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# Letter of Transmittal

| | | | |
|---|---|---|---|
| Attention: | Frank Battaglia, EPA | Date: | April 3, 2012 |
| Project reference: | BASF Cranston, RI | Project number: | 60163799.6 |

**We are sending you the following:**

| Number of originals: | Number of copies: | Description: |
|---|---|---|
| | 1 | Sediment IRM Report |

Enclosed is a hard copy of the Sediment Interim Remedial Measures (IRM) Report that documents the sediment removal activities in the Pawtuxet River, related to the former Ciba-Geigy facility in Cranston, RI, in January 2012. An electronic copy of this report was transmitted via email on March 16, 2012 from Kris Carbonneau (AECOM).

Please do not hesitate to contact me at (978) 905-2296 if you have any questions.

REC'D 4/5/12
F.B.

Joanne M. Lynch
Project Manager

cc:

Dr. Joseph Guarnaccia, BASF (w/enclosure)
Margaret Bradley, RIDEM (w/enclosure)



SEMS DocID 643655

AECOM Environment

Prepared for:
BASF
Toms River, NJ

Prepared by:
AECOM
Chelmsford, MA
60163799
March 2012

REC'D 4/5/12
F. B.

# Sediment Interim Remedial Measures Report
# Draft

## Pawtuxet River Remedial Dredging Project
## Former Ciba-Geigy Facility
## 180 Mill Street
## Cranston, Rhode Island
## BASF

AECOM Environment

Prepared for:
BASF
Toms River, NJ

Prepared by:
AECOM
Chelmsford, MA
60163799
March 2012

# Sediment Interim Remedial Measures Report Draft

## Pawtuxet River Remedial Dredging Project
## Former Ciba-Geigy Facility
## 180 Mill Street
## Cranston, Rhode Island
## BASF


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# 1.0 Introduction

## 1.1 Overview

On behalf of BASF, AECOM has completed this Sediment Interim Remedial Measures (IRM) Report to document the contaminated sediment removal of three areas in the Pawtuxet River at the former Ciba-Geigy facility in Cranston, Rhode Island (Site) (Figure 1). The work was conducted in accordance with an Administrative Consent Order (ACO) with Environmental Protection Agency (EPA) (RCRA Docket No: I-88-1088) dated June 1989, and modified in September of 1992 (EPA, 1992).

Contaminated sediment removal took place from January 17 through January 23, 2012. The areas were identified by investigations conducted by AECOM in November 2010 and July 2011 (AECOM, 2011a). The three areas are identified as SD-2R, the westernmost area; SD-34, the middle area; and SD-42, the easternmost area (Figure 2).

## 1.2 Project Background

### 1.2.1 Site History

The former Ciba-Geigy production facility is located on Mill Street in Cranston, Rhode Island (Site) and consists of approximately 5.5 acres with several unoccupied buildings and open land upon which chemical production buildings were located adjacent to the Pawtuxet River.

Beginning in 1930, the Alrose Chemical Company manufactured chemicals at the Site. The Geigy Chemical Company purchased the Site in 1954 and merged with the Ciba Corporation (Ciba) in 1970 and became known as Ciba-Geigy. Throughout its operational history, the Site was used for the manufacture of various agricultural products, leather and textile auxiliaries, plastics additives, optical brighteners, pharmaceuticals, and bacteriostats. The facility operated until May 1986, when at that time Ciba-Geigy ceased chemical manufacturing operations at the Site and began decommissioning and razing the existing plant. The production plant was demolished in the late 1980's, and there are currently four buildings that remain on the property (Buildings #15, #20, #25 and #26) which are located north of the railroad spur and upgradient from the former Production Area. BASF Corporation acquired Ciba-Geigy Corporation in 2009.

### 1.2.2 History of Remediation Activities

Site soils, sediments and groundwater were found through site investigation to be impacted with Volatile Organic Compounds (VOCs), Semivolatile Organic Compounds (SVOCs) and Polychlorinated biphenyls (PCBs). Accordingly, remedial actions such as the installation of a pump-and-treat system to limit groundwater discharge to the river and voluntary soil removal were implemented. Additionally, Ciba-Geigy performed a voluntary excavation and capping corrective measure within the Pawtuxet River and submitted an IRM report to verify the findings of the remedial investigation in 1996.

A major flooding event occurred during the spring of 2010 and at that time the EPA requested that BASF re-sample the sediment cap to ensure that it is functioning as intended, and to propose and implement a work plan to that end. On behalf of BASF, AECOM prepared and performed sediment cap testing and sediment characterization work in November of 2010. That work confirmed the

following: 1) a 12-inch clean sand cover was confirmed to exist in all 12 sampling locations; and 2) PCB concentrations in the vicinity of upstream location SD-2R remain though it was confirmed that the impacts are not widespread and consistent with the previous sediment sampling reports.

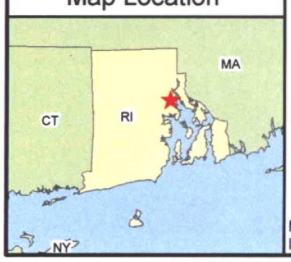
AECOM also completed sediment sampling in the Pawtuxet River on July 13 and 14, 2011 as there were two outlying areas where, in addition to location SD-2R, PCBs were also found to remain. Since it was determined that further remedial action was warranted in location SD-2R, investigation in these other areas was also warranted and consistent with the previous work objectives. The sediment sampling was conducted in locations where elevated total PCB concentrations were measured during historical sediment investigations. The sampling activities were designed to delineate areas for a voluntary remedial action. Sediment samples were collected from the historic SD-TUF7C (in the immediate vicinity of the current SD-34) and SD-TUF2C (in the immediate vicinity of the current SD-42) locations and the immediate surrounding area (AECOM, 2011b).

## 1.3 Objectives of the Pawtuxet River Sediment Removal

The objective of the sediment removal activities was to facilitate the voluntary removal of PCB contaminated sediment from the Pawtuxet River adjacent to the former Ciba-Geigy facility. Removed contaminated sediment and associated water was to be characterized and disposed of at permitted facilities. The excavation areas were to be filled with clean material to restore the river bottom to the appropriate grade.

The remedial program was designed so the activities resulted in an overall benefit to the environment by improving the local ecological habitat and eliminating potential harm to humans and environmental receptors (AECOM, 2011c).

Map Location




**Site Locus**

Former Ciba-Geigy
Cranston, Rhode Island

0 500 1,000 2,000 3,000 4,000 5,000 6,000 Feet

0 100 200 400 600 800 1,000 1,200 1,400 1,600 Meters

Map Projection: State Plane, NAD 83, Feet.
Image Source: USGS Topographic Quadrangle: Providence, RI.

Scale: 1:24,000

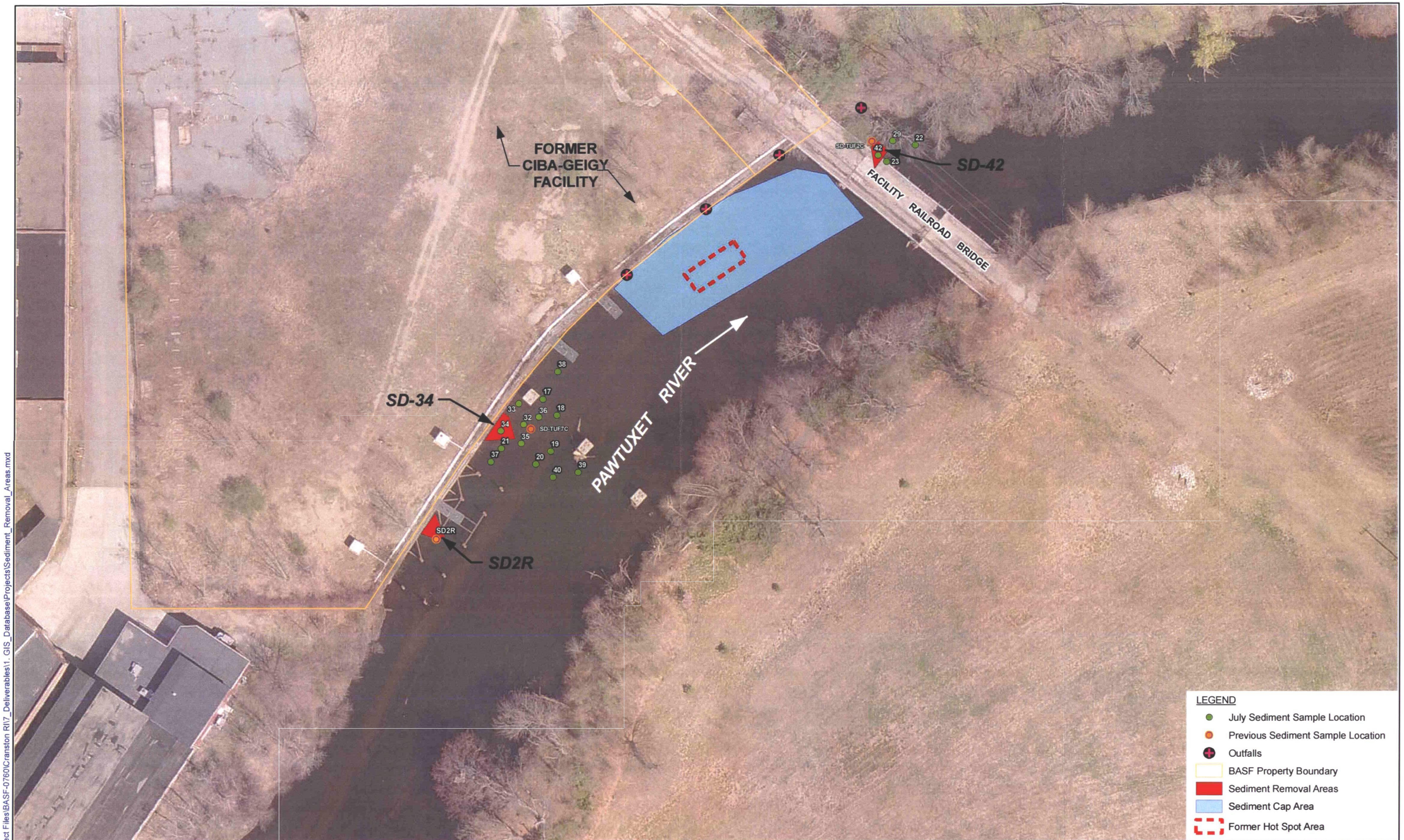
AECOM

Figure 1

Date: October 2011

Project #: 60163799.1

J:\Indl_Service\Project Files\BASF-0760\Cranston RI\9_Permitting\ACOE\GIS\Projects\Figure 1 Site Locus.mxd




SOURCES:
1. AERIAL PHOTOGRAPHY FROM RIGIS (2008).
2. RFI REPORT, PAWTUXET RIVER, WOODWARD-CLYDE, MARCH 1996

0 30 60 Feet

N W E S

FORMER CIBA-GEIGY
SITE INVESTIGATION
CRANSTON, RI
60163799.6

SEDIMENT REMOVAL AREAS

DATE: 02/22/12 | DRWN: J.E.B. | FIGURE 2

J:\Indl_Service\Project Files\BASF-0760\Cranston RI\7_Deliverables\1. GIS_Database\Projects\Sediment_Removal_Areas.mxd

# 2.0 Preliminary Tasks

## 2.1 Removal Delineation

The work boundaries for this project are the upland property lines of the former Ciba-Geigy facility. This includes the property lines shown in Figure 2 as well as the northwestern side of the railroad bridge and the riverbank to the north of the railroad bridge.

The excavation areas are shown in Figure 2. The westernmost area is identified as SD-2R. It covers 120 $ft^2$ with impacted sediment to a depth of 1 foot. The middle area is identified as area SD-34, which covers 180 $ft^2$ with impacted sediment to a depth 2 feet. The easternmost area is identified as area SD-42, which covers 90 $ft^2$ with impacted sediment to a depth of 0.5 feet. Excavation of the sediment was restricted to these three areas. The allowable but not required over-dredge depth was 1 foot vertically below the impacted sediment and 1 foot laterally from the boundary of impacted sediment.

## 2.2 Permitting

On behalf of BASF, AECOM submitted a Section 404/10 Programmatic General Permit application to the U.S. Army Corps of Engineers (ACOE) seeking authorization under Category 2 (Screening) of the Rhode Island Programmatic General Permit (RI PGP) for proposed remediation and restoration activities to be conducted in the Pawtuxet River. Refer to Appendix A for the permit and ACOE approval letter.

The proposed project was exempt from the need to file for a permit with the RIDEM Freshwater Wetlands Program. Since, the proposed remedial activities would result in a temporary inadvertent release of dredged or fill material into waters of the United States, AECOM reviewed Appendix A of the Department of the Army Programmatic General Permit State of Rhode Island (RI PGP) and determined that the project met several criteria of Category 1. Specifically, the proposed work involved the rehabilitation of wetland systems and resulted in less than 5,000 square feet of direct and secondary impacts to onsite waterways. As described in the RI PGP activities subject to Corps jurisdiction but exempt from state regulation are not eligible for authorization under Category 1 even if they meet the definition of Category 1. Accordingly, BASF submitted the application information seeking authorization under Category 2 of the U.S. Army Corps' RI PGP.

The U.S. Army Corps determined that the proposed activity will have only minimal individual or cumulative impacts on the waters of the U.S, including wetlands, and authorized the work as Category 2 under the Rhode Island PGP with Permit Number NAE-2011-2032.

## 2.3 Proposed Activities

The proposed activities included sediment removal, management and disposal from three areas in the Pawtuxet River at the former Ciba-Geigy facility in Cranston, Rhode Island. The following list includes the key design and operation tasks in the approximate order of implementation.

- Mobilize Contractor and equipment;
- Delineate and stake out the limits of work;

- Prepare construction area (stage construction equipment; clear and grub work areas if required; prepare roll-off containers for sediment storage and dewatering, and decontamination area; and install temporary erosion and sedimentation controls);
- Deploy silt curtain in the Pawtuxet River to minimize dispersion of re-suspended sediment;
- Excavate impacted River sediments;
- Monitor turbidity in the Pawtuxet River, outside the silt curtain, to insure minimal dispersion of sediment
- Dewater and solidify/stabilize sediments generated during excavation activities as needed for
- transportation and to meet appropriate permitted receiving facility requirements;
- Analyze decant water for off-site management;
- Transport off-Site and dispose of impacted sediments at permitted receiving facilities;
- Backfill sandy soil into excavation to restore grades;
- Remove silt curtain; and
- Decontaminate equipment and demobilize all equipment and materials from the site.

## 2.4 Contractor Selection

RC&D, Inc. of Providence, Rhode Island was selected to be the main contractor to perform the remediation efforts. EQ Northeast in Wrentham, MA, was subcontracted to perform the water and sediment disposal activities.

# 3.0 Sediment Removal Operations and Disposal

## 3.1 Regulatory Approvals

An Administrative Consent Order (ACO) was entered into with the Environmental Protection Agency (EPA) in June of 1989 (RCRA Docket No: I-88-1088), and was subsequently modified during September of 1992. The ACO identified the steps that are to be taken to evaluate the nature and extent of any releases of hazardous waste or hazardous constituents at or from the facility, and to take the necessary steps to develop a Corrective Measures Study (CMS). This remediation of the three target areas is a voluntary action conducted in accordance with the ACO. This Sediment Removal Report is being submitted to the EPA for approval upon completion of the voluntary action.

## 3.2 Section 404 Permit

The Section 404/10 Programmatic General Permit application was submitted to the U.S. Army Corps of Engineers (ACOE) seeking authorization under Category 2 (Screening) of the Rhode Island Programmatic General Permit (RI PGP) for proposed remediation and restoration activities to be conducted in the Pawtuxet River. The U.S. Army Corps authorized the work as Category 2 under the Rhode Island PGP with Permit Number NAE-2011-2032. See Section 2.2 for additional details.

## 3.3 Mobilization and Site Preparation

On January 17, 2012, RC&D mobilized to the Site. Equipment mobilized included a skid steer, mechanics trailer and long reach excavator. All staging took place on the property of the former Ciba-Geigy facility.

Site preparation activities included the following:

- Sections of the east side railing of the bridge were dismantled for access and monitoring wells and other structures were flagged for protection.
- Clearing and grubbing of the upland property was conducted. Wood debris along the access road to the bridge was removed. Standing trees were cut and laid down in the staging area. Similarly, brush and other vegetation were cut and piled in the staging area. SD-42 (eastern most area) contained submerged branches and other debris and was grubbed prior to excavation. Materials removed during grubbing were stockpiled for management by BASF at a later date.
- The barbed wire, fence fabric and guard rail along the retaining wall was removed to access the excavation areas. Two angle irons were also removed off of the pier in the western most excavation area.
- The chain-link fence that ran along the top of the bulkhead was disassembled and stored during excavation and reassembled when the work was completed.
- During excavation near the bridge (SD-42), the staging area (roll-off containers) was relocated to the bridge area.

## 3.4 Erosion and Sediment Controls

Crane mats were installed and used to support equipment and heavy material staged on cleared earthen areas and on the top of the bridge. In the staging area, reinforced 20-mil poly sheeting was placed under the sediment roll-off containers and secondary containment (bermed soil under 20-mil poly sheeting) was placed around the roll-off containers. RC&D used 6-mil poly sheeting between the shore line and the roll-off container to contain spills during transfer of sediments from the excavation areas to the roll-off containers with the long arm excavator. Absorbent booms were placed at a downstream location from the excavation work areas to mitigate fuel or oil spills and then disposed of when work was completed.

## 3.5 Silt Curtain Installation

Silt curtains were placed around each excavation prior to any sediment removal in accordance with Specification 02 69 00 to minimize dispersion of re-suspended sediment during remediation activities. The curtains were weighted and in contact with the river bottom and suspended from the water surface with flotation devices at the top. The curtains were placed approximately 180° - 270° around the excavation area downstream of each area but located as close as possible to the limits of the excavation without interfering with the operations. The staging of the silt curtain was managed carefully so as not to disturb the sediment.

Installation and removal of the silt curtains were conducted with a long reach excavator and rowboat. The same silt curtain was used for each excavation area; as remediation of an area was completed the silt curtain was moved to the next area. The eastern (bridge) excavation area utilized a different silt curtain during pre-excavation activities only.

## 3.6 Turbidity Monitoring

AECOM personnel periodically tested the turbidity of downstream waters to ensure suspended solid action levels were not exceeded. The turbidity action level for the work was 50 N.T.U. (average) above background outside curtained areas. Readings were taken at least 3 times within the construction day; one prior to the commencement of activities (to establish background) and two other times during construction activities consistent with the Turbidity Data Collection SOP. The protocol was that if the 50 N.T.U. level above background was reached, work would be temporarily stopped and the silt curtain would be inspected to insure that it had not been compromised. If no obvious rips or tears are identified, work would start up again but would proceed more slowly to minimize turbidity. Turbidity levels were also measured during and after backfilling measures were completed.

The Work Plan stated that if at any point during excavation that the turbidity action level was exceeded, prior to demobilizing from the area, surficial sediment would be scraped from the sediment surface within the limits of the curtain; however this action was not required for this work. The only exceedance occurred during backfill operations of the middle excavation area with clean sand, which quickly decreased below the action level once operations were slowed. Refer to Section 4.1 for turbidity monitoring measurements.

## 3.7 Air Monitoring

The work plan stated that dust control measures would be implemented if necessary during grubbing and excavation activities (i.e., periodic wetting or other best practices), however, this was not necessary.

The primary method to control odor issues was to cover the roll-offs containing the excavated sediment with tarps. Also, odor levels surrounding the roll-off containers were monitored with a PID; no levels were measured that resulted in corrective action. Refer to Section 4.3 for a summary of PID measurements.

The activities likely to generate the highest decibel levels were scheduled toward the middle of the day to minimize potential for noise impacts on the adjacent community.

## 3.8 Excavation

From January 19 to January 23, 2012, excavation of impacted sediment was conducted using a GPS guided land-based long-arm excavator positioned on shore. Prior to the excavations, pre-excavation topography was obtained for each area with a GPS. The total excavation volume was approximately 23 cubic yards (CY). Refer to Appendix B for the As-Built Drawings.

On January 19, excavation of the middle area (SD-34) was completed. SD-34 covered 180 $ft^2$ with impacted sediment to a depth 2 feet. The excavation depths ranged from -2.2 to -2.6 feet below pre-excavation topography. The total excavation volume estimated by differential survey was 14.5 CY. Backfilling of this area was completed on January 19; refer to Section 3.9 for backfilling procedures and finish grades.

On January 20, excavation of the western most excavation area (SD-2R) was completed. SD-2R covered 120 $ft^2$ with impacted sediment to a depth of 1 foot. Excavation depths ranged from -1.0 to -2.0 feet below pre-excavation topography. The total excavation volume estimated by differential survey was 5.7 CY. Backfilling of this area was completed on January 20; refer to Section 3.9 for backfilling procedures and finish grades.

On January 20, excavation of the eastern most (bridge) excavation area (SD-42) was initiated. SD-42 covered 90 $ft^2$ with impacted sediment to a depth of 0.5 feet. RC&D removed minor portions of the bridge to access the excavation area (i.e., section of a bridge rail, protruding pipe angle irons). The roll-off containers for sediment containment were relocated to near the bridge excavation area. Due to access issues, the sediments under the bridge were removed manually with post hole diggers from the boat. The bridge excavation was completed on January 23 to depths ranging from -0.5 and -1.5 feet below pre-excavation topography. The total excavation volume estimated by differential survey was 2.4 CY. Backfilling was completed on January 23; refer to Section 3.9 for backfilling procedures and finish grades.

Sediment management consisted of placement of the sediment directly in TSCA certified roll-off container placed on 20-mil poly. Excess liquid in the sediment was gravity dewatered within the roll-off containers; see Section 3.10 for dewatering details. Also, Zap Zorb polymer was mixed into the sediments with a mini excavator for additional sediment moisture reduction to the extent necessary to pass the free liquid testing for acceptance to the off-Site permitted receiving facility.

RC&D covered the roll-off containers with tarps at the close of each construction day and during inclement weather.

## 3.9 Backfilling

After the target excavation depth was confirmed, RC&D decontaminated (i.e., "metal x" rinse with steam cleaner) the excavator bucket prior to placement of backfill material and, upon authorization,

began backfilling operations. Backfilling was conducted as the excavation of each area was completed from January 19 to January 23, 2012. Refer to Appendix B for the As-Built Drawings.

The areas under remediation were brought to pre-excavation grades with certified clean medium grained sand. The sand proposed by RC&D was confirmed to be a washed, concrete grade sand that met ASTM C 33 - Standard Specification for Concrete Aggregates, the requirements of the bid documents. The Field Engineer also verified the condition of the sand as it arrived on site to verify that the sand is free of debris or stones. Refer to Appendix C for the backfill sand clean material certification information.

Backfilling operations used a land-based long arm excavator and backfill placement methods were the same as with excavation. Sand was carefully placed in maximum 1-foot lifts starting from the outside edges and working in to minimize turbidity. The excavator bucket was closed and lowered into the water to the fill position before emptying the bucket to minimize turbidity. Turbidity curtains remained in place until the backfill material was placed and inspected to insure that restoration elevations approximately matched the pre-excavation grades. RC&D recorded placement depths using the GPS guided excavator equipment. A minimum of three (3) point elevations was measured in each restored area.

Backfilling of the three areas occurred as follows:

- Backfilling of the middle area (SD-34) was completed on January 19, 2012 with a skid steer to avoid freezing ruts.
- Backfilling of the western most excavation area (SD-2R) was completed on January 20, 2012.
- Backfilling of the eastern most (bridge) excavation area (SD-42) was completed on January 23, 2012.

## 3.10 Dewatering

The nature of the sediment was such that it dewatered quickly, so excess water was gravity drained directly inside the roll-off containers. The excess water was filtered through a bag filter to remove any sediment or debris and pumped into 55-gallon drums that were placed on the same reinforced poly under the roll-off containers. RC&D provided inline filtration and pumping equipment; EQNE provided for the delivery and rental of the liquids containers. Refer to Section 3.14 for characterization and off-site disposal details.

During the week of February 13th, 2012, additional decanted water was obtained from the roll-offs due to sediment moisture loss from the frequent freeze/thaw cycles of the season. The water was pumped into 55-gal drums.

## 3.11 Post-excavation Sampling

Sediment and decanted water characterization samples were obtained for laboratory analysis in accordance with SOP for the Stockpile and Sump Sampling Procedures for Dewatered Dredged Material - Characterization, Classification, and Disposal. This SOP describes the methodology used for the collection of valid and representative waste characterization and classification samples from the dredged contaminated sediment and the decanted water from the stockpile.

A composite sediment sample representative for each area was obtained from the roll-off containers. The samples were characterized for PCBs and other parameters for acceptance at the disposal facility as described in Section 3.14.

One composite sample of the decanted water from the sediment dewatering was obtained for waste characterization to determine the appropriate transportation and disposal procedures. See Section 3.14 for characterization and disposal details.

## 3.12 Demobilization and Restoration

Following completion of restoration, AECOM measured turbidity levels and ensured that background turbidity levels were restored prior to removing the turbidity curtain. Sediment and erosion controls placed around/under sediment containment were removed and placed in the roll-off containers.

Crane mats used to conduct the work were removed upon demobilizing from the Site and either disposed of or decontaminated prior to moving offsite. The barbed wire, fence fabric and guard rail along the retaining wall was replaced. Prior to demobilizing from the Site, RC&D inspected and provided good housekeeping of the areas in order to return Site to current status.

## 3.13 Final Cleanup

All excavated sediments and other construction and demolition debris generated during the work was inspected and signed for by AECOM's representative and the Site owner's representative prior to transport away from the Site. Appropriate material characterization was performed prior to offloading and accompanied the material shipping logs as required for legal transport. Grubbed materials remained on Site for the client to manage. Refer to Appendix D for the Daily Reports and Appendix E for Photographs of Site activities.

## 3.14 Waste Characterization and Handling

Sampling and characterization efforts of the sediment and wastewater were consistent with the SOP for the Stockpile and Sump Sampling Procedures for Dewatered Dredged Material - Characterization, Classification, and Disposal. Refer to Appendix F for the Laboratory Analytical Reports and Appendix G for the Waste Manifests.

The sediment and decanted water were sampled by AECOM personnel as described in Section 3.11 and sent for laboratory analysis at ESS Laboratory in Cranston, RI. The sediments and water were analyzed for PCBs, TCLP Metals, Total Metals, VOCs/methanol, Organochlorine Pesticides, total petroleum hydrocarbons, chlorinated herbicides, SVOCs and pH. The objective of the sediment removal was to address elevated concentrations of PCBs in river sediment and delineation of the excavation areas were based on PCB concentrations in sediment (AECOM, 2011b). The average concentration of total PCBs from each excavation area ranged from 10.9 mg/kg (bridge area) to 35.9 mg/kg (middle) in the waste characterization samples. Refer to Appendix G for the waste manifests.

EQ Northeast, Inc. handled the disposal and transport operations. Once the sediments in the three roll-offs were sufficiently dewatered, characterized and approved for acceptance by the disposal facility, the sediment was loaded into lined and covered trucks for transport to Wayne Disposal, Inc. in Belleville, Michigan for disposal.

The decanted waste water was transported in seven 55-gallon drums for off-site disposal to Clean Harbors Deer Park in Deer Park, Texas. Refer to Appendix G for the waste manifests.

# 4.0 Environmental Monitoring Summary

## 4.1 Turbidity

Turbidity levels were monitored upstream and downstream during excavation and backfilling of each area as described in Section 3.6. Turbidity levels were recorded and are detailed below:

| | **Baseline Upstream** | **Baseline Downstream** | **During Excavation Upstream** | **During Excavation Downstream** | **Backfill Operations Upstream** | **Backfill Operations Downstream** | **Other** |
|---|---|---|---|---|---|---|---|
| Middle Area (SD-35) | 2.3 NTU<br><br>(Jan 18 - obtained off bulkhead prior to silt curtain placed) | 1.9 NTU<br><br>(Jan 18 - obtained off RR bridge prior to silt curtain placement) | 2.6 NTU (Jan 19) | 25.0 NTU (Jan 19) | 1.9 NTU (Jan 19) | 49.6, 62 NTU.<br><br>(Jan 19 - Backfilling slowed due to exceedance; slowed operations resulted in 15 NTU)<br><br>**Inspection of the silt curtain indicated it was intact** | na |
| Western Area (SD2R)<br><br>(all Jan 20) | 1.9 NTU | 2.1 NTU | 29.4 NTU | 11.0 NTU | 30.2 NTU | 11.1 NTU | na |
| Eastern Bridge Area (SD-42)<br><br>(all Jan 23) | 1.7 NTU | 2.2 NTU | 7 NTU | Post-hole dredging operations (occurred after bulk excavation) - 1.9 NTU | na | 8.7, 9.2, 15.2 NTU | Post Excavation Upstream – 2.1 NTU |

## 4.2 Waste Management

Refer to Appendix G for the waste manifests. The total amount of waste materials disposed of included:

- Three roll-offs containing sediment (approximately 23 CY)
- Seven 55 gallon drums containing liquid from drained sediments.

Note that the disposal requirements for non-sediment and non-liquid contaminated waste, including sampling supplies and personal protective equipment (PPE) and decontamination liquids, were evaluated based on the analytical results of the sediment and effluent classification sampling. Therefore, samples of non-sediment and non-liquid waste were not collected for waste classification purposes. The solid items were disposed of with the sediments in the roll-offs and the decontamination liquid was disposed of with the decanted water in the 55-gallon drums.

## 4.3 Air Monitoring

Dust from remediation activities was not observed, therefore, dust control methods were not employed.

All daily PID readings obtained to monitor odor levels were zero parts per million (ppm) except for one measurement from the roll-off containing sediment from the middle excavation area. This measurement was 17 ppm; this measurement was taken within the roll-off near the sediment surface to assess if minor odors noted by the AECOM engineer originated from the sediment within the roll-off or from decontamination cleaning agents. As the PID reading was low, it was assessed the odor did not originate from the roll-off.

# 5.0 Summary and Conclusions

## 5.1 Summary

This post-remedial report documents the voluntary Site activities that were conducted consistent with the October 2011 Work Plan (AECOM, 2011). The work was conducted in accordance with the EPA Administrative Consent Order RCRA Docket No: I-88-1088 and the ACOE Section 404/10 Programmatic General Permit Number NAE-2011-2032. The remedial program was designed so the activities resulted in an overall benefit to the environment by improving the local ecological habitat and eliminating potential harm to humans and environmental receptors.

From January 17 through January 23, 2012, RC&D completed excavation of contaminated sediment from three PCB-impacted areas in the Pawtuxet River at the former Ciba-Geigy facility in Cranston, Rhode Island. The areas are identified as SD-2R, the westernmost area; SD-34, the middle area; and SD-42, the easternmost area (Figure 2). RC&D subsequently filled the excavation areas with clean material to restore the river bottom to pre-excavation grades.

Applicable erosion and sediment controls were in place (i.e., crane mats, poly sheeting, soil berms) and a silt curtain was employed at each area during remediation activities to minimize dispersion of re-suspended sediment during remediation activities. Odor levels surrounding the roll-off containers were monitored with a PID and no levels were measured that resulted in corrective action. Turbidity measurements were conducted upstream and downstream of excavation and backfill activities with an action level of 50 NTU. The only exceedance of the action level occurred during backfill operations of the middle excavation area, which quickly decreased below the action level once operations were slowed.

The removed sediment was placed in roll-off containers and stabilized with a polymer for sediment moisture reduction. Water from the sediment was gravity drained in the roll-offs and pumped to 55-gallon drums. The use of roll-off containers and gravity dewatering opposed to stockpiling on a dewatering pad is a minor alteration from the work plan scope of work, and is documented in an email from AECOM (Joanne Lynch) to the EPA Remedial Project Manager on January 13, 2012.

The removed contaminated sediment and associated decanted water were sampled and sent for characterization at ESS Laboratories. The sediment and decanted water were transported and disposed at EQ Northeast at Wayne Disposal, In. in Belleville, Michigan and Clean Harbors Deer Park in Deer Park, Texas, respectively. Approximately 23 CY of sediment and seven 55-gallons of decanted water were disposed of at the above mentioned facilities.

Upon completion of the remediation work, erosion controls were removed and placed in the roll-off containers. Any crane mats were removed upon demobilizing from the Site and either disposed of or decontaminated prior to moving offsite. RC&D inspected and provided good housekeeping of the areas in order to return Site to current status prior to demobilizing. Grubbed materials remained on Site for the client to manage.

## 5.2 Conclusions

Areas SD-2R, the westernmost area; SD-34, the middle area; and SD-42, the easternmost area were remediated in accordance with the Interim Remedial Measure Workplan for Sediment Removal within the Pawtuxet River and USACOE Permit Number NAE-2011-2032. Sediment was removed and properly disposed of at appropriate facilities. Approximately 23 CY of sediment and seven 55-gallon drums of decanted water were shipped off-Site and disposed of in accordance with characterization data. The areas were backfilled to pre-excavation grades with certified clean medium-grained sand.

# 6.0 References

AECOM, 2011a. Sand Cap Inspection and Sediment Quality Investigation Report, Feb 7, 2011.

AECOM, 2011b. Memorandum from Joanne Lynch/Kris Carbonneau (AECOM) to Frank Battaglia (US EPA) "Sediment Sampling Results and Scope of Work for Sediment Removal at Former Ciba-Geigy Facility, Cranston, RI" Sep. 16, 2011.

AECOM, 2011c. Interim Remedial Measure Workplan for Sediment Removal within the Pawtuxet River

EPA, 1992. Administrative Consent Order (ACO) with Environmental Protection Agency (EPA) (RCRA Docket No: I-88-1088) dated June 1989, and modified in September of 1992.

# Appendix A - USACOE Permit and Approval Letter

**DEPARTMENT OF THE ARMY**
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO
ATTENTION OF

November 15, 2011

Regulatory Division
CENAE-R-PEB
Permit Number: NAE-2011-2032

Joseph Guarnaccia
BASF
P.O. Box 71, Oak Ridge Parkway
Toms River, New Jersey 08754

Dear Mr. Guarnaccia:

We have reviewed your application to perform remediation and restoration activities in the Pawtuxet River. The site is the former Ciba-Geigy Corporation facility located at 180 Mill Street in Cranston, Rhode Island. Your company proposed to remove 31 cubic yards (CY) of contaminated sediments from three discrete areas totaling 390 square feet in the Pawtuxet River. The material will be transported off-site to a permitted receiving facility. Following excavation of sediment from each discrete location, the excavated areas will be backfilled with a total of 31 CY of clean sand to restore the areas to pre-remedial construction elevations. The work is proceeding under an EPA Consent Order and is exempt from RIDEM wetlands regulations. It is shown on the attached plans titled "FORMER CIBA-GEIGY PAWTUXET RIVER REMEDIAL DREDGING PROJECT SITE PLAN CRANSTON, RI" dated "10/13/11."

Based on the information you have provided, we have determined that the proposed activity will have only minimal individual or cumulative impacts on waters of the United States, including wetlands. Therefore, this work is authorized as a Category 2 activity under the attached Federal permit known as the Rhode Island Programmatic General Permit (PGP). This work must be performed in accordance with the terms and conditions of the PGP.

You are responsible for complying with all of the PGP's requirements. Please review the attached PGP carefully, in particular the PGP conditions beginning on Page 7, to familiarize yourself with its contents. You should ensure that whoever does the work fully understands the requirements and that a copy of the permit document and this authorization letter are at the project site throughout the time the work is underway.

This authorization expires on February 13, 2012, unless the PGP is modified, suspended, or revoked. You must commence or have under contract to commence the work authorized herein by February 13, 2012 and complete the work by February 13, 2013. If you do not, you must contact this office to

determine the need for further authorization before beginning or continuing the activity. We recommend you contact us before this permit expires to discuss a time extension or permit reissuance.

If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

This authorization requires you to complete and return the enclosed Work Start Notification Form to this office at least two weeks before the anticipated starting date. You must also complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work and any required mitigation.

This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law, as listed on Page 2 of the PGP. Performing work not specifically authorized by this determination or failing to comply with any special condition(s) provided above or all the terms and conditions of the PGP may subject you to the enforcement provisions of our regulations.

Please contact Michael Elliott of my staff, at (978) 318-8131 if you have any questions.

Sincerely,

Robert J. DeSista
Chief, Permits & Enforcement Branch
Regulatory Division

Attachments

Copy Furnished:

Thomas J. Keough
AECOM, Inc.
250 Apollo Drive
Chelmsford, MA 01824

Frank Battaglia
EPA New England, Region 1
5 Post Office Square, Suite 100
Mail Code OSRR07-3
Boston, MA 02109-3912

US Army Corps of Engineers®
New England District

# GENERAL PERMIT
# WORK-START NOTIFICATION FORM
(Minimum Notice: Two weeks before work begins)

**********
* MAIL TO: U.S. Army Corps of Engineers, New England District *
*
* Policy Analysis/Technical Support Branch *
* Regulatory Division *
* 696 Virginia Road *
* Concord, Massachusetts 01742-2751 *
**********

Corps of Engineers Permit No. 2011-2032 was issued to BASF. The work is located at 180 Mill Street in Cranston, Rhode Island. The site is the former Ciba Geigy facility. The permit authorized them to remove 31 cubic yards (CY) of contaminated sediments from three areas totaling 390 square feet in the Pawtuxet River with the material being disposed of upland. The three areas will then have 31 CY of clean sand placed to replicate the original elevations and contours. The work is proceeding under an EPA Consent Order and is exempt from RIDEM wetlands regulations.

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

**PLEASE PRINT OR T**

**Name of Person/Firm:**

**Business Address:**

**Telephone Numbers:** (732) 762 4743 ( )

**Proposed Work Dates:** **Start:** _____ **Finish:** _____

**Permittee/Agent Signature:** Joseph Guarnaccia **Date:** _____

**Printed Name:** _____ **Title:** _____

**Date Permit Issued:** _____ **Date Permit Expires:** _____

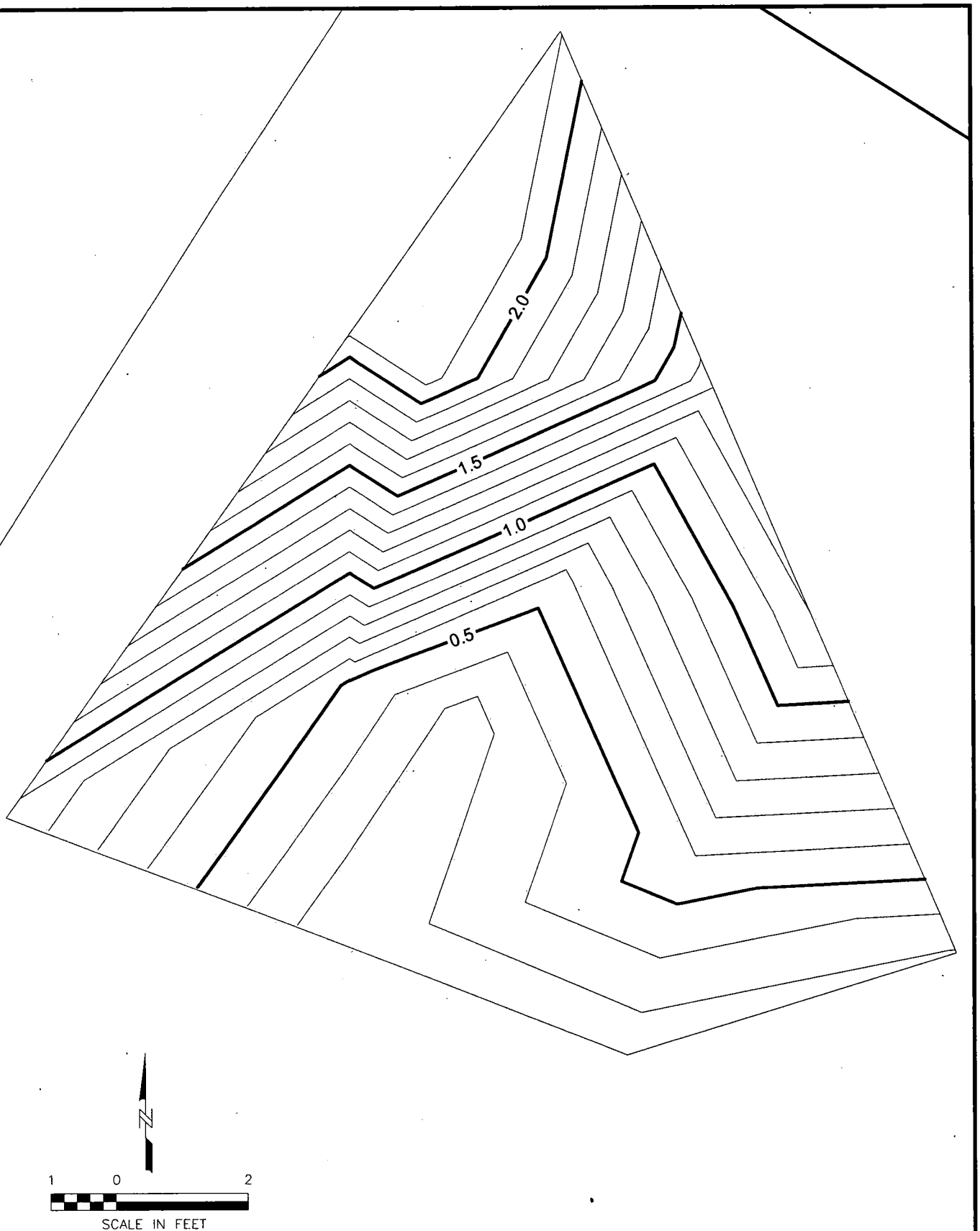
**********

**FOR USE BY THE CORPS OF ENGINEERS**

**PM:** M. Elliott **Submittals Required:** No

**Inspection Recommendation:** _____

# Appendix B - As-Built Drawings




AECOM

FORMER CIBA-GEIGY
CRANSTON, RI
60163799.6

DATE: 02/23/12 | DRWN: J.E.B.

**PRE-EXCAVATION CONDITIONS**
**SD2R AREA**

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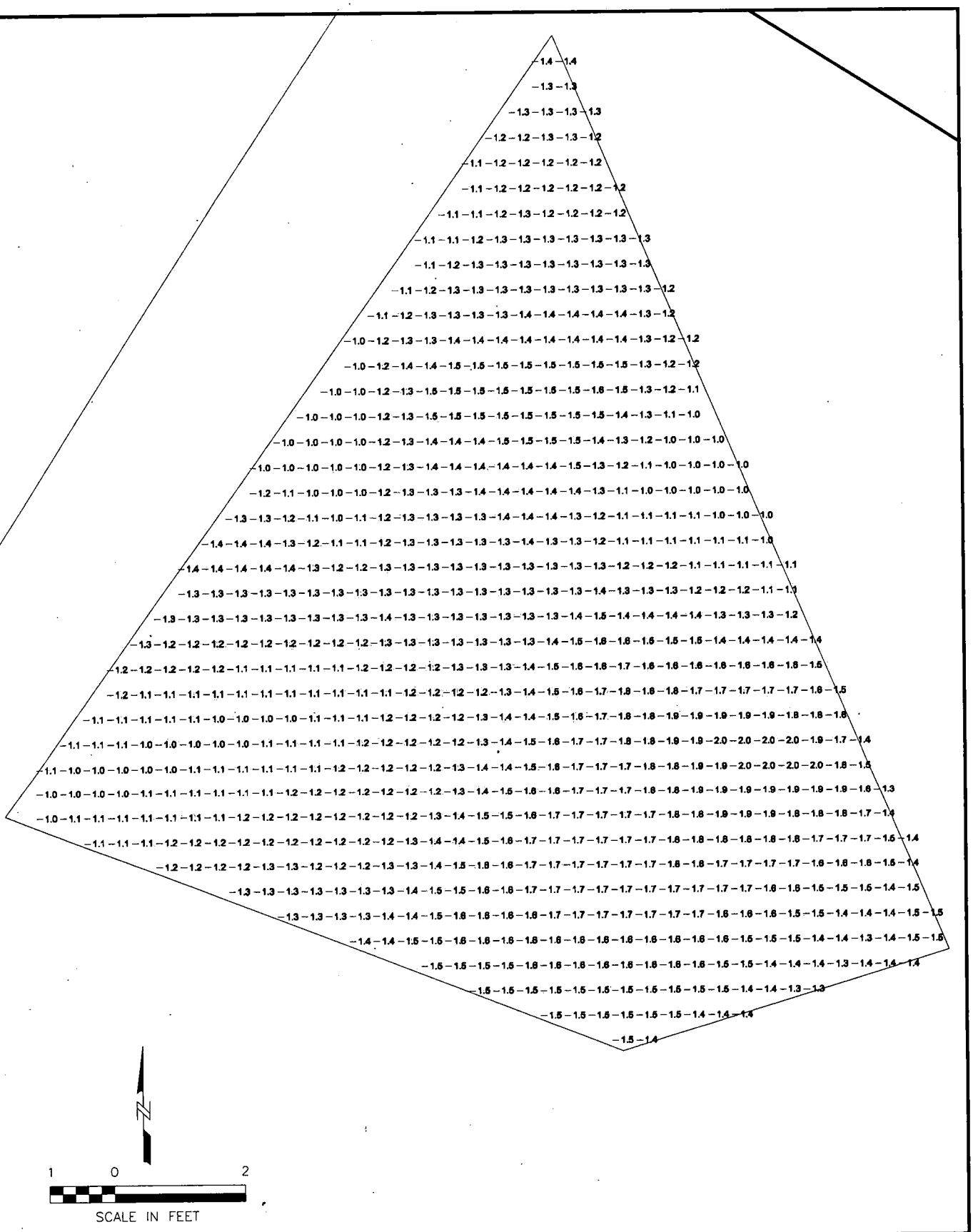


AECOM

| FORMER CIBA-GEIGY CRANSTON, RI 60163799.6 | EXCAVATION DEPTHS SD2R AREA |
|---|---|
| DATE: 02/23/12 DRWN: J.E.B. | |

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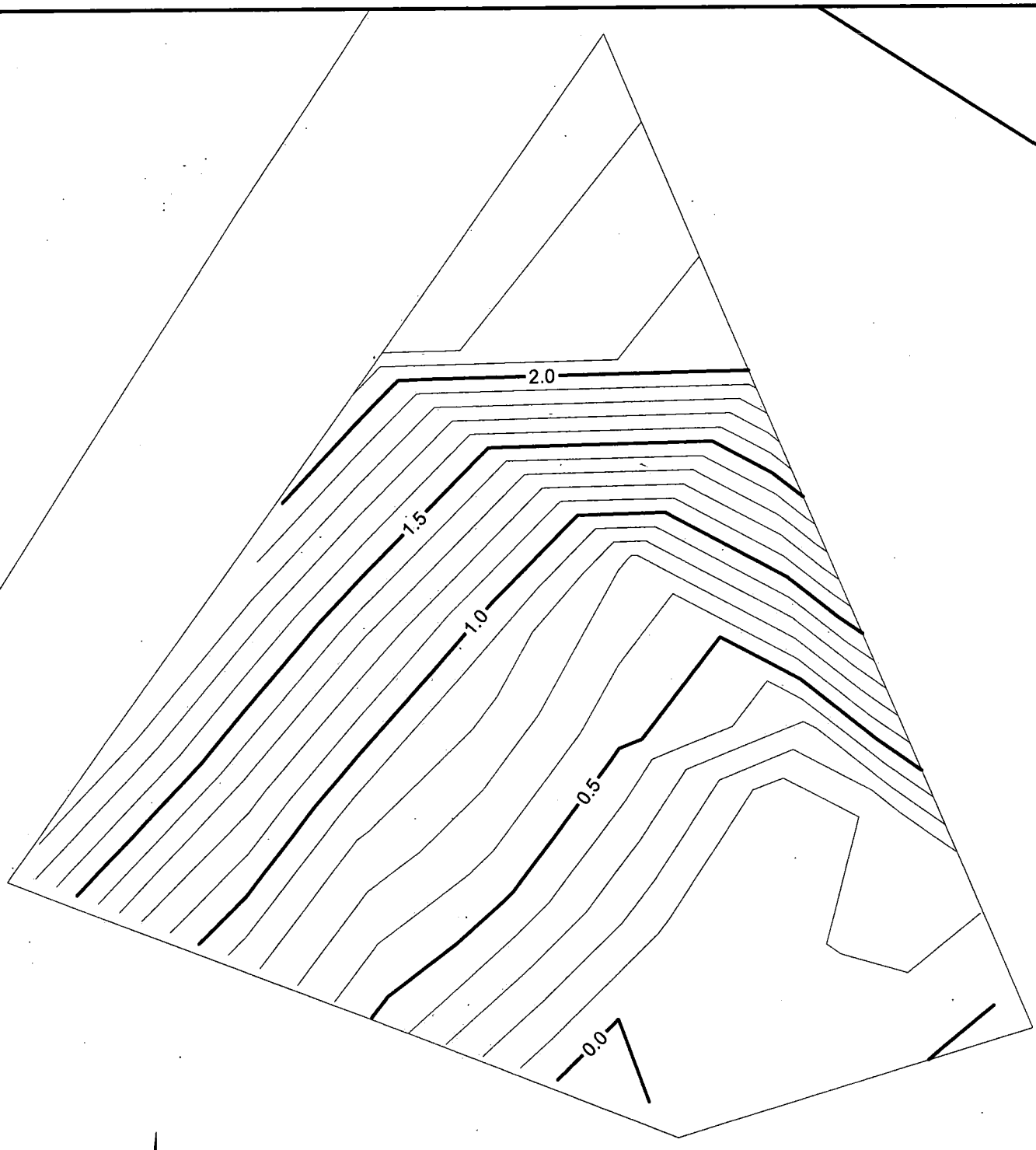


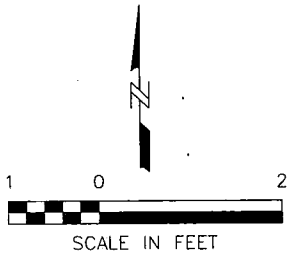


AECOM

| FORMER CIBA-GEIGY<br>CRANSTON, RI<br>60163799.6 | POST-BACKFILL CONDITIONS<br>SD2R AREA |
|---|---|
| DATE: 02/23/12 DRWN: J.E.B. | |

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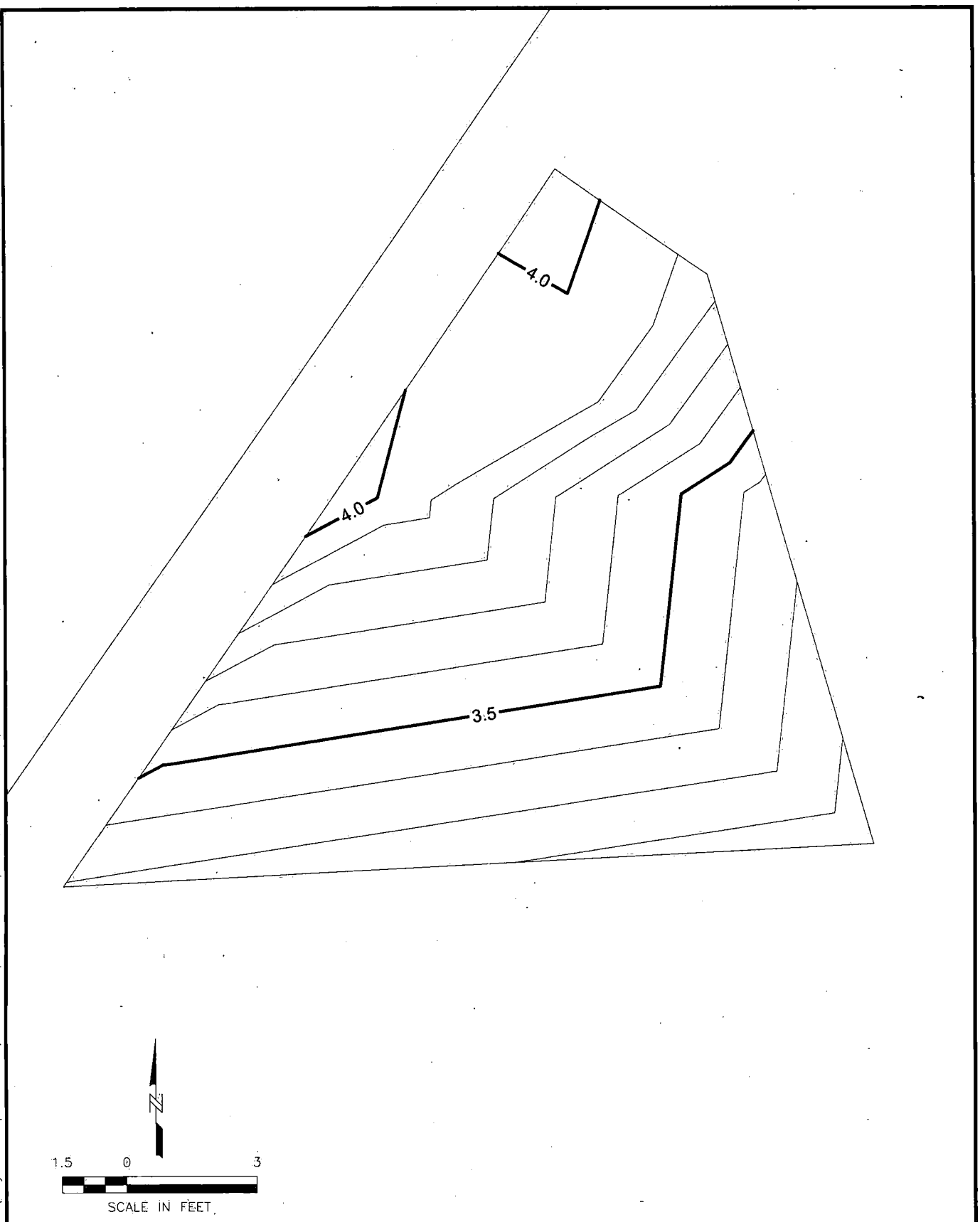


AECOM

| FORMER CIBA-GEIGY CRANSTON, RI 60163799.6 | PRE-EXCAVATION CONDITIONS SD-34 AREA |
|---|---|
| DATE: 02/23/12 DRWN: J.E.B. | |

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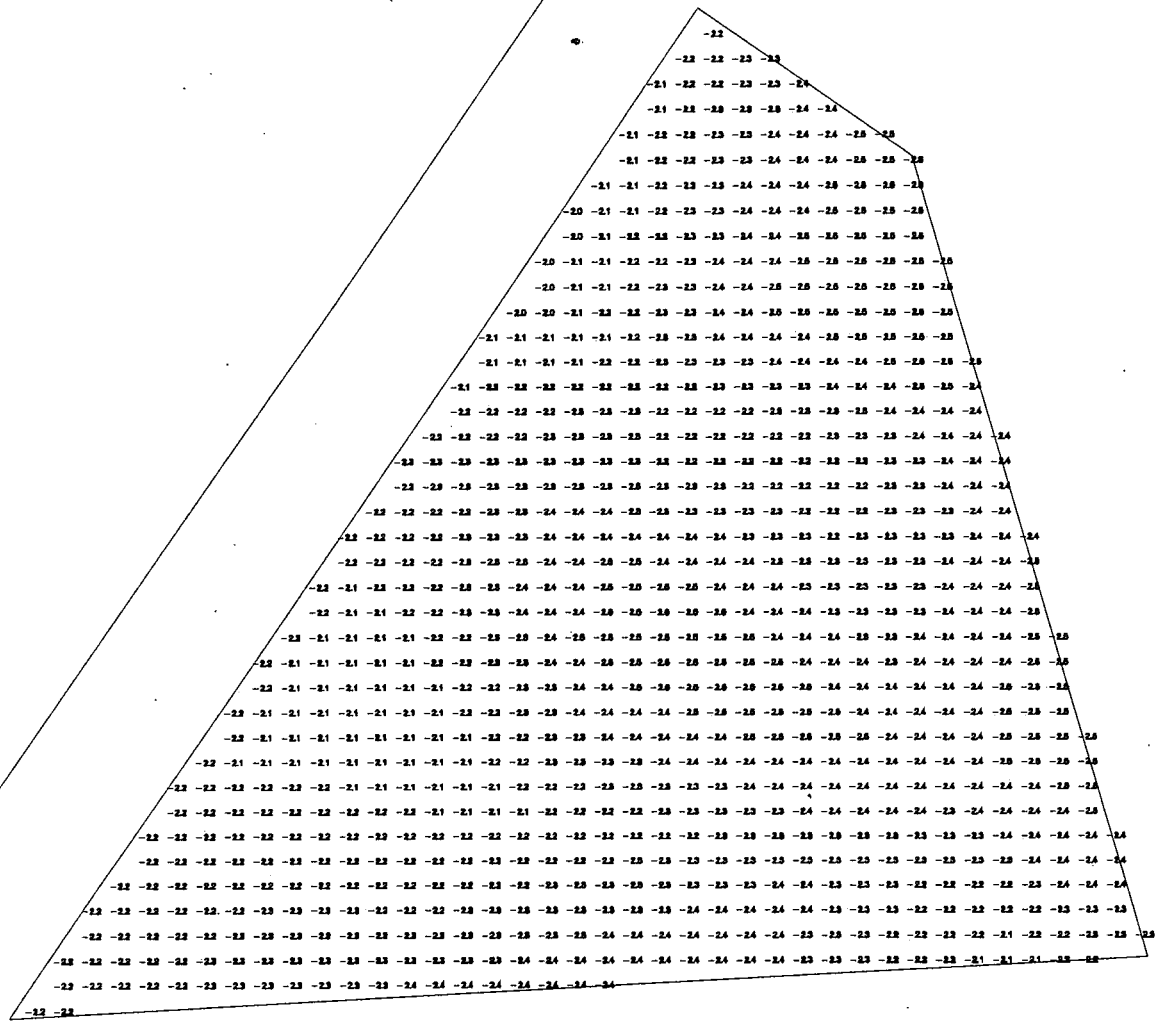

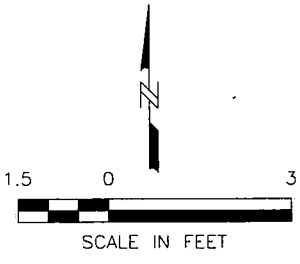


AECOM

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|---|---|
| DATE: 02/23/12 DRWN: J.E.B. | |

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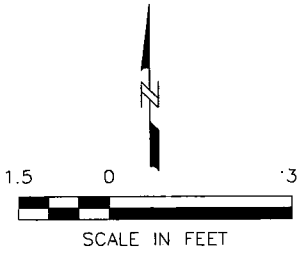


AECOM

| FORMER CIBA-GEIGY CRANSTON, RI 60163799.6 | POST-BACKFILL CONDITIONS SD-34 AREA |
|---|---|
| DATE: 02/27/12 DRWN: J.E.B. | |

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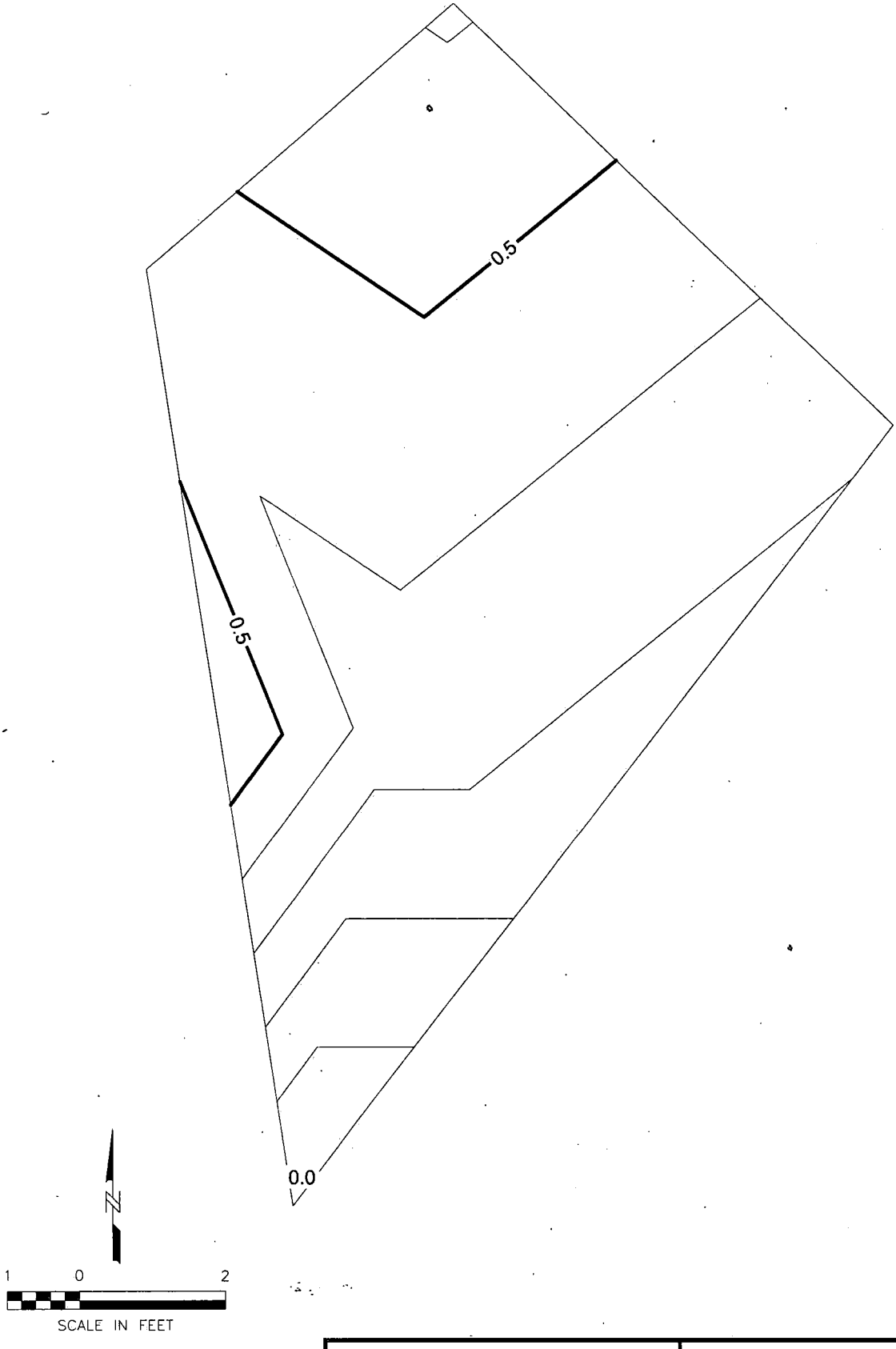


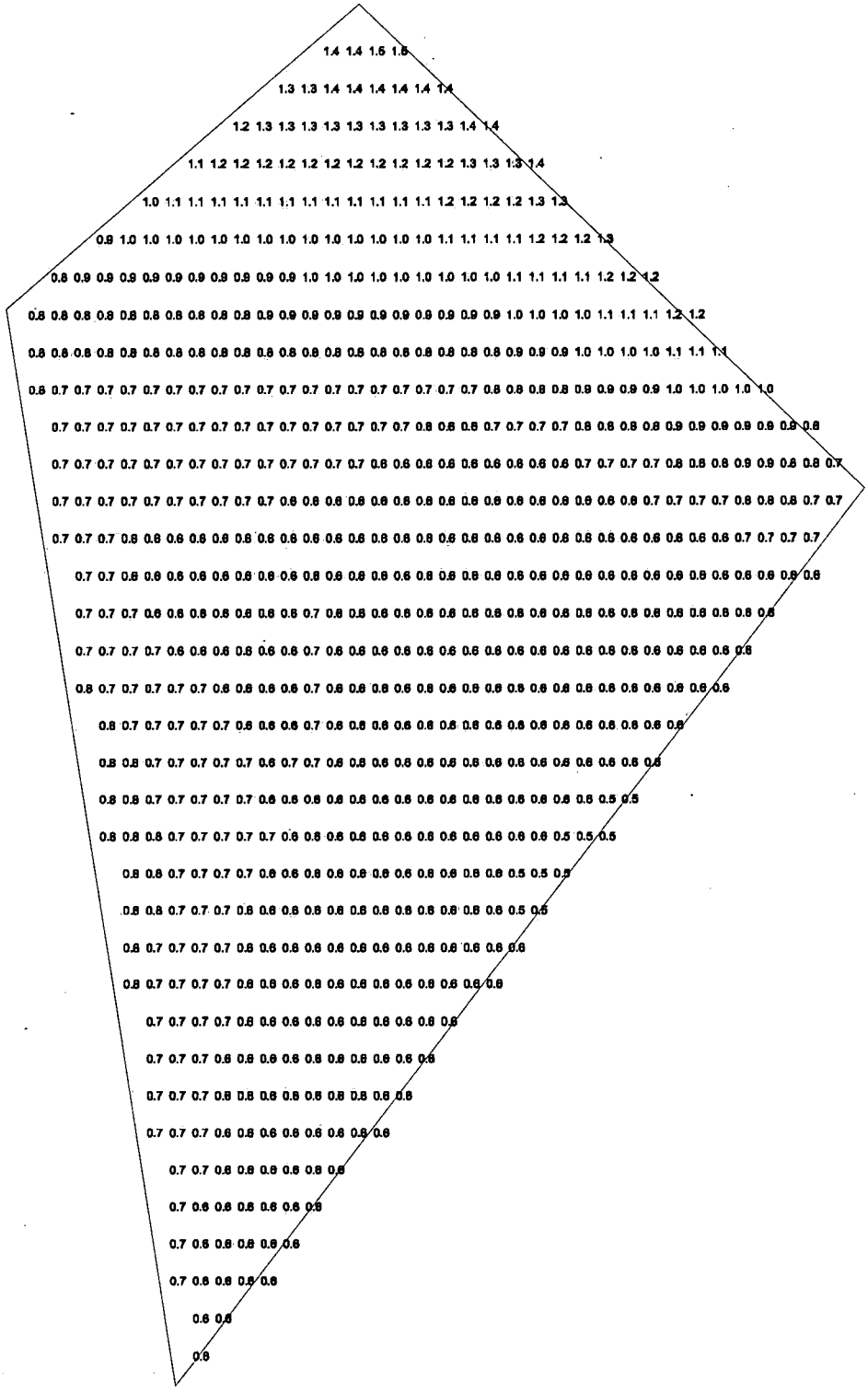

AECOM

FORMER CIBA-GEIGY
CRANSTON, RI
60163799.6

**PRE-EXCAVATION CONDITIONS**
**SD-42 AREA**

DATE: 02/23/12 | DRWN: J.E.B.

