I
(330)497-9396
john.mcfadden@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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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 ID: 240-110121-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: Institute of Ecolonomics

Project: CERTA - Vandalia

Report Number: 240-110121-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT
The samples were received on 3/29/2019 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.2º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)
Samples B004 (240-110121-1), G004 (240-110121-2) and G006 (240-110121-3) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/10/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-110121-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-110121-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-110121-1	B004	Water	03/28/19 10:12	03/29/19 08:00
240-110121-2	G004	Water	03/28/19 11:22	03/29/19 08:00
240-110121-3	G006	Water	03/28/19 13:14	03/29/19 08:00

Detection Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-110121-1

Client Sample ID: B004 — Lab Sample ID: 240-110121-1

No Detections.

Client Sample ID: G004 — Lab Sample ID: 240-110121-2

No Detections.

Client Sample ID: G006 — Lab Sample ID: 240-110121-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1.45		1.00		ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	1.24		1.00		ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-110121-1

Client Sample ID: B004

Date Collected: 03/28/19 10:12
Date Received: 03/29/19 08:00

Lab Sample ID: 240-110121-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/10/19 16:23	1
Benzene	<1.00		1.00		ug/L			04/10/19 16:23	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/10/19 16:23	1
Bromoform	<1.00		1.00		ug/L			04/10/19 16:23	1
Bromomethane	<1.00		1.00		ug/L			04/10/19 16:23	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/10/19 16:23	1
Carbon disulfide	<1.00		1.00		ug/L			04/10/19 16:23	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/10/19 16:23	1
Chlorobenzene	<1.00		1.00		ug/L			04/10/19 16:23	1
Chloroethane	<1.00		1.00		ug/L			04/10/19 16:23	1
Chloroform	<1.00		1.00		ug/L			04/10/19 16:23	1
Chloromethane	<1.00		1.00		ug/L			04/10/19 16:23	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/10/19 16:23	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/10/19 16:23	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/10/19 16:23	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/10/19 16:23	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/10/19 16:23	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/10/19 16:23	1
Ethylbenzene	<1.00		1.00		ug/L			04/10/19 16:23	1
2-Hexanone	<10.0		10.0		ug/L			04/10/19 16:23	1
Methylene Chloride	<5.00		5.00		ug/L			04/10/19 16:23	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/10/19 16:23	1
Styrene	<1.00		1.00		ug/L			04/10/19 16:23	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/10/19 16:23	1
Tetrachloroethene	<1.00		1.00		ug/L			04/10/19 16:23	1
Toluene	<1.00		1.00		ug/L			04/10/19 16:23	1
Trichloroethene	<1.00		1.00		ug/L			04/10/19 16:23	1
Vinyl chloride	<1.00		1.00		ug/L			04/10/19 16:23	1
Xylenes, Total	<2.00		2.00		ug/L			04/10/19 16:23	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/10/19 16:23	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/10/19 16:23	1
Cyclohexane	<1.00		1.00		ug/L			04/10/19 16:23	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/10/19 16:23	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/10/19 16:23	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/10/19 16:23	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/10/19 16:23	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/10/19 16:23	1
Isopropylbenzene	<1.00		1.00		ug/L			04/10/19 16:23	1
Methyl acetate	<10.0		10.0		ug/L			04/10/19 16:23	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/10/19 16:23	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/10/19 16:23	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/10/19 16:23	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/10/19 16:23	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/10/19 16:23	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/10/19 16:23	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/10/19 16:23	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/10/19 16:23	1
Methylcyclohexane	<1.00		1.00		ug/L			04/10/19 16:23	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-110121-1

Client Sample ID: B004

Date Collected: 03/28/19 10:12
Date Received: 03/29/19 08:00

Lab Sample ID: 240-110121-1

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		70 - 121		04/10/19 16:23	1
4-Bromofluorobenzene (Surr)	83		59 - 120		04/10/19 16:23	1
Toluene-d8 (Surr)	95		70 - 123		04/10/19 16:23	1
Dibromofluoromethane (Surr)	90		75 - 128		04/10/19 16:23	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-110121-1

