# Enbridge Line 6B MP 608
# Marshall, MI Pipeline Release

## Monthly Progress Report for the
## Time Frame of August 1 – 31, 2012

**Prepared for United States Environmental Protection Agency and**
**Michigan Department of Environmental Quality**

**Enbridge Energy, Limited Partnership**

**Submitted: September 27, 2012**

631019

# Table of Contents


Table of Contents ..... i

Tables ..... iii

Figures ..... iv

Appendices ..... v

Acronyms and Abbreviations ..... vi

1.0 Introduction ..... 1

2a.0 Surface Water and Sediment Monitoring Activities ..... 3
2a.1 Introduction ..... 3
2a.2 Work Completed ..... 3
2a.3 Work Planned ..... 4

2b.0 Water Quality Monitoring Activities ..... 5
2b.1 Introduction ..... 5
2b.2 Work Completed ..... 5
2b.3 Work Planned ..... 5

2c.0 Potable Water Monitoring Activities ..... 6
2c.1 Introduction ..... 6
2c.2 Work Completed ..... 6
2c.3 Work Planned ..... 7

2d.0 Air Sampling and Monitoring Activities ..... 8
2d.1 Introduction ..... 8
2d.2 Work Completed ..... 8
2d.3 Work Planned ..... 10

2e.0 Submerged Oil Assessment and Recovery Activities ..... 11
2e.1 Introduction ..... 11
2e.2 Work Completed ..... 11
2e.3 Work Planned ..... 13

2f.0 Remedial Investigation Activities ..... 15
2f.1 Introduction ..... 15
2f.2 Work Completed ..... 15
2f.3 Work Planned ..... 17

2g.0 Temporary Facility Restoration and Demobilization Activities ..... 19
2g.1 Introduction ..... 19
2g.2 Work Completed ..... 19

2g.3 Work Planned ..... 19
2h.0 River Bank Erosion Control and Restoration Activities ..... 20
2h.1 Introduction ..... 20
2h.2 Work Completed ..... 20
2h.3 Work Planned ..... 22
2i.0 Sediment Traps and Cylindrical Sampling Devices ..... 23
2i.1 Introduction ..... 23
2i.2 Work Completed ..... 23
2i.3 Work Planned ..... 27
2j.0 Waste Management Activities ..... 28
2j.1 Introduction ..... 28
2j.2 Work Completed ..... 29
2j.3 Work Planned ..... 31
2k.0 Overbank Excavation Activities ..... 33
2k.1 Introduction ..... 33
2k.2 Work Completed ..... 33
2k.3 Work Planned ..... 33
2l.0 Overbank Oil Recovery Activities ..... 34
2l.1 Introduction ..... 34
2l.2 Work Completed ..... 34
2l.3 Work Planned ..... 34
2m.0 Hydrodynamic Assessment and Model Activities ..... 35
2m.1 Introduction ..... 35
2m.2 Work Completed ..... 35
2m.3 Work Planned ..... 36
3.0 Conclusion ..... 37
4.0 References ..... 38

# Tables


Table 2a-1 Surface Water Monitoring Locations-Kalamazoo River and Morrow Lake ..... 4
Table 2c-1 Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells (See Attached) ..... 6
Table 2c-2 Residential Well Sampling and Letter Status Through September 5, 2012 - Winterized Wells (See Attached) ..... 6
Table 2c-3 Residential Well Sampling and Letter Status Through September 5, 2012 - Wells Not Being Sampled (See Attached) ..... 6
Table 2h-1 Talmadge Creek Restoration Work Areas ..... 20
Table 2h-2 Bridge and Access Site Restoration Work Areas ..... 21
Table 2h-3 ERO Site Restoration Work Areas ..... 21
Table 2h-4 Kalamazoo River Bank Erosion Assessment Site Restoration Work Areas ..... 22
Table 2i-1 2012 Sediment Trap Monitoring Rounds Sedimentation Rates Summary (See Attached) ..... 23
Table 2i-2 Water Level Depths at Cylindrical Sampling Device Locations August 2012 (See Attached) ..... 26
Table 2j-1 Waste Transporters and Disposal Facilities August 2012 ..... 28
Table 2j-2 Waste Shipment Summary Through August 31, 2012 ..... 29
Table 2j-3 Weekly and Project Cumulative Recovered Oil Through September 5, 2012 ..... 31

# Figures


Figure 2a-1 Kalamazoo River and Morrow Lake Surface Water Monitoring Locations August 2012

Figure 2c-1 Potable Well Locations, Eligibility Status, and Wells Sampled as of August 31, 2012

Figure 2e-1 2012 Late Summer Reassessment Poling Locations and Results August 2012

Figure 2e-2 Downstream of Morrow Lake Dam Poling Locations and Results August 2012

Figure 2e-3 Submerged Oil Poling Locations and Results Sediment Fan and Morrow Lake (Round 24) August 1, 2012

Figure 2e-4 Submerged Oil Poling Locations and Results Morrow Lake Delta (Round 8) August 1 – August 3, 2012

Figure 2e-5 E 4.0 Boom Monitoring August 2012

Figure 2e-6 Kalamazoo River Soil Quantification Cores and Poling August 2012

Figure 2e-7 Agitation Study Sample Locations August 2012

Figure 2f-1 Source Area Remedial Investigation Boring Locations August 2012

Figure 2i-1 Sediment Trap Monitoring Round 6 Poling Results: August 13 – 21, 2012

Figure 2i-2 Cylindrical Sampling Devices August 2012 Ceresco

Figure 2i-3 Sediment Trap Transect Poling August 2012 Ceresco

Figure 2i-4 Sediment Trap Bathymetry August 2012 MP 33.00 A

Figure 2m-1 Flow Direction and Velocity: MP 04.90 - MP 05.65 - Station Locations June 2012

Figure 2m-2 Flow Direction and Velocity: Kalamazoo River Transects June 2012

Figure 2m-3 Flow Direction and Velocity: Morrow Lake Neck and Morrow Lake Transects June 2012

Figure 2m-4 Flow Direction and Velocity: Morrow Lake Dam Transects June 2012

# Appendices


Appendix A Planning Resources

Appendix B Analytical Data Reports for Samples Collected in August 2012

Appendix C Analytical Data Reports for Samples Collected Prior to August 2012

Appendix D Work Plans Approved in August 2012

Appendix E Level 1 Reviews of Laboratory Analytical Results

Appendix F Waste Manifests and Bills of Lading

# Acronyms and Abbreviations

| | |
|---|---|
| COPC | Chemical of Potential Concern |
| CO | Carbon Monoxide |
| CSD | Cylindrical Sampling Devices |
| CWA | Clean Water Act |
| Enbridge | Enbridge Energy, Limited Partnership |
| ERO | Environment, Right of Way, and Operations |
| FTC | Frac Tank City |
| $H_2S$ | Hydrogen Sulfide |
| HEC-RAS | Hydrologic Engineering Center – River Analysis System |
| HP OSCAR | High Priority Outstanding Site Characterization and Reconciliation |
| IAPs | Incident Action Plans |
| ICS | Incident Command System |
| KRBEA | Kalamazoo River Bank Erosion Assessment |
| LDB | Left Descending Bank |
| Line 6B | The pipeline owned by Enbridge Energy, Limited Partnership that runs just south of Marshall, Michigan |
| LIWS | Liquid Industrial Waste Services |
| LSR | Late Summer Reassessment |
| MDEQ | Michigan Department of Environmental Quality |
| MDEQ Order | Administrative Consent Order And Partial Settlement Agreement entered *In the Matter of Enbridge Energy Partners, L.P., and Enbridge Energy, Limited Partnership*, proceedings under the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.101 et seq. |
| MDNR | Michigan Department of Natural Resources |
| MP | Mile Post |
| MSW | Municipal Solid Waste |
| POTW | Publicly Owned Treatment Works |
| RDB | Right Descending Bank |
| RDF | Recycling & Disposal Facility |
| RI | Remedial Investigation |
| RRD | Remediation and Redevelopment Division |
| SAP | Sampling and Analysis Plan |

| | |
|---|---|
| Supplemental Order | Supplement to Order for Compliance Under Section 311(c) of the Clean Water Act, issued by U.S. EPA Region 5 on September 23, 2010 to Enbridge Energy Partners, L.P. *et al*., Respondents, Docket No: CWA 1321-5-10-001 |
| U.S. EPA | United States Environmental Protection Agency |
| U.S. EPA Order | U.S. EPA Removal Administrative Order Under Section 311(c) of the Clean Water Act, issued on July 27, 2010 to Enbridge Energy Partners, L.P., Docket Number: CWA 1321-5-10-001 |
| VOCs | Volatile Organic Compounds |
| WSS | Walling Suspended Sediment |
| WTTD | Waste Treatment, Transportation, and Disposal |
| WTTD Plan | Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Waste Treatment, Transportation, and Disposal Plan.* Approved by U.S. EPA on May 17, 2011. |
| Z | Profile depth |

# 1.0 Introduction

This monthly progress report for the period of August 1 through and including August 31, 2012 is submitted to the United States Environmental Protection Agency (U.S. EPA) and to the Michigan Department of Environmental Quality (MDEQ) to satisfy reporting requirements for each agency as defined below describing activities completed during the prior month.

Paragraph 18 of the U.S. EPA *Removal Administrative Order Under Section 311(c) of the Clean Water Act* (CWA), issued on July 27, 2010 to Enbridge Energy Partners, L.P., Docket Number: CWA 1321-5-10-001 (U.S. EPA Order) as modified by Paragraph 6 of the Supplement to Order for Compliance Under Section 311(c) of the CWA, issued by U.S. EPA Region 5 on September 23, 2010 to Enbridge Energy Partners, L.P. *et al*., Respondents, Docket No: CWA 1321-5-10-001 (Supplemental Order) (U.S. EPA, 2010) requires monthly progress reports to be submitted to the U.S. EPA commencing on December 27, 2010 and continuing monthly thereafter (Supplemental Order, Paragraph 6(o)).

Paragraph 7.9 of the Administrative Consent Order and Partial Settlement Agreement entered *In the Matter of Enbridge Energy Partners, L.P., and Enbridge Energy, Limited Partnership,* proceedings under the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.101 et seq. signed on November 1, 2010 (MDEQ, 2010) (MDEQ Order) requires Enbridge Energy, Limited Partnership (Enbridge) to submit to the MDEQ, formerly Michigan Department of Natural Resources and Environment, written progress reports on the 27$^{th}$ day of each month.

Following this introduction, *Section 2* of this report is arranged by activity, for example 'Surface Water and Sediment Monitoring Activities'. In each subsection, the subject area work is introduced and an update of progress made in the previous month is described, including field activities performed, analyses completed, and reports submitted. Each section also summarizes future work planned. Conclusions are presented in *Section 3* and references are provided for each section in *Section 4.* Planning resources, including daily summaries of completed work referred to as *Incident Command System* (ICS) *214, Incident Action Plans* (IAPs), and work orders are provided as *Appendix A.*

Laboratory analytical reports of samples that were collected and received in August 2012 can be found in *Appendix B*. Laboratory analytical reports received in August 2012 for samples collected prior to August 2012 (but not previously submitted in the monthly report) can be found in *Appendix C*. All laboratory analytical results received for samples collected in August 2012 and received in September 2012 will be submitted with the September 2012 monthly progress report.

Work plans and procedures approved during August 2012 are provided in their entirety in *Appendix D*. *Response Action Work Plan for the Source Area* (Enbridge, 2012) was approved by MDEQ on August 20, 2012.

Level 1 reviews of laboratory analytical results are included in *Appendix E*.

Waste manifests and bills of lading received in August 2012 are included in *Appendix F*.

# 2a.0 Surface Water and Sediment Monitoring Activities

## 2a.1 Introduction

In August 2012, monthly surface water monitoring activities were conducted per the *Addendum to the Sampling and Analysis Plan (SAP): Attachment C - Surface Water and Sediment Monitoring Supplement to the Sampling and Analysis Plan* approved by MDEQ on May 18, 2012 (Enbridge, 2012(1)). Sampling activities were completed at 18 routine monitoring locations to assess the quality of the surface water in the Kalamazoo River and Morrow Lake.

## 2a.2 Work Completed

### 2a.2.1 Surface Water Monitoring

In August 2012, 18 surface water samples were collected which consisted of collecting samples from nine locations in the Kalamazoo River (between the Talmadge Creek confluence and Morrow Lake), eight locations within Morrow Lake, and one location in the Kalamazoo River immediately downstream of the Morrow Lake Dam per the *SAP: Attachment C* (Enbridge, 2012(1)). The results of the laboratory analyses of the 18 samples (plus 1 duplicate) were compared to Michigan *Rule 57 Water Quality Standards* (MDEQ, 2011). There were no analytical results that exceeded the Michigan *Rule 57 Water Quality Standards* (MDEQ, 2011). *Figure 2a-1* shows the sample locations. Surface water sample location identification number (Sample ID), location description, and latitude and longitude coordinates of each surface water monitoring location are provided in *Table 2a-1*.

| Location ID | Location Description | Latitude (Decimal Degrees) | Longitude (Decimal Degrees) |
|---|---|---|---|
| ML-1 | Morrow Lake | 42.279011 | -85.458466 |
| SW-935 | Morrow Lake | 42.278255 | -85.472069 |
| ML-7 | Morrow Lake | 42.281063 | -85.480469 |
| ML-10 | Morrow Lake | 42.276375 | -85.478920 |
| SWKR3840C02 | Morrow Lake | 42.274991 | -85.464724 |
| SW-936 | Morrow Lake | 42.276611 | -85.453972 |
| SW-937 | Morrow Lake | 42.281200 | -85.486115 |
| SW-112 | Downstream of Morrow Lake Dam | 42.283659 | -85.498262 |
| SWKR3980C01 | Morrow Lake Dam | 42.282665 | -85.491508 |
| SW-105 | 15 Mile Bridge | 42.258250 | -84.998184 |
| SW-115 | Fort Custer State Park | 42.324341 | -85.358049 |
| SWKR0540C01 | Mile Post (MP) 5.4 | 42.266558 | -85.054032 |
| SWKR0600C01 | MP 6.0 | 42.270887 | -85.063948 |
| SW-120 | Shady Bend Campground, Augusta | 42.347423 | -85.329214 |
| SWKR1480C01 | MP 14.8 | 42.304726 | -85.183417 |
| SWKR1565C01 | MP 15.5 | 42.312748 | -85.184869 |
| SWKR1948C01 | MP 19.4 | 42.343617 | -85.243147 |
| SW-110 | 35th St Bridge, Galesburg | 42.280206 | -85.429028 |

**Table 2a-1. Surface Water Monitoring Locations-Kalamazoo River and Morrow Lake**

### 2a.2.2 Sediment Monitoring

Sediment monitoring along the Kalamazoo River and Morrow Lake has been reduced to a quarterly frequency and was not performed in August 2012.

## 2a.3 Work Planned

### 2a.3.1 Surface Water Monitoring

The next monthly surface water monitoring event for the Kalamazoo River and Morrow Lake is scheduled for the week of September 10, 2012 per the *SAP: Attachment C* (Enbridge, 2012(1)).

### 2a.3.2 Sediment Monitoring

Sediment monitoring for the Kalamazoo River and Morrow Lake is conducted quarterly and the next sampling event is tentatively scheduled for the week of September 10, 2012.

# 2b.0 Water Quality Monitoring Activities

## 2b.1 Introduction

The Water Quality Monitoring Program was initiated in July 2011 in response to concerns about the potential risk to fish populations related to low dissolved oxygen levels. This monitoring program was implemented in accordance with the *Water Quality Measurement Standard Operating Procedure* (Enbridge, 2011) approved by MDEQ on September 22, 2011.

## 2b.2 Work Completed

No water quality monitoring was conducted during August 2012.

## 2b.3 Work Planned

Water quality monitoring requirements will be evaluated and water quality monitoring will be resumed as appropriate.

# 2c.0 Potable Water Monitoring Activities

## 2c.1 Introduction

In August 2012, no quarterly potable well sampling was conducted in accordance with the *SAP: Attachment B,* approved by MDEQ on May 18, 2012 (Enbridge, 2012(1)). An amended sampling plan for wells not sampled on a quarterly basis is under development. In addition, a second *Request for Reduction of the Drinking Water Monitoring Program* was submitted to the MDEQ on August 9, 2012 (Enbridge, 2012(2)) and is currently in discussion with the MDEQ.

## 2c.2 Work Completed

### 2c.2.1 Residential Drinking Water Wells

During August 2012, no potable well samples were collected.

There are currently 168 residential wells eligible for sampling under the *SAP: Attachment B* (Enbridge, 2012(1)) included in the Potable Well Monitoring Program. These wells fall into four categories: winterized, not accessible, refused permission, and yes. 'Yes' denotes the wells are being sampled at the frequency outlined in the *SAP: Attachment B* (Enbridge, 2012(1)). Wells designated as 'winterized', 'not accessible', or 'refused permission' are eligible but they are not currently being sampled. Some well pumps at unoccupied homes owned by Enbridge are turned off. These wells are categorized as 'winterized'. The eligibility status of the wells was not altered during this monitoring period.

Multiple sampling events have been completed at the 168 residential wells included in the Potable Well Monitoring Program. The results for all wells sampled through September 5, 2012 are summarized on *Tables 2c-1 through 2c-3* (See Attached) , and *Figure 2c-1.* Tables include updates on well locations, access status, sampling data, and landowner letters. The number of sample events and constituent detections are also summarized on *Figure 2c-1*.

Results of residential potable well monitoring sampling activities are reported through several methods. Each time sampling events are conducted, a report is submitted to the Calhoun and Kalamazoo County Public Health Departments providing notification of the sample locations. On a monthly basis, information shown on *Tables 2c-1 through 2c-3* (See Attached) , and *Figure 2c-1* is updated and posted on the Enbridge Sharepoint site, which can be accessed by Calhoun

and Kalamazoo County Public Health Departments, MDEQ, and U.S. EPA. This information is also updated when public health meetings are held. Analytical data are uploaded to the U.S. EPA SCRIBE database (a software tool used to manage environmental data) to be viewed by Calhoun and Kalamazoo County Public Health Departments, MDEQ, U.S. EPA, and Michigan Department of Community Health. Well owners receive 'landowner letters' communicating the analytical results of their potable water well sample within a month of sample collection.

### 2c.2.2 Groundwater Monitoring

Groundwater sampling from the five monitoring wells in the Village of Augusta and the five monitoring wells at the City of Kalamazoo Wellfield #39 has been transitioned to a quarterly frequency and was not conducted in August 2012.

A letter report for the *Augusta June 2012 Groundwater Sample Results* (Enbridge, 2012(3)) monitoring well sampling at the Village of Augusta wellfield was completed and submitted to the Village of Augusta, the Village of Augusta Chief of Police Jeff Heppler, and a courtesy copy was provided to the MDEQ in August 2012.

A letter report for the *Kalamazoo June 2012 Groundwater Sample Results* (Enbridge, 2012(4)) monitoring well sampling at the City of Kalamazoo Wellfield #39 was completed and submitted to the City of Kalamazoo and a courtesy copy was provided to the MDEQ in August 2012.

## 2c.3 Work Planned

### 2c.3.1 Residential Drinking Water Wells

Residential drinking water sampling for the Potable Well Monitoring Program is planned to continue during September 2012 per the *SAP: Attachment B* (Enbridge, 2012(1)). An additional sampling event to include those wells not sampled on a quarterly basis is planned for September 2012.

### 2c.3.2 Groundwater Monitoring

Groundwater sampling from the five monitoring wells in the Village of Augusta and the five monitoring wells at the City of Kalamazoo Wellfield #39 is tentatively scheduled for sampling during September 2012.

# 2d.0 Air Sampling and Monitoring Activities

## 2d.1 Introduction

Air sampling and monitoring activities are performed in 'community' and 'work areas' in accordance with the *Air Monitoring and Sampling Addendum to the Sampling and Analysis Plan* (Enbridge, 2012(1)). The term 'community' includes all individuals living or working near areas potentially impacted by the Enbridge Line 6B crude oil release or from subsequent response actions. 'Work areas' are those sites where workers are engaged in oil recovery activities. During August 2012, air monitoring activities were only performed in work areas during boom deployment/maintenance activities.

The purpose of air monitoring and sampling activities is to assess community exposures to target analytes and worker exposure to chemicals of potential concern (COPCs). Target analytes are those volatile organic compounds (VOCs) associated with the Line 6B crude oil release and measured by modified U.S. EPA Method TO-15 laboratory analysis. All other VOCs reported from the TO-15 method are referred to as non-target analytes. COPCs are a subset of the 'target analytes' that includes:

- Benzene,
- Toluene,
- Ethylbenzene,
- Xylenes, and
- N-hexane.

## 2d.2 Work Completed

During August 2012, the following submittal was presented to the U.S. EPA for review:

- *Request for Modification of the Air Monitoring and Sampling Addendum to the Sampling and Analysis Plan* (Enbridge, 2012(2)) submitted on August 17, 2012.

No air sampling activities were conducted in August 2012. Air monitoring activities were conducted in work areas as discussed below.

### 2d.2.1 Community Air Monitoring

No community air monitoring was conducted in August 2012.

### 2d.2.2 Community Air Sampling

No community air sampling was conducted during August 2012.

### 2d.2.3 Work Area Air Monitoring

Real-time air monitoring data were collected to provide information regarding airborne chemical concentrations for immediate use. MultiRAEs™ were used to collect real-time air quality data for VOCs, carbon monoxide (CO), and hydrogen sulfide ($H_2S$). If air monitoring indicated a VOC alarm above applicable action levels, benzene monitoring was initiated utilizing benzene-specific monitoring devices, including UltraRAEs™ and Gastec™ tubes. This information assisted field personnel with hazard assessment for potential worker and community exposure scenarios.

Real-time air monitoring in work areas was conducted from August 1 through and including August 31, 2012 with the exception of August 4, 5, 12, 19, and 26, 2012 when no oil recovery activities were being conducted. Real-time air monitoring readings were collected by Enbridge Safety in oil recovery work areas, which consisted of boom deployment and maintenance. A total of 573 readings were collected in the work areas during oil recovery activities during August 2012, including:

- 191 VOC readings,
- 191 CO readings, and
- 191 $H_2S$ readings.

There was one CO detection (50 parts per million) during boom deployment and maintenance activities conducted in August 2012 and was attributed to operation of a boat motor. There were no detections of VOCs or $H_2S$ during August 2012.

### 2d.2.4 Odor Response

In response to the release, Enbridge established a hotline number that remains available throughout the response activities for the public to communicate their concerns to Enbridge. As

work activities were initiated, the public was encouraged to use the hotline to report any perceived odor issues related to these activities. The most recent odor complaint received on this hotline was in October 2011. There were no calls regarding odor issues that required air sampling or monitoring efforts in August 2012.

## 2d.3 Work Planned

In September 2012, air monitoring and sampling activities per the approved *Air Monitoring and Sampling Addendum to the Sampling and Analysis Plan* (Enbridge, 2012(1)), will continue within work areas and within communities adjacent to oil recovery activities until modifications outlined in *Request for Modification of the Air Monitoring and Sampling Addendum to the Sampling and Analysis Plan* (Enbridge, 2012(2)) are approved. Specifically, air monitoring will be conducted within the work areas during oil recovery activities. Community air monitoring and sampling will only be initiated during specific conditions outlined in the *Air Monitoring and Sampling Addendum to the Sampling and Analysis Plan* (Enbridge, 2012(1)). Odor response activities will address odor complaints during periods of oil recovery activities.

# 2e.0 Submerged Oil Assessment and Recovery Activities

## 2e.1 Introduction

During August 2012, submerged oil assessment activities included poling, sediment collection from Walling Suspended Sediment (WSS) samplers, and quantification and agitation studies. Poling activities consisted of the 2012 Late Summer Reassessment (LSR), poling downstream of Morrow Lake Dam, and monitoring at fixed locations within Morrow Lake and Morrow Lake Delta, as well as along E 4.0 boom and curtain locations. The quantification and agitation studies were completed at the remaining locations within the Kalamazoo River.

No submerged oil recovery field activities were conducted during August 2012.

## 2e.2 Work Completed

### 2e.2.1 2012 Late Summer Reassessment Poling

2012 LSR poling occurred at 17 target areas on the Kalamazoo River from August 22 through and including August 28, 2012. The 2012 LSR poling was conducted by three poling teams which collected a total of 718 poling locations. The submerged oil category results of the 718 poling locations were classified as 86 'none', 338 'light', 211 'moderate', and 83 'heavy'. The poling locations and results are shown in *Figure 2e-1*.

In addition, poling was conducted downstream of the Morrow Lake Dam during August 20, 21, and 24, 2012. This effort was conducted by one poling team. Poling data was collected from a total of 95 locations; however, due to lack of landowner access permission, poling activities were not permitted in the area directly adjacent to Morrow Lake Dam to the first downstream island at approximately MP 39.95. The submerged oil category results of the 95 poling locations were all classified as "none'. The poling locations and results are shown in *Figure 2e-2*.

### 2e.2.2 Poling (Monitoring)

Submerged oil monitoring activities were conducted at fixed locations on Morrow Lake including the Sediment Fan and Morrow Lake Delta from August 1 through and including August 3, 2012. There are 65 pre-determined poling locations on Morrow Lake including the Sediment Fan. Monitoring was conducted by one poling team with one round of poling (Round 24), which began

during July 2012 and was completed in August 2012. The submerged oil category results of the 10 locations completed in August 2012 were classified as 0 'heavy', 4 'moderate', 4 'light', and 2 'none' locations. The 4 'moderate' locations were identified in the eastern portion of the lake. The poling locations and associated submerged oil results are provided in *Figure 2e-3*.

One round of poling was conducted during August 2012 on the Morrow Lake Delta including the neck between Morrow Lake Delta and Morrow Lake. A total of 67 pre-selected locations were poled. The results of poling conducted during this round (Round 8) showed 12 'heavy', 22 'moderate', 25 'light', and 8 'none' locations. The poling locations and associated submerged oil results are provided in *Figure 2e-4.*

Monitoring of E 4.0 boom and curtain locations was performed from August 6 through and including August 10, 2012 by one poling team. This monitoring occurred along the boom located within the neck between Morrow Lake Delta and Morrow Lake and in the western portion of Morrow Lake Delta. Poling was conducted approximately every 50 feet on the upstream and downstream side of the boom and curtain, except for one boom where poling was only conducted on the upstream side of the boom. On the upstream side of the boom and curtain, poling results were classified as 14 'heavy', 38 'moderate', 45 'light', and 5 'none' locations. The results of poling on the downstream side of the boom and curtain were classified as 2 'heavy', 39 'moderate', 42 'light', and 6 'none' locations. Poling results and associated submerged oil classifications for the E 4.0 boom and curtain locations are shown in *Figure 2e-5*.

### 2e.2.3 Walling Sediment Sampling

Additional field work for submerged oil activities included collection of suspended sediment from 20 WSS sample locations. Sediment collection was conducted by two field teams from August 13 through and including August 16, 2012.

### 2e.2.4 Quantification Evaluation Study

Sediment cores were collected from August 6 through and including August 8, 2012 to support the quantification of submerged oil. Field work was conducted by two core collection teams. During August 2012, a total of 37 sediment cores were collected throughout the Kalamazoo River and Morrow Lake Delta. Sediment core sample locations are shown in *Figure 2e-6*.

### 2e.2.5 Agitation Evaluation Study

The agitation study was performed from August 6 through and including August 8, 2012. The goals of the study were to evaluate the chemical and physical traits of submerged oil and sediment within the impacted Kalamazoo River system by monitoring and sampling sediment, water, sheen, and oil before, during and after agitation of river sediments. The agitation of river sediments was performed inside aluminum enclosures placed at impacted depositional locations. Six depositional locations along the Kalamazoo River System characterized by poling and containing moderate to heavy impacts to the sediment were the intended target evaluation locations. Field work was conducted by one team at three of the six locations during August 2012 (MP 5.55 North, MP 14.80, and Delta Z). Water and sheen net samples were submitted to the laboratory for fingerprint analysis and all sediment cores were frozen for future sampling. Agitation sample locations are shown in *Figure 2e-7*.

## 2e.3 Work Planned

### 2e.3.1 2012 Late Summer Reassessment Poling

Additional step-out poling locations at target areas in the Mill Ponds will be completed in September 2012.

### 2e.3.2 Poling (Monitoring)

The monitoring of Morrow Lake, Morrow Lake Delta, and E 4.0 boom and curtain locations will continue periodically in September 2012 to assess and characterize the presence of submerged oil to determine if assessed locations are changing or remaining static.

### 2e.3.3 Walling Sediment Sampling

The *2012 Consolidated Work Plan* (Enbridge, 2011) requires sampling of the Walling Suspended Sediment samplers on a monthly basis. Therefore, the WSS samplers will be sampled during September 2012.

### 2e.3.4 Quantification Evaluation Study

Data compilation, review, and quality control will continue in September 2012. Logging and sampling of frozen cores may also occur during September 2012. The quantification evaluation will resume when analytical results of the pilot study are received and reviewed.

### 2e.3.5 Agitation Evaluation Study

Data compilation, logging, and sampling of frozen cores may also occur during September 2012.

# 2f.0 Remedial Investigation Activities

## 2f.1 Introduction

Remedial investigation (RI) activities conducted in August 2012 were in support of the Kalamazoo River RI Program. Activities for the remedial investigations were conducted in accordance with the following work plan:

- *Investigation Work Plan for Source Area (A1)* approved by U. S. EPA on May 21, 2012 (Enbridge, 2012(1)).

## 2f.2 Work Completed

### 2f.2.1 HP OSCAR Remedial Investigation

No activities related to expedited remedial investigations at High Priority Outstanding Sites Characterization and Reconciliation (HP OSCAR) locations occurred during August 2012.

### 2f.2.2 Kalamazoo River Remedial Investigation

Field activities related to the Kalamazoo River RI were suspended on August 6, 2012. August 2012 activities were confined to compilation of Kalamazoo River RI data for Parcel Primer development (see *Section 2f.2.3*) and generation of several documents for submittal to the MDEQ.

The documents submitted to the MDEQ in August 2012 and pending approval include:

- *Work Plan for Hydrocarbon Fingerprint Evaluation in Overbank Soils* submitted August 23, 2012 (Enbridge, 2012(2)), and
- *Work Plan for Overbank Soil Background Metals Evaluation* submitted August 30, 2012 (Enbridge, 2012(3)).

Documents remaining in progress through August 2012 include:

- *Remedial Investigation Work Plan for Collection of Cores and Line 6B samples for Petro-Physical Testing in Support of Tier 1 NAPL Conceptual Site Model*, and
- *Non-Aqueous Phase Liquid (NAPL) Conceptual Site Model.*

### 2f.2.3 Parcel Primers and Presentations

A Parcel Primer development and presentation procedure was initiated in June 2012. The purpose of the Parcel Primer is to provide the parcel owner with documentation of Enbridge and MDEQ concurrence that further operations and maintenance and/or remedial investigation activities are not required on the subject parcel.

Each parcel is categorized into one of three color code designations:

- "No Color" – Parcel does not require investigation, data compilation, or review,
- "Green Hatched" – Limited data compilation and a "Live GIS" presentation to show lack of historical issues, and
- "Orange" – Parcel requires RI activities and a full primer package.

The final templates for the primer package and concurrence form remain under review by MDEQ.

No Parcel Primers were submitted for MDEQ review and concurrence in August 2012.

### 2f.2.4 Additional Investigations

Additional investigation activities were conducted in August 2012 in support of and in accordance with the *Investigation Work Plan for Source Area (A1)* approved by the U.S. EPA on May 21, 2012 (Enbridge, 2012(1)). The objective of this work plan was to identify and characterize the nature and extent of any residual oil impact in Sub-Unit A1 of the Source Area.

Initial field activities were conducted in Sub-Unit A1 during June 2012 and a complete observation and data summary were provided to the U.S. EPA as the *Summary of Findings for the Investigation Work Plan for Source Area (A1)* submitted in memorandum form on July 6, 2012 (Enbridge, 2012(4)). Additional field activities were conducted in Sub-Units A2, A3, and A4 of the Source Area from July 18 through and including July 21, 2012.