File: J:\Indl_Service\Project Files\BASF-0760\Cranston RI\7_Deliverables\10. Sediment Removal\As-built\02_13_12\Sediment Removal Report Figures.dwg Layout: SD-42-Pre-Excavation User: bourdeauj Plotted: F

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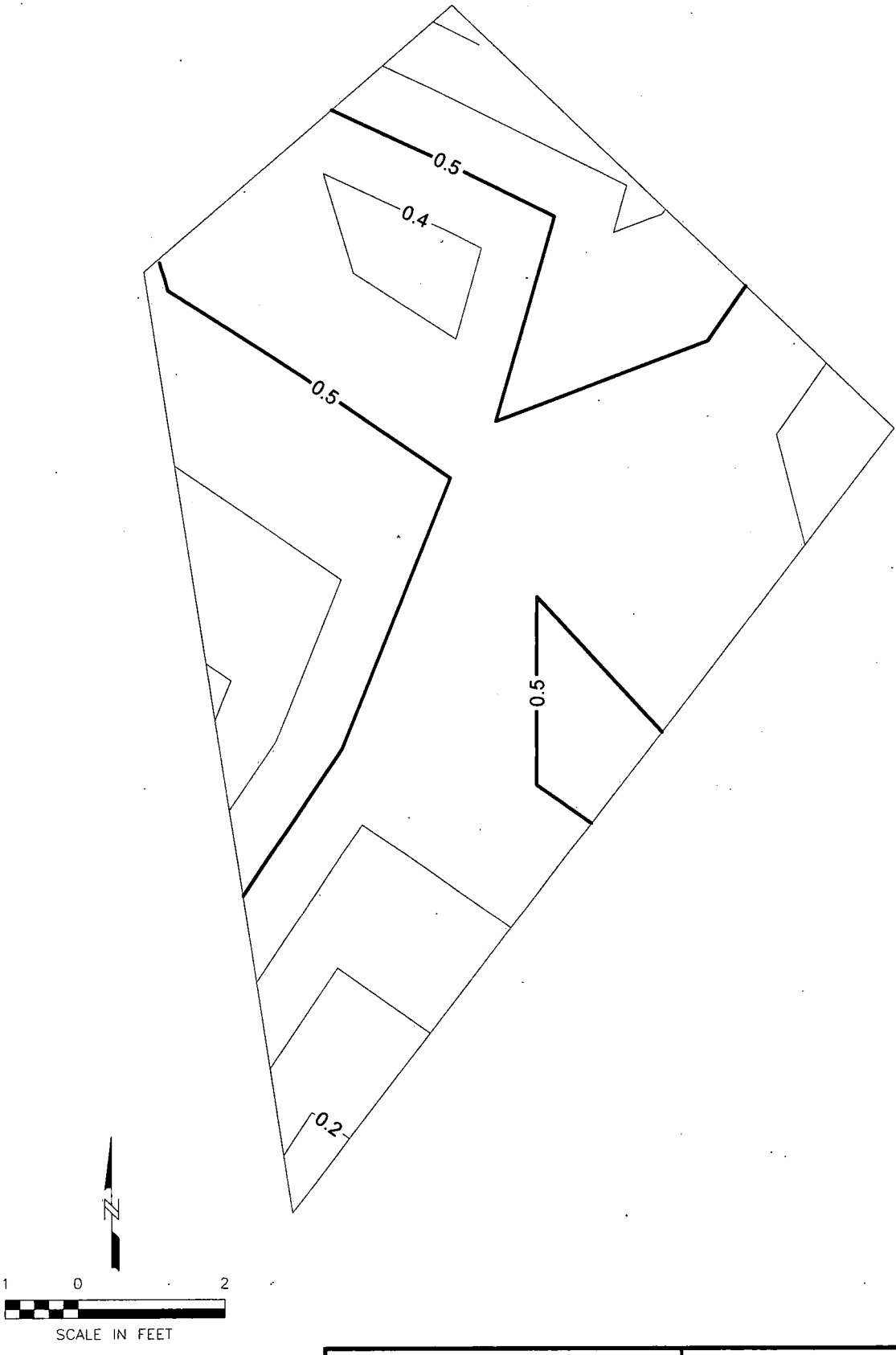


AECOM

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|---|---|
| DATE: 02/23/12 DRWN: J.E.B: | |

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# Appendix C – Backfill Sand Clean Material Certification Documents

**Review of Submittal 003 – Analytical Results and Gradation for sand proposed as fill material for the BASF-Cranston excavation project in the Pawtuxet River, RI.**

The Pawtuxet River Remedial Dredging Project requires that dredged areas be backfilled with clean sand. RC&D (Contractor) submitted analytical results and gradation data for sand to be supplied by Material Sand and Stone Corp. of Rhode Island.

The AECOM Performance Specification, Section 02 40 00 Dredging and Marine Work, Item 2.02 - Materials stipulated the following terms for acceptance of sand as a clean fill material:

**A.** Sand shall be from an approved borrow sources. Sand will be tested for chemical parameters including SVOCs, VOCs, PCBs, and metals.

**B.** Sand will be free of roots, stumps, wood, rubbish, stones over 1 inch in diameter, frozen materials, and other objectionable materials.

**C.** Fines (passing a 200 mesh screen) shall be less than 2%.

**D.** Lightweight pieces (floating) shall be less than 0.5%

**E.** A five pound sample of sand will be tested by the site engineer prior to any sand placement in the river.

**F.** Once the sand has been accepted by the site engineer, the contractor can begin delivering sand to the site. The first delivery and subsequent deliveries of sand will be visually inspected by the engineer.

Analytical data summarizing SVOCs, VOCs, PCBs and metals were compared to RIDEM Remediation Regulations Method 1 Direct Exposure Criteria (Residential) and Leachability Criteria (Method 1, DEM-DSR-01-93). Most of the analysis results returned undetectable limits. Constituents of concern that did have detectable levels are given in Table 1, along with the relevant RIDEM limits. The analytical data provided in Submittal 003 demonstrates that the sand is "clean", as defined by Rhode Island Department of Environmental Management Remediation Regulations.

The sand proposed by the Contractor is a washed, concrete grade sand that meets ASTM C 33 - Standard Specification for Concrete Aggregates. As such, the sand contains no debris, wood, stones over 1 inch in diameter and by definition should pass Item 2.02 C because ASTM C 33 requires the fines passing the 200 mesh to be 0%.

The analytical data and gradation data provided in Submittal 003 show that the proposed sand meets the requirements of Item 2.02 of the bid documents and may be accepted for use. The Field Engineer will verify the condition of the sand as it arrives on site to verify that the sand is free of debris, stones, etc.

**Table 1. Measureable Constituents of Concern**

| Constituent of Concern | Result | RIDEM Direct Exposure Limits (Residential) | RIDEM Leachability Limits |
|---|---|---|---|
| Benzo[a]anthracene | 198† µg/Kg | 0.9 mg/Kg | ⋇ |
| Benzo[a]pyrene | 186† µg/Kg | 0.4 mg/Kg | 240 mg/Kg |
| Benszo[b]fluoranthene | 238† µg/Kg | 0.9 mg/Kg | ⋇ |
| Chrysene | 167† µg/Kg | 0.4 mg/Kg | ⋇ |
| Fluoranthene | 274† µg/Kg | 20 mg/Kg | ⋇ |
| Pyrene | 251† µg/Kg | 13 mg/Kg | ⋇ |
| PCB-1260 | 15† µg/Kg | 10 mg/Kg | 10 mg/Kg |
| Total Petroleum Hydrocarbons | 42 mg/Kg | 500 mg/Kg | 500 mg/Kg |
| Arsenic | 1.2 mg/Kg | 7 mg/Kg | ⋇ |
| Beryllium | 0.29 mg/Kg | 0.4 mg/Kg | 0.03 mg/l |
| Chromium | 2.2 mg/Kg | 1,790 mg/Kg* | 1.1 mg/l |
| Copper | 5.3 mg/Kg | 3,100 mg/Kg | ⋇ |
| Lead | 6.8 mg/Kg | 150 mg/Kg | 0.04 mg/l |
| Nickel | 1.8 mg/Kg | 1,000 mg/Kg | 1 mg/l |
| Zinc | 51 mg/Kg | 6,000 mg/Kg | ⋇ |

† - Estimated value, below quantitative limits
* - Combined trivalent and hexavalent chromium

RC&D, Inc.
17 Gordon Ave, Suite 204
Providence, RI 02905
T. 401.270.5483
F. 401.270.5486

Remediation • Construction • Development

# LETTER OF TRANSMITTAL

To:

AECOM
250 Apollo Drive
Chelmsford, MA 01824
Mark.hayden@aecom.com

Date: 1/15/2012 | Job No. 1201

Attention: Mark Hayden

Re: **Submittal 003**
Sediment Removal from Pawtuxet River
180 Mill Street
Cranston, RI 02920

**WE ARE SENDING YOU:**

☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop Drawings ☐ Prints ☐ Plans ☐ Change Order

☐ Specifications ☐ Copy of Letter ☐ Samples ☐ _____

| COPIES | DATE | NO. | DESCRIPTION |
|---|---|---|---|
| 3 | | 003 | Backfill Testing – Analytical [02 40 00, Paragraph 2.02 (A)] |
| 3 | | 003 | Backfill Testing – Gradation [02 40 00, Paragraph 2.02 (B), (C)] |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**THESE ARE TRANSMITTED AS CHECKED BELOW:**

☒ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ _____ ☐ PRINTS RETURNED AFTER LOAN TO US.

REMARKS: Attached Submittal 003 – Backfill Testing Results for above-referenced project.
This submittal has been delivered electronically via e-mail
This submittal has been prepared in accordance with Specification Section 02 40 00, Paragraph 2.02

COPY TO: _____

SIGNED: Jim Henebury

*If enclosures are not as noted, kindly notify us at once.*

# SAND GRADATIONS

## CONCRETE SAND

ASTM C-33

| SIEVES | SAMPLE No. 1 | | | | % PASS | SAMPLE No. 2 | | | | % PASS |
|---|---|---|---|---|---|---|---|---|---|---|
| | RET | % RET | % PASS | | | RET | % RET | % PASS | | |
| 3/8 | | | 100 | | 100 | | | | | 100 |
| 4 | | | 97 | | 95-100 | | | | | 95-100 |
| 8 | | | 85 | | 80-100 | | | | | 80-100 |
| 16 | | | 60 | | 50-85 | | | | | 50-85 |
| 30 | | | 45 | | 25-60 | | | | | 25-60 |
| 50 | | | 18 | | 10-30 | | | | | 10-30 |
| 100 | | | 8 | | 2-10 | | | | | 2-10 |
| PAN | FM _____ | | % MOIST _____ | | | FM _____ | | % MOIST _____ | | |

## MASON SAND

ASTM C-144

| | NATURAL | | | | | MANUFACTURED | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SIEVES | SAMPLE No. 1 | | | | % PASS | SAMPLE No. 2 | | | | % PASS |
| | RET | % RET | % PASS | | | RET | % RET | % PASS | | |
| 4 | | | | | 100 | | | | | 100 |
| 8 | | | | | 95-100 | | | | | 95-100 |
| 16 | | | | | 70-100 | | | | | 70-100 |
| 30 | | | | | 40-75 | | | | | 40-75 |
| 50 | | | | | 10-35 | | | | | 20-40 |
| 100 | | | | | 2-15 | | | | | 10-25 |
| 200 | | | | | -- | | | | | 0-10 |
| PAN | FM _____ | | % MOIST _____ | | | FM _____ | | % MOIST _____ | | |

DATE TESTED: 1/10/2012 SOURCE: Stockpile TECH: R. C.

CLIENT: In house quality assurance program. Organic Plate No. 1

COMMENTS: Conforms to ASTM C-33

SIGMA TESTING LABORATORY - 618 GREENVILLE RD, NO. SMITHFIELD, RI 02896
Phone 401-453-1110 * Fax 401-767-2070

analytics environmental laboratory LLC

198 Commerce Way
Portsmouth, New Hampshire 03801
603-436-5791 Fax 603-436-8161
800-[illegible]

[redacted]

January 4, 2012

**SAMPLE DATA**

| | |
|---|---|
| Lab Sample ID: | 71915-1 |
| Matrix: | Solid |
| Percent Solid: | 92 |
| Dilution Factor: | 93 |
| Collection Date: | 12/29/11 |
| Lab Receipt Date: | 12/30/11 |
| Analysis Date: | 01/03/12 |

**CLIENT SAMPLE ID**

Project Name: [redacted]

Project Number: 1104

Field Sample ID: 1104-Fill1

## ANALYTICAL RESULTS VOLATILE ORGANICS

| COMPOUND | Quantitation Limit µg/kg | Result µg/kg | COMPOUND | Quantitation Limit µg/kg | Result µg/kg |
|---|---|---|---|---|---|
| Benzene | 93 | U | 1,3-Dichloropropane | 93 | U |
| Bromobenzene | 93 | U | cis-1,3-Dichloropropene | 93 | U |
| Bromochloromethane | 93 | U | trans-1,3-Dichloropropene | 93 | U |
| Bromodichloromethane | 69 | U | 2,2-Dichloropropane | 93 | U |
| Bromoform | 69 | U | 1,1-Dichloropropene | 93 | U |
| Bromomethane | 93 | U | Ethylbenzene | 93 | U |
| n-butylbenzene | 93 | U | Hexachlorobutadiene | 93 | U |
| sec-butylbenzene | 93 | U | Isopropylbenzene | 93 | U |
| tert-butylbenzene | 93 | U | p-isopropyltoluene | 93 | U |
| Carbon Tetrachloride | 93 | U | Methylene Chloride | 463 | U |
| Chlorobenzene | 93 | U | Methyl-tert-butyl ether (MTBE) | 69 | U |
| Chloroethane | 93 | U | Naphthalene | 93 | U |
| Chloroform | 69 | U | n-Propylbenzene | 93 | U |
| Chloromethane | 93 | U | Styrene | 93 | U |
| 2-Chlorotoluene | 93 | U | 1,1,1,2-Tetrachloroethane | 93 | U |
| 4-Chlorotoluene | 93 | U | 1,1,2,2-Tetrachloroethane | 69 | U |
| Dibromochloromethane | 69 | U | Tetrachloroethene | 93 | U |
| 1,2-Dibromo-3-chloropropane | 93 | U | Toluene | 93 | U |
| 1,2-Dibromoethane | 69 | U | 1,2,3-Trichlorobenzene | 93 | U |
| Dibromomethane | 93 | U | 1,2,4-Trichlorobenzene | 93 | U |
| 1,2-Dichlorobenzene | 93 | U | 1,1,1-Trichloroethane | 93 | U |
| 1,3-Dichlorobenzene | 93 | U | 1,1,2-Trichloroethane | 69 | U |
| 1,4-Dichlorobenzene | 93 | U | Trichloroethene | 93 | U |
| Dichlorodifluoromethane | 93 | U | Trichlorofluoromethane | 93 | U |
| 1,1-Dichloroethane | 93 | U | 1,2,3-Trichloropropane | 93 | U |
| 1,2-Dichloroethane | 69 | U | 1,2,4-Trimethylbenzene | 93 | U |
| 1,1-Dichloroethene | 69 | U | 1,3,5-Trimethylbenzene | 93 | U |
| cis-1,2-Dichloroethene | 93 | U | Vinyl Chloride | 93 | U |
| trans-1,2-Dichloroethene | 93 | U | o-Xylene | 93 | U |
| 1,2-Dichloropropane | 69 | U | m,p-Xylene | 93 | U |
| Acetone | 926 | U | Diethyl ether | 93 | U |
| Carbon Disulfide | 93 | U | 2-Hexanone | 926 | U |
| Tetrahydrofuran | 463 | U | Methyl isobutyl ketone | 926 | U |
| Methyl ethyl ketone | 926 | U | Di-isopropyl ether (DIPE) | 93 | U |
| t-Butyl alcohol (TBA) | 1850 | U | Ethyl t-butyl ether (ETBE) | 93 | U |
| t-Amyl methyl ether (TAME) | 93 | U | 1,3,5-Trichlorobenzene | 93 | U |
| | | | 1,4-Dioxane | 2780 | U |

**Surrogate Standard Recovery**

d4-1,2-Dichloroethane 90 % d8-Toluene 88 % Bromofluorobenzene 90 %

U=Undetected J=Estimated E=Exceeds Calibration Range B=Detected in Blank

**METHODOLOGY:** Sample collection in accordance with SW-846 method 5035A. Sample analysis was conducted according to: Test Methods for Evaluating Solid Waste, SW-846 Method 8260B.

**COMMENTS:** Results are expressed on a dry weight basis.

8260 2009 • DioxaneRes(75)Rec(3)

Authorized signature [signature]



FROM : C PHONE NO. : 4017672070 Jan. 13 2012 03:55PM P3

analytics environmental laboratory LLC

195 Commerce Way
Portsmouth, New Hampshire 03801
603-436-5111 Fax 603-436-5151
800-919-9755

[redacted]

January 4, 2012

**SAMPLE DATA**

| | |
|---|---|
| Lab Sample ID: | 71915-1 |
| Matrix: | Solid |
| Percent Solid: | 92 |
| Dilution Factor: | 1.1 |
| Collection Date: | 12/29/11 |
| Lab Receipt Date: | 12/30/11 |
| Extraction Date: | 12/30/11 |
| Analysis Date: | 01/03/12 |

**CLIENT SAMPLE ID**

| | |
|---|---|
| Project Name: | [redacted] |
| Project Number: | 1104 |
| Field Sample ID: | 1104-FIII |

PAGE ONE

**ANALYTICAL RESULTS SEMI-VOLATILE ORGANICS**

| ACID COMPOUND | Quantitation Limit µg/kg | Result µg/kg | ACID COMPOUND | Quantitation Limit µg/kg | Result µg/kg |
|---|---|---|---|---|---|
| 2-Chlorophenol | 380 | U | Pentachlorophenol | 760 | U |
| 4-Chloro-3-methylphenol | 760 | U | Phenol | 760 | U |
| 2,4-Dichlorophenol | 380 | U | 2,4,5-Trichlorophenol | 540 | U |
| 2,4-Dimethylphenol | 380 | U | 2,4,6-Trichlorophenol | 380 | U |
| 2,4-dinitrophenol | 760 | U * | Benzoic Acid | 1100 | U * |
| 4,6-Dinitro-2-methylphenol | 760 | U | 2-Methylphenol | 760 | U |
| 2-Nitrophenol | 760 | U | 3+4-Methylphenol | 760 | U |
| 2,6-Dichlorophenol | 540 | U | Benzyl Alcohol | 760 | U |
| 4-Nitrophenol | 760 | U | 2,3,4,6-Tetrachlorophenol | 760 | U |

**Acid Surrogate Standard Recovery**

| | | | | | |
|---|---|---|---|---|---|
| 2-Fluorophenol | 66 % | d5-Phenol | 68 % | 2,4,6-Tribromophenol | 88 % |

| BASE NEUTRAL COMPOUND | Quantitation Limit µg/kg | Result µg/kg | BASE NEUTRAL COMPOUND | Quantitation Limit µg/kg | Result µg/kg |
|---|---|---|---|---|---|
| 1,2-Dichlorobenzene | 540 | U | Hexachlorobenzene | 380 | U |
| 1,3-Dichlorobenzene | 540 | U | * Benzidine | 540 | U |
| 1,4-Dichlorobenzene | 380 | U | 3,3'-Dichlorobenzidine | 540 | U |
| 2,4-Dinitrotoluene | 380 | U | Azobenzene | 540 | U |
| 2,6-Dinitrotoluene | 540 | U | Bis(2-chloroethoxy)methane | 540 | U |
| Nitrobenzene | 540 | U | bis(2-chloroethyl) ether | 380 | U |
| Hexachlorobutadiene | 540 | U | bis(2-chloroisopropyl)ether | 380 | U |
| Dimethyl Phthalate | 540 | U | 4-bromophenyl phenyl ether | 540 | U |
| Di-n-butyl phthalate | 540 | U | Butyl benzyl phthalate | 540 | U |
| di-n-octyl-phthalate | 540 | U | 4-Chlorophenyl phenyl ether | 540 | U |
| Bis (2-ethylhexyl) phthalate | 540 | U | Diethyl Phthalate | 540 | U |
| 1,2,4-Trichlorobenzene | 540 | U | Hexachlorocyclopentadiene | 540 | U |

U=Undetected J=Estimated E=Exceeds Calibration Range B=Detected in Blank

METHODOLOGY: Sample analysis was conducted according to Test Methods for Evaluating Solid Waste, SW-846 Method 8270C.

8270/625 layout

Authorized signature



FROM : C PHONE NO. : 4017672070 Jan. 13 2012 03:55PM P4

analytics environmental laboratory LLC

153 Commerce Way
Portsmouth, New Hampshire 03801
603-436-5111 Fax 603-436-2181
800-929-9906

[redacted]

January 4, 2012

**SAMPLE DATA**

| | |
|---|---|
| Lab Sample ID: | 71915-1 |
| Matrix: | Solid |
| Percent Solid: | 92 |
| Dilution Factor: | 1.1 |
| Collection Date: | 12/29/11 |
| Lab Receipt Date: | 12/30/11 |
| Extraction Date: | 12/30/11 |
| Analysis Date: | 01/03/12 |

**CLIENT SAMPLE ID**

| | |
|---|---|
| Project Name: | [redacted] |
| Project Number: | 1104 |
| Field Sample ID: | 1104-Fill1 |

PAGE TWO

**ANALYTICAL RESULTS SEMI-VOLATILE ORGANICS**

| BASE NEUTRAL COMPOUND | Quantitation Limit µg/kg | Result µg/kg | BASE NEUTRAL COMPOUND | Quantitation Limit µg/kg | Result µg/kg |
|---|---|---|---|---|---|
| Acenaphthene | 290 | U | N-nitrosodimethylamine | 540 | U |
| Acenaphthylene | 290 | U | N-nitroso-di-n-propylamine | 540 | U |
| Anthracene | 290 | U | n-nitrosodiphenylamine | 540 | U |
| Benzo[a]anthracene | 290 | 198 J | Pyridine | 540 | U |
| Benzo[a] pyrene | 290 | 185 J | 2-Methylnaphthalene | 290 | U |
| Benzo[b] fluoranthene | 290 | 238 J | 2-Chloronaphthalene | 290 | U |
| Benzo[k] fluoranthene | 290 | U | Naphthalene | 290 | U |
| Benzo( g,h,i) perylene | 290 | U | Phenanthrene | 290 | U |
| Chrysene | 290 | 167 J | Dibenzofuran | 290 | U |
| Dibenz [a,h] anthracene | 290 | U | Aniline | 540 | U |
| Fluoranthene | 290 | 274 J | 4-Chloroaniline | 540 | U |
| Fluorene | 290 | U | 2-Nitroaniline | 540 | U |
| Indeno [1,2,3-cd] pyrene | 290 | U | 3-Nitroaniline | 540 | U |
| Pyrene | 290 | 261 J | 4-Nitroaniline | 540 | U |
| Hexachloroethane | 380 | U | Carbazole | 290 | U |
| Isophorone | 540 | U | | | |

**Base Neutral Surrogate Standard Recovery**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2-Fluorobiphenyl | 71 | % | d5-nitrobenzene | 66 | % | d14-p-terphenyl | 101 | % |

U=Undetected J=Estimated E=Exceeds Calibration Range B=Detected in Blank

**METHODOLOGY:** Sample analysis was conducted according to: Test Methods for Evaluating Solid Waste, SW-846 Method 8270C.

**COMMENTS:** *Due to the reactive nature of this compound, the Benzidine quantitation limit is estimated.
Results are expressed on a dry weight basis. *Analyte had low recovery in the MS/MSD extracted on this sample. The laboratory control sample was in control for all analytes.

8270/625 layout

Authorized signature [signature]



FROM : C PHONE NO. : 4017672070 Jan. 13 2012 03:56PM P5

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800-929-9906

[redacted]

January 3, 2012

**SAMPLE DATA**

| | |
|---|---|
| Lab Sample ID: | 71915-1 |
| Matrix: | Solid |
| Percent Solid: | 92 |
| Dilution Factor: | 1.1 |
| Collection Date: | 12/29/11 |
| Lab Receipt Date: | 12/30/11 |
| Extraction Date: | 12/30/11 |
| Analysis Date: | 12/30/11 |

**CLIENT SAMPLE ID**

| | |
|---|---|
| Project Name: | [redacted] |
| Project Number: | 1104 |
| Field Sample ID: | 1104-FI01 |

**PCB ANALYTICAL RESULTS**

| COMPOUND | Quantitation Limit µg/kg | Results µg/kg |
|---|---|---|
| PCB-1016 | 17 | U |
| PCB-1221 | 17 | U |
| PCB-1232 | 17 | U |
| PCB-1242 | 17 | U |
| PCB-1248 | 17 | U |
| PCB-1254 | 17 | U |
| PCB-1260 | 17 | 15 J |

**Surrogate Standard Recovery**

| | | |
|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 84 | % |
| Decachlorobiphenyl | 82 | % |

U=Undetected J=Estimated E=Exceeds Calibration Range B=Detected in Blank

METHODOLOGY: Sample analysis conducted according to Test Methods for Evaluating Solid Waste, SW-846 Method 8082.
Sample preparation conducted according to Test Methods for Evaluating Solid Waste, SW-846 Method 3546.
Sample cleanup was conducted according to SW-846 Method 3665A.

COMMENTS: Results are expressed on a dry weight basis.

PCB Report

Authorized signature



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Analytics environmental laboratory LLC

195 Commerce Way
Portsmouth, New Hampshire 03801
603-436-5111 Fax 603-430-2151
800-929-9906

[redacted]

January 4, 2012
**SAMPLE DATA**

| | |
|---|---|
| Lab Sample ID: | 71915-1 |
| Matrix: | Solid |
| Percent Solid: | 92 |
| Dilution Factor: | 1.1 |
| Collection Date: | 12/29/11 |
| Lab Receipt Date: | 12/30/11 |
| Extraction Date: | 12/30/11 |
| Analysis Date: | 01/03/12 |

**CLIENT SAMPLE ID**

| | |
|---|---|
| Project Name: | [redacted] |
| Project Number: | 1104 |
| Field Sample ID: | 1104-Fill1 |

**ANALYTICAL RESULTS**

**TOTAL PETROLEUM HYDROCARBONS (C10-C36)**

| Result | Units | Quantitation Limit |
|---|---|---|
| 42 | mg/kg | 21 |

**Surrogate Standard Recovery**

| | | |
|---|---|---|
| m-Terphenyl | 94 | % |

U=Undetected J=Estimated E=Exceeds Calibration Range B=Detected in Blank

**METHODOLOGY:** Aqueous samples prepared by Separatory Funnel Liquid/Liquid Extraction, "Test Methods for Evaluating Solid Waste," Method 3510C; other matrices prepared by Pressurized Fluid Extraction, "Test Methods for Evaluating Solid Waste," Method 3545.

All matrices analyzed according to "Test Methods for Evaluating Solid Waste, SW-846 Method 8100"

**COMMENTS:** Results are expressed on a dry weight basis. The MS/MSD analyzed in this sample had low recoveries. The laboratory control samples were in control.

Authorized signature



FROM : C PHONE NO. : 4017672070 Jan. 13 2012 03:57PM P7

Serial_No:01041215:08

| | | | |
|---|---|---|---|
| **Project Name:** | [redacted] | **Lab Number:** | L1121811 |
| **Project Number:** | 1104 | **Report Date:** | 01/04/12 |

**SAMPLE RESULTS**

| | | | |
|---|---|---|---|
| **Lab ID:** | L1121811-01 | **Date Collected:** | 12/29/11 15:30 |
| **Client ID:** | 1104-FILL 1 | **Date Received:** | 12/30/11 |
| **Sample Location:** | 71915-1 | **Field Prep:** | Not Specified |
| **Matrix:** | Soil | | |
| **Percent Solids:** | 91% | | |

| Parameter | Result | Qualifier | Units | RL | MDL | Dilution Factor | Date Prepared | Date Analyzed | Prep Method | Analytical Method | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals - Mansfield Lab** | | | | | | | | | | | |
| Antimony, Total | ND | | mg/kg | 2.2 | -- | 1 | 01/01/12 13:40 | 01/02/12 12:17 | EPA 3050B | 1,6010B | MS |
| Arsenic, Total | 1.2 | | mg/kg | 0.45 | -- | 1 | 01/01/12 13:40 | 01/02/12 12:17 | EPA 3050B | 1,6010B | MS |
| Beryllium, Total | 0.29 | | mg/kg | 0.22 | -- | 1 | 01/01/12 13:40 | 01/02/12 12:17 | EPA 3050B | 1,6010B | MS |
| Cadmium, Total | ND | | mg/kg | 0.45 | -- | 1 | 01/01/12 13:40 | 01/02/12 12:17 | EPA 3050B | 1,6010B | MS |
| Chromium, Total | 2.2 | | mg/kg | 0.45 | -- | 1 | 01/01/12 13:40 | 01/02/12 12:17 | EPA 3050B | 1,6010B | MS |
| Copper, Total | 5.3 | | mg/kg | 0.45 | -- | 1 | 01/01/12 13:40 | 01/02/12 12:17 | EPA 3050B | 1,6010B | MS |
| Lead, Total | 6.8 | | mg/kg | 2.2 | -- | 1 | 01/01/12 13:40 | 01/02/12 12:17 | EPA 3050B | 1,6010B | MS |
| Mercury, Total | ND | | mg/kg | 0.09 | -- | 1 | 01/03/11 20:30 | 01/04/12 12:46 | EPA 7471A | 1,7471A | JP |
| Nickel, Total | 1.8 | | mg/kg | 1.1 | -- | 1 | 01/01/12 13:40 | 01/02/12 12:17 | EPA 3050B | 1,6010B | MS |
| Selenium, Total | ND | | mg/kg | 0.90 | -- | 1 | 01/01/12 13:40 | 01/02/12 12:17 | EPA 3050B | 1,6010B | MS |
| Silver, Total | ND | | mg/kg | 0.45 | -- | 1 | 01/01/12 13:40 | 01/02/12 12:17 | EPA 3050B | 1,6010B | MS |
| Thallium, Total | ND | | mg/kg | 0.90 | -- | 1 | 01/01/12 13:40 | 01/02/12 12:17 | EPA 3050B | 1,6010B | MS |
| Zinc, Total | 51 | | mg/kg | 2.2 | -- | 1 | 01/01/12 13:40 | 01/02/12 12:17 | EPA 3050B | 1,6010B | MS |



FROM : C PHONE NO. : 4017672070 Jan. 13 2012 03:57PM P8

# Appendix D - Daily Reports

# DAILY ACTIVITY REPORT

AECOM

| DATE | JOB NO. | PROJECT |
|---|---|---|
| 01 / 17 / 12 | 60163799 | River Hot Spot Remediation |
| **CLIENT** | **LOCATION** | **CONTRACTOR** |
| BASF | Cranston, RI | RC&D |

**Document following activities in addition to items specified in this form: **decon activities prior to demobilization** ; **disruption/damages to utilities/structures** ; **structures that are permanently removed or removed and replaced** ; **any changes to design** ; **dewatering activities** ; **air/dust monitoring ****

WEATHER CONDITIONS

Snow AM, Rain PM, Low 40s.

ACCOUNTING OF WASTES STORED/STOCKPILED ON-SITE

N/A

MATERIALS BROUGHT ON SITE (NAME OF SUPPLIER, TYPE, VOLUME)

N/A

TIME SUMMARY

| Time From | Time To | Description of Activities |
|---|---|---|
| 0700 | | Contractor mobilizes to site. Conducted daily health and safety tailgate meeting. |
| 0715 | | J. Henebury and two laborers from RC&D arrive on site. |
| 0730 | | Dismantling sections of the east side railing off of the bridge. |
| 0800 | | Same activities. |
| 0830 | | Flagging monitoring wells and other structures with pink tape to protect them from equipment. |
| 0930 | | RC&D mobilizes skid steer, mechanics trailer and two operators to site. |
| 1000 | | Clearing area for staging on the west side off the property along the river. |
| 1030 | | Same activities. Relocating wood debris using the skid steer to low spot next to pad area. |
| 1100 | | Clearing wood debris along the access road to the bridge. |
| 1130 | | Long reach excavator mobilized to site. |
| 1200 | | Removing barbed wire, fence fabric and guard rail along the retaining wall to access excavation areas. |
| 1230 | | Attaching excavator bucket fitted with clam shell lid to long reach excavator. |
| 1300 | | Continue removing fence fabric along retaining wall with the excavator because of growth through fabric. |
| 1330 | | Torch cutting the angle irons (2) off of the pier/waler in the western most excavation area. |
| 1400 | | Same activities. Attended project conference call. |
| 1445 | | Completed removal of the angle irons. |
| 1500 | | Shooting control points with GPS. GPS is within 1/10 horizontally and dead on vertically. |
| 1530 | | Contractor demobilizes from site. |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

SUMMARY OF DAILY ACTIVITIES

**Spills, Leaks, Discharges:** None

**Changes to Design:** None

**Survey activities:** None

DAILY AND POST RAINFALL EH&S CONTROLS INSPECTION: (VERIFY INTEGRITY OF CONTROLS, NOTIFY ENGINEER OF DEFICIENCIES, IMMEDIATELY).

**Signs of Erosion:** N/A

**Surface/Vegetative Cover Condition:** Sufficient

**Items for Repair:** N/A

DAILY STOCKPILE INSPECTION: (VERIFY INTEGRITY OF STOCKPILE LINER AND COVER SYSTEM, CORRECT DEFICIENCIES IMMEDIATELY)

N/A

ON-SITE PERSONNEL

| AECOM | BASF | Others | RC&D | |
|---|---|---|---|---|

| 1 | 2 | 0 | 6 | |
|---|---|---|---|---|
| Traveling Record | | | | Reported By |
| Vehicle I.D. | Starting Odometer | Ending Odometer | Total Miles | |
| | | | | Mark Hayden |
| Report Signature | | | | Date |
| | | | | |

Clearing using weed whacker and skid steer.

Removing fence fabric and gaurdrail using the long reach excavator.

# DAILY ACTIVITY REPORT

AECOM

| DATE | JOB NO. | PROJECT |
|---|---|---|
| 01 / 18 / 12 | 60163799 | River Hot Spot Remediation |
| **CLIENT** | **LOCATION** | **CONTRACTOR** |
| BASF | Cranston, RI | RC&D |

**Document following activities in addition to items specified in this form: **decon activities prior to demobilization** ; **disruption/damages to utilities/structures** ; **structures that are permanently removed or removed and replaced** ; **any changes to design** ; **dewatering activities** ; **air/dust monitoring ****

WEATHER CONDITIONS

Clear, Windy, Low 30s.

ACCOUNTING OF WASTES STORED/STOCKPILED ON-SITE

N/A

MATERIALS BROUGHT ON SITE (NAME OF SUPPLIER, TYPE, VOLUME)

N/A

TIME SUMMARY

| Time From | Time To | Description of Activities |
|---|---|---|
| 0600 | | Early mobilization. Receive delivery of crane mats. |
| 0700 | | Contractor mobilizes to site. Conducted tailgate health and safety meeting. |
| 0800 | | Relocating crane mats from the building down to the work area using the skid steer and long reach excavator. |
| 0830 | | Receive delivery of the turbidity curtain. |
| 0845 | | RC&D mobilizes a boat to the site. Two EQ roll-offs mobilized to the site. |
| 0930 | | Installing crane mats next to the center excavation area. |
| 1000 | | Same activities. |
| 1030 | | Installing crane mats on top of the bridge. |
| 1045 | | Third roll-off mobilized to the site. |
| 1100 | | Moving/relocating roll-offs into position with a smaller EQ truck. |
| 1130 | | K. Carbonneau arrives on site. |
| 1200 | | AECOM turbidity monitors arrive on site with a boat. |
| 1300 | | Completed localizing GPS on the long reach excavator. |
| 1330 | | Installing turbidity curtain using a boat around the middle excavation area. RC&D decided to start with this area rather than the |
| | | upstream excavation because a third angle iron beam is in the way and will now need to be torch cut. |
| 1400 | | Same activities. |
| 1430 | | Completed the middle excavation area turbidity curtain installation. |
| 1500 | | AECOM turbidity monitors demobilize as no excavation will be taking place for the remainder of the day. |
| 1530 | | Torch cutting third angle iron beam in the upstream excavation area. |
| 1600 | | K. Carbonneau demobilizes from site. |
| 1630 | | Contractor demobilizes from site. |
| | | |
| | | |
| | | |
| | | |

SUMMARY OF DAILY ACTIVITIES

**Spills, Leaks, Discharges:** None

**Changes to Design:** None

**Survey activities:** None

DAILY AND POST RAINFALL EH&S CONTROLS INSPECTION: (VERIFY INTEGRITY OF CONTROLS. NOTIFY ENGINEER OF DEFICIENCIES. IMMEDIATELY).

**Signs of Erosion:** N/A

**Surface/Vegetative Cover Condition:** Sufficient

**Items for Repair:** N/A

DAILY STOCKPILE INSPECTION: (VERIFY INTEGRITY OF STOCKPILE LINER AND COVER SYSTEM. CORRECT DEFICIENCIES IMMEDIATELY)

N/A

ON-SITE PERSONNEL

| AECOM | BASF | Others | RC&D | |
|---|---|---|---|---|

| 4 | 2 | 0 | 6 | |
|---|---|---|---|---|
| Traveling Record | | | | Reported By |
| Vehicle I.D. | Starting Odometer | Ending Odometer | Total Miles | |
| | | | | Mark Hayden |
| Report Signature | | | | Date |
| | | | | |

Preparing to install turbidity curtain.

Installing turbidity curtain in middle excavation area.

# DAILY ACTIVITY REPORT

AECOM

| DATE | JOB NO. | PROJECT |
|---|---|---|
| 01 / 19 / 12 | 60163799 | River Hot Spot Remediation |
| **CLIENT** | **LOCATION** | **CONTRACTOR** |
| BASF | Cranston, RI | RC&D |

**Document following activities in addition to items specified in this form: **decon activities prior to demobilization** ; **disruption/damages to utilities/structures** ; **structures that are permanently removed or removed and replaced** ; **any changes to design** ; **dewatering activities** ; **air/dust monitoring ****

WEATHER CONDITIONS

Partly cloudy, Low 30s.

ACCOUNTING OF WASTES STORED/STOCKPILED ON-SITE

N/A

MATERIALS BROUGHT ON SITE (NAME OF SUPPLIER, TYPE, VOLUME)

N/A

TIME SUMMARY

| Time From | Time To | Description of Activities |
|---|---|---|
| 0700 | | Contractor mobilizes to site. Conducted tailgate health and safety meeting. |
| 0730 | | Preparing for excavation in the river. |
| 0830 | | Turbidity monitors mobilize to the site. |
| 0900 | | Reshooting middle excavation area to obtain pre-excavation topography (this is required because the base station fell down |
| | | late yesterday due to high winds. |
| 0930 | | Reshooting western most upstream excavation area for pre-excavation topography. |
| 0940 | | First load of backfill sand arrives on site and is staged next to the middle excavation area. |
| 1000 | | BASF representative (Joe) arrives on site. RIDEM representative (Margaret Bradley) arrives on site. |
| 1015 | | Begin excavating middle excavation area. |
| 1100 | | Turbidity monitoring during excavation shows no exceedances downstream. |
| 1130 | | Pumping excess water out of the HDPE sumps in the roll-off and placing it in 55 gallon drums. |
| 1145 | | Completed the middle area excavation. MH confirmed excavation depths (-2.2' to -3.1' with an average of -2.5') on the GPS. |
| 1200 | | Shooting final topography of middle area. |
| 1230 | | Completed final topography shooting of middle excavation area. |
| 1245 | | Begin backfilling of middle excavation area. |
| 1315 | | Downstream turbidity levels at 42, 48 with a high of 62. Requested RC&D to slow down the backfilling operation to see if the |
| | | turbidity levels would decrease. |
| 1330 | | EPA representative (Frank) on site. |
| 1345 | | EPA representative inspecting the backfilling operation. Turbidity levels at 12, 11 and 15 turbidity units. |
| 1430 | | MH confirmed backfill levels on GPS.. Need to add more sand in areas (-.25' and -.5') along bulkhead. |
| 1500 | | Completed backfilling operations. MH confirmed backfill finish grades. |
| 1515 | | Mixing Zap Zorb polymer into the sediment in the roll-off with the mini excavator. |
| 1600 | | Same activities. |
| 1615 | | Completed sediment stabilization. Closing roll-off with tarps. Regrading work areas with skid steer to avoid freeze ruts. |
| 1630 | | Contractor demobilizes from site. |

SUMMARY OF DAILY ACTIVITIES

**Spills, Leaks, Discharges:** None

**Changes to Design:** None

**Survey activities:** None

DAILY AND POST RAINFALL EH&S CONTROLS INSPECTION: (VERIFY INTEGRITY OF CONTROLS. NOTIFY ENGINEER OF DEFICIENCIES, IMMEDIATELY).

**Signs of Erosion:** N/A

**Surface/Vegetative Cover Condition:** Sufficient

**Items for Repair:** N/A

DAILY STOCKPILE INSPECTION: (VERIFY INTEGRITY OF STOCKPILE LINER AND COVER SYSTEM. CORRECT DEFICIENCIES IMMEDIATELY)

N/A

ON-SITE PERSONNEL

| AECOM | BASF | Others | RC&D | |
|---|---|---|---|---|

| 3 | 3 | 2 | 7 | |
|---|---|---|---|---|
| Traveling Record | | | | Reported By |
| Vehicle I.D. | Starting Odometer | Ending Odometer | Total Miles | |
| | | | | Mark Hayden |
| Report Signature | | | | Date |
| | | | | |

Mixing polymer into sediment for stabilization.

Middle excavation after placement of backfill sand.

# DAILY ACTIVITY REPORT

AECOM

| DATE | JOB NO. | PROJECT |
|---|---|---|
| 01 / 20 / 12 | 60163799 | River Hot Spot Remediation |
| **CLIENT** | **LOCATION** | **CONTRACTOR** |
| BASF | Cranston, RI | RC&D |

**Document following activities in addition to items specified in this form: **decon activities prior to demobilization** ; **disruption/damages to utilities/structures** ; **structures that are permanently removed or removed and replaced** ; **any changes to design** ; **dewatering activities** ; **air/dust monitoring ****

WEATHER CONDITIONS

Sunny, Low 30s.

ACCOUNTING OF WASTES STORED/STOCKPILED ON-SITE

Two roll-offs containing sediment. Four 55 gallon drums containing liquid from drained sediments.

MATERIALS BROUGHT ON SITE (NAME OF SUPPLIER, TYPE, VOLUME)

N/A

TIME SUMMARY

| Time From | Time To | Description of Activities |
|---|---|---|
| 0700 | | Contractor mobilizes to site. Conducted tailgate health and safety meeting. |
| 0730 | | Clearing snow from the various work areas using the skid steer. |
| 0800 | | Turbidity monitor mobilizes to site. Second turbidity curtain mobilized to the site for the bridge excavation area. |
| 0830 | | Begin pulling the anchors and disconnecting the turbidity curtain from the middle excavation area. |
| 0900 | | Same activities. Upstream turbidity level at 2 units. |
| 0930 | | Relocating turbidity curtain from the middle excavation area to the westernmost excavation area using the long reach |
| | | excavator and the boat. |
| 1000 | | BASF representative (Joe) on site. Begin excavation in westernmost excavation area. PID reading in the roll-off (6" from the |
| | | sediment) is 17.1 PPM. |
| 1030 | | Downstream turbidity level at 7 to 11 units during excavation. |
| 1100 | | Completed excavation in the westernmost excavation area. MH confirmed GPS excavation depths (-1.6', -1.25', -1.2'). |
| 1200 | | Backfilling westernmost excavation area. Turbidity at 17 to 20 units. |
| 1230 | | MH confirming backfill levels with GPS. A few areas need more sand (-.3' and -.4'). |
| 1245 | | Completed backfill of westernmost excavation area. MH confirmed levels. Shooting westernmost excavation area for As-Builts. |
| 1300 | | Same activities. |
| 1315 | | Relocating long reach excavator and excavation operations to the bridge excavation area. |
| 1400 | | Contractor removing an additional section of bridge rail to access excavation area. Torching and removing protruding pipe |
| | | angle irons on bridge over the excavation area. |
| 1500 | | Installing turbidity curtain around the bridge excavation area |
| 1530 | | Begin pre-excavation topography of bridge excavation area with long reach GPS. |
| 1600 | | Relocating roll-off around the bridge excavation. Installing secondary containment under and around the roll-off. |
| 1610 | | RIDEM representative (Margaret Bradley) arrives on site. |
| 1630 | | RIDEM representative leaves site after inspecting the bridge work area. |
| 1700 | | Contractor demobilizes from site. |
| | | |

SUMMARY OF DAILY ACTIVITIES

**Spills, Leaks, Discharges:** None

**Changes to Design:** None

**Survey activities:** None

DAILY AND POST RAINFALL EH&S CONTROLS INSPECTION: (VERIFY INTEGRITY OF CONTROLS. NOTIFY ENGINEER OF DEFICIENCIES. IMMEDIATELY).

**Signs of Erosion:** N/A

**Surface/Vegetative Cover Condition:** Sufficient

**Items for Repair:** N/A

DAILY STOCKPILE INSPECTION: (VERIFY INTEGRITY OF STOCKPILE LINER AND COVER SYSTEM. CORRECT DEFICIENCIES IMMEDIATELY)

N/A

ON-SITE PERSONNEL

| AECOM | BASF | Others | RC&D |
|---|---|---|---|

| 2 | 1 | 1 | 7 | |
|---|---|---|---|---|
| Traveling Record | | | | Reported By |
| Vehicle I.D. | Starting Odometer | Ending Odometer | Total Miles | |
| | | | | Mark Hayden |
| Report Signature | | | | Date |
| | | | | |

Long reach excavator bucket backfilling westernmost excavation area.

Installing turbidity curtain in bridge excavation area.

# DAILY ACTIVITY REPORT

AECOM

| DATE | JOB NO. | PROJECT |
|---|---|---|
| 01 / 23 / 12 | 60163799 | River Hot Spot Remediation |
| **CLIENT** | **LOCATION** | **CONTRACTOR** |
| BASF | Cranston, RI | RC&D |

**Document following activities in addition to items specified in this form: **decon activities prior to demobilization** ; **disruption/damages to utilities/structures** ; **structures that are permanently removed or removed and replaced** ; **any changes to design** ; **dewatering activities** ; **air/dust monitoring ****

WEATHER CONDITIONS

Cloudy, Low 40s.

ACCOUNTING OF WASTES STORED/STOCKPILED ON-SITE

Three roll-offs containing sediment. 3-55 gallon drums containing liquid from drained sediments (one reported in yesterday's Daily Report was empty).

MATERIALS BROUGHT ON SITE (NAME OF SUPPLIER, TYPE, VOLUME)

N/A

TIME SUMMARY

| Time From | Time To | Description of Activities |
|---|---|---|
| 0700 | | Contractor mobilizes to site. Conducted tailgate health and safety meeting. |
| 0715 | | Turbidity monitor arrives on site. |
| 0730 | | Clearing snow off of work areas with skid steer. |
| 0800 | | Same activities. |
| 0830 | | Removing anchors and disconnecting turbidity curtain around westernmost excavation area. |
| 0930 | | Removing turbidity curtain and with long reach excavator and boat. |
| 1000 | | Removing green turbidity curtain around bridge excavation area and replacing with the orange (8') turbidity curtain from the |
| | | westernmost excavation area. |
| 1100 | | Begin excavating around the bridge piling/support. |
| 1130 | | Completed nearly all bulk excavation near the bridge. Contractor getting the boat and post hole diggers to surgically remove |
| | | sediment from areas under the bridge inaccessible by the long reach excavator. Turbidity levels at 7 units. |
| 1200 | | Begin under bridge sediment removal with post hole diggers from the boat. |
| 1230 | | Same activities. Mixing in polymer into sediment in the roll-off. |
| 1300 | | Completed river excavation in the bridge excavation area. MH confirmed GPS depths at -.62' and -.55'. |
| 1315 | | Backfilling the bridge excavation area. MH confirmed GPS depths at +.55' and +.57'. |
| 1400 | | Sampling bridge roll-off sediment. |
| 1415 | | Relocating bridge roll-off to middle excavation roll-off to balance loads. |
| 1430 | | Removing bridge excavation turbidity curtain. |
| 1500 | | Removing secondary containments from under roll-offs. Placing secondary containment materials in the roll-offs. |
| 1530 | | Same activities. |
| 1600 | | Contractor demobilizes from site. |
| | | |
| | | |
| | | |
| | | |

SUMMARY OF DAILY ACTIVITIES

**Spills, Leaks, Discharges:** None

**Changes to Design:** None

**Survey activities:** None

DAILY AND POST RAINFALL EH&S CONTROLS INSPECTION: (VERIFY INTEGRITY OF CONTROLS. NOTIFY ENGINEER OF DEFICIENCIES. IMMEDIATELY).

**Signs of Erosion:** N/A

**Surface/Vegetative Cover Condition:** Sufficient

**Items for Repair:** N/A

DAILY STOCKPILE INSPECTION: (VERIFY INTEGRITY OF STOCKPILE LINER AND COVER SYSTEM. CORRECT DEFICIENCIES IMMEDIATELY)

N/A

ON-SITE PERSONNEL

| AECOM | BASF | Others | RC&D | |
|---|---|---|---|---|

| 2 | 2 | 0 | 5 | |
|---|---|---|---|---|
| Traveling Record | | | | Reported By |
| Vehicle I.D. | Starting Odometer | Ending Odometer | Total Miles | |
| | | | | Mark Hayden |
| Report Signature | | | | Date |
| | | | | |

Long reach excavator in bridge excavation area.

Hand excavating under the bridge.