Client Sample ID: G004

Date Collected: 03/28/19 11:22
Date Received: 03/29/19 08:00

Lab Sample ID: 240-110121-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/10/19 16:44	1
Benzene	<1.00		1.00		ug/L			04/10/19 16:44	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/10/19 16:44	1
Bromoform	<1.00		1.00		ug/L			04/10/19 16:44	1
Bromomethane	<1.00		1.00		ug/L			04/10/19 16:44	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/10/19 16:44	1
Carbon disulfide	<1.00		1.00		ug/L			04/10/19 16:44	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/10/19 16:44	1
Chlorobenzene	<1.00		1.00		ug/L			04/10/19 16:44	1
Chloroethane	<1.00		1.00		ug/L			04/10/19 16:44	1
Chloroform	<1.00		1.00		ug/L			04/10/19 16:44	1
Chloromethane	<1.00		1.00		ug/L			04/10/19 16:44	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/10/19 16:44	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/10/19 16:44	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/10/19 16:44	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/10/19 16:44	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/10/19 16:44	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/10/19 16:44	1
Ethylbenzene	<1.00		1.00		ug/L			04/10/19 16:44	1
2-Hexanone	<10.0		10.0		ug/L			04/10/19 16:44	1
Methylene Chloride	<5.00		5.00		ug/L			04/10/19 16:44	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/10/19 16:44	1
Styrene	<1.00		1.00		ug/L			04/10/19 16:44	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/10/19 16:44	1
Tetrachloroethene	<1.00		1.00		ug/L			04/10/19 16:44	1
Toluene	<1.00		1.00		ug/L			04/10/19 16:44	1
Trichloroethene	<1.00		1.00		ug/L			04/10/19 16:44	1
Vinyl chloride	<1.00		1.00		ug/L			04/10/19 16:44	1
Xylenes, Total	<2.00		2.00		ug/L			04/10/19 16:44	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/10/19 16:44	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/10/19 16:44	1
Cyclohexane	<1.00		1.00		ug/L			04/10/19 16:44	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/10/19 16:44	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/10/19 16:44	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/10/19 16:44	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/10/19 16:44	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/10/19 16:44	1
Isopropylbenzene	<1.00		1.00		ug/L			04/10/19 16:44	1
Methyl acetate	<10.0		10.0		ug/L			04/10/19 16:44	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/10/19 16:44	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/10/19 16:44	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/10/19 16:44	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/10/19 16:44	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/10/19 16:44	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/10/19 16:44	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/10/19 16:44	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/10/19 16:44	1
Methylcyclohexane	<1.00		1.00		ug/L			04/10/19 16:44	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-110121-1

Client Sample ID: G004

Date Collected: 03/28/19 11:22
Date Received: 03/29/19 08:00

Lab Sample ID: 240-110121-2

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	76		70 - 121		04/10/19 16:44	1
4-Bromofluorobenzene (Surr)	75		59 - 120		04/10/19 16:44	1
Toluene-d8 (Surr)	88		70 - 123		04/10/19 16:44	1
Dibromofluoromethane (Surr)	84		75 - 128		04/10/19 16:44	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-110121-1

Client Sample ID: G006

Date Collected: 03/28/19 13:14
Date Received: 03/29/19 08:00

Lab Sample ID: 240-110121-3

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/10/19 17:06	1
Benzene	<1.00		1.00		ug/L			04/10/19 17:06	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/10/19 17:06	1
Bromoform	<1.00		1.00		ug/L			04/10/19 17:06	1
Bromomethane	<1.00		1.00		ug/L			04/10/19 17:06	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/10/19 17:06	1
Carbon disulfide	<1.00		1.00		ug/L			04/10/19 17:06	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/10/19 17:06	1
Chlorobenzene	<1.00		1.00		ug/L			04/10/19 17:06	1
Chloroethane	<1.00		1.00		ug/L			04/10/19 17:06	1
Chloroform	<1.00		1.00		ug/L			04/10/19 17:06	1
Chloromethane	<1.00		1.00		ug/L			04/10/19 17:06	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/10/19 17:06	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/10/19 17:06	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/10/19 17:06	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/10/19 17:06	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/10/19 17:06	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/10/19 17:06	1
Ethylbenzene	<1.00		1.00		ug/L			04/10/19 17:06	1
2-Hexanone	<10.0		10.0		ug/L			04/10/19 17:06	1
Methylene Chloride	<5.00		5.00		ug/L			04/10/19 17:06	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/10/19 17:06	1
Styrene	<1.00		1.00		ug/L			04/10/19 17:06	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/10/19 17:06	1
Tetrachloroethene	<1.00		1.00		ug/L			04/10/19 17:06	1
Toluene	<1.00		1.00		ug/L			04/10/19 17:06	1
Trichloroethene	**1.45**		1.00		ug/L			04/10/19 17:06	1
Vinyl chloride	<1.00		1.00		ug/L			04/10/19 17:06	1
Xylenes, Total	<2.00		2.00		ug/L			04/10/19 17:06	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/10/19 17:06	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/10/19 17:06	1
Cyclohexane	<1.00		1.00		ug/L			04/10/19 17:06	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/10/19 17:06	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/10/19 17:06	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/10/19 17:06	1
cis-1,2-Dichloroethene	**1.24**		1.00		ug/L			04/10/19 17:06	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/10/19 17:06	1
Isopropylbenzene	<1.00		1.00		ug/L			04/10/19 17:06	1
Methyl acetate	<10.0		10.0		ug/L			04/10/19 17:06	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/10/19 17:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/10/19 17:06	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/10/19 17:06	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/10/19 17:06	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/10/19 17:06	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/10/19 17:06	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/10/19 17:06	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/10/19 17:06	1
Methylcyclohexane	<1.00		1.00		ug/L			04/10/19 17:06	1