Field activities to investigate potential data gaps identified in a July 25, 2012 MDEQ review of available information from previous Source Area response and investigation activities were initiated on July 31, 2012 and continued into August 2012. These additional investigation activities were conducted in accordance with the *Investigation Work Plan for Source Area (A1)* (Enbridge, 2012(1)) and per the previous July 2012 investigation. Activities performed included the following:

- Soil and sediment core collection via manual techniques,
- Soil and sediment sampling from the collected cores,
- Continuous logging of collected cores,
- Evaluation of soil and sediment cores using ultraviolet light,
- Installation of temporary monitoring wells in select soil borings,
- Groundwater sampling via low-flow techniques, and
- Global positioning system collection of horizontal (X, Y) coordinates for each boring and bulk sediment location.

Soil, sediment, and groundwater samples were collected and analyzed for:

- VOCs,
- Polynuclear aromatic hydrocarbons,
- Four select metals (beryllium, vanadium, nickel, and molybdenum), and
- Total petroleum hydrocarbons as diesel range organics and oil range organics.

The source area remedial investigation boring locations of soil and sediment and temporary monitoring wells installed in Sub-Units A1 and A2 are presented in *Figure 2f-1*.

## 2f.3 Work Planned

Planned RI activities for September 2012 consist of:

- Continue data compilation and Parcel Primer generation with presentations as necessary,
- Complete and submit RI documents in progress through August 2012,
- Continue implementation of field activities for Kalamazoo River RI (MP 2.25 to Ceresco Dam (MP 5.80)) in accordance with *Remedial Investigation Work Plan for Kalamazoo River (MP 2.25 to MP 3.14)* approved by MDEQ on November 18, 2011 (Enbridge, 2011), and *Remedial Investigation Work Plan for Kalamazoo River (MP 3.14 to Ceresco Dam (MP 5.80))* approved by MDEQ on January 13, 2012 (Enbridge, 2012(5)), as necessary,
- Continue implementation of the Kalamazoo River RI (MP 5.80 to MP 11.00) in accordance with *Remedial Investigation Work Plan for Kalamazoo River (MP 5.80 to MP 11.00)* approved by MDEQ on February 10, 2012 (Enbridge, 2012(6)), as necessary,

- Continue implementation of the Kalamazoo River RI (MP 11.00 to Morrow Lake Dam) in accordance with the *Remedial Investigation Work Plan for Kalamazoo River (MP 11.00 to Morrow Lake Dam)* approved by MDEQ on March 8, 2012 (Enbridge, 2012(7)), as necessary, and
- Continue implementation of the additional investigation of potential data gaps in the Source Area in accordance with the *Investigation Work Plan for Source Area (A1)* approved by the U.S. EPA on May 21, 2012 (Enbridge, 2012(1)), as necessary.

# 2g.0 Temporary Facility Restoration and Demobilization Activities

## 2g.1 Introduction

Approximately 95 work sites have been used for release response activities to provide river access, staging of equipment and materials, decontamination, waste staging, and similar activities. As response and remediation work was completed, site decommissioning and site closure activities including removal of equipment and consumables, implementation of soil erosion and sediment control measures, restoration of the site to pre-response conditions, and inspections were performed. If appropriate, verification soil samples were collected for laboratory analysis in accordance with MDEQ requirements outlined in *RRD Operational Memorandum No. 2* (MDEQ, 2004) for comparison to Part 201 of Michigan's Act 451 of 1994, as amended, and Generic Residential Criteria in accordance with the *Soil Staging, Decontamination & River Access Site Closure Plan* (Enbridge, 2011), currently under review by MDEQ and U.S. EPA. The MDEQ is notified of each sampling event.

## 2g.2 Work Completed

### 2g.2.1 River Access Sites and Other Work Sites

No soil samples were collected at either river access sites or other work sites during August 2012.

### 2g.2.2 Soil Staging and Decontamination Areas

No site decommissioning samples were collected at soil staging and decontamination areas in August 2012.

## 2g.3 Work Planned

Sampling activities are tentatively planned for the northern area of Frac Tank City (FTC) during September 2012.

# 2h.0 River Bank Erosion Control and Restoration Activities

## 2h.1 Introduction

In August 2012, erosion control and restoration activities were conducted at one Environment, Right-of-Way, and Operations (ERO) site, one Bridge and Access Site, and along Talmadge Creek. Sites requiring erosion control and restoration activities were identified during work plan development, Kalamazoo River Bank Erosion Assessment (KRBEA) site monitoring events, or in coordination with representatives of Enbridge and the MDEQ. During August 2012, the following activities were conducted for numerous locations as described below and in *Section 2h.2:*

- Restoration of areas following oil recovery efforts,
- Monitoring of previously restored areas,
- Design and monitoring of wetland mitigation areas,
- Implementing of sediment and erosion control measures, and
- Continuation of MDEQ and Michigan Department of Natural Resources (MDNR) permitting efforts.

## 2h.2 Work Completed

During August 2012, localized shrub and tree planting was completed along Talmadge Creek. These activities are summarized in *Table 2h-1* below.

| Talmadge Creek Segments | Unique Site Identification | Work Completed |
|---|---|---|
| MP 0.50 - 0.75 | Talmadge Creek (Division Drive to Station 37+00) | Installed approximately 970 shrubs and 52 trees to complete portions of final restoration measures and improve habitat. |

**Table 2h-1. Talmadge Creek Restoration Work Areas**

Restoration and erosion control activities were completed at one Bridge and Access site as summarized in *Table 2h-2*.

| Kalamazoo River Segment | Unique Site Identification | Work Completed |
|---|---|---|
| MP 15.50 – 15.75 | MP 15.66 Left Descending Bank (LDB) (Battle Creek Dam Access Site) | Raked soil in an area approximately 11,200 square feet in size, and installed approximately 9,200 square feet of mesic prairie seed, 2,000 square feet of ryegrass seed, and 11,200 square feet of straw mulch over the entire area to restore the previous vehicle access corridor. |

**Table 2h-2. Bridge and Access Site Restoration Work Areas**

Restoration and erosion control activities were completed at one ERO site as summarized in *Table 2h-3*.

| Kalamazoo River Segment | Unique Site Identification | Work Completed |
|---|---|---|
| MP 26.75 – 27.00 | MP 26.80 Right Descending Bank (RDB) | Installed approximately 240 linear feet of BioD-Block, 62 cubic yards of clay loam soil, 8 cubic yards of 2 to 4-inch stone, 2,600 square feet of native emergent wetland seed, 12,800 square feet of grass seed, 930 square feet of jute blanket, and 12,800 square feet of straw to construct soil lifts to stabilize the subject site. |

**Table 2h-3. ERO Site Restoration Work Areas**

KRBEA trips are made to assess, rank, and score Kalamazoo River sites exhibiting signs of existing erosion or potential for future erosion. KRBEAs are scheduled to occur every other month; however, adjustments to this schedule are made based on water levels, boating activity, and the ability to access and monitor the riverbank. The most recent KRBEA river trip was conducted from August 22 through and including August 23, 2012 (Monitoring Trip No. 9). Results from this trip will be presented in the *Kalamazoo River Bank Erosion Assessment and Action Plan Summary Report – Monitoring Trip No. 9*, which is currently under development for submittal to MDEQ.

One of the nine high-priority KRBEA sites identified during Monitoring Trip No. 1 (November 28 through and including November 30, 2010), Raymond Road (MP 12.20 L1), has yet to be stabilized or restored. On August 17, 2012 MDEQ Permit # 12-13-0019-P was issued to allow completion of the proposed activities. Restoration activities are proposed for completion during September 2012.

Restoration activities were conducted to provide additional stabilization on one previously-stabilized KRBEA site in August 2012. This work is summarized in *Table 2h-4*.

| Kalamazoo River Segment | Unique Site Identification | Work Completed |
|---|---|---|
| MP 22.50 – 22.75 | 22.60L | Installed 250 linear feet of brush bundles and woody debris and installed 15 live willow stakes to complete restoration of the subject site. |

**Table 2h-4. Kalamazoo River Bank Erosion Assessment Site Restoration Work Areas**

Other restoration and assessment activities completed in August 2012 included:

- Initiated or continued work on numerous MDEQ or MDNR permit application packages and supporting documents for HP OSCAR, Submerged Oil, KRBEA, ERO, or other future restoration work sites including the Source Area (A1-A4), the KRBEA Raymond Road site (12.20 L1), MP 23.10 RDB, MP 26.80 RDB, and the E 4.0 containment boom,
- Continued to irrigate previously-installed restoration plantings at the C3.2 Launch Site (MP 10.00 LDB), the C3.7 Launch Site (MP 11.5 LDB), OB 13.40 LDB, and the Custer Road Restoration Area (MP 21.5 RDB), and
- Continued mitigation plan coordination and development for potential wetland mitigation locations.

## 2h.3 Work Planned

Work planned for September 2012 is as follows:

- Continue erosion control and restoration activities along the Kalamazoo River,
- Conduct post-construction inspections of completed restoration sites,
- Complete site restoration activities for the high-priority KRBEA site at Raymond Road (MP 12.20 L1),
- Continue MDEQ permit application development and ecological assessments for designated work sites and projects,
- Respond to MDEQ comments for the *Invasive Species Management Plan* (Enbridge, 2012(1)), and
- Respond to MDEQ comments for the *Talmadge Creek Final Restoration Plan* (Enbridge 2012(2)).

# 2i.0 Sediment Traps and Cylindrical Sampling Devices

## 2i.1 Introduction

During August 2012, sediment trap and cylindrical sampling device (CSD) activities included monitoring, measuring water depths for proposed CSD locations, measuring baseline bathymetry, and monitoring data compilation. All six existing sediment trap and CSD locations were monitored, and the water depth in future proposed trap and CSD locations was assessed to determine if there was sufficient water for trap and CSD installation. In addition, Hydrologic Engineering Center – River Analysis System (HEC-RAS) modeling continued to be performed to predict the calculated 100-year flood backwater effects for the E 4.0 Containment System.

## 2i.2 Work Completed

During August 2012, the following reports were submitted to U.S. EPA and MDEQ for review:

- *Evaluation of Potential Floodplain Impacts and Proposed Operational Modifications for Containment Near MP 37.50,* submitted to MDEQ on August 28, 2012 (Enbridge, 2012(1)).

During August 2012, data compilation included calculating the rate of sedimentation in the CSD sample jars. The sedimentation rates were determined through review and evaluation of the data collected during the sixth round monitoring event conducted in August 2012. The results for the sedimentation rates within the CSD sample jars are attached as *Table 2i-1* (See Attached).

During August 2012, no sediment traps, sediment structures, or CSDs were installed.

### 2i.2.1 Sediment Trap Monitoring

During August 2012, monitoring was conducted at the six installed sediment trap locations (MP 10.75 LDB, MP 14.75 RDB, MP 19.25 LDB, MP 21.50 RDB, MP 28.25 RDB, and MP 36.10 NW) in accordance with the *Sediment Trap Monitoring and Maintenance Plan*, approved by U.S. EPA on July 10, 2012 (Enbridge, 2012(2)). Monitoring activities included poling, measurement, and sampling of the sediment collected in the CSD samplers. In addition, quarterly bathymetry measurements began at sediment trap MP 33.00 A.

Poling activities were conducted along transects that correspond to the CSD locations within each sediment trap. When the submerged oil classification for the poling locations resulted in 50% or more locations classified as 'moderate' and/or 'heavy', step-outs were conducted to delineate the areas. Step-out poling locations were conducted at sediment traps: MP 10.75 LDB, MP 14.75 RDB, and MP 21.50 RDB.

At sediment trap MP 10.75 LDB 17, poling locations were collected along the CSD transects and 18 step-out poling locations were collected for a total of 35 poling locations. The 35 poling locations were characterized with the following submerged oil classifications:

- 10 'Heavy',
- 6 'Moderate',
- 15 'Light', and
- 4 'None'.

At sediment trap MP 14.75 RDB 17, poling locations were collected along the CSD transects and 20 step-out poling locations were collected for a total of 37 poling locations. The 37 poling locations were characterized with the following submerged oil classifications:

- 11 'Heavy',
- 5 'Moderate',
- 15 'Light', and
- 6 'None'.

At sediment trap MP 19.25 LDB, a total of 27 poling locations along the CSD transects were characterized with the following submerged oil classifications:

- 0 'Heavy',
- 2 'Moderate',
- 25 'Light', and
- 0 'None'.

At sediment trap MP 21.50 RDB, 24 poling locations were collected along the CSD transects and 42 step-out poling locations were collected for a total of 66 poling locations. The 66 poling locations were characterized with the following submerged oil classifications:

- 16 ‘Heavy’,
- 15 ‘Moderate’,
- 34 ‘Light’, and
- 1 ‘None’.

At sediment trap MP 28.25 RDB, a total of 15 poling locations along the CSD transects were characterized with the following submerged oil classifications:

- 1 ‘Heavy’,
- 3 ‘Moderate’,
- 10 ‘Light’, and
- 1 ‘None’.

At sediment trap MP 36.10 NW, a total of 18 poling locations along the CSD transects were characterized with the following submerged oil classifications:

- 0 ‘Heavy’,
- 0 ‘Moderate’,
- 16 ‘Light’, and
- 2 ‘None’.

Results of the poling activities are shown in *Figure 2i-1*.

In August 2012, sediment samples were collected, composited, and submitted for analysis from the following CSD locations in sediment traps MP 10.75 LDB, MP 21.50 RDB, and MP 36.10 NW:

- CSKR1075C03,
- CSKR2150C01,
- CSKR2150C02,
- CSKR2150C03,
- CSKR3610C01,
- CSKR3610C02, and
- CSKR3610C03.

In August 2012, water levels were measured at the proposed CSD locations to determine if the proposed CSDs would be fully submerged. This was performed due to the low water levels in the Kalamazoo River. The minimum water depth required to fully submerge a CSD is 0.80 feet. These water levels were measured concurrently during sediment trap monitoring. The water depths at proposed CSD locations are presented in *Table 2i-2* (See Attached), and are shown as the water depth greater than or less than 0.80 feet in *Figure 2i-2*.

In August 2012, baseline transect poling at Ceresco Impoundment and quarterly bathymetry measurements were conducted at one proposed sediment trap location (MP 33.00 A) in accordance with the *Sediment Trap Monitoring and Maintenance Plan*, approved by U.S. EPA on July 10, 2012 (Enbridge, 2012(2)). The baseline transect poling at Ceresco Impoundment and bathymetry data collected at MP 33.00 A results are shown in *Figure 2i-3* and *Figure 2i-4*, respectively.

### 2i.2.2 Model Calculations

During August 2012, a HEC-RAS evaluation continued for the potential floodplain impacts from the E 4.0 Containment System. The HEC-RAS evaluation determined that the permitted E 4.0 Containment System may cause a harmful interference at a critical structure situated in the floodplain, located upstream of the E 4.0 Containment System near MP 36.00. The memo, *Evaluation of Potential Floodplain Impacts and Proposed Operational Modifications for Containment Near MP 37.50*, submitted to MDEQ on August 28, 2012 (Enbridge, 2012(1)), also specifies operational modifications to the E 4.0 Containment System that will eliminate the

harmful interference and potential impacts to the critical structure resulting from E 4.0 Containment System installation.

## 2i.3 Work Planned

During September 2012, monitoring of sediment traps is planned for the week of September 17, 2012. In addition, sedimentation rates within the CSD sample jars will be calculated.
In September 2012, quarterly bathymetry is planned to continue at the remainder of the proposed sediment traps as well as all of the installed sediment traps. In addition, installation of the proposed sediment traps and CSD locations is planned for the month of September.

# 2j.0 Waste Management Activities

## 2j.1 Introduction

In August 2012, waste management activities were conducted in accordance with the *Waste Treatment, Transportation, and Disposal (WTTD) Plan* (WTTD Plan) (Enbridge, 2011(1)) approved by U.S. EPA on May 17, 2011, the *Addendum to the Revised Waste Treatment, Transportation and Disposal Plan (May 20, 2011)* (Enbridge, 2011(2)) approved by U.S. EPA on June 20, 2011, and the *Operation and Maintenance Excavation Work Plan titled Waste Best Management Practices* (Enbridge, 2011(3)) approved by U.S. EPA on June 29, 2011.

Generated waste streams included, but were not limited to:

- Crude oil impacted debris,
- Non-impacted debris - Municipal Solid Waste (MSW),
- Crude oil impacted soil,
- Miscellaneous other small volume materials,
- Crude oil impacted water, and
- Non-impacted precipitation.

*Table 2j-1* provides a list of transporters and disposal facilities used for management of each waste stream.

| Waste Stream | Disposal Company | EPA ID Number | Treatment Option | Transporter |
|---|---|---|---|---|
| Wastewater (Non-Hazardous) | Dynecol, Inc. | MID 074 259 565 | Wastewater Treatment | PVS Transportation<br>HM Environmental<br>SET Environmental, Inc. and sub-contractors |
| Wastewater (Non-Hazardous) | Liquid Industrial Waste Services (LIWS) | MID 006 546 121 | Wastewater Treatment | LIWS |
| Wastewater (Non-Hazardous) | Plummer's Environmental Services | MIK 111 229 563 | Wastewater Treatment | Plummer's Environmental Services |
| Wastewater (Non-Hazardous) | Marshall Publicly Owned Treatment Works (POTW)<br>Muskegon POTW<br>Kalamazoo POTW<br>Battle Creek POTW | | Wastewater Treatment POTW | LIWS<br>Clean Harbors Environmental Quality Company<br>SET Environmental, Inc. and sub-contractors |
| Non-Hazardous Waste Solid | Republic Services C&C Landfill | MID 985 618 420 | Landfill | SET Environmental, Inc. and sub-contractors |
| Non-Hazardous Soil | Republic Services C&C Landfill | MID 985 618 420 | Landfill | SET Environmental, Inc. and sub-contractors |

**Table 2j-1. Waste Transporters and Disposal Facilities August 2012**

## 2j.2 Work Completed

*Table 2j-2* is a summary of the active waste streams and any shipments that occurred during August 2012. The cumulative amount of each waste type generated during response is the total shipped as of August 31, 2012. The processes that generate each waste stream are described further in the following sections. Waste manifests and bills of lading received in August 2012 are included in *Appendix F*.

| Waste Stream | Shipped to | Quantity Shipped in August 2012 | Cumulative Total Shipped as of August 31, 2012 | Unit of Measure |
|---|---|---|---|---|
| Non-Hazardous Soil | C&C Landfill Marshall, MI | 0.0 | 76,443 | Cubic Yards |
| Non-Hazardous Debris (oily debris) | C&C Landfill Marshall, MI | 19.45 | 7,065 | Tons |
| Non-Hazardous Debris (MSW, non-impacted) | C&C Landfill Marshall, MI | 38.37 | 1,756 | Tons |
| Non-Hazardous Water (precipitation) | POTW Battle Creek, MI | 0.0 | 1,143,280 | Gallons |
| Non-Hazardous Water | Dynecol Detroit, MI | 0.0 | 981,792 | Gallons |
| Non-Hazardous Water | LIWS, Inc. | 0.0 | 1,376,757 | Gallons |
| Non-Hazardous Water | Plummer's Environmental Services | 24,200 | 416,726 | Gallons |

**Table 2j-2. Waste Shipment Summary Through August 31, 2012**

### 2j.2.1 Oily Debris

Oily debris was segregated from non-oily debris and stored in lined 20-cubic yard roll off boxes and transported to Republic Services' C&C Landfill in Marshall, Michigan for disposal. Handling procedures for oily debris were conducted in accordance with procedures outlined in the approved WTTD Plan (Enbridge, 2011(1)). Based on how the waste was generated (e.g. control points), sampling and required analyses were performed in accordance with the WTTD Plan (Enbridge, 2011(1)).

### 2j.2.2 Non-Impacted Debris

Non-impacted (non-oily) debris or MSW generated at field locations was transported to Republic Services' C&C Landfill in Marshall, Michigan using lined 20-cubic yard roll off boxes. Non-impacted debris was not sampled and was not included in the recovered oil calculations. The non-hazardous designation for the debris was based on generator knowledge.

### 2j.2.3 Soil

Disposal requirements for oil impacted soil are based on an evaluation of analytical data. Non-hazardous oil impacted soil was not generated in August 2012. In addition, hazardous soil was not generated during August 2012.

### 2j.2.4 Miscellaneous Small Quantity Waste Streams

Miscellaneous small quantity waste streams have been generated throughout the project. These wastes have primarily been stored in drums and include, but are not limited to: used oil, batteries, small quantities of medical waste, and lab samples. These waste streams have been characterized individually and disposed at approved facilities as required.

### 2j.2.5 Decontamination and Precipitation Wastewater

Accumulated water from decontamination and precipitation at FTC's soil staging cell containment was transported to Plummer's Environmental Services for disposal. A total of 24,200 gallons were disposed in August 2012.

### 2j.2.6 Recovered Oil Calculations

The quantity of oil contained in waste materials has been calculated since the beginning of the release response. Oil and grease analytical results for oily solids and oily liquids are used to calculate recovered oil volumes. The oil quantity calculation is based on the concentration of oil (analytical results) in the waste and the total amount of waste shipped. Recovered oil values are determined for each waste stream and a recovered oil summary is reported weekly to the U.S. EPA. A summary of this report through September 5, 2012 is provided in *Table 2j-3*.

| Waste Stream | Weekly Oil Recovery Estimates (gallons) | | | | | Cumulative Oil Recovery Estimate (gallons) |
|---|---|---|---|---|---|---|
| | 8/6/2012 | 8/13/2012 | 8/20/2012 | 8/27/2012 | 9/5/2012 | |
| **Soil (Non-Haz)** (Impacted Soil & Debris) C&C Landfill | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **13,814** |
| **Soil (Haz)** (Impacted Soil & Debris) Envirosafe/Westside Recycling & Disposal Facility (RDF) | -- | -- | -- | -- | -- | **278,665** |
| **Geotube Sediment** (Impacted Sediment) Westside RDF | -- | -- | -- | -- | -- | **1,298** |
| **Debris (Non-Haz)** (Roll Off Boxes with Impacted Sorbents, boom, pads, plastic, Personal Protective Equipment, vegetation, and biomass) | 0.4 | 55.8 | 50.9 | 0.0 | 0.0 | **34,072** |
| **Wastewater (Haz)** FTC - Influent to Carbon Filtration System | -- | -- | -- | -- | -- | **8,109** |
| **Wastewater (Non-Haz)** FTC - Water to Dynecol/ LIWS/Plummer's/City of Battle Creek | 0.0 | 0.0 | 0.05 | 0.02 | 0.00 | **46,176** |
| **Wastewater (Non-Haz)** Battle Creek - Non-Hazardous rain water Ceresco Dredge and C05 Inactive Decon Pad | -- | -- | -- | -- | -- | **--** |
| **Wildlife Center Wastewater (Non-Haz)** Water to Plummer's | -- | -- | -- | -- | -- | **--** |
| **Ceresco Pretreatment System** | -- | -- | -- | -- | -- | **90** |
| **A-1 Pretreatment System (Haz)** | -- | -- | -- | -- | -- | **9** |
| **Oily Water (Non-Haz)** Recoverable Petroleum Product to Griffith | -- | -- | -- | -- | -- | **766,288** |
| | | | | | | **Total: 1,148,520** |

**Table 2j-3. Weekly and Project Cumulative Recovered Oil Through September 5, 2012**

## 2j.3 Work Planned

Waste management activities are planned to continue in accordance with the plans referenced in *Section 2j.1*. Soils with no free liquids will be transported either directly to FTC and stockpiled using a bill of lading or transported directly to a landfill using a manifest in accordance with the

approved *Addendum to the Revised Waste Treatment, Transportation, and Disposal Plan* (Enbridge, 2011(2)). Each soil stockpile will have a representative sample (one 4-point composite sample collected and homogenized for oil and grease analysis) collected for every 200 cubic yards of waste soil. Each load transported directly to the landfill will have one scoop (single point aliquot) of soil collected for oil and grease analysis prior to leaving the site per the approved *Operation and Maintenance Excavation Work Plan titled Waste Best Management Practices* (Enbridge, 2011(3)).

# 2k.0 Overbank Excavation Activities

## 2k.1 Introduction

During August 2012, planning was conducted for overbank excavation activities to be performed at the Source Area based on the results of recent investigation activities at the Source Area and presented in the memorandum *Summary of Findings for the Investigation Work Plan for Source Area (A1)* (Enbridge, 2012(1)) submitted to the U.S. EPA on July 6, 2012. Additional investigation activities were performed July 18 through and including July 23, 2012. Based upon these findings, Enbridge proposes surficial soil scraping activities. Soil scraping will occur at the areas shown to be impacted during the previous investigations.

## 2k.2 Work Completed

No overbank excavation field activities were conducted during August 2012.

## 2k.3 Work Planned

During September 2012, overbank excavation activities are scheduled to begin at the Source Area on September 17, 2012 in accordance with the *Response Action Work Plan for the Source Area* (Enbridge, 2012(2)) approved by MDEQ on August 20, 2012.

# 2l.0 Overbank Oil Recovery Activities

## 2l.1 Introduction

During August 2012, no overbank oil recovery activities were conducted.

## 2l.2 Work Completed

No overbank oil recovery activities were conducted during August 2012.

## 2l.3 Work Planned

No overbank oil recovery activities are scheduled during September 2012.

# 2m.0 Hydrodynamic Assessment and Model Activities

## 2m.1 Introduction

Hydrodynamic assessment data has been used to develop an understanding of the riverine and floodplain system by identifying physical patterns and migration rates of sediment caused by various river conditions. During August 2012, velocity measurement data processing, formatting, and plotting, and dam rating curves were completed to support the site hydrodynamic model in accordance with the *Hydrodynamic Assessment Work Plan* (Enbridge, 2011) submitted to U.S. EPA on September 30, 2011.

## 2m.2 Work Completed

During August 2012, velocity measurements collected in Morrow Lake and select locations in the Kalamazoo River were processed, formatted, and plotted to show flow direction and velocity results.

### 2m.2.1 Hydrodynamic Modeling

Comments were received from the U.S. EPA and reviewed for the *Kalamazoo River Hydrodynamic and Sediment Transport Model* in August 2012 (Enbridge, 2012(1)).

### 2m.2.2 Water Velocity Monitoring

Velocity measurements collected in June 2012 along transects and at single point stations throughout Morrow Lake as well as in the Kalamazoo River near the Mill Ponds (MP 14.25 to MP 15.50) and above Ceresco Dam (MP 5.50 to MP 5.75) were processed to select representative depth intervals in August 2012. The process included an initial quality control review of the raw data from the velocity measurments. Transect and station velocity data were formatted and plotted to illustrate flow direction and velocity at depth intervals from 20% to 90% of the profile depth (Z) (0.2Z to 0.9Z). *Figures 2m-1* through *2m-4* show the station velocity monitoring results for flow direction and velocity at representative depth interval, 0.6Z.

## 2m.3 Work Planned

The U.S. EPA comments on the *Kalamazoo River Hydrodynamic and Sediment Transport Model* (Enbridge, 2012(1)) and *Rating Curves* (Enbridge, 2012) will be discussed and a strategy to address the comments will be developed.

# 3.0 Conclusion

As described in this monthly progress report for August 2012, Enbridge continued to conduct activities required under the U.S. EPA Order and Supplemental Order and to conduct activities pursuant to the MDEQ Order. The work conducted and data received during September 2012 will be included in the monthly report to be submitted on October 27, 2012.

# 4.0 References


**Section 1.0 Introduction**

Enbridge, 2012. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Response Action Work Plan for the Source Area."* Approved by MDEQ on August 20, 2012.

MDEQ, 2010. "Administrative Consent Order and Partial Settlement Agreement entered *In the Matter of Enbridge Energy Partners, L.P., and Enbridge Energy, Limited Partnership*, proceedings under the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.101 et seq. signed November 1, 2010."

U.S. EPA, 2010. "*Removal Administrative Order Section 311(c) of the Clean Water Act*, issued on July 27, 2010 to Enbridge Energy Partners, L.P., Docket Number: CWA 1321-5-10-001 as modified by Paragraph 6 of the Supplement to Order for Compliance Under Section 311(c) of the Clean Water Act, issued by the U.S. EPA Region 5 on September 23, 2010 to Enbridge Energy Partners, L.P. *et al.*, Respondents, Docket No: CWA 1321-5-10-001."

**Section 2a.0 Surface Water and Sediment Monitoring Activities**

Enbridge, 2012(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Addendum to the Sampling and Analysis Plan (SAP): Attachment C - Surface Water and Sediment Monitoring Supplement to the Sampling and Analysis Plan.*" Approved by MDEQ on May 18, 2012.

MDEQ, 2011. "*Rule 57 Water Quality Values*" "*Rule 323.1057 (Toxic Substances) of the Part 4 Water Quality Standards.*" June 2011.

**Section 2b.0 Water Quality Monitoring Activities**

Enbridge, 2011. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Water Quality Measurement Standard Operating Procedure.*" Approved by MDEQ on September 22, 2011.

**Section 2c.0 Potable Water Investigation Activities**

Enbridge, 2012(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Addendum to Sampling and Analysis Plan (SAP): Attachment B - Drinking Water Well Supplement to the Sampling and Analysis Plan.*" Approved by MDEQ on May 18, 2012.

Enbridge, 2012(2). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Request for Reduction of the Drinking Water Monitoring Program.*" Submitted to MDEQ on August 9, 2012.

Enbridge, 2012(3), "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan *Augusta June 2012 Groundwater Sample Results*." Submitted to Village of Augusta, Village of Augusta Chief of Police Jeff Heppler, and a courtesy copy provided to MDEQ in August, 2012.

Enbridge, 2012(4). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan *Kalamazoo June 2012 Groundwater Sample Results*." Submitted to City of Kalamazoo and a courtesy copy provided to MDEQ in August, 2012.

**Section 2d.0 Air Sampling and Monitoring Activities**

Enbridge, 2012(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Air Monitoring & Sampling Addendum to the Sampling & Analysis Plan.*" Submitted to U.S. EPA on December 9, 2011 and resubmitted on January 31, 2012, March 28, 2012, and May 3, 2012. Approved by U.S. EPA on May 4, 2012.

Enbridge, 2012(2). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Request for Modification of the Air Monitoring and Sampling Addendum to the Sampling and Analysis Plan.*" Submitted to U.S. EPA on August 17, 2012.

**Section 2e.0 Submerged Oil Assessment and Recovery Activities**

Enbridge, 2011. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Addendum to the Response Plan for Downstream Impacted Areas, August 2, 2010 (Revised August 17, 2010 per U.S. EPA August 17, 2010 letter), Supplement to Source Area Response Plan and Supplement to Response Plan for Downstream Impacted Areas, Referred to as Operations and Maintenance Work Plan commonly referred to as "Consolidated Work Plan for Activities through 2012.*" Submitted to U.S. EPA on October 20, 2011.

**Section 2f.0 Remedial Investigation Activities**

Enbridge, 2011. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Remedial Investigation Work Plan for Kalamazoo River (MP 2.25 to MP 3.14).*" Approved by MDEQ on November 18, 2011.

Enbridge, 2012(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Investigation Work Plan for Source Area (A1).*" Approved by U.S. EPA on May 21, 2012.

Enbridge, 2012(2). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan*; Work Plan for Hydrocarbon Fingerprint Evaluation in Overbank Soils.*" Submitted to MDEQ on August 23, 2012.

Enbridge, 2012(3). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan*; Work Plan for Overbank Soil Background Metals Evaluation.*" Submitted to MDEQ on August 30, 2012.

Enbridge, 2012(4). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Summary of Findings for the Investigation Work Plan for Source Area (A1).*" Submitted to U.S. EPA in memorandum form on July 6, 2012.

Enbridge, 2012(5). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Remedial Investigation Work Plan for Kalamazoo River (MP 3.14 to Ceresco Dam (MP 5.80)).*" Approved by MDEQ on January 13, 2012.

Enbridge, 2012(6). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Remedial Investigation Work Plan for Kalamazoo River (MP 5.80 to MP 11.00).*" Approved by MDEQ on February 10, 2012.

Enbridge, 2012(7). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan*; Remedial Investigation Work Plan for Kalamazoo River (MP 11.00 to Morrow Lake Dam).*" Approved by MDEQ on March 8, 2012.

**Section 2g.0 Temporary Facility Restoration and Demobilization Activities**

Enbridge, 2011. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Soil Staging, Decontamination and River Access Site Closure Plan.*" Submitted to U.S. EPA and MDEQ on January 11, 2011.

MDEQ, 2004. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *RRD Operational Memorandum No. 2, MDEQ Remediation and Redevelopment Division, Sampling and Analysis.*" October 22, 2004.