# Appendix E - Photographs

1. Contractor Boat

2. Preparation of Roll-off Container

3. Prepped Roll-off Container

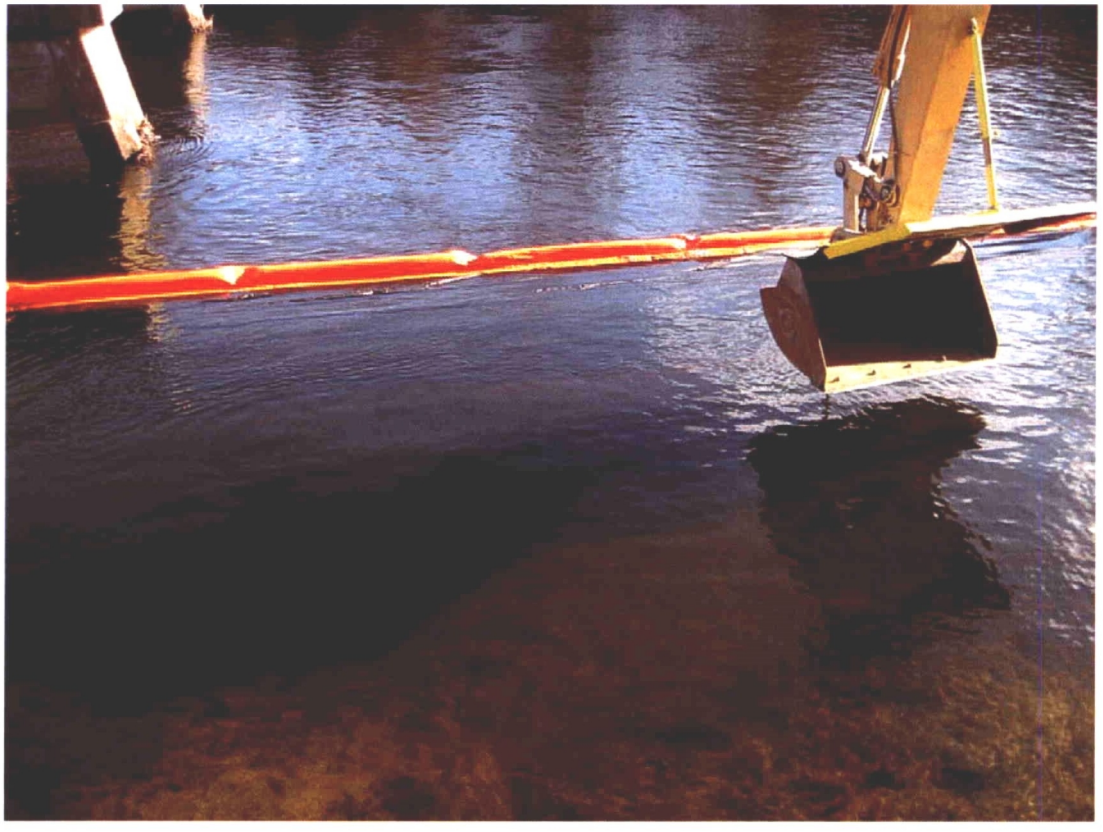
4. Prepped Roll-off Container

5. Resecuring Safety Fence

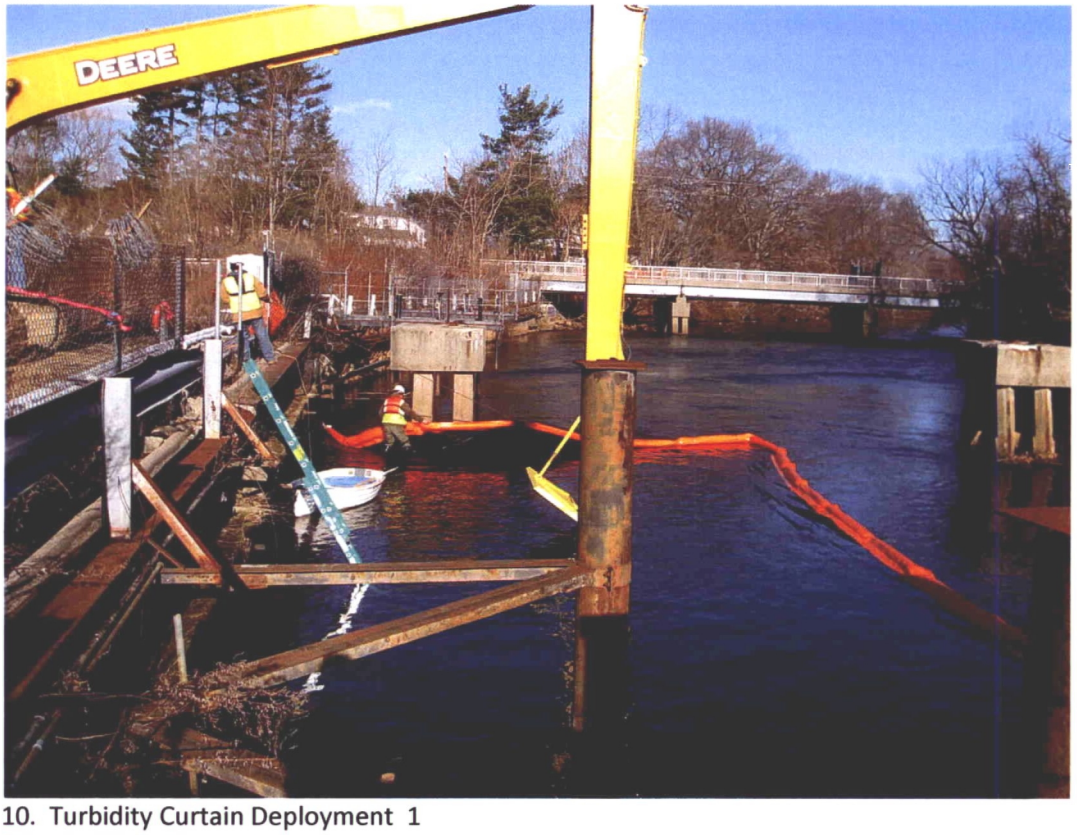
6. Rolled Back Fence for Access

7. Secured Waterfront Area 1

8. Secured Waterfront Area 2



9. Turbidity Curtain Anchor




10.

10. Turbidity Curtain Deployment 1

11. Turbidity Curtain Deploy 2

12. Turbidity Curtain Deployment 3

13. Turbidity Curtain Deployment 4

14. Turbidity Curtain Deployment 5

# Appendix F - Analytical Laboratory Reports

*CERTIFICATE OF ANALYSIS*

Joanne Lynch
AECOM Environment - ENSR
250 Apollo Drive
Chelmsford, MA 01824

**RE: BASF - Cranston RI (60163799.1)**
**ESS Laboratory Work Order Number: 1201216**

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

**REVIEWED**
**By ESS Laboratory at 1:26 pm, Jan 27, 2012**

**Analytical Summary**
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

ESS Laboratory certifies that the test results meet the requirements of NELAC and A2LA, except where noted within this project narrative.

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

## SAMPLE RECEIPT

The following samples were received on January 20, 2012 for the analyses specified on the enclosed Chain of Custody Record.

| Lab Number | SampleName | Matrix | Analysis |
|---|---|---|---|
| 1201216-01 | Water Disposal | Surface Water | 1311/6010B, 1311/7470A, 6010B, 7060A, 7470A, 8081A, 8082, 8100M, 8151, 8260B, 8270C, 9040 |
| 1201216-02 | Trip Blank | Aqueous | 8260B |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

## PROJECT NARRATIVE

**8081A Organochlorine Pesticides**

1201216-01 **Percent difference between primary and confirmation results exceeds 40% (P).**
4,4'-DDE [2C] , Endosulfan II [2C] , Endosulfan Sulfate , Methoxychlor

CVA0163-CCV1 **Initial Calibration Verification recovery is outside of control limit (ICV).**
Endosulfan II , Endosulfan II [2C]

CVA0163-CCV3 **Initial Calibration Verification recovery is outside of control limit (ICV).**
Endosulfan II , Endosulfan II [2C]

**8151A Chlorinated Herbicides**

1201216-01 **Percent difference between primary and confirmation results exceeds 40% (P).**
MCPA [2C] , MCPP

CA22511-BSD1 **Relative percent difference for duplicate is outside of criteria (D+).**
2,4,5-T (39%)

**8260B Volatile Organic Compounds**

CVA0150-CCV1 **Continuing Calibration recovery is above upper control limit (C+).**
1,4-Dioxane - Screen (132% @ 70-130%)

**8270C Semi-Volatile Organic Compounds**

1201216-01 **Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).**
2-Fluorobiphenyl (28% @ 30-130%), 2-Fluorophenol (% @ 15-110%), p-Terphenyl-d14 (18% @ 30-130%)

CA22510-BS1 **Blank Spike recovery is below lower control limit (B-).**
Pyridine (33% @ 40-140%)

CA22510-BSD1 **Blank Spike recovery is below lower control limit (B-).**
Pyridine (31% @ 40-140%)

CA22510-BSD1 **Relative percent difference for duplicate is outside of criteria (D+).**
3+4-Methylphenol (21%)

CVA0174-CCV1 **Initial Calibration Verification recovery is outside of control limit (ICV).**
Pyridine

**No other observations noted.**

**End of Project Narrative.**

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

## DATA USABILITY LINKS

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Water Disposal
Date Sampled: 01/20/12 14:45
Percent Solids: N/A

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-01
Sample Matrix: Surface Water
Units: mg/L

TCLP Extraction Date: 1/24/12 16:20

## 1311/6000/7000 TCLP Metals

| Analyte | Results (MRL) | Method | TCLP Limit | DF | Analyst | Analyzed | I/V | F/V | Batch |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND (0.050) | 1311/6010B | | 1 | SVD | 01/25/12 23:43 | 50 | 50 | CA22513 |
| **Barium** | **0.279** (0.050) | 1311/6010B | | 1 | SVD | 01/25/12 23:43 | 50 | 50 | CA22513 |
| **Cadmium** | **0.0170** (0.0050) | 1311/6010B | | 1 | SVD | 01/25/12 23:43 | 50 | 50 | CA22513 |
| **Chromium** | **0.608** (0.020) | 1311/6010B | | 1 | SVD | 01/25/12 23:43 | 50 | 50 | CA22513 |
| **Lead** | **0.368** (0.020) | 1311/6010B | | 1 | SVD | 01/25/12 23:43 | 50 | 50 | CA22513 |
| Mercury | ND (0.00200) | 1311/7470A | | 1 | KJK | 01/26/12 13:02 | 5 | 40 | CA22521 |
| Selenium | ND (0.050) | 1311/6010B | | 1 | SVD | 01/25/12 23:43 | 50 | 50 | CA22513 |
| Silver | ND (0.010) | 1311/6010B | | 1 | SVD | 01/25/12 23:43 | 50 | 50 | CA22513 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Water Disposal
Date Sampled: 01/20/12 14:45
Percent Solids: N/A

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-01
Sample Matrix: Surface Water
Units: mg/L

## 3005A/3020A/6000/7000 Total Metals

| Analyte | Results (MRL) | Method | Limit | DF | Analyst | Analyzed | I/V | F/V | Batch |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **0.0193** (0.0050) | 7060A | | 1 | JP | 01/25/12 18:24 | 50 | 50 | CA22401 |
| **Barium** | **0.337** (0.050) | 6010B | | 1 | JP | 01/24/12 18:50 | 50 | 50 | CA22401 |
| **Cadmium** | **0.0227** (0.0050) | 6010B | | 1 | JP | 01/24/12 18:50 | 50 | 50 | CA22401 |
| **Chromium** | **0.765** (0.020) | 6010B | | 1 | JP | 01/24/12 18:50 | 50 | 50 | CA22401 |
| **Lead** | **0.453** (0.020) | 6010B | | 1 | JP | 01/24/12 18:50 | 50 | 50 | CA22401 |
| **Mercury** | **0.00107** (0.00050) | 7470A | | 1 | KJK | 01/24/12 20:56 | 20 | 40 | CA22402 |
| Selenium | ND (0.050) | 6010B | | 1 | JP | 01/24/12 18:50 | 50 | 50 | CA22401 |
| Silver | ND (0.010) | 6010B | | 1 | JP | 01/24/12 18:50 | 50 | 50 | CA22401 |

# ESS Laboratory

*Division of Thielsch Engineering, Inc.*

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Water Disposal
Date Sampled: 01/20/12 14:45
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 5
Extraction Method: 3510C

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-01
Sample Matrix: Surface Water
Units: mg/L
Analyst: ML
Prepared: 1/25/12 10:45

## 8081A Organochlorine Pesticides

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| 4,4'-DDD | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| **4,4'-DDE [2C]** | **P 0.000167** (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| 4,4'-DDT | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| Aldrin | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| alpha-BHC | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| alpha-Chlordane | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| beta-BHC | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| Chlordane (Total) | ND (0.000500) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| delta-BHC | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| Dieldrin | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| Endosulfan I | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| **Endosulfan II [2C]** | **P 0.000677** (0.000250) | | 5 | 01/26/12 10:39 | CVA0163 | CA22507 |
| **Endosulfan Sulfate** | **P 0.000135** (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| Endrin | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| Endrin Aldehyde | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| Endrin Ketone | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| gamma-BHC (Lindane) | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| gamma-Chlordane | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| Heptachlor | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| Heptachlor Epoxide | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| Hexachlorobenzene | ND (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| **Methoxychlor** | **P 0.000223** (0.000050) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |
| Toxaphene | ND (0.00130) | | 1 | 01/26/12 5:31 | CVA0163 | CA22507 |

| | *%Recovery* | *Qualifier* | *Limits* |
|---|---|---|---|
| *Surrogate: Decachlorobiphenyl* | *56 %* | | *30-150* |
| *Surrogate: Decachlorobiphenyl [2C]* | *48 %* | | *30-150* |
| *Surrogate: Tetrachloro-m-xylene* | *81 %* | | *30-150* |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *100 %* | | *30-150* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Water Disposal
Date Sampled: 01/20/12 14:45
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 5
Extraction Method: 3510C

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-01
Sample Matrix: Surface Water
Units: mg/L
Analyst: SEP
Prepared: 1/25/12 10:45

## 8082 Polychlorinated Biphenyls (PCB)

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Aroclor 1016 | ND (0.00050) | | 1 | 01/26/12 12:46 | | CA22507 |
| Aroclor 1221 | ND (0.00050) | | 1 | 01/26/12 12:46 | | CA22507 |
| Aroclor 1232 | ND (0.00050) | | 1 | 01/26/12 12:46 | | CA22507 |
| Aroclor 1242 | ND (0.00050) | | 1 | 01/26/12 12:46 | | CA22507 |
| **Aroclor 1248** | **0.0502** (0.00500) | | 10 | 01/26/12 17:09 | | CA22507 |
| Aroclor 1254 | ND (0.00050) | | 1 | 01/26/12 12:46 | | CA22507 |
| **Aroclor 1260** | **0.00271** (0.00050) | | 1 | 01/26/12 12:46 | | CA22507 |
| Aroclor 1262 | ND (0.00050) | | 1 | 01/26/12 12:46 | | CA22507 |
| Aroclor 1268 | ND (0.00050) | | 1 | 01/26/12 12:46 | | CA22507 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: Decachlorobiphenyl* | *41 %* | | *30-150* |
| *Surrogate: Decachlorobiphenyl [2C]* | *41 %* | | *30-150* |
| *Surrogate: Tetrachloro-m-xylene* | *37 %* | | *30-150* |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *61 %* | | *30-150* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Water Disposal
Date Sampled: 01/20/12 14:45
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-01
Sample Matrix: Surface Water
Units: mg/L
Analyst: ML
Prepared: 1/25/12 9:45

## 8100M Total Petroleum Hydrocarbons

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| **Total Petroleum Hydrocarbons** | **38.9** (0.20) | | 1 | 01/25/12 15:21 | CVA0169 | CA22506 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: O-Terphenyl* | *74 %* | | *40-140* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Water Disposal
Date Sampled: 01/20/12 14:45
Percent Solids: N/A
Initial Volume: 35
Final Volume: 4
Extraction Method: 8151A

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-01
Sample Matrix: Surface Water
Units: mg/L
Analyst: ML
Prepared: 1/24/12 9:30

## 8151A Chlorinated Herbicides

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| 2,4,5-T | ND (0.0001) | | 1 | 01/26/12 11:35 | CVA0176 | CA22511 |
| 2,4,5-TP (Silvex) | ND (0.0001) | | 1 | 01/26/12 11:35 | CVA0176 | CA22511 |
| 2,4-D | ND (0.001) | | 1 | 01/26/12 11:35 | CVA0176 | CA22511 |
| 2,4-DB | ND (0.001) | | 1 | 01/26/12 11:35 | CVA0176 | CA22511 |
| Dalapon | ND (0.003) | | 1 | 01/26/12 11:35 | CVA0176 | CA22511 |
| Dicamba | ND (0.001) | | 1 | 01/26/12 11:35 | CVA0176 | CA22511 |
| Dichlorprop | ND (0.001) | | 1 | 01/26/12 11:35 | CVA0176 | CA22511 |
| Dinoseb | ND (0.0007) | | 1 | 01/26/12 11:35 | CVA0176 | CA22511 |
| **MCPA [2C]** | **P 0.192** (0.117) | | 1 | 01/26/12 11:35 | CVA0176 | CA22511 |
| **MCPP** | **P 1.21** (0.118) | | 1 | 01/26/12 11:35 | CVA0176 | CA22511 |

| | *%Recovery* | *Qualifier* | *Limits* |
|---|---|---|---|
| *Surrogate: DCAA* | *89 %* | | *30-150* |
| *Surrogate: DCAA [2C]* | *71 %* | | *30-150* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Water Disposal
Date Sampled: 01/20/12 14:45
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-01
Sample Matrix: Surface Water
Units: mg/L
Analyst: MD

## 8260B Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,1,1-Trichloroethane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,1,2,2-Tetrachloroethane | ND (0.0500) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,1,2-Trichloroethane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,1-Dichloroethane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,1-Dichloroethene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,1-Dichloropropene | ND (0.200) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,2,3-Trichlorobenzene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,2,3-Trichloropropane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,2,4-Trichlorobenzene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,2,4-Trimethylbenzene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,2-Dibromo-3-Chloropropane | ND (0.500) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,2-Dibromoethane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,2-Dichlorobenzene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,2-Dichloroethane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,2-Dichloropropane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,3,5-Trimethylbenzene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,3-Dichlorobenzene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,3-Dichloropropane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,4-Dichlorobenzene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1,4-Dioxane - Screen | ND (50.0) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 1-Chlorohexane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 2,2-Dichloropropane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 2-Butanone | ND (1.00) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 2-Chlorotoluene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 2-Hexanone | ND (1.00) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 4-Chlorotoluene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 4-Isopropyltoluene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| 4-Methyl-2-Pentanone | ND (2.50) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Acetone | ND (1.00) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| **Benzene** | **1.24** (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Water Disposal
Date Sampled: 01/20/12 14:45
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-01
Sample Matrix: Surface Water
Units: mg/L
Analyst: MD

## 8260B Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Bromobenzene | ND (0.200) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Bromochloromethane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Bromodichloromethane | ND (0.0600) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Bromoform | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Bromomethane | ND (0.200) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Carbon Disulfide | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Carbon Tetrachloride | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| **Chlorobenzene** | **12.9** (1.00) | | 1000 | 01/24/12 15:21 | CVA0150 | CA22407 |
| Chloroethane | ND (0.200) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Chloroform | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Chloromethane | ND (0.200) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| cis-1,2-Dichloroethene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| cis-1,3-Dichloropropene | ND (0.0400) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Dibromochloromethane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Dibromomethane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Dichlorodifluoromethane | ND (0.200) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Diethyl Ether | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Di-isopropyl ether | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Ethyl tertiary-butyl ether | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Ethylbenzene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Hexachlorobutadiene | ND (0.0600) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Hexachloroethane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Isopropylbenzene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Methyl tert-Butyl Ether | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Methylene Chloride | ND (0.200) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Naphthalene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| n-Butylbenzene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| n-Propylbenzene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| sec-Butylbenzene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Styrene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| tert-Butylbenzene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Water Disposal
Date Sampled: 01/20/12 14:45
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-01
Sample Matrix: Surface Water
Units: mg/L
Analyst: MD

## 8260B Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Tertiary-amyl methyl ether | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Tetrachloroethene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Tetrahydrofuran | ND (0.500) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| **Toluene** | **0.593** (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| trans-1,2-Dichloroethene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| trans-1,3-Dichloropropene | ND (0.0400) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Trichloroethene | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Trichlorofluoromethane | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Vinyl Acetate | ND (0.500) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Vinyl Chloride | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Xylene O | ND (0.100) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Xylene P,M | ND (0.200) | | 100 | 01/24/12 13:11 | CVA0150 | CA22407 |
| Xylenes (Total) | ND (0.300) | | 100 | 01/24/12 13:11 | | [CALC] |
| Trihalomethanes (Total) | ND (0.360) | | | 01/24/12 13:11 | | [CALC] |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | *97 %* | | *70-130* |
| *Surrogate: 4-Bromofluorobenzene* | *101 %* | | *70-130* |
| *Surrogate: Dibromofluoromethane* | *97 %* | | *70-130* |
| *Surrogate: Toluene-d8* | *108 %* | | *70-130* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Water Disposal
Date Sampled: 01/20/12 14:45
Percent Solids: N/A
Initial Volume: 980
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-01
Sample Matrix: Surface Water
Units: mg/L
Analyst: CMT
Prepared: 1/25/12 11:30

## 8270C Semi-Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| 1,1-Biphenyl | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 1,2,4-Trichlorobenzene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 1,2-Dichlorobenzene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 1,3-Dichlorobenzene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 1,4-Dichlorobenzene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 2,3,4,6-Tetrachlorophenol | ND (0.0510) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 2,4,5-Trichlorophenol | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 2,4,6-Trichlorophenol | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 2,4-Dichlorophenol | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 2,4-Dimethylphenol | ND (0.0510) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 2,4-Dinitrophenol | ND (0.0510) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 2,4-Dinitrotoluene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 2,6-Dinitrotoluene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 2-Chloronaphthalene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 2-Chlorophenol | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 2-Methylnaphthalene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 2-Methylphenol | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 2-Nitroaniline | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| **2-Nitrophenol** | **0.0184** (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 3,3'-Dichlorobenzidine | ND (0.0204) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 3+4-Methylphenol | ND (0.0204) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 3-Nitroaniline | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 4,6-Dinitro-2-Methylphenol | ND (0.0510) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 4-Bromophenyl-phenylether | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 4-Chloro-3-Methylphenol | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| **4-Chloroaniline** | **0.0653** (0.0204) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 4-Chloro-phenyl-phenyl ether | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 4-Nitroaniline | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| 4-Nitrophenol | ND (0.0510) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Acenaphthene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Acenaphthylene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Water Disposal
Date Sampled: 01/20/12 14:45
Percent Solids: N/A
Initial Volume: 980
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-01
Sample Matrix: Surface Water
Units: mg/L
Analyst: CMT
Prepared: 1/25/12 11:30

## 8270C Semi-Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Acetophenone | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Aniline | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Anthracene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Azobenzene | ND (0.0204) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Benzo(a)anthracene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Benzo(a)pyrene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Benzo(b)fluoranthene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Benzo(g,h,i)perylene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Benzo(k)fluoranthene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Benzoic Acid | ND (0.102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Benzyl Alcohol | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| bis(2-Chloroethoxy)methane | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| bis(2-Chloroethyl)ether | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| bis(2-chloroisopropyl)Ether | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| **bis(2-Ethylhexyl)phthalate** | **0.0181** (0.0061) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Butylbenzylphthalate | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Carbazole | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Chrysene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Dibenzo(a,h)Anthracene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Dibenzofuran | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Diethylphthalate | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Dimethylphthalate | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Di-n-butylphthalate | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Di-n-octylphthalate | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Fluoranthene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Fluorene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Hexachlorobenzene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Hexachlorobutadiene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Hexachlorocyclopentadiene | ND (0.0255) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Hexachloroethane | ND (0.0051) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Indeno(1,2,3-cd)Pyrene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Water Disposal
Date Sampled: 01/20/12 14:45
Percent Solids: N/A
Initial Volume: 980
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-01
Sample Matrix: Surface Water
Units: mg/L
Analyst: CMT
Prepared: 1/25/12 11:30

## 8270C Semi-Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Isophorone | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| **Naphthalene** | **0.0153** (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Nitrobenzene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| N-Nitrosodimethylamine | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| **N-Nitroso-Di-n-Propylamine** | **0.0261** (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| N-nitrosodiphenylamine | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Pentachlorophenol | ND (0.0510) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Phenanthrene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| **Phenol** | **0.0192** (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Pyrene | ND (0.0102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |
| Pyridine | ND (0.102) | | 1 | 01/26/12 13:20 | CVA0174 | CA22510 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: 1,2-Dichlorobenzene-d4* | *57 %* | | *30-130* |
| *Surrogate: 2,4,6-Tribromophenol* | *49 %* | | *15-110* |
| *Surrogate: 2-Chlorophenol-d4* | *56 %* | | *15-110* |
| *Surrogate: 2-Fluorobiphenyl* | *28 %* | *SM* | *30-130* |
| *Surrogate: 2-Fluorophenol* | *%* | *SM* | *15-110* |
| *Surrogate: Nitrobenzene-d5* | *56 %* | | *30-130* |
| *Surrogate: Phenol-d6* | *56 %* | | *15-110* |
| *Surrogate: p-Terphenyl-d14* | *18 %* | *SM* | *30-130* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Water Disposal
Date Sampled: 01/20/12 14:45
Percent Solids: N/A

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-01
Sample Matrix: Surface Water

## Classical Chemistry

| Analyte | Results (MRL) | Method | Limit | DF | Analyst | Analyzed | Units | Batch |
|---|---|---|---|---|---|---|---|---|
| **pH** | **6.79** (N/A) | 9040 | | 1 | DPS | 01/20/12 18:56 | S.U. | CA22007 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Trip Blank
Date Sampled: 01/20/12 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-02
Sample Matrix: Aqueous
Units: mg/L
Analyst: MD

## 8260B Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,1,1-Trichloroethane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,1,2,2-Tetrachloroethane | ND (0.0005) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,1,2-Trichloroethane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,1-Dichloroethane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,1-Dichloroethene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,1-Dichloropropene | ND (0.0020) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,2,3-Trichlorobenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,2,3-Trichloropropane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,2,4-Trichlorobenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,2,4-Trimethylbenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,2-Dibromo-3-Chloropropane | ND (0.0050) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,2-Dibromoethane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,2-Dichlorobenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,2-Dichloroethane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,2-Dichloropropane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,3,5-Trimethylbenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,3-Dichlorobenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,3-Dichloropropane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,4-Dichlorobenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1,4-Dioxane - Screen | ND (0.500) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 1-Chlorohexane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 2,2-Dichloropropane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 2-Butanone | ND (0.0100) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 2-Chlorotoluene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 2-Hexanone | ND (0.0100) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 4-Chlorotoluene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 4-Isopropyltoluene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| 4-Methyl-2-Pentanone | ND (0.0250) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Acetone | ND (0.0100) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Benzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Trip Blank
Date Sampled: 01/20/12 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-02
Sample Matrix: Aqueous
Units: mg/L
Analyst: MD

## 8260B Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Bromobenzene | ND (0.0020) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Bromochloromethane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Bromodichloromethane | ND (0.0006) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Bromoform | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Bromomethane | ND (0.0020) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Carbon Disulfide | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Carbon Tetrachloride | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Chlorobenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Chloroethane | ND (0.0020) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Chloroform | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Chloromethane | ND (0.0020) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| cis-1,2-Dichloroethene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| cis-1,3-Dichloropropene | ND (0.0004) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Dibromochloromethane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Dibromomethane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Dichlorodifluoromethane | ND (0.0020) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Diethyl Ether | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Di-isopropyl ether | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Ethyl tertiary-butyl ether | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Ethylbenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Hexachlorobutadiene | ND (0.0006) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Hexachloroethane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Isopropylbenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Methyl tert-Butyl Ether | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Methylene Chloride | ND (0.0020) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Naphthalene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| n-Butylbenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| n-Propylbenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| sec-Butylbenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Styrene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| tert-Butylbenzene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Trip Blank
Date Sampled: 01/20/12 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1201216
ESS Laboratory Sample ID: 1201216-02
Sample Matrix: Aqueous
Units: mg/L
Analyst: MD