Client Sample Results

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-110121-1

Client Sample ID: G006

Date Collected: 03/28/19 13:14
Date Received: 03/29/19 08:00

Lab Sample ID: 240-110121-3

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		70 - 121		04/10/19 17:06	1
4-Bromofluorobenzene (Surr)	83		59 - 120		04/10/19 17:06	1
Toluene-d8 (Surr)	97		70 - 123		04/10/19 17:06	1
Dibromofluoromethane (Surr)	99		75 - 128		04/10/19 17:06	1

Surrogate Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-110121-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	**Client Sample ID**	**(70-121)**	**(59-120)**	**(70-123)**	**(75-128)**
240-110121-1	B004	83	83	95	90
240-110121-2	G004	76	75	88	84
240-110121-3	G006	87	83	97	99
LCS 240-375746/4	Lab Control Sample	83	94	103	93
MB 240-375746/6	Method Blank	85	80	99	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-375746/6
Matrix: Water
Analysis Batch: 375746

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			04/10/19 10:28	1
Benzene	<1.00		1.00		ug/L			04/10/19 10:28	1
Dichlorobromomethane	<1.00		1.00		ug/L			04/10/19 10:28	1
Bromoform	<1.00		1.00		ug/L			04/10/19 10:28	1
Bromomethane	<1.00		1.00		ug/L			04/10/19 10:28	1
2-Butanone (MEK)	<10.0		10.0		ug/L			04/10/19 10:28	1
Carbon disulfide	<1.00		1.00		ug/L			04/10/19 10:28	1
Carbon tetrachloride	<1.00		1.00		ug/L			04/10/19 10:28	1
Chlorobenzene	<1.00		1.00		ug/L			04/10/19 10:28	1
Chloroethane	<1.00		1.00		ug/L			04/10/19 10:28	1
Chloroform	<1.00		1.00		ug/L			04/10/19 10:28	1
Chloromethane	<1.00		1.00		ug/L			04/10/19 10:28	1
1,1-Dichloroethane	<1.00		1.00		ug/L			04/10/19 10:28	1
1,2-Dichloroethane	<1.00		1.00		ug/L			04/10/19 10:28	1
1,1-Dichloroethene	<1.00		1.00		ug/L			04/10/19 10:28	1
1,2-Dichloropropane	<1.00		1.00		ug/L			04/10/19 10:28	1
cis-1,3-Dichloropropene	<1.00		1.00		ug/L			04/10/19 10:28	1
trans-1,3-Dichloropropene	<1.00		1.00		ug/L			04/10/19 10:28	1
Ethylbenzene	<1.00		1.00		ug/L			04/10/19 10:28	1
2-Hexanone	<10.0		10.0		ug/L			04/10/19 10:28	1
Methylene Chloride	<5.00		5.00		ug/L			04/10/19 10:28	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			04/10/19 10:28	1
Styrene	<1.00		1.00		ug/L			04/10/19 10:28	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			04/10/19 10:28	1
Tetrachloroethene	<1.00		1.00		ug/L			04/10/19 10:28	1
Toluene	<1.00		1.00		ug/L			04/10/19 10:28	1
Trichloroethene	<1.00		1.00		ug/L			04/10/19 10:28	1
Vinyl chloride	<1.00		1.00		ug/L			04/10/19 10:28	1
Xylenes, Total	<2.00		2.00		ug/L			04/10/19 10:28	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			04/10/19 10:28	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			04/10/19 10:28	1
Cyclohexane	<1.00		1.00		ug/L			04/10/19 10:28	1
1,2-Dibromo-3-Chloropropane	<2.00		2.00		ug/L			04/10/19 10:28	1
Ethylene Dibromide	<1.00		1.00		ug/L			04/10/19 10:28	1
Dichlorodifluoromethane	<1.00		1.00		ug/L			04/10/19 10:28	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			04/10/19 10:28	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			04/10/19 10:28	1
Isopropylbenzene	<1.00		1.00		ug/L			04/10/19 10:28	1
Methyl acetate	<10.0		10.0		ug/L			04/10/19 10:28	1
Methyl tert-butyl ether	<1.00		1.00		ug/L			04/10/19 10:28	1
1,1,2-Trichloro-1,2,2-trifluoroethane	<1.00		1.00		ug/L			04/10/19 10:28	1
1,2,4-Trichlorobenzene	<1.00		1.00		ug/L			04/10/19 10:28	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			04/10/19 10:28	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			04/10/19 10:28	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			04/10/19 10:28	1
Trichlorofluoromethane	<1.00		1.00		ug/L			04/10/19 10:28	1
Chlorodibromomethane	<1.00		1.00		ug/L			04/10/19 10:28	1
Methylcyclohexane	<1.00		1.00		ug/L			04/10/19 10:28	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-375746/6
Matrix: Water
Analysis Batch: 375746