**Section 2h.0 River Bank Erosion Control and Restoration Activities**

Enbridge, 2012(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Invasive Species Management Plan.*" Submitted to MDEQ on June 1, 2012.

Enbridge, 2012(2). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Final Restoration Plan Talmadge Creek.*" Submitted to MDEQ on June 1, 2012.

**Section 2i.0 Sediment Traps and Cylindrical Sampling Devices**

Enbridge, 2012(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Evaluation of Potential Floodplain Impacts and Proposed Operational Modifications for Containment Near MP 37.5.*" Submitted to MDEQ on August 28, 2012.

Enbridge, 2012(2). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Sediment Trap Monitoring and Maintenance Plan.*" Approved by U.S. EPA on July 10, 2012.

**Section 2j.0 Waste Management Activities**

Enbridge, 2011(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Waste Treatment, Transportation, and Disposal Plan.*" Approved by U.S. EPA on May 17, 2011.

Enbridge, 2011(2). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Addendum to the Revised Waste Treatment, Transportation and Disposal Plan.*" Approved by U.S. EPA on June 20, 2011.

Enbridge, 2011(3). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Operation and Maintenance Excavation Work Plan titled Waste Best Management Practices.*" Approved by U.S. EPA on June 29, 2011.

**Section 2k.0 Overbank Excavation Activities**

Enbridge, 2012(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Summary of Findings for the Investigation Work Plan for Source Area (A1).*" Submitted in memorandum form to U.S. EPA on July 6, 2012.

Enbridge, 2012(2). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Response Action Work Plan for the Source Area.*" Approved by MDEQ on August 20, 2012.

**Section 2m.0 Hydrodynamic Assessment and Model Activites**

Enbridge, 2011. "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Hydrodynamic Assessment Work Plan.*" Submitted to the U.S. EPA on September 30, 2011.

Enbridge, 2012(1). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Kalamazoo River Hydrodynamic and Sediment Transport Model.*" Submitted to the U.S. EPA on April 20, 2012.

Enbridge, 2012(2). "Enbridge Line 6B MP 608 Pipeline Release Marshall, Michigan; *Response to Comments regarding HDM Rating Curves*." Submitted to the U.S. EPA on July 20, 2012.

# Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

## Tables

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C07198A_StandPipe | C07198A [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.75 | Permit but Call/Schedule Required | 04-Oct-10 | | 4 | 3 | **04-Oct-10** | | | Iron |
| | | | | | | | | | | | 24-Feb-11 | 23-Mar-11 | | |
| | | | | | | | | | | | **18-Oct-11** | 02-Dec-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | 17-Apr-12 | 16-May-12 | | |
| C0004F3A | C0004F3 [redacted] | [redacted] | Ceresco MI | Calhoun | 7.5 | Permit but Call/Schedule Required | 12-Sep-10 | Prior to Sale or Occupation | 8 | 7 | **30-Jul-10** | 21-Aug-10 | | |
| | | | | | | | | | | | **31-Aug-10** | 01-Oct-10 | | Iron |
| | | | | | | | | | | | **12-Sep-10** | 01-Oct-10 | | Iron |
| | | | | | | | | | | | **20-Sep-10** | | | Iron |
| | | | | | | | | | | | **17-Oct-10** | 01-Nov-10 | | Iron |
| | | | | | | | | | | | **30-Oct-10** | 18-Nov-10 | | IRON |
| | | | | | | | | | | | **15-Sep-11** | 29-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 16-Dec-11 | 20-Jan-12 | | |
| C001899A | C001899 [redacted] | [redacted] . | Marshall MI | Calhoun | 1.5 | Unattended Permission, Anytime | 31-Aug-10 | Prior to Sale or Occupation | 12 | 12 | **30-Jul-10** | 21-Aug-10 | | |
| | | | | | | | | | | | **31-Aug-10** | 14-Oct-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C001899A | C001899 [redacted] | [redacted] | Marshall MI | Calhoun | 1.5 | Unattended Permission, Anytime | 31-Aug-10 | Prior to Sale or Occupation | 12 | 12 | **11-Oct-10** | 26-Oct-10 | | Iron |
| | | | | | | | | | | | **12-Oct-10** | 26-Oct-10 | | Iron |
| | | | | | | | | | | | **22-Oct-10** | 12-Nov-10 | | IRON |
| | | | | | | | | | | | **05-Nov-10** | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **05-Jan-11** | 24-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **12-Apr-11** | 02-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **19-Jul-11** | 02-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 19-Oct-11 | 08-Dec-11 | | |
| | | | | | | | | | | | 19-Jan-12 | 09-Feb-12 | | |
| C0021FEA | C0021FE [redacted] | [redacted] | Marshall MI | Calhoun | 1.5 | Permit but Call/Schedule Required | 19-Sep-10 | Prior to Sale or Occupation | 12 | 12 | **27-Jul-10** | 21-Aug-10 | | |
| | | | | | | | | | | | **31-Aug-10** | 14-Oct-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0021FEA | C0021FE [redacted] | [redacted] | Marshall MI | Calhoun | 1.5 | Permit but Call/Schedule Required | 19-Sep-10 | Prior to Sale or Occupation | 12 | 12 | 04-Sep-10 | 04-Oct-10 | | |
| | | | | | | | | | | | 19-Sep-10 | 01-Nov-10 | | |
| | | | | | | | | | | | 11-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 24-Oct-10 | 30-Nov-10 | | IRON |
| | | | | | | | | | | | 05-Nov-10 | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 05-Jan-11 | 24-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 12-Apr-11 | 02-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 19-Jul-11 | 02-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 20-Oct-11 | 08-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 19-Jan-12 | 09-Feb-12 | | |
| C002471A | C002471 [redacted] | [redacted] | Marshall MI | Calhoun | 1.25 | Permit but Call/Schedule Required | 01-Sep-10 | Prior to Sale or Occupation | 7 | 6 | 31-Jul-10 | 25-Aug-10 | | |
| | | | | | | | | | | | 01-Sep-10 | 05-Oct-10 | | Iron |
| | | | | | | | | | | | 04-Sep-10 | 13-Oct-10 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C002471A | C002471 [redacted] | [redacted] | Marshall MI | Calhoun | 1.25 | Permit but Call/Schedule Required | 01-Sep-10 | Prior to Sale or Occupation | 7 | 6 | **17-Sep-10** | | | Iron |
| | | | | | | | | | | | **13-Oct-10** | 13-Nov-10 | | Iron |
| | | | | | | | | | | | **29-Oct-10** | 04-Dec-10 | | IRON |
| | | | | | | | | | | | 23-Feb-12 | 30-Mar-12 | | |
| C0027CBA | C0027CB [redacted] | [redacted] | Marshall MI | Calhoun | 1.5 | Unattended Permission, Anytime | 31-Aug-10 | Prior to Sale or Occupation | 10 | 10 | **07-Aug-10** | 19-Aug-10 | | Iron |
| | | | | | | | | | | | **31-Aug-10** | 14-Oct-10 | | Iron |
| | | | | | | | | | | | **12-Sep-10** | 07-Jan-11 | | Iron |
| | | | | | | | | | | | **17-Sep-10** | 08-Feb-11 | | Iron |
| | | | | | | | | | | | **11-Oct-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **21-Oct-10** | 13-Dec-10 | | IRON |
| | | | | | | | | | | | **05-Nov-10** | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **05-Jan-11** | 24-Jan-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0027CBA | C0027CB [redacted] | [redacted] | Marshall MI | Calhoun | 1.5 | Unattended Permission, Anytime | 31-Aug-10 | Prior to Sale or Occupation | 10 | 10 | 22-Feb-12 | 16-Mar-12 | | |
| C0040EEA | C0040EE [redacted] | [redacted] | Marshall MI | Calhoun | 2.5 | Permit but Call/Schedule Required | 25-Oct-10 | Prior to Sale or Occupation | 11 | 11 | **29-Jul-10** | 21-Aug-10 | | |
| | | | | | | | | | | | 25-Oct-10 | 12-Nov-10 | | |
| | | | | | | | | | | | 03-Nov-10 | 19-Nov-10 | | |
| | | | | | | | | | | | **11-Nov-10** | 21-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **29-Nov-10** | 10-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **14-Dec-10** | 26-Jan-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **05-Jan-11** | 24-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **11-Feb-11** | 07-Mar-11 | | IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **12-May-11** | 02-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **15-Aug-11** | 14-Sep-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0040EEA | C0040EE [redacted] | [redacted] | Marshall MI | Calhoun | 2.5 | Permit but Call/Schedule Required | 25-Oct-10 | Prior to Sale or Occupation | 11 | 11 | 17-Nov-11 | 14-Dec-11 | | IRON, TOTAL |
| C005139A | C005139 [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Unattended Permission, Anytime | 26-Aug-10 | Prior to Sale or Occupation | 12 | 12 | 07-Aug-10 | 19-Sep-10 | | Iron |
| | | | | | | | | | | | 28-Aug-10 | 02-Oct-10 | | Iron |
| | | | | | | | | | | | 13-Sep-10 | 04-Oct-10 | | Iron |
| | | | | | | | | | | | 21-Sep-10 | 08-Oct-10 | | Iron |
| | | | | | | | | | | | 07-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 17-Oct-10 | 01-Nov-10 | | Iron |
| | | | | | | | | | | | 30-Oct-10 | 18-Nov-10 | | IRON |
| | | | | | | | | | | | 01-Dec-10 | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 04-Jan-11 | 24-Jan-11 | | IRON, TOTAL |
| | | | | | | | | | | | 08-Apr-11 | 02-May-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 15-Jul-11 | 02-Aug-11 | | IRON, TOTAL |
| | | | | | | | | | | | 17-Oct-11 | 08-Dec-11 | | IRON, TOTAL |
| C0094BAPW1 | C0094BA [redacted] | [redacted] | Marshall MI | Calhoun | 1.75 | Permit but Call/Schedule Required | 01-Sep-10 | Prior to Sale or Occupation | 11 | 10 | 29-Jul-10 | 21-Aug-10 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0094BAPW1 | C0094BA [redacted] | [redacted] | Marshall MI | Calhoun | 1.75 | Permit but Call/Schedule Required | 01-Sep-10 | Prior to Sale or Occupation | 11 | 10 | **11-Sep-10** | 04-Oct-10 | | Iron |
| | | | | | | | | | | | **25-Sep-10** | 07-Oct-10 | | Iron |
| | | | | | | | | | | | **29-Oct-10** | 16-Dec-10 | | IRON |
| | | | | | | | | | | | **25-Jan-11** | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **15-Feb-11** | 03-Mar-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **09-Jun-11** | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **16-Aug-11** | 29-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **17-Nov-11** | 14-Dec-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 23-Feb-12 | 16-Mar-12 | | |
| C0118AEA | C0118AE [redacted] | [redacted] | Ceresco MI | Calhoun | 5.75 | Permit but Call/Schedule Required | 28-Aug-10 | Prior to Sale or Occupation | 12 | 12 | **28-Jul-10** | 21-Aug-10 | | |
| | | | | | | | | | | | **28-Aug-10** | 01-Oct-10 | | Iron |
| | | | | | | | | | | | **11-Sep-10** | 01-Oct-10 | | Iron |
| | | | | | | | | | | | **20-Sep-10** | 09-Feb-11 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0118AEA | C0118AE [redacted] | [redacted] | Ceresco MI | Calhoun | 5.75 | Permit but Call/Schedule Required | 28-Aug-10 | Prior to Sale or Occupation | 12 | 12 | 12-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 22-Oct-10 | 30-Nov-10 | | IRON |
| | | | | | | | | | | | 06-Nov-10 | 29-Nov-10 | | IRON |
| | | | | | | | | | | | 01-Dec-10 | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 21-Jan-11 | 17-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 11-Feb-11 | 07-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 12-May-11 | 02-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 12-Aug-11 | 14-Sep-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| C0127FCA | C0127FC [redacted] | [redacted] | Marshall MI | Calhoun | 3.25 | Unattended Permission, Anytime | 16-Sep-10 | Prior to Sale or Occupation | 7 | 7 | 01-Aug-10 | 25-Aug-10 | | |
| | | | | | | | | | | | 31-Aug-10 | 05-Oct-10 | | Iron |
| | | | | | | | | | | | 23-Oct-10 | 12-Nov-10 | | IRON |
| | | | | | | | | | | | 05-Nov-10 | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 30-Nov-10 | 15-Dec-10 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0127FCA | C0127FC [redacted] | [redacted] | Marshall MI | Calhoun | 3.25 | Unattended Permission, Anytime | 16-Sep-10 | Prior to Sale or Occupation | 7 | 7 | **24-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **11-Feb-11** | 07-Mar-11 | | IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| C0129FBA | C0129FB [redacted] | [redacted] | Marshall MI | Calhoun | 3.25 | Unattended Permission, Anytime | 04-Sep-10 | Prior to Sale or Occupation | 11 | 11 | **07-Aug-10** | 19-Aug-10 | | Iron |
| | | | | | | | | | | | **04-Sep-10** | 04-Oct-10 | | |
| | | | | | | | | | | | **09-Sep-10** | 04-Oct-10 | | Iron |
| | | | | | | | | | | | **24-Sep-10** | 07-Oct-10 | | Iron |
| | | | | | | | | | | | **11-Oct-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **21-Oct-10** | 12-Nov-10 | | IRON |
| | | | | | | | | | | | **05-Nov-10** | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **07-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **06-Apr-11** | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0129FBA | C0129FB [redacted] | [redacted] | Marshall MI | Calhoun | 3.25 | Unattended Permission, Anytime | 04-Sep-10 | Prior to Sale or Occupation | 11 | 11 | **19-Jul-11** | 02-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| C013407A | C013407 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 19-Sep-10 | Prior to Sale or Occupation | 8 | 8 | **28-Jul-10** | 08-Sep-10 | | |
| | | | | | | | | | | | **05-Sep-10** | 01-Oct-10 | | |
| | | | | | | | | | | | **20-Sep-10** | 08-Feb-11 | | Iron |
| | | | | | | | | | | | **06-Oct-10** | 20-Oct-10 | | |
| | | | | | | | | | | | **15-Oct-10** | 26-Oct-10 | | Iron |
| | | | | | | | | | | | **29-Oct-10** | 07-Jan-11 | | IRON |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **16-Nov-11** | 18-Jan-12 | | IRON, TOTAL |
| C0144C0A | C0144C0 [redacted] | [redacted] | Marshall MI | Calhoun | 3.25 | Unattended Permission, Anytime | 12-Sep-10 | Prior to Sale or Occupation | 14 | 14 | **27-Jul-10** | 21-Aug-10 | | |
| | | | | | | | | | | | **31-Aug-10** | 05-Oct-10 | | Iron |
| | | | | | | | | | | | **12-Sep-10** | 04-Oct-10 | | Iron |
| | | | | | | | | | | | **19-Sep-10** | 08-Feb-11 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0144C0A | C0144C0 [redacted] | [redacted] | Marshall MI | Calhoun | 3.25 | Unattended Permission, Anytime | 12-Sep-10 | Prior to Sale or Occupation | 14 | 14 | 01-Oct-10 | 08-Feb-11 | | Iron |
| | | | | | | | | | | | 14-Oct-10 | 28-Oct-10 | | Iron |
| | | | | | | | | | | | 28-Oct-10 | 17-Nov-10 | | IRON |
| | | | | | | | | | | | 30-Nov-10 | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 11-Jan-11 | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 11-Feb-11 | 07-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 02-May-11 | 12-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 12-Aug-11 | 14-Sep-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | 17-Nov-11 | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 24-Feb-12 | 16-Mar-12 | | |
| C01497DA | C01497D [redacted] | [redacted] | Battle Creek MI | Calhoun | 23 | Permit but Call/Schedule Required | 21-Sep-10 | Prior to Sale or Occupation | 8 | 7 | 29-Jul-10 | 25-Aug-10 | | |
| | | | | | | | | | | | 31-Aug-10 | 14-Oct-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C01497DA | C01497D [redacted] | [redacted] | Battle Creek MI | Calhoun | 23 | Permit but Call/Schedule Required | 21-Sep-10 | Prior to Sale or Occupation | 8 | 7 | 21-Sep-10 | 08-Oct-10 | | Iron |
| | | | | | | | | | | | 10-Oct-10 | 28-Oct-10 | | Iron |
| | | | | | | | | | | | 21-Oct-10 | 12-Nov-10 | | |
| | | | | | | | | | | | 07-Nov-10 | 29-Nov-10 | | |
| | | | | | | | | | | | 02-Dec-10 | 18-Dec-10 | | |
| C015098PW1 | C015098 [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Unattended Permission, Anytime | 26-Aug-10 | Prior to Sale or Occupation | 12 | 11 | 10-Aug-10 | 11-Nov-10 | | Iron |
| | | | | | | | | | | | 28-Aug-10 | 02-Oct-10 | | Iron |
| | | | | | | | | | | | 13-Sep-10 | 11-Nov-10 | | Iron |
| | | | | | | | | | | | 19-Sep-10 | 08-Feb-11 | | Iron |
| | | | | | | | | | | | 10-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 20-Oct-10 | | | Iron |
| | | | | | | | | | | | 30-Oct-10 | 18-Nov-10 | | IRON |
| | | | | | | | | | | | 03-Dec-10 | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 18-Jan-11 | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C015098PW1 | C015098 [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Unattended Permission, Anytime | 26-Aug-10 | Prior to Sale or Occupation | 12 | 11 | 03-Feb-11 | 02-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 13-Sep-11 | 30-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 19-Dec-11 | 20-Jan-12 | | |
| C016277A | C016277 [redacted] | [redacted] | Marshall MI | Calhoun | 3.25 | Unattended Permission, Anytime | 06-Sep-10 | Prior to Sale or Occupation | 9 | 9 | 07-Aug-10 | 19-Aug-10 | | Iron |
| | | | | | | | | | | | 08-Sep-10 | 05-Oct-10 | | Iron |
| | | | | | | | | | | | 23-Oct-10 | 12-Nov-10 | | IRON |
| | | | | | | | | | | | 05-Nov-10 | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 30-Nov-10 | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 07-Jan-11 | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 06-Apr-11 | 26-Apr-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 19-Jul-11 | 02-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 18-Oct-11 | 18-Jan-12 | | IRON, TOTAL |
| C0173A0PW1 | C0173A0 [redacted] | [redacted] | Marshall MI | Calhoun | 3 | Unattended Permission, Anytime | 29-Aug-10 | Prior to Sale or Occupation | 12 | 11 | 05-Aug-10 | 20-Aug-10 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0173A0PW1 | C0173A0 [redacted] | [redacted] | Marshall MI | Calhoun | 3 | Unattended Permission, Anytime | 29-Aug-10 | Prior to Sale or Occupation | 12 | 11 | 20-Sep-10 | 01-Nov-10 | | Iron |
| | | | | | | | | | | | 24-Jan-11 | 17-Feb-11 | | IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 10-Feb-11 | 07-Mar-11 | | BERYLLIUM, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 02-Mar-11 | 25-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | 06-Apr-11 | 26-Apr-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 02-May-11 | 12-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 06-Jun-11 | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 19-Jul-11 | 02-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 14-Sep-11 | 30-Nov-11 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0173A0PW1 | C0173A0 [redacted] | [redacted] | Marshall MI | Calhoun | 3 | Unattended Permission, Anytime | 29-Aug-10 | Prior to Sale or Occupation | 12 | 11 | 19-Jan-12 | 09-Feb-12 | | |
| C0179BEPW1 | C0179BE [redacted] | [redacted] | Marshall MI | Calhoun | 3 | Unattended Permission, Anytime | 15-Sep-10 | Prior to Sale or Occupation | 12 | 11 | **27-Jul-10** | 21-Aug-10 | | |
| | | | | | | | | | | | **13-Oct-10** | 13-Nov-10 | | |
| | | | | | | | | | | | **23-Oct-10** | 14-Jan-11 | | |
| | | | | | | | | | | | **05-Nov-10** | 09-Dec-10 | | |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | NICKEL, TOTAL |
| | | | | | | | | | | | **24-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **10-Feb-11** | 07-Mar-11 | | MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **02-May-11** | 12-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **12-Aug-11** | 14-Sep-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **17-Nov-11** | 18-Jan-12 | | |
| | | | | | | | | | | | 24-Feb-12 | 16-Mar-12 | | |
| C01855AA | C01855A [redacted] | [redacted] | Galesburg MI | Kalamazoo | 37.25 | Unattended Permission, Anytime | 23-Sep-10 | Prior to Sale or Occupation | 12 | 12 | **10-Aug-10** | 23-Aug-10 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C01855AA | C01855A [redacted] | [redacted] | Galesburg MI | Kalamazoo | 37.25 | Unattended Permission, Anytime | 23-Sep-10 | Prior to Sale or Occupation | 12 | 12 | **23-Sep-10** | 07-Oct-10 | | |
| | | | | | | | | | | | **05-Oct-10** | 20-Oct-10 | | |
| | | | | | | | | | | | **16-Oct-10** | 28-Oct-10 | | Nickel |
| | | | | | | | | | | | **29-Oct-10** | 04-Dec-10 | | |
| | | | | | | | | | | | **11-Nov-10** | 09-Dec-10 | | |
| | | | | | | | | | | | **29-Nov-10** | 10-Dec-10 | | |
| | | | | | | | | | | | **12-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **11-Apr-11** | 02-May-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **11-Jul-11** | 21-Jul-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **18-Oct-11** | 18-Jan-12 | | |
| | | | | | | | | | | | 16-Jan-12 | 09-Feb-12 | | |
| C019930PW1 | C019930 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 33.5 | Unattended Permission, Anytime | 23-Oct-10 | Prior to Sale or Occupation | 8 | 8 | **08-Aug-10** | 01-Sep-10 | | Iron |
| | | | | | | | | | | | **23-Oct-10** | 12-Nov-10 | | IRON |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C019930PW1 | C019930 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 33.5 | Unattended Permission, Anytime | 23-Oct-10 | Prior to Sale or Occupation | 8 | 8 | **04-Nov-10** | 23-Nov-10 | | IRON |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **10-Jan-11** | 16-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **31-Jan-11** | 07-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **28-Feb-11** | 25-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 16-Jan-12 | 09-Feb-12 | | |
| C0208B6A | C0208B6 [redacted] | [redacted] | Ceresco MI | Calhoun | 7.25 | Unattended Permission, Anytime | 24-Sep-10 | Prior to Sale or Occupation | 14 | 12 | **27-Jul-10** | 01-Sep-10 | | |
| | | | | | | | | | | | **31-Jul-10** | 01-Sep-10 | | |
| | | | | | | | | | | | **24-Sep-10** | 07-Oct-10 | | Iron |
| | | | | | | | | | | | **06-Oct-10** | 01-Nov-10 | | Iron, Naphthalene |
| | | | | | | | | | | | **16-Oct-10** | 28-Oct-10 | | Iron, Naphthalene |
| | | | | | | | | | | | **30-Oct-10** | | | IRON, NAPHTHALENE |
| | | | | | | | | | | | **11-Nov-10** | | | IRON, TOTAL, NAPHTHALENE |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0208B6A | C0208B6 [redacted] | [redacted] | Ceresco MI | Calhoun | 7.25 | Unattended Permission, Anytime | 24-Sep-10 | Prior to Sale or Occupation | 14 | 12 | 29-Nov-10 | 10-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 16-Dec-10 | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | 03-Jan-11 | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 06-Apr-11 | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 18-Jul-11 | 02-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 18-Oct-11 | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 18-Jan-12 | 09-Feb-12 | | |
| C0218F7PW1 | C0218F7 [redacted] | [redacted] | Marshall MI | Calhoun | 2.25 | Permit but Call/Schedule Required | 01-Sep-10 | Prior to Sale or Occupation | 7 | 7 | 27-Jul-10 | 01-Nov-10 | | |
| | | | | | | | | | | | 31-Jul-10 | 01-Nov-10 | | |
| | | | | | | | | | | | 15-Sep-10 | 04-Oct-10 | | Iron |
| | | | | | | | | | | | 22-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 06-Nov-10 | 04-Dec-10 | | IRON |
| | | | | | | | | | | | 17-Nov-11 | 14-Dec-11 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0218F7PW1 | C0218F7 [redacted] | [redacted] | Marshall MI | Calhoun | 2.25 | Permit but Call/Schedule Required | 01-Sep-10 | Prior to Sale or Occupation | 7 | 7 | 23-Feb-12 | 16-Mar-12 | | |
| C0227A5A | C0227A5 [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Unattended Permission, Anytime | 26-Aug-10 | Prior to Sale or Occupation | 12 | 12 | **07-Aug-10** | 21-Sep-10 | | |
| | | | | | | | | | | | **28-Aug-10** | 04-Oct-10 | | |
| | | | | | | | | | | | **13-Sep-10** | 14-Oct-10 | | |
| | | | | | | | | | | | **21-Sep-10** | 14-Oct-10 | | |
| | | | | | | | | | | | **10-Oct-10** | 28-Oct-10 | | |
| | | | | | | | | | | | **21-Oct-10** | 12-Nov-10 | | |
| | | | | | | | | | | | **02-Nov-10** | 19-Nov-10 | | |
| | | | | | | | | | | | **02-Dec-10** | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **19-Jan-11** | 15-Feb-11 | | NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **04-Feb-11** | 02-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **04-May-11** | 17-May-11 | | IRON, TOTAL, VANADIUM, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0227A5A | C0227A5 [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Unattended Permission, Anytime | 26-Aug-10 | Prior to Sale or Occupation | 12 | 12 | **08-Aug-11** | 11-Sep-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| C024080PW1 | C024080 [redacted] | [redacted] | Marshall MI | Calhoun | 3 | Permit but Call/Schedule Required | 06-Sep-10 | Prior to Sale or Occupation | 10 | 9 | **08-Sep-10** | 03-Nov-10 | | Iron |
| | | | | | | | | | | | **14-Dec-10** | 26-Jan-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **18-Jan-11** | 10-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **31-Jan-11** | 07-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **15-Feb-11** | 09-Mar-11 | | IRON, TOTAL, MOLYBDENUM |
| | | | | | | | | | | | **02-Mar-11** | 25-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **06-Jun-11** | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **14-Sep-11** | 29-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 16-Dec-11 | 20-Jan-12 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C02433AWP1 | C02433A [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 04-Sep-10 | Prior to Sale or Occupation | 11 | 10 | **04-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **17-Sep-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **06-Oct-10** | | | Iron |
| | | | | | | | | | | | **15-Oct-10** | 26-Oct-10 | | Iron |
| | | | | | | | | | | | **29-Oct-10** | 07-Jan-11 | | IRON |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **24-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **14-Feb-11** | 03-Mar-11 | | IRON, TOTAL, MERCURY, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **09-May-11** | 26-May-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | **11-Aug-11** | 29-Aug-11 | | IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 23-Feb-12 | 16-Mar-12 | | |
| C0248B2PW1 | C0248B2 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 36.25 | Permit but Call/Schedule Required | 06-Sep-10 | Prior to Sale or Occupation | 11 | 11 | **08-Sep-10** | 13-Oct-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0248B2PW1 | C0248B2 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 36.25 | Permit but Call/Schedule Required | 06-Sep-10 | Prior to Sale or Occupation | 11 | 11 | **17-Sep-10** | 07-Oct-10 | | Iron |
| | | | | | | | | | | | **06-Oct-10** | 20-Oct-10 | | Iron |
| | | | | | | | | | | | **16-Oct-10** | 22-Nov-10 | | Iron |
| | | | | | | | | | | | **06-Nov-10** | 23-Nov-10 | | IRON |
| | | | | | | | | | | | **03-Dec-10** | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **12-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **08-Apr-11** | 05-May-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **14-Jul-11** | 02-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 19-Oct-11 | 08-Dec-11 | | |
| | | | | | | | | | | | 16-Jan-12 | 09-Feb-12 | | |
| C0250C1WP1 | C0250C1 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 36.25 | Unattended Permission, Anytime | | Prior to Sale or Occupation | 10 | 8 | **18-Oct-10** | | | Iron |
| | | | | | | | | | | | **30-Oct-10** | 18-Nov-10 | | IRON |
| | | | | | | | | | | | **03-Dec-10** | | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0250C1WP1 | C0250C1 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 36.25 | Unattended Permission, Anytime | | Prior to Sale or Occupation | 10 | 8 | **12-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **31-Jan-11** | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **28-Feb-11** | 23-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **05-Apr-11** | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **03-May-11** | 17-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **09-Jun-11** | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 15-Dec-11 | 20-Jan-12 | | |
| C0286B9PW1 | C0286B9 [redacted] | [redacted] | Marshall MI | Calhoun | 1 | Permit but Call/Schedule Required | 24-Sep-10 | Prior to Sale or Occupation | 1 | 1 | 01-Mar-12 | 16-Mar-12 | | |
| C0292E1A | C0292E1 [redacted] | [redacted] | Marshall MI | Calhoun | 1.5 | Permit but Call/Schedule Required | 31-Aug-10 | Prior to Sale or Occupation | 8 | 7 | **12-Aug-10** | 01-Sep-10 | | |
| | | | | | | | | | | | **31-Aug-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **22-Sep-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **01-Oct-10** | | | Iron |
| | | | | | | | | | | | **14-Oct-10** | 26-Oct-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0292E1A | C0292E1 [redacted] | [redacted] | Marshall MI | Calhoun | 1.5 | Permit but Call/Schedule Required | 31-Aug-10 | Prior to Sale or Occupation | 8 | 7 | **28-Oct-10** | 17-Nov-10 | | IRON |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 16-Dec-11 | 20-Jan-12 | | |
| C0300B3WP1 | C0300B3 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 33.25 | Unattended Permission, Anytime | 07-Sep-10 | Prior to Sale or Occupation | 7 | 7 | **09-Sep-10** | 16-Oct-10 | | Iron |
| | | | | | | | | | | | **23-Oct-10** | 12-Nov-10 | | IRON |
| | | | | | | | | | | | **29-Oct-10** | 04-Dec-10 | | IRON |
| | | | | | | | | | | | **06-Nov-10** | 03-Dec-10 | | IRON |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **15-Dec-10** | 26-Jan-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **10-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| C0304AAPW1 | C0304AA [redacted] | [redacted] | Battle Creek MI | Calhoun | 13.75 | Unattended Permission, Anytime | 29-Sep-10 | Prior to Sale or Occupation | 12 | 10 | **04-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **29-Sep-10** | 20-Oct-10 | | Iron |
| | | | | | | | | | | | **12-Oct-10** | 26-Oct-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0304AAPW1 | C0304AA [redacted] | [redacted] | Battle Creek MI | Calhoun | 13.75 | Unattended Permission, Anytime | 29-Sep-10 | Prior to Sale or Occupation | 12 | 10 | 23-Oct-10 | 13-Jan-11 | ETHYLBENZENE, M-P-XYLENE, O-XYLENE (1,2-DIMETHYLBENZENE) | IRON |
| | | | | | | | | | | | 07-Nov-10 | | | IRON |
| | | | | | | | | | | | 03-Dec-10 | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 06-Jan-11 | 24-Jan-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 09-Feb-11 | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 02-Mar-11 | 25-Mar-11 | | IRON, TOTAL, MOLYBDENUM |
| | | | | | | | | | | | 04-Apr-11 | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 06-Jun-11 | 21-Jun-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| C033469WP1 | C033469 [redacted] | [redacted] | Augusta MI | Kalamazoo | 28.25 | Unattended Permission, Anytime | 05-Sep-10 | Prior to Sale or Occupation | 7 | 6 | 08-Sep-10 | 21-Oct-10 | | Iron |
| | | | | | | | | | | | 18-Sep-10 | 14-Oct-10 | | Iron |
| | | | | | | | | | | | 08-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 19-Oct-10 | | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C033469WP1 | C033469 [redacted] | [redacted] | Augusta MI | Kalamazoo | 28.25 | Unattended Permission, Anytime | 05-Sep-10 | Prior to Sale or Occupation | 7 | 6 | **05-Nov-10** | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **02-Dec-10** | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **14-Jan-11** | 17-Feb-11 | | IRON, TOTAL, TITANIUM |
| C0335FFWP1 | C0335FF [redacted] | [redacted] | Augusta MI | Kalamazoo | 27.5 | Permit but Call/Schedule Required | 29-Aug-10 | Prior to Sale or Occupation | 8 | 8 | **03-Oct-10** | 16-Nov-10 | | Iron |
| | | | | | | | | | | | **27-Oct-10** | 14-Jan-11 | | IRON |
| | | | | | | | | | | | **05-Nov-10** | 10-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **02-Dec-10** | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **03-May-11** | 17-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **09-Jun-11** | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **12-Sep-11** | 29-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 15-Dec-11 | 20-Jan-12 | | |
| C033645WP1 | C033645 [redacted] | [redacted] | Augusta MI | Kalamazoo | 27.25 | Unattended Permission, Anytime | 12-Sep-10 | Prior to Sale or Occupation | 8 | 7 | **12-Sep-10** | | | Iron |
| | | | | | | | | | | | **27-Oct-10** | 14-Jan-11 | | IRON |
| | | | | | | | | | | | **06-Nov-10** | 03-Dec-10 | | IRON |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C033645WP1 | C033645 [redacted] | [redacted] | Augusta MI | Kalamazoo | 27.25 | Unattended Permission, Anytime | 12-Sep-10 | Prior to Sale or Occupation | 8 | 7 | 02-Dec-10 | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 10-Jan-11 | 15-Feb-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | 04-Feb-11 | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 03-May-11 | 17-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 08-Aug-11 | 18-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| C0375FBWP1 | C0375FB [redacted] | [redacted] | Battle Creek MI | Calhoun | 12 | Unattended Permission, Anytime | 04-Sep-10 | Prior to Sale or Occupation | 12 | 12 | 24-Aug-10 | 14-Oct-10 | | Iron |
| | | | | | | | | | | | 04-Sep-10 | 14-Oct-10 | | |
| | | | | | | | | | | | 19-Sep-10 | 27-Oct-10 | | Iron |
| | | | | | | | | | | | 11-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 21-Oct-10 | 12-Nov-10 | | IRON |
| | | | | | | | | | | | 01-Nov-10 | 19-Nov-10 | | IRON |
| | | | | | | | | | | | 02-Dec-10 | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 20-Jan-11 | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0375FBWP1 | C0375FB [redacted] | [redacted] | Battle Creek MI | Calhoun | 12 | Unattended Permission, Anytime | 04-Sep-10 | Prior to Sale or Occupation | 12 | 12 | **09-Feb-11** | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **05-May-11** | 17-May-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **09-Aug-11** | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 22-Feb-12 | 16-Mar-12 | | |
| C0384A2WP1 | C0384A2 [redacted] | [redacted] | Ceresco MI | Calhoun | 5.75 | Permit but Call/Schedule Required | 05-Sep-10 | Prior to Sale or Occupation | 6 | 6 | **05-Sep-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **21-Sep-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **06-Oct-10** | 26-Oct-10 | | Iron |
| | | | | | | | | | | | **15-Oct-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **29-Oct-10** | 07-Jan-11 | | |
| | | | | | | | | | | | **02-Dec-10** | 18-Dec-10 | | IRON, TOTAL |
| C038718WP1 | C038718 [redacted] | [redacted] | Marshall MI | Calhoun | 2.75 | Permit but Call/Schedule Required | 21-Sep-10 | Prior to Sale or Occupation | 7 | 6 | **11-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **21-Sep-10** | 07-Jan-11 | | |
| | | | | | | | | | | | **02-Oct-10** | | | |