## 8260B Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Tertiary-amyl methyl ether | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Tetrachloroethene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Tetrahydrofuran | ND (0.0050) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Toluene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| trans-1,2-Dichloroethene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| trans-1,3-Dichloropropene | ND (0.0004) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Trichloroethene | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Trichlorofluoromethane | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Vinyl Acetate | ND (0.0050) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Vinyl Chloride | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Xylene O | ND (0.0010) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |
| Xylene P,M | ND (0.0020) | | 1 | 01/23/12 13:48 | CVA0143 | CA22308 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | *94 %* | | *70-130* |
| *Surrogate: 4-Bromofluorobenzene* | *100 %* | | *70-130* |
| *Surrogate: Dibromofluoromethane* | *95 %* | | *70-130* |
| *Surrogate: Toluene-d8* | *110 %* | | *70-130* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **1311/6000/7000 TCLP Metals** | | | | | | | | | | |
| **Batch CA22513 - 3005A** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Arsenic | ND | 0.025 | mg/L | | | | | | | |
| Barium | ND | 0.025 | mg/L | | | | | | | |
| Cadmium | ND | 0.0025 | mg/L | | | | | | | |
| Chromium | ND | 0.010 | mg/L | | | | | | | |
| Lead | ND | 0.010 | mg/L | | | | | | | |
| Selenium | ND | 0.025 | mg/L | | | | | | | |
| Silver | ND | 0.005 | mg/L | | | | | | | |
| **LCS** | | | | | | | | | | |
| Arsenic | 0.517 | 0.025 | mg/L | 0.5000 | | 103 | 80-120 | | | |
| Barium | 0.495 | 0.025 | mg/L | 0.5000 | | 99 | 80-120 | | | |
| Cadmium | 0.246 | 0.0025 | mg/L | 0.2500 | | 98 | 80-120 | | | |
| Chromium | 0.492 | 0.010 | mg/L | 0.5000 | | 98 | 80-120 | | | |
| Lead | 0.513 | 0.010 | mg/L | 0.5000 | | 103 | 80-120 | | | |
| Selenium | 0.997 | 0.025 | mg/L | 1.000 | | 100 | 80-120 | | | |
| Silver | 0.241 | 0.005 | mg/L | 0.2500 | | 96 | 80-120 | | | |
| **LCS Dup** | | | | | | | | | | |
| Arsenic | 0.520 | 0.025 | mg/L | 0.5000 | | 104 | 80-120 | 0.5 | 20 | |
| Barium | 0.491 | 0.025 | mg/L | 0.5000 | | 98 | 80-120 | 0.9 | 20 | |
| Cadmium | 0.245 | 0.0025 | mg/L | 0.2500 | | 98 | 80-120 | 0.2 | 20 | |
| Chromium | 0.488 | 0.010 | mg/L | 0.5000 | | 98 | 80-120 | 0.8 | 20 | |
| Lead | 0.511 | 0.010 | mg/L | 0.5000 | | 102 | 80-120 | 0.3 | 20 | |
| Selenium | 1.01 | 0.025 | mg/L | 1.000 | | 101 | 80-120 | 1 | 20 | |
| Silver | 0.239 | 0.005 | mg/L | 0.2500 | | 96 | 80-120 | 0.7 | 20 | |
| **Batch CA22521 - 245.1/7470A** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Mercury | ND | 0.00050 | mg/L | | | | | | | |
| **LCS** | | | | | | | | | | |
| Mercury | 0.00593 | 0.00050 | mg/L | 0.006000 | | 99 | 80-120 | | | |
| **LCS Dup** | | | | | | | | | | |
| Mercury | 0.00606 | 0.00050 | mg/L | 0.006000 | | 101 | 80-120 | 2 | 20 | |
| **Duplicate** **Source: 1201216-01** | | | | | | | | | | |
| Mercury | ND | 0.00200 | mg/L | | ND | | | | 20 | |
| **Matrix Spike** **Source: 1201216-01** | | | | | | | | | | |
| Mercury | 0.0243 | 0.00200 | mg/L | 0.02400 | ND | 101 | 75-125 | | | |
| **3005A/3020A/6000/7000 Total Metals** | | | | | | | | | | |
| **Batch CA22401 - 3005A** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Arsenic | ND | 0.0050 | mg/L | | | | | | | |
| Barium | ND | 0.050 | mg/L | | | | | | | |
| Cadmium | ND | 0.0050 | mg/L | | | | | | | |
| Chromium | ND | 0.020 | mg/L | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **3005A/3020A/6000/7000 Total Metals** | | | | | | | | | | |
| **Batch CA22401 - 3005A** | | | | | | | | | | |
| Lead | ND | 0.020 | mg/L | | | | | | | |
| Selenium | ND | 0.050 | mg/L | | | | | | | |
| Silver | ND | 0.010 | mg/L | | | | | | | |
| **LCS** | | | | | | | | | | |
| Arsenic | 0.537 | 0.100 | mg/L | 0.5000 | | 107 | 80-120 | | | |
| Barium | 0.497 | 0.050 | mg/L | 0.5000 | | 99 | 80-120 | | | |
| Cadmium | 0.239 | 0.0050 | mg/L | 0.2500 | | 96 | 80-120 | | | |
| Chromium | 0.490 | 0.020 | mg/L | 0.5000 | | 98 | 80-120 | | | |
| Lead | 0.498 | 0.020 | mg/L | 0.5000 | | 100 | 80-120 | | | |
| Selenium | 1.00 | 0.050 | mg/L | 1.000 | | 100 | 80-120 | | | |
| Silver | 0.245 | 0.010 | mg/L | 0.2500 | | 98 | 80-120 | | | |
| **LCS Dup** | | | | | | | | | | |
| Arsenic | 0.537 | 0.100 | mg/L | 0.5000 | | 107 | 80-120 | 0.2 | 20 | |
| Barium | 0.491 | 0.050 | mg/L | 0.5000 | | 98 | 80-120 | 1 | 20 | |
| Cadmium | 0.237 | 0.0050 | mg/L | 0.2500 | | 95 | 80-120 | 0.7 | 20 | |
| Chromium | 0.483 | 0.020 | mg/L | 0.5000 | | 97 | 80-120 | 1 | 20 | |
| Lead | 0.492 | 0.020 | mg/L | 0.5000 | | 98 | 80-120 | 1 | 20 | |
| Selenium | 1.01 | 0.050 | mg/L | 1.000 | | 101 | 80-120 | 0.7 | 20 | |
| Silver | 0.241 | 0.010 | mg/L | 0.2500 | | 97 | 80-120 | 2 | 20 | |
| **Batch CA22402 - 245.1/7470A** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Mercury | ND | 0.00050 | mg/L | | | | | | | |
| **LCS** | | | | | | | | | | |
| Mercury | 0.00640 | 0.00050 | mg/L | 0.006000 | | 107 | 80-120 | | | |
| **LCS Dup** | | | | | | | | | | |
| Mercury | 0.00650 | 0.00050 | mg/L | 0.006000 | | 108 | 80-120 | 1 | 20 | |
| **8081A Organochlorine Pesticides** | | | | | | | | | | |
| **Batch CA22507 - 3510C** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| 4,4'-DDD | ND | 0.000050 | mg/L | | | | | | | |
| 4,4'-DDD [2C] | ND | 0.000050 | mg/L | | | | | | | |
| 4,4'-DDE | ND | 0.000050 | mg/L | | | | | | | |
| 4,4'-DDE [2C] | ND | 0.000050 | mg/L | | | | | | | |
| 4,4'-DDT | ND | 0.000050 | mg/L | | | | | | | |
| 4,4'-DDT [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Aldrin | ND | 0.000050 | mg/L | | | | | | | |
| Aldrin [2C] | ND | 0.000050 | mg/L | | | | | | | |
| alpha-BHC | ND | 0.000050 | mg/L | | | | | | | |
| alpha-BHC [2C] | ND | 0.000050 | mg/L | | | | | | | |
| alpha-Chlordane | ND | 0.000050 | mg/L | | | | | | | |
| alpha-Chlordane [2C] | ND | 0.000050 | mg/L | | | | | | | |
| beta-BHC | ND | 0.000050 | mg/L | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 8081A Organochlorine Pesticides | | | | | | | |
| **Batch CA22507 - 3510C** | | | | | | | | | | |
| beta-BHC [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Chlordane (Total) | ND | 0.000500 | mg/L | | | | | | | |
| Chlordane (Total) [2C] | ND | 0.000500 | mg/L | | | | | | | |
| delta-BHC | ND | 0.000050 | mg/L | | | | | | | |
| delta-BHC [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Dieldrin | ND | 0.000050 | mg/L | | | | | | | |
| Dieldrin [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Endosulfan I | ND | 0.000050 | mg/L | | | | | | | |
| Endosulfan I [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Endosulfan II | ND | 0.000050 | mg/L | | | | | | | |
| Endosulfan II [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Endosulfan Sulfate | ND | 0.000050 | mg/L | | | | | | | |
| Endosulfan Sulfate [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Endrin | ND | 0.000050 | mg/L | | | | | | | |
| Endrin [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Endrin Aldehyde | ND | 0.000050 | mg/L | | | | | | | |
| Endrin Aldehyde [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Endrin Ketone | ND | 0.000050 | mg/L | | | | | | | |
| Endrin Ketone [2C] | ND | 0.000050 | mg/L | | | | | | | |
| gamma-BHC (Lindane) | ND | 0.000050 | mg/L | | | | | | | |
| gamma-BHC (Lindane) [2C] | ND | 0.000050 | mg/L | | | | | | | |
| gamma-Chlordane | ND | 0.000050 | mg/L | | | | | | | |
| gamma-Chlordane [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Heptachlor | ND | 0.000050 | mg/L | | | | | | | |
| Heptachlor [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Heptachlor Epoxide | ND | 0.000050 | mg/L | | | | | | | |
| Heptachlor Epoxide [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Hexachlorobenzene | ND | 0.000050 | mg/L | | | | | | | |
| Hexachlorobenzene [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Methoxychlor | ND | 0.000050 | mg/L | | | | | | | |
| Methoxychlor [2C] | ND | 0.000050 | mg/L | | | | | | | |
| Toxaphene | ND | 0.00130 | mg/L | | | | | | | |
| Toxaphene [2C] | ND | 0.00130 | mg/L | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | *0.000207* | | mg/L | *0.0002500* | | *83* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.000202* | | mg/L | *0.0002500* | | *81* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.000208* | | mg/L | *0.0002500* | | *83* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.000216* | | mg/L | *0.0002500* | | *86* | *30-150* | | | |
| **LCS** | | | | | | | | | | |
| 4,4'-DDD | 0.000261 | 0.000050 | mg/L | 0.0002500 | | 104 | 40-140 | | | |
| 4,4'-DDD [2C] | 0.000256 | 0.000050 | mg/L | 0.0002500 | | 102 | 40-140 | | | |
| 4,4'-DDE | 0.000251 | 0.000050 | mg/L | 0.0002500 | | 100 | 40-140 | | | |
| 4,4'-DDE [2C] | 0.000257 | 0.000050 | mg/L | 0.0002500 | | 103 | 40-140 | | | |
| 4,4'-DDT | 0.000277 | 0.000050 | mg/L | 0.0002500 | | 111 | 40-140 | | | |
| 4,4'-DDT [2C] | 0.000275 | 0.000050 | mg/L | 0.0002500 | | 110 | 40-140 | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8081A Organochlorine Pesticides** | | | | | | | | | | |
| **Batch CA22507 - 3510C** | | | | | | | | | | |
| Aldrin | 0.000241 | 0.000050 | mg/L | 0.0002500 | | 96 | 40-140 | | | |
| Aldrin [2C] | 0.000241 | 0.000050 | mg/L | 0.0002500 | | 96 | 40-140 | | | |
| alpha-BHC | 0.000256 | 0.000050 | mg/L | 0.0002500 | | 102 | 40-140 | | | |
| alpha-BHC [2C] | 0.000263 | 0.000050 | mg/L | 0.0002500 | | 105 | 40-140 | | | |
| alpha-Chlordane | 0.000245 | 0.000050 | mg/L | 0.0002500 | | 98 | 40-140 | | | |
| alpha-Chlordane [2C] | 0.000247 | 0.000050 | mg/L | 0.0002500 | | 99 | 40-140 | | | |
| beta-BHC | 0.000248 | 0.000050 | mg/L | 0.0002500 | | 99 | 40-140 | | | |
| beta-BHC [2C] | 0.000266 | 0.000050 | mg/L | 0.0002500 | | 106 | 40-140 | | | |
| delta-BHC | 0.000248 | 0.000050 | mg/L | 0.0002500 | | 99 | 40-140 | | | |
| delta-BHC [2C] | 0.000260 | 0.000050 | mg/L | 0.0002500 | | 104 | 40-140 | | | |
| Dieldrin | 0.000254 | 0.000050 | mg/L | 0.0002500 | | 102 | 40-140 | | | |
| Dieldrin [2C] | 0.000252 | 0.000050 | mg/L | 0.0002500 | | 101 | 40-140 | | | |
| Endosulfan I | 0.000255 | 0.000050 | mg/L | 0.0002500 | | 102 | 40-140 | | | |
| Endosulfan I [2C] | 0.000258 | 0.000050 | mg/L | 0.0002500 | | 103 | 40-140 | | | |
| Endosulfan II | 0.000329 | 0.000050 | mg/L | 0.0002500 | | 132 | 40-140 | | | |
| Endosulfan II [2C] | 0.000323 | 0.000050 | mg/L | 0.0002500 | | 129 | 40-140 | | | |
| Endosulfan Sulfate | 0.000246 | 0.000050 | mg/L | 0.0002500 | | 98 | 40-140 | | | |
| Endosulfan Sulfate [2C] | 0.000254 | 0.000050 | mg/L | 0.0002500 | | 102 | 40-140 | | | |
| Endrin | 0.000277 | 0.000050 | mg/L | 0.0002500 | | 111 | 40-140 | | | |
| Endrin [2C] | 0.000278 | 0.000050 | mg/L | 0.0002500 | | 111 | 40-140 | | | |
| Endrin Aldehyde | 0.000241 | 0.000050 | mg/L | 0.0002500 | | 96 | 40-140 | | | |
| Endrin Aldehyde [2C] | 0.000237 | 0.000050 | mg/L | 0.0002500 | | 95 | 40-140 | | | |
| Endrin Ketone | 0.000241 | 0.000050 | mg/L | 0.0002500 | | 96 | 40-140 | | | |
| Endrin Ketone [2C] | 0.000244 | 0.000050 | mg/L | 0.0002500 | | 98 | 40-140 | | | |
| gamma-BHC (Lindane) | 0.000255 | 0.000050 | mg/L | 0.0002500 | | 102 | 40-140 | | | |
| gamma-BHC (Lindane) [2C] | 0.000259 | 0.000050 | mg/L | 0.0002500 | | 104 | 40-140 | | | |
| gamma-Chlordane | 0.000246 | 0.000050 | mg/L | 0.0002500 | | 98 | 40-140 | | | |
| gamma-Chlordane [2C] | 0.000246 | 0.000050 | mg/L | 0.0002500 | | 98 | 40-140 | | | |
| Heptachlor | 0.000242 | 0.000050 | mg/L | 0.0002500 | | 97 | 40-140 | | | |
| Heptachlor [2C] | 0.000239 | 0.000050 | mg/L | 0.0002500 | | 95 | 40-140 | | | |
| Heptachlor Epoxide | 0.000247 | 0.000050 | mg/L | 0.0002500 | | 99 | 40-140 | | | |
| Heptachlor Epoxide [2C] | 0.000250 | 0.000050 | mg/L | 0.0002500 | | 100 | 40-140 | | | |
| Hexachlorobenzene | 0.000221 | 0.000050 | mg/L | 0.0002500 | | 88 | 40-140 | | | |
| Hexachlorobenzene [2C] | 0.000239 | 0.000050 | mg/L | 0.0002500 | | 96 | 40-140 | | | |
| Methoxychlor | 0.000264 | 0.000050 | mg/L | 0.0002500 | | 106 | 40-140 | | | |
| Methoxychlor [2C] | 0.000265 | 0.000050 | mg/L | 0.0002500 | | 106 | 40-140 | | | |
| *Surrogate: Decachlorobiphenyl* | *0.000245* | | mg/L | *0.0002500* | | *98* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.000240* | | mg/L | *0.0002500* | | *96* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.000240* | | mg/L | *0.0002500* | | *96* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.000252* | | mg/L | *0.0002500* | | *101* | *30-150* | | | |
| **LCS Dup** | | | | | | | | | | |
| 4,4'-DDD | 0.000271 | 0.000050 | mg/L | 0.0002500 | | 109 | 40-140 | 4 | 30 | |
| 4,4'-DDD [2C] | 0.000266 | 0.000050 | mg/L | 0.0002500 | | 106 | 40-140 | 4 | 30 | |
| 4,4'-DDE | 0.000266 | 0.000050 | mg/L | 0.0002500 | | 107 | 40-140 | 6 | 30 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8081A Organochlorine Pesticides** | | | | | | | | | | |
| **Batch CA22507 - 3510C** | | | | | | | | | | |
| 4,4'-DDE [2C] | 0.000267 | 0.000050 | mg/L | 0.0002500 | | 107 | 40-140 | 4 | 30 | |
| 4,4'-DDT | 0.000288 | 0.000050 | mg/L | 0.0002500 | | 115 | 40-140 | 4 | 30 | |
| 4,4'-DDT [2C] | 0.000288 | 0.000050 | mg/L | 0.0002500 | | 115 | 40-140 | 4 | 30 | |
| Aldrin | 0.000252 | 0.000050 | mg/L | 0.0002500 | | 101 | 40-140 | 5 | 30 | |
| Aldrin [2C] | 0.000253 | 0.000050 | mg/L | 0.0002500 | | 101 | 40-140 | 5 | 30 | |
| alpha-BHC | 0.000264 | 0.000050 | mg/L | 0.0002500 | | 106 | 40-140 | 3 | 30 | |
| alpha-BHC [2C] | 0.000270 | 0.000050 | mg/L | 0.0002500 | | 108 | 40-140 | 3 | 30 | |
| alpha-Chlordane | 0.000253 | 0.000050 | mg/L | 0.0002500 | | 101 | 40-140 | 3 | 30 | |
| alpha-Chlordane [2C] | 0.000254 | 0.000050 | mg/L | 0.0002500 | | 102 | 40-140 | 3 | 30 | |
| beta-BHC | 0.000257 | 0.000050 | mg/L | 0.0002500 | | 103 | 40-140 | 3 | 30 | |
| beta-BHC [2C] | 0.000277 | 0.000050 | mg/L | 0.0002500 | | 111 | 40-140 | 4 | 30 | |
| delta-BHC | 0.000259 | 0.000050 | mg/L | 0.0002500 | | 103 | 40-140 | 4 | 30 | |
| delta-BHC [2C] | 0.000273 | 0.000050 | mg/L | 0.0002500 | | 109 | 40-140 | 5 | 30 | |
| Dieldrin | 0.000263 | 0.000050 | mg/L | 0.0002500 | | 105 | 40-140 | 3 | 30 | |
| Dieldrin [2C] | 0.000260 | 0.000050 | mg/L | 0.0002500 | | 104 | 40-140 | 3 | 30 | |
| Endosulfan I | 0.000261 | 0.000050 | mg/L | 0.0002500 | | 104 | 40-140 | 2 | 30 | |
| Endosulfan I [2C] | 0.000265 | 0.000050 | mg/L | 0.0002500 | | 106 | 40-140 | 3 | 30 | |
| Endosulfan II | 0.000338 | 0.000050 | mg/L | 0.0002500 | | 135 | 40-140 | 3 | 30 | |
| Endosulfan II [2C] | 0.000332 | 0.000050 | mg/L | 0.0002500 | | 133 | 40-140 | 3 | 30 | |
| Endosulfan Sulfate | 0.000254 | 0.000050 | mg/L | 0.0002500 | | 102 | 40-140 | 3 | 30 | |
| Endosulfan Sulfate [2C] | 0.000263 | 0.000050 | mg/L | 0.0002500 | | 105 | 40-140 | 3 | 30 | |
| Endrin | 0.000287 | 0.000050 | mg/L | 0.0002500 | | 115 | 40-140 | 4 | 30 | |
| Endrin [2C] | 0.000290 | 0.000050 | mg/L | 0.0002500 | | 116 | 40-140 | 4 | 30 | |
| Endrin Aldehyde | 0.000251 | 0.000050 | mg/L | 0.0002500 | | 100 | 40-140 | 4 | 30 | |
| Endrin Aldehyde [2C] | 0.000248 | 0.000050 | mg/L | 0.0002500 | | 99 | 40-140 | 4 | 30 | |
| Endrin Ketone | 0.000253 | 0.000050 | mg/L | 0.0002500 | | 101 | 40-140 | 5 | 30 | |
| Endrin Ketone [2C] | 0.000254 | 0.000050 | mg/L | 0.0002500 | | 102 | 40-140 | 4 | 30 | |
| gamma-BHC (Lindane) | 0.000264 | 0.000050 | mg/L | 0.0002500 | | 106 | 40-140 | 3 | 30 | |
| gamma-BHC (Lindane) [2C] | 0.000269 | 0.000050 | mg/L | 0.0002500 | | 107 | 40-140 | 4 | 30 | |
| gamma-Chlordane | 0.000255 | 0.000050 | mg/L | 0.0002500 | | 102 | 40-140 | 4 | 30 | |
| gamma-Chlordane [2C] | 0.000256 | 0.000050 | mg/L | 0.0002500 | | 102 | 40-140 | 4 | 30 | |
| Heptachlor | 0.000254 | 0.000050 | mg/L | 0.0002500 | | 102 | 40-140 | 5 | 30 | |
| Heptachlor [2C] | 0.000250 | 0.000050 | mg/L | 0.0002500 | | 100 | 40-140 | 4 | 30 | |
| Heptachlor Epoxide | 0.000256 | 0.000050 | mg/L | 0.0002500 | | 102 | 40-140 | 4 | 30 | |
| Heptachlor Epoxide [2C] | 0.000259 | 0.000050 | mg/L | 0.0002500 | | 103 | 40-140 | 3 | 30 | |
| Hexachlorobenzene | 0.000228 | 0.000050 | mg/L | 0.0002500 | | 91 | 40-140 | 3 | 30 | |
| Hexachlorobenzene [2C] | 0.000247 | 0.000050 | mg/L | 0.0002500 | | 99 | 40-140 | 3 | 30 | |
| Methoxychlor | 0.000275 | 0.000050 | mg/L | 0.0002500 | | 110 | 40-140 | 4 | 30 | |
| Methoxychlor [2C] | 0.000276 | 0.000050 | mg/L | 0.0002500 | | 110 | 40-140 | 4 | 30 | |
| *Surrogate: Decachlorobiphenyl* | *0.000242* | | mg/L | *0.0002500* | | *97* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.000237* | | mg/L | *0.0002500* | | *95* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.000250* | | mg/L | *0.0002500* | | *100* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.000264* | | mg/L | *0.0002500* | | *106* | *30-150* | | | |
| **8082 Polychlorinated Biphenyls (PCB)** | | | | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8082 Polychlorinated Biphenyls (PCB)** | | | | | | | | | | |
| **Batch CA22507 - 3510C** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Aroclor 1016 | ND | 0.00050 | mg/L | | | | | | | |
| Aroclor 1221 | ND | 0.00050 | mg/L | | | | | | | |
| Aroclor 1232 | ND | 0.00050 | mg/L | | | | | | | |
| Aroclor 1242 | ND | 0.00050 | mg/L | | | | | | | |
| Aroclor 1248 | ND | 0.00050 | mg/L | | | | | | | |
| Aroclor 1254 | ND | 0.00050 | mg/L | | | | | | | |
| Aroclor 1260 | ND | 0.00050 | mg/L | | | | | | | |
| Aroclor 1262 | ND | 0.00050 | mg/L | | | | | | | |
| Aroclor 1268 | ND | 0.00050 | mg/L | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | *0.000186* | | mg/L | *0.0002500* | | *74* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.000179* | | mg/L | *0.0002500* | | *71* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.000193* | | mg/L | *0.0002500* | | *77* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.000205* | | mg/L | *0.0002500* | | *82* | *30-150* | | | |
| **LCS** | | | | | | | | | | |
| Aroclor 1016 | 0.00556 | 0.00050 | mg/L | 0.005000 | | 111 | 40-140 | | | |
| Aroclor 1260 | 0.00556 | 0.00050 | mg/L | 0.005000 | | 111 | 40-140 | | | |
| *Surrogate: Decachlorobiphenyl* | *0.000251* | | mg/L | *0.0002500* | | *100* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.000228* | | mg/L | *0.0002500* | | *91* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.000221* | | mg/L | *0.0002500* | | *88* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.000223* | | mg/L | *0.0002500* | | *89* | *30-150* | | | |
| **LCS Dup** | | | | | | | | | | |
| Aroclor 1016 | 0.00501 | 0.00050 | mg/L | 0.005000 | | 100 | 40-140 | 10 | 50 | |
| Aroclor 1260 | 0.00543 | 0.00050 | mg/L | 0.005000 | | 109 | 40-140 | 2 | 50 | |
| *Surrogate: Decachlorobiphenyl* | *0.000244* | | mg/L | *0.0002500* | | *98* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.000221* | | mg/L | *0.0002500* | | *88* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.000213* | | mg/L | *0.0002500* | | *85* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.000210* | | mg/L | *0.0002500* | | *84* | *30-150* | | | |
| **8100M Total Petroleum Hydrocarbons** | | | | | | | | | | |
| **Batch CA22506 - 3510C** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Decane (C10) | ND | 0.005 | mg/L | | | | | | | |
| Docosane (C22) | ND | 0.005 | mg/L | | | | | | | |
| Dodecane (C12) | ND | 0.005 | mg/L | | | | | | | |
| Eicosane (C20) | ND | 0.005 | mg/L | | | | | | | |
| Hexacosane (C26) | ND | 0.005 | mg/L | | | | | | | |
| Hexadecane (C16) | ND | 0.005 | mg/L | | | | | | | |
| Nonadecane (C19) | ND | 0.005 | mg/L | | | | | | | |
| Nonane (C9) | ND | 0.005 | mg/L | | | | | | | |
| Octacosane (C28) | ND | 0.005 | mg/L | | | | | | | |
| Octadecane (C18) | ND | 0.005 | mg/L | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8100M Total Petroleum Hydrocarbons** | | | | | | | | | | |
| **Batch CA22506 - 3510C** | | | | | | | | | | |
| Tetracosane (C24) | ND | 0.005 | mg/L | | | | | | | |
| Tetradecane (C14) | ND | 0.005 | mg/L | | | | | | | |
| Total Petroleum Hydrocarbons | ND | 0.20 | mg/L | | | | | | | |
| Triacontane (C30) | ND | 0.005 | mg/L | | | | | | | |
| *Surrogate: O-Terphenyl* | *0.0844* | | mg/L | *0.1000* | | *84* | *40-140* | | | |
| **LCS** | | | | | | | | | | |
| Decane (C10) | 0.037 | 0.005 | mg/L | 0.05000 | | 73 | 40-140 | | | |
| Docosane (C22) | 0.044 | 0.005 | mg/L | 0.05000 | | 88 | 40-140 | | | |
| Dodecane (C12) | 0.040 | 0.005 | mg/L | 0.05000 | | 80 | 40-140 | | | |
| Eicosane (C20) | 0.044 | 0.005 | mg/L | 0.05000 | | 87 | 40-140 | | | |
| Hexacosane (C26) | 0.045 | 0.005 | mg/L | 0.05000 | | 90 | 40-140 | | | |
| Hexadecane (C16) | 0.044 | 0.005 | mg/L | 0.05000 | | 87 | 40-140 | | | |
| Nonadecane (C19) | 0.047 | 0.005 | mg/L | 0.05000 | | 94 | 40-140 | | | |
| Nonane (C9) | 0.030 | 0.005 | mg/L | 0.05000 | | 60 | 30-140 | | | |
| Octacosane (C28) | 0.046 | 0.005 | mg/L | 0.05000 | | 92 | 40-140 | | | |
| Octadecane (C18) | 0.044 | 0.005 | mg/L | 0.05000 | | 88 | 40-140 | | | |
| Tetracosane (C24) | 0.045 | 0.005 | mg/L | 0.05000 | | 90 | 40-140 | | | |
| Tetradecane (C14) | 0.042 | 0.005 | mg/L | 0.05000 | | 85 | 40-140 | | | |
| Triacontane (C30) | 0.046 | 0.005 | mg/L | 0.05000 | | 93 | 40-140 | | | |
| *Surrogate: O-Terphenyl* | *0.0871* | | mg/L | *0.1000* | | *87* | *40-140* | | | |
| **LCS Dup** | | | | | | | | | | |
| Decane (C10) | 0.035 | 0.005 | mg/L | 0.05000 | | 71 | 40-140 | 4 | 25 | |
| Docosane (C22) | 0.044 | 0.005 | mg/L | 0.05000 | | 87 | 40-140 | 0.8 | 25 | |
| Dodecane (C12) | 0.037 | 0.005 | mg/L | 0.05000 | | 75 | 40-140 | 7 | 25 | |
| Eicosane (C20) | 0.043 | 0.005 | mg/L | 0.05000 | | 86 | 40-140 | 1 | 25 | |
| Hexacosane (C26) | 0.044 | 0.005 | mg/L | 0.05000 | | 89 | 40-140 | 1 | 25 | |
| Hexadecane (C16) | 0.042 | 0.005 | mg/L | 0.05000 | | 84 | 40-140 | 4 | 25 | |
| Nonadecane (C19) | 0.045 | 0.005 | mg/L | 0.05000 | | 91 | 40-140 | 3 | 25 | |
| Nonane (C9) | 0.030 | 0.005 | mg/L | 0.05000 | | 59 | 30-140 | 2 | 25 | |
| Octacosane (C28) | 0.045 | 0.005 | mg/L | 0.05000 | | 91 | 40-140 | 1 | 25 | |
| Octadecane (C18) | 0.043 | 0.005 | mg/L | 0.05000 | | 85 | 40-140 | 3 | 25 | |
| Tetracosane (C24) | 0.044 | 0.005 | mg/L | 0.05000 | | 89 | 40-140 | 1 | 25 | |
| Tetradecane (C14) | 0.040 | 0.005 | mg/L | 0.05000 | | 81 | 40-140 | 4 | 25 | |
| Triacontane (C30) | 0.046 | 0.005 | mg/L | 0.05000 | | 92 | 40-140 | 1 | 25 | |
| *Surrogate: O-Terphenyl* | *0.0824* | | mg/L | *0.1000* | | *82* | *40-140* | | | |
| **8151A Chlorinated Herbicides** | | | | | | | | | | |
| **Batch CA22511 - 8151A** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| 2,4,5-T | ND | 0.0001 | mg/L | | | | | | | |
| 2,4,5-T [2C] | ND | 0.0001 | mg/L | | | | | | | |
| 2,4,5-TP (Silvex) | ND | 0.0001 | mg/L | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 8151A Chlorinated Herbicides | | | | | | |
| **Batch CA22511 - 8151A** | | | | | | | | | | |
| 2,4,5-TP (Silvex) [2C] | ND | 0.0001 | mg/L | | | | | | | |
| 2,4-D | ND | 0.001 | mg/L | | | | | | | |
| 2,4-D [2C] | ND | 0.001 | mg/L | | | | | | | |
| 2,4-DB | ND | 0.001 | mg/L | | | | | | | |
| 2,4-DB [2C] | ND | 0.001 | mg/L | | | | | | | |
| Dalapon | ND | 0.003 | mg/L | | | | | | | |
| Dalapon [2C] | ND | 0.003 | mg/L | | | | | | | |
| Dicamba | ND | 0.001 | mg/L | | | | | | | |
| Dicamba [2C] | ND | 0.001 | mg/L | | | | | | | |
| Dichlorprop | ND | 0.001 | mg/L | | | | | | | |
| Dichlorprop [2C] | ND | 0.001 | mg/L | | | | | | | |
| Dinoseb | ND | 0.0007 | mg/L | | | | | | | |
| Dinoseb [2C] | ND | 0.0007 | mg/L | | | | | | | |
| MCPA | ND | 0.117 | mg/L | | | | | | | |
| MCPA [2C] | ND | 0.117 | mg/L | | | | | | | |
| MCPP | ND | 0.118 | mg/L | | | | | | | |
| MCPP [2C] | ND | 0.118 | mg/L | | | | | | | |
| *Surrogate: DCAA* | *4.87* | | mg/L | *5.714* | | *85* | *30-150* | | | |
| *Surrogate: DCAA [2C]* | *4.29* | | mg/L | *5.714* | | *75* | *30-150* | | | |
| **LCS** | | | | | | | | | | |
| 2,4,5-T | 0.004 | 0.0001 | mg/L | 0.005429 | | 78 | 40-140 | | | |
| 2,4,5-T [2C] | 0.004 | 0.0001 | mg/L | 0.005429 | | 72 | 40-140 | | | |
| 2,4,5-TP (Silvex) | 0.004 | 0.0001 | mg/L | 0.005429 | | 76 | 40-140 | | | |
| 2,4,5-TP (Silvex) [2C] | 0.004 | 0.0001 | mg/L | 0.005429 | | 66 | 40-140 | | | |
| 2,4-D | 0.046 | 0.001 | mg/L | 0.05371 | | 85 | 40-140 | | | |
| 2,4-D [2C] | 0.040 | 0.001 | mg/L | 0.05371 | | 74 | 40-140 | | | |
| 2,4-DB | 0.046 | 0.001 | mg/L | 0.05429 | | 86 | 40-140 | | | |
| 2,4-DB [2C] | 0.041 | 0.001 | mg/L | 0.05429 | | 75 | 40-140 | | | |
| Dalapon | 0.086 | 0.003 | mg/L | 0.1300 | | 66 | 40-140 | | | |
| Dalapon [2C] | 0.084 | 0.003 | mg/L | 0.1300 | | 64 | 40-140 | | | |
| Dicamba | 0.005 | 0.001 | mg/L | 0.005371 | | 96 | 40-140 | | | |
| Dicamba [2C] | 0.004 | 0.001 | mg/L | 0.005371 | | 76 | 40-140 | | | |
| Dichlorprop | 0.055 | 0.001 | mg/L | 0.05371 | | 102 | 40-140 | | | |
| Dichlorprop [2C] | 0.048 | 0.001 | mg/L | 0.05371 | | 90 | 40-140 | | | |
| Dinoseb | 0.022 | 0.0007 | mg/L | 0.02714 | | 80 | 10-100 | | | |
| Dinoseb [2C] | 0.022 | 0.0007 | mg/L | 0.02714 | | 82 | 10-100 | | | |
| MCPA | 4.55 | 0.117 | mg/L | 5.314 | | 86 | 40-140 | | | |
| MCPA [2C] | 4.24 | 0.117 | mg/L | 5.314 | | 80 | 40-140 | | | |
| MCPP | 4.36 | 0.118 | mg/L | 5.371 | | 81 | 40-140 | | | |
| MCPP [2C] | 3.84 | 0.118 | mg/L | 5.371 | | 71 | 40-140 | | | |
| *Surrogate: DCAA* | *5.21* | | mg/L | *5.714* | | *91* | *30-150* | | | |
| *Surrogate: DCAA [2C]* | *4.55* | | mg/L | *5.714* | | *80* | *30-150* | | | |
| **LCS Dup** | | | | | | | | | | |
| 2,4,5-T | 0.006 | 0.0001 | mg/L | 0.005429 | | 116 | 40-140 | 39 | 30 | D+ |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8151A Chlorinated Herbicides** | | | | | | | | | | |
| **Batch CA22511 - 8151A** | | | | | | | | | | |
| 2,4,5-T [2C] | 0.005 | 0.0001 | mg/L | 0.005429 | | 90 | 40-140 | 22 | 30 | |
| 2,4,5-TP (Silvex) | 0.005 | 0.0001 | mg/L | 0.005429 | | 92 | 40-140 | 19 | 30 | |
| 2,4,5-TP (Silvex) [2C] | 0.004 | 0.0001 | mg/L | 0.005429 | | 82 | 40-140 | 22 | 30 | |
| 2,4-D | 0.055 | 0.001 | mg/L | 0.05371 | | 103 | 40-140 | 18 | 30 | |
| 2,4-D [2C] | 0.048 | 0.001 | mg/L | 0.05371 | | 90 | 40-140 | 20 | 30 | |
| 2,4-DB | 0.056 | 0.001 | mg/L | 0.05429 | | 103 | 40-140 | 19 | 30 | |
| 2,4-DB [2C] | 0.050 | 0.001 | mg/L | 0.05429 | | 92 | 40-140 | 21 | 30 | |
| Dalapon | 0.110 | 0.003 | mg/L | 0.1300 | | 84 | 40-140 | 25 | 30 | |
| Dalapon [2C] | 0.107 | 0.003 | mg/L | 0.1300 | | 82 | 40-140 | 24 | 30 | |
| Dicamba | 0.006 | 0.001 | mg/L | 0.005371 | | 114 | 40-140 | 17 | 30 | |
| Dicamba [2C] | 0.005 | 0.001 | mg/L | 0.005371 | | 92 | 40-140 | 19 | 30 | |
| Dichlorprop | 0.065 | 0.001 | mg/L | 0.05371 | | 121 | 40-140 | 17 | 30 | |
| Dichlorprop [2C] | 0.058 | 0.001 | mg/L | 0.05371 | | 108 | 40-140 | 19 | 30 | |
| Dinoseb | 0.026 | 0.0007 | mg/L | 0.02714 | | 96 | 10-100 | 19 | 30 | |
| Dinoseb [2C] | 0.027 | 0.0007 | mg/L | 0.02714 | | 99 | 10-100 | 19 | 30 | |
| MCPA | 6.11 | 0.117 | mg/L | 5.314 | | 115 | 40-140 | 29 | 30 | |
| MCPA [2C] | 5.15 | 0.117 | mg/L | 5.314 | | 97 | 40-140 | 19 | 30 | |
| MCPP | 5.22 | 0.118 | mg/L | 5.371 | | 97 | 40-140 | 18 | 30 | |
| MCPP [2C] | 4.75 | 0.118 | mg/L | 5.371 | | 88 | 40-140 | 21 | 30 | |
| *Surrogate: DCAA* | *5.79* | | mg/L | *5.714* | | *101* | *30-150* | | | |
| *Surrogate: DCAA [2C]* | *5.18* | | mg/L | *5.714* | | *91* | *30-150* | | | |
| **8260B Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22407 - 5030B** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 0.0010 | mg/L | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.0010 | mg/L | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0005 | mg/L | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.0010 | mg/L | | | | | | | |
| 1,1-Dichloroethane | ND | 0.0010 | mg/L | | | | | | | |
| 1,1-Dichloroethene | ND | 0.0010 | mg/L | | | | | | | |
| 1,1-Dichloropropene | ND | 0.0020 | mg/L | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0010 | mg/L | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.0010 | mg/L | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0010 | mg/L | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0010 | mg/L | | | | | | | |
| 1,2-Dibromo-3-Chloropropane | ND | 0.0050 | mg/L | | | | | | | |
| 1,2-Dibromoethane | ND | 0.0010 | mg/L | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0010 | mg/L | | | | | | | |
| 1,2-Dichloroethane | ND | 0.0010 | mg/L | | | | | | | |
| 1,2-Dichloropropane | ND | 0.0010 | mg/L | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0010 | mg/L | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0010 | mg/L | | | | | | | |
| 1,3-Dichloropropane | ND | 0.0010 | mg/L | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8260B Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22407 - 5030B** | | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0010 | mg/L | | | | | | | |
| 1,4-Dioxane - Screen | ND | 0.500 | mg/L | | | | | | | |
| 1-Chlorohexane | ND | 0.0010 | mg/L | | | | | | | |
| 2,2-Dichloropropane | ND | 0.0010 | mg/L | | | | | | | |
| 2-Butanone | ND | 0.0100 | mg/L | | | | | | | |
| 2-Chlorotoluene | ND | 0.0010 | mg/L | | | | | | | |
| 2-Hexanone | ND | 0.0100 | mg/L | | | | | | | |
| 4-Chlorotoluene | ND | 0.0010 | mg/L | | | | | | | |
| 4-Isopropyltoluene | ND | 0.0010 | mg/L | | | | | | | |
| 4-Methyl-2-Pentanone | ND | 0.0250 | mg/L | | | | | | | |
| Acetone | ND | 0.0100 | mg/L | | | | | | | |
| Benzene | ND | 0.0010 | mg/L | | | | | | | |
| Bromobenzene | ND | 0.0020 | mg/L | | | | | | | |
| Bromochloromethane | ND | 0.0010 | mg/L | | | | | | | |
| Bromodichloromethane | ND | 0.0006 | mg/L | | | | | | | |
| Bromoform | ND | 0.0010 | mg/L | | | | | | | |
| Bromomethane | ND | 0.0020 | mg/L | | | | | | | |
| Carbon Disulfide | ND | 0.0010 | mg/L | | | | | | | |
| Carbon Tetrachloride | ND | 0.0010 | mg/L | | | | | | | |
| Chlorobenzene | ND | 0.0010 | mg/L | | | | | | | |
| Chloroethane | ND | 0.0020 | mg/L | | | | | | | |
| Chloroform | ND | 0.0010 | mg/L | | | | | | | |
| Chloromethane | ND | 0.0020 | mg/L | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0010 | mg/L | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0004 | mg/L | | | | | | | |
| Dibromochloromethane | ND | 0.0010 | mg/L | | | | | | | |
| Dibromomethane | ND | 0.0010 | mg/L | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0020 | mg/L | | | | | | | |
| Diethyl Ether | ND | 0.0010 | mg/L | | | | | | | |
| Di-isopropyl ether | ND | 0.0010 | mg/L | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0010 | mg/L | | | | | | | |
| Ethylbenzene | ND | 0.0010 | mg/L | | | | | | | |
| Hexachlorobutadiene | ND | 0.0006 | mg/L | | | | | | | |
| Hexachloroethane | ND | 0.0010 | mg/L | | | | | | | |
| Isopropylbenzene | ND | 0.0010 | mg/L | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0010 | mg/L | | | | | | | |
| Methylene Chloride | ND | 0.0020 | mg/L | | | | | | | |
| Naphthalene | ND | 0.0010 | mg/L | | | | | | | |
| n-Butylbenzene | ND | 0.0010 | mg/L | | | | | | | |
| n-Propylbenzene | ND | 0.0010 | mg/L | | | | | | | |
| sec-Butylbenzene | ND | 0.0010 | mg/L | | | | | | | |
| Styrene | ND | 0.0010 | mg/L | | | | | | | |
| tert-Butylbenzene | ND | 0.0010 | mg/L | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0010 | mg/L | | | | | | | |
| Tetrachloroethene | ND | 0.0010 | mg/L | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8260B Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22407 - 5030B** | | | | | | | | | | |
| Tetrahydrofuran | ND | 0.0050 | mg/L | | | | | | | |
| Toluene | ND | 0.0010 | mg/L | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0010 | mg/L | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0004 | mg/L | | | | | | | |
| Trichloroethene | ND | 0.0010 | mg/L | | | | | | | |
| Trichlorofluoromethane | ND | 0.0010 | mg/L | | | | | | | |
| Vinyl Acetate | ND | 0.0050 | mg/L | | | | | | | |
| Vinyl Chloride | ND | 0.0010 | mg/L | | | | | | | |
| Xylene O | ND | 0.0010 | mg/L | | | | | | | |
| Xylene P,M | ND | 0.0020 | mg/L | | | | | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0244* | | mg/L | *0.02500* | | *98* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0246* | | mg/L | *0.02500* | | *98* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *0.0242* | | mg/L | *0.02500* | | *97* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *0.0272* | | mg/L | *0.02500* | | *109* | *70-130* | | | |
| **LCS** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 9.17 | | ug/L | 10.00 | | 92 | 70-130 | | | |
| 1,1,1-Trichloroethane | 9.41 | | ug/L | 10.00 | | 94 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 9.89 | | ug/L | 10.00 | | 99 | 70-130 | | | |
| 1,1,2-Trichloroethane | 9.89 | | ug/L | 10.00 | | 99 | 70-130 | | | |
| 1,1-Dichloroethane | 9.62 | | ug/L | 10.00 | | 96 | 70-130 | | | |
| 1,1-Dichloroethene | 10.9 | | ug/L | 10.00 | | 109 | 70-130 | | | |
| 1,1-Dichloropropene | 10.1 | | ug/L | 10.00 | | 101 | 70-130 | | | |
| 1,2,3-Trichlorobenzene | 9.80 | | ug/L | 10.00 | | 98 | 70-130 | | | |
| 1,2,3-Trichloropropane | 10.5 | | ug/L | 10.00 | | 105 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 9.41 | | ug/L | 10.00 | | 94 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 10.1 | | ug/L | 10.00 | | 101 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 9.97 | | ug/L | 10.00 | | 100 | 70-130 | | | |
| 1,2-Dibromoethane | 9.27 | | ug/L | 10.00 | | 93 | 70-130 | | | |
| 1,2-Dichlorobenzene | 9.51 | | ug/L | 10.00 | | 95 | 70-130 | | | |
| 1,2-Dichloroethane | 9.40 | | ug/L | 10.00 | | 94 | 70-130 | | | |
| 1,2-Dichloropropane | 10.5 | | ug/L | 10.00 | | 105 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 10.6 | | ug/L | 10.00 | | 106 | 70-130 | | | |
| 1,3-Dichlorobenzene | 9.72 | | ug/L | 10.00 | | 97 | 70-130 | | | |
| 1,3-Dichloropropane | 9.86 | | ug/L | 10.00 | | 99 | 70-130 | | | |
| 1,4-Dichlorobenzene | 9.85 | | ug/L | 10.00 | | 98 | 70-130 | | | |
| 1,4-Dioxane - Screen | 375 | | ug/L | 200.0 | | 188 | 0-332 | | | |
| 1-Chlorohexane | 10.8 | | ug/L | 10.00 | | 108 | 70-130 | | | |
| 2,2-Dichloropropane | 9.18 | | ug/L | 10.00 | | 92 | 70-130 | | | |
| 2-Butanone | 54.8 | | ug/L | 50.00 | | 110 | 70-130 | | | |
| 2-Chlorotoluene | 10.5 | | ug/L | 10.00 | | 105 | 70-130 | | | |
| 2-Hexanone | 57.1 | | ug/L | 50.00 | | 114 | 70-130 | | | |
| 4-Chlorotoluene | 10.0 | | ug/L | 10.00 | | 100 | 70-130 | | | |
| 4-Isopropyltoluene | 9.37 | | ug/L | 10.00 | | 94 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 55.4 | | ug/L | 50.00 | | 111 | 70-130 | | | |
| Acetone | 57.1 | | ug/L | 50.00 | | 114 | 70-130 | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8260B Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22407 - 5030B** | | | | | | | | | | |
| Benzene | 10.1 | | ug/L | 10.00 | | 101 | 70-130 | | | |
| Bromobenzene | 9.87 | | ug/L | 10.00 | | 99 | 70-130 | | | |
| Bromochloromethane | 9.55 | | ug/L | 10.00 | | 96 | 70-130 | | | |
| Bromodichloromethane | 9.73 | | ug/L | 10.00 | | 97 | 70-130 | | | |
| Bromoform | 9.10 | | ug/L | 10.00 | | 91 | 70-130 | | | |
| Bromomethane | 9.12 | | ug/L | 10.00 | | 91 | 70-130 | | | |
| Carbon Disulfide | 10.2 | | ug/L | 10.00 | | 102 | 70-130 | | | |
| Carbon Tetrachloride | 9.13 | | ug/L | 10.00 | | 91 | 70-130 | | | |
| Chlorobenzene | 9.99 | | ug/L | 10.00 | | 100 | 70-130 | | | |
| Chloroethane | 10.2 | | ug/L | 10.00 | | 102 | 70-130 | | | |
| Chloroform | 9.38 | | ug/L | 10.00 | | 94 | 70-130 | | | |
| Chloromethane | 9.29 | | ug/L | 10.00 | | 93 | 70-130 | | | |
| cis-1,2-Dichloroethene | 10.2 | | ug/L | 10.00 | | 102 | 70-130 | | | |
| cis-1,3-Dichloropropene | 10.1 | | ug/L | 10.00 | | 101 | 70-130 | | | |
| Dibromochloromethane | 9.22 | | ug/L | 10.00 | | 92 | 70-130 | | | |
| Dibromomethane | 9.34 | | ug/L | 10.00 | | 93 | 70-130 | | | |
| Dichlorodifluoromethane | 8.66 | | ug/L | 10.00 | | 87 | 70-130 | | | |
| Diethyl Ether | 11.0 | | ug/L | 10.00 | | 110 | 70-130 | | | |
| Di-isopropyl ether | 10.0 | | ug/L | 10.00 | | 100 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 8.84 | | ug/L | 10.00 | | 88 | 70-130 | | | |
| Ethylbenzene | 9.45 | | ug/L | 10.00 | | 94 | 70-130 | | | |
| Hexachlorobutadiene | 11.3 | | ug/L | 10.00 | | 113 | 70-130 | | | |
| Hexachloroethane | 9.77 | | ug/L | 10.00 | | 98 | 70-130 | | | |
| Isopropylbenzene | 8.67 | | ug/L | 10.00 | | 87 | 70-130 | | | |
| Methyl tert-Butyl Ether | 9.86 | | ug/L | 10.00 | | 99 | 70-130 | | | |
| Methylene Chloride | 10.0 | | ug/L | 10.00 | | 100 | 70-130 | | | |
| Naphthalene | 9.57 | | ug/L | 10.00 | | 96 | 70-130 | | | |
| n-Butylbenzene | 10.1 | | ug/L | 10.00 | | 101 | 70-130 | | | |
| n-Propylbenzene | 10.1 | | ug/L | 10.00 | | 101 | 70-130 | | | |
| sec-Butylbenzene | 9.89 | | ug/L | 10.00 | | 99 | 70-130 | | | |
| Styrene | 9.06 | | ug/L | 10.00 | | 91 | 70-130 | | | |
| tert-Butylbenzene | 9.67 | | ug/L | 10.00 | | 97 | 70-130 | | | |
| Tertiary-amyl methyl ether | 8.93 | | ug/L | 10.00 | | 89 | 70-130 | | | |
| Tetrachloroethene | 9.38 | | ug/L | 10.00 | | 94 | 70-130 | | | |
| Tetrahydrofuran | 10.7 | | ug/L | 10.00 | | 107 | 70-130 | | | |
| Toluene | 10.2 | | ug/L | 10.00 | | 102 | 70-130 | | | |
| trans-1,2-Dichloroethene | 10.3 | | ug/L | 10.00 | | 103 | 70-130 | | | |
| trans-1,3-Dichloropropene | 8.37 | | ug/L | 10.00 | | 84 | 70-130 | | | |
| Trichloroethene | 9.65 | | ug/L | 10.00 | | 96 | 70-130 | | | |
| Trichlorofluoromethane | 9.36 | | ug/L | 10.00 | | 94 | 70-130 | | | |
| Vinyl Acetate | 10.7 | | ug/L | 10.00 | | 107 | 70-130 | | | |
| Vinyl Chloride | 10.7 | | ug/L | 10.00 | | 107 | 70-130 | | | |
| Xylene O | 9.81 | | ug/L | 10.00 | | 98 | 70-130 | | | |
| Xylene P,M | 19.8 | | ug/L | 20.00 | | 99 | 70-130 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0246* | | mg/L | *0.02500* | | *98* | *70-130* | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8260B Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22407 - 5030B** | | | | | | | | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0253* | | mg/L | *0.02500* | | *101* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *0.0251* | | mg/L | *0.02500* | | *100* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *0.0264* | | mg/L | *0.02500* | | *106* | *70-130* | | | |
| **LCS Dup** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 8.87 | | ug/L | 10.00 | | 89 | 70-130 | 3 | 25 | |
| 1,1,1-Trichloroethane | 9.27 | | ug/L | 10.00 | | 93 | 70-130 | 1 | 25 | |
| 1,1,2,2-Tetrachloroethane | 10.2 | | ug/L | 10.00 | | 102 | 70-130 | 3 | 25 | |
| 1,1,2-Trichloroethane | 9.92 | | ug/L | 10.00 | | 99 | 70-130 | 0.3 | 25 | |
| 1,1-Dichloroethane | 9.61 | | ug/L | 10.00 | | 96 | 70-130 | 0.1 | 25 | |
| 1,1-Dichloroethene | 10.5 | | ug/L | 10.00 | | 105 | 70-130 | 4 | 25 | |
| 1,1-Dichloropropene | 10.1 | | ug/L | 10.00 | | 101 | 70-130 | 0.6 | 25 | |
| 1,2,3-Trichlorobenzene | 9.70 | | ug/L | 10.00 | | 97 | 70-130 | 1 | 25 | |
| 1,2,3-Trichloropropane | 10.0 | | ug/L | 10.00 | | 100 | 70-130 | 4 | 25 | |
| 1,2,4-Trichlorobenzene | 9.37 | | ug/L | 10.00 | | 94 | 70-130 | 0.4 | 25 | |
| 1,2,4-Trimethylbenzene | 9.96 | | ug/L | 10.00 | | 100 | 70-130 | 1 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 9.36 | | ug/L | 10.00 | | 94 | 70-130 | 6 | 25 | |
| 1,2-Dibromoethane | 9.45 | | ug/L | 10.00 | | 94 | 70-130 | 2 | 25 | |
| 1,2-Dichlorobenzene | 9.75 | | ug/L | 10.00 | | 98 | 70-130 | 2 | 25 | |
| 1,2-Dichloroethane | 9.21 | | ug/L | 10.00 | | 92 | 70-130 | 2 | 25 | |
| 1,2-Dichloropropane | 10.2 | | ug/L | 10.00 | | 102 | 70-130 | 3 | 25 | |
| 1,3,5-Trimethylbenzene | 10.1 | | ug/L | 10.00 | | 101 | 70-130 | 6 | 25 | |
| 1,3-Dichlorobenzene | 9.65 | | ug/L | 10.00 | | 96 | 70-130 | 0.7 | 25 | |
| 1,3-Dichloropropane | 9.82 | | ug/L | 10.00 | | 98 | 70-130 | 0.4 | 25 | |
| 1,4-Dichlorobenzene | 9.61 | | ug/L | 10.00 | | 96 | 70-130 | 2 | 25 | |
| 1,4-Dioxane - Screen | 304 | | ug/L | 200.0 | | 152 | 0-332 | 21 | 200 | |
| 1-Chlorohexane | 10.6 | | ug/L | 10.00 | | 106 | 70-130 | 1 | 25 | |
| 2,2-Dichloropropane | 9.35 | | ug/L | 10.00 | | 94 | 70-130 | 2 | 25 | |
| 2-Butanone | 56.2 | | ug/L | 50.00 | | 112 | 70-130 | 2 | 25 | |
| 2-Chlorotoluene | 10.4 | | ug/L | 10.00 | | 104 | 70-130 | 1 | 25 | |
| 2-Hexanone | 57.3 | | ug/L | 50.00 | | 115 | 70-130 | 0.3 | 25 | |
| 4-Chlorotoluene | 9.97 | | ug/L | 10.00 | | 100 | 70-130 | 0.5 | 25 | |
| 4-Isopropyltoluene | 9.03 | | ug/L | 10.00 | | 90 | 70-130 | 4 | 25 | |
| 4-Methyl-2-Pentanone | 56.0 | | ug/L | 50.00 | | 112 | 70-130 | 1 | 25 | |
| Acetone | 58.4 | | ug/L | 50.00 | | 117 | 70-130 | 2 | 25 | |
| Benzene | 10.1 | | ug/L | 10.00 | | 101 | 70-130 | 0.6 | 25 | |
| Bromobenzene | 9.69 | | ug/L | 10.00 | | 97 | 70-130 | 2 | 25 | |
| Bromochloromethane | 9.77 | | ug/L | 10.00 | | 98 | 70-130 | 2 | 25 | |
| Bromodichloromethane | 9.88 | | ug/L | 10.00 | | 99 | 70-130 | 2 | 25 | |
| Bromoform | 9.03 | | ug/L | 10.00 | | 90 | 70-130 | 0.8 | 25 | |
| Bromomethane | 9.07 | | ug/L | 10.00 | | 91 | 70-130 | 0.5 | 25 | |
| Carbon Disulfide | 10.2 | | ug/L | 10.00 | | 102 | 70-130 | 0.2 | 25 | |
| Carbon Tetrachloride | 8.91 | | ug/L | 10.00 | | 89 | 70-130 | 2 | 25 | |
| Chlorobenzene | 9.70 | | ug/L | 10.00 | | 97 | 70-130 | 3 | 25 | |
| Chloroethane | 9.99 | | ug/L | 10.00 | | 100 | 70-130 | 2 | 25 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8260B Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22407 - 5030B** | | | | | | | | | | |
| Chloroform | 9.53 | | ug/L | 10.00 | | 95 | 70-130 | 2 | 25 | |
| Chloromethane | 8.83 | | ug/L | 10.00 | | 88 | 70-130 | 5 | 25 | |
| cis-1,2-Dichloroethene | 10.1 | | ug/L | 10.00 | | 101 | 70-130 | 0.5 | 25 | |
| cis-1,3-Dichloropropene | 10.1 | | ug/L | 10.00 | | 101 | 70-130 | 0.1 | 25 | |
| Dibromochloromethane | 9.44 | | ug/L | 10.00 | | 94 | 70-130 | 2 | 25 | |
| Dibromomethane | 9.68 | | ug/L | 10.00 | | 97 | 70-130 | 4 | 25 | |
| Dichlorodifluoromethane | 8.53 | | ug/L | 10.00 | | 85 | 70-130 | 2 | 25 | |
| Diethyl Ether | 10.5 | | ug/L | 10.00 | | 105 | 70-130 | 4 | 25 | |
| Di-isopropyl ether | 10.1 | | ug/L | 10.00 | | 101 | 70-130 | 0.3 | 25 | |
| Ethyl tertiary-butyl ether | 8.61 | | ug/L | 10.00 | | 86 | 70-130 | 3 | 25 | |
| Ethylbenzene | 9.49 | | ug/L | 10.00 | | 95 | 70-130 | 0.4 | 25 | |
| Hexachlorobutadiene | 10.3 | | ug/L | 10.00 | | 103 | 70-130 | 9 | 25 | |
| Hexachloroethane | 9.35 | | ug/L | 10.00 | | 94 | 70-130 | 4 | 25 | |
| Isopropylbenzene | 8.76 | | ug/L | 10.00 | | 88 | 70-130 | 1 | 25 | |
| Methyl tert-Butyl Ether | 9.66 | | ug/L | 10.00 | | 97 | 70-130 | 2 | 25 | |
| Methylene Chloride | 9.80 | | ug/L | 10.00 | | 98 | 70-130 | 2 | 25 | |
| Naphthalene | 9.51 | | ug/L | 10.00 | | 95 | 70-130 | 0.6 | 25 | |
| n-Butylbenzene | 9.74 | | ug/L | 10.00 | | 97 | 70-130 | 4 | 25 | |
| n-Propylbenzene | 10.2 | | ug/L | 10.00 | | 102 | 70-130 | 2 | 25 | |
| sec-Butylbenzene | 10.1 | | ug/L | 10.00 | | 101 | 70-130 | 2 | 25 | |
| Styrene | 9.06 | | ug/L | 10.00 | | 91 | 70-130 | 0 | 25 | |
| tert-Butylbenzene | 9.73 | | ug/L | 10.00 | | 97 | 70-130 | 0.6 | 25 | |
| Tertiary-amyl methyl ether | 8.96 | | ug/L | 10.00 | | 90 | 70-130 | 0.3 | 25 | |
| Tetrachloroethene | 9.02 | | ug/L | 10.00 | | 90 | 70-130 | 4 | 25 | |
| Tetrahydrofuran | 11.6 | | ug/L | 10.00 | | 116 | 70-130 | 8 | 25 | |
| Toluene | 10.5 | | ug/L | 10.00 | | 105 | 70-130 | 3 | 25 | |
| trans-1,2-Dichloroethene | 10.4 | | ug/L | 10.00 | | 104 | 70-130 | 2 | 25 | |
| trans-1,3-Dichloropropene | 8.30 | | ug/L | 10.00 | | 83 | 70-130 | 0.8 | 25 | |
| Trichloroethene | 9.86 | | ug/L | 10.00 | | 99 | 70-130 | 2 | 25 | |
| Trichlorofluoromethane | 9.43 | | ug/L | 10.00 | | 94 | 70-130 | 0.7 | 25 | |
| Vinyl Acetate | 10.4 | | ug/L | 10.00 | | 104 | 70-130 | 3 | 25 | |
| Vinyl Chloride | 10.5 | | ug/L | 10.00 | | 105 | 70-130 | 2 | 25 | |
| Xylene O | 9.90 | | ug/L | 10.00 | | 99 | 70-130 | 0.9 | 25 | |
| Xylene P,M | 19.7 | | ug/L | 20.00 | | 98 | 70-130 | 0.6 | 25 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0250* | | mg/L | *0.02500* | | *100* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0250* | | mg/L | *0.02500* | | *100* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *0.0251* | | mg/L | *0.02500* | | *100* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *0.0258* | | mg/L | *0.02500* | | *103* | *70-130* | | | |
| **8270C Semi-Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22510 - 3520C** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| 1,1-Biphenyl | ND | 0.0100 | mg/L | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0100 | mg/L | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0100 | mg/L | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8270C Semi-Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22510 - 3520C** | | | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0100 | mg/L | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0100 | mg/L | | | | | | | |
| 2,3,4,6-Tetrachlorophenol | ND | 0.0500 | mg/L | | | | | | | |
| 2,4,5-Trichlorophenol | ND | 0.0100 | mg/L | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 0.0100 | mg/L | | | | | | | |
| 2,4-Dichlorophenol | ND | 0.0100 | mg/L | | | | | | | |
| 2,4-Dimethylphenol | ND | 0.0500 | mg/L | | | | | | | |
| 2,4-Dinitrophenol | ND | 0.0500 | mg/L | | | | | | | |
| 2,4-Dinitrotoluene | ND | 0.0100 | mg/L | | | | | | | |
| 2,6-Dinitrotoluene | ND | 0.0100 | mg/L | | | | | | | |
| 2-Chloronaphthalene | ND | 0.0100 | mg/L | | | | | | | |
| 2-Chlorophenol | ND | 0.0100 | mg/L | | | | | | | |
| 2-Methylnaphthalene | ND | 0.0100 | mg/L | | | | | | | |
| 2-Methylphenol | ND | 0.0100 | mg/L | | | | | | | |
| 2-Nitroaniline | ND | 0.0100 | mg/L | | | | | | | |
| 2-Nitrophenol | ND | 0.0100 | mg/L | | | | | | | |
| 3,3'-Dichlorobenzidine | ND | 0.0200 | mg/L | | | | | | | |
| 3+4-Methylphenol | ND | 0.0200 | mg/L | | | | | | | |
| 3-Nitroaniline | ND | 0.0100 | mg/L | | | | | | | |
| 4,6-Dinitro-2-Methylphenol | ND | 0.0500 | mg/L | | | | | | | |
| 4-Bromophenyl-phenylether | ND | 0.0100 | mg/L | | | | | | | |
| 4-Chloro-3-Methylphenol | ND | 0.0100 | mg/L | | | | | | | |
| 4-Chloroaniline | ND | 0.0200 | mg/L | | | | | | | |
| 4-Chloro-phenyl-phenyl ether | ND | 0.0100 | mg/L | | | | | | | |
| 4-Nitroaniline | ND | 0.0100 | mg/L | | | | | | | |
| 4-Nitrophenol | ND | 0.0500 | mg/L | | | | | | | |
| Acenaphthene | ND | 0.0100 | mg/L | | | | | | | |
| Acenaphthylene | ND | 0.0100 | mg/L | | | | | | | |
| Acetophenone | ND | 0.0100 | mg/L | | | | | | | |
| Aniline | ND | 0.0100 | mg/L | | | | | | | |
| Anthracene | ND | 0.0100 | mg/L | | | | | | | |
| Azobenzene | ND | 0.0200 | mg/L | | | | | | | |
| Benzo(a)anthracene | ND | 0.0100 | mg/L | | | | | | | |
| Benzo(a)pyrene | ND | 0.0100 | mg/L | | | | | | | |
| Benzo(b)fluoranthene | ND | 0.0100 | mg/L | | | | | | | |
| Benzo(g,h,i)perylene | ND | 0.0100 | mg/L | | | | | | | |
| Benzo(k)fluoranthene | ND | 0.0100 | mg/L | | | | | | | |
| Benzoic Acid | ND | 0.100 | mg/L | | | | | | | |
| Benzyl Alcohol | ND | 0.0100 | mg/L | | | | | | | |
| bis(2-Chloroethoxy)methane | ND | 0.0100 | mg/L | | | | | | | |
| bis(2-Chloroethyl)ether | ND | 0.0100 | mg/L | | | | | | | |
| bis(2-chloroisopropyl)Ether | ND | 0.0100 | mg/L | | | | | | | |
| bis(2-Ethylhexyl)phthalate | ND | 0.0060 | mg/L | | | | | | | |
| Butylbenzylphthalate | ND | 0.0100 | mg/L | | | | | | | |
| Carbazole | ND | 0.0100 | mg/L | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8270C Semi-Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22510 - 3520C** | | | | | | | | | | |
| Chrysene | ND | 0.0100 | mg/L | | | | | | | |
| Dibenzo(a,h)Anthracene | ND | 0.0100 | mg/L | | | | | | | |
| Dibenzofuran | ND | 0.0100 | mg/L | | | | | | | |
| Diethylphthalate | ND | 0.0100 | mg/L | | | | | | | |
| Dimethylphthalate | ND | 0.0100 | mg/L | | | | | | | |
| Di-n-butylphthalate | ND | 0.0100 | mg/L | | | | | | | |
| Di-n-octylphthalate | ND | 0.0100 | mg/L | | | | | | | |
| Fluoranthene | ND | 0.0100 | mg/L | | | | | | | |
| Fluorene | ND | 0.0100 | mg/L | | | | | | | |
| Hexachlorobenzene | ND | 0.0100 | mg/L | | | | | | | |
| Hexachlorobutadiene | ND | 0.0100 | mg/L | | | | | | | |
| Hexachlorocyclopentadiene | ND | 0.0250 | mg/L | | | | | | | |
| Hexachloroethane | ND | 0.0050 | mg/L | | | | | | | |
| Indeno(1,2,3-cd)Pyrene | ND | 0.0100 | mg/L | | | | | | | |
| Isophorone | ND | 0.0100 | mg/L | | | | | | | |
| Naphthalene | ND | 0.0100 | mg/L | | | | | | | |
| Nitrobenzene | ND | 0.0100 | mg/L | | | | | | | |
| N-Nitrosodimethylamine | ND | 0.0100 | mg/L | | | | | | | |
| N-Nitroso-Di-n-Propylamine | ND | 0.0100 | mg/L | | | | | | | |
| N-nitrosodiphenylamine | ND | 0.0100 | mg/L | | | | | | | |
| Pentachlorophenol | ND | 0.0500 | mg/L | | | | | | | |
| Phenanthrene | ND | 0.0100 | mg/L | | | | | | | |
| Phenol | ND | 0.0100 | mg/L | | | | | | | |
| Pyrene | ND | 0.0100 | mg/L | | | | | | | |
| Pyridine | ND | 0.100 | mg/L | | | | | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | *0.0826* | | mg/L | *0.1000* | | *83* | *30-130* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *0.137* | | mg/L | *0.1500* | | *92* | *15-110* | | | |
| *Surrogate: 2-Chlorophenol-d4* | *0.106* | | mg/L | *0.1500* | | *71* | *15-110* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *0.0899* | | mg/L | *0.1000* | | *90* | *30-130* | | | |
| *Surrogate: 2-Fluorophenol* | *0.0794* | | mg/L | *0.1500* | | *53* | *15-110* | | | |
| *Surrogate: Nitrobenzene-d5* | *0.0805* | | mg/L | *0.1000* | | *80* | *30-130* | | | |
| *Surrogate: Phenol-d6* | *0.113* | | mg/L | *0.1500* | | *75* | *15-110* | | | |
| *Surrogate: p-Terphenyl-d14* | *0.104* | | mg/L | *0.1000* | | *104* | *30-130* | | | |
| **LCS** | | | | | | | | | | |
| 1,1-Biphenyl | 0.0859 | 0.0100 | mg/L | 0.1000 | | 86 | 40-140 | | | |
| 1,2,4-Trichlorobenzene | 0.0780 | 0.0100 | mg/L | 0.1000 | | 78 | 40-140 | | | |
| 1,2-Dichlorobenzene | 0.0722 | 0.0100 | mg/L | 0.1000 | | 72 | 40-140 | | | |
| 1,3-Dichlorobenzene | 0.0736 | 0.0100 | mg/L | 0.1000 | | 74 | 40-140 | | | |
| 1,4-Dichlorobenzene | 0.0715 | 0.0100 | mg/L | 0.1000 | | 71 | 40-140 | | | |
| 2,3,4,6-Tetrachlorophenol | 0.0913 | 0.0500 | mg/L | 0.1000 | | 91 | 30-130 | | | |
| 2,4,5-Trichlorophenol | 0.0990 | 0.0100 | mg/L | 0.1000 | | 99 | 30-130 | | | |
| 2,4,6-Trichlorophenol | 0.102 | 0.0100 | mg/L | 0.1000 | | 102 | 30-130 | | | |
| 2,4-Dichlorophenol | 0.0950 | 0.0100 | mg/L | 0.1000 | | 95 | 30-130 | | | |
| 2,4-Dimethylphenol | 0.0870 | 0.0500 | mg/L | 0.1000 | | 87 | 30-130 | | | |
| 2,4-Dinitrophenol | 0.0997 | 0.0500 | mg/L | 0.1000 | | 100 | 30-130 | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8270C Semi-Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22510 - 3520C** | | | | | | | | | | |
| 2,4-Dinitrotoluene | 0.108 | 0.0100 | mg/L | 0.1000 | | 108 | 40-140 | | | |
| 2,6-Dinitrotoluene | 0.102 | 0.0100 | mg/L | 0.1000 | | 102 | 40-140 | | | |
| 2-Chloronaphthalene | 0.0851 | 0.0100 | mg/L | 0.1000 | | 85 | 40-140 | | | |
| 2-Chlorophenol | 0.0729 | 0.0100 | mg/L | 0.1000 | | 73 | 30-130 | | | |
| 2-Methylnaphthalene | 0.0915 | 0.0100 | mg/L | 0.1000 | | 92 | 40-140 | | | |
| 2-Methylphenol | 0.0808 | 0.0100 | mg/L | 0.1000 | | 81 | 30-130 | | | |
| 2-Nitroaniline | 0.0715 | 0.0100 | mg/L | 0.1000 | | 71 | 40-140 | | | |
| 2-Nitrophenol | 0.0913 | 0.0100 | mg/L | 0.1000 | | 91 | 30-130 | | | |
| 3,3'-Dichlorobenzidine | 0.0754 | 0.0200 | mg/L | 0.1000 | | 75 | 40-140 | | | |
| 3+4-Methylphenol | 0.168 | 0.0200 | mg/L | 0.2000 | | 84 | 30-130 | | | |
| 3-Nitroaniline | 0.0956 | 0.0100 | mg/L | 0.1000 | | 96 | 40-140 | | | |
| 4,6-Dinitro-2-Methylphenol | 0.105 | 0.0500 | mg/L | 0.1000 | | 105 | 30-130 | | | |
| 4-Bromophenyl-phenylether | 0.0952 | 0.0100 | mg/L | 0.1000 | | 95 | 40-140 | | | |
| 4-Chloro-3-Methylphenol | 0.0963 | 0.0100 | mg/L | 0.1000 | | 96 | 30-130 | | | |
| 4-Chloroaniline | 0.0695 | 0.0200 | mg/L | 0.1000 | | 69 | 40-140 | | | |
| 4-Chloro-phenyl-phenyl ether | 0.0948 | 0.0100 | mg/L | 0.1000 | | 95 | 40-140 | | | |
| 4-Nitroaniline | 0.0845 | 0.0100 | mg/L | 0.1000 | | 84 | 40-140 | | | |
| 4-Nitrophenol | 0.0974 | 0.0500 | mg/L | 0.1000 | | 97 | 30-130 | | | |
| Acenaphthene | 0.0866 | 0.0100 | mg/L | 0.1000 | | 87 | 40-140 | | | |
| Acenaphthylene | 0.0858 | 0.0100 | mg/L | 0.1000 | | 86 | 40-140 | | | |
| Acetophenone | 0.0724 | 0.0100 | mg/L | 0.1000 | | 72 | 40-140 | | | |
| Aniline | 0.0673 | 0.0100 | mg/L | 0.1000 | | 67 | 40-140 | | | |
| Anthracene | 0.0930 | 0.0100 | mg/L | 0.1000 | | 93 | 40-140 | | | |
| Azobenzene | 0.0783 | 0.0200 | mg/L | 0.1000 | | 78 | 40-140 | | | |
| Benzo(a)anthracene | 0.0925 | 0.0100 | mg/L | 0.1000 | | 92 | 40-140 | | | |
| Benzo(a)pyrene | 0.0879 | 0.0100 | mg/L | 0.1000 | | 88 | 40-140 | | | |
| Benzo(b)fluoranthene | 0.0992 | 0.0100 | mg/L | 0.1000 | | 99 | 40-140 | | | |
| Benzo(g,h,i)perylene | 0.105 | 0.0100 | mg/L | 0.1000 | | 105 | 40-140 | | | |
| Benzo(k)fluoranthene | 0.0917 | 0.0100 | mg/L | 0.1000 | | 92 | 40-140 | | | |
| Benzoic Acid | 0.0809 | 0.100 | mg/L | 0.1000 | | 81 | 40-140 | | | |
| Benzyl Alcohol | 0.0785 | 0.0100 | mg/L | 0.1000 | | 79 | 40-140 | | | |
| bis(2-Chloroethoxy)methane | 0.0864 | 0.0100 | mg/L | 0.1000 | | 86 | 40-140 | | | |
| bis(2-Chloroethyl)ether | 0.0794 | 0.0100 | mg/L | 0.1000 | | 79 | 40-140 | | | |
| bis(2-chloroisopropyl)Ether | 0.0739 | 0.0100 | mg/L | 0.1000 | | 74 | 40-140 | | | |
| bis(2-Ethylhexyl)phthalate | 0.0858 | 0.0060 | mg/L | 0.1000 | | 86 | 40-140 | | | |
| Butylbenzylphthalate | 0.0845 | 0.0100 | mg/L | 0.1000 | | 84 | 40-140 | | | |
| Carbazole | 0.0968 | 0.0100 | mg/L | 0.1000 | | 97 | 40-140 | | | |
| Chrysene | 0.0903 | 0.0100 | mg/L | 0.1000 | | 90 | 40-140 | | | |
| Dibenzo(a,h)Anthracene | 0.108 | 0.0100 | mg/L | 0.1000 | | 108 | 40-140 | | | |
| Dibenzofuran | 0.0976 | 0.0100 | mg/L | 0.1000 | | 98 | 40-140 | | | |
| Diethylphthalate | 0.0932 | 0.0100 | mg/L | 0.1000 | | 93 | 40-140 | | | |
| Dimethylphthalate | 0.0914 | 0.0100 | mg/L | 0.1000 | | 91 | 40-140 | | | |
| Di-n-butylphthalate | 0.0852 | 0.0100 | mg/L | 0.1000 | | 85 | 40-140 | | | |
| Di-n-octylphthalate | 0.0921 | 0.0100 | mg/L | 0.1000 | | 92 | 40-140 | | | |
| Fluoranthene | 0.100 | 0.0100 | mg/L | 0.1000 | | 100 | 40-140 | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8270C Semi-Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22510 - 3520C** | | | | | | | | | | |
| Fluorene | 0.0934 | 0.0100 | mg/L | 0.1000 | | 93 | 40-140 | | | |
| Hexachlorobenzene | 0.110 | 0.0100 | mg/L | 0.1000 | | 110 | 40-140 | | | |
| Hexachlorobutadiene | 0.0832 | 0.0100 | mg/L | 0.1000 | | 83 | 40-140 | | | |
| Hexachlorocyclopentadiene | 0.0610 | 0.0250 | mg/L | 0.1000 | | 61 | 40-140 | | | |
| Hexachloroethane | 0.0740 | 0.0050 | mg/L | 0.1000 | | 74 | 40-140 | | | |
| Indeno(1,2,3-cd)Pyrene | 0.108 | 0.0100 | mg/L | 0.1000 | | 108 | 40-140 | | | |
| Isophorone | 0.0720 | 0.0100 | mg/L | 0.1000 | | 72 | 40-140 | | | |
| Naphthalene | 0.0800 | 0.0100 | mg/L | 0.1000 | | 80 | 40-140 | | | |
| Nitrobenzene | 0.0796 | 0.0100 | mg/L | 0.1000 | | 80 | 40-140 | | | |
| N-Nitrosodimethylamine | 0.0594 | 0.0100 | mg/L | 0.1000 | | 59 | 40-140 | | | |
| N-Nitroso-Di-n-Propylamine | 0.0728 | 0.0100 | mg/L | 0.1000 | | 73 | 40-140 | | | |
| N-nitrosodiphenylamine | 0.0878 | 0.0100 | mg/L | 0.1000 | | 88 | 40-140 | | | |
| Pentachlorophenol | 0.113 | 0.0500 | mg/L | 0.1000 | | 113 | 30-130 | | | |
| Phenanthrene | 0.0933 | 0.0100 | mg/L | 0.1000 | | 93 | 40-140 | | | |
| Phenol | 0.0948 | 0.0100 | mg/L | 0.1000 | | 95 | 30-130 | | | |
| Pyrene | 0.0878 | 0.0100 | mg/L | 0.1000 | | 88 | 40-140 | | | |
| Pyridine | 0.0326 | 0.100 | mg/L | 0.1000 | | 33 | 40-140 | | | B- |
| *Surrogate: 1,2-Dichlorobenzene-d4* | *0.0738* | | mg/L | *0.1000* | | *74* | *30-130* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *0.149* | | mg/L | *0.1500* | | *100* | *15-110* | | | |
| *Surrogate: 2-Chlorophenol-d4* | *0.104* | | mg/L | *0.1500* | | *69* | *15-110* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *0.0864* | | mg/L | *0.1000* | | *86* | *30-130* | | | |
| *Surrogate: 2-Fluorophenol* | *0.0744* | | mg/L | *0.1500* | | *50* | *15-110* | | | |
| *Surrogate: Nitrobenzene-d5* | *0.0712* | | mg/L | *0.1000* | | *71* | *30-130* | | | |
| *Surrogate: Phenol-d6* | *0.111* | | mg/L | *0.1500* | | *74* | *15-110* | | | |
| *Surrogate: p-Terphenyl-d14* | *0.0964* | | mg/L | *0.1000* | | *96* | *30-130* | | | |
| **LCS Dup** | | | | | | | | | | |
| 1,1-Biphenyl | 0.0863 | 0.0100 | mg/L | 0.1000 | | 86 | 40-140 | 0.4 | 20 | |
| 1,2,4-Trichlorobenzene | 0.0779 | 0.0100 | mg/L | 0.1000 | | 78 | 40-140 | 0.1 | 20 | |
| 1,2-Dichlorobenzene | 0.0772 | 0.0100 | mg/L | 0.1000 | | 77 | 40-140 | 7 | 20 | |
| 1,3-Dichlorobenzene | 0.0744 | 0.0100 | mg/L | 0.1000 | | 74 | 40-140 | 1 | 20 | |
| 1,4-Dichlorobenzene | 0.0763 | 0.0100 | mg/L | 0.1000 | | 76 | 40-140 | 7 | 20 | |
| 2,3,4,6-Tetrachlorophenol | 0.0864 | 0.0500 | mg/L | 0.1000 | | 86 | 30-130 | 6 | 20 | |
| 2,4,5-Trichlorophenol | 0.0956 | 0.0100 | mg/L | 0.1000 | | 96 | 30-130 | 4 | 20 | |
| 2,4,6-Trichlorophenol | 0.100 | 0.0100 | mg/L | 0.1000 | | 100 | 30-130 | 2 | 20 | |
| 2,4-Dichlorophenol | 0.0942 | 0.0100 | mg/L | 0.1000 | | 94 | 30-130 | 0.9 | 20 | |
| 2,4-Dimethylphenol | 0.0882 | 0.0500 | mg/L | 0.1000 | | 88 | 30-130 | 1 | 20 | |
| 2,4-Dinitrophenol | 0.0998 | 0.0500 | mg/L | 0.1000 | | 100 | 30-130 | 0.1 | 20 | |
| 2,4-Dinitrotoluene | 0.105 | 0.0100 | mg/L | 0.1000 | | 105 | 40-140 | 2 | 20 | |
| 2,6-Dinitrotoluene | 0.100 | 0.0100 | mg/L | 0.1000 | | 100 | 40-140 | 2 | 20 | |
| 2-Chloronaphthalene | 0.0856 | 0.0100 | mg/L | 0.1000 | | 86 | 40-140 | 0.6 | 20 | |
| 2-Chlorophenol | 0.0808 | 0.0100 | mg/L | 0.1000 | | 81 | 30-130 | 10 | 20 | |
| 2-Methylnaphthalene | 0.0901 | 0.0100 | mg/L | 0.1000 | | 90 | 40-140 | 2 | 20 | |
| 2-Methylphenol | 0.0872 | 0.0100 | mg/L | 0.1000 | | 87 | 30-130 | 8 | 20 | |
| 2-Nitroaniline | 0.0720 | 0.0100 | mg/L | 0.1000 | | 72 | 40-140 | 0.8 | 20 | |
| 2-Nitrophenol | 0.0930 | 0.0100 | mg/L | 0.1000 | | 93 | 30-130 | 2 | 20 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8270C Semi-Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22510 - 3520C** | | | | | | | | | | |
| 3,3'-Dichlorobenzidine | 0.0747 | 0.0200 | mg/L | 0.1000 | | 75 | 40-140 | 0.9 | 20 | |
| 3+4-Methylphenol | 0.136 | 0.0200 | mg/L | 0.2000 | | 68 | 30-130 | 21 | 20 | D+ |
| 3-Nitroaniline | 0.0925 | 0.0100 | mg/L | 0.1000 | | 92 | 40-140 | 3 | 20 | |
| 4,6-Dinitro-2-Methylphenol | 0.104 | 0.0500 | mg/L | 0.1000 | | 104 | 30-130 | 0.7 | 20 | |
| 4-Bromophenyl-phenylether | 0.0885 | 0.0100 | mg/L | 0.1000 | | 88 | 40-140 | 7 | 20 | |
| 4-Chloro-3-Methylphenol | 0.0940 | 0.0100 | mg/L | 0.1000 | | 94 | 30-130 | 2 | 20 | |
| 4-Chloroaniline | 0.0660 | 0.0200 | mg/L | 0.1000 | | 66 | 40-140 | 5 | 20 | |
| 4-Chloro-phenyl-phenyl ether | 0.0928 | 0.0100 | mg/L | 0.1000 | | 93 | 40-140 | 2 | 20 | |
| 4-Nitroaniline | 0.0956 | 0.0100 | mg/L | 0.1000 | | 96 | 40-140 | 12 | 20 | |
| 4-Nitrophenol | 0.0941 | 0.0500 | mg/L | 0.1000 | | 94 | 30-130 | 3 | 20 | |
| Acenaphthene | 0.0858 | 0.0100 | mg/L | 0.1000 | | 86 | 40-140 | 0.9 | 20 | |
| Acenaphthylene | 0.0854 | 0.0100 | mg/L | 0.1000 | | 85 | 40-140 | 0.4 | 20 | |
| Acetophenone | 0.0767 | 0.0100 | mg/L | 0.1000 | | 77 | 40-140 | 6 | 20 | |
| Aniline | 0.0665 | 0.0100 | mg/L | 0.1000 | | 67 | 40-140 | 1 | 20 | |
| Anthracene | 0.0908 | 0.0100 | mg/L | 0.1000 | | 91 | 40-140 | 2 | 20 | |
| Azobenzene | 0.0799 | 0.0200 | mg/L | 0.1000 | | 80 | 40-140 | 2 | 20 | |
| Benzo(a)anthracene | 0.0935 | 0.0100 | mg/L | 0.1000 | | 93 | 40-140 | 1 | 20 | |
| Benzo(a)pyrene | 0.0884 | 0.0100 | mg/L | 0.1000 | | 88 | 40-140 | 0.5 | 20 | |
| Benzo(b)fluoranthene | 0.101 | 0.0100 | mg/L | 0.1000 | | 101 | 40-140 | 2 | 20 | |
| Benzo(g,h,i)perylene | 0.102 | 0.0100 | mg/L | 0.1000 | | 102 | 40-140 | 3 | 20 | |
| Benzo(k)fluoranthene | 0.0922 | 0.0100 | mg/L | 0.1000 | | 92 | 40-140 | 0.6 | 20 | |
| Benzoic Acid | 0.0840 | 0.100 | mg/L | 0.1000 | | 84 | 40-140 | 4 | 20 | |
| Benzyl Alcohol | 0.0826 | 0.0100 | mg/L | 0.1000 | | 83 | 40-140 | 5 | 20 | |
| bis(2-Chloroethoxy)methane | 0.0886 | 0.0100 | mg/L | 0.1000 | | 89 | 40-140 | 3 | 20 | |
| bis(2-Chloroethyl)ether | 0.0820 | 0.0100 | mg/L | 0.1000 | | 82 | 40-140 | 3 | 20 | |
| bis(2-chloroisopropyl)Ether | 0.0793 | 0.0100 | mg/L | 0.1000 | | 79 | 40-140 | 7 | 20 | |
| bis(2-Ethylhexyl)phthalate | 0.0870 | 0.0060 | mg/L | 0.1000 | | 87 | 40-140 | 1 | 20 | |
| Butylbenzylphthalate | 0.0860 | 0.0100 | mg/L | 0.1000 | | 86 | 40-140 | 2 | 20 | |
| Carbazole | 0.0982 | 0.0100 | mg/L | 0.1000 | | 98 | 40-140 | 1 | 20 | |
| Chrysene | 0.0889 | 0.0100 | mg/L | 0.1000 | | 89 | 40-140 | 2 | 20 | |
| Dibenzo(a,h)Anthracene | 0.102 | 0.0100 | mg/L | 0.1000 | | 102 | 40-140 | 5 | 20 | |
| Dibenzofuran | 0.0955 | 0.0100 | mg/L | 0.1000 | | 95 | 40-140 | 2 | 20 | |
| Diethylphthalate | 0.0914 | 0.0100 | mg/L | 0.1000 | | 91 | 40-140 | 2 | 20 | |
| Dimethylphthalate | 0.0881 | 0.0100 | mg/L | 0.1000 | | 88 | 40-140 | 4 | 20 | |
| Di-n-butylphthalate | 0.0866 | 0.0100 | mg/L | 0.1000 | | 87 | 40-140 | 2 | 20 | |
| Di-n-octylphthalate | 0.0974 | 0.0100 | mg/L | 0.1000 | | 97 | 40-140 | 6 | 20 | |
| Fluoranthene | 0.101 | 0.0100 | mg/L | 0.1000 | | 101 | 40-140 | 0.5 | 20 | |
| Fluorene | 0.0916 | 0.0100 | mg/L | 0.1000 | | 92 | 40-140 | 2 | 20 | |
| Hexachlorobenzene | 0.101 | 0.0100 | mg/L | 0.1000 | | 101 | 40-140 | 9 | 20 | |
| Hexachlorobutadiene | 0.0801 | 0.0100 | mg/L | 0.1000 | | 80 | 40-140 | 4 | 20 | |
| Hexachlorocyclopentadiene | 0.0583 | 0.0250 | mg/L | 0.1000 | | 58 | 40-140 | 5 | 20 | |
| Hexachloroethane | 0.0832 | 0.0050 | mg/L | 0.1000 | | 83 | 40-140 | 12 | 20 | |
| Indeno(1,2,3-cd)Pyrene | 0.103 | 0.0100 | mg/L | 0.1000 | | 103 | 40-140 | 5 | 20 | |
| Isophorone | 0.0728 | 0.0100 | mg/L | 0.1000 | | 73 | 40-140 | 1 | 20 | |
| Naphthalene | 0.0816 | 0.0100 | mg/L | 0.1000 | | 82 | 40-140 | 2 | 20 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8270C Semi-Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22510 - 3520C** | | | | | | | | | | |
| Nitrobenzene | 0.0860 | 0.0100 | mg/L | 0.1000 | | 86 | 40-140 | 8 | 20 | |
| N-Nitrosodimethylamine | 0.0563 | 0.0100 | mg/L | 0.1000 | | 56 | 40-140 | 5 | 20 | |
| N-Nitroso-Di-n-Propylamine | 0.0752 | 0.0100 | mg/L | 0.1000 | | 75 | 40-140 | 3 | 20 | |
| N-nitrosodiphenylamine | 0.0872 | 0.0100 | mg/L | 0.1000 | | 87 | 40-140 | 0.7 | 20 | |
| Pentachlorophenol | 0.106 | 0.0500 | mg/L | 0.1000 | | 106 | 30-130 | 6 | 20 | |
| Phenanthrene | 0.0912 | 0.0100 | mg/L | 0.1000 | | 91 | 40-140 | 2 | 20 | |
| Phenol | 0.0959 | 0.0100 | mg/L | 0.1000 | | 96 | 30-130 | 1 | 20 | |
| Pyrene | 0.0872 | 0.0100 | mg/L | 0.1000 | | 87 | 40-140 | 0.8 | 20 | |
| Pyridine | 0.0310 | 0.100 | mg/L | 0.1000 | | 31 | 40-140 | 5 | 20 | B- |
| *Surrogate: 1,2-Dichlorobenzene-d4* | *0.0817* | | mg/L | *0.1000* | | *82* | *30-130* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *0.136* | | mg/L | *0.1500* | | *90* | *15-110* | | | |
| *Surrogate: 2-Chlorophenol-d4* | *0.114* | | mg/L | *0.1500* | | *76* | *15-110* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *0.0851* | | mg/L | *0.1000* | | *85* | *30-130* | | | |
| *Surrogate: 2-Fluorophenol* | *0.0836* | | mg/L | *0.1500* | | *56* | *15-110* | | | |
| *Surrogate: Nitrobenzene-d5* | *0.0767* | | mg/L | *0.1000* | | *77* | *30-130* | | | |
| *Surrogate: Phenol-d6* | *0.117* | | mg/L | *0.1500* | | *78* | *15-110* | | | |
| *Surrogate: p-Terphenyl-d14* | *0.0917* | | mg/L | *0.1000* | | *92* | *30-130* | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

**Notes and Definitions**

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| SM | Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM). |
| P | Percent difference between primary and confirmation results exceeds 40% (P). |
| ICV | Initial Calibration Verification recovery is outside of control limit (ICV). |
| D+ | Relative percent difference for duplicate is outside of criteria (D+). |
| D | Diluted. |
| C+ | Continuing Calibration recovery is above upper control limit (C+). |
| B- | Blank Spike recovery is below lower control limit (B-). |
| ND | Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |
| MDL | Method Detection Limit |
| MRL | Method Reporting Limit |
| LOD | Limit of Detection |
| LOQ | Limit of Quantitation |
| DL | Detection Limit |
| I/V | Initial Volume |
| F/V | Final Volume |
| § | Subcontracted analysis; see attached report |
| 1 | Range result excludes concentrations of surrogates and/or internal standards eluting in that range. |
| 2 | Range result excludes concentrations of target analytes eluting in that range. |
| 3 | Range result excludes the concentration of the C9-C10 aromatic range. |
| Avg | Results reported as a mathematical average. |
| NR | No Recovery |
| [CALC] | Calculated Analyte |
| SUB | Subcontractged analysis; see attached report |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201216

## ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

### ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)
A2LA Accredited: Testing Cert# 2864.01
http://www.a2la.org/scopepdf/2864-01.pdf

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/labs/waterlabs-instate.php

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/out_state.pdf

Maine Potable and Non Potable Water: RI0002
http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/labcert/labcert.aspx

New Hampshire (NELAP accredited) Potable and Non PotableWater, Solid and Hazardous Waste: 2424
http://www4.egov.nh.gov/des/nhelap/namesearch.asp

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

United States Department of Agriculture Soil Permit: S-54210

Maryland Potable Water: 301
http://www.mde.state.md.us/assets/document/WSP_labs-2009apr20.pdf

### CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01
Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)
http://www.A2LA.org/dirsearchnew/newsearch.cfm

CPSC ID# 1141
Lead Paint, Lead in Children's Metals Jewelry
http://www.cpsc.gov/cgi-bin/labapplist.aspx

**Sample and Cooler Receipt Checklist**

Client: AECOM - ESS
Client Project ID: _____
Shipped/Delivered Via: ESS Courier

ESS Project ID: 12010216
Date Project Due: 1/25/12
Days For Project: 3 Day

**Items to be checked upon receipt:**

1. Air Bill Manifest Present? *** No**
   Air No.:
2. Were Custody Seals Present? **No**
3. Were Custody Seals Intact? **N/A**
4. Is Radiation count < 100 CPM? **Yes**
5. Is a cooler present? **Yes**
   Cooler Temp: **3.6**
   Iced With: **Icepacks**
6. Was COC included with samples? **Yes**
7. Was COC signed and dated by client? **Yes**
8. Does the COC match the sample **Yes**
9. Is COC complete and correct? **Yes**
10. Are the samples properly preserved? **Yes**
11. Proper sample containers used? **Yes**
12. Any air bubbles in the VOA vials? **No**
13. Holding times exceeded? **No**
14. Sufficient sample volumes? **Yes**
15. Any Subcontracting needed? **No**
16. Are ESS labels on correct containers? **Yes | No**
17. Were samples received intact? **Yes | No**
    ESS Sample IDs: _____
    Sub Lab: _____
    Analysis: _____
    TAT: _____
18. Was there need to call project manager to discuss status? If yes, please explain.