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	85		70 - 121		04/10/19 10:28	1
4-Bromofluorobenzene (Surr)	80		59 - 120		04/10/19 10:28	1
Toluene-d8 (Surr)	99		70 - 123		04/10/19 10:28	1
Dibromofluoromethane (Surr)	97		75 - 128		04/10/19 10:28	1

Lab Sample ID: LCS 240-375746/4
Matrix: Water
Analysis Batch: 375746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	17.80		ug/L		89	21 - 162
Benzene	10.0	10.27		ug/L		103	80 - 123
Dichlorobromomethane	10.0	9.017		ug/L		90	77 - 125
Bromoform	10.0	8.042		ug/L		80	49 - 141
Bromomethane	10.0	9.135		ug/L		91	41 - 175
2-Butanone (MEK)	20.0	22.00		ug/L		110	39 - 163
Carbon disulfide	10.0	9.656		ug/L		97	60 - 138
Carbon tetrachloride	10.0	8.205		ug/L		82	63 - 140
Chlorobenzene	10.0	9.632		ug/L		96	80 - 121
Chloroethane	10.0	10.04		ug/L		100	33 - 173
Chloroform	10.0	9.092		ug/L		91	79 - 127
Chloromethane	10.0	9.119		ug/L		91	54 - 143
1,1-Dichloroethane	10.0	9.267		ug/L		93	75 - 133
1,2-Dichloroethane	10.0	8.207		ug/L		82	71 - 135
1,1-Dichloroethene	10.0	10.06		ug/L		101	65 - 139
1,2-Dichloropropane	10.0	10.26		ug/L		103	78 - 133
cis-1,3-Dichloropropene	10.0	10.76		ug/L		108	64 - 132
trans-1,3-Dichloropropene	10.0	9.433		ug/L		94	55 - 128
Ethylbenzene	10.0	9.500		ug/L		95	80 - 120
2-Hexanone	20.0	19.50		ug/L		98	43 - 148
Methylene Chloride	10.0	9.277		ug/L		93	70 - 134
4-Methyl-2-pentanone (MIBK)	20.0	20.29		ug/L		101	49 - 143
Styrene	10.0	9.008		ug/L		90	79 - 120
1,1,2,2-Tetrachloroethane	10.0	11.82		ug/L		118	65 - 139
Tetrachloroethene	10.0	9.291		ug/L		93	74 - 130
Toluene	10.0	10.27		ug/L		103	78 - 129
Trichloroethene	10.0	9.651		ug/L		97	76 - 125
Vinyl chloride	10.0	9.166		ug/L		92	58 - 143
Xylenes, Total	20.0	19.38		ug/L		97	80 - 120
1,1,1-Trichloroethane	10.0	8.321		ug/L		83	69 - 134
1,1,2-Trichloroethane	10.0	10.02		ug/L		100	78 - 133
Cyclohexane	10.0	10.16		ug/L		102	58 - 145
1,2-Dibromo-3-Chloropropane	10.0	8.828		ug/L		88	46 - 132
Ethylene Dibromide	10.0	9.517		ug/L		95	77 - 123
Dichlorodifluoromethane	10.0	6.625		ug/L		66	29 - 148
cis-1,2-Dichloroethene	10.0	9.793		ug/L		98	76 - 128
trans-1,2-Dichloroethene	10.0	9.791		ug/L		98	78 - 133
Isopropylbenzene	10.0	9.145		ug/L		91	74 - 120