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C038718WP1 | C038718 [redacted] | [redacted] | Marshall MI | Calhoun | 2.75 | Permit but Call/Schedule Required | 21-Sep-10 | Prior to Sale or Occupation | 7 | 6 | **15-Oct-10** | 28-Oct-10 | | |
| | | | | | | | | | | | **29-Oct-10** | 11-Jan-11 | | |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | NICKEL, TOTAL |
| | | | | | | | | | | | 24-Feb-12 | 16-Mar-12 | | |
| C043756WP1 | C043756 [redacted] | [redacted] | Marshall MI | Calhoun | 2.75 | Unattended Permission, Anytime | 07-Sep-10 | Prior to Sale or Occupation | 11 | 11 | **09-Sep-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **21-Sep-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **12-Oct-10** | 26-Oct-10 | | Iron |
| | | | | | | | | | | | **22-Oct-10** | 12-Nov-10 | | IRON |
| | | | | | | | | | | | **06-Nov-10** | 20-Dec-10 | | IRON |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **05-Jan-11** | 24-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **06-Apr-11** | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **18-Jul-11** | 02-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C043756WP1 | C043756 [redacted] | [redacted] | Marshall MI | Calhoun | 2.75 | Unattended Permission, Anytime | 07-Sep-10 | Prior to Sale or Occupation | 11 | 11 | 19-Oct-11 | 08-Dec-11 | | |
| | | | | | | | | | | | 19-Jan-12 | 09-Feb-12 | | |
| C044607PW1 | C044607 [redacted] | [redacted] | Marshall MI | Calhoun | 2.75 | Permit but Call/Schedule Required | 08-Sep-10 | Prior to Sale or Occupation | 8 | 8 | **09-Sep-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **21-Sep-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **12-Oct-10** | 26-Oct-10 | | Iron |
| | | | | | | | | | | | **22-Oct-10** | 12-Nov-10 | | IRON |
| | | | | | | | | | | | **06-Nov-10** | 29-Nov-10 | | IRON |
| | | | | | | | | | | | **06-Dec-10** | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **14-Sep-11** | 30-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 19-Jan-12 | 09-Feb-12 | | |
| C0470F1PW1 | C0470F1 [redacted] | [redacted] | Battle Creek MI | Calhoun | 23 | Unattended Permission, Anytime | 26-Aug-10 | Prior to Sale or Occupation | 11 | 11 | **04-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **21-Sep-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **10-Oct-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **21-Oct-10** | 12-Nov-10 | | IRON |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0470F1PW1 | C0470F1 [redacted] | [redacted] | Battle Creek MI | Calhoun | 23 | Unattended Permission, Anytime | 26-Aug-10 | Prior to Sale or Occupation | 11 | 11 | 07-Nov-10 | 29-Nov-10 | | IRON |
| | | | | | | | | | | | 02-Dec-10 | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 24-Jan-11 | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 08-Feb-11 | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 04-May-11 | 25-May-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 10-Aug-11 | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 20-Feb-12 | 16-Mar-12 | | |
| C04757EWP1 | C04757E [redacted] | [redacted] | Battle Creek MI | Calhoun | 23 | Permit but Call/Schedule Required | 07-Sep-10 | Prior to Sale or Occupation | 6 | 6 | 07-Sep-10 | 13-Oct-10 | | |
| | | | | | | | | | | | 21-Sep-10 | 13-Oct-10 | | |
| | | | | | | | | | | | 10-Oct-10 | 28-Oct-10 | | |
| | | | | | | | | | | | 21-Oct-10 | 12-Nov-10 | | |
| | | | | | | | | | | | 07-Nov-10 | 29-Nov-10 | | IRON |
| | | | | | | | | | | | 02-Dec-10 | 18-Dec-10 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C053154PW1 | C053154 [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Permit but Call/Schedule Required | 04-Sep-10 | Prior to Sale or Occupation | 3 | 2 | 09-Oct-10 | 28-Oct-10 | | Iron |
| | | | | | | | | | | | 20-Oct-10 | | | Iron |
| | | | | | | | | | | | 30-Oct-10 | 18-Nov-10 | | IRON |
| C0568B5PW1 | C0568B5 [redacted] | [redacted] | Marshall MI | Calhoun | 3 | Unattended Permission, Anytime | 06-Sep-10 | Prior to Sale or Occupation | 12 | 11 | 08-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 19-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 01-Oct-10 | | | Iron |
| | | | | | | | | | | | 15-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 29-Oct-10 | 03-Dec-10 | | IRON |
| | | | | | | | | | | | 30-Nov-10 | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 24-Jan-11 | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 11-Feb-11 | 07-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 02-May-11 | 12-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0568B5PW1 | C0568B5 [redacted] | [redacted] | Marshall MI | Calhoun | 3 | Unattended Permission, Anytime | 06-Sep-10 | Prior to Sale or Occupation | 12 | 11 | **15-Aug-11** | 14-Sep-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **17-Nov-11** | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 24-Feb-12 | 16-Mar-12 | | |
| C0601CEWP1 | C0601CE [redacted] | [redacted] | Battle Creek MI | Calhoun | 10.5 | Unattended Permission, Anytime | 11-Oct-10 | Prior to Sale or Occupation | 16 | 14 | **20-Oct-10** | 26-Jan-11 | | Iron |
| | | | | | | | | | | | **01-Nov-10** | 19-Nov-10 | | IRON |
| | | | | | | | | | | | **12-Nov-10** | 29-Mar-11 | | IRON, NICKEL |
| | | | | | | | | | | | **17-Jan-11** | 10-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **27-Jan-11** | 02-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **15-Feb-11** | 09-Mar-11 | | IRON, TOTAL |
| | | | | | | | | | | | **03-Mar-11** | 25-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0601CEWP1 | C0601CE [redacted] | [redacted] | Battle Creek MI | Calhoun | 10.5 | Unattended Permission, Anytime | 11-Oct-10 | Prior to Sale or Occupation | 16 | 14 | **04-Apr-11** | 26-Apr-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **05-May-11** | 17-May-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **06-Jun-11** | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **18-Jul-11** | 02-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **09-Aug-11** | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **13-Sep-11** | 30-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 20-Dec-11 | 20-Jan-12 | | |
| C0603E2WP1 | C0603E2 [redacted] | [redacted] | Battle Creek MI | Calhoun | 10 | Permit but Call/Schedule Required | 14-Sep-10 | Prior to Sale or Occupation | 4 | 3 | **30-Aug-10** | 15-Oct-10 | | Iron |
| | | | | | | | | | | | **14-Sep-10** | | | Iron |
| | | | | | | | | | | | **13-Sep-11** | 30-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 20-Dec-11 | 20-Jan-12 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C060441WP1 | C060441 [redacted] | [redacted] | Battle Creek MI | Calhoun | 10 | Permit but Call/Schedule Required | 25-Sep-10 | Prior to Sale or Occupation | 4 | 4 | **04-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **19-Sep-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **13-Sep-11** | 30-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 20-Dec-11 | 20-Jan-12 | | |
| C0605D7WP1 | C0605D7 [redacted] | [redacted] | Battle Creek MI | Calhoun | 10 | Permit but Call/Schedule Required | | Prior to Sale or Occupation | 4 | 4 | **06-Dec-10** | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **17-Jan-11** | 10-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **13-Sep-11** | 30-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 20-Dec-11 | 20-Jan-12 | | |
| C06827CA | C06827C [redacted] | [redacted] | Battle Creek MI | Calhoun | 12.25 | Unattended Permission, Anytime | 28-Oct-10 | Prior to Sale or Occupation | 6 | 6 | **19-Aug-10** | 06-Oct-10 | | Iron |
| | | | | | | | | | | | **28-Oct-10** | 17-Nov-10 | | IRON |
| | | | | | | | | | | | **02-Dec-10** | 20-Dec-10 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **06-Jan-11** | 24-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C06827CA | C06827C [redacted] | [redacted] | Battle Creek MI | Calhoun | 12.25 | Unattended Permission, Anytime | 28-Oct-10 | Prior to Sale or Occupation | 6 | 6 | **07-Feb-11** | 07-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **05-May-11** | 17-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| C0789C3PW1 | C0789C3 [redacted] | [redacted] | Augusta MI | Kalamazoo | 26.75 | Permit but Call/Schedule Required | 06-Sep-10 | Prior to Sale or Occupation | 4 | 4 | **07-Dec-10** | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **17-Jan-11** | 10-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **14-Nov-11** | 14-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 20-Feb-12 | 16-Mar-12 | | |
| C0872B9PW2 | C0872B9 [redacted] | [redacted] | Augusta MI | Kalamazoo | 26.75 | Unattended Permission, Anytime | 29-Aug-10 | Prior to Sale or Occupation | 8 | 8 | **04-Sep-10** | 28-Oct-10 | | |
| | | | | | | | | | | | **18-Sep-10** | 16-Nov-10 | | |
| | | | | | | | | | | | **08-Oct-10** | 26-Oct-10 | | |
| | | | | | | | | | | | **02-Dec-10** | 08-Feb-11 | | IRON, TOTAL |
| | | | | | | | | | | | **13-Jan-11** | 15-Feb-11 | | IRON, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **07-Apr-11** | 02-May-11 | | IRON, TOTAL, TITANIUM, VANADIUM, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0872B9PW2 | C0872B9 [redacted] | [redacted] | Augusta MI | Kalamazoo | 26.75 | Unattended Permission, Anytime | 29-Aug-10 | Prior to Sale or Occupation | 8 | 8 | **14-Jul-11** | 02-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **17-Oct-11** | 14-Dec-11 | | |
| C090249WP1 | C090249 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 37.25 | Unattended Permission, Anytime | 26-Sep-10 | Prior to Sale or Occupation | 11 | 11 | **04-Oct-10** | 16-Nov-10 | | |
| | | | | | | | | | | | **13-Oct-10** | 16-Nov-10 | | |
| | | | | | | | | | | | **23-Oct-10** | 12-Nov-10 | | |
| | | | | | | | | | | | **06-Nov-10** | 03-Dec-10 | | |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | |
| | | | | | | | | | | | **12-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **11-Apr-11** | 02-May-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **11-Jul-11** | 21-Jul-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **18-Oct-11** | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 16-Jan-12 | 09-Feb-12 | | |

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C090249WP1 | C090249 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 37.25 | Unattended Permission, Anytime | 26-Sep-10 | Prior to Sale or Occupation | 11 | 11 | 12-Jul-12 | 02-Aug-12 | | |
| C0947C2WP1 | C0947C2 [redacted] | [redacted] | Marshall MI | Calhoun | 2 | Permit but Call/Schedule Required | 05-Oct-10 | Prior to Sale or Occupation | 4 | 4 | **02-Nov-10** | 30-Nov-10 | | IRON |
| | | | | | | | | | | | **17-Nov-10** | 02-Dec-10 | | IRON |
| | | | | | | | | | | | **29-Nov-10** | 28-Jan-11 | | IRON, TOTAL |
| | | | | | | | | | | | **05-Jan-11** | 24-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |
| C107264WP1 | C107264 [redacted] | [redacted] | Ceresco MI | Calhoun | 6.5 | Unattended Permission, Anytime | 28-Oct-10 | Prior to Sale or Occupation | 8 | 6 | 01-Aug-10 | | | |
| | | | | | | | | | | | **28-Oct-10** | 17-Nov-10 | | IRON |
| | | | | | | | | | | | **11-Nov-10** | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **29-Nov-10** | 10-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **20-Jan-11** | | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **08-Feb-11** | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **13-Sep-11** | 29-Nov-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 22-Feb-12 | 16-Mar-12 | | |
| C1426E4WP1 | C1426E4 [redacted] | [redacted] | Battle Creek MI | Calhoun | 21 | Unattended Permission, Anytime | 27-Oct-10 | Prior to Sale or Occupation | 9 | 10 | **27-Oct-10** | 14-Jan-11 | | IRON |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C1426E4WP1 | C1426E4 [redacted] | [redacted] | Battle Creek MI | Calhoun | 21 | Unattended Permission, Anytime | 27-Oct-10 | Prior to Sale or Occupation | 9 | 10 | **03-Nov-10** | 19-Nov-10 | | IRON |
| | | | | | | | | | | | **03-Nov-10** | 12-Jan-11 | | IRON |
| | | | | | | | | | | | **19-Nov-10** | 13-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **02-Dec-10** | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **19-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **01-Feb-11** | 02-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **05-May-11** | 17-May-11 | | IRON, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **10-Aug-11** | 24-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | 21-Feb-12 | 16-Mar-12 | | |
| C0002C6A | C0002C6 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 25-Sep-10 | Quarterly 2 | 12 | 12 | **03-Aug-10** | 13-Nov-10 | | |
| | | | | | | | | | | | **25-Sep-10** | 07-Oct-10 | | Iron |
| | | | | | | | | | | | **25-Oct-10** | 12-Nov-10 | | IRON |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0002C6A | C0002C6 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 25-Sep-10 | Quarterly 2 | 12 | 12 | **29-Oct-10** | 07-Jan-11 | | IRON |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **20-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **14-Feb-11** | 03-Mar-11 | | IRON, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **09-May-11** | 26-May-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | **12-Aug-11** | 14-Sep-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **16-Nov-11** | 14-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 23-Feb-12 | 16-Mar-12 | | |
| | | | | | | | | | | | 25-Jun-12 | 24-Jul-12 | | |
| C0029CCWP1 | C0029CC [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 08-Sep-10 | Quarterly 2 | 14 | 14 | **03-Aug-10** | 25-Aug-10 | | |
| | | | | | | | | | | | **10-Sep-10** | 01-Oct-10 | | Iron |
| | | | | | | | | | | | **12-Sep-10** | 01-Oct-10 | | |
| | | | | | | | | | | | **25-Oct-10** | 12-Nov-10 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0029CCWP1 | C0029CC [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 08-Sep-10 | Quarterly 2 | 14 | 14 | **29-Oct-10** | 07-Jan-11 | | |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | |
| | | | | | | | | | | | **20-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **09-Feb-11** | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **01-Mar-11** | 25-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **04-Apr-11** | 26-Apr-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **10-Jun-11** | 22-Jun-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | **13-Sep-11** | 29-Nov-11 | | |
| | | | | | | | | | | | 16-Dec-11 | 20-Jan-12 | | |
| | | | | | | | | | | | 25-Jun-12 | 24-Jul-12 | | |
| C005315A | C005315 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Restricted Times | 25-Oct-10 | Quarterly 2 | 11 | 11 | **01-Aug-10** | 25-Aug-10 | | |
| | | | | | | | | | | | **25-Oct-10** | 12-Nov-10 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C005315A | C005315 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Restricted Times | 25-Oct-10 | Quarterly 2 | 11 | 11 | **29-Oct-10** | 07-Jan-11 | | |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | |
| | | | | | | | | | | | **26-Jan-11** | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **14-Feb-11** | 03-Mar-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **09-May-11** | 26-May-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **11-Aug-11** | 29-Aug-11 | | IRON, TOTAL, MERCURY, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **16-Nov-11** | 14-Dec-11 | | |
| | | | | | | | | | | | 23-Feb-12 | 16-Mar-12 | | |
| | | | | | | | | | | | 25-Jun-12 | 24-Jul-12 | | |
| C011485A | C011485 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 19-Sep-10 | Quarterly 2 | 13 | 13 | **03-Aug-10** | 25-Aug-10 | | |
| | | | | | | | | | | | **19-Sep-10** | 08-Feb-11 | | Iron |
| | | | | | | | | | | | **06-Oct-10** | 20-Oct-10 | | Iron |
| | | | | | | | | | | | **16-Oct-10** | 28-Oct-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C011485A | C011485 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 19-Sep-10 | Quarterly 2 | 13 | 13 | **30-Oct-10** | 18-Nov-10 | | IRON |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **21-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **10-Feb-11** | 07-Mar-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **09-May-11** | 26-May-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | **11-Aug-11** | 29-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **16-Nov-11** | 14-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 23-Feb-12 | 16-Mar-12 | | |
| | | | | | | | | | | | 25-Jun-12 | 24-Jul-12 | | |
| C0223BCA | C0223BC [redacted] | [redacted] | Marshall MI | Calhoun | 0.5 | Unattended Permission, Anytime | | Quarterly 2 | 12 | 9 | **07-Aug-10** | 25-Aug-10 | | Iron |
| | | | | | | | | | | | **01-Nov-10** | 07-Jan-11 | | IRON |
| | | | | | | | | | | | **01-Dec-10** | 06-Jan-11 | | IRON, TOTAL |
| | | | | | | | | | | | **07-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0223BCA | C0223BC [redacted] | [redacted] | Marshall MI | Calhoun | 0.5 | Unattended Permission, Anytime | | Quarterly 2 | 12 | 9 | **11-Feb-11** | 07-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **02-May-11** | 25-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **15-Aug-11** | 14-Sep-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **18-Nov-11** | | | IRON, TOTAL |
| | | | | | | | | | | | 23-Feb-12 | 16-Mar-12 | | |
| | | | | | | | | | | | 25-Jun-12 | 24-Jul-12 | | |
| C0254D8 | C0254D8 [redacted] | [redacted] | Ceresco MI | Calhoun | 7.5 | Unattended Permission, Anytime | 05-Sep-10 | Quarterly 2 | 10 | 10 | **05-Sep-10** | 07-Oct-10 | | Iron |
| | | | | | | | | | | | **24-Oct-10** | 12-Nov-10 | | IRON |
| | | | | | | | | | | | **06-Nov-10** | 03-Dec-10 | | IRON |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **06-Jan-11** | 24-Jan-11 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0254D8 | C0254D8 [redacted] | [redacted] | Ceresco MI | Calhoun | 7.5 | Unattended Permission, Anytime | 05-Sep-10 | Quarterly 2 | 10 | 10 | **06-Apr-11** | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **18-Jul-11** | 02-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **18-Oct-11** | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 18-Jan-12 | 09-Feb-12 | | |
| | | | | | | | | | | | 26-Jun-12 | 24-Jul-12 | | |
| C0273F9WP1 | C0273F9 [redacted] | [redacted] | Ceresco MI | Calhoun | 6.5 | Unattended Permission, Anytime | 03-Oct-10 | Quarterly 2 | 14 | 13 | **01-Sep-10** | 01-Nov-10 | Toluene | Iron |
| | | | | | | | | | | | **03-Oct-10** | 27-Oct-10 | Toluene | Iron |
| | | | | | | | | | | | **24-Oct-10** | 30-Nov-10 | | IRON |
| | | | | | | | | | | | **05-Nov-10** | | ETHYLBENZENE, TOLUENE | |
| | | | | | | | | | | | **17-Nov-10** | 02-Dec-10 | | IRON |
| | | | | | | | | | | | **29-Nov-10** | 10-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **14-Dec-10** | 26-Jan-11 | | IRON, TOTAL, MOLYBDENUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **20-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0273F9WP1 | C0273F9 [redacted] | [redacted] | Ceresco MI | Calhoun | 6.5 | Unattended Permission, Anytime | 03-Oct-10 | Quarterly 2 | 14 | 13 | **08-Feb-11** | 07-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **12-May-11** | 02-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **12-Aug-11** | 14-Sep-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **16-Nov-11** | 14-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 22-Feb-12 | 16-Mar-12 | | |
| | | | | | | | | | | | 26-Jun-12 | 24-Jul-12 | | |
| C030309WP1 | C030309 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 08-Sep-10 | Quarterly 2 | 14 | 14 | **10-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **11-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **20-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **06-Oct-10** | 20-Oct-10 | | |
| | | | | | | | | | | | **15-Oct-10** | 28-Oct-10 | | |
| | | | | | | | | | | | **29-Oct-10** | 07-Jan-11 | | |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C030309WP1 | C030309 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 08-Sep-10 | Quarterly 2 | 14 | 14 | **26-Jan-11** | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **14-Feb-11** | 03-Mar-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **09-May-11** | 26-May-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | **12-Aug-11** | 14-Sep-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **16-Nov-11** | 14-Dec-11 | | |
| | | | | | | | | | | | 23-Feb-12 | 16-Mar-12 | | |
| | | | | | | | | | | | 25-Jun-12 | 24-Jul-12 | | |
| C0314EBWP1 | C0314EB [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Permit but Call/Schedule Required | 12-Oct-10 | Quarterly 2 | 4 | 4 | **15-Oct-10** | 26-Oct-10 | | Iron |
| | | | | | | | | | | | **12-Nov-10** | 02-Dec-10 | | IRON |
| | | | | | | | | | | | **29-Nov-10** | 10-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 19-Oct-11 | 07-Dec-11 | | |
| C031751PW1 | C031751 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 26-Aug-10 | Quarterly 2 | 11 | 10 | **28-Aug-10** | 01-Nov-10 | | Iron |
| | | | | | | | | | | | **11-Sep-10** | | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C031751PW1 | C031751 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 26-Aug-10 | Quarterly 2 | 11 | 10 | **24-Oct-10** | 30-Nov-10 | | IRON |
| | | | | | | | | | | | **06-Nov-10** | 29-Nov-10 | | IRON, NICKEL |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **20-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **09-Feb-11** | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **09-May-11** | 26-May-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | **12-Aug-11** | 14-Sep-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **16-Nov-11** | 14-Dec-11 | | |
| | | | | | | | | | | | 25-Jun-12 | 24-Jul-12 | | |
| C0377D7A | C0377D7 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 25-Sep-10 | Quarterly 2 | 14 | 13 | **15-Aug-10** | 02-Sep-10 | | |
| | | | | | | | | | | | **28-Aug-10** | 01-Oct-10 | | |
| | | | | | | | | | | | **25-Sep-10** | 07-Oct-10 | | Iron |
| | | | | | | | | | | | **06-Oct-10** | 20-Oct-10 | | Iron |
| | | | | | | | | | | | **20-Oct-10** | | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0377D7A | C0377D7 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 25-Sep-10 | Quarterly 2 | 14 | 13 | **06-Nov-10** | 29-Nov-10 | | IRON |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **20-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **09-Feb-11** | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **09-May-11** | 26-May-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | **16-Aug-11** | 29-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **16-Nov-11** | 14-Dec-11 | | |
| | | | | | | | | | | | 22-Feb-12 | 16-Mar-12 | | |
| | | | | | | | | | | | 25-Jun-12 | 24-Jul-12 | | |
| C03868EWP1 | C03868E [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 04-Sep-10 | Quarterly 2 | 12 | 12 | **04-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **21-Sep-10** | 07-Jan-11 | | |
| | | | | | | | | | | | **06-Oct-10** | 20-Oct-10 | | |
| | | | | | | | | | | | **15-Oct-10** | 01-Nov-10 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C03868EWP1 | C03868E [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 04-Sep-10 | Quarterly 2 | 12 | 12 | **29-Oct-10** | 07-Jan-11 | | |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | |
| | | | | | | | | | | | **21-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **10-Feb-11** | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **12-May-11** | 02-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **11-Aug-11** | 29-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **16-Nov-11** | 18-Jan-12 | | |
| | | | | | | | | | | | 25-Jun-12 | 24-Jul-12 | | |
| C07198APW1 | C07198A [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.75 | Permit but Call/Schedule Required | 04-Oct-10 | Quarterly 2 | 9 | 8 | 08-Aug-10 | | | |
| | | | | | | | | | | | **04-Oct-10** | 16-Oct-10 | | Iron |
| | | | | | | | | | | | **15-Dec-10** | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **31-Jan-11** | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C07198APW1 | C07198A [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.75 | Permit but Call/Schedule Required | 04-Oct-10 | Quarterly 2 | 9 | 8 | **28-Feb-11** | 21-Apr-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **15-Jul-11** | 02-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **18-Oct-11** | 02-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 21-Dec-11 | 20-Jan-12 | | |
| | | | | | | | | | | | 17-Apr-12 | 16-May-12 | | |
| C086970PW1 | C086970 [redacted] | Augusta Municipal Wells | Augusta MI | Kalamazoo | 28.75 | Permit but Call/Schedule Required | 27-Oct-10 | Quarterly 2 | 17 | 16 | **27-Oct-10** | 14-Jan-11 | | IRON |
| | | | | | | | | | | | **03-Nov-10** | 04-Dec-10 | | IRON |
| | | | | | | | | | | | **18-Nov-10** | 21-Jan-11 | | IRON, TOTAL |
| | | | | | | | | | | | **02-Dec-10** | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **10-Jan-11** | 19-Apr-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **04-Feb-11** | 09-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **01-Mar-11** | 25-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C086970PW1 | C086970 [redacted] | Augusta Municipal Wells | Augusta MI | Kalamazoo | 28.75 | Permit but Call/Schedule Required | 27-Oct-10 | Quarterly 2 | 17 | 16 | **05-Apr-11** | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **04-May-11** | 17-May-11 | | IRON, TOTAL |
| | | | | | | | | | | | **09-Jun-11** | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **19-Jul-11** | 02-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **11-Aug-11** | 29-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **14-Sep-11** | 28-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 15-Dec-11 | 20-Jan-12 | | |
| | | | | | | | | | | | 24-Apr-12 | 16-May-12 | | |
| | | | | | | | | | | | 26-Jun-12 | 24-Jul-12 | | |
| C086970PW2 | C086970 [redacted] | Augusta Municipal Wells | Augusta MI | Kalamazoo | 28.75 | Permit but Call/Schedule Required | 27-Oct-10 | Quarterly 2 | 16 | 16 | **27-Oct-10** | 14-Jan-11 | | IRON |
| | | | | | | | | | | | **03-Nov-10** | 04-Dec-10 | | IRON |
| | | | | | | | | | | | **18-Nov-10** | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **02-Dec-10** | 18-Dec-10 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C086970PW2 | C086970 [redacted] | Augusta Municipal Wells | Augusta MI | Kalamazoo | 28.75 | Permit but Call/Schedule Required | 27-Oct-10 | Quarterly 2 | 16 | 16 | **10-Jan-11** | 19-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **04-Feb-11** | 09-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **01-Mar-11** | 25-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **05-Apr-11** | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **04-May-11** | 17-May-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **09-Jun-11** | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **19-Jul-11** | 02-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **11-Aug-11** | 29-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **14-Sep-11** | 28-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 15-Dec-11 | 20-Jan-12 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C086970PW2 | C086970 [redacted] | Augusta Municipal Wells | Augusta MI | Kalamazoo | 28.75 | Permit but Call/Schedule Required | 27-Oct-10 | Quarterly 2 | 16 | 16 | 24-Apr-12 | 16-May-12 | | |
| | | | | | | | | | | | 26-Jun-12 | 24-Jul-12 | | |
| C0881CCWP1 | C0881CC [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 02-Oct-10 | Quarterly 2 | 12 | 11 | **04-Oct-10** | 20-Oct-10 | | Iron |
| | | | | | | | | | | | **16-Oct-10** | 26-Oct-10 | | Iron |
| | | | | | | | | | | | **30-Oct-10** | 18-Nov-10 | | IRON |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **21-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **10-Feb-11** | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **09-May-11** | 26-May-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **11-Aug-11** | 29-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **16-Nov-11** | 14-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 23-Feb-12 | 16-Mar-12 | | |
| | | | | | | | | | | | 26-Jun-12 | 24-Jul-12 | | |
| C088276WP1 | C088276 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Permit but Call/Schedule Required | 12-Oct-10 | Quarterly 2 | 9 | 9 | **13-Oct-10** | 13-Nov-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C088276WP1 | C088276 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Permit but Call/Schedule Required | 12-Oct-10 | Quarterly 2 | 9 | 9 | **22-Oct-10** | 12-Nov-10 | | IRON |
| | | | | | | | | | | | **06-Nov-10** | 29-Nov-10 | | IRON |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **21-Jan-11** | 15-Feb-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **10-Feb-11** | 07-Mar-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | **02-Mar-11** | 23-Mar-11 | | IRON, TOTAL |
| | | | | | | | | | | | 19-Oct-11 | 07-Dec-11 | | |
| | | | | | | | | | | | 26-Jun-12 | 24-Jul-12 | | |
| C0889FEWP1 | C0889FE [redacted] | [redacted] | Galesburg MI | Kalamazoo | 38 | Permit but Call/Schedule Required | | Quarterly 2 | 10 | 10 | **01-Dec-10** | 21-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **15-Dec-10** | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **04-Jan-11** | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **04-Feb-11** | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0889FEWP1 | C0889FE [redacted] | [redacted] | Galesburg MI | Kalamazoo | 38 | Permit but Call/Schedule Required | | Quarterly 2 | 10 | 10 | **01-Mar-11** | 29-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **09-Jun-11** | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **15-Sep-11** | 28-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 18-Jan-12 | 09-Feb-12 | | |
| | | | | | | | | | | | 24-Apr-12 | 16-May-12 | | |
| | | | | | | | | | | | 26-Jun-12 | 24-Jul-12 | | |
| C10619FWP1 | C10619F [redacted] | [redacted] | Ceresco MI | Calhoun | 8 | Unattended Permission, Anytime | 09-Oct-10 | Quarterly 2 | 22 | 19 | **30-Aug-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **31-Aug-10** | 06-Oct-10 | | Iron |
| | | | | | | | | | | | **12-Oct-10** | 28-Oct-10 | Toluene | Iron |
| | | | | | | | | | | | **22-Oct-10** | | TOLUENE | IRON |
| | | | | | | | | | | | **04-Nov-10** | | TOLUENE | IRON |
| | | | | | | | | | | | **17-Nov-10** | 02-Dec-10 | TOLUENE | IRON |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C10619FWP1 | C10619F [redacted] | [redacted] | Ceresco MI | Calhoun | 8 | Unattended Permission, Anytime | 09-Oct-10 | Quarterly 2 | 22 | 19 | **29-Nov-10** | 11-Dec-10 | TOLUENE | IRON, TOTAL |
| | | | | | | | | | | | **16-Dec-10** | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **03-Jan-11** | 26-Jan-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **17-Jan-11** | 10-Mar-11 | TOLUENE | IRON, TOTAL |
| | | | | | | | | | | | **27-Jan-11** | 02-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **15-Feb-11** | 09-Mar-11 | | IRON, TOTAL, MOLYBDENUM |
| | | | | | | | | | | | **03-Mar-11** | 29-Mar-11 | TOLUENE | IRON, TOTAL, MOLYBDENUM |
| | | | | | | | | | | | **04-Apr-11** | 26-Apr-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **12-May-11** | 02-Jun-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **06-Jun-11** | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C10619FWP1 | C10619F [redacted] | [redacted] | Ceresco MI | Calhoun | 8 | Unattended Permission, Anytime | 09-Oct-10 | Quarterly 2 | 22 | 19 | **18-Jul-11** | 02-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **12-Aug-11** | 14-Sep-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **14-Sep-11** | 29-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 16-Dec-11 | 20-Jan-12 | | |
| | | | | | | | | | | | 26-Jun-12 | 24-Jul-12 | | |
| C135093WP1 | C135093 [redacted] | [redacted] | Marshall MI | Calhoun | 0.25 | Unattended Permission, Anytime | 11-Oct-10 | Quarterly 2 | 12 | 10 | 19-Aug-10 | | | |
| | | | | | | | | | | | **11-Oct-10** | 26-Oct-10 | | |
| | | | | | | | | | | | **21-Oct-10** | 13-Dec-10 | | |
| | | | | | | | | | | | **06-Nov-10** | 17-Feb-11 | | |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | |
| | | | | | | | | | | | **26-Jan-11** | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **11-Feb-11** | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C135093WP1 | C135093 [redacted] | [redacted] | Marshall MI | Calhoun | 0.25 | Unattended Permission, Anytime | 11-Oct-10 | Quarterly 2 | 12 | 10 | **02-May-11** | 12-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **15-Aug-11** | 14-Sep-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **18-Nov-11** | | | |
| | | | | | | | | | | | 23-Feb-12 | 16-Mar-12 | | |
| | | | | | | | | | | | 25-Jun-12 | 24-Jul-12 | | |
| C152569WP1 | C152569 [redacted] | [redacted] | Ceresco MI | Calhoun | 7.25 | Unattended Permission, Anytime | | Quarterly 2 | 10 | 10 | **17-Nov-10** | 02-Dec-10 | | IRON |
| | | | | | | | | | | | **29-Nov-10** | 13-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **16-Dec-10** | 26-Jan-11 | | IRON, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **06-Jan-11** | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **09-Feb-11** | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **12-May-11** | 02-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **12-Aug-11** | 14-Sep-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **16-Nov-11** | 14-Dec-11 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C152569WP1 | C152569 [redacted] | [redacted] | Ceresco MI | Calhoun | 7.25 | Unattended Permission, Anytime | | Quarterly 2 | 10 | 10 | 22-Feb-12 | 16-Mar-12 | | |
| | | | | | | | | | | | 26-Jun-12 | 24-Jul-12 | | |
| C1528D4PW1 | C1528D4 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | | Quarterly 2 | 11 | 10 | **11-Nov-10** | 06-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **29-Nov-10** | 06-Jan-11 | | IRON, TOTAL |
| | | | | | | | | | | | **14-Dec-10** | 26-Jan-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **03-Jan-11** | 26-Jan-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **10-Feb-11** | 07-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **12-May-11** | 02-Jun-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **12-Aug-11** | 14-Sep-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C1528D4PW1 | C1528D4 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | | Quarterly 2 | 11 | 10 | **16-Nov-11** | 14-Dec-11 | | |
| | | | | | | | | | | | 23-Feb-12 | 16-Mar-12 | | |
| | | | | | | | | | | | 25-Jun-12 | 24-Jul-12 | | |
| C153895PW1 | C153895 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Permit But Call First | | Quarterly 2 | 15 | 14 | **17-Nov-10** | 02-Dec-10 | | IRON |
| | | | | | | | | | | | **29-Nov-10** | 10-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **14-Dec-10** | 26-Jan-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **21-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **10-Feb-11** | 07-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **02-Mar-11** | 25-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **04-Apr-11** | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C153895PW1 | C153895 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Permit But Call First | | Quarterly 2 | 15 | 14 | 09-May-11 | 26-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 10-Jun-11 | 22-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 20-Jul-11 | 02-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 11-Aug-11 | 29-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 14-Sep-11 | 29-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 16-Dec-11 | 20-Jan-12 | | |
| | | | | | | | | | | | 25-Jun-12 | 24-Jul-12 | | |
| C000749A | C000749 [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Permit but Call/Schedule Required | 19-Nov-10 | Semi-Annual | 9 | 9 | 06-Aug-10 | 20-Aug-10 | | Iron |
| | | | | | | | | | | | 17-Nov-10 | 13-Dec-10 | | IRON, NICKEL |
| | | | | | | | | | | | 29-Nov-10 | 11-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 17-Jan-11 | 10-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 27-Jan-11 | 02-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 03-May-11 | 17-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C000749A | C000749 [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Permit but Call/Schedule Required | 19-Nov-10 | Semi-Annual | 9 | 9 | **15-Aug-11** | 14-Sep-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **15-Nov-11** | 14-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 20-Feb-12 | 16-Mar-12 | | |
| C001311A | C001311 [redacted] | [redacted] | Marshall MI | Calhoun | 3 | Unattended Permission, Anytime | 06-Sep-10 | Semi-Annual | 11 | 11 | **31-Jul-10** | 25-Aug-10 | | |
| | | | | | | | | | | | **08-Sep-10** | 04-Oct-10 | | Iron |
| | | | | | | | | | | | **27-Oct-10** | 14-Jan-11 | | IRON |
| | | | | | | | | | | | **05-Nov-10** | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **24-Jan-11** | 15-Feb-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **10-Feb-11** | 07-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **02-May-11** | 12-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **15-Aug-11** | 14-Sep-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C001311A | C001311 [redacted] | [redacted] | Marshall MI | Calhoun | 3 | Unattended Permission, Anytime | 06-Sep-10 | Semi-Annual | 11 | 11 | **17-Nov-11** | 14-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 24-Feb-12 | 16-Mar-12 | | |
| C0042C2A | C0042C2 [redacted] | [redacted] | Battle Creek MI | Calhoun | 13.5 | Unattended Permission, Anytime | 23-Oct-10 | Semi-Annual | 10 | 10 | **02-Aug-10** | 25-Aug-10 | | |
| | | | | | | | | | | | 29-Oct-10 | 04-Dec-10 | | |
| | | | | | | | | | | | **11-Nov-10** | 13-Jan-11 | M,P-XYLENES | IRON, TOTAL |
| | | | | | | | | | | | **29-Nov-10** | 10-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **16-Dec-10** | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **06-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **11-Apr-11** | 02-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **15-Jul-11** | 02-Aug-11 | | IRON, TOTAL |
| | | | | | | | | | | | **17-Oct-11** | 08-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 17-Jan-12 | 09-Feb-12 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C00474DA | C00474D [redacted] | [redacted] | Battle Creek MI | Calhoun | 13.75 | Unattended Permission, Anytime | 24-Oct-10 | Semi-Annual | 11 | 10 | 02-Aug-10 | 25-Aug-10 | | |
| | | | | | | | | | | | 05-Aug-10 | 20-Aug-10 | | |
| | | | | | | | | | | | 24-Oct-10 | 12-Nov-10 | | IRON |
| | | | | | | | | | | | 02-Nov-10 | 19-Nov-10 | | IRON |
| | | | | | | | | | | | 03-Dec-10 | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 04-Jan-11 | 24-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 11-Apr-11 | 02-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 18-Jul-11 | 02-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 17-Oct-11 | 08-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 18-Jan-12 | 09-Feb-12 | | |
| C0048DCA | C0048DC [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Unattended Permission, Anytime | 23-Sep-10 | Semi-Annual | 12 | 11 | 10-Aug-10 | 25-Aug-10 | | |
| | | | | | | | | | | | 23-Sep-10 | 07-Oct-10 | | Iron |
| | | | | | | | | | | | 07-Oct-10 | 26-Oct-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0048DCA | C0048DC [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Unattended Permission, Anytime | 23-Sep-10 | Semi-Annual | 12 | 11 | **17-Oct-10** | 01-Nov-10 | | Iron |
| | | | | | | | | | | | **30-Oct-10** | 18-Nov-10 | | IRON |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **04-Jan-11** | 24-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **08-Apr-11** | 02-May-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **15-Jul-11** | 02-Aug-11 | | IRON, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **17-Oct-11** | 14-Dec-11 | | |
| | | | | | | | | | | | 17-Jan-12 | 09-Feb-12 | | |
| C00589DA | C00589D [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Unattended Permission, Anytime | 26-Aug-10 | Semi-Annual | 13 | 13 | **10-Aug-10** | 25-Aug-10 | | Iron |
| | | | | | | | | | | | **28-Aug-10** | 02-Oct-10 | | Iron |
| | | | | | | | | | | | **13-Sep-10** | 04-Oct-10 | | Iron |
| | | | | | | | | | | | **21-Sep-10** | 08-Oct-10 | | Iron |
| | | | | | | | | | | | **07-Oct-10** | 26-Oct-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C00589DA | C00589D [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Unattended Permission, Anytime | 26-Aug-10 | Semi-Annual | 13 | 13 | **17-Oct-10** | 01-Nov-10 | | Iron |
| | | | | | | | | | | | **30-Oct-10** | 18-Nov-10 | | IRON |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **04-Jan-11** | 24-Jan-11 | | IRON, TOTAL |
| | | | | | | | | | | | **08-Apr-11** | 02-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **15-Jul-11** | 02-Aug-11 | | IRON, TOTAL |
| | | | | | | | | | | | **17-Oct-11** | 08-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 17-Jan-12 | 09-Feb-12 | | |
| C00856DA | C00856D [redacted] | [redacted] | Augusta MI | Kalamazoo | 27.25 | Unattended Permission, Anytime | 07-Sep-10 | Semi-Annual | 14 | 14 | **04-Aug-10** | 25-Aug-10 | | |
| | | | | | | | | | | | **07-Sep-10** | 05-Oct-10 | | Iron |
| | | | | | | | | | | | **17-Sep-10** | 08-Feb-11 | | Iron |
| | | | | | | | | | | | **08-Oct-10** | 26-Oct-10 | | Iron |
| | | | | | | | | | | | **18-Oct-10** | 12-Nov-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C00856DA | C00856D [redacted] | [redacted] | Augusta MI | Kalamazoo | 27.25 | Unattended Permission, Anytime | 07-Sep-10 | Semi-Annual | 14 | 14 | **30-Oct-10** | 18-Nov-10 | | IRON |
| | | | | | | | | | | | **02-Dec-10** | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **13-Jan-11** | 15-Feb-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **04-Feb-11** | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **28-Feb-11** | 25-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **05-Apr-11** | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **09-Jun-11** | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **12-Sep-11** | 29-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 15-Dec-11 | 20-Jan-12 | | |
| C00928FA | C00928F [redacted] | [redacted] | Augusta MI | Kalamazoo | 26.5 | Unattended Permission, Anytime | 27-Oct-10 | Semi-Annual | 10 | 10 | **03-Aug-10** | 23-Aug-10 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C00928FA | C00928F [redacted] | [redacted] | Augusta MI | Kalamazoo | 26.5 | Unattended Permission, Anytime | 27-Oct-10 | Semi-Annual | 10 | 10 | **31-Aug-10** | 05-Oct-10 | | |
| | | | | | | | | | | | **27-Oct-10** | 14-Jan-11 | | |
| | | | | | | | | | | | **05-Nov-10** | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **02-Dec-10** | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **13-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **07-Apr-11** | 02-May-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **14-Jul-11** | 02-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **17-Oct-11** | 08-Dec-11 | | |
| | | | | | | | | | | | 17-Jan-12 | 09-Feb-12 | | |
| C0108EFA | C0108EF [redacted] | [redacted] | Marshall MI | Calhoun | 0.75 | Unattended Permission, Anytime | 24-Oct-10 | Semi-Annual | 13 | 12 | **01-Aug-10** | 21-Aug-10 | | |
| | | | | | | | | | | | **10-Aug-10** | 01-Nov-10 | | Iron |