_____

_____

_____

Who was called?: _____ By whom? _____

| Sample Number | Properly Preserved | Container Type | # of Containers | Preservative |
|---|---|---|---|---|
| 1 | Yes | 1 L Glass | 2 | HCL |
| 1 | Yes | 1 L Glass | 10 | NP |
| 1 | Yes | 250 ml Plastic | 1 | HNO3 |
| 1 | Yes | 250 ml Plastic | 1 | NP |
| 1 | Yes | 40 ml - VOA | 3 | HCL |
| 2 | Yes | 40 ml - VOA | 1 | HCL |

Completed By: MK Date/Time: 1/20/12
Reviewed By: STD Date/Time: 1-20-12

# ESS Laboratory

*Division of Thielsch Engineering, Inc.*
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

# CHAIN OF CUSTODY

Page 1 of 1

Turn Time ___ Standard Other ~~[illegible]~~ 72 HR
If faster than 5 days, prior approval by laboratory is required # ___
State where samples were collected from: MA (RI) CT NH NJ NY ME Other ___
Is this project for any of the following: MA-MCP Navy USACE Other ___

Reporting Limits

ESS LAB PROJECT ID: 1201216

Electronic Deliverable Yes X No ___
Format: Excel X Access ___ PDF ___ Other ___

| Co. Name | Project # | Project Name (20 Char. or less) |
|---|---|---|
| AECOM | 60163799 | BASF - Cranston |

| Contact Person | Address |
|---|---|
| KRIS CARBONNEAU | 250 Apollo Drive |

| City | State | Zip | PO# |
|---|---|---|---|
| Chelmsford | MA | 01824 | |

| Telephone # | Fax # | Email Address |
|---|---|---|
| 978-905-2100 | | KRIS.CARBONNEAU@AECOM.COM |

Circle and/or Write Required Analysis

| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | 8260 VOA (624, 524.2) | 8021 MTBE/BTEX (8015 GRO) | 8100 TPH (8015 DRO) | EPH w/o PAHs (EPH w/PAHs, EPH 4 Diesel) | 8081 Pesticides (8082 PCB, 608 Pesticides, 608 PCB) | 8270 SVOA (625, PAH 8270) | RCRA5 (RCRA8, PP13, TAL23) | KCLP-RCRA8 (NBC7) | MCP-METALS (13) (MCP-METALS (13) w/Hg) | Herbicides | pH | Paint filter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | 1/20/12 | 1125 | X | | SO | Middle Roll off | 6 | 5 | V,G | X | | X | | X | X | X | X | | X | X | X | | |
| — | 1/20/12 | 1210 | X | | SO | Western Roll off | 6 | 5 | V,G | X | | X | | X | X | X | X | | X | X | X | | |
| 01 | 1/20/12 | 1445 | X | | SW | Water Disposal | 2 | 17 | V G,P | X | | X | | X | X | X | X | | X | X | | | |
| — | Lab | → | | | | Trip Blank | 6 | 1 | ✓ | X | | | | | | | | | | | | | |
| 02 | Lab | → | | | | Trip Blank | 2 | 1 | ✓ | X | | | | | | | | | | | | | |

Container Type: P-Poly G-Glass S-Sterile V-VOA | Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present X Yes ___ No
Seals Intact ___ Yes ___ No NA: X
Cooler Temp: 3.6

Internal Use Only
[ ] Pickup
[ ] Technicians ___

Preservation Code 1- NP, 2- HCl, 3- $H_2SO_4$, 4- $HNO_3$, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ___

Sampled by: Tom Croft

Comments:

| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
|---|---|---|---|---|---|---|---|
| [signature] | 1/20/12 1640 | [signature] | 1/20/12 1640 | | | | |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| | 1/20/12 | | | | | | |

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/28/04 B

*CERTIFICATE OF ANALYSIS*

Joanne Lynch
AECOM Environment - ENSR
250 Apollo Drive
Chelmsford, MA 01824

**RE: BASF - Cranston RI (60163799.1)**
**ESS Laboratory Work Order Number: 1201315**

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

**REVIEWED**
**By ESS Laboratory at 5:14 pm, Feb 03, 2012**

**Analytical Summary**
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

ESS Laboratory certifies that the test results meet the requirements of NELAC and A2LA, except where noted within this project narrative.

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201315

## SAMPLE RECEIPT

The following samples were received on January 31, 2012 for the analyses specified on the enclosed Chain of Custody Record.

**These samples were originally received on January 20, 2011 as ESS Laboratory Sample IDs 1201221-01 and 1201221-02.**

| Lab Number | SampleName | Matrix | Analysis |
|---|---|---|---|
| 1201315-01 | Middle Roll Off | Soil | 1311/8260B |
| 1201315-02 | Western Roll Off | Soil | 1311/8260B |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201315

## PROJECT NARRATIVE

**No unusual observations noted.**

**End of Project Narrative.**

## DATA USABILITY LINKS

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Roll Off
Date Sampled: 01/20/12 11:25
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1201315
ESS Laboratory Sample ID: 1201315-01
Sample Matrix: Soil
Units: mg/L
Analyst: MD

TCLP Extraction Date:

## 1311/8260B Volatile TCLP Compounds

| Analyte | Results (MRL) | TCLP Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Benzene | ND (0.100) | 0.5 | 100 | 02/03/12 12:15 | CVB0021 | CB20314 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | *80 %* | | *70-130* |
| *Surrogate: 4-Bromofluorobenzene* | *92 %* | | *70-130* |
| *Surrogate: Dibromofluoromethane* | *86 %* | | *70-130* |
| *Surrogate: Toluene-d8* | *93 %* | | *70-130* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Roll Off
Date Sampled: 01/20/12 12:10
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 1201315
ESS Laboratory Sample ID: 1201315-02
Sample Matrix: Soil
Units: mg/L
Analyst: MD

TCLP Extraction Date:

## 1311/8260B Volatile TCLP Compounds

| Analyte | Results (MRL) | TCLP Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Benzene | ND (0.100) | 0.5 | 100 | 02/03/12 12:44 | CVB0021 | CB20314 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | *79 %* | | *70-130* |
| *Surrogate: 4-Bromofluorobenzene* | *93 %* | | *70-130* |
| *Surrogate: Dibromofluoromethane* | *85 %* | | *70-130* |
| *Surrogate: Toluene-d8* | *93 %* | | *70-130* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201315

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **1311/8260B Volatile TCLP Compounds** | | | | | | | | | | |
| **Batch CB20314 - 5030B** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Benzene | ND | 0.0050 | mg/L | | | | | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0199* | | mg/L | *0.02500* | | *80* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0230* | | mg/L | *0.02500* | | *92* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *0.0214* | | mg/L | *0.02500* | | *85* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *0.0234* | | mg/L | *0.02500* | | *94* | *70-130* | | | |
| **LCS** | | | | | | | | | | |
| Benzene | 8.96 | | ug/L | 10.00 | | 90 | 70-130 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0229* | | mg/L | *0.02500* | | *92* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0234* | | mg/L | *0.02500* | | *94* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *0.0236* | | mg/L | *0.02500* | | *95* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *0.0240* | | mg/L | *0.02500* | | *96* | *70-130* | | | |
| **LCS Dup** | | | | | | | | | | |
| Benzene | 9.06 | | ug/L | 10.00 | | 91 | 70-130 | 1 | 25 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *0.0232* | | mg/L | *0.02500* | | *93* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *0.0235* | | mg/L | *0.02500* | | *94* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *0.0237* | | mg/L | *0.02500* | | *95* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *0.0240* | | mg/L | *0.02500* | | *96* | *70-130* | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201315

**Notes and Definitions**

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| D | Diluted. |
| ND | Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |
| MDL | Method Detection Limit |
| MRL | Method Reporting Limit |
| LOD | Limit of Detection |
| LOQ | Limit of Quantitation |
| DL | Detection Limit |
| I/V | Initial Volume |
| F/V | Final Volume |
| § | Subcontracted analysis; see attached report |
| 1 | Range result excludes concentrations of surrogates and/or internal standards eluting in that range. |
| 2 | Range result excludes concentrations of target analytes eluting in that range. |
| 3 | Range result excludes the concentration of the C9-C10 aromatic range. |
| Avg | Results reported as a mathematical average. |
| NR | No Recovery |
| [CALC] | Calculated Analyte |
| SUB | Subcontracted analysis; see attached report |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201315

## ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

### ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)
A2LA Accredited: Testing Cert# 2864.01
http://www.a2la.org/scopepdf/2864-01.pdf

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/labs/waterlabs-instate.php

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/out_state.pdf

Maine Potable and Non Potable Water: RI0002
http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/labcert/labcert.aspx

New Hampshire (NELAP accredited) Potable and Non PotableWater, Solid and Hazardous Waste: 2424
http://www4.egov.nh.gov/des/nhelap/namesearch.asp

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

United States Department of Agriculture Soil Permit: S-54210

Maryland Potable Water: 301
http://www.mde.state.md.us/assets/document/WSP_labs-2009apr20.pdf

### CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01
Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)
http://www.A2LA.org/dirsearchnew/newsearch.cfm

CPSC ID# 1141
Lead Paint, Lead in Children's Metals Jewelry
http://www.cpsc.gov/cgi-bin/labapplist.aspx

# CHAIN OF CUSTODY

ESS 1201315


**ESS Laboratory**
Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com


Turn Time ___ Standard Other ~~[illegible]~~ 72 HR
If faster than 5 days, prior approval by laboratory is required #
State where samples were collected from: MA (RI) CT NH NJ NY ME Other
Is this project for any of the following: MA-MCP Navy USACE Other

Reporting Limits

ESS LAB PROJECT ID: 1201221

Electronic Deliverable Yes X No ___
Format: Excel X Access ___ PDF ___ Other ___

Circle and/or Write Required Analysis

| Co. Name | Project # | Project Name (20 Char. or less) |
|---|---|---|
| AECOM | 60163799 | BASF - Cranston |

Contact Person: KRIS CARBONNEAU
Address: 250 Apollo Drive
City: Chelmsford State: MA Zip: 01824 PO#
Telephone #: 978-905-2100 Fax #
Email Address: KRIS.CARBONNEAU@AECOM.COM

| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | 624 524.2 VOA | 8015 MTBE/BTEX GRO VPH | 8015 DRO | EPH w/o PAHs EPH w/PAHs EPH 4 Diesel | 8081 Pesticides 8082 PCB 608 PCB | 8270 SVOA 625 PAH 8270 | RCRA3 PP13 TAL23 | RCRA3 NBC7 | MCP-METALS (13) w/Hg | Herbicides | H | Paint filter | TCLP Benzene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1/20/12 | 1125 | X | | SO | Middle Roll off | 6 | 5 | VG | X | | X | | X | X | X | X | | X | X | X | X |
| 2 | 1/20/12 | 1210 | X | | SO | Western Roll off | 6 | 5 | VG | X | | X | | X | X | X | X | | X | X | X | X |
| | 1/20/12 | 1445 | X | | SW | Water Disposal | 2 | 17 | CP | X | | X | | X | X | X | X | | X | X | | |
| 3 | Lab | | | | | Trip Blank | 6 | 1 | V | X | | | | | | | | | | | | |
| | Lab | | | | | Trip Blank | 2 | 1 | V | X | | | | | | | | | | | | |

*Relog for TCLP Benzene 3 Day TAT

Container Type: P-Poly G-Glass S-Sterile V-VOA
Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present X Yes ___ No
Seals Intact ___ Yes ___ No NA: X
Cooler Temp: 3.6

Internal Use Only
[ ] Pickup
[ ] Technicians ___

Preservation Code 1- NP, 2- HCl, 3- $H_2SO_4$, 4- $HNO_3$, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ___

Sampled by: Tom Croft
Comments: *EO 1/31/12

| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
|---|---|---|---|---|---|---|---|
| [signature] | 1/20/12 1640 | [signature] | 1/20/12 1640 | | | | |
| Relinquished by: (Signature) | Date/Time 1/20/12 | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

*By circling MA-MCP, client acknowledges samples were collected

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 B

*CERTIFICATE OF ANALYSIS*

Joanne Lynch
AECOM Environment - ENSR
250 Apollo Drive
Chelmsford, MA 01824

**RE: BASF - Cranston RI (60163799.)**
**ESS Laboratory Work Order Number: 1201230**

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

**REVIEWED**
**By ESS Laboratory at 4:15 pm, Jan 27, 2012**

**Analytical Summary**
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

ESS Laboratory certifies that the test results meet the requirements of NELAC and A2LA, except where noted within this project narrative.

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

## SAMPLE RECEIPT

The following samples were received on January 23, 2012 for the analyses specified on the enclosed Chain of Custody Record.

| Lab Number | SampleName | Matrix | Analysis |
|---|---|---|---|
| 1201230-01 | Bridge Rolloff | Soil | 1311/6010B, 1311/7470A, 6010B, 7471A, 8081A, 8082, 8100M, 8151A, 8260B, 8270C, 9045, 9095A |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

## PROJECT NARRATIVE

**1311/6000/7000 TCLP Metals**

CA22520-BSD1 **Relative percent difference for duplicate is outside of criteria (D+).**
Mercury (27%)

**3050B/6000/7000 Total Metals**

CA22329-DUP2 **Relative percent difference for duplicate is outside of criteria (D+).**
Arsenic (36%), Lead (49%), Silver (105%)

**5035/8260B Volatile Organic Compounds / Methanol**

1201230-01 **Present in Method Blank (B).**
Methylene Chloride

CA22415-BS1 **Blank Spike recovery is above upper control limit (B+).**
Diethyl Ether (133% @ 70-130%)

CVA0154-CCV1 **Continuing Calibration recovery is above upper control limit (C+).**
1,4-Dioxane - Screen (153% @ 70-130%), Diethyl Ether (133% @ 70-130%)

**8081A Organochlorine Pesticides**

1201230-01 **Percent difference between primary and confirmation results exceeds 40% (P).**
4,4'-DDT , Endosulfan II , Methoxychlor [2C]

1201230-01 **Reported above the quantitation limit; Estimated value (E).**
Endosulfan Sulfate [2C]

1201230-01 **Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).**
Decachlorobiphenyl (171% @ 30-150%), Decachlorobiphenyl [2C] (296% @ 30-150%), Tetrachloro-m-xylene [2C] (158% @ 30-150%)

**8151A Chlorinated Herbicides**

1201230-01 **Percent difference between primary and confirmation results exceeds 40% (P).**
MCPP [2C]

CA22311-BSD1 **Relative percent difference for duplicate is outside of criteria (D+).**

CVA0168-CCV2 **Continuing Calibration recovery is above upper control limit (C+).**
2,4,5-T (126% @ 80-120%), Dinoseb (126% @ 80-120%), Dinoseb [2C] (123% @ 80-120%), MCPA (122% @ 80-120%)

**No other observations noted.**

**End of Project Narrative.**

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

## DATA USABILITY LINKS

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Bridge Rolloff
Date Sampled: 01/23/12 00:00
Percent Solids: 69

ESS Laboratory Work Order: 1201230
ESS Laboratory Sample ID: 1201230-01
Sample Matrix: Soil
Units: mg/L

TCLP Extraction Date: 1/24/12 17:19

## 1311/6000/7000 TCLP Metals

| Analyte | Results (MRL) | Method | TCLP Limit | DF | Analyst | Analyzed | I/V | F/V | Batch |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND (0.050) | 1311/6010B | | 1 | SVD | 01/25/12 21:25 | 50 | 50 | CA22517 |
| **Barium** | **0.317** (0.050) | 1311/6010B | | 1 | SVD | 01/25/12 21:25 | 50 | 50 | CA22517 |
| Cadmium | ND (0.0050) | 1311/6010B | | 1 | SVD | 01/25/12 21:25 | 50 | 50 | CA22517 |
| Chromium | ND (0.020) | 1311/6010B | | 1 | SVD | 01/25/12 21:25 | 50 | 50 | CA22517 |
| **Lead** | **0.041** (0.020) | 1311/6010B | | 1 | SVD | 01/25/12 21:25 | 50 | 50 | CA22517 |
| Mercury | ND (0.00050) | 1311/7470A | | 1 | KJK | 01/26/12 12:48 | 20 | 40 | CA22520 |
| Selenium | ND (0.050) | 1311/6010B | | 1 | SVD | 01/25/12 21:25 | 50 | 50 | CA22517 |
| Silver | ND (0.010) | 1311/6010B | | 1 | SVD | 01/25/12 21:25 | 50 | 50 | CA22517 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Bridge Rolloff
Date Sampled: 01/23/12 00:00
Percent Solids: 69

ESS Laboratory Work Order: 1201230
ESS Laboratory Sample ID: 1201230-01
Sample Matrix: Soil
Units: mg/kg dry

## 3050B/6000/7000 Total Metals

| Analyte | Results (MRL) | Method | Limit | DF | Analyst | Analyzed | I/V | F/V | Batch |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND (2.9) | 6010B | | 1 | SVD | 01/24/12 0:34 | 2.46 | 100 | CA22329 |
| **Barium** | **31.0** (2.9) | 6010B | | 1 | SVD | 01/24/12 0:34 | 2.46 | 100 | CA22329 |
| **Cadmium** | **1.25** (0.59) | 6010B | | 1 | SVD | 01/24/12 0:34 | 2.46 | 100 | CA22329 |
| **Chromium** | **26.6** (1.2) | 6010B | | 1 | SVD | 01/24/12 0:34 | 2.46 | 100 | CA22329 |
| **Lead** | **47.0** (5.9) | 6010B | | 1 | SVD | 01/24/12 0:34 | 2.46 | 100 | CA22329 |
| **Mercury** | **0.425** (0.041) | 7471A | | 1 | KJK | 01/25/12 19:40 | 0.7 | 40 | CA22425 |
| Selenium | ND (5.9) | 6010B | | 1 | SVD | 01/24/12 0:34 | 2.46 | 100 | CA22329 |
| Silver | ND (0.59) | 6010B | | 1 | SVD | 01/24/12 0:34 | 2.46 | 100 | CA22329 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Bridge Rolloff
Date Sampled: 01/23/12 00:00
Percent Solids: 69
Initial Volume: 16.6
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1201230
ESS Laboratory Sample ID: 1201230-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

## 5035/8260B Volatile Organic Compounds / Methanol

| Analyte | Results (MRL) | MDL | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND (0.176) | 0.0153 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,1,1-Trichloroethane | ND (0.0879) | 0.0155 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,1,2,2-Tetrachloroethane | ND (0.0879) | 0.0239 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,1,2-Trichloroethane | ND (0.0879) | 0.0220 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,1-Dichloroethane | ND (0.0879) | 0.0141 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,1-Dichloroethene | ND (0.0879) | 0.0216 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,1-Dichloropropene | ND (0.0879) | 0.0135 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,2,3-Trichlorobenzene | ND (0.0879) | 0.0294 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,2,3-Trichloropropane | ND (0.0879) | 0.0218 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **1,2,4-Trichlorobenzene** | **J 0.0352** (0.0879) | 0.0193 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **1,2,4-Trimethylbenzene** | **0.612** (0.0879) | 0.0169 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,2-Dibromo-3-Chloropropane | ND (0.528) | 0.176 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,2-Dibromoethane | ND (0.0879) | 0.0223 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **1,2-Dichlorobenzene** | **0.656** (0.0879) | 0.0125 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,2-Dichloroethane | ND (0.0879) | 0.0236 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,2-Dichloropropane | ND (0.0879) | 0.0230 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **1,3,5-Trimethylbenzene** | **0.209** (0.0879) | 0.0155 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **1,3-Dichlorobenzene** | **J 0.0141** (0.0879) | 0.0111 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,3-Dichloropropane | ND (0.0879) | 0.0197 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **1,4-Dichlorobenzene** | **0.106** (0.0879) | 0.0234 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1,4-Dioxane - Screen | ND (8.79) | 2.94 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 1-Chlorohexane | ND (0.0879) | 0.0167 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 2,2-Dichloropropane | ND (0.176) | 0.0301 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 2-Butanone | ND (2.20) | 0.508 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 2-Chlorotoluene | ND (0.0879) | 0.0248 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 2-Hexanone | ND (0.879) | 0.151 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 4-Chlorotoluene | ND (0.0879) | 0.0114 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **4-Isopropyltoluene** | **0.712** (0.0879) | 0.0157 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| 4-Methyl-2-Pentanone | ND (0.879) | 0.106 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **Acetone** | **J 0.691** (2.20) | 0.651 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Benzene | ND (0.0879) | 0.0142 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Bridge Rolloff
Date Sampled: 01/23/12 00:00
Percent Solids: 69
Initial Volume: 16.6
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1201230
ESS Laboratory Sample ID: 1201230-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

## 5035/8260B Volatile Organic Compounds / Methanol

| Analyte | Results (MRL) | MDL | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|---|
| Bromobenzene | ND (0.0879) | 0.0241 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Bromochloromethane | ND (0.0879) | 0.0285 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Bromodichloromethane | ND (0.0879) | 0.0121 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Bromoform | ND (0.0879) | 0.0253 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Bromomethane | ND (0.176) | 0.0587 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Carbon Disulfide | ND (0.0879) | 0.0130 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Carbon Tetrachloride | ND (0.0879) | 0.0153 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **Chlorobenzene** | **5.35** (0.0879) | 0.0139 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Chloroethane | ND (0.176) | 0.0586 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Chloroform | ND (0.0879) | 0.0181 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Chloromethane | ND (0.176) | 0.0223 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| cis-1,2-Dichloroethene | ND (0.0879) | 0.0218 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| cis-1,3-Dichloropropene | ND (0.0879) | 0.0199 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Dibromochloromethane | ND (0.0879) | 0.0222 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Dibromomethane | ND (0.0879) | 0.0278 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Dichlorodifluoromethane | ND (0.0879) | 0.0153 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Diethyl Ether | ND (0.0879) | 0.0223 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Di-isopropyl ether | ND (0.0879) | 0.0165 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Ethyl tertiary-butyl ether | ND (0.0879) | 0.0222 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **Ethylbenzene** | **J 0.0317** (0.0879) | 0.0114 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Hexachlorobutadiene | ND (0.0879) | 0.0294 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **Isopropylbenzene** | **J 0.0475** (0.0879) | 0.0155 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Methyl tert-Butyl Ether | ND (0.0879) | 0.0141 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **Methylene Chloride** | **B, J 0.0563** (0.440) | 0.0230 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **Naphthalene** | **0.459** (0.0879) | 0.0230 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **n-Butylbenzene** | **0.252** (0.0879) | 0.0216 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **n-Propylbenzene** | **0.243** (0.0879) | 0.0215 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **sec-Butylbenzene** | **J 0.0774** (0.0879) | 0.0118 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Styrene | ND (0.0879) | 0.0116 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| tert-Butylbenzene | ND (0.0879) | 0.0206 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Tertiary-amyl methyl ether | ND (0.0879) | 0.0127 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Bridge Rolloff
Date Sampled: 01/23/12 00:00
Percent Solids: 69
Initial Volume: 16.6
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1201230
ESS Laboratory Sample ID: 1201230-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

## 5035/8260B Volatile Organic Compounds / Methanol

| Analyte | Results (MRL) | MDL | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|---|
| Tetrachloroethene | ND (0.0879) | 0.0294 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Tetrahydrofuran | ND (0.879) | 0.227 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **Toluene** | **0.406** (0.0879) | 0.0223 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| trans-1,2-Dichloroethene | ND (0.0879) | 0.0288 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| trans-1,3-Dichloropropene | ND (0.0879) | 0.0271 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Trichloroethene | ND (0.0879) | 0.0181 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Trichlorofluoromethane | ND (0.0879) | 0.0232 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Vinyl Acetate | ND (0.440) | 0.0181 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Vinyl Chloride | ND (0.0879) | 0.0290 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **Xylene O** | **J 0.0176** (0.0879) | 0.0169 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| **Xylene P,M** | **J 0.0369** (0.176) | 0.0341 | | 1 | 01/24/12 13:21 | CVA0154 | CA22415 |
| Xylenes (Total) | ND (0.264) | | | 1 | 01/24/12 13:21 | | [CALC] |

| | *%Recovery* | *Qualifier* | *Limits* |
|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | *82 %* | | *70-130* |
| *Surrogate: 4-Bromofluorobenzene* | *88 %* | | *70-130* |
| *Surrogate: Dibromofluoromethane* | *89 %* | | *70-130* |
| *Surrogate: Toluene-d8* | *88 %* | | *70-130* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Bridge Rolloff
Date Sampled: 01/23/12 00:00
Percent Solids: 69
Initial Volume: 20.2
Final Volume: 5
Extraction Method: 3546

ESS Laboratory Work Order: 1201230
ESS Laboratory Sample ID: 1201230-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 15:30

## 8081A Organochlorine Pesticides

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| 4,4'-DDD | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| 4,4'-DDE | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| **4,4'-DDT** | **P 0.0935** (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| Aldrin | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| alpha-BHC | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| alpha-Chlordane | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| beta-BHC | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| Chlordane (Total) | ND (0.215) | | 5 | 01/26/12 16:40 | | CA22322 |
| delta-BHC | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| Dieldrin | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| Endosulfan I | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| **Endosulfan II** | **P 0.0499** (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| **Endosulfan Sulfate [2C]** | **E 0.282** (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| Endrin | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| Endrin Aldehyde | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| Endrin Ketone | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| gamma-BHC (Lindane) | ND (0.0108) | | 5 | 01/26/12 16:40 | | CA22322 |
| gamma-Chlordane | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| Heptachlor | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| Heptachlor Epoxide | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| Hexachlorobenzene | ND (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| **Methoxychlor [2C]** | **P 0.117** (0.0179) | | 5 | 01/26/12 16:40 | | CA22322 |
| Toxaphene | ND (0.897) | | 5 | 01/26/12 16:40 | | CA22322 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: Decachlorobiphenyl* | *171 %* | *SM* | *30-150* |
| *Surrogate: Decachlorobiphenyl [2C]* | *296 %* | *SM* | *30-150* |
| *Surrogate: Tetrachloro-m-xylene* | *137 %* | | *30-150* |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *158 %* | *SM* | *30-150* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Bridge Rolloff
Date Sampled: 01/23/12 00:00
Percent Solids: 69
Initial Volume: 20
Final Volume: 10
Extraction Method: 3540

ESS Laboratory Work Order: 1201230
ESS Laboratory Sample ID: 1201230-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 15:45

## 8082 Polychlorinated Biphenyls (PCB)

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Aroclor 1221 | ND (0.0725) | | 1 | 01/25/12 19:00 | | CA22323 |
| **Aroclor 1232** | **5.33** (0.362) | | 5 | 01/25/12 19:19 | | CA22323 |
| Aroclor 1242 | ND (0.0725) | | 1 | 01/25/12 19:00 | | CA22323 |
| Aroclor 1248 | ND (0.0725) | | 1 | 01/25/12 19:00 | | CA22323 |
| **Aroclor 1254** | **4.86** (0.362) | | 5 | 01/25/12 19:19 | | CA22323 |
| **Aroclor 1260** | **0.720** (0.0725) | | 1 | 01/25/12 19:00 | | CA22323 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: Decachlorobiphenyl* | *133 %* | | *30-150* |
| *Surrogate: Decachlorobiphenyl [2C]* | *100 %* | | *30-150* |
| *Surrogate: Tetrachloro-m-xylene* | *110 %* | | *30-150* |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *100 %* | | *30-150* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Bridge Rolloff
Date Sampled: 01/23/12 00:00
Percent Solids: 69
Initial Volume: 20.4
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1201230
ESS Laboratory Sample ID: 1201230-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 15:30

## 8100M Total Petroleum Hydrocarbons

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| **Total Petroleum Hydrocarbons** | **2240** (53.3) | | 1 | 01/23/12 19:28 | CVA0162 | CA22302 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: O-Terphenyl* | *73 %* | | *40-140* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Bridge Rolloff
Date Sampled: 01/23/12 00:00
Percent Solids: 69
Initial Volume: 10.1
Final Volume: 4
Extraction Method: 8151A

ESS Laboratory Work Order: 1201230
ESS Laboratory Sample ID: 1201230-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 15:15

## 8151A Chlorinated Herbicides

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| 2,4,5-T | ND (0.006) | | 1 | 01/25/12 20:08 | CVA0168 | CA22311 |
| 2,4,5-TP (Silvex) | ND (0.006) | | 1 | 01/25/12 20:08 | CVA0168 | CA22311 |
| 2,4-D [2C] | ND (0.128) | | 1 | 01/25/12 20:08 | CVA0168 | CA22311 |
| 2,4-DB | ND (0.130) | | 1 | 01/25/12 20:08 | CVA0168 | CA22311 |
| Dalapon [2C] | ND (0.124) | | 1 | 01/25/12 20:08 | CVA0168 | CA22311 |
| Dicamba | ND (0.006) | | 1 | 01/25/12 20:08 | CVA0168 | CA22311 |
| Dichlorprop | ND (0.128) | | 1 | 01/25/12 20:08 | CVA0168 | CA22311 |
| Dinoseb | ND (0.130) | | 1 | 01/25/12 20:08 | CVA0168 | CA22311 |
| MCPA | ND (12.7) | | 1 | 01/25/12 20:08 | CVA0168 | CA22311 |
| **MCPP [2C]** | **P 89.8** (12.8) | | 1 | 01/25/12 20:08 | CVA0168 | CA22311 |

| | *%Recovery* | *Qualifier* | *Limits* |
|---|---|---|---|
| *Surrogate: DCAA* | *112 %* | | *30-150* |
| *Surrogate: DCAA [2C]* | *94 %* | | *30-150* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Bridge Rolloff
Date Sampled: 01/23/12 00:00
Percent Solids: 69
Initial Volume: 15.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1201230
ESS Laboratory Sample ID: 1201230-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: CMT
Prepared: 1/23/12 15:30

## 8270C Semi-Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 1,2-Dichlorobenzene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 1,3-Dichlorobenzene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 1,4-Dichlorobenzene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2,3,4,6-Tetrachlorophenol | ND (11.4) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2,4,5-Trichlorophenol | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2,4,6-Trichlorophenol | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2,4-Dichlorophenol | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2,4-Dimethylphenol | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2,4-Dinitrophenol | ND (11.4) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2,4-Dinitrotoluene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2,6-Dinitrotoluene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2-Chloronaphthalene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2-Chlorophenol | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2-Methylnaphthalene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2-Methylphenol | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2-Nitroaniline | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 2-Nitrophenol | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 3,3'-Dichlorobenzidine | ND (4.56) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 3+4-Methylphenol | ND (4.56) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 3-Nitroaniline | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 4,6-Dinitro-2-Methylphenol | ND (11.4) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 4-Bromophenyl-phenylether | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 4-Chloro-3-Methylphenol | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| **4-Chloroaniline** | **7.24** (4.56) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 4-Chloro-phenyl-phenyl ether | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 4-Nitroaniline | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| 4-Nitrophenol | ND (11.4) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Acenaphthene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Acenaphthylene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Acetophenone | ND (4.56) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Bridge Rolloff
Date Sampled: 01/23/12 00:00
Percent Solids: 69
Initial Volume: 15.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1201230
ESS Laboratory Sample ID: 1201230-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: CMT
Prepared: 1/23/12 15:30

## 8270C Semi-Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Aniline | ND (4.56) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Anthracene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Azobenzene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Benzo(a)anthracene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Benzo(a)pyrene | ND (1.14) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Benzo(b)fluoranthene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Benzo(g,h,i)perylene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Benzo(k)fluoranthene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Benzoic Acid | ND (11.4) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Benzyl Alcohol | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| bis(2-Chloroethoxy)methane | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| bis(2-Chloroethyl)ether | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| bis(2-chloroisopropyl)Ether | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| **bis(2-Ethylhexyl)phthalate** | **21.8** (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Butylbenzylphthalate | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Carbazole | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Chrysene | ND (1.14) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Dibenzo(a,h)Anthracene | ND (1.14) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Dibenzofuran | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Diethylphthalate | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| **Dimethylphthalate** | **4.44** (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Di-n-butylphthalate | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| **Di-n-octylphthalate** | **4.55** (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Fluoranthene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Fluorene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Hexachlorobenzene | ND (1.14) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Hexachlorobutadiene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Hexachlorocyclopentadiene | ND (11.4) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Hexachloroethane | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Indeno(1,2,3-cd)Pyrene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Isophorone | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Bridge Rolloff
Date Sampled: 01/23/12 00:00
Percent Solids: 69
Initial Volume: 15.9
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1201230
ESS Laboratory Sample ID: 1201230-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: CMT
Prepared: 1/23/12 15:30

## 8270C Semi-Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Naphthalene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Nitrobenzene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| N-Nitrosodimethylamine | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| N-Nitroso-Di-n-Propylamine | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| N-nitrosodiphenylamine | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Pentachlorophenol | ND (11.4) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Phenanthrene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Phenol | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Pyrene | ND (2.28) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |
| Pyridine | ND (11.4) | | 5 | 01/26/12 15:53 | CVA0171 | CA22301 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: 1,2-Dichlorobenzene-d4* | *62 %* | | *30-130* |
| *Surrogate: 2,4,6-Tribromophenol* | *70 %* | | *30-130* |
| *Surrogate: 2-Chlorophenol-d4* | *62 %* | | *30-130* |
| *Surrogate: 2-Fluorobiphenyl* | *63 %* | | *30-130* |
| *Surrogate: 2-Fluorophenol* | *52 %* | | *30-130* |
| *Surrogate: Nitrobenzene-d5* | *66 %* | | *30-130* |
| *Surrogate: Phenol-d6* | *70 %* | | *30-130* |
| *Surrogate: p-Terphenyl-d14* | *76 %* | | *30-130* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Bridge Rolloff
Date Sampled: 01/23/12 00:00
Percent Solids: 69

ESS Laboratory Work Order: 1201230
ESS Laboratory Sample ID: 1201230-01
Sample Matrix: Soil