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-375746/4
Matrix: Water
Analysis Batch: 375746

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl acetate	20.0	19.21		ug/L		96	52 - 145
Methyl tert-butyl ether	10.0	7.526		ug/L		75	51 - 133
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	8.915		ug/L		89	50 - 156
1,2,4-Trichlorobenzene	10.0	7.073		ug/L		71	42 - 133
1,2-Dichlorobenzene	10.0	9.615		ug/L		96	78 - 120
1,3-Dichlorobenzene	10.0	9.731		ug/L		97	78 - 120
1,4-Dichlorobenzene	10.0	9.426		ug/L		94	78 - 120
Trichlorofluoromethane	10.0	7.813		ug/L		78	51 - 164
Chlorodibromomethane	10.0	9.387		ug/L		94	70 - 132
Methylcyclohexane	10.0	10.08		ug/L		101	60 - 125
m-Xylene & p-Xylene	10.0	10.03		ug/L		100	80 - 120
o-Xylene	10.0	9.345		ug/L		93	80 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*70 - 121*
4-Bromofluorobenzene (Surr)	*94*		*59 - 120*
Toluene-d8 (Surr)	*103*		*70 - 123*
Dibromofluoromethane (Surr)	*93*		*75 - 128*

QC Association Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-110121-1

GC/MS VOA

Analysis Batch: 375746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-110121-1	B004	Total/NA	Water	8260B	
240-110121-2	G004	Total/NA	Water	8260B	
240-110121-3	G006	Total/NA	Water	8260B	
MB 240-375746/6	Method Blank	Total/NA	Water	8260B	
LCS 240-375746/4	Lab Control Sample	Total/NA	Water	8260B	

Lab Chronicle

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-110121-1

Client Sample ID: B004
Date Collected: 03/28/19 10:12
Date Received: 03/29/19 08:00

Lab Sample ID: 240-110121-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	375746	04/10/19 16:23	LEE	TAL CAN

Client Sample ID: G004
Date Collected: 03/28/19 11:22
Date Received: 03/29/19 08:00

Lab Sample ID: 240-110121-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	375746	04/10/19 16:44	LEE	TAL CAN

Client Sample ID: G006
Date Collected: 03/28/19 13:14
Date Received: 03/29/19 08:00

Lab Sample ID: 240-110121-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	375746	04/10/19 17:06	LEE	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Institute of Ecolonomics
Project/Site: CERTA - Vandalia

Job ID: 240-110121-1

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	04-30-19 *
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-20
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Canton
4101 Shuffel Street, N. N.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

24019071

Chain of Custody Record

24/C2.2

150263

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☒ RCRA ☐ Other:

Client Contact	Project Manager: Chris powers	Site Contact: Chris Powers	Date: 3/28/19	COC No:
Company Name: Certa / IOE	Tel/Fax:	Lab Contact:	Carrier:	____ of ____ COCs
Address:	Analysis Turnaround Time			Sampler:
City/State/Zip: vandalia, OH	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: 810-358-9920	TAT if different from Below ____			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: Certa vandalia	☐ 1 week			
Site: vandalia	☐ 2 days			Job / SDG No.:
PO#	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	8260B	Sample Specific Notes:
B004	3/28	10:12	G	Spring	3			+	
G004	↓	11:22	↓	Spring	3				
G006		13:14		↓	3				

240-110121 Chain of Custody

210
Dayton

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	IOE	3/28/19 2:38	[signature]	TA	3-28-19 1438
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by: [signature]	Company: TA	Date/Time: 3-28-19 1600	Received in Laboratory by: [signature]	Company: TA	Date/Time: 3/29/19 800

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 110121
Canton Facility

Client Certa Site Name
Cooler Received on 3/29/14 Opened on 3/29/19
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Cooler unpacked by:

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap Foam Plastic Bag None Other
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **-0.2** °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 2.2 °C
   IR GUN #36 (CF **+0.7**°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC861525**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Yes No
16. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: R.C

18. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099