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0108EFA | C0108EF [redacted] | [redacted] | Marshall MI | Calhoun | 0.75 | Unattended Permission, Anytime | 24-Oct-10 | Semi-Annual | 13 | 12 | **12-Aug-10** | 05-Oct-10 | | Iron |
| | | | | | | | | | | | **20-Aug-10** | 27-Sep-10 | | Iron |
| | | | | | | | | | | | 24-Oct-10 | 30-Nov-10 | | |
| | | | | | | | | | | | 03-Nov-10 | | | |
| | | | | | | | | | | | **11-Nov-10** | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **17-Dec-10** | 17-Feb-11 | | IRON, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **07-Jan-11** | 15-Feb-11 | | IRON, TOTAL |
| | | | | | | | | | | | **11-Feb-11** | 07-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **02-May-11** | 12-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **15-Aug-11** | 14-Sep-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0108EFA | C0108EF [redacted] | [redacted] | Marshall MI | Calhoun | 0.75 | Unattended Permission, Anytime | 24-Oct-10 | Semi-Annual | 13 | 12 | 18-Nov-11 | 19-Dec-11 | | IRON, TOTAL |
| C0137BDA | C0137BD [redacted] | [redacted] | Marshall MI | Calhoun | 2.75 | Unattended Permission, Anytime | 01-Sep-10 | Semi-Annual | 13 | 13 | 08-Aug-10 | 01-Sep-10 | | Iron |
| | | | | | | | | | | | 01-Sep-10 | 05-Oct-10 | | Iron |
| | | | | | | | | | | | 11-Sep-10 | 04-Oct-10 | | Iron |
| | | | | | | | | | | | 20-Sep-10 | 08-Feb-11 | | Iron |
| | | | | | | | | | | | 02-Oct-10 | 08-Feb-11 | | Iron |
| | | | | | | | | | | | 16-Oct-10 | 28-Oct-10 | | Iron |
| | | | | | | | | | | | 05-Nov-10 | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 30-Nov-10 | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 07-Jan-11 | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 06-Apr-11 | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 20-Jul-11 | 02-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 19-Oct-11 | 08-Dec-11 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0137BDA | C0137BD [redacted] | [redacted] | Marshall MI | Calhoun | 2.75 | Unattended Permission, Anytime | 01-Sep-10 | Semi-Annual | 13 | 13 | 19-Jan-12 | 09-Feb-12 | | |
| C0139BAA | C0139BA [redacted] | [redacted] | Marshall MI | Calhoun | 2.75 | Unattended Permission, Anytime | 01-Sep-10 | Semi-Annual | 13 | 11 | **02-Aug-10** | 25-Aug-10 | | |
| | | | | | | | | | | | **01-Sep-10** | 05-Oct-10 | | Iron |
| | | | | | | | | | | | **12-Sep-10** | 04-Oct-10 | | Iron |
| | | | | | | | | | | | **19-Sep-10** | 08-Feb-11 | | Iron |
| | | | | | | | | | | | **03-Oct-10** | 20-Oct-10 | | Iron |
| | | | | | | | | | | | **16-Oct-10** | | | Iron |
| | | | | | | | | | | | **29-Oct-10** | 03-Dec-10 | | IRON |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **07-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **06-Apr-11** | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **20-Jul-11** | 02-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 19-Oct-11 | 08-Dec-11 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C015322A | C015322 [redacted] | [redacted] | Battle Creek MI | Calhoun | 23 | Unattended Permission, Anytime | 07-Sep-10 | Semi-Annual | 16 | 14 | 05-Aug-10 | | | |
| | | | | | | | | | | | 07-Sep-10 | 07-Oct-10 | | Iron |
| | | | | | | | | | | | 13-Sep-10 | 04-Oct-10 | | Iron |
| | | | | | | | | | | | 16-Sep-10 | 07-Oct-10 | | Iron |
| | | | | | | | | | | | 30-Sep-10 | 20-Oct-10 | | Iron |
| | | | | | | | | | | | 14-Oct-10 | 28-Oct-10 | | Iron, Nickel |
| | | | | | | | | | | | 28-Oct-10 | 17-Nov-10 | | IRON |
| | | | | | | | | | | | 11-Nov-10 | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 29-Nov-10 | 11-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 14-Jan-11 | 17-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 07-Feb-11 | 07-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | 04-May-11 | 17-May-11 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C015322A | C015322 [redacted] | [redacted] | Battle Creek MI | Calhoun | 23 | Unattended Permission, Anytime | 07-Sep-10 | Semi-Annual | 16 | 14 | 11-Aug-11 | 29-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 15-Nov-11 | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 20-Feb-12 | 16-Mar-12 | | |
| C015481A | C015481 [redacted] | [redacted] | Battle Creek MI | Calhoun | 23 | Unattended Permission, Anytime | 04-Sep-10 | Semi-Annual | 13 | 13 | 05-Aug-10 | 20-Aug-10 | | |
| | | | | | | | | | | | 04-Sep-10 | 04-Oct-10 | | |
| | | | | | | | | | | | 16-Sep-10 | 07-Oct-10 | | Iron |
| | | | | | | | | | | | 30-Sep-10 | 20-Oct-10 | | Iron |
| | | | | | | | | | | | 14-Oct-10 | 28-Oct-10 | | Iron |
| | | | | | | | | | | | 28-Oct-10 | 17-Nov-10 | | IRON |
| | | | | | | | | | | | 02-Dec-10 | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 14-Jan-11 | 17-Feb-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | 07-Feb-11 | 07-Mar-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 04-May-11 | 17-May-11 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C015481A | C015481 [redacted] | [redacted] | Battle Creek MI | Calhoun | 23 | Unattended Permission, Anytime | 04-Sep-10 | Semi-Annual | 13 | 13 | **10-Aug-11** | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **15-Nov-11** | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 20-Feb-12 | 16-Mar-12 | | |
| C0156ADA | C0156AD [redacted] | [redacted] | Battle Creek MI | Calhoun | 23.25 | Unattended Permission, Anytime | 01-Sep-10 | Semi-Annual | 15 | 14 | **05-Aug-10** | | | |
| | | | | | | | | | | | **01-Sep-10** | 14-Oct-10 | | Iron |
| | | | | | | | | | | | **13-Sep-10** | 30-Nov-10 | | Iron, Nickel |
| | | | | | | | | | | | **21-Sep-10** | 28-Oct-10 | | Iron, Nickel |
| | | | | | | | | | | | **30-Sep-10** | 30-Nov-10 | | Iron, Nickel |
| | | | | | | | | | | | **14-Oct-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **28-Oct-10** | 30-Nov-10 | | IRON, NICKEL |
| | | | | | | | | | | | **11-Nov-10** | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **02-Dec-10** | 18-Dec-10 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **14-Jan-11** | 17-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0156ADA | C0156AD [redacted] | [redacted] | Battle Creek MI | Calhoun | 23.25 | Unattended Permission, Anytime | 01-Sep-10 | Semi-Annual | 15 | 14 | 09-Feb-11 | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 04-May-11 | 17-May-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 10-Aug-11 | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | 15-Nov-11 | 15-Mar-12 | | IRON, TOTAL |
| | | | | | | | | | | | 20-Feb-12 | 16-Mar-12 | | |
| C01573BA | C01573B [redacted] | [redacted] | Battle Creek MI | Calhoun | 23.25 | Unattended Permission, Anytime | 01-Sep-10 | Semi-Annual | 13 | 12 | 05-Aug-10 | | | |
| | | | | | | | | | | | 01-Sep-10 | 28-Oct-10 | | Iron |
| | | | | | | | | | | | 13-Sep-10 | 04-Oct-10 | | Iron |
| | | | | | | | | | | | 16-Sep-10 | 07-Jan-11 | | Iron |
| | | | | | | | | | | | 30-Sep-10 | 08-Feb-11 | | Iron |
| | | | | | | | | | | | 14-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 28-Oct-10 | 17-Nov-10 | | IRON |
| | | | | | | | | | | | 02-Dec-10 | 20-Dec-10 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C01573BA | C01573B [redacted] | [redacted] | Battle Creek MI | Calhoun | 23.25 | Unattended Permission, Anytime | 01-Sep-10 | Semi-Annual | 13 | 12 | **13-Jan-11** | 15-Feb-11 | | IRON, TOTAL |
| | | | | | | | | | | | **11-Apr-11** | 02-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **15-Jul-11** | 02-Aug-11 | | IRON, TOTAL |
| | | | | | | | | | | | **17-Oct-11** | 08-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 19-Jan-12 | 09-Feb-12 | | |
| C0165D4PW1 | C0165D4M [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Unattended Permission, Anytime | 14-Sep-10 | Semi-Annual | 16 | 14 | **28-Aug-10** | 04-Oct-10 | | Iron |
| | | | | | | | | | | | **31-Aug-10** | 05-Oct-10 | | Iron |
| | | | | | | | | | | | **14-Sep-10** | 05-Oct-10 | | Iron |
| | | | | | | | | | | | **20-Sep-10** | 08-Feb-11 | | |
| | | | | | | | | | | | **09-Oct-10** | 28-Oct-10 | | |
| | | | | | | | | | | | **19-Oct-10** | 08-Feb-11 | | |
| | | | | | | | | | | | **30-Oct-10** | 18-Nov-10 | | IRON |
| | | | | | | | | | | | **18-Nov-10** | 09-Dec-10 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0165D4PW1 | C0165D4M [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Unattended Permission, Anytime | 14-Sep-10 | Semi-Annual | 16 | 14 | **18-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **03-Feb-11** | 02-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **06-May-11** | 26-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **10-Aug-11** | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **14-Nov-11** | 14-Dec-11 | | |
| | | | | | | | | | | | 21-Feb-12 | 16-Mar-12 | | |
| C017595PW1 | C017595 [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.25 | Unattended Permission, Anytime | 24-Oct-10 | Semi-Annual | 12 | 10 | **29-Jul-10** | 21-Aug-10 | | |
| | | | | | | | | | | | **24-Oct-10** | 12-Nov-10 | | IRON |
| | | | | | | | | | | | **02-Nov-10** | 19-Nov-10 | | IRON |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **14-Jan-11** | 17-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C017595PW1 | C017595 [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.25 | Unattended Permission, Anytime | 24-Oct-10 | Semi-Annual | 12 | 10 | **03-Feb-11** | 07-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **09-May-11** | 26-May-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | **09-Aug-11** | 11-Sep-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **16-Nov-11** | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 21-Feb-12 | 16-Mar-12 | | |
| C0177B9A | C0177B9 [redacted] | [redacted] | Battle Creek MI | Calhoun | 14 | Unattended Permission, Anytime | 28-Sep-10 | Semi-Annual | 11 | 11 | **10-Aug-10** | 02-Sep-10 | | Iron |
| | | | | | | | | | | | **28-Sep-10** | 20-Oct-10 | | Iron |
| | | | | | | | | | | | **24-Oct-10** | 12-Nov-10 | | IRON |
| | | | | | | | | | | | **07-Nov-10** | 29-Nov-10 | | IRON |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **25-Jan-11** | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **03-Feb-11** | 02-Mar-11 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0177B9A | C0177B9 [redacted] | [redacted] | Battle Creek MI | Calhoun | 14 | Unattended Permission, Anytime | 28-Sep-10 | Semi-Annual | 11 | 11 | **06-May-11** | 26-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **09-Aug-11** | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **16-Nov-11** | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 21-Feb-12 | 16-Mar-12 | | |
| C0180D5A | C0180D5 [redacted] | [redacted] | Battle Creek MI | Calhoun | 14 | Permit but Call/Schedule Required | 31-Aug-10 | Semi-Annual | 15 | 13 | **08-Aug-10** | 19-Aug-10 | | Iron |
| | | | | | | | | | | | **31-Aug-10** | 05-Oct-10 | | Iron |
| | | | | | | | | | | | **14-Sep-10** | 05-Oct-10 | | Iron |
| | | | | | | | | | | | **20-Sep-10** | | | Iron |
| | | | | | | | | | | | **07-Oct-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **17-Oct-10** | 01-Nov-10 | | Iron |
| | | | | | | | | | | | **30-Oct-10** | 17-Nov-10 | | IRON |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0180D5A | C0180D5 [redacted] | [redacted] | Battle Creek MI | Calhoun | 14 | Permit but Call/Schedule Required | 31-Aug-10 | Semi-Annual | 15 | 13 | **19-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **08-Feb-11** | 07-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **06-May-11** | 26-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **09-Aug-11** | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **17-Nov-11** | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 21-Feb-12 | 16-Mar-12 | | |
| C018776A | C018776 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 37.25 | Unattended Permission, Anytime | 23-Sep-10 | Semi-Annual | 11 | 11 | **10-Aug-10** | 23-Aug-10 | | |
| | | | | | | | | | | | **23-Sep-10** | 07-Oct-10 | | |
| | | | | | | | | | | | **05-Oct-10** | 20-Oct-10 | | |
| | | | | | | | | | | | **16-Oct-10** | 01-Nov-10 | | |
| | | | | | | | | | | | **29-Oct-10** | 04-Dec-10 | | |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C018776A | C018776 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 37.25 | Unattended Permission, Anytime | 23-Sep-10 | Semi-Annual | 11 | 11 | **12-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **11-Apr-11** | 02-May-11 | | TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **11-Jul-11** | 21-Jul-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **18-Oct-11** | 18-Jan-12 | | |
| | | | | | | | | | | | 16-Jan-12 | 09-Feb-12 | | |
| C01932EA | C01932E [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.75 | Unattended Permission, Anytime | 01-Sep-10 | Semi-Annual | 18 | 17 | **07-Aug-10** | 01-Sep-10 | | Iron |
| | | | | | | | | | | | **01-Sep-10** | 01-Nov-10 | | |
| | | | | | | | | | | | **12-Sep-10** | 04-Oct-10 | | |
| | | | | | | | | | | | **03-Oct-10** | 07-Jan-11 | | |
| | | | | | | | | | | | **16-Oct-10** | 26-Oct-10 | | |
| | | | | | | | | | | | **30-Oct-10** | 18-Nov-10 | | |
| | | | | | | | | | | | **01-Dec-10** | 06-Jan-11 | | |
| | | | | | | | | | | | **12-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C01932EA | C01932E [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.75 | Unattended Permission, Anytime | 01-Sep-10 | Semi-Annual | 18 | 17 | **31-Jan-11** | 02-Mar-11 | | MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **28-Feb-11** | 23-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **05-Apr-11** | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **03-May-11** | 17-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **10-Jun-11** | 22-Jun-11 | | MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **14-Jul-11** | 02-Aug-11 | | MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **08-Aug-11** | 11-Sep-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **18-Oct-11** | 18-Jan-12 | | |
| | | | | | | | | | | | 16-Jan-12 | 09-Feb-12 | | |
| C01948DPW1 | C01948D [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.25 | Unattended Permission, Anytime | 06-Sep-10 | Semi-Annual | 11 | 10 | **08-Sep-10** | 16-Oct-10 | | |
| | | | | | | | | | | | **17-Sep-10** | 08-Oct-10 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C01948DPW1 | C01948D [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.25 | Unattended Permission, Anytime | 06-Sep-10 | Semi-Annual | 11 | 10 | **08-Oct-10** | 26-Oct-10 | | |
| | | | | | | | | | | | **18-Oct-10** | | | |
| | | | | | | | | | | | **30-Oct-10** | 18-Nov-10 | | |
| | | | | | | | | | | | **01-Dec-10** | 06-Jan-11 | | |
| | | | | | | | | | | | **12-Jan-11** | 21-Apr-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **07-Apr-11** | 05-May-11 | | MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **14-Jul-11** | 02-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **18-Oct-11** | 18-Jan-12 | | |
| | | | | | | | | | | | 16-Jan-12 | 09-Feb-12 | | |
| C0229A2A | C0229A2M [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.75 | Unattended Permission, Anytime | 28-Sep-10 | Semi-Annual | 16 | 16 | **02-Aug-10** | 17-Nov-10 | | |
| | | | | | | | | | | | **28-Sep-10** | 11-Nov-10 | | Iron |
| | | | | | | | | | | | **12-Oct-10** | 11-Nov-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0229A2A | C0229A2M [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.75 | Unattended Permission, Anytime | 28-Sep-10 | Semi-Annual | 16 | 16 | 27-Oct-10 | 10-Jan-11 | | IRON, NICKEL |
| | | | | | | | | | | | 05-Nov-10 | 20-Jan-11 | | IRON, TOTAL |
| | | | | | | | | | | | 16-Dec-10 | 24-Jan-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 18-Jan-11 | 17-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 03-Feb-11 | 02-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 01-Mar-11 | 23-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | 05-Apr-11 | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 06-May-11 | 26-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 06-Jun-11 | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 15-Jul-11 | 02-Aug-11 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0229A2A | C0229A2M [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.75 | Unattended Permission, Anytime | 28-Sep-10 | Semi-Annual | 16 | 16 | **10-Aug-11** | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **14-Nov-11** | 14-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 21-Feb-12 | 16-Mar-12 | | |
| C023047A | C023047 [redacted] | [redacted] | Battle Creek MI | Calhoun | 23 | Unattended Permission, Anytime | 31-Aug-10 | Semi-Annual | 15 | 14 | **07-Aug-10** | 01-Sep-10 | | Iron |
| | | | | | | | | | | | **31-Aug-10** | 05-Oct-10 | | Iron |
| | | | | | | | | | | | **13-Sep-10** | 04-Oct-10 | | Iron |
| | | | | | | | | | | | **16-Sep-10** | 07-Oct-10 | | Iron |
| | | | | | | | | | | | **30-Sep-10** | 20-Oct-10 | | Iron |
| | | | | | | | | | | | **14-Oct-10** | 01-Nov-10 | | Iron |
| | | | | | | | | | | | **28-Oct-10** | 17-Nov-10 | | IRON |
| | | | | | | | | | | | **02-Dec-10** | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **14-Jan-11** | 17-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C023047A | C023047 [redacted] | [redacted] | Battle Creek MI | Calhoun | 23 | Unattended Permission, Anytime | 31-Aug-10 | Semi-Annual | 15 | 14 | **14-Feb-11** | 03-Mar-11 | | IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **04-May-11** | 17-May-11 | | IRON, TOTAL |
| | | | | | | | | | | | **08-Aug-11** | 11-Sep-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **15-Nov-11** | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 20-Feb-12 | 16-Mar-12 | | |
| C0231D1A | C0231D1 [redacted] | [redacted] | Battle Creek MI | Calhoun | 23 | Unattended Permission, Anytime | 23-Sep-10 | Semi-Annual | 12 | 11 | **07-Aug-10** | 01-Sep-10 | | Iron |
| | | | | | | | | | | | **25-Sep-10** | 07-Oct-10 | | Iron |
| | | | | | | | | | | | **30-Sep-10** | | | Iron |
| | | | | | | | | | | | **14-Oct-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **28-Oct-10** | 17-Nov-10 | | IRON |
| | | | | | | | | | | | **02-Dec-10** | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **14-Jan-11** | 17-Feb-11 | | IRON, TOTAL, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0231D1A | C0231D1 [redacted] | [redacted] | Battle Creek MI | Calhoun | 23 | Unattended Permission, Anytime | 23-Sep-10 | Semi-Annual | 12 | 11 | 09-Feb-11 | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 04-May-11 | 17-May-11 | | IRON, TOTAL |
| | | | | | | | | | | | 10-Aug-11 | 24-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | 15-Nov-11 | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 21-Feb-12 | 16-Mar-12 | | |
| C024723PW1 | C024723 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 36.25 | Unattended Permission, Anytime | 26-Aug-10 | Semi-Annual | 16 | 15 | 04-Sep-10 | 07-Oct-10 | | |
| | | | | | | | | | | | 17-Sep-10 | 07-Oct-10 | | |
| | | | | | | | | | | | 06-Oct-10 | 20-Oct-10 | | |
| | | | | | | | | | | | 19-Oct-10 | 12-Nov-10 | | |
| | | | | | | | | | | | 06-Nov-10 | 03-Dec-10 | | |
| | | | | | | | | | | | 03-Dec-10 | 18-Dec-10 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C024723PW1 | C024723 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 36.25 | Unattended Permission, Anytime | 26-Aug-10 | Semi-Annual | 16 | 15 | **12-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **31-Jan-11** | 02-Mar-11 | | IRON, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **28-Feb-11** | 25-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **05-Apr-11** | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **02-May-11** | 12-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **09-Jun-11** | 21-Jun-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | **14-Jul-11** | 02-Aug-11 | | IRON, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **12-Sep-11** | 29-Nov-11 | | |
| | | | | | | | | | | | 15-Dec-11 | 20-Jan-12 | | |
| C0252EDA | C0252ED [redacted] | [redacted] | Galesburg MI | Kalamazoo | 36.25 | Permit but Call/Schedule Required | 06-Sep-10 | Semi-Annual | 12 | 12 | **24-Aug-10** | 06-Oct-10 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0252EDA | C0252ED [redacted] | [redacted] | Galesburg MI | Kalamazoo | 36.25 | Permit but Call/Schedule Required | 06-Sep-10 | Semi-Annual | 12 | 12 | **08-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **17-Sep-10** | 07-Oct-10 | | |
| | | | | | | | | | | | **06-Oct-10** | 20-Oct-10 | | |
| | | | | | | | | | | | **16-Oct-10** | 28-Oct-10 | | |
| | | | | | | | | | | | **29-Oct-10** | 04-Dec-10 | | |
| | | | | | | | | | | | **03-Dec-10** | 18-Dec-10 | | |
| | | | | | | | | | | | **13-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **11-Apr-11** | 02-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **18-Jul-11** | 02-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **18-Oct-11** | 18-Jan-12 | | |
| | | | | | | | | | | | 16-Jan-12 | 09-Feb-12 | | |
| C0269A6PW1 | C0269A6 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.75 | Unattended Permission, Anytime | 08-Oct-10 | Semi-Annual | 17 | 16 | **29-Aug-10** | 28-Oct-10 | | |