## Classical Chemistry

| Analyte | Results (MRL) | Method | Limit | DF | Analyst | Analyzed | Units | Batch |
|---|---|---|---|---|---|---|---|---|
| **Corrosivity (pH)** | **7.51** (N/A) | 9045 | | 1 | DPS | 01/23/12 16:30 | S.U. | CA22326 |
| **Corrosivity (pH) Sample Temp** | **Soil pH measured in water at 18.3 °C.** | | | | | | | |
| Free Liquid | ND (0.3) | 9095A | | 1 | EEM | 01/25/12 10:15 | ml/5 min | CA22503 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1311/6000/7000 TCLP Metals | | | | | | | |
| **Batch CA22517 - 3005A** | | | | | | | | | | | |
| **Blank** | | | | | | | | | | | |
| Arsenic | | ND | 0.050 | mg/L | | | | | | | |
| Barium | | ND | 0.050 | mg/L | | | | | | | |
| Cadmium | | ND | 0.0050 | mg/L | | | | | | | |
| Chromium | | ND | 0.020 | mg/L | | | | | | | |
| Lead | | ND | 0.020 | mg/L | | | | | | | |
| Selenium | | ND | 0.050 | mg/L | | | | | | | |
| Silver | | 0.012 | 0.010 | mg/L | | | | | | | |
| **Blank** | | | | | | | | | | | |
| Arsenic | | ND | 0.050 | mg/L | | | | | | | |
| Barium | | ND | 0.050 | mg/L | | | | | | | |
| Cadmium | | ND | 0.0050 | mg/L | | | | | | | |
| Chromium | | ND | 0.020 | mg/L | | | | | | | |
| Lead | | ND | 0.020 | mg/L | | | | | | | |
| Selenium | | ND | 0.050 | mg/L | | | | | | | |
| Silver | | 0.013 | 0.010 | mg/L | | | | | | | |
| **LCS** | | | | | | | | | | | |
| Arsenic | | 0.545 | 0.050 | mg/L | 0.5000 | | 109 | 80-120 | | | |
| Barium | | 0.509 | 0.050 | mg/L | 0.5000 | | 102 | 80-120 | | | |
| Cadmium | | 0.264 | 0.0050 | mg/L | 0.2500 | | 106 | 80-120 | | | |
| Chromium | | 0.499 | 0.020 | mg/L | 0.5000 | | 100 | 80-120 | | | |
| Lead | | 0.508 | 0.020 | mg/L | 0.5000 | | 102 | 80-120 | | | |
| Selenium | | 1.12 | 0.050 | mg/L | 1.000 | | 112 | 80-120 | | | |
| Silver | | 0.275 | 0.010 | mg/L | 0.2500 | | 110 | 80-120 | | | |
| **LCS Dup** | | | | | | | | | | | |
| Arsenic | | 0.562 | 0.050 | mg/L | 0.5000 | | 112 | 80-120 | 3 | 20 | |
| Barium | | 0.506 | 0.050 | mg/L | 0.5000 | | 101 | 80-120 | 0.4 | 20 | |
| Cadmium | | 0.263 | 0.0050 | mg/L | 0.2500 | | 105 | 80-120 | 0.6 | 20 | |
| Chromium | | 0.496 | 0.020 | mg/L | 0.5000 | | 99 | 80-120 | 0.6 | 20 | |
| Lead | | 0.510 | 0.020 | mg/L | 0.5000 | | 102 | 80-120 | 0.3 | 20 | |
| Selenium | | 1.12 | 0.050 | mg/L | 1.000 | | 112 | 80-120 | 0.4 | 20 | |
| Silver | | 0.273 | 0.010 | mg/L | 0.2500 | | 109 | 80-120 | 0.8 | 20 | |
| **Duplicate** | **Source: 1201230-01** | | | | | | | | | | |
| Arsenic | | ND | 0.050 | mg/L | | ND | | | | 20 | |
| Barium | | 0.324 | 0.050 | mg/L | | 0.317 | | | 2 | 20 | |
| Cadmium | | ND | 0.0050 | mg/L | | ND | | | | 20 | |
| Chromium | | ND | 0.020 | mg/L | | ND | | | | 20 | |
| Lead | | 0.044 | 0.020 | mg/L | | 0.041 | | | 8 | 20 | |
| Selenium | | ND | 0.050 | mg/L | | ND | | | | 20 | |
| Silver | | 0.003 | 0.010 | mg/L | | 0.004 | | | 21 | 20 | |
| **Matrix Spike** | **Source: 1201230-01** | | | | | | | | | | |
| Arsenic | | 0.566 | 0.050 | mg/L | 0.5000 | ND | 113 | 75-125 | | | |
| Barium | | 0.809 | 0.050 | mg/L | 0.5000 | 0.317 | 98 | 75-125 | | | |
| Cadmium | | 0.261 | 0.0050 | mg/L | 0.2500 | ND | 105 | 75-125 | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **1311/6000/7000 TCLP Metals** | | | | | | | | | | |
| **Batch CA22517 - 3005A** | | | | | | | | | | |
| Chromium | 0.505 | 0.020 | mg/L | 0.5000 | ND | 101 | 75-125 | | | |
| Lead | 0.567 | 0.020 | mg/L | 0.5000 | 0.041 | 105 | 75-125 | | | |
| Selenium | 1.22 | 0.050 | mg/L | 1.000 | ND | 122 | 75-125 | | | |
| Silver | 0.274 | 0.010 | mg/L | 0.2500 | 0.004 | 108 | 75-125 | | | |
| **Batch CA22520 - 245.1/7470A** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Mercury | ND | 0.00050 | mg/L | | | | | | | |
| **LCS** | | | | | | | | | | |
| Mercury | 0.00680 | 0.00050 | mg/L | 0.006000 | | 113 | 80-120 | | | |
| **LCS Dup** | | | | | | | | | | |
| Mercury | 0.00520 | 0.00050 | mg/L | 0.006000 | | 87 | 80-120 | 27 | 20 | D+ |
| **3050B/6000/7000 Total Metals** | | | | | | | | | | |
| **Batch CA22329 - 3050B** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Arsenic | ND | 2.5 | mg/kg wet | | | | | | | |
| Barium | ND | 2.5 | mg/kg wet | | | | | | | |
| Cadmium | ND | 0.50 | mg/kg wet | | | | | | | |
| Chromium | ND | 1.0 | mg/kg wet | | | | | | | |
| Lead | ND | 5.0 | mg/kg wet | | | | | | | |
| Selenium | ND | 5.0 | mg/kg wet | | | | | | | |
| Silver | ND | 0.50 | mg/kg wet | | | | | | | |
| **LCS** | | | | | | | | | | |
| Arsenic | 228 | 9.8 | mg/kg wet | 237.0 | | 96 | 80-120 | | | |
| Barium | 231 | 9.8 | mg/kg wet | 252.0 | | 92 | 80-120 | | | |
| Cadmium | 178 | 1.97 | mg/kg wet | 191.0 | | 93 | 80-120 | | | |
| Chromium | 123 | 3.9 | mg/kg wet | 128.0 | | 96 | 80-120 | | | |
| Lead | 94.5 | 19.6 | mg/kg wet | 103.0 | | 92 | 80-120 | | | |
| Selenium | 104 | 19.6 | mg/kg wet | 110.0 | | 94 | 80-120 | | | |
| Silver | 44.5 | 1.97 | mg/kg wet | 47.30 | | 94 | 80-120 | | | |
| **LCS Dup** | | | | | | | | | | |
| Arsenic | 219 | 9.6 | mg/kg wet | 237.0 | | 93 | 80-120 | 4 | 20 | |
| Barium | 221 | 9.6 | mg/kg wet | 252.0 | | 88 | 80-120 | 5 | 20 | |
| Cadmium | 167 | 1.93 | mg/kg wet | 191.0 | | 88 | 80-120 | 6 | 20 | |
| Chromium | 117 | 3.8 | mg/kg wet | 128.0 | | 91 | 80-120 | 5 | 20 | |
| Lead | 90.6 | 19.2 | mg/kg wet | 103.0 | | 88 | 80-120 | 4 | 20 | |
| Selenium | 98.1 | 19.2 | mg/kg wet | 110.0 | | 89 | 80-120 | 6 | 20 | |
| Silver | 42.9 | 1.93 | mg/kg wet | 47.30 | | 91 | 80-120 | 4 | 20 | |
| **Duplicate** **Source: 1201230-01** | | | | | | | | | | |
| Arsenic | 4.14 | 3.1 | mg/kg dry | | 2.89 | | | 36 | 35 | D+ |
| Barium | 31.2 | 3.1 | mg/kg dry | | 31.0 | | | 0.4 | 35 | |
| Cadmium | 1.36 | 0.61 | mg/kg dry | | 1.25 | | | 8 | 35 | |
| Chromium | 31.0 | 1.2 | mg/kg dry | | 26.6 | | | 15 | 35 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **3050B/6000/7000 Total Metals** | | | | | | | | | | |
| **Batch CA22329 - 3050B** | | | | | | | | | | |
| Lead | 77.2 | 6.1 | mg/kg dry | | 47.0 | | | 49 | 35 | D+ |
| Selenium | 0.975 | 6.1 | mg/kg dry | | 2.73 | | | 95 | 35 | |
| Silver | 1.30 | 0.61 | mg/kg dry | | 0.406 | | | 105 | 35 | D+ |
| **Matrix Spike** **Source: 1201230-01** | | | | | | | | | | |
| Arsenic | 33.1 | 3.3 | mg/kg dry | 33.09 | 2.89 | 91 | 75-125 | | | |
| Barium | 63.1 | 3.3 | mg/kg dry | 33.09 | 31.0 | 97 | 75-125 | | | |
| Cadmium | 14.3 | 0.67 | mg/kg dry | 16.54 | 1.25 | 79 | 75-125 | | | |
| Chromium | 58.7 | 1.3 | mg/kg dry | 33.09 | 26.6 | 97 | 75-125 | | | |
| Lead | 75.2 | 6.6 | mg/kg dry | 33.09 | 47.0 | 85 | 75-125 | | | |
| Selenium | 54.2 | 6.6 | mg/kg dry | 66.18 | 2.73 | 78 | 75-125 | | | |
| Silver | 14.0 | 0.67 | mg/kg dry | 16.54 | 0.406 | 82 | 75-125 | | | |
| **Batch CA22425 - 245.1/7470A** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Mercury | ND | 0.033 | mg/kg wet | | | | | | | |
| **LCS** | | | | | | | | | | |
| Mercury | 13.3 | 1.48 | mg/kg wet | 12.40 | | 107 | 80-120 | | | |
| **LCS Dup** | | | | | | | | | | |
| Mercury | 12.9 | 1.60 | mg/kg wet | 12.40 | | 104 | 80-120 | 3 | 20 | |
| **5035/8260B Volatile Organic Compounds / Methanol** | | | | | | | | | | |
| **Batch CA22415 - 5035** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet | | | | | | | |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet | | | | | | | |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **5035/8260B Volatile Organic Compounds / Methanol** | | | | | | | | | | |
| **Batch CA22415 - 5035** | | | | | | | | | | |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet | | | | | | | |
| 2-Butanone | ND | 1.25 | mg/kg wet | | | | | | | |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2-Hexanone | ND | 0.500 | mg/kg wet | | | | | | | |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet | | | | | | | |
| Acetone | ND | 1.25 | mg/kg wet | | | | | | | |
| Benzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromoform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromomethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet | | | | | | | |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | 0.0390 | 0.250 | mg/kg wet | | | | | | | J |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **5035/8260B Volatile Organic Compounds / Methanol** | | | | | | | | | | |
| **Batch CA22415 - 5035** | | | | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *2.21* | | mg/kg wet | *2.500* | | *88* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *2.32* | | mg/kg wet | *2.500* | | *93* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *2.46* | | mg/kg wet | *2.500* | | *99* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *2.37* | | mg/kg wet | *2.500* | | *95* | *70-130* | | | |
| **LCS** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 2.23 | 0.100 | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.24 | 0.0500 | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |
| 1,1-Dichloroethane | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| 1,1-Dichloroethene | 3.23 | 0.0500 | mg/kg wet | 2.500 | | 129 | 70-130 | | | |
| 1,1-Dichloropropene | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| 1,2,3-Trichlorobenzene | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.33 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.56 | 0.300 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2-Dibromoethane | 2.31 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.19 | 0.0500 | mg/kg wet | 2.500 | | 87 | 70-130 | | | |
| 1,2-Dichloroethane | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,2-Dichloropropane | 2.95 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.24 | 0.0500 | mg/kg wet | 2.500 | | 90 | 70-130 | | | |
| 1,3-Dichloropropane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.20 | 0.0500 | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| 1,4-Dioxane - Screen | 79.5 | 5.00 | mg/kg wet | 50.00 | | 159 | 44-241 | | | |
| 1-Chlorohexane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 2,2-Dichloropropane | 2.64 | 0.100 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 2-Butanone | 11.5 | 1.25 | mg/kg wet | 12.50 | | 92 | 70-130 | | | |
| 2-Chlorotoluene | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 2-Hexanone | 11.6 | 0.500 | mg/kg wet | 12.50 | | 93 | 70-130 | | | |
| 4-Chlorotoluene | 2.24 | 0.0500 | mg/kg wet | 2.500 | | 90 | 70-130 | | | |
| 4-Isopropyltoluene | 2.22 | 0.0500 | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 14.0 | 0.500 | mg/kg wet | 12.50 | | 112 | 70-130 | | | |
| Acetone | 13.4 | 1.25 | mg/kg wet | 12.50 | | 107 | 70-130 | | | |
| Benzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Bromobenzene | 2.24 | 0.0500 | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Bromochloromethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Bromodichloromethane | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | | | |
| Bromoform | 2.19 | 0.0500 | mg/kg wet | 2.500 | | 88 | 70-130 | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **5035/8260B Volatile Organic Compounds / Methanol** | | | | | | | | | | |
| **Batch CA22415 - 5035** | | | | | | | | | | |
| Bromomethane | 3.02 | 0.100 | mg/kg wet | 2.500 | | 121 | 70-130 | | | |
| Carbon Disulfide | 3.25 | 0.0500 | mg/kg wet | 2.500 | | 130 | 70-130 | | | |
| Carbon Tetrachloride | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Chlorobenzene | 2.33 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| Chloroethane | 3.12 | 0.100 | mg/kg wet | 2.500 | | 125 | 70-130 | | | |
| Chloroform | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Chloromethane | 2.73 | 0.100 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.96 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | | | |
| Dibromochloromethane | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Dibromomethane | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Dichlorodifluoromethane | 2.27 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | | | |
| Diethyl Ether | 3.32 | 0.0500 | mg/kg wet | 2.500 | | 133 | 70-130 | | | B+ |
| Di-isopropyl ether | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.19 | 0.0500 | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| Ethylbenzene | 2.27 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | | | |
| Hexachlorobutadiene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Isopropylbenzene | 1.98 | 0.0500 | mg/kg wet | 2.500 | | 79 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Methylene Chloride | 3.18 | 0.250 | mg/kg wet | 2.500 | | 127 | 70-130 | | | |
| Naphthalene | 3.06 | 0.0500 | mg/kg wet | 2.500 | | 122 | 70-130 | | | |
| n-Butylbenzene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| n-Propylbenzene | 2.20 | 0.0500 | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| sec-Butylbenzene | 2.35 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Styrene | 2.24 | 0.0500 | mg/kg wet | 2.500 | | 90 | 70-130 | | | |
| tert-Butylbenzene | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| Tetrachloroethene | 2.07 | 0.0500 | mg/kg wet | 2.500 | | 83 | 70-130 | | | |
| Tetrahydrofuran | 2.45 | 0.500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Toluene | 2.88 | 0.0500 | mg/kg wet | 2.500 | | 115 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.92 | 0.0500 | mg/kg wet | 2.500 | | 117 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Trichloroethene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Vinyl Acetate | 2.83 | 0.250 | mg/kg wet | 2.500 | | 113 | 70-130 | | | |
| Vinyl Chloride | 3.25 | 0.0500 | mg/kg wet | 2.500 | | 130 | 70-130 | | | |
| Xylene O | 2.26 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | | | |
| Xylene P,M | 4.59 | 0.100 | mg/kg wet | 5.000 | | 92 | 70-130 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *2.27* | | mg/kg wet | *2.500* | | *91* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *2.22* | | mg/kg wet | *2.500* | | *89* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *2.35* | | mg/kg wet | *2.500* | | *94* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *2.56* | | mg/kg wet | *2.500* | | *103* | *70-130* | | | |
| **LCS Dup** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 2.25 | 0.100 | mg/kg wet | 2.500 | | 90 | 70-130 | 0.7 | 25 | |
| 1,1,1-Trichloroethane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 16 | 25 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **5035/8260B Volatile Organic Compounds / Methanol** | | | | | | | | | | |
| **Batch CA22415 - 5035** | | | | | | | | | | |
| 1,1,2-Trichloroethane | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 0.7 | 25 | |
| 1,1-Dichloroethane | 2.83 | 0.0500 | mg/kg wet | 2.500 | | 113 | 70-130 | 4 | 25 | |
| 1,1-Dichloroethene | 3.16 | 0.0500 | mg/kg wet | 2.500 | | 127 | 70-130 | 2 | 25 | |
| 1,1-Dichloropropene | 2.77 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 12 | 25 | |
| 1,2,3-Trichlorobenzene | 2.31 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 3 | 25 | |
| 1,2,3-Trichloropropane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 8 | 25 | |
| 1,2,4-Trichlorobenzene | 2.31 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 5 | 25 | |
| 1,2,4-Trimethylbenzene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 7 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.43 | 0.300 | mg/kg wet | 2.500 | | 97 | 70-130 | 5 | 25 | |
| 1,2-Dibromoethane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 4 | 25 | |
| 1,2-Dichlorobenzene | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 5 | 25 | |
| 1,2-Dichloroethane | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 3 | 25 | |
| 1,2-Dichloropropane | 2.98 | 0.0500 | mg/kg wet | 2.500 | | 119 | 70-130 | 1 | 25 | |
| 1,3,5-Trimethylbenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 10 | 25 | |
| 1,3-Dichlorobenzene | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 4 | 25 | |
| 1,3-Dichloropropane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.3 | 25 | |
| 1,4-Dichlorobenzene | 2.29 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | 4 | 25 | |
| 1,4-Dioxane - Screen | 46.6 | 5.00 | mg/kg wet | 50.00 | | 93 | 44-241 | 52 | 200 | |
| 1-Chlorohexane | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 8 | 25 | |
| 2,2-Dichloropropane | 2.75 | 0.100 | mg/kg wet | 2.500 | | 110 | 70-130 | 4 | 25 | |
| 2-Butanone | 12.5 | 1.25 | mg/kg wet | 12.50 | | 100 | 70-130 | 8 | 25 | |
| 2-Chlorotoluene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 8 | 25 | |
| 2-Hexanone | 13.0 | 0.500 | mg/kg wet | 12.50 | | 104 | 70-130 | 12 | 25 | |
| 4-Chlorotoluene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 12 | 25 | |
| 4-Isopropyltoluene | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 6 | 25 | |
| 4-Methyl-2-Pentanone | 14.0 | 0.500 | mg/kg wet | 12.50 | | 112 | 70-130 | 0.5 | 25 | |
| Acetone | 11.2 | 1.25 | mg/kg wet | 12.50 | | 90 | 70-130 | 18 | 25 | |
| Benzene | 2.89 | 0.0500 | mg/kg wet | 2.500 | | 116 | 70-130 | 13 | 25 | |
| Bromobenzene | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 6 | 25 | |
| Bromochloromethane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 7 | 25 | |
| Bromodichloromethane | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 3 | 25 | |
| Bromoform | 2.16 | 0.0500 | mg/kg wet | 2.500 | | 86 | 70-130 | 2 | 25 | |
| Bromomethane | 3.02 | 0.100 | mg/kg wet | 2.500 | | 121 | 70-130 | 0 | 25 | |
| Carbon Disulfide | 2.96 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | 9 | 25 | |
| Carbon Tetrachloride | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 3 | 25 | |
| Chlorobenzene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 4 | 25 | |
| Chloroethane | 3.20 | 0.100 | mg/kg wet | 2.500 | | 128 | 70-130 | 3 | 25 | |
| Chloroform | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 3 | 25 | |
| Chloromethane | 2.43 | 0.100 | mg/kg wet | 2.500 | | 97 | 70-130 | 12 | 25 | |
| cis-1,2-Dichloroethene | 2.82 | 0.0500 | mg/kg wet | 2.500 | | 113 | 70-130 | 9 | 25 | |
| cis-1,3-Dichloropropene | 2.90 | 0.0500 | mg/kg wet | 2.500 | | 116 | 70-130 | 2 | 25 | |
| Dibromochloromethane | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 0.2 | 25 | |
| Dibromomethane | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 6 | 25 | |
| Dichlorodifluoromethane | 2.01 | 0.0500 | mg/kg wet | 2.500 | | 80 | 70-130 | 12 | 25 | |
| Diethyl Ether | 3.15 | 0.0500 | mg/kg wet | 2.500 | | 126 | 70-130 | 5 | 25 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **5035/8260B Volatile Organic Compounds / Methanol** | | | | | | | | | | |
| **Batch CA22415 - 5035** | | | | | | | | | | |
| Di-isopropyl ether | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 4 | 25 | |
| Ethyl tertiary-butyl ether | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 13 | 25 | |
| Ethylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 8 | 25 | |
| Hexachlorobutadiene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 10 | 25 | |
| Isopropylbenzene | 2.13 | 0.0500 | mg/kg wet | 2.500 | | 85 | 70-130 | 7 | 25 | |
| Methyl tert-Butyl Ether | 2.73 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 2 | 25 | |
| Methylene Chloride | 3.03 | 0.250 | mg/kg wet | 2.500 | | 121 | 70-130 | 5 | 25 | |
| Naphthalene | 3.05 | 0.0500 | mg/kg wet | 2.500 | | 122 | 70-130 | 0.4 | 25 | |
| n-Butylbenzene | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 10 | 25 | |
| n-Propylbenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 14 | 25 | |
| sec-Butylbenzene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 7 | 25 | |
| Styrene | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 5 | 25 | |
| tert-Butylbenzene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 7 | 25 | |
| Tertiary-amyl methyl ether | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 12 | 25 | |
| Tetrachloroethene | 1.98 | 0.0500 | mg/kg wet | 2.500 | | 79 | 70-130 | 4 | 25 | |
| Tetrahydrofuran | 2.54 | 0.500 | mg/kg wet | 2.500 | | 102 | 70-130 | 4 | 25 | |
| Toluene | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 3 | 25 | |
| trans-1,2-Dichloroethene | 2.87 | 0.0500 | mg/kg wet | 2.500 | | 115 | 70-130 | 2 | 25 | |
| trans-1,3-Dichloropropene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 3 | 25 | |
| Trichloroethene | 2.69 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 9 | 25 | |
| Vinyl Acetate | 2.88 | 0.250 | mg/kg wet | 2.500 | | 115 | 70-130 | 2 | 25 | |
| Vinyl Chloride | 3.09 | 0.0500 | mg/kg wet | 2.500 | | 124 | 70-130 | 5 | 25 | |
| Xylene O | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 6 | 25 | |
| Xylene P,M | 4.85 | 0.100 | mg/kg wet | 5.000 | | 97 | 70-130 | 5 | 25 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *2.29* | | mg/kg wet | *2.500* | | *92* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *2.32* | | mg/kg wet | *2.500* | | *93* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *2.38* | | mg/kg wet | *2.500* | | *95* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *2.35* | | mg/kg wet | *2.500* | | *94* | *70-130* | | | |
| **8081A Organochlorine Pesticides** | | | | | | | | | | |
| **Batch CA22322 - 3546** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| 4,4'-DDD | ND | 0.0025 | mg/kg wet | | | | | | | |
| 4,4'-DDD [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| 4,4'-DDE | ND | 0.0025 | mg/kg wet | | | | | | | |
| 4,4'-DDE [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| 4,4'-DDT | ND | 0.0025 | mg/kg wet | | | | | | | |
| 4,4'-DDT [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Aldrin | ND | 0.0025 | mg/kg wet | | | | | | | |
| Aldrin [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| alpha-BHC | ND | 0.0025 | mg/kg wet | | | | | | | |
| alpha-BHC [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| alpha-Chlordane | ND | 0.0025 | mg/kg wet | | | | | | | |
| alpha-Chlordane [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| beta-BHC | ND | 0.0025 | mg/kg wet | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8081A Organochlorine Pesticides** | | | | | | | | | | |
| **Batch CA22322 - 3546** | | | | | | | | | | |
| beta-BHC [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Chlordane (Total) | ND | 0.0300 | mg/kg wet | | | | | | | |
| Chlordane (Total) [2C] | ND | 0.0300 | mg/kg wet | | | | | | | |
| delta-BHC | ND | 0.0025 | mg/kg wet | | | | | | | |
| delta-BHC [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Dieldrin | ND | 0.0025 | mg/kg wet | | | | | | | |
| Dieldrin [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endosulfan I | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endosulfan I [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endosulfan II | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endosulfan II [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endosulfan Sulfate | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endosulfan Sulfate [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endrin | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endrin [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endrin Aldehyde | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endrin Aldehyde [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endrin Ketone | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endrin Ketone [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| gamma-BHC (Lindane) | ND | 0.0015 | mg/kg wet | | | | | | | |
| gamma-BHC (Lindane) [2C] | ND | 0.0015 | mg/kg wet | | | | | | | |
| gamma-Chlordane | ND | 0.0025 | mg/kg wet | | | | | | | |
| gamma-Chlordane [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Heptachlor | ND | 0.0025 | mg/kg wet | | | | | | | |
| Heptachlor [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Heptachlor Epoxide | ND | 0.0025 | mg/kg wet | | | | | | | |
| Heptachlor Epoxide [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Hexachlorobenzene | ND | 0.0025 | mg/kg wet | | | | | | | |
| Hexachlorobenzene [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Methoxychlor | ND | 0.0025 | mg/kg wet | | | | | | | |
| Methoxychlor [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Toxaphene | ND | 0.125 | mg/kg wet | | | | | | | |
| Toxaphene [2C] | ND | 0.125 | mg/kg wet | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0124* | | mg/kg wet | *0.01250* | | *99* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.00976* | | mg/kg wet | *0.01250* | | *78* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.0123* | | mg/kg wet | *0.01250* | | *98* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.0102* | | mg/kg wet | *0.01250* | | *82* | *30-150* | | | |
| **LCS** | | | | | | | | | | |
| 4,4'-DDD | 0.0150 | 0.0025 | mg/kg wet | 0.01250 | | 120 | 40-140 | | | |
| 4,4'-DDD [2C] | 0.0111 | 0.0025 | mg/kg wet | 0.01250 | | 89 | 40-140 | | | |
| 4,4'-DDE | 0.0153 | 0.0025 | mg/kg wet | 0.01250 | | 122 | 40-140 | | | |
| 4,4'-DDE [2C] | 0.0113 | 0.0025 | mg/kg wet | 0.01250 | | 90 | 40-140 | | | |
| 4,4'-DDT | 0.0149 | 0.0025 | mg/kg wet | 0.01250 | | 119 | 40-140 | | | |
| 4,4'-DDT [2C] | 0.0118 | 0.0025 | mg/kg wet | 0.01250 | | 95 | 40-140 | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8081A Organochlorine Pesticides** | | | | | | | | | | |
| **Batch CA22322 - 3546** | | | | | | | | | | |
| Aldrin | 0.0134 | 0.0025 | mg/kg wet | 0.01250 | | 107 | 40-140 | | | |
| Aldrin [2C] | 0.0106 | 0.0025 | mg/kg wet | 0.01250 | | 85 | 40-140 | | | |
| alpha-BHC | 0.0139 | 0.0025 | mg/kg wet | 0.01250 | | 111 | 40-140 | | | |
| alpha-BHC [2C] | 0.0112 | 0.0025 | mg/kg wet | 0.01250 | | 90 | 40-140 | | | |
| alpha-Chlordane | 0.0127 | 0.0025 | mg/kg wet | 0.01250 | | 102 | 40-140 | | | |
| alpha-Chlordane [2C] | 0.0103 | 0.0025 | mg/kg wet | 0.01250 | | 83 | 40-140 | | | |
| beta-BHC | 0.0139 | 0.0025 | mg/kg wet | 0.01250 | | 111 | 40-140 | | | |
| beta-BHC [2C] | 0.0114 | 0.0025 | mg/kg wet | 0.01250 | | 91 | 40-140 | | | |
| delta-BHC | 0.0137 | 0.0025 | mg/kg wet | 0.01250 | | 110 | 40-140 | | | |
| delta-BHC [2C] | 0.0118 | 0.0025 | mg/kg wet | 0.01250 | | 95 | 40-140 | | | |
| Dieldrin | 0.0135 | 0.0025 | mg/kg wet | 0.01250 | | 108 | 40-140 | | | |
| Dieldrin [2C] | 0.0105 | 0.0025 | mg/kg wet | 0.01250 | | 84 | 40-140 | | | |
| Endosulfan I | 0.0128 | 0.0025 | mg/kg wet | 0.01250 | | 102 | 40-140 | | | |
| Endosulfan I [2C] | 0.0108 | 0.0025 | mg/kg wet | 0.01250 | | 87 | 40-140 | | | |
| Endosulfan II | 0.0167 | 0.0025 | mg/kg wet | 0.01250 | | 133 | 40-140 | | | |
| Endosulfan II [2C] | 0.0132 | 0.0025 | mg/kg wet | 0.01250 | | 105 | 40-140 | | | |
| Endosulfan Sulfate | 0.0132 | 0.0025 | mg/kg wet | 0.01250 | | 105 | 40-140 | | | |
| Endosulfan Sulfate [2C] | 0.0110 | 0.0025 | mg/kg wet | 0.01250 | | 88 | 40-140 | | | |
| Endrin | 0.0147 | 0.0025 | mg/kg wet | 0.01250 | | 117 | 40-140 | | | |
| Endrin [2C] | 0.0118 | 0.0025 | mg/kg wet | 0.01250 | | 94 | 40-140 | | | |
| Endrin Aldehyde | 0.0116 | 0.0025 | mg/kg wet | 0.01250 | | 93 | 40-140 | | | |
| Endrin Aldehyde [2C] | 0.0090 | 0.0025 | mg/kg wet | 0.01250 | | 72 | 40-140 | | | |
| Endrin Ketone | 0.0132 | 0.0025 | mg/kg wet | 0.01250 | | 105 | 40-140 | | | |
| Endrin Ketone [2C] | 0.0105 | 0.0025 | mg/kg wet | 0.01250 | | 84 | 40-140 | | | |
| gamma-BHC (Lindane) | 0.0141 | 0.0015 | mg/kg wet | 0.01250 | | 113 | 40-140 | | | |
| gamma-BHC (Lindane) [2C] | 0.0114 | 0.0015 | mg/kg wet | 0.01250 | | 91 | 40-140 | | | |
| gamma-Chlordane | 0.0135 | 0.0025 | mg/kg wet | 0.01250 | | 108 | 40-140 | | | |
| gamma-Chlordane [2C] | 0.0106 | 0.0025 | mg/kg wet | 0.01250 | | 85 | 40-140 | | | |
| Heptachlor | 0.0135 | 0.0025 | mg/kg wet | 0.01250 | | 108 | 40-140 | | | |
| Heptachlor [2C] | 0.0113 | 0.0025 | mg/kg wet | 0.01250 | | 90 | 40-140 | | | |
| Heptachlor Epoxide | 0.0134 | 0.0025 | mg/kg wet | 0.01250 | | 107 | 40-140 | | | |
| Heptachlor Epoxide [2C] | 0.0106 | 0.0025 | mg/kg wet | 0.01250 | | 84 | 40-140 | | | |
| Hexachlorobenzene | 0.0124 | 0.0025 | mg/kg wet | 0.01250 | | 99 | 40-140 | | | |
| Hexachlorobenzene [2C] | 0.0102 | 0.0025 | mg/kg wet | 0.01250 | | 82 | 40-140 | | | |
| Methoxychlor | 0.0152 | 0.0025 | mg/kg wet | 0.01250 | | 122 | 40-140 | | | |
| Methoxychlor [2C] | 0.0121 | 0.0025 | mg/kg wet | 0.01250 | | 97 | 40-140 | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0138* | | mg/kg wet | *0.01250* | | *110* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.0109* | | mg/kg wet | *0.01250* | | *87* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.0128* | | mg/kg wet | *0.01250* | | *103* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.0113* | | mg/kg wet | *0.01250* | | *90* | *30-150* | | | |
| **LCS Dup** | | | | | | | | | | |
| 4,4'-DDD | 0.0154 | 0.0025 | mg/kg wet | 0.01250 | | 123 | 40-140 | 3 | 30 | |
| 4,4'-DDD [2C] | 0.0116 | 0.0025 | mg/kg wet | 0.01250 | | 93 | 40-140 | 5 | 30 | |
| 4,4'-DDE | 0.0159 | 0.0025 | mg/kg wet | 0.01250 | | 127 | 40-140 | 4 | 30 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8081A Organochlorine Pesticides** | | | | | | | | | | |
| **Batch CA22322 - 3546** | | | | | | | | | | |
| 4,4'-DDE [2C] | 0.0120 | 0.0025 | mg/kg wet | 0.01250 | | 96 | 40-140 | 6 | 30 | |
| 4,4'-DDT | 0.0154 | 0.0025 | mg/kg wet | 0.01250 | | 124 | 40-140 | 4 | 30 | |
| 4,4'-DDT [2C] | 0.0124 | 0.0025 | mg/kg wet | 0.01250 | | 99 | 40-140 | 5 | 30 | |
| Aldrin | 0.0139 | 0.0025 | mg/kg wet | 0.01250 | | 111 | 40-140 | 4 | 30 | |
| Aldrin [2C] | 0.0112 | 0.0025 | mg/kg wet | 0.01250 | | 90 | 40-140 | 5 | 30 | |
| alpha-BHC | 0.0146 | 0.0025 | mg/kg wet | 0.01250 | | 117 | 40-140 | 5 | 30 | |
| alpha-BHC [2C] | 0.0119 | 0.0025 | mg/kg wet | 0.01250 | | 95 | 40-140 | 6 | 30 | |
| alpha-Chlordane | 0.0135 | 0.0025 | mg/kg wet | 0.01250 | | 108 | 40-140 | 6 | 30 | |
| alpha-Chlordane [2C] | 0.0111 | 0.0025 | mg/kg wet | 0.01250 | | 89 | 40-140 | 7 | 30 | |
| beta-BHC | 0.0143 | 0.0025 | mg/kg wet | 0.01250 | | 115 | 40-140 | 3 | 30 | |
| beta-BHC [2C] | 0.0119 | 0.0025 | mg/kg wet | 0.01250 | | 95 | 40-140 | 4 | 30 | |
| delta-BHC | 0.0143 | 0.0025 | mg/kg wet | 0.01250 | | 114 | 40-140 | 4 | 30 | |
| delta-BHC [2C] | 0.0123 | 0.0025 | mg/kg wet | 0.01250 | | 98 | 40-140 | 4 | 30 | |
| Dieldrin | 0.0140 | 0.0025 | mg/kg wet | 0.01250 | | 112 | 40-140 | 4 | 30 | |
| Dieldrin [2C] | 0.0111 | 0.0025 | mg/kg wet | 0.01250 | | 89 | 40-140 | 5 | 30 | |
| Endosulfan I | 0.0133 | 0.0025 | mg/kg wet | 0.01250 | | 106 | 40-140 | 4 | 30 | |
| Endosulfan I [2C] | 0.0115 | 0.0025 | mg/kg wet | 0.01250 | | 92 | 40-140 | 6 | 30 | |
| Endosulfan II | 0.0175 | 0.0025 | mg/kg wet | 0.01250 | | 140 | 40-140 | 5 | 30 | |
| Endosulfan II [2C] | 0.0139 | 0.0025 | mg/kg wet | 0.01250 | | 111 | 40-140 | 5 | 30 | |
| Endosulfan Sulfate | 0.0140 | 0.0025 | mg/kg wet | 0.01250 | | 112 | 40-140 | 6 | 30 | |
| Endosulfan Sulfate [2C] | 0.0119 | 0.0025 | mg/kg wet | 0.01250 | | 95 | 40-140 | 8 | 30 | |
| Endrin | 0.0152 | 0.0025 | mg/kg wet | 0.01250 | | 122 | 40-140 | 4 | 30 | |
| Endrin [2C] | 0.0125 | 0.0025 | mg/kg wet | 0.01250 | | 100 | 40-140 | 6 | 30 | |
| Endrin Aldehyde | 0.0121 | 0.0025 | mg/kg wet | 0.01250 | | 97 | 40-140 | 4 | 30 | |
| Endrin Aldehyde [2C] | 0.0093 | 0.0025 | mg/kg wet | 0.01250 | | 74 | 40-140 | 4 | 30 | |
| Endrin Ketone | 0.0136 | 0.0025 | mg/kg wet | 0.01250 | | 109 | 40-140 | 3 | 30 | |
| Endrin Ketone [2C] | 0.0109 | 0.0025 | mg/kg wet | 0.01250 | | 87 | 40-140 | 3 | 30 | |
| gamma-BHC (Lindane) | 0.0147 | 0.0015 | mg/kg wet | 0.01250 | | 117 | 40-140 | 4 | 30 | |
| gamma-BHC (Lindane) [2C] | 0.0119 | 0.0015 | mg/kg wet | 0.01250 | | 95 | 40-140 | 4 | 30 | |
| gamma-Chlordane | 0.0150 | 0.0025 | mg/kg wet | 0.01250 | | 120 | 40-140 | 10 | 30 | |
| gamma-Chlordane [2C] | 0.0124 | 0.0025 | mg/kg wet | 0.01250 | | 99 | 40-140 | 16 | 30 | |
| Heptachlor | 0.0142 | 0.0025 | mg/kg wet | 0.01250 | | 114 | 40-140 | 5 | 30 | |
| Heptachlor [2C] | 0.0118 | 0.0025 | mg/kg wet | 0.01250 | | 94 | 40-140 | 5 | 30 | |
| Heptachlor Epoxide | 0.0143 | 0.0025 | mg/kg wet | 0.01250 | | 114 | 40-140 | 6 | 30 | |
| Heptachlor Epoxide [2C] | 0.0111 | 0.0025 | mg/kg wet | 0.01250 | | 89 | 40-140 | 5 | 30 | |
| Hexachlorobenzene | 0.0131 | 0.0025 | mg/kg wet | 0.01250 | | 105 | 40-140 | 5 | 30 | |
| Hexachlorobenzene [2C] | 0.0110 | 0.0025 | mg/kg wet | 0.01250 | | 88 | 40-140 | 7 | 30 | |
| Methoxychlor | 0.0158 | 0.0025 | mg/kg wet | 0.01250 | | 126 | 40-140 | 4 | 30 | |
| Methoxychlor [2C] | 0.0121 | 0.0025 | mg/kg wet | 0.01250 | | 97 | 40-140 | 0.5 | 30 | |
| *Surrogate: Decachlorobiphenyl* | *0.0139* | | mg/kg wet | *0.01250* | | *111* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.0109* | | mg/kg wet | *0.01250* | | *87* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.0133* | | mg/kg wet | *0.01250* | | *106* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.0118* | | mg/kg wet | *0.01250* | | *94* | *30-150* | | | |
| **8082 Polychlorinated Biphenyls (PCB)** | | | | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8082 Polychlorinated Biphenyls (PCB)** | | | | | | | | | | |
| **Batch CA22323 - 3540** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Aroclor 1221 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1232 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1242 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1248 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1254 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1260 | ND | 0.0500 | mg/kg wet | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0214* | | mg/kg wet | *0.02500* | | *86* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.0189* | | mg/kg wet | *0.02500* | | *75* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.0214* | | mg/kg wet | *0.02500* | | *86* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.0238* | | mg/kg wet | *0.02500* | | *95* | *30-150* | | | |
| **LCS** | | | | | | | | | | |
| Aroclor 1260 | 0.528 | 0.0500 | mg/kg wet | 0.5000 | | 106 | 40-140 | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0232* | | mg/kg wet | *0.02500* | | *93* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.0228* | | mg/kg wet | *0.02500* | | *91* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.0234* | | mg/kg wet | *0.02500* | | *94* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.0249* | | mg/kg wet | *0.02500* | | *100* | *30-150* | | | |
| **LCS Dup** | | | | | | | | | | |
| Aroclor 1260 | 0.522 | 0.0500 | mg/kg wet | 0.5000 | | 104 | 40-140 | 1 | 50 | |
| *Surrogate: Decachlorobiphenyl* | *0.0240* | | mg/kg wet | *0.02500* | | *96* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.0220* | | mg/kg wet | *0.02500* | | *88* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.0238* | | mg/kg wet | *0.02500* | | *95* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.0253* | | mg/kg wet | *0.02500* | | *101* | *30-150* | | | |
| **8100M Total Petroleum Hydrocarbons** | | | | | | | | | | |
| **Batch CA22302 - 3546** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Decane (C10) | ND | 0.2 | mg/kg wet | | | | | | | |
| Docosane (C22) | ND | 0.2 | mg/kg wet | | | | | | | |
| Dodecane (C12) | ND | 0.2 | mg/kg wet | | | | | | | |
| Eicosane (C20) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexacosane (C26) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexadecane (C16) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonadecane (C19) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonane (C9) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octacosane (C28) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octadecane (C18) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetracosane (C24) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetradecane (C14) | ND | 0.2 | mg/kg wet | | | | | | | |
| Total Petroleum Hydrocarbons | ND | 37.5 | mg/kg wet | | | | | | | |
| Triacontane (C30) | ND | 0.2 | mg/kg wet | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8100M Total Petroleum Hydrocarbons** | | | | | | | | | | |
| **Batch CA22302 - 3546** | | | | | | | | | | |
| *Surrogate: O-Terphenyl* | *5.54* | | mg/kg wet | *5.000* | | *111* | *40-140* | | | |
| **LCS** | | | | | | | | | | |
| Decane (C10) | 1.8 | 0.2 | mg/kg wet | 2.500 | | 71 | 40-140 | | | |
| Docosane (C22) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 88 | 40-140 | | | |
| Dodecane (C12) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 79 | 40-140 | | | |
| Eicosane (C20) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 88 | 40-140 | | | |
| Hexacosane (C26) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | | | |
| Hexadecane (C16) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 84 | 40-140 | | | |
| Nonadecane (C19) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | | | |
| Nonane (C9) | 1.5 | 0.2 | mg/kg wet | 2.500 | | 59 | 30-140 | | | |
| Octacosane (C28) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | | | |
| Octadecane (C18) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 86 | 40-140 | | | |
| Tetracosane (C24) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | | | |
| Tetradecane (C14) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 82 | 40-140 | | | |
| Total Petroleum Hydrocarbons | 36.1 | 37.5 | mg/kg wet | 35.00 | | 103 | 40-140 | | | |
| Triacontane (C30) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 92 | 40-140 | | | |
| *Surrogate: O-Terphenyl* | *5.61* | | mg/kg wet | *5.000* | | *112* | *40-140* | | | |
| **LCS Dup** | | | | | | | | | | |
| Decane (C10) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 78 | 40-140 | 10 | 50 | |
| Docosane (C22) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 2 | 50 | |
| Dodecane (C12) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 85 | 40-140 | 7 | 50 | |
| Eicosane (C20) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 2 | 50 | |
| Hexacosane (C26) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 0.7 | 50 | |
| Hexadecane (C16) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 91 | 40-140 | 8 | 50 | |
| Nonadecane (C19) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 94 | 40-140 | 4 | 50 | |
| Nonane (C9) | 1.6 | 0.2 | mg/kg wet | 2.500 | | 65 | 30-140 | 10 | 50 | |
| Octacosane (C28) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 0.3 | 50 | |
| Octadecane (C18) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 92 | 40-140 | 6 | 50 | |
| Tetracosane (C24) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 91 | 40-140 | 1 | 50 | |
| Tetradecane (C14) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | 8 | 50 | |
| Total Petroleum Hydrocarbons | 39.2 | 37.5 | mg/kg wet | 35.00 | | 112 | 40-140 | 8 | 50 | |
| Triacontane (C30) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 91 | 40-140 | 1 | 50 | |
| *Surrogate: O-Terphenyl* | *5.80* | | mg/kg wet | *5.000* | | *116* | *40-140* | | | |
| **8151A Chlorinated Herbicides** | | | | | | | | | | |
| **Batch CA22311 - 8151A** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| 2,4,5-T | ND | 0.010 | mg/kg dry | | | | | | | |
| 2,4,5-T [2C] | ND | 0.010 | mg/kg dry | | | | | | | |
| 2,4,5-TP (Silvex) | ND | 0.010 | mg/kg dry | | | | | | | |
| 2,4,5-TP (Silvex) [2C] | ND | 0.010 | mg/kg dry | | | | | | | |
| 2,4-D | ND | 0.188 | mg/kg dry | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8151A Chlorinated Herbicides** | | | | | | | | | | |
| **Batch CA22311 - 8151A** | | | | | | | | | | |
| 2,4-D [2C] | ND | 0.188 | mg/kg dry | | | | | | | |
| 2,4-DB | ND | 0.190 | mg/kg dry | | | | | | | |
| 2,4-DB [2C] | ND | 0.190 | mg/kg dry | | | | | | | |
| Dalapon | ND | 0.182 | mg/kg dry | | | | | | | |
| Dalapon [2C] | ND | 0.182 | mg/kg dry | | | | | | | |
| Dicamba | ND | 0.009 | mg/kg dry | | | | | | | |
| Dicamba [2C] | ND | 0.009 | mg/kg dry | | | | | | | |
| Dichlorprop | ND | 0.188 | mg/kg dry | | | | | | | |
| Dichlorprop [2C] | ND | 0.188 | mg/kg dry | | | | | | | |
| Dinoseb | ND | 0.190 | mg/kg dry | | | | | | | |
| Dinoseb [2C] | ND | 0.190 | mg/kg dry | | | | | | | |
| MCPA | ND | 18.6 | mg/kg dry | | | | | | | |
| MCPA [2C] | ND | 18.6 | mg/kg dry | | | | | | | |
| MCPP | ND | 18.8 | mg/kg dry | | | | | | | |
| MCPP [2C] | ND | 18.8 | mg/kg dry | | | | | | | |
| *Surrogate: DCAA* | *16.5* | | mg/kg dry | *20.00* | | *82* | *30-150* | | | |
| *Surrogate: DCAA [2C]* | *15.3* | | mg/kg dry | *20.00* | | *76* | *30-150* | | | |
| **LCS** | | | | | | | | | | |
| 2,4,5-T | 0.013 | 0.010 | mg/kg dry | 0.01900 | | 70 | 40-140 | | | |
| 2,4,5-T [2C] | 0.012 | 0.010 | mg/kg dry | 0.01900 | | 64 | 40-140 | | | |
| 2,4,5-TP (Silvex) | 0.013 | 0.010 | mg/kg dry | 0.01900 | | 66 | 40-140 | | | |
| 2,4,5-TP (Silvex) [2C] | 0.013 | 0.010 | mg/kg dry | 0.01900 | | 66 | 40-140 | | | |
| 2,4-D | 0.123 | 0.188 | mg/kg dry | 0.1880 | | 65 | 40-140 | | | |
| 2,4-D [2C] | 0.136 | 0.188 | mg/kg dry | 0.1880 | | 73 | 40-140 | | | |
| 2,4-DB | 0.128 | 0.190 | mg/kg dry | 0.1900 | | 67 | 40-140 | | | |
| 2,4-DB [2C] | 0.139 | 0.190 | mg/kg dry | 0.1900 | | 73 | 40-140 | | | |
| Dalapon | 0.248 | 0.182 | mg/kg dry | 0.4550 | | 54 | 40-140 | | | |
| Dalapon [2C] | 0.240 | 0.182 | mg/kg dry | 0.4550 | | 53 | 40-140 | | | |
| Dicamba | 0.014 | 0.009 | mg/kg dry | 0.01880 | | 76 | 40-140 | | | |
| Dicamba [2C] | 0.013 | 0.009 | mg/kg dry | 0.01880 | | 68 | 40-140 | | | |
| Dichlorprop | 0.166 | 0.188 | mg/kg dry | 0.1880 | | 88 | 40-140 | | | |
| Dichlorprop [2C] | 0.162 | 0.188 | mg/kg dry | 0.1880 | | 86 | 40-140 | | | |
| Dinoseb | 0.013 | 0.190 | mg/kg dry | 0.09500 | | 14 | 10-100 | | | |
| Dinoseb [2C] | 0.012 | 0.190 | mg/kg dry | 0.09500 | | 13 | 10-100 | | | |
| MCPA | 14.5 | 18.6 | mg/kg dry | 18.60 | | 78 | 40-140 | | | |
| MCPA [2C] | 13.2 | 18.6 | mg/kg dry | 18.60 | | 71 | 40-140 | | | |
| MCPP | 12.7 | 18.8 | mg/kg dry | 18.80 | | 68 | 40-140 | | | |
| MCPP [2C] | 12.0 | 18.8 | mg/kg dry | 18.80 | | 64 | 40-140 | | | |
| *Surrogate: DCAA* | *15.2* | | mg/kg dry | *20.00* | | *76* | *30-150* | | | |
| *Surrogate: DCAA [2C]* | *14.0* | | mg/kg dry | *20.00* | | *70* | *30-150* | | | |
| **LCS Dup** | | | | | | | | | | **D+** |
| 2,4,5-T | 0.017 | 0.010 | mg/kg dry | 0.01900 | | 92 | 40-140 | 27 | 30 | |
| 2,4,5-T [2C] | 0.019 | 0.010 | mg/kg dry | 0.01900 | | 102 | 40-140 | 46 | 30 | |
| 2,4,5-TP (Silvex) | 0.016 | 0.010 | mg/kg dry | 0.01900 | | 84 | 40-140 | 24 | 30 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8151A Chlorinated Herbicides** | | | | | | | | | | |
| **Batch CA22311 - 8151A** | | | | | | | | | | |
| 2,4,5-TP (Silvex) [2C] | 0.017 | 0.010 | mg/kg dry | 0.01900 | | 90 | 40-140 | 31 | 30 | |
| 2,4-D | 0.162 | 0.188 | mg/kg dry | 0.1880 | | 86 | 40-140 | 28 | 30 | |
| 2,4-D [2C] | 0.184 | 0.188 | mg/kg dry | 0.1880 | | 98 | 40-140 | 30 | 30 | |
| 2,4-DB | 0.211 | 0.190 | mg/kg dry | 0.1900 | | 111 | 40-140 | 49 | 30 | |
| 2,4-DB [2C] | 0.181 | 0.190 | mg/kg dry | 0.1900 | | 95 | 40-140 | 26 | 30 | |
| Dalapon | 0.355 | 0.182 | mg/kg dry | 0.4550 | | 78 | 40-140 | 36 | 30 | |
| Dalapon [2C] | 0.359 | 0.182 | mg/kg dry | 0.4550 | | 79 | 40-140 | 40 | 30 | |
| Dicamba | 0.018 | 0.009 | mg/kg dry | 0.01880 | | 98 | 40-140 | 25 | 30 | |
| Dicamba [2C] | 0.016 | 0.009 | mg/kg dry | 0.01880 | | 86 | 40-140 | 23 | 30 | |
| Dichlorprop | 0.218 | 0.188 | mg/kg dry | 0.1880 | | 116 | 40-140 | 27 | 30 | |
| Dichlorprop [2C] | 0.214 | 0.188 | mg/kg dry | 0.1880 | | 114 | 40-140 | 27 | 30 | |
| Dinoseb | 0.020 | 0.190 | mg/kg dry | 0.09500 | | 21 | 10-100 | 39 | 30 | |
| Dinoseb [2C] | 0.017 | 0.190 | mg/kg dry | 0.09500 | | 18 | 10-100 | 34 | 30 | |
| MCPA | 17.9 | 18.6 | mg/kg dry | 18.60 | | 96 | 40-140 | 21 | 30 | |
| MCPA [2C] | 17.4 | 18.6 | mg/kg dry | 18.60 | | 94 | 40-140 | 28 | 30 | |
| MCPP | 17.0 | 18.8 | mg/kg dry | 18.80 | | 90 | 40-140 | 29 | 30 | |
| MCPP [2C] | 16.8 | 18.8 | mg/kg dry | 18.80 | | 89 | 40-140 | 33 | 30 | |
| *Surrogate: DCAA* | *19.8* | | mg/kg dry | *20.00* | | *99* | *30-150* | | | |
| *Surrogate: DCAA [2C]* | *18.2* | | mg/kg dry | *20.00* | | *91* | *30-150* | | | |
| **8270C Semi-Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22301 - 3546** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.333 | mg/kg wet | | | | | | | |
| 2-Methylnaphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| 4-Chloroaniline | ND | 0.667 | mg/kg wet | | | | | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | *2.61* | | mg/kg wet | *3.333* | | *78* | *30-130* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *4.31* | | mg/kg wet | *5.000* | | *86* | *30-130* | | | |
| *Surrogate: 2-Chlorophenol-d4* | *3.94* | | mg/kg wet | *5.000* | | *79* | *30-130* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *2.86* | | mg/kg wet | *3.333* | | *86* | *30-130* | | | |
| *Surrogate: 2-Fluorophenol* | *3.69* | | mg/kg wet | *5.000* | | *74* | *30-130* | | | |
| *Surrogate: Nitrobenzene-d5* | *2.50* | | mg/kg wet | *3.333* | | *75* | *30-130* | | | |
| *Surrogate: Phenol-d6* | *4.10* | | mg/kg wet | *5.000* | | *82* | *30-130* | | | |
| *Surrogate: p-Terphenyl-d14* | *3.45* | | mg/kg wet | *3.333* | | *104* | *30-130* | | | |
| **LCS** | | | | | | | | | | |
| 1,2-Dichlorobenzene | 2.90 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| 2-Methylnaphthalene | 3.49 | 0.333 | mg/kg wet | 3.333 | | 105 | 40-140 | | | |
| 4-Chloroaniline | 2.22 | 0.667 | mg/kg wet | 3.333 | | 67 | 40-140 | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | *2.66* | | mg/kg wet | *3.333* | | *80* | *30-130* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *4.61* | | mg/kg wet | *5.000* | | *92* | *30-130* | | | |
| *Surrogate: 2-Chlorophenol-d4* | *3.89* | | mg/kg wet | *5.000* | | *78* | *30-130* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *2.96* | | mg/kg wet | *3.333* | | *89* | *30-130* | | | |
| *Surrogate: 2-Fluorophenol* | *3.68* | | mg/kg wet | *5.000* | | *74* | *30-130* | | | |
| *Surrogate: Nitrobenzene-d5* | *2.48* | | mg/kg wet | *3.333* | | *74* | *30-130* | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8270C Semi-Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22301 - 3546** | | | | | | | | | | |
| *Surrogate: Phenol-d6* | *4.04* | | mg/kg wet | *5.000* | | *81* | *30-130* | | | |
| *Surrogate: p-Terphenyl-d14* | *3.08* | | mg/kg wet | *3.333* | | *92* | *30-130* | | | |
| **LCS Dup** | | | | | | | | | | |
| 1,2-Dichlorobenzene | 2.42 | 0.333 | mg/kg wet | 3.333 | | 73 | 40-140 | 18 | 30 | |
| 2-Methylnaphthalene | 2.78 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | 23 | 30 | |
| 4-Chloroaniline | 1.99 | 0.667 | mg/kg wet | 3.333 | | 60 | 40-140 | 11 | 30 | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | *2.38* | | mg/kg wet | *3.333* | | *71* | *30-130* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *4.47* | | mg/kg wet | *5.000* | | *89* | *30-130* | | | |
| *Surrogate: 2-Chlorophenol-d4* | *3.54* | | mg/kg wet | *5.000* | | *71* | *30-130* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *2.77* | | mg/kg wet | *3.333* | | *83* | *30-130* | | | |
| *Surrogate: 2-Fluorophenol* | *3.47* | | mg/kg wet | *5.000* | | *69* | *30-130* | | | |
| *Surrogate: Nitrobenzene-d5* | *2.28* | | mg/kg wet | *3.333* | | *68* | *30-130* | | | |
| *Surrogate: Phenol-d6* | *3.64* | | mg/kg wet | *5.000* | | *73* | *30-130* | | | |
| *Surrogate: p-Terphenyl-d14* | *3.10* | | mg/kg wet | *3.333* | | *93* | *30-130* | | | |
| **Classical Chemistry** | | | | | | | | | | |
| **Batch CA22326 - General Preparation** | | | | | | | | | | |
| **Duplicate** **Source: 1201230-01** | | | | | | | | | | |
| Corrosivity (pH) | 7.49 | | S.U. | | 7.51 | | | 0.3 | 200 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

**Notes and Definitions**

| | |
|---|---|
| Z-10 | Soil pH measured in water at 18.3 °C. |
| U | Analyte included in the analysis, but not detected |
| SM | Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM). |
| P | Percent difference between primary and confirmation results exceeds 40% (P). |
| J | Reported between MDL and MRL; Estimated value. |
| E | Reported above the quantitation limit; Estimated value (E). |
| D+ | Relative percent difference for duplicate is outside of criteria (D+). |
| D | Diluted. |
| C+ | Continuing Calibration recovery is above upper control limit (C+). |
| B+ | Blank Spike recovery is above upper control limit (B+). |
| B | Present in Method Blank (B). |
| ND | Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |
| MDL | Method Detection Limit |
| MRL | Method Reporting Limit |
| LOD | Limit of Detection |
| LOQ | Limit of Quantitation |
| DL | Detection Limit |
| I/V | Initial Volume |
| F/V | Final Volume |
| § | Subcontracted analysis; see attached report |
| 1 | Range result excludes concentrations of surrogates and/or internal standards eluting in that range. |
| 2 | Range result excludes concentrations of target analytes eluting in that range. |
| 3 | Range result excludes the concentration of the C9-C10 aromatic range. |
| Avg | Results reported as a mathematical average. |
| NR | No Recovery |
| [CALC] | Calculated Analyte |
| SUB | Subcontractged analysis; see attached report |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201230

## ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

### ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)
A2LA Accredited: Testing Cert# 2864.01
http://www.a2la.org/scopepdf/2864-01.pdf

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/labs/waterlabs-instate.php

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/out_state.pdf

Maine Potable and Non Potable Water: RI0002
http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/labcert/labcert.aspx

New Hampshire (NELAP accredited) Potable and Non PotableWater, Solid and Hazardous Waste: 2424
http://www4.egov.nh.gov/des/nhelap/namesearch.asp

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

United States Department of Agriculture Soil Permit: S-54210

Maryland Potable Water: 301
http://www.mde.state.md.us/assets/document/WSP_labs-2009apr20.pdf

### CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01
Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)
http://www.A2LA.org/dirsearchnew/newsearch.cfm

CPSC ID# 1141
Lead Paint, Lead in Children's Metals Jewelry
http://www.cpsc.gov/cgi-bin/labapplist.aspx

Attachment B
SOP 10_0001

**Sample and Cooler Receipt Checklist**

Client: AECOM - CT
Client Project ID: _____
Shipped/Delivered Via: Client

ESS Project ID: 12010230
Date Project Due: 1/26/12
Days For Project: 3 Day

**Items to be checked upon receipt:**

1. Air Bill Manifest Present? * No
   Air No.:
2. Were Custody Seals Present? No
3. Were Custody Seals Intact? N/A
4. Is Radiation count < 100 CPM? Yes
5. Is a cooler present? Yes
   Cooler Temp: **3.6**
   Iced With: **Ice**
6. Was COC included with samples? Yes
7. Was COC signed and dated by client? Yes
8. Does the COC match the sample Yes
9. Is COC complete and correct? Yes
10. Are the samples properly preserved? Yes
11. Proper sample containers used? Yes
12. Any air bubbles in the VOA vials? N/A
13. Holding times exceeded? No
14. Sufficient sample volumes? Yes
15. Any Subcontracting needed? No
16. Are ESS labels on correct containers? Yes | No
17. Were samples received intact? Yes | No
    ESS Sample IDs: _____
    Sub Lab: _____
    Analysis: _____
    TAT: _____
18. Was there need to call project manager to discuss status? If yes, please explain.

No MeOH VOA trip blank received CLO 1/23/12

Who was called?: _____ By whom? _____

| Sample Number | Properly Preserved | Container Type | # of Containers | Preservative |
|---|---|---|---|---|
| 1 | Yes | 4 oz Soil Jar | 2 | NP |
| 1 | Yes | 40 ml - VOA | 1 | MeOH |
| 1 | Yes | 40 ml - VOA | 2 | other |
| 2 | Yes | 4 oz Soil Jar | 2 | NP |
| 2 | Yes | 40 ml - VOA | 1 | MeOH |
| 2 | Yes | 40 ml - VOA | 3 | other |

Completed By: CLO Date/Time: 1/23/12
Reviewed By: ED Date/Time: 1/23/12

# ESS Laboratory

*Division of Thielsch Engineering, Inc.*
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

# CHAIN OF CUSTODY

Page 1 of 1

Turn Time ___ Standard Other 72 Hours
If faster than 5 days, prior approval by laboratory is required # ___
State where samples were collected from: MA (RI) CT NH NJ NY ME Other ___
Is this project for any of the following: MA-MCP Navy USACE Other ___

Reporting Limits

ESS LAB PROJECT ID 1201230

Electronic Deliverable Yes X No ___
Format: Excel X Access ___ PDF ___ Other ___

| Co. Name | Project # | Project Name (20 Char. or less) |
|---|---|---|
| AECOM | 60163799 | BASF - CRANSTON |

| Contact Person | Address |
|---|---|
| KRIS CARBONNEAU | 250 APOLLO DR. |

| City | State | Zip | PO# |
|---|---|---|---|
| CHELMSFORD | MA | 01824 | |

| Telephone # | Fax # | Email Address |
|---|---|---|
| 978-905-2100 | | KRIS.CARBONNEAU@AECOM.COM |

Circle and/or Write Required Analysis

| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | 8260 VOA / 624 / 524.2 | 8021 MTBE/BTEX / 8015 GRO / VPH w/targets | 8100 TPH / 8015 DRO | EPH w/o PAHs / EPH w/PAHs / EPH 4 Diesel | 8081 Pesticides / 8083 PCB / 608 Pesticides / 608 PCB | 8270 SVOA / 625 / PAH 8270 | RCRA5 / RCRA8 / PP13 / TAL23 | TCLP-RCRA8 / NBC7 | MCP-METALS (13) / MCP-METALS (13) w/Hg | HERBICIDES | pH | PAINT FILTER | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1/23/12 | | X | | 50 | BRIDGE ROLL OFF | 6 | 5 | V/G | X | | X | [illegible] | X | X | X | X | | X | X | X | | |
| 02 | | | | | | TRIP BLANK | | | | | | | | | | | | | | | | | |

Container Type: P-Poly G-Glass S-Sterile V-VOA | Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ___ Yes X No ZIP bag Internal Use Only
Seals Intact ___ Yes ___ No NA: ___ [ ] Pickup
Cooler Temp: 3.6 on ICE [ ] Technicians ___

Preservation Code 1- NP, 2- HC1, 3- $H_2SO_4$, 4- $HNO_3$, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ___
Sampled by: Julien Chambert
Comments:

| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
|---|---|---|---|---|---|---|---|
| [signature] | 1/23/12 1425 | [signature] | 1/23/12 1425 | | | | |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
| | | | | | | | |

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 B

*CERTIFICATE OF ANALYSIS*

Joanne Lynch
AECOM Environment - ENSR
250 Apollo Drive
Chelmsford, MA 01824

**RE: BASF - Cranston RI (60163799)**
**ESS Laboratory Work Order Number: 1201221**

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

**REVIEWED**
**By ESS Laboratory at 4:24 pm, Jan 27, 2012**

**Analytical Summary**
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

ESS Laboratory certifies that the test results meet the requirements of NELAC and A2LA, except where noted within this project narrative.

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

## SAMPLE RECEIPT

The following samples were received on January 20, 2012 for the analyses specified on the enclosed Chain of Custody Record.

| Lab Number | SampleName | Matrix | Analysis |
|---|---|---|---|
| 1201221-01 | Middle Rolloff | Soil | 1311/6010B, 1311/7470A, 6010B, 7471A, 8081A, 8082, 8100M, 8151A, 8260B, 8270C, 9045, 9095A |
| 1201221-02 | Western Rolloff | Soil | 1311/6010B, 1311/7470A, 6010B, 7471A, 8081A, 8082, 8100M, 8151A, 8260B, 8270C, 9045, 9095A |
| 1201221-03 | Trip Blank | Solid | 8260B |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

## PROJECT NARRATIVE

**1311/6000/7000 TCLP Metals**

CA22520-BSD1 **Relative percent difference for duplicate is outside of criteria (D+).**
Mercury (27%)

**3050B/6000/7000 Total Metals**

CA22424-MS1 **Matrix Spike recovery is below lower control limit (M-).**
Barium (74% @ 75-125%), Cadmium (68% @ 75-125%), Lead (74% @ 75-125%)

CA22425-MS1 **Matrix Spike recovery is below lower control limit (M-).**
Mercury (60% @ 75-125%)

**5035/8260B Volatile Organic Compounds / Methanol**

1201221-01 **Present in Method Blank (B).**
Methylene Chloride

1201221-02 **Present in Method Blank (B).**
Methylene Chloride

CA22415-BS1 **Blank Spike recovery is above upper control limit (B+).**
Diethyl Ether (133% @ 70-130%)

CVA0154-CCV1 **Continuing Calibration recovery is above upper control limit (C+).**
1,4-Dioxane - Screen (153% @ 70-130%), Diethyl Ether (133% @ 70-130%)

**8081A Organochlorine Pesticides**

1201221-01 **Percent difference between primary and confirmation results exceeds 40% (P).**
4,4'-DDT , Endosulfan II , Endosulfan Sulfate

1201221-01 **Reported above the quantitation limit; Estimated value (E).**
beta-BHC

1201221-01 **Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).**
Decachlorobiphenyl [2C] (156% @ 30-150%), Tetrachloro-m-xylene (269% @ 30-150%)

1201221-02 **Percent difference between primary and confirmation results exceeds 40% (P).**
4,4'-DDT , beta-BHC , Endosulfan II , Endrin , Endrin Ketone , Heptachlor

1201221-02 **Reported above the quantitation limit; Estimated value (E).**
beta-BHC

1201221-02 **Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).**
Decachlorobiphenyl (191% @ 30-150%)

**8082 Polychlorinated Biphenyls (PCB)**

1201221-01 **Surrogate recovery(ies) diluted below the MRL (SD).**
Decachlorobiphenyl (% @ 30-150%), Decachlorobiphenyl [2C] (% @ 30-150%), Tetrachloro-m-xylene (% @ 30-150%), Tetrachloro-m-xylene [2C] (% @ 30-150%)

1201221-02 **Surrogate recovery(ies) diluted below the MRL (SD).**
Decachlorobiphenyl (% @ 30-150%), Decachlorobiphenyl [2C] (% @ 30-150%), Tetrachloro-m-xylene (% @ 30-150%), Tetrachloro-m-xylene [2C] (% @ 30-150%)

**8100M Total Petroleum Hydrocarbons**

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI ESS Laboratory Work Order: 1201221

CA22302-MS1 **Matrix Spike recovery is above upper control limit (M+).**
Total Petroleum Hydrocarbons (179% @ 40-140%)

CA22302-MSD1 **Matrix Spike recovery is below lower control limit (M-).**
Total Petroleum Hydrocarbons (10% @ 40-140%)

**8151A Chlorinated Herbicides**

1201221-01 **Percent difference between primary and confirmation results exceeds 40% (P).**
2,4-D [2C]

1201221-02 **Percent difference between primary and confirmation results exceeds 40% (P).**
MCPP [2C]

CA22311-BSD1 **Relative percent difference for duplicate is outside of criteria (D+).**

CA22311-MS1 **Majority of matrix spike compounds are outside of criteria due to matrix interferences (MM).**

CA22311-MSD1 **Majority of matrix spike compounds are outside of criteria due to matrix interferences (MM).**

CA22311-MSD1 **Relative percent difference for duplicate is outside of criteria (D+).**

CVA0168-CCV2 **Continuing Calibration recovery is above upper control limit (C+).**
2,4,5-T (126% @ 80-120%), Dinoseb (126% @ 80-120%), Dinoseb [2C] (123% @ 80-120%), MCPA (122% @ 80-120%)

**8270C Semi-Volatile Organic Compounds**

1201221-02 **Surrogate recovery(ies) below lower control limit (S-).**
2-Fluorobiphenyl (28% @ 30-130%), 2-Fluorophenol (19% @ 30-130%)

**No other observations noted.**

**End of Project Narrative.**

## DATA USABILITY LINKS

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Rolloff
Date Sampled: 01/20/12 11:25
Percent Solids: 56

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-01
Sample Matrix: Soil
Units: mg/L

TCLP Extraction Date: 1/24/12 17:19

## 1311/6000/7000 TCLP Metals

| Analyte | Results (MRL) | Method | TCLP Limit | DF | Analyst | Analyzed | I/V | F/V | Batch |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND (0.050) | 1311/6010B | | 1 | SVD | 01/25/12 21:08 | 50 | 50 | CA22517 |
| **Barium** | **0.417** (0.050) | 1311/6010B | | 1 | SVD | 01/25/12 21:08 | 50 | 50 | CA22517 |
| **Cadmium** | **0.0057** (0.0050) | 1311/6010B | | 1 | SVD | 01/25/12 21:08 | 50 | 50 | CA22517 |
| Chromium | ND (0.020) | 1311/6010B | | 1 | SVD | 01/25/12 21:08 | 50 | 50 | CA22517 |
| **Lead** | **0.077** (0.020) | 1311/6010B | | 1 | SVD | 01/25/12 21:08 | 50 | 50 | CA22517 |
| Mercury | ND (0.00050) | 1311/7470A | | 1 | KJK | 01/26/12 12:33 | 20 | 40 | CA22520 |
| Selenium | ND (0.050) | 1311/6010B | | 1 | SVD | 01/25/12 21:08 | 50 | 50 | CA22517 |
| Silver | ND (0.010) | 1311/6010B | | 1 | SVD | 01/25/12 21:08 | 50 | 50 | CA22517 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Rolloff
Date Sampled: 01/20/12 11:25
Percent Solids: 56

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-01
Sample Matrix: Soil
Units: mg/kg dry

## 3050B/6000/7000 Total Metals

| Analyte | Results (MRL) | Method | Limit | DF | Analyst | Analyzed | I/V | F/V | Batch |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND (2.9) | 6010B | | 1 | JP | 01/25/12 16:58 | 3.07 | 100 | CA22424 |
| **Barium** | **71.4** (2.9) | 6010B | | 1 | JP | 01/25/12 16:58 | 3.07 | 100 | CA22424 |
| **Cadmium** | **8.00** (0.58) | 6010B | | 1 | JP | 01/25/12 16:58 | 3.07 | 100 | CA22424 |
| **Chromium** | **163** (1.2) | 6010B | | 1 | JP | 01/25/12 16:58 | 3.07 | 100 | CA22424 |
| **Lead** | **130** (5.8) | 6010B | | 1 | JP | 01/25/12 16:58 | 3.07 | 100 | CA22424 |
| **Mercury** | **0.680** (0.059) | 7471A | | 2 | KJK | 01/25/12 19:24 | 1.19 | 40 | CA22425 |
| Selenium | ND (5.8) | 6010B | | 1 | JP | 01/25/12 16:58 | 3.07 | 100 | CA22424 |
| **Silver** | **0.77** (0.58) | 6010B | | 1 | JP | 01/25/12 16:58 | 3.07 | 100 | CA22424 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Rolloff
Date Sampled: 01/20/12 11:25
Percent Solids: 56
Initial Volume: 12.8
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

## 5035/8260B Volatile Organic Compounds / Methanol

| Analyte | Results (MRL) | MDL | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND (0.288) | 0.0250 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,1,1-Trichloroethane | ND (0.144) | 0.0253 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,1,2,2-Tetrachloroethane | ND (0.144) | 0.0391 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,1,2-Trichloroethane | ND (0.144) | 0.0360 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,1-Dichloroethane | ND (0.144) | 0.0230 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,1-Dichloroethene | ND (0.144) | 0.0354 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,1-Dichloropropene | ND (0.144) | 0.0222 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,2,3-Trichlorobenzene | ND (0.144) | 0.0481 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,2,3-Trichloropropane | ND (0.144) | 0.0357 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **1,2,4-Trichlorobenzene** | **J 0.0864** (0.144) | 0.0317 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **1,2,4-Trimethylbenzene** | **25.7** (0.144) | 0.0276 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,2-Dibromo-3-Chloropropane | ND (0.864) | 0.288 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,2-Dibromoethane | ND (0.144) | 0.0366 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **1,2-Dichlorobenzene** | **0.210** (0.144) | 0.0204 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,2-Dichloroethane | ND (0.144) | 0.0386 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,2-Dichloropropane | ND (0.144) | 0.0377 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **1,3,5-Trimethylbenzene** | **9.28** (0.144) | 0.0253 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **1,3-Dichlorobenzene** | **J 0.0259** (0.144) | 0.0181 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,3-Dichloropropane | ND (0.144) | 0.0322 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **1,4-Dichlorobenzene** | **J 0.135** (0.144) | 0.0383 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1,4-Dioxane - Screen | ND (14.4) | 4.81 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 1-Chlorohexane | ND (0.144) | 0.0273 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 2,2-Dichloropropane | ND (0.288) | 0.0492 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 2-Butanone | ND (3.60) | 0.832 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 2-Chlorotoluene | ND (0.144) | 0.0406 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 2-Hexanone | ND (1.44) | 0.248 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 4-Chlorotoluene | ND (0.144) | 0.0187 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **4-Isopropyltoluene** | **22.2** (0.144) | 0.0256 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| 4-Methyl-2-Pentanone | ND (1.44) | 0.173 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **Acetone** | **J 1.55** (3.60) | 1.06 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **Benzene** | **46.3** (14.4) | 2.33 | | 100 | 01/24/12 16:48 | CVA0154 | CA22415 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Rolloff
Date Sampled: 01/20/12 11:25
Percent Solids: 56
Initial Volume: 12.8
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

## 5035/8260B Volatile Organic Compounds / Methanol

| Analyte | Results (MRL) | MDL | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|---|
| Bromobenzene | ND (0.144) | 0.0394 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Bromochloromethane | ND (0.144) | 0.0466 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Bromodichloromethane | ND (0.144) | 0.0199 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Bromoform | ND (0.144) | 0.0414 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Bromomethane | ND (0.288) | 0.0961 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Carbon Disulfide | ND (0.144) | 0.0213 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Carbon Tetrachloride | ND (0.144) | 0.0250 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **Chlorobenzene** | **761** (14.4) | 2.27 | | 100 | 01/24/12 16:48 | CVA0154 | CA22415 |
| Chloroethane | ND (0.288) | 0.0958 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Chloroform | ND (0.144) | 0.0296 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Chloromethane | ND (0.288) | 0.0366 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| cis-1,2-Dichloroethene | ND (0.144) | 0.0357 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| cis-1,3-Dichloropropene | ND (0.144) | 0.0325 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Dibromochloromethane | ND (0.144) | 0.0363 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Dibromomethane | ND (0.144) | 0.0455 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Dichlorodifluoromethane | ND (0.144) | 0.0250 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Diethyl Ether | ND (0.144) | 0.0366 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Di-isopropyl ether | ND (0.144) | 0.0271 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Ethyl tertiary-butyl ether | ND (0.144) | 0.0363 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **Ethylbenzene** | **0.702** (0.144) | 0.0187 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Hexachlorobutadiene | ND (0.144) | 0.0481 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **Isopropylbenzene** | **0.956** (0.144) | 0.0253 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Methyl tert-Butyl Ether | ND (0.144) | 0.0230 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **Methylene Chloride** | **B, J 0.0921** (0.720) | 0.0377 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **Naphthalene** | **4.58** (0.144) | 0.0377 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **n-Butylbenzene** | **3.52** (0.144) | 0.0354 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **n-Propylbenzene** | **3.67** (0.144) | 0.0351 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **sec-Butylbenzene** | **1.23** (0.144) | 0.0193 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Styrene | ND (0.144) | 0.0190 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **tert-Butylbenzene** | **J 0.135** (0.144) | 0.0337 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Tertiary-amyl methyl ether | ND (0.144) | 0.0207 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Rolloff
Date Sampled: 01/20/12 11:25
Percent Solids: 56
Initial Volume: 12.8
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

## 5035/8260B Volatile Organic Compounds / Methanol

| Analyte | Results (MRL) | MDL | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|---|
| Tetrachloroethene | ND (0.144) | 0.0481 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Tetrahydrofuran | ND (1.44) | 0.371 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **Toluene** | **48.9** (14.4) | 3.66 | | 100 | 01/24/12 16:48 | CVA0154 | CA22415 |
| trans-1,2-Dichloroethene | ND (0.144) | 0.0472 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| trans-1,3-Dichloropropene | ND (0.144) | 0.0443 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **Trichloroethene** | **J 0.0547** (0.144) | 0.0296 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Trichlorofluoromethane | ND (0.144) | 0.0380 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Vinyl Acetate | ND (0.720) | 0.0296 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| Vinyl Chloride | ND (0.144) | 0.0475 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **Xylene O** | **1.76** (0.144) | 0.0276 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **Xylene P,M** | **3.01** (0.288) | 0.0558 | | 1 | 01/24/12 14:20 | CVA0154 | CA22415 |
| **Xylenes (Total)** | **4.76** (0.432) | | | 1 | 01/24/12 14:20 | | [CALC] |

| | *%Recovery* | *Qualifier* | *Limits* |
|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | *79 %* | | *70-130* |
| *Surrogate: 4-Bromofluorobenzene* | *81 %* | | *70-130* |
| *Surrogate: Dibromofluoromethane* | *84 %* | | *70-130* |
| *Surrogate: Toluene-d8* | *92 %* | | *70-130* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Rolloff
Date Sampled: 01/20/12 11:25
Percent Solids: 56
Initial Volume: 20.4
Final Volume: 5
Extraction Method: 3546

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/20/12 17:55

## 8081A Organochlorine Pesticides

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| 4,4'-DDD | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| 4,4'-DDE | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| **4,4'-DDT** | **P 0.0336** (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| Aldrin | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| alpha-BHC | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| alpha-Chlordane | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| **beta-BHC** | **E 0.146** (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| Chlordane (Total) | ND (0.0525) | | 1 | 01/26/12 15:44 | | CA22001 |
| delta-BHC | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| Dieldrin | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| Endosulfan I | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| **Endosulfan II** | **P 0.0129** (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| **Endosulfan Sulfate** | **P 0.0158** (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| Endrin | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| Endrin Aldehyde | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| Endrin Ketone | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| gamma-BHC (Lindane) | ND (0.0026) | | 1 | 01/26/12 15:44 | | CA22001 |
| gamma-Chlordane | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| Heptachlor | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| Heptachlor Epoxide | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| Hexachlorobenzene | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| Methoxychlor | ND (0.0044) | | 1 | 01/26/12 15:44 | | CA22001 |
| Toxaphene | ND (0.219) | | 1 | 01/26/12 15:44 | | CA22001 |

| | *%Recovery* | *Qualifier* | *Limits* |
|---|---|---|---|
| *Surrogate: Decachlorobiphenyl* | *111 %* | | *30-150* |
| *Surrogate: Decachlorobiphenyl [2C]* | *156 %* | *SM* | *30-150* |
| *Surrogate: Tetrachloro-m-xylene* | *269 %* | *SM* | *30-150* |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *90 %* | | *30-150* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Rolloff
Date Sampled: 01/20/12 11:25
Percent Solids: 56
Initial Volume: 19.4
Final Volume: 10
Extraction Method: 3541

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/20/12 17:55

## 8082 Polychlorinated Biphenyls (PCB)

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Aroclor 1221 | ND (1.84) | | 20 | 01/25/12 15:33 | | CA22603 |
| Aroclor 1232 | ND (1.84) | | 20 | 01/25/12 15:33 | | CA22603 |
| Aroclor 1242 | ND (1.84) | | 20 | 01/25/12 15:33 | | CA22603 |
| **Aroclor 1248** | **35.9** (1.84) | | 20 | 01/25/12 15:33 | | CA22603 |
| Aroclor 1254 | ND (1.84) | | 20 | 01/25/12 15:33 | | CA22603 |
| Aroclor 1260 | ND (1.84) | | 20 | 01/25/12 15:33 | | CA22603 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: Decachlorobiphenyl* | % | SD | 30-150 |
| *Surrogate: Decachlorobiphenyl [2C]* | % | SD | 30-150 |
| *Surrogate: Tetrachloro-m-xylene* | % | SD | 30-150 |
| *Surrogate: Tetrachloro-m-xylene [2C]* | % | SD | 30-150 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Rolloff
Date Sampled: 01/20/12 11:25
Percent Solids: 56
Initial Volume: 20.6
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 9:15

## 8100M Total Petroleum Hydrocarbons

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| **Total Petroleum Hydrocarbons** | **1820** (65.0) | | 1 | 01/23/12 16:54 | CVA0162 | CA22302 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: O-Terphenyl* | *83 %* | | *40-140* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Rolloff
Date Sampled: 01/20/12 11:25
Percent Solids: 56
Initial Volume: 10.5
Final Volume: 4
Extraction Method: 8151A

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 9:00

## 8151A Chlorinated Herbicides

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| 2,4,5-T | ND (0.005) | | 1 | 01/25/12 18:30 | CVA0168 | CA22311 |
| 2,4,5-TP (Silvex) | ND (0.005) | | 1 | 01/25/12 18:30 | CVA0168 | CA22311 |
| **2,4-D [2C]** | **P 0.257** (0.100) | | 1 | 01/25/12 18:30 | CVA0168 | CA22311 |
| 2,4-DB | ND (0.101) | | 1 | 01/25/12 18:30 | CVA0168 | CA22311 |
| Dalapon [2C] | ND (0.097) | | 1 | 01/25/12 18:30 | CVA0168 | CA22311 |
| Dicamba | ND (0.005) | | 1 | 01/25/12 18:30 | CVA0168 | CA22311 |
| Dichlorprop | ND (0.100) | | 1 | 01/25/12 18:30 | CVA0168 | CA22311 |
| Dinoseb | ND (0.101) | | 1 | 01/25/12 18:30 | CVA0168 | CA22311 |
| MCPA | ND (9.92) | | 1 | 01/25/12 18:30 | CVA0168 | CA22311 |
| **MCPP [2C]** | **408** (50.1) | | 5 | 01/26/12 13:38 | CVA0168 | CA22311 |

| | *%Recovery* | *Qualifier* | *Limits* |
|---|---|---|---|
| *Surrogate: DCAA* | *100 %* | | *30-150* |
| *Surrogate: DCAA [2C]* | *79 %* | | *30-150* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Rolloff
Date Sampled: 01/20/12 11:25
Percent Solids: 56
Initial Volume: 15.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 9:15

## 8270C Semi-Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 1,2-Dichlorobenzene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 1,3-Dichlorobenzene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 1,4-Dichlorobenzene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 2,3,4,6-Tetrachlorophenol | ND (2.90) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 2,4,5-Trichlorophenol | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 2,4,6-Trichlorophenol | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 2,4-Dichlorophenol | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 2,4-Dimethylphenol | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 2,4-Dinitrophenol | ND (2.90) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 2,4-Dinitrotoluene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 2,6-Dinitrotoluene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 2-Chloronaphthalene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 2-Chlorophenol | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 2-Methylnaphthalene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 2-Methylphenol | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| **2-Nitroaniline** | **0.728** (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 2-Nitrophenol | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 3,3'-Dichlorobenzidine | ND (1.16) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 3+4-Methylphenol | ND (1.16) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 3-Nitroaniline | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 4,6-Dinitro-2-Methylphenol | ND (2.90) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 4-Bromophenyl-phenylether | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 4-Chloro-3-Methylphenol | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| **4-Chloroaniline** | **20.4** (5.80) | | 5 | 01/26/12 14:54 | CVA0161 | CA22301 |
| 4-Chloro-phenyl-phenyl ether | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 4-Nitroaniline | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| 4-Nitrophenol | ND (2.90) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Acenaphthene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Acenaphthylene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Acetophenone | ND (1.16) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Rolloff
Date Sampled: 01/20/12 11:25
Percent Solids: 56
Initial Volume: 15.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 9:15

## 8270C Semi-Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Aniline | ND (1.16) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Anthracene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Azobenzene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Benzo(a)anthracene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Benzo(a)pyrene | ND (0.290) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Benzo(b)fluoranthene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Benzo(g,h,i)perylene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Benzo(k)fluoranthene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Benzoic Acid | ND (2.90) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Benzyl Alcohol | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| bis(2-Chloroethoxy)methane | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| bis(2-Chloroethyl)ether | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| bis(2-chloroisopropyl)Ether | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| **bis(2-Ethylhexyl)phthalate** | **6.03** (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Butylbenzylphthalate | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Carbazole | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| **Chrysene** | **0.291** (0.290) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Dibenzo(a,h)Anthracene | ND (0.290) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Dibenzofuran | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Diethylphthalate | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Dimethylphthalate | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Di-n-butylphthalate | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| **Di-n-octylphthalate** | **4.15** (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Fluoranthene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Fluorene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Hexachlorobenzene | ND (0.290) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Hexachlorobutadiene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Hexachlorocyclopentadiene | ND (2.90) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Hexachloroethane | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Indeno(1,2,3-cd)Pyrene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Isophorone | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Rolloff
Date Sampled: 01/20/12 11:25
Percent Solids: 56
Initial Volume: 15.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 9:15

## 8270C Semi-Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| **Naphthalene** | **0.758** (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Nitrobenzene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| N-Nitrosodimethylamine | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| N-Nitroso-Di-n-Propylamine | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| N-nitrosodiphenylamine | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Pentachlorophenol | ND (2.90) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Phenanthrene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Phenol | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Pyrene | ND (0.579) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |
| Pyridine | ND (2.90) | | 1 | 01/25/12 18:39 | CVA0161 | CA22301 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: 1,2-Dichlorobenzene-d4* | *43 %* | | *30-130* |
| *Surrogate: 2,4,6-Tribromophenol* | *74 %* | | *30-130* |
| *Surrogate: 2-Chlorophenol-d4* | *62 %* | | *30-130* |
| *Surrogate: 2-Fluorobiphenyl* | *42 %* | | *30-130* |
| *Surrogate: 2-Fluorophenol* | *57 %* | | *30-130* |
| *Surrogate: Nitrobenzene-d5* | *59 %* | | *30-130* |
| *Surrogate: Phenol-d6* | *65 %* | | *30-130* |
| *Surrogate: p-Terphenyl-d14* | *50 %* | | *30-130* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Middle Rolloff
Date Sampled: 01/20/12 11:25
Percent Solids: 56

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-01
Sample Matrix: Soil

## Classical Chemistry

| Analyte | Results (MRL) | Method | Limit | DF | Analyst | Analyzed | Units | Batch |
|---|---|---|---|---|---|---|---|---|
| **Corrosivity (pH)** | **7.63** (N/A) | 9045 | | 1 | DPS | 01/20/12 18:56 | S.U. | CA22016 |
| **Corrosivity (pH) Sample Temp** | **Soil pH measured in water at 19.4 °C.** | | | | | | | |
| Free Liquid | ND (0.3) | 9095A | | 1 | EEM | 01/25/12 10:15 | ml/5 min | CA22503 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Rolloff
Date Sampled: 01/20/12 12:10
Percent Solids: 66

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-02
Sample Matrix: Soil
Units: mg/L

TCLP Extraction Date: 1/24/12 17:19

## 1311/6000/7000 TCLP Metals

| Analyte | Results (MRL) | Method | TCLP Limit | DF | Analyst | Analyzed | I/V | F/V | Batch |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND (0.050) | 1311/6010B | | 1 | SVD | 01/25/12 21:21 | 50 | 50 | CA22517 |
| **Barium** | **0.322** (0.050) | 1311/6010B | | 1 | SVD | 01/25/12 21:21 | 50 | 50 | CA22517 |
| **Cadmium** | **0.0098** (0.0050) | 1311/6010B | | 1 | SVD | 01/25/12 21:21 | 50 | 50 | CA22517 |
| Chromium | ND (0.020) | 1311/6010B | | 1 | SVD | 01/25/12 21:21 | 50 | 50 | CA22517 |
| **Lead** | **0.074** (0.020) | 1311/6010B | | 1 | SVD | 01/25/12 21:21 | 50 | 50 | CA22517 |
| Mercury | ND (0.00050) | 1311/7470A | | 1 | KJK | 01/26/12 12:46 | 20 | 40 | CA22520 |
| Selenium | ND (0.050) | 1311/6010B | | 1 | SVD | 01/25/12 21:21 | 50 | 50 | CA22517 |
| Silver | ND (0.010) | 1311/6010B | | 1 | SVD | 01/25/12 21:21 | 50 | 50 | CA22517 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Rolloff
Date Sampled: 01/20/12 12:10
Percent Solids: 66

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-02
Sample Matrix: Soil
Units: mg/kg dry

## 3050B/6000/7000 Total Metals

| Analyte | Results (MRL) | Method | Limit | DF | Analyst | Analyzed | I/V | F/V | Batch |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | **2.5** (2.3) | 6010B | | 1 | JP | 01/25/12 17:25 | 3.23 | 100 | CA22424 |
| **Barium** | **43.8** (2.3) | 6010B | | 1 | JP | 01/25/12 17:25 | 3.23 | 100 | CA22424 |
| **Cadmium** | **1.66** (0.47) | 6010B | | 1 | JP | 01/25/12 17:25 | 3.23 | 100 | CA22424 |
| **Chromium** | **47.4** (0.9) | 6010B | | 1 | JP | 01/25/12 17:25 | 3.23 | 100 | CA22424 |
| **Lead** | **63.7** (4.7) | 6010B | | 1 | JP | 01/25/12 17:25 | 3.23 | 100 | CA22424 |
| **Mercury** | **0.207** (0.021) | 7471A | | 1 | KJK | 01/25/12 19:38 | 1.4 | 40 | CA22425 |
| Selenium | ND (4.7) | 6010B | | 1 | JP | 01/25/12 17:25 | 3.23 | 100 | CA22424 |
| **Silver** | **0.49** (0.47) | 6010B | | 1 | JP | 01/25/12 17:25 | 3.23 | 100 | CA22424 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Rolloff
Date Sampled: 01/20/12 12:10
Percent Solids: 66
Initial Volume: 14.8
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

## 5035/8260B Volatile Organic Compounds / Methanol

| Analyte | Results (MRL) | MDL | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND (0.205) | 0.0178 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,1,1-Trichloroethane | ND (0.103) | 0.0180 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,1,2,2-Tetrachloroethane | ND (0.103) | 0.0279 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,1,2-Trichloroethane | ND (0.103) | 0.0256 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,1-Dichloroethane | ND (0.103) | 0.0164 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,1-Dichloroethene | ND (0.103) | 0.0252 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,1-Dichloropropene | ND (0.103) | 0.0158 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,2,3-Trichlorobenzene | ND (0.103) | 0.0342 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,2,3-Trichloropropane | ND (0.103) | 0.0254 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,2,4-Trichlorobenzene | ND (0.103) | 0.0226 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **1,2,4-Trimethylbenzene** | **J 0.0984** (0.103) | 0.0197 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,2-Dibromo-3-Chloropropane | ND (0.615) | 0.205 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,2-Dibromoethane | ND (0.103) | 0.0260 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **1,2-Dichlorobenzene** | **J 0.0472** (0.103) | 0.0146 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,2-Dichloroethane | ND (0.103) | 0.0275 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,2-Dichloropropane | ND (0.103) | 0.0269 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **1,3,5-Trimethylbenzene** | **J 0.0636** (0.103) | 0.0180 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,3-Dichlorobenzene | ND (0.103) | 0.0129 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,3-Dichloropropane | ND (0.103) | 0.0230 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **1,4-Dichlorobenzene** | **0.232** (0.103) | 0.0273 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1,4-Dioxane - Screen | ND (10.3) | 3.42 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 1-Chlorohexane | ND (0.103) | 0.0195 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 2,2-Dichloropropane | ND (0.205) | 0.0351 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 2-Butanone | ND (2.56) | 0.593 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **2-Chlorotoluene** | **0.375** (0.103) | 0.0289 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 2-Hexanone | ND (1.03) | 0.177 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 4-Chlorotoluene | ND (0.103) | 0.0133 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **4-Isopropyltoluene** | **J 0.0738** (0.103) | 0.0183 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| 4-Methyl-2-Pentanone | ND (1.03) | 0.123 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **Acetone** | **J 0.783** (2.56) | 0.759 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **Benzene** | **3.36** (0.103) | 0.0166 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Rolloff
Date Sampled: 01/20/12 12:10
Percent Solids: 66
Initial Volume: 14.8
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

## 5035/8260B Volatile Organic Compounds / Methanol

| Analyte | Results (MRL) | MDL | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|---|
| Bromobenzene | ND (0.103) | 0.0281 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Bromochloromethane | ND (0.103) | 0.0332 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Bromodichloromethane | ND (0.103) | 0.0142 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Bromoform | ND (0.103) | 0.0295 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Bromomethane | ND (0.205) | 0.0685 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Carbon Disulfide | ND (0.103) | 0.0152 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Carbon Tetrachloride | ND (0.103) | 0.0178 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **Chlorobenzene** | **26.5** (1.03) | 0.162 | | 10 | 01/24/12 16:18 | CVA0154 | CA22415 |
| Chloroethane | ND (0.205) | 0.0683 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Chloroform | ND (0.103) | 0.0211 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Chloromethane | ND (0.205) | 0.0260 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| cis-1,2-Dichloroethene | ND (0.103) | 0.0254 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| cis-1,3-Dichloropropene | ND (0.103) | 0.0232 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Dibromochloromethane | ND (0.103) | 0.0258 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Dibromomethane | ND (0.103) | 0.0324 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Dichlorodifluoromethane | ND (0.103) | 0.0178 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Diethyl Ether | ND (0.103) | 0.0260 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Di-isopropyl ether | ND (0.103) | 0.0193 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Ethyl tertiary-butyl ether | ND (0.103) | 0.0258 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **Ethylbenzene** | **J 0.0267** (0.103) | 0.0133 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Hexachlorobutadiene | ND (0.103) | 0.0342 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Isopropylbenzene | ND (0.103) | 0.0180 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Methyl tert-Butyl Ether | ND (0.103) | 0.0164 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **Methylene Chloride** | **B, J 0.0759** (0.513) | 0.0269 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **Naphthalene** | **0.158** (0.103) | 0.0269 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **n-Butylbenzene** | **J 0.0492** (0.103) | 0.0252 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| n-Propylbenzene | ND (0.103) | 0.0250 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **sec-Butylbenzene** | **J 0.0267** (0.103) | 0.0137 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Styrene | ND (0.103) | 0.0135 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| tert-Butylbenzene | ND (0.103) | 0.0240 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Tertiary-amyl methyl ether | ND (0.103) | 0.0148 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Rolloff
Date Sampled: 01/20/12 12:10
Percent Solids: 66
Initial Volume: 14.8
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

## 5035/8260B Volatile Organic Compounds / Methanol

| Analyte | Results (MRL) | MDL | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|---|
| Tetrachloroethene | ND (0.103) | 0.0342 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Tetrahydrofuran | ND (1.03) | 0.265 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **Toluene** | **J 0.0308** (0.103) | 0.0260 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| trans-1,2-Dichloroethene | ND (0.103) | 0.0336 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| trans-1,3-Dichloropropene | ND (0.103) | 0.0316 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Trichloroethene | ND (0.103) | 0.0211 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Trichlorofluoromethane | ND (0.103) | 0.0271 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Vinyl Acetate | ND (0.513) | 0.0211 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Vinyl Chloride | ND (0.103) | 0.0338 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **Xylene O** | **J 0.0472** (0.103) | 0.0197 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| **Xylene P,M** | **J 0.127** (0.205) | 0.0398 | | 1 | 01/24/12 13:51 | CVA0154 | CA22415 |
| Xylenes (Total) | ND (0.308) | | | 1 | 01/24/12 13:51 | | [CALC] |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | *83 %* | | *70-130* |
| *Surrogate: 4-Bromofluorobenzene* | *87 %* | | *70-130* |
| *Surrogate: Dibromofluoromethane* | *90 %* | | *70-130* |
| *Surrogate: Toluene-d8* | *88 %* | | *70-130* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Rolloff
Date Sampled: 01/20/12 12:10
Percent Solids: 66
Initial Volume: 20
Final Volume: 5
Extraction Method: 3546

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/20/12 17:55

## 8081A Organochlorine Pesticides

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| **4,4'-DDD** | **0.0087** (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| 4,4'-DDE | ND (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| **4,4'-DDT** | **P 0.0213** (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| Aldrin | ND (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| alpha-BHC | ND (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| alpha-Chlordane | ND (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| **beta-BHC** | **E, P 0.132** (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| Chlordane (Total) | ND (0.0455) | | 1 | 01/26/12 16:12 | | CA22001 |
| delta-BHC | ND (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| Dieldrin | ND (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| Endosulfan I | ND (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| **Endosulfan II** | **P 0.0071** (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| Endosulfan Sulfate | ND (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| **Endrin** | **P 0.0078** (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| Endrin Aldehyde [2C] | ND (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| **Endrin Ketone** | **P 0.0260** (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| gamma-BHC (Lindane) | ND (0.0023) | | 1 | 01/26/12 16:12 | | CA22001 |
| gamma-Chlordane | ND (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| **Heptachlor** | **P 0.127** (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| Heptachlor Epoxide | ND (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| Hexachlorobenzene | ND (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| Methoxychlor | ND (0.0038) | | 1 | 01/26/12 16:12 | | CA22001 |
| Toxaphene | ND (0.189) | | 1 | 01/26/12 16:12 | | CA22001 |

| | *%Recovery* | *Qualifier* | *Limits* |
|---|---|---|---|
| *Surrogate: Decachlorobiphenyl* | *191 %* | *SM* | *30-150* |
| *Surrogate: Decachlorobiphenyl [2C]* | *148 %* | | *30-150* |
| *Surrogate: Tetrachloro-m-xylene* | *74 %* | | *30-150* |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *59 %* | | *30-150* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Rolloff
Date Sampled: 01/20/12 12:10
Percent Solids: 66
Initial Volume: 19.3
Final Volume: 10
Extraction Method: 3541

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/20/12 17:55

## 8082 Polychlorinated Biphenyls (PCB)

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Aroclor 1221 | ND (1.57) | | 20 | 01/25/12 15:52 | | CA22603 |
| Aroclor 1232 | ND (1.57) | | 20 | 01/25/12 15:52 | | CA22603 |
| Aroclor 1242 | ND (1.57) | | 20 | 01/25/12 15:52 | | CA22603 |
| **Aroclor 1248** | **17.1** (1.57) | | 20 | 01/25/12 15:52 | | CA22603 |
| Aroclor 1254 | ND (1.57) | | 20 | 01/25/12 15:52 | | CA22603 |
| Aroclor 1260 | ND (1.57) | | 20 | 01/25/12 15:52 | | CA22603 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: Decachlorobiphenyl* | % | SD | 30-150 |
| *Surrogate: Decachlorobiphenyl [2C]* | % | SD | 30-150 |
| *Surrogate: Tetrachloro-m-xylene* | % | SD | 30-150 |
| *Surrogate: Tetrachloro-m-xylene [2C]* | % | SD | 30-150 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Rolloff
Date Sampled: 01/20/12 12:10
Percent Solids: 66
Initial Volume: 20.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 9:15

## 8100M Total Petroleum Hydrocarbons

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| **Total Petroleum Hydrocarbons** | **265** (54.4) | | 1 | 01/23/12 17:32 | CVA0162 | CA22302 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: O-Terphenyl* | *79 %* | | *40-140* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Rolloff
Date Sampled: 01/20/12 12:10
Percent Solids: 66
Initial Volume: 10.3
Final Volume: 4
Extraction Method: 8151A

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 9:00

## 8151A Chlorinated Herbicides

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| 2,4,5-T | ND (0.006) | | 1 | 01/25/12 18:54 | CVA0168 | CA22311 |
| 2,4,5-TP (Silvex) | ND (0.006) | | 1 | 01/25/12 18:54 | CVA0168 | CA22311 |
| 2,4-D [2C] | ND (0.120) | | 1 | 01/25/12 18:54 | CVA0168 | CA22311 |
| 2,4-DB | ND (0.122) | | 1 | 01/25/12 18:54 | CVA0168 | CA22311 |
| Dalapon [2C] | ND (0.117) | | 1 | 01/25/12 18:54 | CVA0168 | CA22311 |
| Dicamba | ND (0.006) | | 1 | 01/25/12 18:54 | CVA0168 | CA22311 |
| Dichlorprop | ND (0.120) | | 1 | 01/25/12 18:54 | CVA0168 | CA22311 |
| Dinoseb | ND (0.122) | | 1 | 01/25/12 18:54 | CVA0168 | CA22311 |
| MCPA | ND (11.9) | | 1 | 01/25/12 18:54 | CVA0168 | CA22311 |
| **MCPP [2C]** | **P 25.8** (12.0) | | 1 | 01/25/12 18:54 | CVA0168 | CA22311 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: DCAA* | *89 %* | | *30-150* |
| *Surrogate: DCAA [2C]* | *79 %* | | *30-150* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Rolloff
Date Sampled: 01/20/12 12:10
Percent Solids: 66
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 9:15

## 8270C Semi-Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| 1,1-Biphenyl | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 1,2,4-Trichlorobenzene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 1,2-Dichlorobenzene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 1,3-Dichlorobenzene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 1,4-Dichlorobenzene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2,3,4,6-Tetrachlorophenol | ND (2.43) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2,4,5-Trichlorophenol | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2,4,6-Trichlorophenol | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2,4-Dichlorophenol | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2,4-Dimethylphenol | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2,4-Dinitrophenol | ND (2.43) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2,4-Dinitrotoluene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2,6-Dinitrotoluene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2-Chloronaphthalene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2-Chlorophenol | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2-Methylnaphthalene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2-Methylphenol | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2-Nitroaniline | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 2-Nitrophenol | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 3,3'-Dichlorobenzidine | ND (0.972) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 3+4-Methylphenol | ND (0.972) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 3-Nitroaniline | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 4,6-Dinitro-2-Methylphenol | ND (2.43) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 4-Bromophenyl-phenylether | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 4-Chloro-3-Methylphenol | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 4-Chloroaniline | ND (0.972) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 4-Chloro-phenyl-phenyl ether | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 4-Nitroaniline | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| 4-Nitrophenol | ND (2.43) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Acenaphthene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Acenaphthylene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Rolloff
Date Sampled: 01/20/12 12:10
Percent Solids: 66
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 9:15

## 8270C Semi-Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Acetophenone | ND (0.972) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Aniline | ND (0.972) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Anthracene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Azobenzene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| **Benzo(a)anthracene** | **0.536** (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| **Benzo(a)pyrene** | **0.457** (0.243) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| **Benzo(b)fluoranthene** | **0.621** (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Benzo(g,h,i)perylene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Benzo(k)fluoranthene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Benzoic Acid | ND (2.43) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Benzyl Alcohol | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| bis(2-Chloroethoxy)methane | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| bis(2-Chloroethyl)ether | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| bis(2-chloroisopropyl)Ether | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| **bis(2-Ethylhexyl)phthalate** | **11.3** (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| **Butylbenzylphthalate** | **0.721** (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Carbazole | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| **Chrysene** | **0.585** (0.243) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Dibenzo(a,h)Anthracene | ND (0.243) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Dibenzofuran | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Diethylphthalate | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Dimethylphthalate | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Di-n-butylphthalate | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Di-n-octylphthalate | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| **Fluoranthene** | **1.27** (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Fluorene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Hexachlorobenzene | ND (0.243) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Hexachlorobutadiene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Hexachlorocyclopentadiene | ND (2.43) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Hexachloroethane | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Indeno(1,2,3-cd)Pyrene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Rolloff
Date Sampled: 01/20/12 12:10
Percent Solids: 66
Initial Volume: 15.6
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: ML
Prepared: 1/23/12 9:15

## 8270C Semi-Volatile Organic Compounds

| Analyte | Results (MRL) | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|
| Isophorone | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Naphthalene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Nitrobenzene | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| N-Nitrosodimethylamine | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| N-Nitroso-Di-n-Propylamine | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| N-nitrosodiphenylamine | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Pentachlorophenol | ND (2.43) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| **Phenanthrene** | **0.731** (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Phenol | ND (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| **Pyrene** | **0.996** (0.485) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |
| Pyridine | ND (2.43) | | 1 | 01/25/12 16:39 | CVA0161 | CA22301 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: 1,2-Dichlorobenzene-d4* | *39 %* | | *30-130* |
| *Surrogate: 2,4,6-Tribromophenol* | *63 %* | | *30-130* |
| *Surrogate: 2-Chlorophenol-d4* | *61 %* | | *30-130* |
| *Surrogate: 2-Fluorobiphenyl* | *28 %* | *S-* | *30-130* |
| *Surrogate: 2-Fluorophenol* | *19 %* | *S-* | *30-130* |
| *Surrogate: Nitrobenzene-d5* | *55 %* | | *30-130* |
| *Surrogate: Phenol-d6* | *65 %* | | *30-130* |
| *Surrogate: p-Terphenyl-d14* | *39 %* | | *30-130* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Western Rolloff
Date Sampled: 01/20/12 12:10
Percent Solids: 66

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-02
Sample Matrix: Soil

## Classical Chemistry

| Analyte | Results (MRL) | Method | Limit | DF | Analyst | Analyzed | Units | Batch |
|---|---|---|---|---|---|---|---|---|
| **Corrosivity (pH)** | **6.93** (N/A) | 9045 | | 1 | DPS | 01/20/12 18:56 | S.U. | CA22016 |
| **Corrosivity (pH) Sample Temp** | **Soil pH measured in water at 19.6 °C.** | | | | | | | |
| Free Liquid | ND (0.3) | 9095A | | 1 | EEM | 01/25/12 10:15 | ml/5 min | CA22503 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Trip Blank
Date Sampled: 01/20/12 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-03
Sample Matrix: Solid
Units: mg/kg
Analyst: MD

## 5035/8260B Volatile Organic Compounds / Methanol

| Analyte | Results (MRL) | MDL | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND (0.100) | 0.0087 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,1,1-Trichloroethane | ND (0.0500) | 0.0088 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,1,2,2-Tetrachloroethane | ND (0.0500) | 0.0136 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,1,2-Trichloroethane | ND (0.0500) | 0.0125 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,1-Dichloroethane | ND (0.0500) | 0.0080 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,1-Dichloroethene | ND (0.0500) | 0.0123 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,1-Dichloropropene | ND (0.0500) | 0.0077 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,2,3-Trichlorobenzene | ND (0.0500) | 0.0167 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,2,3-Trichloropropane | ND (0.0500) | 0.0124 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,2,4-Trichlorobenzene | ND (0.0500) | 0.0110 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,2,4-Trimethylbenzene | ND (0.0500) | 0.0096 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,2-Dibromo-3-Chloropropane | ND (0.300) | 0.100 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,2-Dibromoethane | ND (0.0500) | 0.0127 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,2-Dichlorobenzene | ND (0.0500) | 0.0071 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,2-Dichloroethane | ND (0.0500) | 0.0134 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,2-Dichloropropane | ND (0.0500) | 0.0131 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,3,5-Trimethylbenzene | ND (0.0500) | 0.0088 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,3-Dichlorobenzene | ND (0.0500) | 0.0063 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,3-Dichloropropane | ND (0.0500) | 0.0112 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,4-Dichlorobenzene | ND (0.0500) | 0.0133 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1,4-Dioxane - Screen | ND (5.00) | 1.67 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 1-Chlorohexane | ND (0.0500) | 0.0095 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 2,2-Dichloropropane | ND (0.100) | 0.0171 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 2-Butanone | ND (1.25) | 0.289 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 2-Chlorotoluene | ND (0.0500) | 0.0141 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 2-Hexanone | ND (0.500) | 0.0861 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 4-Chlorotoluene | ND (0.0500) | 0.0065 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 4-Isopropyltoluene | ND (0.0500) | 0.0089 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| 4-Methyl-2-Pentanone | ND (0.500) | 0.0602 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Acetone | ND (1.25) | 0.370 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Benzene | ND (0.0500) | 0.0081 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Trip Blank
Date Sampled: 01/20/12 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-03
Sample Matrix: Solid
Units: mg/kg
Analyst: MD

## 5035/8260B Volatile Organic Compounds / Methanol

| Analyte | Results (MRL) | MDL | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|---|
| Bromobenzene | ND (0.0500) | 0.0137 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Bromochloromethane | ND (0.0500) | 0.0162 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Bromodichloromethane | ND (0.0500) | 0.0069 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Bromoform | ND (0.0500) | 0.0144 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Bromomethane | ND (0.100) | 0.0334 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Carbon Disulfide | ND (0.0500) | 0.0074 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Carbon Tetrachloride | ND (0.0500) | 0.0087 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Chlorobenzene | ND (0.0500) | 0.0079 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Chloroethane | ND (0.100) | 0.0333 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Chloroform | ND (0.0500) | 0.0103 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Chloromethane | ND (0.100) | 0.0127 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| cis-1,2-Dichloroethene | ND (0.0500) | 0.0124 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| cis-1,3-Dichloropropene | ND (0.0500) | 0.0113 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Dibromochloromethane | ND (0.0500) | 0.0126 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Dibromomethane | ND (0.0500) | 0.0158 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Dichlorodifluoromethane | ND (0.0500) | 0.0087 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Diethyl Ether | ND (0.0500) | 0.0127 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Di-isopropyl ether | ND (0.0500) | 0.0094 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Ethyl tertiary-butyl ether | ND (0.0500) | 0.0126 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Ethylbenzene | ND (0.0500) | 0.0065 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Hexachlorobutadiene | ND (0.0500) | 0.0167 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Isopropylbenzene | ND (0.0500) | 0.0088 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Methyl tert-Butyl Ether | ND (0.0500) | 0.0080 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| **Methylene Chloride** | **0.0370** (0.250) | 0.0131 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Naphthalene | ND (0.0500) | 0.0131 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| n-Butylbenzene | ND (0.0500) | 0.0123 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| n-Propylbenzene | ND (0.0500) | 0.0122 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| sec-Butylbenzene | ND (0.0500) | 0.0067 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Styrene | ND (0.0500) | 0.0066 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| tert-Butylbenzene | ND (0.0500) | 0.0117 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Tertiary-amyl methyl ether | ND (0.0500) | 0.0072 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI
Client Sample ID: Trip Blank
Date Sampled: 01/20/12 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 1201221
ESS Laboratory Sample ID: 1201221-03
Sample Matrix: Solid
Units: mg/kg
Analyst: MD

## 5035/8260B Volatile Organic Compounds / Methanol

| Analyte | Results (MRL) | MDL | Limit | DF | Analyzed | Sequence | Batch |
|---|---|---|---|---|---|---|---|
| Tetrachloroethene | ND (0.0500) | 0.0167 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Tetrahydrofuran | ND (0.500) - | 0.129 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Toluene | ND (0.0500) | 0.0127 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| trans-1,2-Dichloroethene | ND (0.0500) | 0.0164 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| trans-1,3-Dichloropropene | ND (0.0500) | 0.0154 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Trichloroethene | ND (0.0500) | 0.0103 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Trichlorofluoromethane | ND (0.0500) | 0.0132 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Vinyl Acetate | ND (0.250) | 0.0103 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Vinyl Chloride | ND (0.0500) | 0.0165 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Xylene O | ND (0.0500) | 0.0096 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Xylene P,M | ND (0.100) | 0.0194 | | 1 | 01/24/12 12:52 | CVA0154 | CA22415 |
| Xylenes (Total) | ND (0.300) | 0.0310 | | 0 | 01/24/12 12:52 | CVA0154 | CA22415 |