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0269A6PW1 | C0269A6 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.75 | Unattended Permission, Anytime | 08-Oct-10 | Semi-Annual | 17 | 16 | 11-Sep-10 | | | |
| | | | | | | | | | | | 17-Sep-10 | 28-Oct-10 | | |
| | | | | | | | | | | | 08-Oct-10 | 26-Oct-10 | | |
| | | | | | | | | | | | 18-Oct-10 | 12-Nov-10 | | |
| | | | | | | | | | | | 30-Oct-10 | 18-Nov-10 | | |
| | | | | | | | | | | | 16-Dec-10 | 24-Jan-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 12-Jan-11 | 15-Feb-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 31-Jan-11 | 02-Mar-11 | | BERYLLIUM, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | 28-Feb-11 | 23-Mar-11 | | IRON, TOTAL, MOLYBDENUM |
| | | | | | | | | | | | 05-Apr-11 | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 03-May-11 | 17-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 09-Jun-11 | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0269A6PW1 | C0269A6 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.75 | Unattended Permission, Anytime | 08-Oct-10 | Semi-Annual | 17 | 16 | **14-Jul-11** | 02-Aug-11 | | MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **08-Aug-11** | 11-Sep-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **18-Oct-11** | 18-Jan-12 | | |
| | | | | | | | | | | | 16-Jan-12 | 09-Feb-12 | | |
| C0271D5PW1 | C0271D5 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.25 | Unattended Permission, Anytime | 25-Oct-10 | Semi-Annual | 9 | 9 | **19-Sep-10** | 11-Nov-10 | | |
| | | | | | | | | | | | **25-Oct-10** | 12-Nov-10 | | IRON |
| | | | | | | | | | | | **06-Nov-10** | 03-Dec-10 | | IRON |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | |
| | | | | | | | | | | | **13-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **07-Apr-11** | 02-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **14-Jul-11** | 02-Aug-11 | | IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0271D5PW1 | C0271D5 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.25 | Unattended Permission, Anytime | 25-Oct-10 | Semi-Annual | 9 | 9 | **18-Oct-11** | 18-Jan-12 | | |
| | | | | | | | | | | | 16-Jan-12 | 09-Feb-12 | | |
| C0298FFWP1 | C0298FF [redacted] | [redacted] | Battle Creek MI | Calhoun | 17 | Permit but Call/Schedule Required | 06-Oct-10 | Semi-Annual | 14 | 14 | **07-Oct-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **17-Oct-10** | 01-Nov-10 | | Iron |
| | | | | | | | | | | | **30-Oct-10** | 18-Nov-10 | | IRON |
| | | | | | | | | | | | **02-Dec-10** | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **14-Jan-11** | 17-Feb-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **01-Feb-11** | 02-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **01-Mar-11** | 25-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **05-Apr-11** | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **05-May-11** | 17-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0298FFWP1 | C0298FF [redacted] | [redacted] | Battle Creek MI | Calhoun | 17 | Permit but Call/Schedule Required | 06-Oct-10 | Semi-Annual | 14 | 14 | **10-Jun-11** | 22-Jun-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | **19-Jul-11** | 02-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **16-Aug-11** | 29-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **20-Oct-11** | 08-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 18-Jan-12 | 09-Feb-12 | | |
| C0298FFWP2 | C0298FF [redacted] | [redacted] | Battle Creek MI | Calhoun | 17 | Permit but Call/Schedule Required | 06-Oct-10 | Semi-Annual | 10 | 10 | **07-Oct-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **17-Oct-10** | 01-Nov-10 | | Iron |
| | | | | | | | | | | | **30-Oct-10** | 18-Nov-10 | | IRON |
| | | | | | | | | | | | **02-Dec-10** | 12-Jan-11 | | IRON, TOTAL |
| | | | | | | | | | | | **14-Jan-11** | 17-Feb-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **01-Feb-11** | 02-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **05-May-11** | 17-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0298FFWP2 | C0298FF [redacted] | [redacted] | Battle Creek MI | Calhoun | 17 | Permit but Call/Schedule Required | 06-Oct-10 | Semi-Annual | 10 | 10 | **16-Aug-11** | 29-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **20-Oct-11** | 08-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 18-Jan-12 | 09-Feb-12 | | |
| C030917WP1 | C030917 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 32.5 | Permit but Call/Schedule Required | 07-Sep-10 | Semi-Annual | 11 | 11 | **23-Oct-10** | 12-Nov-10 | | IRON |
| | | | | | | | | | | | **04-Nov-10** | 23-Nov-10 | | IRON |
| | | | | | | | | | | | **18-Nov-10** | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **01-Dec-10** | 21-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **10-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **31-Jan-11** | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM |
| | | | | | | | | | | | **28-Feb-11** | 23-Mar-11 | | IRON, TOTAL, MOLYBDENUM |
| | | | | | | | | | | | **05-Apr-11** | 26-Apr-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **10-Jun-11** | 22-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C030917WP1 | C030917 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 32.5 | Permit but Call/Schedule Required | 07-Sep-10 | Semi-Annual | 11 | 11 | **12-Sep-11** | 29-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 15-Dec-11 | 20-Jan-12 | | |
| C0310F2PW1 | C0310F2 [redacted] | [redacted] | Marshall MI | Calhoun | 3.25 | Unattended Permission, Anytime | 24-Oct-10 | Semi-Annual | 14 | 14 | **08-Sep-10** | 16-Oct-10 | | Iron |
| | | | | | | | | | | | **24-Oct-10** | 30-Nov-10 | | IRON |
| | | | | | | | | | | | **05-Nov-10** | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **11-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **11-Feb-11** | 07-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MERCURY, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **02-Mar-11** | 25-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **04-Apr-11** | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0310F2PW1 | C0310F2 [redacted] | [redacted] | Marshall MI | Calhoun | 3.25 | Unattended Permission, Anytime | 24-Oct-10 | Semi-Annual | 14 | 14 | 02-May-11 | 12-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 06-Jun-11 | 21-Jun-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 19-Jul-11 | 02-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 12-Aug-11 | 14-Sep-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | 14-Sep-11 | 29-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 16-Dec-11 | 20-Jan-12 | | |
| C0337D3WP1 | C0337D3 [redacted] | [redacted] | Augusta MI | Kalamazoo | 27.25 | Unattended Permission, Anytime | 04-Sep-10 | Semi-Annual | 11 | 10 | 04-Sep-10 | 13-Oct-10 | | |
| | | | | | | | | | | | 18-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 08-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 18-Oct-10 | | | Iron |
| | | | | | | | | | | | 05-Nov-10 | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 02-Dec-10 | 18-Dec-10 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0337D3WP1 | C0337D3 [redacted] | [redacted] | Augusta MI | Kalamazoo | 27.25 | Unattended Permission, Anytime | 04-Sep-10 | Semi-Annual | 11 | 10 | 13-Jan-11 | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 07-Apr-11 | 02-May-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | 15-Jul-11 | 02-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM |
| | | | | | | | | | | | 17-Oct-11 | 08-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 17-Jan-12 | 09-Feb-12 | | |
| C03429BWP1 | C03429B [redacted] | [redacted] | Augusta MI | Kalamazoo | 26.75 | Unattended Permission, Anytime | 18-Oct-10 | Semi-Annual | 11 | 10 | 07-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 18-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 09-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 20-Oct-10 | | | Iron |
| | | | | | | | | | | | 05-Nov-10 | 09-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 02-Dec-10 | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 13-Jan-11 | 21-Apr-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 07-Apr-11 | 02-May-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 15-Jul-11 | 02-Aug-11 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C03429BWP1 | C03429B [redacted] | [redacted] | Augusta MI | Kalamazoo | 26.75 | Unattended Permission, Anytime | 18-Oct-10 | Semi-Annual | 11 | 10 | **17-Oct-11** | 08-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 17-Jan-12 | 09-Feb-12 | | |
| C046713WP1 | C046713 [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Unattended Permission, Anytime | 26-Aug-10 | Semi-Annual | 14 | 12 | **26-Aug-10** | 30-Nov-10 | | Iron, Nickel |
| | | | | | | | | | | | **28-Aug-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **13-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **21-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **10-Oct-10** | 01-Nov-10 | | |
| | | | | | | | | | | | **21-Oct-10** | | | |
| | | | | | | | | | | | **01-Nov-10** | | | |
| | | | | | | | | | | | **17-Nov-10** | 02-Dec-10 | | IRON |
| | | | | | | | | | | | **02-Dec-10** | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **19-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **01-Feb-11** | 02-Mar-11 | | IRON, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **04-May-11** | 17-May-11 | | IRON, TOTAL, VANADIUM, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C046713WP1 | C046713 [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Unattended Permission, Anytime | 26-Aug-10 | Semi-Annual | 14 | 12 | 08-Aug-11 | 11-Sep-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | 15-Nov-11 | 18-Jan-12 | | NICKEL, TOTAL |
| C04879DWP1 | C04879DM [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.75 | Unattended Permission, Anytime | 28-Sep-10 | Semi-Annual | 11 | 11 | 28-Sep-10 | 11-Nov-10 | | Iron |
| | | | | | | | | | | | 12-Oct-10 | 11-Nov-10 | p,m-Xylene | Iron |
| | | | | | | | | | | | 23-Oct-10 | 14-Jan-11 | | IRON |
| | | | | | | | | | | | 04-Nov-10 | 30-Nov-10 | | IRON |
| | | | | | | | | | | | 19-Nov-10 | 06-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 18-Jan-11 | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 03-Feb-11 | 02-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 06-May-11 | 26-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 10-Aug-11 | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C04879DWP1 | C04879DM [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.75 | Unattended Permission, Anytime | 28-Sep-10 | Semi-Annual | 11 | 11 | 14-Nov-11 | 14-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 21-Feb-12 | 16-Mar-12 | | |
| C0491E9PW1 | C0491E9 [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Permit but Call/Schedule Required | 26-Aug-10 | Semi-Annual | 14 | 13 | 28-Aug-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 13-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 19-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 10-Oct-10 | 28-Oct-10 | | Iron |
| | | | | | | | | | | | 20-Oct-10 | | | Iron |
| | | | | | | | | | | | 30-Oct-10 | 18-Nov-10 | | IRON |
| | | | | | | | | | | | 03-Dec-10 | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 18-Jan-11 | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 04-Feb-11 | 02-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 14-Feb-11 | 03-Mar-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 06-May-11 | 26-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0491E9PW1 | C0491E9 [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Permit but Call/Schedule Required | 26-Aug-10 | Semi-Annual | 14 | 13 | **10-Aug-11** | 29-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **15-Nov-11** | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 21-Feb-12 | 16-Mar-12 | | |
| C052339PW1 | C052339 [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Unattended Permission, Anytime | 26-Sep-10 | Semi-Annual | 12 | 11 | **28-Aug-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **13-Sep-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **19-Sep-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **09-Oct-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **19-Oct-10** | | | Iron |
| | | | | | | | | | | | **30-Oct-10** | 18-Nov-10 | | IRON |
| | | | | | | | | | | | **03-Dec-10** | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **18-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **03-Feb-11** | 07-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C052339PW1 | C052339 [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Unattended Permission, Anytime | 26-Sep-10 | Semi-Annual | 12 | 11 | 06-May-11 | 26-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 09-Aug-11 | 15-Sep-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 14-Nov-11 | 18-Jan-12 | | IRON, TOTAL |
| C052927WP1 | C052927 [redacted] | [redacted] | Marshall MI | Calhoun | 3 | Unattended Permission, Anytime | | Semi-Annual | 9 | 9 | 14-Dec-10 | 26-Jan-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | 03-Jan-11 | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 17-Jan-11 | 10-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 27-Jan-11 | 02-Mar-11 | | MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 02-Mar-11 | 25-Mar-11 | | MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 04-Apr-11 | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 06-Jun-11 | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 14-Sep-11 | 30-Nov-11 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C052927WP1 | C052927 [redacted] | [redacted] | Marshall MI | Calhoun | 3 | Unattended Permission, Anytime | | Semi-Annual | 9 | 9 | 16-Dec-11 | 20-Jan-12 | | |
| C05354DA | C05354D [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Unattended Permission, Anytime | 15-Sep-10 | Semi-Annual | 14 | 13 | 15-Aug-10 | 02-Sep-10 | | Iron |
| | | | | | | | | | | | 28-Aug-10 | 02-Oct-10 | | Iron |
| | | | | | | | | | | | 15-Sep-10 | 04-Oct-10 | | Iron |
| | | | | | | | | | | | 22-Sep-10 | 14-Oct-10 | | Iron |
| | | | | | | | | | | | 09-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 19-Oct-10 | | | Iron |
| | | | | | | | | | | | 30-Oct-10 | 30-Nov-10 | | IRON |
| | | | | | | | | | | | 03-Dec-10 | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 18-Jan-11 | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 03-Feb-11 | 02-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 06-May-11 | 26-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 09-Aug-11 | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C05354DA | C05354D [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Unattended Permission, Anytime | 15-Sep-10 | Semi-Annual | 14 | 13 | **14-Nov-11** | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 21-Feb-12 | 16-Mar-12 | | |
| C053761WP1 | C053761 [redacted] | [redacted] | Battle Creek MI | Calhoun | 18.25 | Permit but Call/Schedule Required | 09-Sep-10 | Semi-Annual | 11 | 11 | **20-Sep-10** | 13-Oct-10 | | Iron |
| | | | | | | | | | | | **12-Oct-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **25-Oct-10** | 03-Dec-10 | | IRON |
| | | | | | | | | | | | **08-Nov-10** | 29-Nov-10 | | IRON |
| | | | | | | | | | | | **02-Dec-10** | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **19-Jan-11** | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **03-Feb-11** | 02-Mar-11 | | IRON, TOTAL |
| | | | | | | | | | | | **05-May-11** | 17-May-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **10-Aug-11** | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **16-Nov-11** | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 22-Feb-12 | 16-Mar-12 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0572EAWP1 | C0572EA [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Permit but Call/Schedule Required | 04-Sep-10 | Semi-Annual | 12 | 12 | 07-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 20-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 11-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 23-Oct-10 | 12-Nov-10 | | IRON |
| | | | | | | | | | | | 08-Nov-10 | 29-Nov-10 | | IRON |
| | | | | | | | | | | | 02-Dec-10 | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 19-Jan-11 | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 14-Feb-11 | 03-Mar-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | 06-May-11 | 26-May-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 09-Aug-11 | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 14-Nov-11 | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 21-Feb-12 | 16-Mar-12 | | |
| C0574DFWP1 | C0574DF [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Unattended Permission, Anytime | 14-Sep-10 | Semi-Annual | 12 | 11 | 28-Sep-10 | 20-Oct-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0574DFWP1 | C0574DF [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.5 | Unattended Permission, Anytime | 14-Sep-10 | Semi-Annual | 12 | 11 | 12-Oct-10 | 28-Oct-10 | | Iron |
| | | | | | | | | | | | 23-Oct-10 | 14-Jan-11 | | IRON |
| | | | | | | | | | | | 09-Nov-10 | 02-Dec-10 | | IRON |
| | | | | | | | | | | | 02-Dec-10 | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 18-Jan-11 | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 08-Feb-11 | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 06-May-11 | 26-May-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 09-Aug-11 | 11-Sep-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | 15-Nov-11 | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 21-Feb-12 | 16-Mar-12 | | |
| C059451PW1 | C059451 1[redacted] | [redacted] | Battle Creek MI | Calhoun | 10.5 | Permit but Call/Schedule Required | 20-Sep-10 | Semi-Annual | 8 | 8 | 04-Sep-10 | 13-Oct-10 | | |
| | | | | | | | | | | | 16-Dec-10 | 26-Jan-11 | | IRON, TOTAL, VANADIUM, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C059451PW1 | C059451 [redacted] | [redacted] | Battle Creek MI | Calhoun | 10.5 | Permit but Call/Schedule Required | 20-Sep-10 | Semi-Annual | 8 | 8 | 03-Jan-11 | 15-Feb-11 | | IRON, TOTAL |
| | | | | | | | | | | | 08-Feb-11 | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | 01-Mar-11 | 25-Mar-11 | | MOLYBDENUM, VANADIUM, TOTAL |
| | | | | | | | | | | | 10-Jun-11 | 22-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 14-Sep-11 | 30-Nov-11 | | |
| | | | | | | | | | | | 20-Dec-11 | 20-Jan-12 | | |
| C06162CPW1 | C06162C [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.75 | Permit but Call/Schedule Required | 20-Sep-10 | Semi-Annual | 12 | 12 | 07-Sep-10 | 07-Jan-11 | | Iron |
| | | | | | | | | | | | 20-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 11-Oct-10 | 08-Feb-11 | | Iron |
| | | | | | | | | | | | 25-Oct-10 | 08-Feb-11 | TOLUENE | IRON |
| | | | | | | | | | | | 08-Nov-10 | 29-Nov-10 | | IRON |
| | | | | | | | | | | | 02-Dec-10 | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 19-Jan-11 | 21-Apr-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C06162CPW1 | C06162C [redacted] | [redacted] | Battle Creek MI | Calhoun | 14.75 | Permit but Call/Schedule Required | 20-Sep-10 | Semi-Annual | 12 | 12 | 03-Feb-11 | 02-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | 05-May-11 | 17-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | 11-Aug-11 | 29-Aug-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MERCURY, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | 16-Nov-11 | 18-Jan-12 | | IRON, TOTAL |
| | | | | | | | | | | | 22-Feb-12 | 16-Mar-12 | | |
| C0668ECA | C0668EC [redacted] | [redacted] | Marshall MI | Calhoun | 2.75 | Unattended Permission, Anytime | | Semi-Annual | 9 | 9 | 18-Aug-10 | 24-Sep-10 | | |
| | | | | | | | | | | | 24-Oct-10 | 12-Nov-10 | | IRON |
| | | | | | | | | | | | 05-Nov-10 | 10-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 30-Nov-10 | 15-Dec-10 | | |
| | | | | | | | | | | | 07-Jan-11 | 15-Feb-11 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0668ECA | C0668EC [redacted] | [redacted] | Marshall MI | Calhoun | 2.75 | Unattended Permission, Anytime | | Semi-Annual | 9 | 9 | 06-Apr-11 | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 20-Jul-11 | 02-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 18-Oct-11 | 18-Jan-12 | | |
| | | | | | | | | | | | 19-Jan-12 | 09-Feb-12 | | |
| C0678ADA | C0678AD [redacted] | [redacted] | Augusta MI | Kalamazoo | 29.5 | Unattended Permission, Anytime | 23-Sep-10 | Semi-Annual | 12 | 11 | 13-Aug-10 | 07-Sep-10 | | |
| | | | | | | | | | | | 23-Sep-10 | 07-Oct-10 | | |
| | | | | | | | | | | | 08-Oct-10 | 26-Oct-10 | | |
| | | | | | | | | | | | 18-Oct-10 | | | |
| | | | | | | | | | | | 30-Oct-10 | 03-Dec-10 | | |
| | | | | | | | | | | | 02-Dec-10 | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 10-Jan-11 | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, PHENANTHRENE, TITANIUM |
| | | | | | | | | | | | 31-Jan-11 | 02-Mar-11 | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0678ADA | C0678AD [redacted] | [redacted] | Augusta MI | Kalamazoo | 29.5 | Unattended Permission, Anytime | 23-Sep-10 | Semi-Annual | 12 | 11 | 03-May-11 | 17-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 08-Aug-11 | 18-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 14-Nov-11 | 18-Jan-12 | | |
| | | | | | | | | | | | 20-Feb-12 | 16-Mar-12 | | |
| C0693ABPW1 | C0693AB [redacted] | [redacted] | Battle Creek MI | Calhoun | 11 | Permit but Call/Schedule Required | 27-Oct-10 | Semi-Annual | 10 | 10 | 20-Aug-10 | 27-Sep-10 | | Iron, Nickel |
| | | | | | | | | | | | 27-Oct-10 | 14-Jan-11 | | IRON |
| | | | | | | | | | | | 03-Nov-10 | 19-Nov-10 | | IRON |
| | | | | | | | | | | | 17-Nov-10 | 02-Dec-10 | | IRON |
| | | | | | | | | | | | 02-Dec-10 | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 06-Jan-11 | 24-Jan-11 | | IRON, TOTAL |
| | | | | | | | | | | | 12-Apr-11 | 02-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 18-Jul-11 | 02-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 20-Oct-11 | 08-Dec-11 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0693ABPW1 | C0693AB [redacted] | [redacted] | Battle Creek MI | Calhoun | 11 | Permit but Call/Schedule Required | 27-Oct-10 | Semi-Annual | 10 | 10 | 18-Jan-12 | 09-Feb-12 | | |
| C0730ACPW1 | C0730AC [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.5 | Unattended Permission, Anytime | 14-Sep-10 | Semi-Annual | 17 | 17 | 01-Sep-10 | 09-Nov-10 | | Iron |
| | | | | | | | | | | | 14-Sep-10 | 09-Nov-10 | | |
| | | | | | | | | | | | 22-Sep-10 | 09-Nov-10 | | Iron |
| | | | | | | | | | | | 09-Oct-10 | 09-Nov-10 | | |
| | | | | | | | | | | | 25-Oct-10 | 14-Jan-11 | | |
| | | | | | | | | | | | 06-Nov-10 | 03-Dec-10 | | |
| | | | | | | | | | | | 01-Dec-10 | 15-Dec-10 | | |
| | | | | | | | | | | | 12-Jan-11 | 21-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | 31-Jan-11 | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | 28-Feb-11 | 25-Mar-11 | | IRON, TOTAL, MOLYBDENUM, VANADIUM, TOTAL |
| | | | | | | | | | | | 05-Apr-11 | 26-Apr-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0730ACPW1 | C0730AC [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.5 | Unattended Permission, Anytime | 14-Sep-10 | Semi-Annual | 17 | 17 | **03-May-11** | 17-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **09-Jun-11** | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **14-Jul-11** | 02-Aug-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **08-Aug-11** | 11-Sep-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **12-Sep-11** | 29-Nov-11 | | |
| | | | | | | | | | | | 15-Dec-11 | 20-Jan-12 | | |
| C07313APW1 | C07313A [redacted] | [redacted] | Galesburg MI | Kalamazoo | | Unattended Permission, Anytime | 15-Sep-10 | Semi-Annual | 8 | 6 | **15-Sep-10** | | | Iron |
| | | | | | | | | | | | **03-May-11** | 17-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **09-Jun-11** | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **14-Jul-11** | 02-Aug-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **08-Aug-11** | 11-Sep-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C07313APW1 | C07313A [redacted] | [redacted] | Galesburg MI | Kalamazoo | | Unattended Permission, Anytime | 15-Sep-10 | Semi-Annual | 8 | 6 | **12-Sep-11** | 29-Nov-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 15-Dec-11 | 20-Jan-12 | | |
| C07824BPW1 | C07824B [redacted] | [redacted] | Augusta MI | Kalamazoo | 27.5 | Unattended Permission, Anytime | 29-Aug-10 | Semi-Annual | 10 | 10 | **27-Oct-10** | 14-Jan-11 | | IRON |
| | | | | | | | | | | | **03-Nov-10** | 07-Jan-11 | | IRON |
| | | | | | | | | | | | **19-Nov-10** | 04-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **02-Dec-10** | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **10-Jan-11** | 21-Apr-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **04-Feb-11** | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | **03-May-11** | 17-May-11 | | IRON, TOTAL, MOLYBDENUM |
| | | | | | | | | | | | **08-Aug-11** | 11-Sep-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **14-Nov-11** | 14-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 20-Feb-12 | 16-Mar-12 | | |
| C0876A0WP1 | C0876A0 [redacted] | [redacted] | Battle Creek MI | Calhoun | 19.25 | Permit but Call/Schedule Required | 04-Oct-10 | Semi-Annual | 9 | 9 | **05-Oct-10** | 20-Oct-10 | | Iron |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0876A0WP1 | C0876A0 [redacted] | [redacted] | Battle Creek MI | Calhoun | 19.25 | Permit but Call/Schedule Required | 04-Oct-10 | Semi-Annual | 9 | 9 | **25-Oct-10** | 12-Nov-10 | | IRON |
| | | | | | | | | | | | **07-Nov-10** | 29-Nov-10 | | IRON |
| | | | | | | | | | | | **03-Dec-10** | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **06-Jan-11** | 24-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **12-Apr-11** | 02-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **18-Jul-11** | 02-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 19-Oct-11 | 08-Dec-11 | | |
| | | | | | | | | | | | 18-Jan-12 | 09-Feb-12 | | |
| C087736WP1 | C087736 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.5 | Unattended Permission, Anytime | 27-Sep-10 | Semi-Annual | 11 | 10 | **27-Sep-10** | 28-Oct-10 | | Nickel |
| | | | | | | | | | | | **09-Oct-10** | 26-Oct-10 | | |
| | | | | | | | | | | | **19-Oct-10** | | | |
| | | | | | | | | | | | **03-Nov-10** | 19-Nov-10 | | IRON |
| | | | | | | | | | | | **18-Nov-10** | 05-Jan-11 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C087736WP1 | C087736 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.5 | Unattended Permission, Anytime | 27-Sep-10 | Semi-Annual | 11 | 10 | **01-Dec-10** | 15-Dec-10 | | |
| | | | | | | | | | | | **12-Jan-11** | 15-Feb-11 | | IRON, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **07-Apr-11** | 02-May-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | **14-Jul-11** | 02-Aug-11 | | IRON, TOTAL, TITANIUM |
| | | | | | | | | | | | **18-Oct-11** | 18-Jan-12 | | |
| | | | | | | | | | | | 16-Jan-12 | 09-Feb-12 | | |
| C0920E7PW1 | C0920E7 [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Unattended Permission, Anytime | 23-Nov-10 | Semi-Annual | 8 | 8 | **01-Dec-10** | 15-Dec-10 | | |
| | | | | | | | | | | | **15-Dec-10** | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **04-Jan-11** | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **01-Feb-11** | 07-Mar-11 | | IRON, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **28-Feb-11** | 25-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **06-Jun-11** | 21-Jun-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0920E7PW1 | C0920E7 [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Unattended Permission, Anytime | 23-Nov-10 | Semi-Annual | 8 | 8 | 13-Sep-11 | 29-Nov-11 | | |
| | | | | | | | | | | | 19-Dec-11 | 20-Jan-12 | | |
| C0949C5WP1 | C0949C5 [redacted] | [redacted] | Battle Creek MI | Calhoun | 13.75 | Unattended Permission, Anytime | 25-Sep-10 | Semi-Annual | 12 | 12 | 25-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 12-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 23-Oct-10 | 14-Jan-11 | | IRON |
| | | | | | | | | | | | 07-Nov-10 | 29-Nov-10 | | IRON |
| | | | | | | | | | | | 03-Dec-10 | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 06-Jan-11 | 24-Jan-11 | | IRON, TOTAL, MERCURY, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 09-Feb-11 | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 02-Mar-11 | 25-Mar-11 | | IRON, TOTAL, MOLYBDENUM , NICKEL, TOTAL |
| | | | | | | | | | | | 04-Apr-11 | 26-Apr-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM , NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 06-Jun-11 | 21-Jun-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM , NICKEL, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0949C5WP1 | C0949C5 [redacted] | [redacted] | Battle Creek MI | Calhoun | 13.75 | Unattended Permission, Anytime | 25-Sep-10 | Semi-Annual | 12 | 12 | **13-Sep-11** | 28-Nov-11 | | IRON, TOTAL |
| | | | | | | | | | | | 19-Dec-11 | 20-Jan-12 | | |
| C14123EWP1 | C14123E [redacted] | [redacted] | Battle Creek MI | Calhoun | 20.25 | Unattended Permission, Anytime | 20-Oct-10 | Semi-Annual | 10 | 10 | **24-Oct-10** | 12-Nov-10 | | IRON |
| | | | | | | | | | | | **03-Nov-10** | 07-Jan-11 | | IRON, NICKEL |
| | | | | | | | | | | | **18-Nov-10** | 21-Dec-10 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **02-Dec-10** | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **15-Dec-10** | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **03-Jan-11** | 21-Apr-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **11-Apr-11** | 02-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **15-Jul-11** | 02-Aug-11 | | IRON, TOTAL |
| | | | | | | | | | | | **17-Oct-11** | 08-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 17-Jan-12 | 09-Feb-12 | | |
| C14332AWP1 | C14332A [redacted] | [redacted] | Augusta MI | Kalamazoo | 29.75 | Permit but Call/Schedule Required | | Semi-Annual | 9 | 9 | **19-Nov-10** | 04-Dec-10 | | IRON, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C14332AWP1 | C14332A [redacted] | [redacted] | Augusta MI | Kalamazoo | 29.75 | Permit but Call/Schedule Required | | Semi-Annual | 9 | 9 | 29-Nov-10 | 11-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 15-Dec-10 | 26-Jan-11 | | IRON, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | 10-Jan-11 | 21-Apr-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 04-Feb-11 | 02-Mar-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 11-Apr-11 | 02-May-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 14-Jul-11 | 02-Aug-11 | | IRON, TOTAL, MOLYBDENUM, TITANIUM |
| | | | | | | | | | | | 20-Oct-11 | 08-Dec-11 | | IRON, TOTAL |
| | | | | | | | | | | | 18-Jan-12 | 09-Feb-12 | | |
| C145599A | C145599 [redacted] | [redacted] | Battle Creek MI | Calhoun | 11 | Permit but Call/Schedule Required | | Semi-Annual | 8 | 8 | 23-Aug-10 | 01-Nov-10 | | Iron |
| | | | | | | | | | | | 17-Nov-10 | 02-Dec-10 | | IRON |
| | | | | | | | | | | | 01-Dec-10 | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 06-Jan-11 | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 08-Feb-11 | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C145599A | C145599 [redacted] | [redacted] | Battle Creek MI | Calhoun | 11 | Permit but Call/Schedule Required | | Semi-Annual | 8 | 8 | **05-May-11** | 17-May-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **09-Aug-11** | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **16-Nov-11** | 18-Jan-12 | | IRON, TOTAL |
| C145623WP1 | C145623 [redacted] | [redacted] | Battle Creek MI | Calhoun | 10.75 | Unattended Permission, Anytime | 28-Oct-10 | Semi-Annual | 8 | 8 | **03-Nov-10** | 07-Jan-11 | | IRON |
| | | | | | | | | | | | **17-Nov-10** | 02-Dec-10 | | IRON |
| | | | | | | | | | | | **29-Nov-10** | 10-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **08-Feb-11** | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **01-Mar-11** | 25-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **10-Jun-11** | 22-Jun-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **13-Sep-11** | 08-Dec-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 20-Dec-11 | 20-Jan-12 | | |
| C1509C0WP1 | C1509C0 [redacted] | [redacted] | Battle Creek MI | Calhoun | 20.5 | Permit but Call/Schedule Required | | Semi-Annual | 12 | 10 | 13-Aug-10 | | | |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C1509C0WP1 | C1509C0 [redacted] | [redacted] | Battle Creek MI | Calhoun | 20.5 | Permit but Call/Schedule Required | | Semi-Annual | 12 | 10 | 07-Nov-10 | 10-Dec-10 | | IRON |
| | | | | | | | | | | | 18-Nov-10 | 05-Jan-11 | | IRON, TOTAL |
| | | | | | | | | | | | 29-Nov-10 | 11-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 15-Dec-10 | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | 19-Jan-11 | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 01-Feb-11 | 02-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | 05-May-11 | 17-May-11 | | IRON, TOTAL |
| | | | | | | | | | | | 10-Aug-11 | 24-Aug-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 16-Nov-11 | 14-Dec-11 | | |
| | | | | | | | | | | | 20-Feb-12 | 16-Mar-12 | | |
| C1520E6WP1 | C1520E6 [redacted] | [redacted] | Battle Creek MI | Calhoun | 2.25 | Unattended Permission, Anytime | 19-Nov-10 | Semi-Annual | 9 | 8 | 09-Aug-10 | | | |
| | | | | | | | | | | | 02-Dec-10 | 26-Jan-11 | | |
| | | | | | | | | | | | 03-Jan-11 | 26-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |

Table 2c-1. Residential Well Sampling and Letter Status Through September 5, 2012 - Sampled Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C1520E6WP1 | C1520E6 [redacted] | [redacted] | Battle Creek MI | Calhoun | 2.25 | Unattended Permission, Anytime | 19-Nov-10 | Semi-Annual | 9 | 8 | **17-Jan-11** | 10-Mar-11 | | IRON, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **01-Feb-11** | 07-Mar-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **01-Mar-11** | 25-Mar-11 | | VANADIUM, TOTAL |
| | | | | | | | | | | | **06-Jun-11** | 21-Jun-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **13-Sep-11** | 29-Nov-11 | | |
| | | | | | | | | | | | 19-Dec-11 | 20-Jan-12 | | |

Notes:
Bold and Underlined Sample Date: Represents analytical results that have had a Level II Validation performed.
Non Bold and Non Underlined Sample Date: Represents analytical results that have had a Level I Review performed.
BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes
Cnt: Count
DRO: Diesel Range Organics
GRO: Gasoline Range Organics
ORO: Oil Range Organics

Table 2c-2. Residential Well Sampling and Letter Status Through September 5, 2012 - Winterized Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0250C1WP2 | C0250C1 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 36 | Unattended Permission, Anytime | | Prior to Sale or Occupation | 3 | 3 | 23-Oct-10 | 12-Nov-10 | | |
| | | | | | | | | | | | 30-Oct-10 | 18-Nov-10 | | |
| | | | | | | | | | | | 03-Dec-10 | 20-Dec-10 | | IRON, TOTAL |
| C0555CBA | C0555CB [redacted] | [redacted] | Marshall MI | Calhoun | 3 | Unattended Permission, Anytime | 06-Sep-10 | Prior to Sale or Occupation | 9 | 7 | 15-Aug-10 | 01-Sep-10 | | Iron |
| | | | | | | | | | | | 08-Sep-10 | 05-Oct-10 | | Iron |
| | | | | | | | | | | | 19-Sep-10 | | | Iron |
| | | | | | | | | | | | 01-Oct-10 | | | Iron |
| | | | | | | | | | | | 14-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 28-Oct-10 | 17-Nov-10 | | IRON |
| | | | | | | | | | | | 30-Nov-10 | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | 11-Jan-11 | 15-Feb-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | 11-Feb-11 | 07-Mar-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| C0872B9PW1 | C0872B9 [redacted] | [redacted] | Augusta MI | Kalamazoo | 27 | Unattended Permission, Anytime | 29-Aug-10 | Prior to Sale or Occupation | 3 | 3 | 30-Aug-10 | 28-Oct-10 | | Iron |
| | | | | | | | | | | | 18-Sep-10 | 16-Nov-10 | | Iron |

Table 2c-2. Residential Well Sampling and Letter Status Through September 5, 2012 - Winterized Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0872B9PW1 | C0872B9 [redacted] | [redacted] | Augusta MI | Kalamazoo | 27 | Unattended Permission, Anytime | 29-Aug-10 | Prior to Sale or Occupation | 3 | 3 | **08-Oct-10** | 26-Oct-10 | | Iron |
| C50318DWP2 | C50318D [redacted] | [redacted] | Marshall MI | Calhoun | 2.25 | Permit but Call/Schedule Required | 03-Dec-10 | Prior to Sale or Occupation | | | | | | |
| C062360A | C062360 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Permit but Call/Schedule Required | | Quarterly 2 | 4 | 4 | **18-Aug-10** | 03-Nov-10 | | Iron |
| | | | | | | | | | | | **20-Jul-11** | 02-Aug-11 | | IRON, TOTAL, NICKEL, TOTAL, TITANIUM |
| | | | | | | | | | | | **11-Aug-11** | 29-Aug-11 | | IRON, TOTAL, MERCURY, TOTAL, NICKEL, TOTAL |
| | | | | | | | | | | | **14-Sep-11** | 29-Nov-11 | | IRON, TOTAL |
| C0955AFPW1 | C0955AF [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Permit But Call First | | Quarterly 2 | | | | | | |
| C01836FA | C01836F [redacted] | [redacted] | Battle Creek MI | Calhoun | 14 | Unattended Permission, Anytime | 30-Aug-10 | Semi-Annual | 10 | 9 | **08-Aug-10** | 19-Aug-10 | | Iron |
| | | | | | | | | | | | **30-Aug-10** | 05-Oct-10 | | Iron |
| | | | | | | | | | | | **13-Sep-10** | 04-Oct-10 | | Iron |
| | | | | | | | | | | | **20-Sep-10** | | | Iron |
| | | | | | | | | | | | **07-Oct-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **17-Oct-10** | 01-Nov-10 | | Iron |
| | | | | | | | | | | | **30-Oct-10** | 18-Nov-10 | | IRON |

Table 2c-2. Residential Well Sampling and Letter Status Through September 5, 2012 - Winterized Wells
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C01836FA | C01836F | [redacted] | Battle Creek | Calhoun | 14 | Unattended Permission, Anytime | 30-Aug-10 | Semi-Annual | 10 | 9 | **12-May-11** | 02-Jun-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM |
| | [redacted] | | MI | | | | | | | | | | | |
| | | | | | | | | | | | **06-Jun-11** | 21-Jun-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| | | | | | | | | | | | **13-Sep-11** | 30-Nov-11 | | IRON, TOTAL, NICKEL, TOTAL |
| C052927WP2 | C052927 | [redacted] | Marshall | Calhoun | 3 | Unattended Permission, Anytime | | Semi-Annual | | | | | | |
| | [redacted] | | MI | | | | | | | | | | | |
| C1346E7WP1 | C1346E7 | [redacted] | Galesburg | Kalamazoo | 38.75 | Unattended Permission, Anytime | 16-Oct-10 | Semi-Annual | 7 | 7 | **28-Sep-10** | 13-Nov-10 | | Iron |
| | [redacted] | | MI | | | | | | | | | | | |
| | | | | | | | | | | | **16-Oct-10** | 26-Oct-10 | | Iron |
| | | | | | | | | | | | **30-Oct-10** | 03-Dec-10 | | |
| | | | | | | | | | | | **01-Dec-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **04-May-11** | 17-May-11 | | IRON, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **09-Jun-11** | 21-Jun-11 | | TITANIUM, VANADIUM, TOTAL |
| | | | | | | | | | | | **12-Sep-11** | 30-Nov-11 | | |

Notes:
Bold and Underlined Sample Date: Represents analytical results that have had a Level II Validation performed.
Non Bold and Non Underlined Sample Date: Represents analytical results that have had a Level I Review performed.
BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes
Cnt: Count
DRO: Diesel Range Organics
GRO: Gasoline Range Organics
ORO: Oil Range Organics

Table 2c-3. Residential Well Sampling and Letter Status Through September 5, 2012 - Wells Not Being Sampled
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C0246B5WP1 | C0246B5 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.75 | Unattended Permission, Anytime | 12-Oct-10 | Prior to Sale or Occupation | 1 | | | | | |
| C025965WP1 | C025965 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 34.75 | Unattended Permission, Anytime | 09-Oct-10 | Prior to Sale or Occupation | 3 | 1 | | | | |
| | | | | | | | | | | | **16-Oct-10** | 01-Nov-10 | | Iron |
| | | | | | | | | | | | **30-Oct-10** | | | IRON |
| C038297 | C038297 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Unattended Permission, Anytime | 05-Sep-10 | Prior to Sale or Occupation | 9 | 8 | | | | |
| | | | | | | | | | | | **05-Sep-10** | 07-Oct-10 | | |
| | | | | | | | | | | | **24-Oct-10** | 30-Nov-10 | | NICKEL |
| | | | | | | | | | | | **06-Nov-10** | 29-Nov-10 | | |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **20-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **08-Feb-11** | 07-Mar-11 | | BERYLLIUM, TOTAL, IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |

Table 2c-3. Residential Well Sampling and Letter Status Through September 5, 2012 - Wells Not Being Sampled
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C038297 | C038297 | [redacted] | Ceresco | Calhoun | 6 | Unattended Permission, Anytime | 05-Sep-10 | Prior to Sale or Occupation | 9 | 8 | **12-May-11** | 02-Jun-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL, TITANIUM, VANADIUM, TOTAL |
| | [redacted] | | MI | | | | | | | | | | | |
| | | | | | | | | | | | **12-Aug-11** | 14-Sep-11 | | IRON, TOTAL, NICKEL, TOTAL, VANADIUM, TOTAL |
| C046882A | C046882 | [redacted] | Battle Creek | Calhoun | 22.75 | Permit but Call and Schedule First | 26-Aug-10 | Prior to Sale or Occupation | 12 | 11 | | | | |
| | [redacted] | | MI | | | | | | | | | | | |
| | | | | | | | | | | | **03-Aug-10** | 21-Sep-10 | | |
| | | | | | | | | | | | **28-Aug-10** | 28-Oct-10 | | |
| | | | | | | | | | | | **28-Aug-10** | 01-Nov-10 | | |
| | | | | | | | | | | | **13-Sep-10** | 28-Oct-10 | | |
| | | | | | | | | | | | **21-Sep-10** | | | |
| | | | | | | | | | | | **10-Oct-10** | 26-Oct-10 | | |
| | | | | | | | | | | | **20-Oct-10** | 12-Nov-10 | | |
| | | | | | | | | | | | **03-Nov-10** | 15-Feb-11 | | |
| | | | | | | | | | | | **02-Dec-10** | 18-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **19-Jan-11** | 15-Feb-11 | | NICKEL, TOTAL, VANADIUM, TOTAL |

Table 2c-3. Residential Well Sampling and Letter Status Through September 5, 2012 - Wells Not Being Sampled
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C046882A | C046882 [redacted] | [redacted] | Battle Creek MI | Calhoun | 22.75 | Permit but Call and Schedule First | 26-Aug-10 | Prior to Sale or Occupation | 12 | 11 | **01-Feb-11** | 02-Mar-11 | | IRON, TOTAL, VANADIUM, TOTAL |
| | | | | | | | | | | | **04-May-11** | 17-May-11 | | IRON, TOTAL, VANADIUM, TOTAL |
| C0883E0WP1 | C0883E0 [redacted] | [redacted] | Galesburg MI | Kalamazoo | 37.5 | Permit but Call/Schedule Required | 07-Oct-10 | Prior to Sale or Occupation | 1 | | | | | |
| C50318DWP1 | C50318D [redacted] | [redacted] | Marshall MI | Calhoun | 2.25 | Permit but Call/Schedule Required | 03-Dec-10 | Prior to Sale or Occupation | 4 | 3 | | | | |
| | | | | | | | | | | | 03-Aug-10 | 25-Aug-10 | | |
| | | | | | | | | | | | **06-Dec-10** | 20-Dec-10 | | IRON, TOTAL |
| | | | | | | | | | | | **11-Jan-11** | 15-Feb-11 | | IRON, TOTAL, MOLYBDENUM, NICKEL, TOTAL |
| C002068A | C002068 [redacted] | [redacted] | Marshall MI | Calhoun | 1.25 | Refused Permission | 31-Aug-10 | Quarterly 2 | 7 | 7 | **01-Aug-10** | 01-Sep-10 | | |
| | | | | | | | | | | | **31-Aug-10** | 28-Oct-10 | | Iron |
| | | | | | | | | | | | **12-Sep-10** | 21-Oct-10 | | |
| | | | | | | | | | | | **22-Oct-10** | 12-Nov-10 | | |
| | | | | | | | | | | | **05-Nov-10** | 20-Dec-10 | | |
| | | | | | | | | | | | **30-Nov-10** | 15-Dec-10 | | |

Table 2c-3. Residential Well Sampling and Letter Status Through September 5, 2012 - Wells Not Being Sampled
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C002068A | C002068 [redacted] | [redacted] | Marshall MI | Calhoun | 1.25 | Refused Permission | 31-Aug-10 | Quarterly 2 | 7 | 7 | 05-Jan-11 | 24-Jan-11 | | IRON, TOTAL, NICKEL, TOTAL |
| C0023D2WP1 | C0023D2 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Permit But Call First | | Quarterly 2 | 1 | 1 | 28-Jul-10 | 21-Aug-10 | | |
| C0188E7A | C0188E7 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | | | Quarterly 2 | 1 | 1 | 08-Aug-10 | 02-Sep-10 | | |
| C032604WP1 | C032604 [redacted] | [redacted] | Ceresco MI | Calhoun | 6 | Permit but Call/Schedule Required | 15-Oct-10 | Quarterly 2 | 1 | | | | | |
| C039759WP1 | C039759 [redacted] | [redacted] | Ceresco MI | Calhoun | 5.75 | Permit but Call/Schedule Required | 03-Oct-10 | Quarterly 2 | 4 | 3 | | | | |
| | | | | | | | | | | | 12-Oct-10 | 01-Nov-10 | | Iron |
| | | | | | | | | | | | 23-Oct-10 | 03-Dec-10 | | BERYLLIUM, IRON |
| | | | | | | | | | | | 08-Nov-10 | 03-Dec-10 | | IRON |
| C01477APW1 | C01477A [redacted] | [redacted]d | Battle Creek MI | Calhoun | 21 | Refused Permission | 29-Sep-10 | Semi-Annual | 2 | 1 | 08-Aug-10 | | | Iron |
| | | | | | | | | | | | 17-Aug-10 | 01-Sep-10 | | Iron |
| C035755WP1 | C035755 [redacted] | [redacted] | Augusta MI | Kalamazoo | 24.75 | Refused Permission | 05-Sep-10 | Semi-Annual | 5 | 5 | 08-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 18-Sep-10 | 13-Oct-10 | | Iron |
| | | | | | | | | | | | 08-Oct-10 | 26-Oct-10 | | Iron |
| | | | | | | | | | | | 18-Oct-10 | 12-Nov-10 | | Iron |
| | | | | | | | | | | | 06-Nov-10 | 03-Dec-10 | | IRON |

Table 2c-3. Residential Well Sampling and Letter Status Through September 5, 2012 - Wells Not Being Sampled
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Well No | Property No/Tax ID | Address | City/State | County | Mile Post | Permission | Permission Date | Frequency | Sample Cnt. | Letter Cnt. | Sample Date | Letter Sent Date | BTEX, GRO, ORO, DRO Detects | Other Crude Oil Constituent Detects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C035755WP2 | C035755 [redacted] | [redacted] | Augusta MI | Kalamazoo | 24.75 | Refused Permission | 05-Sep-10 | Semi-Annual | 5 | 5 | **08-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **18-Sep-10** | 13-Oct-10 | | |
| | | | | | | | | | | | **08-Oct-10** | 26-Oct-10 | | |
| | | | | | | | | | | | **18-Oct-10** | 12-Nov-10 | | Iron |
| | | | | | | | | | | | **06-Nov-10** | 03-Dec-10 | | |
| C0609FCWP1 | C0609FC [redacted] | [redacted] | Battle Creek MI | Calhoun | 14 | | | Semi-Annual | 1 | | | | | |
| C068050PW1 | C068050 [redacted] | [redacted] | Battle Creek MI | Calhoun | 15 | Refused Permission | 22-Oct-10 | Semi-Annual | 1 | 1 | **18-Aug-10** | 24-Sep-10 | | |
| C0878A7WP1 | C0878A7 [redacted] | [redacted] | Springfield MI | Calhoun | 17.75 | | | Semi-Annual | 1 | | | | | |
| C12624BPW1 | C12624B [redacted] | [redacted] | Battle Creek MI | Calhoun | 13.75 | | | Semi-Annual | | | | | | |
| C14255EWP1 | C14255E [redacted] | [redacted] | Springfield MI | Calhoun | 17.75 | Refused Permission | | Semi-Annual | | | | | | |
| C14351FWP1 | C14351F [redacted] | [redacted] | Battle Creek MI | Calhoun | 14 | | | Semi-Annual | 1 | | | | | |

Notes:
Bold and Underlined Sample Date: Represents analytical results that have had a Level II Validation performed.
Non Bold and Non Underlined Sample Date: Represents analytical results that have had a Level I Review performed.
BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes
Cnt: Count
DRO: Diesel Range Organics
GRO: Gasoline Range Organics
ORO: Oil Range Organics

| Locations | Geomorphic Setting | Channel Gradient | Cylindrical Sampler Device Identification Number | Date Installed | Monitoring Round 1 | | | | | Monitoring Round 2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Sample Jars Collected | Date Conducted | # of Days | Measuered Sediment (mm) | Sedimentation Rate (mm/day) | Sample Jars Collected | Date Conducted | # of Days | Measuered Sediment (mm) | Sedimentation Rate (mm/day) |
| **MP 10.75 LDB** | Backwater | 2.7 ft/mile | C01 | 5/2/2012 | Yes | 5/10/2012 | 8 | 20 | 2.50 | No | 5/16/2012 | 6 | 10 | 1.67 |
| | | | C02 | 5/2/2012 | Yes | 5/10/2012 | 8 | 20 | 2.50 | No | 5/16/2012 | 6 | 10 | 1.67 |
| | | | C03 | 6/13/2012 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **MP 14.75 RDB** | Cut off channel | 0.5 ft/mile | C01 | 5/1/2012 | Yes | 5/11/2012 | 10 | 76 | 7.60 | No | 5/16/2012 | 5 | 50 | 10.00 |
| | | | C02 | 5/1/2012 | Yes | 5/11/2012 | 10 | 75 | 7.50 | Yes | 5/16/2012 | 5 | 78 | 15.60 |
| | | | C03 | 5/1/2012 | Yes | 5/11/2012 | 10 | 20 | 2.00 | No | 5/16/2012 | 5 | 25 | 5.00 |
| **MP 19.25 LDB** | Cut off channel | 0.6 ft/mile | C01 | 5/2/2012 | Yes | 5/10/2012 | 8 | 25 | 3.13 | No | 5/16/2012 | 6 | 19 | 3.17 |
| | | | C02 | 5/2/2012 | Yes | 5/10/2012 | 8 | 37 | 4.63 | No | 5/16/2012 | 6 | 19 | 3.17 |
| | | | C03 | 5/2/2012 | Yes | 5/9/2012 | 7 | 3 | 0.43 | No | 5/16/2012 | 7 | 3 | 0.43 |
| | | | C04 | 5/2/2012 | Yes | 5/9/2012 | 7 | 13 | 1.86 | No | 5/16/2012 | 7 | 10 | 1.43 |
| | | | C05 | 5/2/2012 | Yes | 5/9/2012 | 7 | 30 | 4.29 | No | 5/16/2012 | 7 | 20 | 2.86 |
| **MP 21.50 RDB** | Oxbow | 0.5 ft/mile | C01 | 5/2/2012 | N/A | N/A | N/A | N/A | N/A | Yes | 5/17/2012 | 15 | 80 | 5.33 |
| | | | C02 | 5/2/2012 | N/A | N/A | N/A | N/A | N/A | Yes | 5/17/2012 | 15 | 95 | 6.33 |
| | | | C03 | 5/2/2012 | N/A | N/A | N/A | N/A | N/A | Yes | 5/17/2012 | 15 | 140 | 9.33 |
| **MP 28.25 RDB** | Oxbow | 0.4 ft/mile | C01 | 5/2/2012 | N/A | N/A | N/A | N/A | N/A | No | 5/18/2012 | 16 | 42 | 2.63 |
| | | | C02 | 5/2/2012 | N/A | N/A | N/A | N/A | N/A | Yes | 5/18/2012 | 16 | 130 | 8.13 |
| | | | C03 | 5/2/2012 | N/A | N/A | N/A | N/A | N/A | Yes | 5/18/2012 | 16 | 95 | 5.94 |
| **MP 36.10 NW** | Cut off channel | 0.3 ft/mile | C01 | 5/8/2012 | Yes | 5/11/2012 | 3 | 19 | 6.33 | No | 5/17/2012 | 6 | 29 | 4.83 |
| | | | C02 | 5/8/2012 | Yes | 5/11/2012 | 3 | 26 | 8.67 | No | 5/17/2012 | 6 | 32 | 5.33 |
| | | | C03 | 5/8/2012 | Yes | 5/11/2012 | 3 | 7 | 2.33 | No | 5/17/2012 | 6 | 18 | 3.00 |

| | |
|---|---|
| N/A | Either no sampler in location or not assessed during monitoring round |
| mm | Millimeter |
| mm/day | Millimeters per day |
| TEXT | Sample device on side facing upstream |
| | Sample Jars replaced but no sample collected |
| | Sample device top at or above surface of water |
| (mm)* | Measured sediment is the average between both jars in CSD |

| Locations | Geomorphic Setting | Channel Gradient | Cylindrical Sampler Device Identification Number | Date Installed | Monitoring Round 3 | | | | | Monitoring Round 4 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Sample Jars Collected | Date Conducted | # of Days | Measured Sediment (mm) | Sedimentation Rate (mm/day) | Sample Jars Collected | Date Conducted | # of Days | Measured Sediment (mm) | Sedimentation Rate (mm/day) |
| **MP 10.75 LDB** | Backwater | 2.7 ft/mile | C01 | 5/2/2012 | No | 5/23/2012 | 13 | 22 | 1.69 | No | 5/31/2012 | 21 | 22 | 1.05 |
| | | | C02 | 5/2/2012 | No | 5/23/2012 | 13 | 17 | 1.31 | No | 5/31/2012 | 21 | 22 | 1.05 |
| | | | C03 | 6/13/2012 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **MP 14.75 RDB** | Cut off channel | 0.5 ft/mile | C01 | 5/1/2012 | No | 5/23/2012 | 12 | 91 | 7.58 | No | 5/31/2012 | 20 | 101 | 5.05 |
| | | | C02 | 5/1/2012 | No | 5/23/2012 | 7 | 45 | 6.43 | No | 5/31/2012 | 15 | 50 | 3.33 |
| | | | C03 | 5/1/2012 | No | 5/23/2012 | 12 | 38 | 3.17 | No | 5/31/2012 | 20 | 38 | 1.90 |
| **MP 19.25 LDB** | Cut off channel | 0.6 ft/mile | C01 | 5/2/2012 | No | 5/23/2012 | 13 | 19 | 1.46 | No | 5/31/2012 | 21 | 19 | 0.90 |
| | | | C02 | 5/2/2012 | No | 5/23/2012 | 13 | 30 | 2.31 | No | 5/31/2012 | 21 | 50 | 2.38 |
| | | | C03 | 5/2/2012 | No | 5/23/2012 | 14 | No assessment | | No | 5/31/2012 | 22 | N/A | N/A |
| | | | C04 | 5/2/2012 | No | 5/23/2012 | 14 | 32 | 2.29 | No | 5/31/2012 | 22 | 51 | 2.32 |
| | | | C05 | 5/2/2012 | No | 5/23/2012 | 14 | 41 | 2.93 | No | 5/31/2012 | 22 | 76 | 3.45 |
| **MP 21.50 RDB** | Oxbow | 0.5 ft/mile | C01 | 5/2/2012 | No | 5/24/2012 | 7 | 25 | 3.57 | No | 6/1/2012 | 15 | 47 | 3.13 |
| | | | C02 | 5/2/2012 | No | 5/24/2012 | 7 | 30 | 4.29 | No | 6/1/2012 | 15 | 57 | 3.80 |
| | | | C03 | 5/2/2012 | No | 5/24/2012 | 7 | 60 | 8.57 | No | 6/1/2012 | 15 | 76 | 5.07 |
| **MP 28.25 RDB** | Oxbow | 0.4 ft/mile | C01 | 5/2/2012 | No | 5/24/2012 | 22 | 50 | 2.27 | No | 6/1/2012 | 30 | 50 | 1.67 |
| | | | C02 | 5/2/2012 | No | 5/24/2012 | 6 | 10 | 1.67 | No | 6/1/2012 | 14 | 12 | 0.86 |
| | | | C03 | 5/2/2012 | No | 5/24/2012 | 6 | 13 | 2.17 | No | 6/1/2012 | 14 | 19 | 1.36 |
| **MP 36.10 NW** | Cut off channel | 0.3 ft/mile | C01 | 5/8/2012 | No | 5/24/2012 | 13 | 41 | 3.15 | No | 5/30/2012 | 19 | 63 | 3.32 |
| | | | C02 | 5/8/2012 | No | 5/24/2012 | 13 | 50 | 3.85 | No | 5/30/2012 | 19 | 63 | 3.32 |
| | | | C03 | 5/8/2012 | No | 5/24/2012 | 13 | 26 | 2.00 | No | 5/30/2012 | 19 | 38 | 2.00 |

| | |
|---|---|
| N/A | Either no sampler in location or not assessed during monitoring round |
| mm | Millimeter |
| mm/day | Millimeters per day |
| TEXT | Sample device on side facing upstream |
| | Sample Jars replaced but no sample collected |
| | Sample device top at or above surface of water |
| (mm)* | Measured sediment is the average between both jars in CSD |

| Locations | Geomorphic Setting | Channel Gradient | Cylindrical Sampler Device Identification Number | Date Installed | Monitoring Round 5 | | | | | | Monitoring Round 6 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Sample Jars Collected | Date Conducted | # of Days | Measured Sediment (mm)* | Sedimentation Rate (mm/day) | Amount of Water Above CSD (ft) | Sample Jars Collected | Date Conducted | # of Days | Measured Sediment (mm)* | Sedimentation Rate (mm/day) | Amount of Water Above CSD (ft) |
| **MP 10.75 LDB** | Backwater | 2.7 ft/mile | C01 | 5/2/2012 | No | 7/9/2012 | 60 | 37 | 0.62 | 0.25 | No | 8/13/2012 | 95 | 37 | 0.39 | 0.70 |
| | | | C02 | 5/2/2012 | No | 7/9/2012 | 60 | 20 | 0.33 | 0.50 | No | 8/13/2012 | 95 | 52 | 0.55 | 0.60 |
| | | | C03 | 6/13/2012 | No | 7/9/2012 | 26 | 15 | 0.58 | 1.00 | Yes | 8/13/2012 | 61 | 97 | 1.59 | 1.20 |
| **MP 14.75 RDB** | Cut off channel | 0.5 ft/mile | C01 | 5/1/2012 | Yes | 7/11/2012 | 61 | 131 | 2.15 | 0.75 | No | 8/14/2012 | 34 | 60 | 1.76 | 1.00 |
| | | | C02 | 5/1/2012 | Yes | 7/11/2012 | 56 | 83 | 1.48 | 1.50 | No | 8/14/2012 | 34 | 70 | 2.06 | 1.90 |
| | | | C03 | 5/1/2012 | Yes | 7/11/2012 | 61 | 88 | 1.44 | 1.10 | No | 8/14/2012 | 34 | 45 | 1.32 | 1.40 |
| **MP 19.25 LDB** | Cut off channel | 0.6 ft/mile | C01 | 5/2/2012 | No | 7/10/2012 | 61 | 17 | 0.28 | -0.60 | No | 8/15/2012 | 97 | 17 | 0.18 | -0.50 |
| | | | C02 | 5/2/2012 | No | 7/10/2012 | 61 | 50 | 0.82 | -0.25 | No | 8/15/2012 | 97 | 60 | 0.62 | -0.10 |
| | | | C03 | 5/2/2012 | No | 7/10/2012 | 62 | 5 | 0.08 | -0.50 | No | 8/15/2012 | 98 | 5 | 0.05 | -0.50 |
| | | | C04 | 5/2/2012 | Yes | 7/10/2012 | 62 | 135 | 2.18 | 0.10 | No | 8/15/2012 | 36 | 50 | 1.39 | 0.40 |
| | | | C05 | 5/2/2012 | Yes | 7/10/2012 | 62 | 114 | 1.84 | N/A | No | 8/15/2012 | 36 | 53 | 1.47 | 1.00 |
| **MP 21.50 RDB** | Oxbow | 0.5 ft/mile | C01 | 5/2/2012 | Yes | 7/12/2012 | 56 | 84 | 1.50 | 1.20 | Yes | 8/17/2012 | 36 | 137 | 3.81 | 1.60 |
| | | | C02 | 5/2/2012 | Yes | 7/12/2012 | 56 | 124 | 2.21 | 1.20 | Yes | 8/17/2012 | 36 | 120 | 3.33 | 1.80 |
| | | | C03 | 5/2/2012 | Yes | 7/12/2012 | 56 | 160 | 2.86 | 0.20 | Yes | 8/16/2012 | 35 | 164 | 4.69 | N/A |
| **MP 28.25 RDB** | Oxbow | 0.4 ft/mile | C01 | 5/2/2012 | No | 7/13/2012 | 72 | 46 | 0.64 | -0.80 | No | 8/16/2012 | 106 | 64 | 0.60 | -0.30 |
| | | | C02 | 5/2/2012 | No | 7/13/2012 | 56 | 50 | 0.89 | 0.05 | No | 8/16/2012 | 90 | 71 | 0.79 | 0.60 |
| | | | C03 | 5/2/2012 | No | 7/13/2012 | 56 | 53 | 0.95 | 0.05 | No | 8/16/2012 | 90 | 60 | 0.67 | 0.80 |
| **MP 36.10 NW** | Cut off channel | 0.3 ft/mile | C01 | 5/8/2012 | Yes | 7/16/2012 | 66 | 107 | 1.62 | 1.00 | Yes | 8/21/2012 | 36 | 128 | 3.56 | 0.80 |
| | | | C02 | 5/8/2012 | Yes | 7/16/2012 | 66 | 109 | 1.65 | 0.80 | Yes | 8/21/2012 | 36 | 130 | 3.61 | 0.70 |
| | | | C03 | 5/8/2012 | Yes | 7/16/2012 | 66 | 140 | 2.12 | 1.00 | Yes | 8/21/2012 | 36 | 120 | 3.33 | 0.70 |

| | |
|---|---|
| N/A | Either no sampler in location or not assessed during monitoring round |
| mm | Millimeter |
| mm/day | Millimeters per day |
| TEXT | Sample device on side facing upstream |
| | Sample Jars replaced but no sample collected |
| | Sample device top at or above surface of water |
| (mm)* | Measured sediment is the average between both jars in CSD |

| Locations | Geomorphic Setting | Channel Gradient | Number of Proposed CSDs | CSD Identification Number | Water Depth (ft) | Amount of Water Above CSD (ft) |
|---|---|---|---|---|---|---|
| **Ceresco** | Impoundment | 0.0 ft/mile | 2 | CSKR0575C01 | 0.6 | -0.2 |
| | | | | CSKR0575C02 | 1.5 | 0.7 |
| | | | | CSKR0575C03 | 1.3 | 0.5 |
| | | | | CSKR0600C04 | 1.5 | 0.7 |
| **MP 10.40 N** | Backwater (downstream side of point bar) | 3.3 ft/mile | 3 | CSKR1040C01 | 1.4 | 0.6 |
| | | | | CSKR1040C02 | 0.5 | -0.3 |
| | | | | CSKR1040C03 | 0.6 | -0.2 |
| **MP 10.50 L2** | Backwater | 3.3 ft/mile | 5 | CSKR1050C01 | 0.7 | -0.1 |
| | | | | CSKR1050C02 | 0.4 | -0.4 |
| | | | | CSKR1050C03 | 0.4 | -0.4 |
| | | | | CSKR1050C04 | 0.9 | 0.1 |
| | | | | CSKR1050C05 | 0.6 | -0.2 |
| **MP 26.00 RDB** | Backwater (downstream side of point bar) | 1.4 ft/mile | 5 | CSKR2600C01 | 0.0 | DRY |
| | | | | CSKR2600C02 | 0.6 | -0.2 |
| | | | | CSKR2600C03 | 0.0 | DRY |
| | | | | CSKR2600C04 | 1.4 | 0.6 |
| | | | | CSKR2600C05 | 4.7 | 3.9 |
| **MP 30.80 LDB** | Backwater (downstream side of point bar) | 1.4 ft/mile | 5 | CSKR3080C01 | 0.2 | -0.6 |
| | | | | CSKR3080C02 | 0.1 | -0.7 |
| | | | | CSKR3080C03 | 0.3 | -0.5 |
| | | | | CSKR3080C04 | 0.5 | -0.3 |
| | | | | CSKR3080C05 | 0.1 | -0.7 |
| **MP 33.00 A** | Backwater (downstream side of point bar) | 0.2 ft/mile | 5 | CSKR3300C01 | 1.2 | 0.4 |
| | | | | CSKR3300C02 | 0.1 | -0.7 |
| | | | | CSKR3300C03 | 1.7 | 0.9 |
| | | | | CSKR3300C04 | 1.3 | 0.5 |
| | | | | CSKR3300C05 | 0.0 | DRY |
| **MP 33.00 B** | Backwater (downstream side of point bar) | 0.2 ft/mile | 5 | CSKR3310C01 | 0.0 | DRY |
| | | | | CSKR3310C02 | 0.1 | -0.7 |
| | | | | CSKR3310C03 | 1.1 | 0.3 |
| | | | | CSKR3310C04 | 1.8 | 1.0 |
| | | | | CSKR3310C05 | 3.4 | 2.6 |
| **Delta A** | Delta distributary channel | 0.0 ft/mile | 5 | CSKR3675C01 | 0.7 | -0.1 |
| | | | | CSKR3675C02 | 1.2 | 0.4 |
| | | | | CSKR3675C03 | 0.0 | DRY |
| | | | | CSKR3700C04 | 1.2 | 0.4 |
| | | | | CSKR3700C05 | 2.7 | 1.9 |

| Locations | Geomorphic Setting | Channel Gradient | Number of Proposed CSDs | CSD Identification Number | Water Depth (ft) | Amount of Water Above CSD (ft) |
|---|---|---|---|---|---|---|
| **Delta Z** | Delta | 0.0 ft/mile | 10 | CSKR3725C01 | 0.7 | -0.1 |
| | | | | CSKR3725C02 | 0.6 | -0.2 |
| | | | | CSKR3725C03 | 0.1 | -0.7 |
| | | | | CSKR3725C04 | 0.9 | 0.1 |
| | | | | CSKR3725C05 | 0.7 | -0.1 |
| | | | | CSKR3750C06 | 0.7 | -0.1 |
| | | | | CSKR3750C07 | 0.6 | -0.2 |
| | | | | CSKR3750C08 | 1.2 | 0.4 |
| | | | | CSKR3750C09 | 1.1 | 0.3 |
| | | | | CSKR3750C10 | 1.0 | 0.2 |
| **MP 37.75 Islands** | Delta | 0.0 ft/mile | 5 | CSKR3775C01 | 0.8 | 0.0 |
| | | | | CSKR3775C02 | 1.1 | 0.3 |
| | | | | CSKR3775C03 | 0.1 | -0.7 |
| | | | | CSKR3775C04 | 2.0 | 1.2 |
| | | | | CSKR3775C05 | 2.0 | 1.2 |
| **OB 11.79 LDB** | Floodplain | Unknown | 3 | CSKR1179C01 | 0.0 | DRY |
| | | | | CSKR1179C02 | 0.0 | DRY |
| | | | | CSKR1179C03 | 0.0 | DRY |