| | %Recovery | Qualifier | Limits |
|---|---|---|---|
| *Surrogate: 1,2-Dichloroethane-d4* | *90 %* | | *70-130* |
| *Surrogate: 4-Bromofluorobenzene* | *91 %* | | *70-130* |
| *Surrogate: Dibromofluoromethane* | *96 %* | | *70-130* |
| *Surrogate: Toluene-d8* | *93 %* | | *70-130* |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1311/6000/7000 TCLP Metals | | | | | | | |
| **Batch CA22517 - 3005A** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Arsenic | ND | 0.050 | mg/L | | | | | | | |
| Barium | ND | 0.050 | mg/L | | | | | | | |
| Cadmium | ND | 0.0050 | mg/L | | | | | | | |
| Chromium | ND | 0.020 | mg/L | | | | | | | |
| Lead | ND | 0.020 | mg/L | | | | | | | |
| Selenium | ND | 0.050 | mg/L | | | | | | | |
| Silver | 0.012 | 0.010 | mg/L | | | | | | | |
| **Blank** | | | | | | | | | | |
| Arsenic | ND | 0.050 | mg/L | | | | | | | |
| Barium | ND | 0.050 | mg/L | | | | | | | |
| Cadmium | ND | 0.0050 | mg/L | | | | | | | |
| Chromium | ND | 0.020 | mg/L | | | | | | | |
| Lead | ND | 0.020 | mg/L | | | | | | | |
| Selenium | ND | 0.050 | mg/L | | | | | | | |
| Silver | 0.013 | 0.010 | mg/L | | | | | | | |
| **LCS** | | | | | | | | | | |
| Arsenic | 0.545 | 0.050 | mg/L | 0.5000 | | 109 | 80-120 | | | |
| Barium | 0.509 | 0.050 | mg/L | 0.5000 | | 102 | 80-120 | | | |
| Cadmium | 0.264 | 0.0050 | mg/L | 0.2500 | | 106 | 80-120 | | | |
| Chromium | 0.499 | 0.020 | mg/L | 0.5000 | | 100 | 80-120 | | | |
| Lead | 0.508 | 0.020 | mg/L | 0.5000 | | 102 | 80-120 | | | |
| Selenium | 1.12 | 0.050 | mg/L | 1.000 | | 112 | 80-120 | | | |
| Silver | 0.275 | 0.010 | mg/L | 0.2500 | | 110 | 80-120 | | | |
| **LCS Dup** | | | | | | | | | | |
| Arsenic | 0.562 | 0.050 | mg/L | 0.5000 | | 112 | 80-120 | 3 | 20 | |
| Barium | 0.506 | 0.050 | mg/L | 0.5000 | | 101 | 80-120 | 0.4 | 20 | |
| Cadmium | 0.263 | 0.0050 | mg/L | 0.2500 | | 105 | 80-120 | 0.6 | 20 | |
| Chromium | 0.496 | 0.020 | mg/L | 0.5000 | | 99 | 80-120 | 0.6 | 20 | |
| Lead | 0.510 | 0.020 | mg/L | 0.5000 | | 102 | 80-120 | 0.3 | 20 | |
| Selenium | 1.12 | 0.050 | mg/L | 1.000 | | 112 | 80-120 | 0.4 | 20 | |
| Silver | 0.273 | 0.010 | mg/L | 0.2500 | | 109 | 80-120 | 0.8 | 20 | |
| **Batch CA22520 - 245.1/7470A** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Mercury | ND | 0.00050 | mg/L | | | | | | | |
| **LCS** | | | | | | | | | | |
| Mercury | 0.00680 | 0.00050 | mg/L | 0.006000 | | 113 | 80-120 | | | |
| **LCS Dup** | | | | | | | | | | |
| Mercury | 0.00520 | 0.00050 | mg/L | 0.006000 | | 87 | 80-120 | 27 | 20 | D+ |
| **Duplicate** **Source: 1201221-01** | | | | | | | | | | |
| Mercury | ND | 0.00050 | mg/L | | ND | | | | 20 | |
| **Matrix Spike** **Source: 1201221-01** | | | | | | | | | | |
| Mercury | 0.00680 | 0.00050 | mg/L | 0.006000 | ND | 113 | 75-125 | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 3050B/6000/7000 Total Metals | | | | | | | |
| **Batch CA22424 - 3050B** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Arsenic | ND | 2.5 | mg/kg wet | | | | | | | |
| Barium | ND | 2.5 | mg/kg wet | | | | | | | |
| Cadmium | ND | 0.50 | mg/kg wet | | | | | | | |
| Chromium | ND | 1.0 | mg/kg wet | | | | | | | |
| Lead | ND | 5.0 | mg/kg wet | | | | | | | |
| Selenium | ND | 5.0 | mg/kg wet | | | | | | | |
| Silver | ND | 0.50 | mg/kg wet | | | | | | | |
| **LCS** | | | | | | | | | | |
| Arsenic | 223 | 9.6 | mg/kg wet | 237.0 | | 94 | 80-120 | | | |
| Barium | 245 | 9.6 | mg/kg wet | 252.0 | | 97 | 80-120 | | | |
| Cadmium | 175 | 1.93 | mg/kg wet | 191.0 | | 92 | 80-120 | | | |
| Chromium | 120 | 3.8 | mg/kg wet | 128.0 | | 94 | 80-120 | | | |
| Lead | 97.0 | 19.2 | mg/kg wet | 103.0 | | 94 | 80-120 | | | |
| Selenium | 109 | 19.2 | mg/kg wet | 110.0 | | 99 | 80-120 | | | |
| Silver | 43.4 | 1.93 | mg/kg wet | 47.30 | | 92 | 80-120 | | | |
| **LCS Dup** | | | | | | | | | | |
| Arsenic | 230 | 9.4 | mg/kg wet | 237.0 | | 97 | 80-120 | 3 | 20 | |
| Barium | 250 | 9.4 | mg/kg wet | 252.0 | | 99 | 80-120 | 2 | 20 | |
| Cadmium | 183 | 1.90 | mg/kg wet | 191.0 | | 96 | 80-120 | 4 | 20 | |
| Chromium | 124 | 3.8 | mg/kg wet | 128.0 | | 97 | 80-120 | 4 | 20 | |
| Lead | 96.7 | 18.9 | mg/kg wet | 103.0 | | 94 | 80-120 | 0.3 | 20 | |
| Selenium | 112 | 18.9 | mg/kg wet | 110.0 | | 102 | 80-120 | 3 | 20 | |
| Silver | 45.5 | 1.90 | mg/kg wet | 47.30 | | 96 | 80-120 | 5 | 20 | |
| **Duplicate** **Source: 1201221-01** | | | | | | | | | | |
| Arsenic | 2.80 | 2.8 | mg/kg dry | | 2.78 | | | 0.8 | 35 | |
| Barium | 74.9 | 2.8 | mg/kg dry | | 71.4 | | | 5 | 35 | |
| Cadmium | 6.93 | 0.57 | mg/kg dry | | 8.00 | | | 14 | 35 | |
| Chromium | 165 | 1.1 | mg/kg dry | | 163 | | | 2 | 35 | |
| Lead | 120 | 5.7 | mg/kg dry | | 130 | | | 8 | 35 | |
| Selenium | 2.96 | 5.7 | mg/kg dry | | 2.29 | | | 26 | 35 | |
| Silver | 0.987 | 0.57 | mg/kg dry | | 0.766 | | | 25 | 35 | |
| **Matrix Spike** **Source: 1201221-01** | | | | | | | | | | |
| Arsenic | 26.2 | 2.9 | mg/kg dry | 29.47 | 2.78 | 79 | 75-125 | | | |
| Barium | 93.3 | 2.9 | mg/kg dry | 29.47 | 71.4 | 74 | 75-125 | | | M- |
| Cadmium | 18.1 | 0.59 | mg/kg dry | 14.73 | 8.00 | 68 | 75-125 | | | M- |
| Chromium | 187 | 1.2 | mg/kg dry | 29.47 | 163 | 83 | 75-125 | | | |
| Lead | 152 | 5.9 | mg/kg dry | 29.47 | 130 | 74 | 75-125 | | | M- |
| Selenium | 48.4 | 5.9 | mg/kg dry | 58.93 | 2.29 | 78 | 75-125 | | | |
| Silver | 12.2 | 0.59 | mg/kg dry | 14.73 | 0.766 | 78 | 75-125 | | | |
| **Reference** | | | | | | | | | | |
| Lead | 3900 | 161 | mg/kg wet | 4490 | | 87 | 80-120 | | | |
| **Batch CA22425 - 245.1/7470A** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **3050B/6000/7000 Total Metals** | | | | | | | | | | |
| **Batch CA22425 - 245.1/7470A** | | | | | | | | | | |
| Mercury | ND | 0.033 | mg/kg wet | | | | | | | |
| **LCS** | | | | | | | | | | |
| Mercury | 13.3 | 1.48 | mg/kg wet | 12.40 | | 107 | 80-120 | | | |
| **LCS Dup** | | | | | | | | | | |
| Mercury | 12.9 | 1.60 | mg/kg wet | 12.40 | | 104 | 80-120 | 3 | 20 | |
| **Duplicate** **Source: 1201221-01** | | | | | | | | | | |
| Mercury | 0.643 | 0.047 | mg/kg dry | | 0.680 | | | 6 | 35 | |
| **Matrix Spike** **Source: 1201221-01** | | | | | | | | | | |
| Mercury | 0.765 | 0.046 | mg/kg dry | 0.1391 | 0.680 | 60 | 75-125 | | | M- |
| **5035/8260B Volatile Organic Compounds / Methanol** | | | | | | | | | | |
| **Batch CA22415 - 5035** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1,2-Trichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,1-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dibromo-3-Chloropropane | ND | 0.300 | mg/kg wet | | | | | | | |
| 1,2-Dibromoethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloroethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,2-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,3-Dichloropropane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 1,4-Dioxane - Screen | ND | 5.00 | mg/kg wet | | | | | | | |
| 1-Chlorohexane | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2,2-Dichloropropane | ND | 0.100 | mg/kg wet | | | | | | | |
| 2-Butanone | ND | 1.25 | mg/kg wet | | | | | | | |
| 2-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 2-Hexanone | ND | 0.500 | mg/kg wet | | | | | | | |
| 4-Chlorotoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Isopropyltoluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| 4-Methyl-2-Pentanone | ND | 0.500 | mg/kg wet | | | | | | | |
| Acetone | ND | 1.25 | mg/kg wet | | | | | | | |
| Benzene | ND | 0.0500 | mg/kg wet | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **5035/8260B Volatile Organic Compounds / Methanol** | | | | | | | | | | |
| **Batch CA22415 - 5035** | | | | | | | | | | |
| Bromobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromodichloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromoform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Bromomethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Carbon Disulfide | ND | 0.0500 | mg/kg wet | | | | | | | |
| Carbon Tetrachloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chlorobenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chloroethane | ND | 0.100 | mg/kg wet | | | | | | | |
| Chloroform | ND | 0.0500 | mg/kg wet | | | | | | | |
| Chloromethane | ND | 0.100 | mg/kg wet | | | | | | | |
| cis-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromochloromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dibromomethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Dichlorodifluoromethane | ND | 0.0500 | mg/kg wet | | | | | | | |
| Diethyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Di-isopropyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethyl tertiary-butyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Ethylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Hexachlorobutadiene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Isopropylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methyl tert-Butyl Ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Methylene Chloride | 0.0390 | 0.250 | mg/kg wet | | | | | | | J |
| Naphthalene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| n-Propylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| sec-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Styrene | ND | 0.0500 | mg/kg wet | | | | | | | |
| tert-Butylbenzene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tertiary-amyl methyl ether | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrachloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Tetrahydrofuran | ND | 0.500 | mg/kg wet | | | | | | | |
| Toluene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,2-Dichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Trichloroethene | ND | 0.0500 | mg/kg wet | | | | | | | |
| Vinyl Acetate | ND | 0.250 | mg/kg wet | | | | | | | |
| Vinyl Chloride | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene O | ND | 0.0500 | mg/kg wet | | | | | | | |
| Xylene P,M | ND | 0.100 | mg/kg wet | | | | | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *2.21* | | mg/kg wet | *2.500* | | *88* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *2.32* | | mg/kg wet | *2.500* | | *93* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *2.46* | | mg/kg wet | *2.500* | | *99* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *2.37* | | mg/kg wet | *2.500* | | *95* | *70-130* | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **5035/8260B Volatile Organic Compounds / Methanol** | | | | | | | | | | |
| **Batch CA22415 - 5035** | | | | | | | | | | |
| **LCS** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 2.23 | 0.100 | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| 1,1,1-Trichloroethane | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,1,2,2-Tetrachloroethane | 2.24 | 0.0500 | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| 1,1,2-Trichloroethane | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | | | |
| 1,1-Dichloroethane | 2.72 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| 1,1-Dichloroethene | 3.23 | 0.0500 | mg/kg wet | 2.500 | | 129 | 70-130 | | | |
| 1,1-Dichloropropene | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| 1,2,3-Trichlorobenzene | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,2,3-Trichloropropane | 2.33 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| 1,2,4-Trichlorobenzene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | | | |
| 1,2,4-Trimethylbenzene | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| 1,2-Dibromo-3-Chloropropane | 2.56 | 0.300 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| 1,2-Dibromoethane | 2.31 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| 1,2-Dichlorobenzene | 2.19 | 0.0500 | mg/kg wet | 2.500 | | 87 | 70-130 | | | |
| 1,2-Dichloroethane | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 1,2-Dichloropropane | 2.95 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| 1,3-Dichlorobenzene | 2.24 | 0.0500 | mg/kg wet | 2.500 | | 90 | 70-130 | | | |
| 1,3-Dichloropropane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| 1,4-Dichlorobenzene | 2.20 | 0.0500 | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| 1,4-Dioxane - Screen | 79.5 | 5.00 | mg/kg wet | 50.00 | | 159 | 44-241 | | | |
| 1-Chlorohexane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| 2,2-Dichloropropane | 2.64 | 0.100 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| 2-Butanone | 11.5 | 1.25 | mg/kg wet | 12.50 | | 92 | 70-130 | | | |
| 2-Chlorotoluene | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| 2-Hexanone | 11.6 | 0.500 | mg/kg wet | 12.50 | | 93 | 70-130 | | | |
| 4-Chlorotoluene | 2.24 | 0.0500 | mg/kg wet | 2.500 | | 90 | 70-130 | | | |
| 4-Isopropyltoluene | 2.22 | 0.0500 | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| 4-Methyl-2-Pentanone | 14.0 | 0.500 | mg/kg wet | 12.50 | | 112 | 70-130 | | | |
| Acetone | 13.4 | 1.25 | mg/kg wet | 12.50 | | 107 | 70-130 | | | |
| Benzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | | | |
| Bromobenzene | 2.24 | 0.0500 | mg/kg wet | 2.500 | | 89 | 70-130 | | | |
| Bromochloromethane | 2.50 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | | | |
| Bromodichloromethane | 2.71 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | | | |
| Bromoform | 2.19 | 0.0500 | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| Bromomethane | 3.02 | 0.100 | mg/kg wet | 2.500 | | 121 | 70-130 | | | |
| Carbon Disulfide | 3.25 | 0.0500 | mg/kg wet | 2.500 | | 130 | 70-130 | | | |
| Carbon Tetrachloride | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Chlorobenzene | 2.33 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| Chloroethane | 3.12 | 0.100 | mg/kg wet | 2.500 | | 125 | 70-130 | | | |
| Chloroform | 2.55 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Chloromethane | 2.73 | 0.100 | mg/kg wet | 2.500 | | 109 | 70-130 | | | |
| cis-1,2-Dichloroethene | 2.57 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | | | |
| cis-1,3-Dichloropropene | 2.96 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **5035/8260B Volatile Organic Compounds / Methanol** | | | | | | | | | | |
| **Batch CA22415 - 5035** | | | | | | | | | | |
| Dibromochloromethane | 2.39 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | | | |
| Dibromomethane | 2.61 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | | | |
| Dichlorodifluoromethane | 2.27 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | | | |
| Diethyl Ether | 3.32 | 0.0500 | mg/kg wet | 2.500 | | 133 | 70-130 | | | B+ |
| Di-isopropyl ether | 2.64 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Ethyl tertiary-butyl ether | 2.19 | 0.0500 | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| Ethylbenzene | 2.27 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | | | |
| Hexachlorobutadiene | 2.65 | 0.0500 | mg/kg wet | 2.500 | | 106 | 70-130 | | | |
| Isopropylbenzene | 1.98 | 0.0500 | mg/kg wet | 2.500 | | 79 | 70-130 | | | |
| Methyl tert-Butyl Ether | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | | | |
| Methylene Chloride | 3.18 | 0.250 | mg/kg wet | 2.500 | | 127 | 70-130 | | | |
| Naphthalene | 3.06 | 0.0500 | mg/kg wet | 2.500 | | 122 | 70-130 | | | |
| n-Butylbenzene | 2.47 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | | | |
| n-Propylbenzene | 2.20 | 0.0500 | mg/kg wet | 2.500 | | 88 | 70-130 | | | |
| sec-Butylbenzene | 2.35 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | | | |
| Styrene | 2.24 | 0.0500 | mg/kg wet | 2.500 | | 90 | 70-130 | | | |
| tert-Butylbenzene | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 93 | 70-130 | | | |
| Tertiary-amyl methyl ether | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | | | |
| Tetrachloroethene | 2.07 | 0.0500 | mg/kg wet | 2.500 | | 83 | 70-130 | | | |
| Tetrahydrofuran | 2.45 | 0.500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Toluene | 2.88 | 0.0500 | mg/kg wet | 2.500 | | 115 | 70-130 | | | |
| trans-1,2-Dichloroethene | 2.92 | 0.0500 | mg/kg wet | 2.500 | | 117 | 70-130 | | | |
| trans-1,3-Dichloropropene | 2.56 | 0.0500 | mg/kg wet | 2.500 | | 102 | 70-130 | | | |
| Trichloroethene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | | | |
| Vinyl Acetate | 2.83 | 0.250 | mg/kg wet | 2.500 | | 113 | 70-130 | | | |
| Vinyl Chloride | 3.25 | 0.0500 | mg/kg wet | 2.500 | | 130 | 70-130 | | | |
| Xylene O | 2.26 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | | | |
| Xylene P,M | 4.59 | 0.100 | mg/kg wet | 5.000 | | 92 | 70-130 | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *2.27* | | mg/kg wet | *2.500* | | *91* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *2.22* | | mg/kg wet | *2.500* | | *89* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *2.35* | | mg/kg wet | *2.500* | | *94* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *2.56* | | mg/kg wet | *2.500* | | *103* | *70-130* | | | |
| **LCS Dup** | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 2.25 | 0.100 | mg/kg wet | 2.500 | | 90 | 70-130 | 0.7 | 25 | |
| 1,1,1-Trichloroethane | 2.59 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 1 | 25 | |
| 1,1,2,2-Tetrachloroethane | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 16 | 25 | |
| 1,1,2-Trichloroethane | 2.78 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 0.7 | 25 | |
| 1,1-Dichloroethane | 2.83 | 0.0500 | mg/kg wet | 2.500 | | 113 | 70-130 | 4 | 25 | |
| 1,1-Dichloroethene | 3.16 | 0.0500 | mg/kg wet | 2.500 | | 127 | 70-130 | 2 | 25 | |
| 1,1-Dichloropropene | 2.77 | 0.0500 | mg/kg wet | 2.500 | | 111 | 70-130 | 12 | 25 | |
| 1,2,3-Trichlorobenzene | 2.31 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 3 | 25 | |
| 1,2,3-Trichloropropane | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 8 | 25 | |
| 1,2,4-Trichlorobenzene | 2.31 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 5 | 25 | |
| 1,2,4-Trimethylbenzene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 7 | 25 | |
| 1,2-Dibromo-3-Chloropropane | 2.43 | 0.300 | mg/kg wet | 2.500 | | 97 | 70-130 | 5 | 25 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **5035/8260B Volatile Organic Compounds / Methanol** | | | | | | | | | | |
| **Batch CA22415 - 5035** | | | | | | | | | | |
| 1,2-Dibromoethane | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 4 | 25 | |
| 1,2-Dichlorobenzene | 2.30 | 0.0500 | mg/kg wet | 2.500 | | 92 | 70-130 | 5 | 25 | |
| 1,2-Dichloroethane | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 3 | 25 | |
| 1,2-Dichloropropane | 2.98 | 0.0500 | mg/kg wet | 2.500 | | 119 | 70-130 | 1 | 25 | |
| 1,3,5-Trimethylbenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 10 | 25 | |
| 1,3-Dichlorobenzene | 2.34 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 4 | 25 | |
| 1,3-Dichloropropane | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 0.3 | 25 | |
| 1,4-Dichlorobenzene | 2.29 | 0.0500 | mg/kg wet | 2.500 | | 91 | 70-130 | 4 | 25 | |
| 1,4-Dioxane - Screen | 46.6 | 5.00 | mg/kg wet | 50.00 | | 93 | 44-241 | 52 | 200 | |
| 1-Chlorohexane | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 8 | 25 | |
| 2,2-Dichloropropane | 2.75 | 0.100 | mg/kg wet | 2.500 | | 110 | 70-130 | 4 | 25 | |
| 2-Butanone | 12.5 | 1.25 | mg/kg wet | 12.50 | | 100 | 70-130 | 8 | 25 | |
| 2-Chlorotoluene | 2.60 | 0.0500 | mg/kg wet | 2.500 | | 104 | 70-130 | 8 | 25 | |
| 2-Hexanone | 13.0 | 0.500 | mg/kg wet | 12.50 | | 104 | 70-130 | 12 | 25 | |
| 4-Chlorotoluene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 12 | 25 | |
| 4-Isopropyltoluene | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 94 | 70-130 | 6 | 25 | |
| 4-Methyl-2-Pentanone | 14.0 | 0.500 | mg/kg wet | 12.50 | | 112 | 70-130 | 0.5 | 25 | |
| Acetone | 11.2 | 1.25 | mg/kg wet | 12.50 | | 90 | 70-130 | 18 | 25 | |
| Benzene | 2.89 | 0.0500 | mg/kg wet | 2.500 | | 116 | 70-130 | 13 | 25 | |
| Bromobenzene | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 6 | 25 | |
| Bromochloromethane | 2.67 | 0.0500 | mg/kg wet | 2.500 | | 107 | 70-130 | 7 | 25 | |
| Bromodichloromethane | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 3 | 25 | |
| Bromoform | 2.16 | 0.0500 | mg/kg wet | 2.500 | | 86 | 70-130 | 2 | 25 | |
| Bromomethane | 3.02 | 0.100 | mg/kg wet | 2.500 | | 121 | 70-130 | 0 | 25 | |
| Carbon Disulfide | 2.96 | 0.0500 | mg/kg wet | 2.500 | | 118 | 70-130 | 9 | 25 | |
| Carbon Tetrachloride | 2.62 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 3 | 25 | |
| Chlorobenzene | 2.42 | 0.0500 | mg/kg wet | 2.500 | | 97 | 70-130 | 4 | 25 | |
| Chloroethane | 3.20 | 0.100 | mg/kg wet | 2.500 | | 128 | 70-130 | 3 | 25 | |
| Chloroform | 2.63 | 0.0500 | mg/kg wet | 2.500 | | 105 | 70-130 | 3 | 25 | |
| Chloromethane | 2.43 | 0.100 | mg/kg wet | 2.500 | | 97 | 70-130 | 12 | 25 | |
| cis-1,2-Dichloroethene | 2.82 | 0.0500 | mg/kg wet | 2.500 | | 113 | 70-130 | 9 | 25 | |
| cis-1,3-Dichloropropene | 2.90 | 0.0500 | mg/kg wet | 2.500 | | 116 | 70-130 | 2 | 25 | |
| Dibromochloromethane | 2.38 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 0.2 | 25 | |
| Dibromomethane | 2.46 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 6 | 25 | |
| Dichlorodifluoromethane | 2.01 | 0.0500 | mg/kg wet | 2.500 | | 80 | 70-130 | 12 | 25 | |
| Diethyl Ether | 3.15 | 0.0500 | mg/kg wet | 2.500 | | 126 | 70-130 | 5 | 25 | |
| Di-isopropyl ether | 2.76 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 4 | 25 | |
| Ethyl tertiary-butyl ether | 2.49 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 13 | 25 | |
| Ethylbenzene | 2.45 | 0.0500 | mg/kg wet | 2.500 | | 98 | 70-130 | 8 | 25 | |
| Hexachlorobutadiene | 2.41 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 10 | 25 | |
| Isopropylbenzene | 2.13 | 0.0500 | mg/kg wet | 2.500 | | 85 | 70-130 | 7 | 25 | |
| Methyl tert-Butyl Ether | 2.73 | 0.0500 | mg/kg wet | 2.500 | | 109 | 70-130 | 2 | 25 | |
| Methylene Chloride | 3.03 | 0.250 | mg/kg wet | 2.500 | | 121 | 70-130 | 5 | 25 | |
| Naphthalene | 3.05 | 0.0500 | mg/kg wet | 2.500 | | 122 | 70-130 | 0.4 | 25 | |
| n-Butylbenzene | 2.74 | 0.0500 | mg/kg wet | 2.500 | | 110 | 70-130 | 10 | 25 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **5035/8260B Volatile Organic Compounds / Methanol** | | | | | | | | | | |
| **Batch CA22415 - 5035** | | | | | | | | | | |
| n-Propylbenzene | 2.53 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 14 | 25 | |
| sec-Butylbenzene | 2.52 | 0.0500 | mg/kg wet | 2.500 | | 101 | 70-130 | 7 | 25 | |
| Styrene | 2.36 | 0.0500 | mg/kg wet | 2.500 | | 95 | 70-130 | 5 | 25 | |
| tert-Butylbenzene | 2.51 | 0.0500 | mg/kg wet | 2.500 | | 100 | 70-130 | 7 | 25 | |
| Tertiary-amyl methyl ether | 2.58 | 0.0500 | mg/kg wet | 2.500 | | 103 | 70-130 | 12 | 25 | |
| Tetrachloroethene | 1.98 | 0.0500 | mg/kg wet | 2.500 | | 79 | 70-130 | 4 | 25 | |
| Tetrahydrofuran | 2.54 | 0.500 | mg/kg wet | 2.500 | | 102 | 70-130 | 4 | 25 | |
| Toluene | 2.80 | 0.0500 | mg/kg wet | 2.500 | | 112 | 70-130 | 3 | 25 | |
| trans-1,2-Dichloroethene | 2.87 | 0.0500 | mg/kg wet | 2.500 | | 115 | 70-130 | 2 | 25 | |
| trans-1,3-Dichloropropene | 2.48 | 0.0500 | mg/kg wet | 2.500 | | 99 | 70-130 | 3 | 25 | |
| Trichloroethene | 2.69 | 0.0500 | mg/kg wet | 2.500 | | 108 | 70-130 | 9 | 25 | |
| Vinyl Acetate | 2.88 | 0.250 | mg/kg wet | 2.500 | | 115 | 70-130 | 2 | 25 | |
| Vinyl Chloride | 3.09 | 0.0500 | mg/kg wet | 2.500 | | 124 | 70-130 | 5 | 25 | |
| Xylene O | 2.40 | 0.0500 | mg/kg wet | 2.500 | | 96 | 70-130 | 6 | 25 | |
| Xylene P,M | 4.85 | 0.100 | mg/kg wet | 5.000 | | 97 | 70-130 | 5 | 25 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *2.29* | | mg/kg wet | *2.500* | | *92* | *70-130* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *2.32* | | mg/kg wet | *2.500* | | *93* | *70-130* | | | |
| *Surrogate: Dibromofluoromethane* | *2.38* | | mg/kg wet | *2.500* | | *95* | *70-130* | | | |
| *Surrogate: Toluene-d8* | *2.35* | | mg/kg wet | *2.500* | | *94* | *70-130* | | | |
| **8081A Organochlorine Pesticides** | | | | | | | | | | |
| **Batch CA22001 - 3546** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| 4,4'-DDD | ND | 0.0025 | mg/kg wet | | | | | | | |
| 4,4'-DDD [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| 4,4'-DDE | ND | 0.0025 | mg/kg wet | | | | | | | |
| 4,4'-DDE [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| 4,4'-DDT | ND | 0.0025 | mg/kg wet | | | | | | | |
| 4,4'-DDT [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Aldrin | ND | 0.0025 | mg/kg wet | | | | | | | |
| Aldrin [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| alpha-BHC | ND | 0.0025 | mg/kg wet | | | | | | | |
| alpha-BHC [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| alpha-Chlordane | ND | 0.0025 | mg/kg wet | | | | | | | |
| alpha-Chlordane [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| beta-BHC | ND | 0.0025 | mg/kg wet | | | | | | | |
| beta-BHC [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Chlordane (Total) | ND | 0.0300 | mg/kg wet | | | | | | | |
| Chlordane (Total) [2C] | ND | 0.0300 | mg/kg wet | | | | | | | |
| delta-BHC | ND | 0.0025 | mg/kg wet | | | | | | | |
| delta-BHC [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Dieldrin | ND | 0.0025 | mg/kg wet | | | | | | | |
| Dieldrin [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endosulfan I | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endosulfan I [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 8081A Organochlorine Pesticides | | | | | | | |
| **Batch CA22001 - 3546** | | | | | | | | | | |
| Endosulfan II | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endosulfan II [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endosulfan Sulfate | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endosulfan Sulfate [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endrin | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endrin [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endrin Aldehyde | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endrin Aldehyde [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endrin Ketone | ND | 0.0025 | mg/kg wet | | | | | | | |
| Endrin Ketone [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| gamma-BHC (Lindane) | ND | 0.0015 | mg/kg wet | | | | | | | |
| gamma-BHC (Lindane) [2C] | ND | 0.0015 | mg/kg wet | | | | | | | |
| gamma-Chlordane | ND | 0.0025 | mg/kg wet | | | | | | | |
| gamma-Chlordane [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Heptachlor | ND | 0.0025 | mg/kg wet | | | | | | | |
| Heptachlor [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Heptachlor Epoxide | ND | 0.0025 | mg/kg wet | | | | | | | |
| Heptachlor Epoxide [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Hexachlorobenzene | ND | 0.0025 | mg/kg wet | | | | | | | |
| Hexachlorobenzene [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Methoxychlor | ND | 0.0025 | mg/kg wet | | | | | | | |
| Methoxychlor [2C] | ND | 0.0025 | mg/kg wet | | | | | | | |
| Toxaphene | ND | 0.125 | mg/kg wet | | | | | | | |
| Toxaphene [2C] | ND | 0.125 | mg/kg wet | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0142* | | mg/kg wet | *0.01250* | | *114* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.0138* | | mg/kg wet | *0.01250* | | *110* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.0115* | | mg/kg wet | *0.01250* | | *92* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.0118* | | mg/kg wet | *0.01250* | | *95* | *30-150* | | | |
| **LCS** | | | | | | | | | | |
| 4,4'-DDD | 0.0122 | 0.0025 | mg/kg wet | 0.01250 | | 97 | 40-140 | | | |
| 4,4'-DDD [2C] | 0.0120 | 0.0025 | mg/kg wet | 0.01250 | | 96 | 40-140 | | | |
| 4,4'-DDE | 0.0123 | 0.0025 | mg/kg wet | 0.01250 | | 99 | 40-140 | | | |
| 4,4'-DDE [2C] | 0.0117 | 0.0025 | mg/kg wet | 0.01250 | | 94 | 40-140 | | | |
| 4,4'-DDT | 0.0126 | 0.0025 | mg/kg wet | 0.01250 | | 101 | 40-140 | | | |
| 4,4'-DDT [2C] | 0.0124 | 0.0025 | mg/kg wet | 0.01250 | | 99 | 40-140 | | | |
| Aldrin | 0.0105 | 0.0025 | mg/kg wet | 0.01250 | | 84 | 40-140 | | | |
| Aldrin [2C] | 0.0105 | 0.0025 | mg/kg wet | 0.01250 | | 84 | 40-140 | | | |
| alpha-BHC | 0.0105 | 0.0025 | mg/kg wet | 0.01250 | | 84 | 40-140 | | | |
| alpha-BHC [2C] | 0.0106 | 0.0025 | mg/kg wet | 0.01250 | | 85 | 40-140 | | | |
| alpha-Chlordane | 0.0113 | 0.0025 | mg/kg wet | 0.01250 | | 90 | 40-140 | | | |
| alpha-Chlordane [2C] | 0.0111 | 0.0025 | mg/kg wet | 0.01250 | | 89 | 40-140 | | | |
| beta-BHC | 0.0111 | 0.0025 | mg/kg wet | 0.01250 | | 89 | 40-140 | | | |
| beta-BHC [2C] | 0.0111 | 0.0025 | mg/kg wet | 0.01250 | | 89 | 40-140 | | | |
| delta-BHC | 0.0106 | 0.0025 | mg/kg wet | 0.01250 | | 85 | 40-140 | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 8081A Organochlorine Pesticides | | | | | | | |
| **Batch CA22001 - 3546** | | | | | | | | | | |
| delta-BHC [2C] | 0.0109 | 0.0025 | mg/kg wet | 0.01250 | | 87 | 40-140 | | | |
| Dieldrin | 0.0119 | 0.0025 | mg/kg wet | 0.01250 | | 95 | 40-140 | | | |
| Dieldrin [2C] | 0.0116 | 0.0025 | mg/kg wet | 0.01250 | | 93 | 40-140 | | | |
| Endosulfan I | 0.0109 | 0.0025 | mg/kg wet | 0.01250 | | 87 | 40-140 | | | |
| Endosulfan I [2C] | 0.0111 | 0.0025 | mg/kg wet | 0.01250 | | 89 | 40-140 | | | |
| Endosulfan II | 0.0122 | 0.0025 | mg/kg wet | 0.01250 | | 98 | 40-140 | | | |
| Endosulfan II [2C] | 0.0119 | 0.0025 | mg/kg wet | 0.01250 | | 95 | 40-140 | | | |
| Endosulfan Sulfate | 0.0115 | 0.0025 | mg/kg wet | 0.01250 | | 92 | 40-140 | | | |
| Endosulfan Sulfate [2C] | 0.0115 | 0.0025 | mg/kg wet | 0.01250 | | 92 | 40-140 | | | |
| Endrin | 0.0127 | 0.0025 | mg/kg wet | 0.01250 | | 102 | 40-140 | | | |
| Endrin [2C] | 0.0124 | 0.0025 | mg/kg wet | 0.01250 | | 99 | 40-140 | | | |
| Endrin Aldehyde | 0.0105 | 0.0025 | mg/kg wet | 0.01250 | | 84 | 40-140 | | | |
| Endrin Aldehyde [2C] | 0.0102 | 0.0025 | mg/kg wet | 0.01250 | | 82 | 40-140 | | | |
| Endrin Ketone | 0.0109 | 0.0025 | mg/kg wet | 0.01250 | | 87 | 40-140 | | | |
| Endrin Ketone [2C] | 0.0104 | 0.0025 | mg/kg wet | 0.01250 | | 83 | 40-140 | | | |
| gamma-BHC (Lindane) | 0.0108 | 0.0015 | mg/kg wet | 0.01250 | | 86 | 40-140 | | | |
| gamma-BHC (Lindane) [2C] | 0.0107 | 0.0015 | mg/kg wet | 0.01250 | | 86 | 40-140 | | | |
| gamma-Chlordane | 0.0114 | 0.0025 | mg/kg wet | 0.01250 | | 91 | 40-140 | | | |
| gamma-Chlordane [2C] | 0.0112 | 0.0025 | mg/kg wet | 0.01250 | | 89 | 40-140 | | | |
| Heptachlor | 0.0101 | 0.0025 | mg/kg wet | 0.01250 | | 81 | 40-140 | | | |
| Heptachlor [2C] | 0.0098 | 0.0025 | mg/kg wet | 0.01250 | | 78 | 40-140 | | | |
| Heptachlor Epoxide | 0.0110 | 0.0025 | mg/kg wet | 0.01250 | | 88 | 40-140 | | | |
| Heptachlor Epoxide [2C] | 0.0109 | 0.0025 | mg/kg wet | 0.01250 | | 87 | 40-140 | | | |
| Hexachlorobenzene | 0.0084 | 0.0025 | mg/kg wet | 0.01250 | | 68 | 40-140 | | | |
| Hexachlorobenzene [2C] | 0.0087 | 0.0025 | mg/kg wet | 0.01250 | | 70 | 40-140 | | | |
| Methoxychlor | 0.0115 | 0.0025 | mg/kg wet | 0.01250 | | 92 | 40-140 | | | |
| Methoxychlor [2C] | 0.0121 | 0.0025 | mg/kg wet | 0.01250 | | 97 | 40-140 | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0125* | | mg/kg wet | *0.01250* | | *100* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.0121* | | mg/kg wet | *0.01250* | | *97* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.00956* | | mg/kg wet | *0.01250* | | *77* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.00981* | | mg/kg wet | *0.01250* | | *79* | *30-150* | | | |
| **LCS Dup** | | | | | | | | | | |
| 4,4'-DDD | 0.0137 | 0.0025 | mg/kg wet | 0.01250 | | 110 | 40-140 | 12 | 30 | |
| 4,4'-DDD [2C] | 0.0134 | 0.0025 | mg/kg wet | 0.01250 | | 108 | 40-140 | 12 | 30 | |
| 4,4'-DDE | 0.0141 | 0.0025 | mg/kg wet | 0.01250 | | 113 | 40-140 | 13 | 30 | |
| 4,4'-DDE [2C] | 0.0134 | 0.0025 | mg/kg wet | 0.01250 | | 107 | 40-140 | 13 | 30 | |
| 4,4'-DDT | 0.0144 | 0.0025 | mg/kg wet | 0.01250 | | 115 | 40-140 | 13 | 30 | |
| 4,4'-DDT [2C] | 0.0141 | 0.0025 | mg/kg wet | 0.01250 | | 113 | 40-140 | 13 | 30 | |
| Aldrin | 0.0120 | 0.0025 | mg/kg wet | 0.01250 | | 96 | 40-140 | 13 | 30 | |
| Aldrin [2C] | 0.0119 | 0.0025 | mg/kg wet | 0.01250 | | 95 | 40-140 | 13 | 30 | |
| alpha-BHC | 0.0119 | 0.0025 | mg/kg wet | 0.01250 | | 96 | 40-140 | 13 | 30 | |
| alpha-BHC [2C] | 0.0120 | 0.0025 | mg/kg wet | 0.01250 | | 96 | 40-140 | 13 | 30 | |
| alpha-Chlordane | 0.0128 | 0.0025 | mg/kg wet | 0.01250 | | 102 | 40-140 | 12 | 30 | |
| alpha-Chlordane [2C] | 0.0126 | 0.0025 | mg/kg wet | 0.01250 | | 101 | 40-140 | 12 | 30 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8081A Organochlorine Pesticides** | | | | | | | | | | |
| **Batch CA22001 - 3546** | | | | | | | | | | |
| beta-BHC | 0.0126 | 0.0025 | mg/kg wet | 0.01250 | | 101 | 40-140 | 12 | 30 | |
| beta-BHC [2C] | 0.0124 | 0.0025 | mg/kg wet | 0.01250 | | 100 | 40-140 | 11 | 30 | |
| delta-BHC | 0.0121 | 0.0025 | mg/kg wet | 0.01250 | | 97 | 40-140 | 14 | 30 | |
| delta-BHC [2C] | 0.0124 | 0.0025 | mg/kg wet | 0.01250 | | 99 | 40-140 | 13 | 30 | |
| Dieldrin | 0.0135 | 0.0025 | mg/kg wet | 0.01250 | | 108 | 40-140 | 13 | 30 | |
| Dieldrin [2C] | 0.0132 | 0.0025 | mg/kg wet | 0.01250 | | 106 | 40-140 | 12 | 30 | |
| Endosulfan I | 0.0125 | 0.0025 | mg/kg wet | 0.01250 | | 100 | 40-140 | 13 | 30 | |
| Endosulfan I [2C] | 0.0126 | 0.0025 | mg/kg wet | 0.01250 | | 101 | 40-140 | 13 | 30 | |
| Endosulfan II | 0.0138 | 0.0025 | mg/kg wet | 0.01250 | | 110 | 40-140 | 12 | 30 | |
| Endosulfan II [2C] | 0.0134 | 0.0025 | mg/kg wet | 0.01250 | | 107 | 40-140 | 12 | 30 | |
| Endosulfan Sulfate | 0.0129 | 0.0025 | mg/kg wet | 0.01250 | | 104 | 40-140 | 12 | 30 | |
| Endosulfan Sulfate [2C] | 0.0128 | 0.0025 | mg/kg wet | 0.01250 | | 103 | 40-140 | 11 | 30 | |
| Endrin | 0.0144 | 0.0025 | mg/kg wet | 0.01250 | | 115 | 40-140 | 13 | 30 | |
| Endrin [2C] | 0.0140 | 0.0025 | mg/kg wet | 0.01250 | | 112 | 40-140 | 13 | 30 | |
| Endrin Aldehyde | 0.0114 | 0.0025 | mg/kg wet | 0.01250 | | 91 | 40-140 | 8 | 30 | |
| Endrin Aldehyde [2C] | 0.0111 | 0.0025 | mg/kg wet | 0.01250 | | 88 | 40-140 | 8 | 30 | |
| Endrin Ketone | 0.0122 | 0.0025 | mg/kg wet | 0.01250 | | 97 | 40-140 | 12 | 30 | |
| Endrin Ketone [2C] | 0.0117 | 0.0025 | mg/kg wet | 0.01250 | | 94 | 40-140 | 12 | 30 | |
| gamma-BHC (Lindane) | 0.0124 | 0.0015 | mg/kg wet | 0.01250 | | 99 | 40-140 | 14 | 30 | |
| gamma-BHC (Lindane) [2C] | 0.0123 | 0.0015 | mg/kg wet | 0.01250 | | 98 | 40-140 | 14 | 30 | |
| gamma-Chlordane | 0.0130 | 0.0025 | mg/kg wet | 0.01250 | | 104 | 40-140 | 13 | 30 | |
| gamma-Chlordane [2C] | 0.0127 | 0.0025 | mg/kg wet | 0.01250 | | 101 | 40-140 | 12 | 30 | |
| Heptachlor | 0.0115 | 0.0025 | mg/kg wet | 0.01250 | | 92 | 40-140 | 13 | 30 | |
| Heptachlor [2C] | 0.0111 | 0.0025 | mg/kg wet | 0.01250 | | 89 | 40-140 | 13 | 30 | |
| Heptachlor Epoxide | 0.0125 | 0.0025 | mg/kg wet | 0.01250 | | 100 | 40-140 | 13 | 30 | |
| Heptachlor Epoxide [2C] | 0.0124 | 0.0025 | mg/kg wet | 0.01250 | | 99 | 40-140 | 13 | 30 | |
| Hexachlorobenzene | 0.0089 | 0.0025 | mg/kg wet | 0.01250 | | 71 | 40-140 | 5 | 30 | |
| Hexachlorobenzene [2C] | 0.0092 | 0.0025 | mg/kg wet | 0.01250 | | 73 | 40-140 | 5 | 30 | |
| Methoxychlor | 0.0130 | 0.0025 | mg/kg wet | 0.01250 | | 104 | 40-140 | 12 | 30 | |
| Methoxychlor [2C] | 0.0136 | 0.0025 | mg/kg wet | 0.01250 | | 108 | 40-140 | 11 | 30 | |
| *Surrogate: Decachlorobiphenyl* | *0.0140* | | mg/kg wet | *0.01250* | | *112* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.0137* | | mg/kg wet | *0.01250* | | *109* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.0109* | | mg/kg wet | *0.01250* | | *87* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.0112* | | mg/kg wet | *0.01250* | | *90* | *30-150* | | | |
| **8082 Polychlorinated Biphenyls (PCB)** | | | | | | | | | | |
| **Batch CA22603 - 3541** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Aroclor 1221 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1232 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1242 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1248 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1254 | ND | 0.0500 | mg/kg wet | | | | | | | |
| Aroclor 1260 | ND | 0.0500 | mg/kg wet | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8082 Polychlorinated Biphenyls (PCB)** | | | | | | | | | | |
| **Batch CA22603 - 3541** | | | | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0170* | | mg/kg wet | *0.02500* | | *68* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.0166* | | mg/kg wet | *0.02500* | | *67* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.0191* | | mg/kg wet | *0.02500* | | *76* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.0206* | | mg/kg wet | *0.02500* | | *82* | *30-150* | | | |
| **LCS** | | | | | | | | | | |
| Aroclor 1260 | 0.450 | 0.0500 | mg/kg wet | 0.5000 | | 90 | 40-140 | | | |
| *Surrogate: Decachlorobiphenyl* | *0.0206* | | mg/kg wet | *0.02500* | | *82* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.0189* | | mg/kg wet | *0.02500* | | *76* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.0225* | | mg/kg wet | *0.02500* | | *90* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.0237* | | mg/kg wet | *0.02500* | | *95* | *30-150* | | | |
| **LCS Dup** | | | | | | | | | | |
| Aroclor 1260 | 0.457 | 0.0500 | mg/kg wet | 0.5000 | | 91 | 40-140 | 2 | 50 | |
| *Surrogate: Decachlorobiphenyl* | *0.0202* | | mg/kg wet | *0.02500* | | *81* | *30-150* | | | |
| *Surrogate: Decachlorobiphenyl [2C]* | *0.0190* | | mg/kg wet | *0.02500* | | *76* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.0214* | | mg/kg wet | *0.02500* | | *85* | *30-150* | | | |
| *Surrogate: Tetrachloro-m-xylene [2C]* | *0.0225* | | mg/kg wet | *0.02500* | | *90* | *30-150* | | | |
| **8100M Total Petroleum Hydrocarbons** | | | | | | | | | | |
| **Batch CA22302 - 3546** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| Decane (C10) | ND | 0.2 | mg/kg wet | | | | | | | |
| Docosane (C22) | ND | 0.2 | mg/kg wet | | | | | | | |
| Dodecane (C12) | ND | 0.2 | mg/kg wet | | | | | | | |
| Eicosane (C20) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexacosane (C26) | ND | 0.2 | mg/kg wet | | | | | | | |
| Hexadecane (C16) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonadecane (C19) | ND | 0.2 | mg/kg wet | | | | | | | |
| Nonane (C9) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octacosane (C28) | ND | 0.2 | mg/kg wet | | | | | | | |
| Octadecane (C18) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetracosane (C24) | ND | 0.2 | mg/kg wet | | | | | | | |
| Tetradecane (C14) | ND | 0.2 | mg/kg wet | | | | | | | |
| Total Petroleum Hydrocarbons | ND | 37.5 | mg/kg wet | | | | | | | |
| Triacontane (C30) | ND | 0.2 | mg/kg wet | | | | | | | |
| *Surrogate: O-Terphenyl* | *5.54* | | mg/kg wet | *5.000* | | *111* | *40-140* | | | |
| **LCS** | | | | | | | | | | |
| Decane (C10) | 1.8 | 0.2 | mg/kg wet | 2.500 | | 71 | 40-140 | | | |
| Docosane (C22) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 88 | 40-140 | | | |
| Dodecane (C12) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 79 | 40-140 | | | |
| Eicosane (C20) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 88 | 40-140 | | | |
| Hexacosane (C26) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 8100M Total Petroleum Hydrocarbons | | | | | | |
| **Batch CA22302 - 3546** | | | | | | | | | | |
| Hexadecane (C16) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 84 | 40-140 | | | |
| Nonadecane (C19) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | | | |
| Nonane (C9) | 1.5 | 0.2 | mg/kg wet | 2.500 | | 59 | 30-140 | | | |
| Octacosane (C28) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | | | |
| Octadecane (C18) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 86 | 40-140 | | | |
| Tetracosane (C24) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | | | |
| Tetradecane (C14) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 82 | 40-140 | | | |
| Total Petroleum Hydrocarbons | 36.1 | 37.5 | mg/kg wet | 35.00 | | 103 | 40-140 | | | |
| Triacontane (C30) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 92 | 40-140 | | | |
| *Surrogate: O-Terphenyl* | *5.61* | | mg/kg wet | *5.000* | | *112* | *40-140* | | | |
| **LCS Dup** | | | | | | | | | | |
| Decane (C10) | 2.0 | 0.2 | mg/kg wet | 2.500 | | 78 | 40-140 | 10 | 50 | |
| Docosane (C22) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 2 | 50 | |
| Dodecane (C12) | 2.1 | 0.2 | mg/kg wet | 2.500 | | 85 | 40-140 | 7 | 50 | |
| Eicosane (C20) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 2 | 50 | |
| Hexacosane (C26) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 0.7 | 50 | |
| Hexadecane (C16) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 91 | 40-140 | 8 | 50 | |
| Nonadecane (C19) | 2.4 | 0.2 | mg/kg wet | 2.500 | | 94 | 40-140 | 4 | 50 | |
| Nonane (C9) | 1.6 | 0.2 | mg/kg wet | 2.500 | | 65 | 30-140 | 10 | 50 | |
| Octacosane (C28) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 90 | 40-140 | 0.3 | 50 | |
| Octadecane (C18) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 92 | 40-140 | 6 | 50 | |
| Tetracosane (C24) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 91 | 40-140 | 1 | 50 | |
| Tetradecane (C14) | 2.2 | 0.2 | mg/kg wet | 2.500 | | 89 | 40-140 | 8 | 50 | |
| Total Petroleum Hydrocarbons | 39.2 | 37.5 | mg/kg wet | 35.00 | | 112 | 40-140 | 8 | 50 | |
| Triacontane (C30) | 2.3 | 0.2 | mg/kg wet | 2.500 | | 91 | 40-140 | 1 | 50 | |
| *Surrogate: O-Terphenyl* | *5.80* | | mg/kg wet | *5.000* | | *116* | *40-140* | | | |
| **Matrix Spike** **Source: 1201221-02** | | | | | | | | | | |
| Decane (C10) | 3.3 | 0.3 | mg/kg dry | 3.788 | 1.0 | 61 | 40-140 | | | |
| Docosane (C22) | 4.4 | 0.3 | mg/kg dry | 3.788 | 0.1 | 114 | 40-140 | | | |
| Dodecane (C12) | 3.3 | 0.3 | mg/kg dry | 3.788 | ND | 88 | 40-140 | | | |
| Eicosane (C20) | 4.0 | 0.3 | mg/kg dry | 3.788 | 0.3 | 99 | 40-140 | | | |
| Hexacosane (C26) | 4.7 | 0.3 | mg/kg dry | 3.788 | 0.3 | 115 | 40-140 | | | |
| Hexadecane (C16) | 3.6 | 0.3 | mg/kg dry | 3.788 | ND | 96 | 40-140 | | | |
| Nonadecane (C19) | 3.9 | 0.3 | mg/kg dry | 3.788 | 0.1 | 100 | 40-140 | | | |
| Nonane (C9) | 2.3 | 0.3 | mg/kg dry | 3.788 | ND | 60 | 30-140 | | | |
| Octacosane (C28) | 4.4 | 0.3 | mg/kg dry | 3.788 | 0.4 | 104 | 40-140 | | | |
| Octadecane (C18) | 4.2 | 0.3 | mg/kg dry | 3.788 | ND | 112 | 40-140 | | | |
| Tetracosane (C24) | 4.6 | 0.3 | mg/kg dry | 3.788 | 0.3 | 112 | 40-140 | | | |
| Tetradecane (C14) | 3.6 | 0.3 | mg/kg dry | 3.788 | ND | 96 | 40-140 | | | |
| Total Petroleum Hydrocarbons | 360 | 56.8 | mg/kg dry | 53.03 | 265 | 179 | 40-140 | | | M+ |
| Triacontane (C30) | 4.9 | 0.3 | mg/kg dry | 3.788 | 0.9 | 107 | 40-140 | | | |
| *Surrogate: O-Terphenyl* | *7.02* | | mg/kg dry | *7.576* | | *93* | *40-140* | | | |
| **Matrix Spike Dup** **Source: 1201221-02** | | | | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8100M Total Petroleum Hydrocarbons** | | | | | | | | | | |
| **Batch CA22302 - 3546** | | | | | | | | | | |
| Decane (C10) | 3.1 | 0.3 | mg/kg dry | 3.769 | 1.0 | 57 | 40-140 | 5 | 50 | |
| Docosane (C22) | 3.4 | 0.3 | mg/kg dry | 3.769 | 0.1 | 87 | 40-140 | 27 | 50 | |
| Dodecane (C12) | 3.0 | 0.3 | mg/kg dry | 3.769 | ND | 80 | 40-140 | 10 | 50 | |
| Eicosane (C20) | 3.4 | 0.3 | mg/kg dry | 3.769 | 0.3 | 84 | 40-140 | 16 | 50 | |
| Hexacosane (C26) | 3.5 | 0.3 | mg/kg dry | 3.769 | 0.3 | 85 | 40-140 | 28 | 50 | |
| Hexadecane (C16) | 3.1 | 0.3 | mg/kg dry | 3.769 | ND | 82 | 40-140 | 16 | 50 | |
| Nonadecane (C19) | 3.2 | 0.3 | mg/kg dry | 3.769 | 0.1 | 80 | 40-140 | 22 | 50 | |
| Nonane (C9) | 2.1 | 0.3 | mg/kg dry | 3.769 | ND | 56 | 30-140 | 6 | 50 | |
| Octacosane (C28) | 3.6 | 0.3 | mg/kg dry | 3.769 | 0.4 | 84 | 40-140 | 20 | 50 | |
| Octadecane (C18) | 3.1 | 0.3 | mg/kg dry | 3.769 | ND | 82 | 40-140 | 31 | 50 | |
| Tetracosane (C24) | 3.4 | 0.3 | mg/kg dry | 3.769 | 0.3 | 81 | 40-140 | 30 | 50 | |
| Tetradecane (C14) | 3.3 | 0.3 | mg/kg dry | 3.769 | ND | 86 | 40-140 | 11 | 50 | |
| Total Petroleum Hydrocarbons | 270 | 56.5 | mg/kg dry | 52.77 | 265 | 10 | 40-140 | 28 | 50 | M- |
| Triacontane (C30) | 3.7 | 0.3 | mg/kg dry | 3.769 | 0.9 | 75 | 40-140 | 28 | 50 | |
| *Surrogate: O-Terphenyl* | *6.14* | | mg/kg dry | *7.538* | | *81* | *40-140* | | | |
| **8151A Chlorinated Herbicides** | | | | | | | | | | |
| **Batch CA22311 - 8151A** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| 2,4,5-T | ND | 0.010 | mg/kg dry | | | | | | | |
| 2,4,5-T [2C] | ND | 0.010 | mg/kg dry | | | | | | | |
| 2,4,5-TP (Silvex) | ND | 0.010 | mg/kg dry | | | | | | | |
| 2,4,5-TP (Silvex) [2C] | ND | 0.010 | mg/kg dry | | | | | | | |
| 2,4-D | ND | 0.188 | mg/kg dry | | | | | | | |
| 2,4-D [2C] | ND | 0.188 | mg/kg dry | | | | | | | |
| 2,4-DB | ND | 0.190 | mg/kg dry | | | | | | | |
| 2,4-DB [2C] | ND | 0.190 | mg/kg dry | | | | | | | |
| Dalapon | ND | 0.182 | mg/kg dry | | | | | | | |
| Dalapon [2C] | ND | 0.182 | mg/kg dry | | | | | | | |
| Dicamba | ND | 0.009 | mg/kg dry | | | | | | | |
| Dicamba [2C] | ND | 0.009 | mg/kg dry | | | | | | | |
| Dichlorprop | ND | 0.188 | mg/kg dry | | | | | | | |
| Dichlorprop [2C] | ND | 0.188 | mg/kg dry | | | | | | | |
| Dinoseb | ND | 0.190 | mg/kg dry | | | | | | | |
| Dinoseb [2C] | ND | 0.190 | mg/kg dry | | | | | | | |
| MCPA | ND | 18.6 | mg/kg dry | | | | | | | |
| MCPA [2C] | ND | 18.6 | mg/kg dry | | | | | | | |
| MCPP | ND | 18.8 | mg/kg dry | | | | | | | |
| MCPP [2C] | ND | 18.8 | mg/kg dry | | | | | | | |
| *Surrogate: DCAA* | *16.5* | | mg/kg dry | *20.00* | | *82* | *30-150* | | | |
| *Surrogate: DCAA [2C]* | *15.3* | | mg/kg dry | *20.00* | | *76* | *30-150* | | | |
| **LCS** | | | | | | | | | | |
| 2,4,5-T | 0.013 | 0.010 | mg/kg dry | 0.01900 | | 70 | 40-140 | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 8151A Chlorinated Herbicides | | | | | | |
| **Batch CA22311 - 8151A** | | | | | | | | | | |
| 2,4,5-T [2C] | 0.012 | 0.010 | mg/kg dry | 0.01900 | | 64 | 40-140 | | | |
| 2,4,5-TP (Silvex) | 0.013 | 0.010 | mg/kg dry | 0.01900 | | 66 | 40-140 | | | |
| 2,4,5-TP (Silvex) [2C] | 0.013 | 0.010 | mg/kg dry | 0.01900 | | 66 | 40-140 | | | |
| 2,4-D | 0.123 | 0.188 | mg/kg dry | 0.1880 | | 65 | 40-140 | | | |
| 2,4-D [2C] | 0.136 | 0.188 | mg/kg dry | 0.1880 | | 73 | 40-140 | | | |
| 2,4-DB | 0.128 | 0.190 | mg/kg dry | 0.1900 | | 67 | 40-140 | | | |
| 2,4-DB [2C] | 0.139 | 0.190 | mg/kg dry | 0.1900 | | 73 | 40-140 | | | |
| Dalapon | 0.248 | 0.182 | mg/kg dry | 0.4550 | | 54 | 40-140 | | | |
| Dalapon [2C] | 0.240 | 0.182 | mg/kg dry | 0.4550 | | 53 | 40-140 | | | |
| Dicamba | 0.014 | 0.009 | mg/kg dry | 0.01880 | | 76 | 40-140 | | | |
| Dicamba [2C] | 0.013 | 0.009 | mg/kg dry | 0.01880 | | 68 | 40-140 | | | |
| Dichlorprop | 0.166 | 0.188 | mg/kg dry | 0.1880 | | 88 | 40-140 | | | |
| Dichlorprop [2C] | 0.162 | 0.188 | mg/kg dry | 0.1880 | | 86 | 40-140 | | | |
| Dinoseb | 0.013 | 0.190 | mg/kg dry | 0.09500 | | 14 | 10-100 | | | |
| Dinoseb [2C] | 0.012 | 0.190 | mg/kg dry | 0.09500 | | 13 | 10-100 | | | |
| MCPA | 14.5 | 18.6 | mg/kg dry | 18.60 | | 78 | 40-140 | | | |
| MCPA [2C] | 13.2 | 18.6 | mg/kg dry | 18.60 | | 71 | 40-140 | | | |
| MCPP | 12.7 | 18.8 | mg/kg dry | 18.80 | | 68 | 40-140 | | | |
| MCPP [2C] | 12.0 | 18.8 | mg/kg dry | 18.80 | | 64 | 40-140 | | | |
| *Surrogate: DCAA* | *15.2* | | mg/kg dry | *20.00* | | *76* | *30-150* | | | |
| *Surrogate: DCAA [2C]* | *14.0* | | mg/kg dry | *20.00* | | *70* | *30-150* | | | |
| **LCS Dup** | | | | | | | | | | **D+** |
| 2,4,5-T | 0.017 | 0.010 | mg/kg dry | 0.01900 | | 92 | 40-140 | 27 | 30 | |
| 2,4,5-T [2C] | 0.019 | 0.010 | mg/kg dry | 0.01900 | | 102 | 40-140 | 46 | 30 | |
| 2,4,5-TP (Silvex) | 0.016 | 0.010 | mg/kg dry | 0.01900 | | 84 | 40-140 | 24 | 30 | |
| 2,4,5-TP (Silvex) [2C] | 0.017 | 0.010 | mg/kg dry | 0.01900 | | 90 | 40-140 | 31 | 30 | |
| 2,4-D | 0.162 | 0.188 | mg/kg dry | 0.1880 | | 86 | 40-140 | 28 | 30 | |
| 2,4-D [2C] | 0.184 | 0.188 | mg/kg dry | 0.1880 | | 98 | 40-140 | 30 | 30 | |
| 2,4-DB | 0.211 | 0.190 | mg/kg dry | 0.1900 | | 111 | 40-140 | 49 | 30 | |
| 2,4-DB [2C] | 0.181 | 0.190 | mg/kg dry | 0.1900 | | 95 | 40-140 | 26 | 30 | |
| Dalapon | 0.355 | 0.182 | mg/kg dry | 0.4550 | | 78 | 40-140 | 36 | 30 | |
| Dalapon [2C] | 0.359 | 0.182 | mg/kg dry | 0.4550 | | 79 | 40-140 | 40 | 30 | |
| Dicamba | 0.018 | 0.009 | mg/kg dry | 0.01880 | | 98 | 40-140 | 25 | 30 | |
| Dicamba [2C] | 0.016 | 0.009 | mg/kg dry | 0.01880 | | 86 | 40-140 | 23 | 30 | |
| Dichlorprop | 0.218 | 0.188 | mg/kg dry | 0.1880 | | 116 | 40-140 | 27 | 30 | |
| Dichlorprop [2C] | 0.214 | 0.188 | mg/kg dry | 0.1880 | | 114 | 40-140 | 27 | 30 | |
| Dinoseb | 0.020 | 0.190 | mg/kg dry | 0.09500 | | 21 | 10-100 | 39 | 30 | |
| Dinoseb [2C] | 0.017 | 0.190 | mg/kg dry | 0.09500 | | 18 | 10-100 | 34 | 30 | |
| MCPA | 17.9 | 18.6 | mg/kg dry | 18.60 | | 96 | 40-140 | 21 | 30 | |
| MCPA [2C] | 17.4 | 18.6 | mg/kg dry | 18.60 | | 94 | 40-140 | 28 | 30 | |
| MCPP | 17.0 | 18.8 | mg/kg dry | 18.80 | | 90 | 40-140 | 29 | 30 | |
| MCPP [2C] | 16.8 | 18.8 | mg/kg dry | 18.80 | | 89 | 40-140 | 33 | 30 | |
| *Surrogate: DCAA* | *19.8* | | mg/kg dry | *20.00* | | *99* | *30-150* | | | |
| *Surrogate: DCAA [2C]* | *18.2* | | mg/kg dry | *20.00* | | *91* | *30-150* | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

## 8151A Chlorinated Herbicides

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch CA22311 - 8151A** | | | | | | | | | | |
| **Matrix Spike** **Source: 1201221-02** | | | | | | | | | | **MM** |
| 2,4,5-T | 0.105 | 0.006 | mg/kg dry | 0.02768 | ND | 380 | 30-150 | | | |
| 2,4,5-T [2C] | 0.035 | 0.006 | mg/kg dry | 0.02768 | ND | 128 | 30-150 | | | |
| 2,4,5-TP (Silvex) | 0.016 | 0.006 | mg/kg dry | 0.02768 | ND | 58 | 30-150 | | | |
| 2,4,5-TP (Silvex) [2C] | 0.030 | 0.006 | mg/kg dry | 0.02768 | ND | 108 | 30-150 | | | |
| 2,4-D | 1.23 | 0.119 | mg/kg dry | 0.2739 | 0.595 | 232 | 30-150 | | | |
| 2,4-D [2C] | 0.324 | 0.119 | mg/kg dry | 0.2739 | 0.046 | 101 | 30-150 | | | |
| 2,4-DB | 0.832 | 0.121 | mg/kg dry | 0.2768 | ND | 300 | 30-150 | | | |
| 2,4-DB [2C] | 0.375 | 0.121 | mg/kg dry | 0.2768 | ND | 135 | 30-150 | | | |
| Dalapon | 0.953 | 0.116 | mg/kg dry | 0.6629 | 0.329 | 94 | 30-150 | | | |
| Dalapon [2C] | 0.428 | 0.116 | mg/kg dry | 0.6629 | ND | 65 | 30-150 | | | |
| Dicamba | 0.015 | 0.006 | mg/kg dry | 0.02739 | ND | 54 | 30-150 | | | |
| Dicamba [2C] | 0.090 | 0.006 | mg/kg dry | 0.02739 | ND | 330 | 30-150 | | | |
| Dichlorprop | 0.360 | 0.119 | mg/kg dry | 0.2739 | ND | 131 | 30-150 | | | |
| Dichlorprop [2C] | 0.328 | 0.119 | mg/kg dry | 0.2739 | ND | 120 | 30-150 | | | |
| Dinoseb | 0.403 | 0.121 | mg/kg dry | 0.1384 | ND | 291 | 10-100 | | | |
| Dinoseb [2C] | 0.070 | 0.121 | mg/kg dry | 0.1384 | ND | 50 | 10-100 | | | |
| MCPA | 148 | 11.8 | mg/kg dry | 27.10 | ND | 547 | 30-150 | | | |
| MCPA [2C] | 27.4 | 11.8 | mg/kg dry | 27.10 | ND | 101 | 30-150 | | | |
| MCPP | 204 | 11.9 | mg/kg dry | 27.39 | 114 | 329 | 30-150 | | | |
| MCPP [2C] | 43.5 | 11.9 | mg/kg dry | 27.39 | 25.8 | 65 | 30-150 | | | |
| *Surrogate: DCAA* | *26.0* | | mg/kg dry | *29.14* | | *89* | *30-150* | | | |
| *Surrogate: DCAA [2C]* | *28.4* | | mg/kg dry | *29.14* | | *98* | *30-150* | | | |
| **Matrix Spike Dup** **Source: 1201221-02** | | | | | | | | | | **D+, MM** |
| 2,4,5-T | 0.086 | 0.006 | mg/kg dry | 0.02768 | ND | 312 | 30-150 | 20 | 30 | |
| 2,4,5-T [2C] | 0.035 | 0.006 | mg/kg dry | 0.02768 | ND | 126 | 30-150 | 2 | 30 | |
| 2,4,5-TP (Silvex) | 0.035 | 0.006 | mg/kg dry | 0.02768 | ND | 128 | 30-150 | 75 | 30 | |
| 2,4,5-TP (Silvex) [2C] | 0.044 | 0.006 | mg/kg dry | 0.02768 | ND | 160 | 30-150 | 39 | 30 | |
| 2,4-D | 1.22 | 0.119 | mg/kg dry | 0.2739 | 0.595 | 230 | 30-150 | 0.4 | 30 | |
| 2,4-D [2C] | 0.311 | 0.119 | mg/kg dry | 0.2739 | 0.046 | 96 | 30-150 | 4 | 30 | |
| 2,4-DB | 0.819 | 0.121 | mg/kg dry | 0.2768 | ND | 296 | 30-150 | 1 | 30 | |
| 2,4-DB [2C] | 0.353 | 0.121 | mg/kg dry | 0.2768 | ND | 128 | 30-150 | 6 | 30 | |
| Dalapon | 0.874 | 0.116 | mg/kg dry | 0.6629 | 0.329 | 82 | 30-150 | 9 | 30 | |
| Dalapon [2C] | 0.458 | 0.116 | mg/kg dry | 0.6629 | ND | 69 | 30-150 | 7 | 30 | |
| Dicamba | 0.037 | 0.006 | mg/kg dry | 0.02739 | ND | 136 | 30-150 | 86 | 30 | |
| Dicamba [2C] | 0.037 | 0.006 | mg/kg dry | 0.02739 | ND | 136 | 30-150 | 83 | 30 | |
| Dichlorprop | 0.335 | 0.119 | mg/kg dry | 0.2739 | ND | 122 | 30-150 | 7 | 30 | |
| Dichlorprop [2C] | 0.337 | 0.119 | mg/kg dry | 0.2739 | ND | 123 | 30-150 | 3 | 30 | |
| Dinoseb | 0.204 | 0.121 | mg/kg dry | 0.1384 | ND | 148 | 10-100 | 65 | 30 | |
| Dinoseb [2C] | 0.061 | 0.121 | mg/kg dry | 0.1384 | ND | 44 | 10-100 | 13 | 30 | |
| MCPA | 84.2 | 11.8 | mg/kg dry | 27.10 | ND | 311 | 30-150 | 55 | 30 | |
| MCPA [2C] | 26.4 | 11.8 | mg/kg dry | 27.10 | ND | 98 | 30-150 | 4 | 30 | |
| MCPP | 171 | 11.9 | mg/kg dry | 27.39 | 114 | 210 | 30-150 | 17 | 30 | |
| MCPP [2C] | 48.9 | 11.9 | mg/kg dry | 27.39 | 25.8 | 84 | 30-150 | 12 | 30 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

# Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **8151A Chlorinated Herbicides** | | | | | | | | | | |
| **Batch CA22311 - 8151A** | | | | | | | | | | |
| *Surrogate: DCAA* | *30.0* | | mg/kg dry | *29.14* | | *103* | *30-150* | | | |
| *Surrogate: DCAA [2C]* | *32.2* | | mg/kg dry | *29.14* | | *110* | *30-150* | | | |
| **8270C Semi-Volatile Organic Compounds** | | | | | | | | | | |
| **Batch CA22301 - 3546** | | | | | | | | | | |
| **Blank** | | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.333 | mg/kg wet | | | | | | | |
| 2-Methylnaphthalene | ND | 0.333 | mg/kg wet | | | | | | | |
| 4-Chloroaniline | ND | 0.667 | mg/kg wet | | | | | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | *2.61* | | mg/kg wet | *3.333* | | *78* | *30-130* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *4.31* | | mg/kg wet | *5.000* | | *86* | *30-130* | | | |
| *Surrogate: 2-Chlorophenol-d4* | *3.94* | | mg/kg wet | *5.000* | | *79* | *30-130* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *2.86* | | mg/kg wet | *3.333* | | *86* | *30-130* | | | |
| *Surrogate: 2-Fluorophenol* | *3.69* | | mg/kg wet | *5.000* | | *74* | *30-130* | | | |
| *Surrogate: Nitrobenzene-d5* | *2.50* | | mg/kg wet | *3.333* | | *75* | *30-130* | | | |
| *Surrogate: Phenol-d6* | *4.10* | | mg/kg wet | *5.000* | | *82* | *30-130* | | | |
| *Surrogate: p-Terphenyl-d14* | *3.45* | | mg/kg wet | *3.333* | | *104* | *30-130* | | | |
| **LCS** | | | | | | | | | | |
| 1,2-Dichlorobenzene | 2.90 | 0.333 | mg/kg wet | 3.333 | | 87 | 40-140 | | | |
| 2-Methylnaphthalene | 3.49 | 0.333 | mg/kg wet | 3.333 | | 105 | 40-140 | | | |
| 4-Chloroaniline | 2.22 | 0.667 | mg/kg wet | 3.333 | | 67 | 40-140 | | | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | *2.66* | | mg/kg wet | *3.333* | | *80* | *30-130* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *4.61* | | mg/kg wet | *5.000* | | *92* | *30-130* | | | |
| *Surrogate: 2-Chlorophenol-d4* | *3.89* | | mg/kg wet | *5.000* | | *78* | *30-130* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *2.96* | | mg/kg wet | *3.333* | | *89* | *30-130* | | | |
| *Surrogate: 2-Fluorophenol* | *3.68* | | mg/kg wet | *5.000* | | *74* | *30-130* | | | |
| *Surrogate: Nitrobenzene-d5* | *2.48* | | mg/kg wet | *3.333* | | *74* | *30-130* | | | |
| *Surrogate: Phenol-d6* | *4.04* | | mg/kg wet | *5.000* | | *81* | *30-130* | | | |
| *Surrogate: p-Terphenyl-d14* | *3.08* | | mg/kg wet | *3.333* | | *92* | *30-130* | | | |
| **LCS Dup** | | | | | | | | | | |
| 1,2-Dichlorobenzene | 2.42 | 0.333 | mg/kg wet | 3.333 | | 73 | 40-140 | 18 | 30 | |
| 2-Methylnaphthalene | 2.78 | 0.333 | mg/kg wet | 3.333 | | 83 | 40-140 | 23 | 30 | |
| 4-Chloroaniline | 1.99 | 0.667 | mg/kg wet | 3.333 | | 60 | 40-140 | 11 | 30 | |
| *Surrogate: 1,2-Dichlorobenzene-d4* | *2.38* | | mg/kg wet | *3.333* | | *71* | *30-130* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *4.47* | | mg/kg wet | *5.000* | | *89* | *30-130* | | | |
| *Surrogate: 2-Chlorophenol-d4* | *3.54* | | mg/kg wet | *5.000* | | *71* | *30-130* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *2.77* | | mg/kg wet | *3.333* | | *83* | *30-130* | | | |
| *Surrogate: 2-Fluorophenol* | *3.47* | | mg/kg wet | *5.000* | | *69* | *30-130* | | | |
| *Surrogate: Nitrobenzene-d5* | *2.28* | | mg/kg wet | *3.333* | | *68* | *30-130* | | | |
| *Surrogate: Phenol-d6* | *3.64* | | mg/kg wet | *5.000* | | *73* | *30-130* | | | |
| *Surrogate: p-Terphenyl-d14* | *3.10* | | mg/kg wet | *3.333* | | *93* | *30-130* | | | |
| **Classical Chemistry** | | | | | | | | | | |
| **Batch CA22016 - General Preparation** | | | | | | | | | | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

## Quality Control Data

| Analyte | Result | MRL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Qualifier |
|---|---|---|---|---|---|---|---|---|---|---|
| **Classical Chemistry** | | | | | | | | | | |
| **Batch CA22016 - General Preparation** | | | | | | | | | | |
| **Duplicate** **Source: 1201221-02** | | | | | | | | | | |
| Corrosivity (pH) | 6.92 | | S.U. | | 6.93 | | | 0.1 | 200 | |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

**Notes and Definitions**

| | |
|---|---|
| MM | Majority of matrix spike compounds are outside of criteria due to matrix interferences (MM). |
| B+ | Blank Spike recovery is above upper control limit (B+). |
| C+ | Continuing Calibration recovery is above upper control limit (C+). |
| D | Diluted. |
| D+ | Relative percent difference for duplicate is outside of criteria (D+). |
| E | Reported above the quantitation limit; Estimated value (E). |
| J | Reported between MDL and MRL; Estimated value. |
| B | Present in Method Blank (B). |
| M+ | Matrix Spike recovery is above upper control limit (M+). |
| Z-10a | Soil pH measured in water at 19.6 °C. |
| P | Percent difference between primary and confirmation results exceeds 40% (P). |
| S- | Surrogate recovery(ies) below lower control limit (S-). |
| SD | Surrogate recovery(ies) diluted below the MRL (SD). |
| SM | Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM). |
| U | Analyte included in the analysis, but not detected |
| Z-10 | Soil pH measured in water at 19.4 °C. |
| M- | Matrix Spike recovery is below lower control limit (M-). |
| ND | Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |
| MDL | Method Detection Limit |
| MRL | Method Reporting Limit |
| LOD | Limit of Detection |
| LOQ | Limit of Quantitation |
| DL | Detection Limit |
| I/V | Initial Volume |
| F/V | Final Volume |
| § | Subcontracted analysis; see attached report |
| 1 | Range result excludes concentrations of surrogates and/or internal standards eluting in that range. |
| 2 | Range result excludes concentrations of target analytes eluting in that range. |
| 3 | Range result excludes the concentration of the C9-C10 aromatic range. |
| Avg | Results reported as a mathematical average. |
| NR | No Recovery |
| [CALC] | Calculated Analyte |
| SUB | Subcontractged analysis; see attached report |

*CERTIFICATE OF ANALYSIS*

Client Name: AECOM Environment - ENSR
Client Project ID: BASF - Cranston RI

ESS Laboratory Work Order: 1201221

## ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

### ENVIRONMENTAL

Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP)
A2LA Accredited: Testing Cert# 2864.01
http://www.a2la.org/scopepdf/2864-01.pdf

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/labs/waterlabs-instate.php

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/out_state.pdf

Maine Potable and Non Potable Water: RI0002
http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/labcert/labcert.aspx

New Hampshire (NELAP accredited) Potable and Non PotableWater, Solid and Hazardous Waste: 2424
http://www4.egov.nh.gov/des/nhelap/namesearch.asp

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

United States Department of Agriculture Soil Permit: S-54210

Maryland Potable Water: 301
http://www.mde.state.md.us/assets/document/WSP_labs-2009apr20.pdf

### CHEMISTRY

A2LA Accredited: Testing Cert # 2864.01
Lead in Paint, Phthalates, Lead in Children's Metals Products (Including Jewelry)
http://www.A2LA.org/dirsearchnew/newsearch.cfm

CPSC ID# 1141
Lead Paint, Lead in Children's Metals Jewelry
http://www.cpsc.gov/cgi-bin/labapplist.aspx

**Sample and Cooler Receipt Checklist**

Client: AECOM - ESS
Client Project ID: _____
Shipped/Delivered Via: Client

ESS Project ID: 12010221
Date Project Due: 1/27/12
Days For Project: 5 Day

**Items to be checked upon receipt:**

1. Air Bill Manifest Present? *** No**
   Air No.:
2. Were Custody Seals Present? **No**
3. Were Custody Seals Intact? **N/A**
4. Is Radiation count < 100 CPM? **Yes**
5. Is a cooler present? **Yes**
   Cooler Temp: **3.6**
   Iced With: **Icepacks**
6. Was COC included with samples? **Yes**
7. Was COC signed and dated by client? **Yes**
8. Does the COC match the sample **Yes**
9. Is COC complete and correct? **Yes**
10. Are the samples properly preserved? **Yes**
11. Proper sample containers used? **Yes**
12. Any air bubbles in the VOA vials? **N/A**
13. Holding times exceeded? **No**
14. Sufficient sample volumes? **Yes**
15. Any Subcontracting needed? **No**
16. Are ESS labels on correct containers? **Yes|No**
17. Were samples received intact? **Yes|No**

ESS Sample IDs: _____
Sub Lab: _____
Analysis: _____
TAT: _____

18. Was there need to call project manager to discuss status? If yes, please explain.

_____

_____

_____

Who was called?: _____ By whom? _____

| Sample Number | Properly Preserved | Container Type | # of Containers | Preservative |
|---|---|---|---|---|
| 1 | Yes | 40 ml - VOA | 1 | MeOH |
| 1 | Yes | 40 ml - VOA | 2 | other |
| 1 | Yes | 8 oz Soil Jar | 2 | NP |
| 2 | Yes | 40 ml - VOA | 1 | MeOH |
| 2 | Yes | 40 ml - VOA | 2 | other |
| 2 | Yes | 8 oz Soil Jar | 2 | NP |
| 3 | Yes | 40 ml - VOA | 1 | MeOH |

Completed By: [signature] Date/Time: 1/20/12
Reviewed By: JTD Date/Time: 1-20-12

# CHAIN OF CUSTODY


**ESS Laboratory**
*Division of Thielsch Engineering, Inc.*
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com


Turn Time ___ Standard Other ~~4 hr~~ 72 HR
If faster than 5 days, prior approval by laboratory is required #_____

State where samples were collected from:
MA (RI) CT NH NJ NY ME Other _____

Is this project for any of the following:
MA-MCP Navy USACE Other _____

Reporting Limits

ESS LAB PROJECT ID: 1201221

Electronic Deliverable Yes X No ___
Format: Excel X Access ___ PDF ___ Other _____

Circle and/or Write Required Analysis

| | |
|---|---|
| Co. Name | AECOM |
| Project # | 60163799 |
| Project Name (20 Char. or less) | BASF - Cranston |
| Contact Person | KRIS CARBONNEAU |
| Address | 250 Apollo Drive |
| City | Chelmsford |
| State | MA |
| Zip | 01824 |
| PO# | |
| Telephone # | 978-905-2100 |
| Fax # | |
| Email Address | KRIS.CARBONNEAU@AECOM.COM |

| ESS LAB Sample # | Date | Collection Time | COMP | GRAB | MATRIX | Sample Identification (20 Char. or less) | Pres Code | Number of Containers | Type of Containers | 624 / 524.2 | 8260 VOA | VPH w/ranges | 8021 MTBE/BTEX | 8015 GRO | 8015 DRO | 8100 TPH | EPH w/o PAHs | EPH w/PAHs | EPH 4 Diesel | 8081 Pesticides | 608 PCB | 608 Pesticides | PAH 8270 | 625 | 8270 SVOA | PP13 | TAL23 | RCRA8 | RCRA5 | NBC7 | RCLP-RCRA8 | MCP-METALS (13) | MCP-METALS (13) w/Hg | Herbicides | pH | Paint Filter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1/20/12 | 1125 | X | | SO | Middle Roll Off | 6 | 5 | VG | X | | | | | X | | | | | | X | | X | X | X | X | | | | | | | X | X | X | | |
| 2 | 1/20/12 | 1210 | X | | SO | Western Roll off | 6 | 5 | VG | X | | | | | X | | | | | | X | | X | X | X | X | | | | | | | X | X | | | |
| | 1/20/12 | 1445 | X | | SW | Water Disposal | 2 | 17 | VG | X | | | | | X | | | | | | X | | X | X | X | X | | | | | | | X | X | | | |
| | | | | | | Trip Blank | 6 | 1 | ✓ | X | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Lab | | | | | Trip Blank | 2 | 1 | ✓ | X | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Lab | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Container Type: P-Poly G-Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Preservation Code 1- NP, 2- HCl, 3- $H_2SO_4$, 4- $HNO_3$, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____

Cooler Present X Yes ___ No
Seals Intact ___ Yes ___ No NA: X
Cooler Temp: 3.6

Internal Use Only
[ ] Pickup
[ ] Technicians _____

Sampled by: Tom Croft

Comments:

| Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |
|---|---|---|---|---|---|---|---|
| [signature] | 1/20/12 1640 | [signature] | 1/20/12 1640 | | | | |
| Relinquished by: (Signature) | Date/Time 1/20/12 | Received by: (Signature) | Date/Time | Relinquished by: (Signature) | Date/Time | Received by: (Signature) | Date/Time |

*By circling MA-MCP, client acknowledges samples were collected

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 B

# Appendix G - Waste Manifests

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-00

**UNIFORM HAZARDOUS WASTE MANIFEST**

1. Generator ID Number: RIP 001 194 323
2. Page 1 of 1
3. Emergency Response Phone: (800) 535-5053
4. Manifest Tracking Number: 009085730 JJK

5. Generator's Name and Mailing Address: BASF
P.O. BOX 71
OAK RIDGE PARKWAY
TOMS RIVER, NJ 08754
Generator's Phone: (732) 762-4743

Generator's Site Address (if different than mailing address)
160 MILL STREET
CRANSTON, RI 02905

6. Transporter 1 Company Name: EQ NORTHEAST, INC.
U.S. EPA ID Number: MAD 084 814 136

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address: CLEAN HARBORS DEER PARK, L.P.
2027 BATTLEGROUND RD
DEER PARK, TX 77536
Facility's Phone: (281) 930-2300
U.S. EPA ID Number: TXD 055 141 378

| 9a. HM | 9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) | 10. Containers No. | 10. Containers Type | 11. Total Quantity | 12. Unit Wt./Vol. | 13. Waste Codes | | |
|---|---|---|---|---|---|---|---|---|
| X | 1. NA3082, Hazardous waste, liquid, n.o.s., (Benzene, PCB), 9, PGIII, ERG #171 | | DM | | K | D018 | R007 | |
| | 2. | | | | | ACTS | 011 | |
| | 3. | | | | | | | |
| | 4. | | | | | | | |

14. Special Handling Instructions and Additional Information
1. CH548424 / (L,E) RCRA/TSCA RINSEATE WATER / SEE PCB CONTINUATION SHEET

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year

**INT'L**

16. International Shipments
☐ Import to U.S. ☐ Export from U.S.
Transporter signature (for exports only): Port of entry/exit: Date leaving U.S.:

**TRANSPORTER**

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name | Signature | Month | Day | Year
Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

**DESIGNATED FACILITY**

18. Discrepancy | Month | Day | Year
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
18b. Alternate Facility (or Generator) | Manifest Reference Number:
Facility's Phone: | U.S. EPA ID Number
18c. Signature of Alternate Facility (or Generator) | Month | Day | Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name | Signature | Month | Day | Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

**DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)**

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

**UNIFORM HAZARDOUS WASTE MANIFEST**

1. Generator ID Number: RIP 001 194 323
2. Page 1 of: 1
3. Emergency Response Phone: (800) 535-5053
4. Manifest Tracking Number: 009085803 JJK

5. Generator's Name and Mailing Address: BASF
P.O. BOX 71
OAK RIDGE PARKWAY
TOMS RIVER, NJ 08754
Generator's Phone: (732) 762-4743

Generator's Site Address (if different than mailing address)
160 MILL STREET
CRANSTON, RI 02905

6. Transporter 1 Company Name: EQ NORTHEAST, INC.
U.S. EPA ID Number: MAD 084 814 136

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address: WAYNE DISPOSAL, INC SITE 2 LANDFILL
49350 N I-94 SERVICE DRIVE
BELLEVILLE, MI 48111
Facility's Phone: (800) 592-5489
U.S. EPA ID Number: MID 048 090 633

| 9a. HM | 9b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) | 10. Containers No. | 10. Containers Type | 11. Total Quantity | 12. Unit Wt./Vol. | 13. Waste Codes | | |
|---|---|---|---|---|---|---|---|---|
| X | 1. RQ, UN3432, Polychlorinated biphenyls, solid, mixture, 9, PGIII, ERG #171 | | CM | | K | PCB1 | R007 | |
| | 2. | | | | | | | |
| | 3. | | | | | | | |
| | 4. | | | | | | | |

14. Special Handling Instructions and Additional Information
1. B125044WDI / (S) SOIL WITH PCBs / STORAGE START DATE:_____, CONTAINER NUMBER:_____

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name | Signature | Month | Day | Year
Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
18b. Alternate Facility (or Generator) U.S. EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) | Month | Day | Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. PCB 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name | Signature | Month | Day | Year

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

**DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)**

---

**From:** Frank Battaglia [mailto:battaglia.frank@epamail.epa.gov]
**Sent:** Friday, April 13, 2012 2:33 PM
**To:** Lynch, Joanne
**Cc:** Joseph Guarnaccia; Carbonneau, Kris
**Subject:** Re: Sediment IRM - BASF Cranston

Joanne, I completed my review of the January 2012 Pawtuxet River sediment removal report. The report contained all pertinent information and I do not have any comments that would require changes to the report. I do have a question, how much backfill material was used and did it match the amount of material removed/disposed. Thanks for submitting a comprehensive and complete report.

Frank Battaglia

617 918-1362

-----"Lynch, Joanne" <Joanne.Lynch@aecom.com> wrote: -----

To: Frank Battaglia/R1/USEPA/US@EPA
From: "Lynch, Joanne" <Joanne.Lynch@aecom.com>
Date: 04/13/2012 01:23PM
Cc: "Carbonneau, Kris" <kris.carbonneau@aecom.com>, Joseph Guarnaccia <joseph.guarnaccia@basf.com>
Subject: Sediment IRM - BASF Cranston

Hi Frank –

I just wanted to send a quick email to see if you had any comments on the Sediment IRM report. Our remediation staff starts to get really busy at this time of year, so it is good if I can catch them early for any response to comments that you might have and close out that phase of Site work.

Thanks in advance,

Joanne

**Joanne M. Lynch, M.Sc., P.Eng.**

Environmental Engineer

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C 978.496.0589

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