Notes:
ft = feet
CSD = Cylindrical Sampling Device
MP = Mile Post
OB = Overbank
RDB = Right Descending Bank
LDB = Left Descending Bank

# Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

## Figures

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

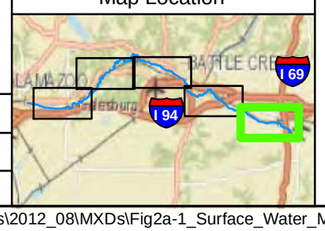
SWKR0600C01

SWKR0540C01

SW-105

| | | |
|---|---|---|
| Drawn: | NS | 9/11/2012 |
| Approved: | EE | 9/11/2012 |
| Project #: | 60246209 | |

Map Location




Legend

- Surface Water Sampling Location
- Talmadge Creek
- Kalamazoo River
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

N

0 1,000 2,000 4,000

Scale in Feet

FIGURE 2a-1
KALAMAZOO RIVER AND MORROW LAKE
SURFACE WATER MONITORING LOCATIONS
AUGUST 2012
SHEET 1 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2a-1_Surface_Water_Monitoring_Locations.mxd

Aerial Photography Date: April 2011 over August 2010

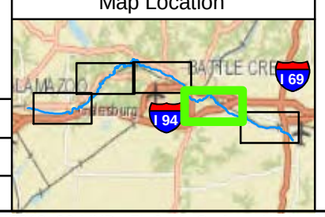
SWKR1565C01

SWKR1480C01

15:50 15:25 15:00 14:75 14:50 14:25 14:00 13:75 13:50 13:25 13:00 12:75 12:50 12:25 12:00 11:75 11:50 11:25 11:00 10:75 10:50 10:25 10:00 9:75 9:50 9:25 9:00 8:75 8:50 8:25 8:00 7:75 7:50 7:25 7:00

| | | |
|---|---|---|
| Drawn: | NS | 9/11/2012 |
| Approved: | EE | 9/11/2012 |
| Project #: | 60246209 | |

Map Location




Legend

- Surface Water Sampling Location
- Talmadge Creek
- Kalamazoo River
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

N

0 1,000 2,000 4,000

Scale in Feet

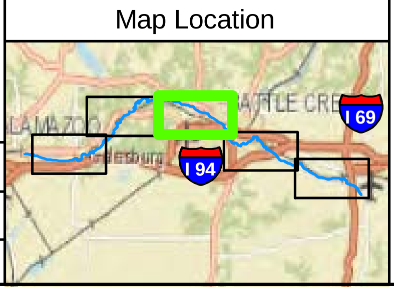
FIGURE 2a-1
KALAMAZOO RIVER AND MORROW LAKE
SURFACE WATER MONITORING LOCATIONS
AUGUST 2012
SHEET 2 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2a-1_Surface_Water_Monitoring_Locations.mxd

Aerial Photography Date: April 2011 over August 2010




ENBRIDGE

| | |
|---|---|
| Drawn: NS | 9/11/2012 |
| Approved: EE | 9/11/2012 |
| Project #: 60246209 | |

Legend
- Surface Water Sampling Location
- Talmadge Creek
- Kalamazoo River
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

N

0 1,000 2,000 4,000
Scale in Feet

FIGURE 2a-1
KALAMAZOO RIVER AND MORROW LAKE
SURFACE WATER MONITORING LOCATIONS
AUGUST 2012
SHEET 3 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2a-1_Surface_Water_Monitoring_Locations.mxd

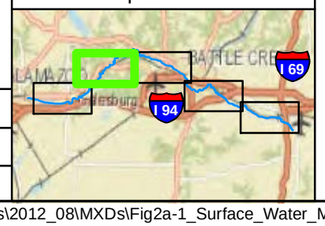
Aerial Photography Date: April 2011 over August 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/11/2012 |
| Approved: | EE | 9/11/2012 |
| Project #: | 60246209 | |

Map Location




Legend

- Surface Water Sampling Location
- Talmadge Creek
- Kalamazoo River
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

N

0 1,000 2,000 4,000

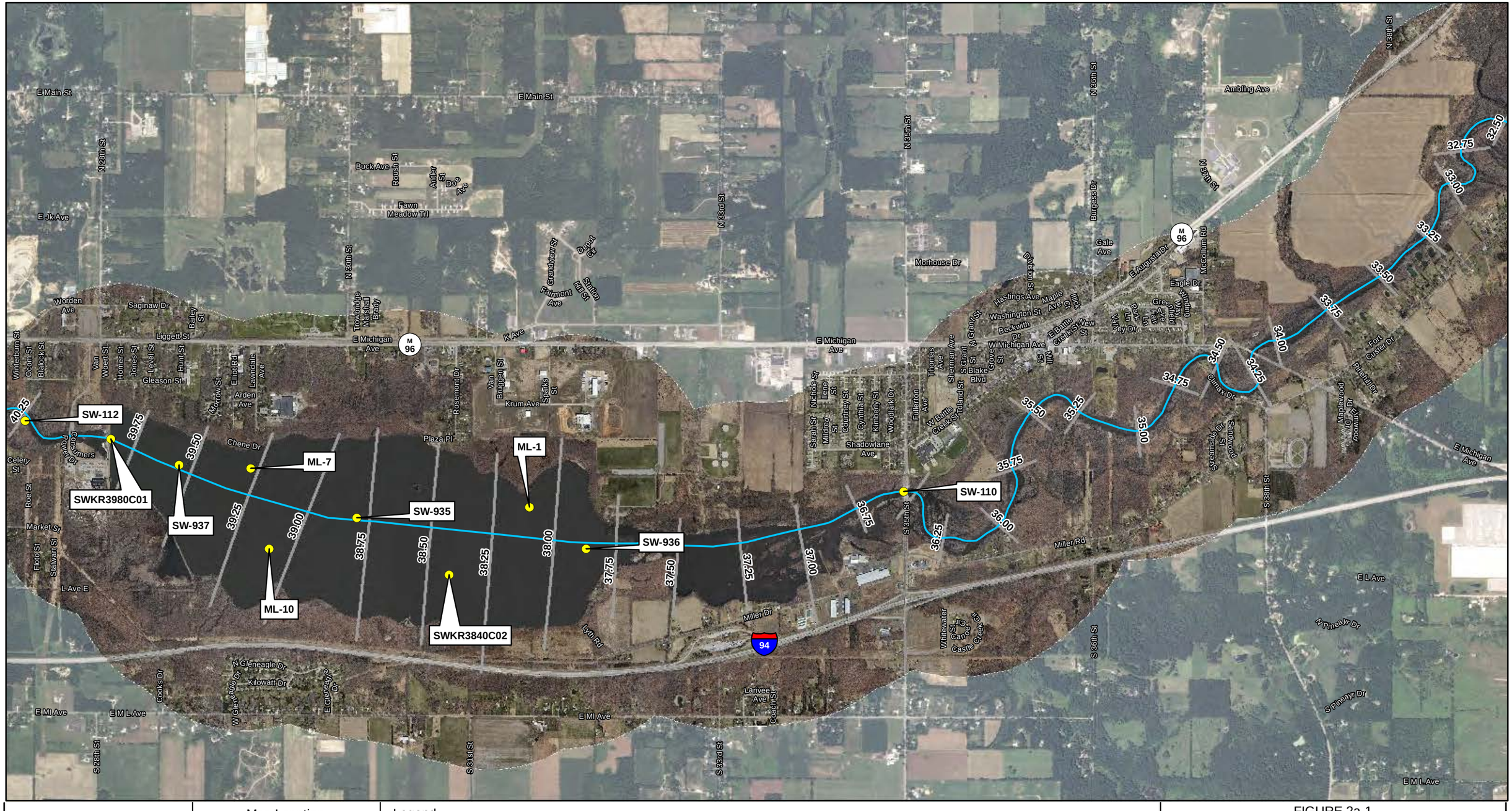
Scale in Feet

FIGURE 2a-1
KALAMAZOO RIVER AND MORROW LAKE
SURFACE WATER MONITORING LOCATIONS
AUGUST 2012
SHEET 4 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

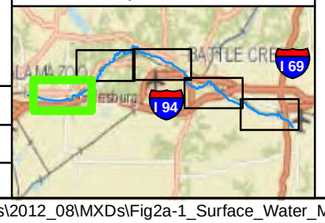
Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2a-1_Surface_Water_Monitoring_Locations.mxd

Aerial Photography Date: April 2011 over August 2010




| | | |
|---|---|---|
| Drawn: | NS | 9/11/2012 |
| Approved: | EE | 9/11/2012 |
| Project #: | 60246209 | |

Map Location




Legend

- Surface Water Sampling Location
- Talmadge Creek
- Kalamazoo River
- Quarter Mile Grid Segments
- SW-105 Sample Location ID - No Exceedances

N

0 1,000 2,000 4,000

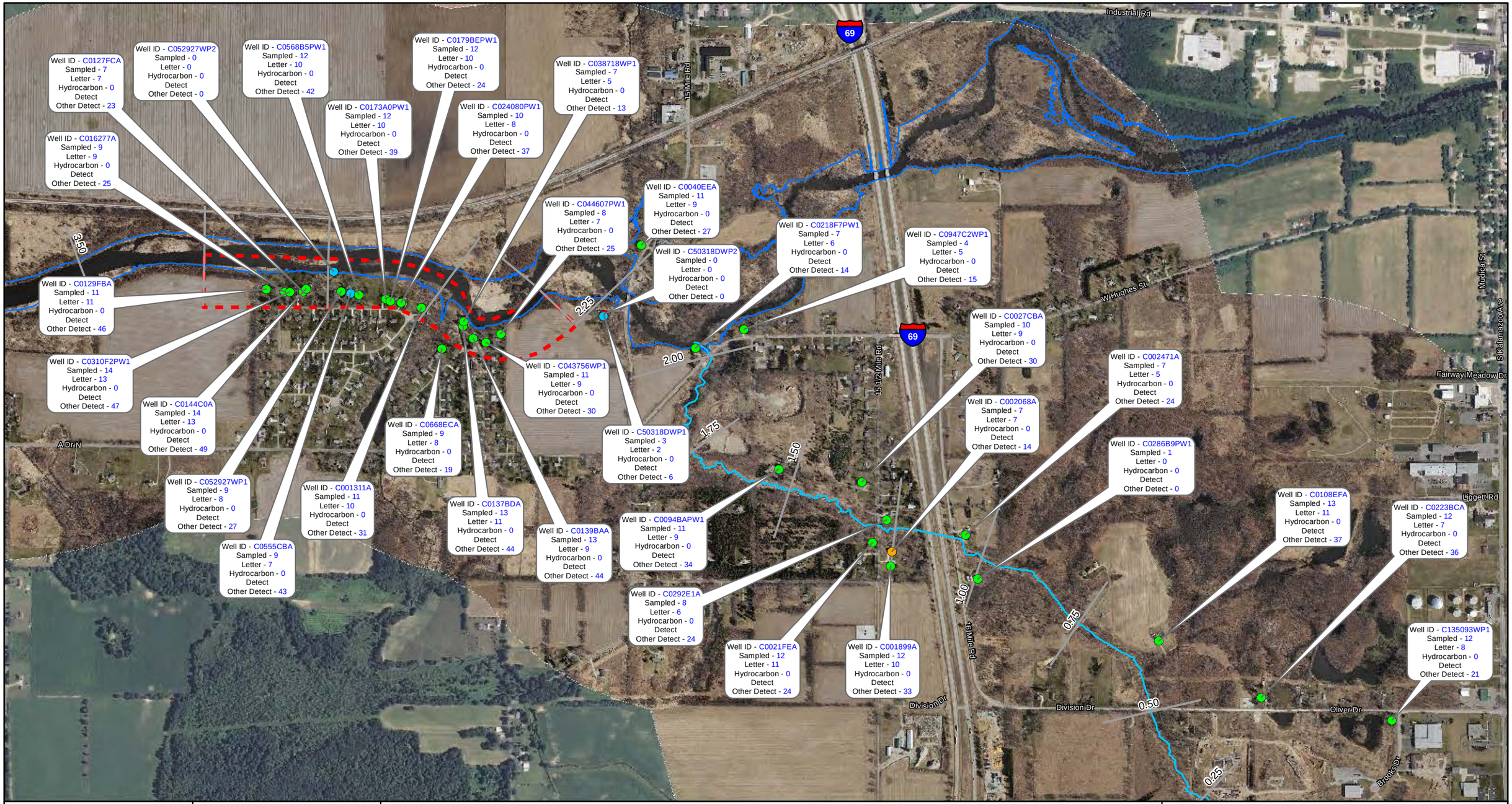
Scale in Feet

FIGURE 2a-1
KALAMAZOO RIVER AND MORROW LAKE
SURFACE WATER MONITORING LOCATIONS
AUGUST 2012
SHEET 5 OF 5

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

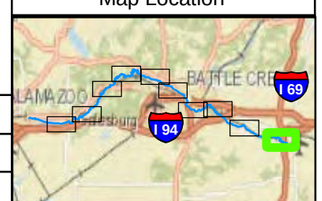
Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2a-1_Surface_Water_Monitoring_Locations.mxd

Aerial Photography Date: April 2011 over August 2010




| | | |
|---|---|---|
| ENBRIDGE | | |
| Drawn: | NS | 9/6/2012 |
| Approved: | EE | 9/6/2012 |
| Project #: | 60246209 | |

Map Location




**Legend**

**Well Eligibility Status**

- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

***Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.***

N

0 1,000 2,000

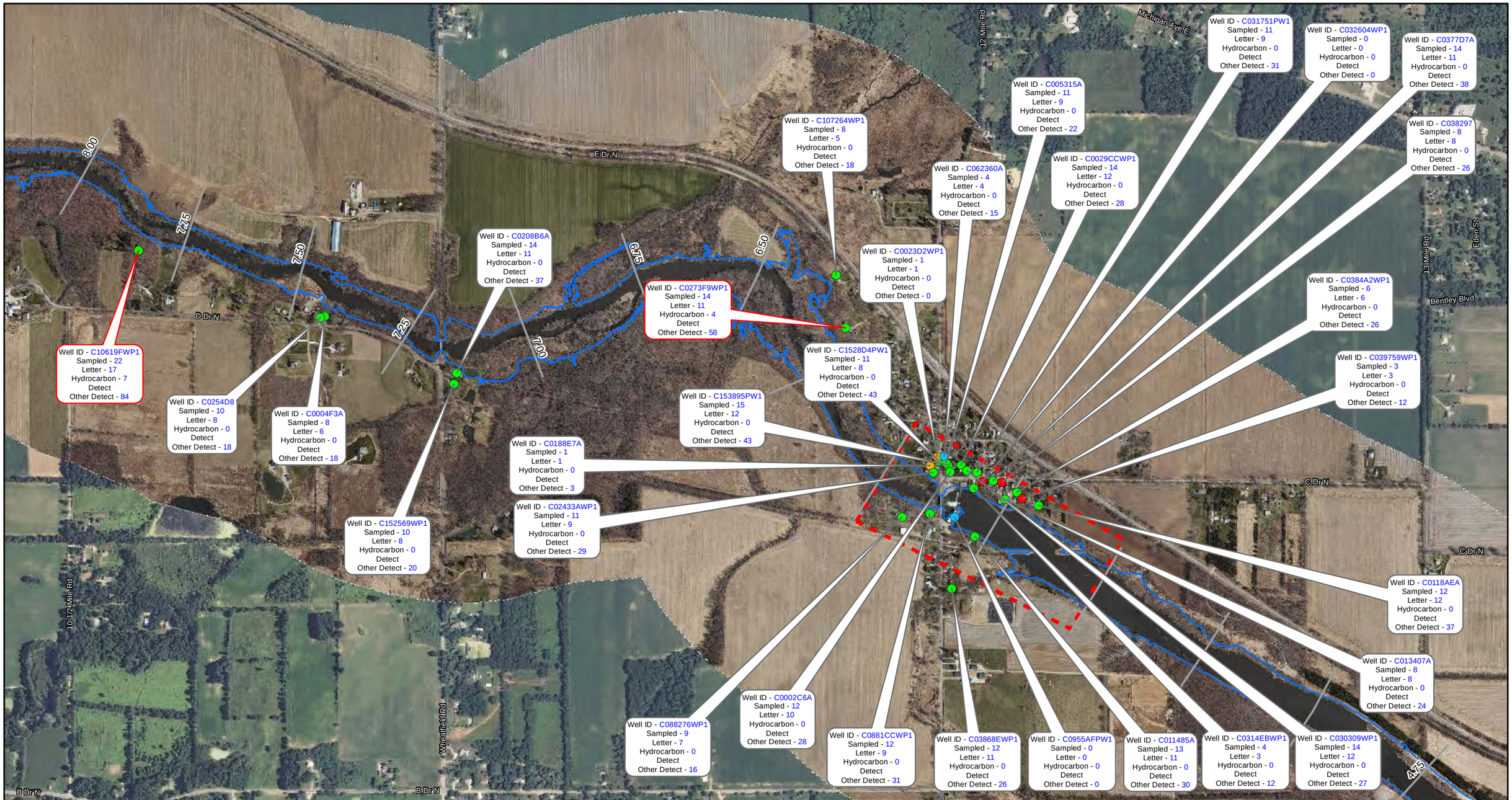
Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF AUGUST 31, 2012
SHEET 1 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

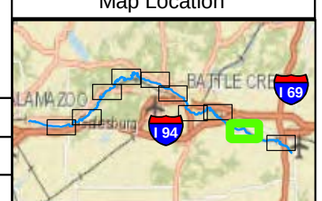
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/6/2012 |
| Approved: | EE | 9/6/2012 |
| Project #: | 60246209 | |

Map Location




**Legend**

**Well Eligibility Status**

- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

***Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.***

N

0 1,000 2,000

Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF AUGUST 31, 2012
SHEET 2 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

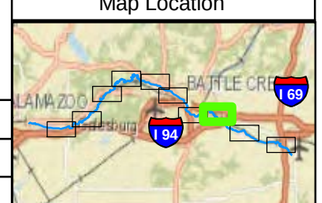
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/6/2012 |
| Approved: | EE | 9/6/2012 |
| Project #: | 60246209 | |

Map Location




**Legend**

**Well Eligibility Status**
- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

***Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.***

N

0 1,000 2,000

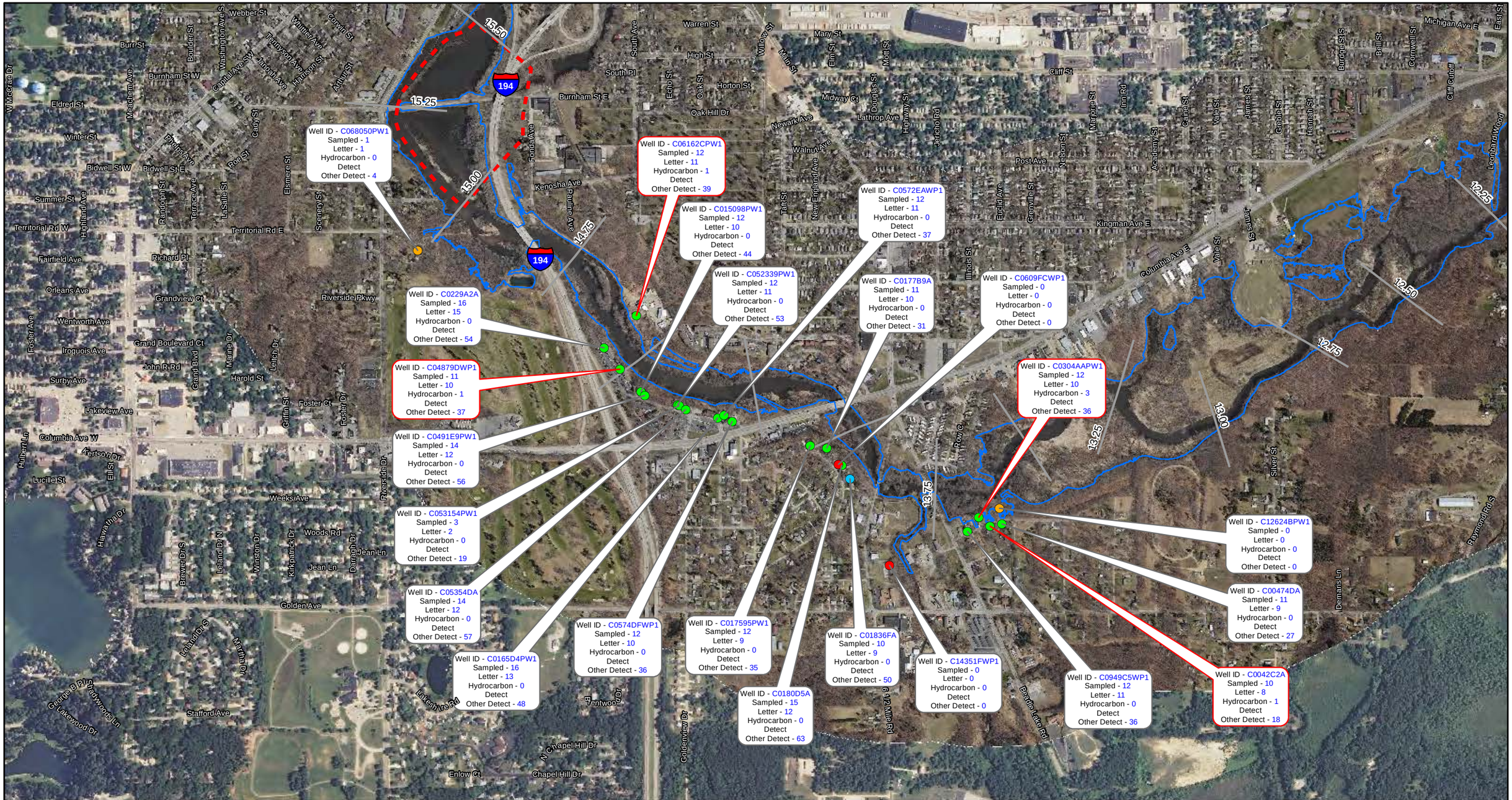
Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF AUGUST 31, 2012
SHEET 3 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/6/2012 |
| Approved: | EE | 9/6/2012 |
| Project #: | 60246209 | |

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF AUGUST 31, 2012
SHEET 4 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

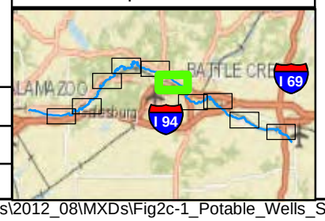
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/6/2012 |
| Approved: | EE | 9/6/2012 |
| Project #: | 60246209 | |

Map Location




**Legend**

**Well Eligibility Status**

- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

***Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.***

N

0 1,000 2,000

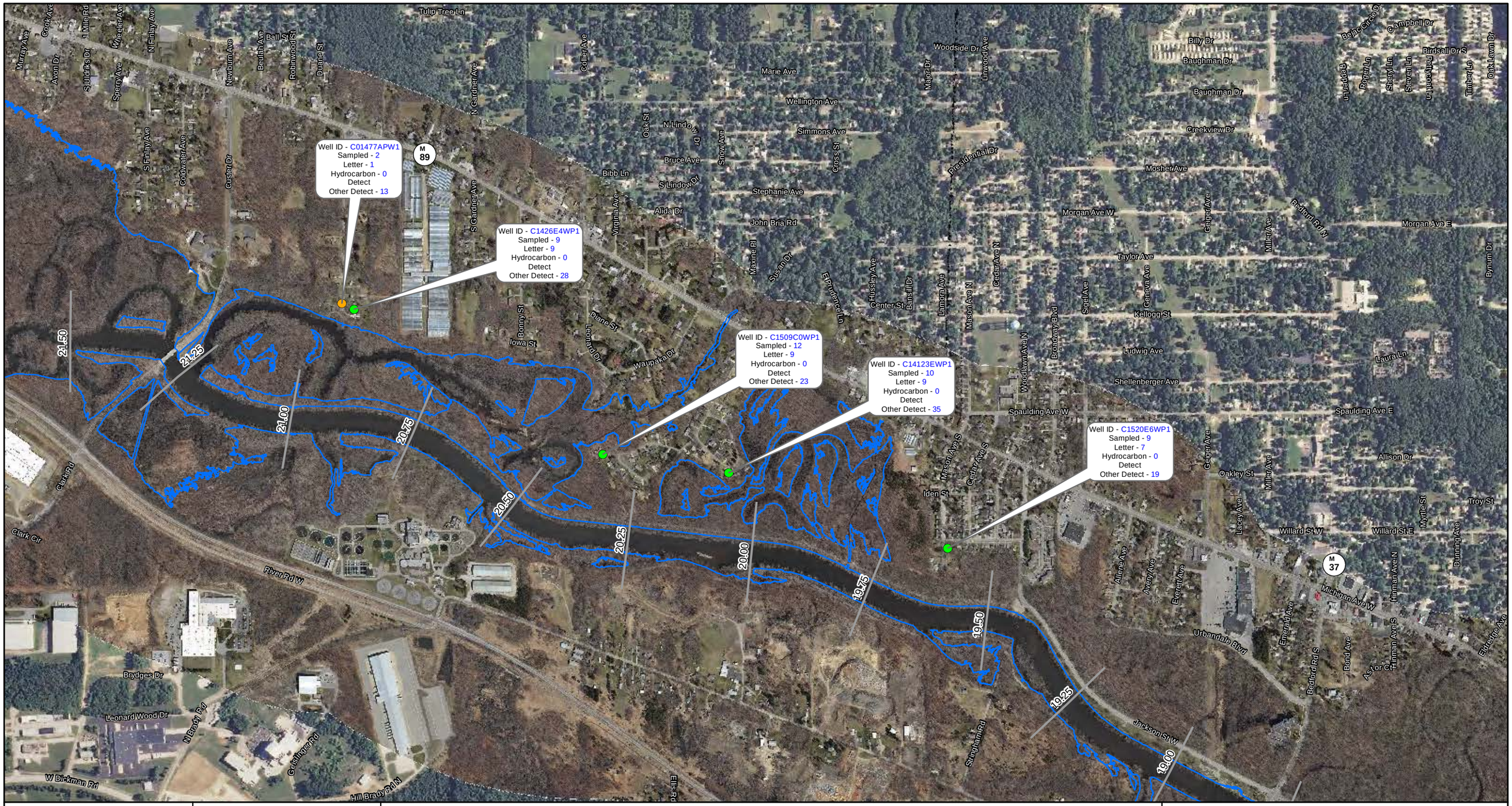
Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF AUGUST 31, 2012
SHEET 5 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

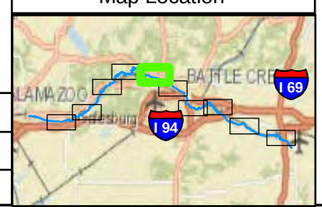
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/6/2012 |
| Approved: | EE | 9/6/2012 |
| Project #: | 60246209 | |

Map Location




**Legend**

**Well Eligibility Status**

- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

***Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.***

N

0 1,000 2,000

Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF AUGUST 31, 2012
SHEET 6 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

Aerial Photography Date: April 2011 over 2010

Well ID - C0231D1A
Sampled - 12
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 40

Well ID - C04757EWP1
Sampled - 6
Letter - 6
Hydrocarbon - 0
Detect
Other Detect - 14

Well ID - C01497DA
Sampled - 8
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 14

Well ID - C0920E7PW1
Sampled - 8
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 19

Well ID - C0156ADA
Sampled - 15
Letter - 13
Hydrocarbon - 0
Detect
Other Detect - 62

Well ID - C01573BA
Sampled - 13
Letter - 11
Hydrocarbon - 0
Detect
Other Detect - 37

Well ID - C005139A
Sampled - 12
Letter - 12
Hydrocarbon - 0
Detect
Other Detect - 41

Well ID - C015481A
Sampled - 13
Letter - 12
Hydrocarbon - 0
Detect
Other Detect - 32

Well ID - C000749A
Sampled - 9
Letter - 8
Hydrocarbon - 0
Detect
Other Detect - 29

Well ID - C015322A
Sampled - 16
Letter - 13
Hydrocarbon - 0
Detect
Other Detect - 53

Well ID - C0470F1PW1
Sampled - 11
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 26

Well ID - C023047A
Sampled - 15
Letter - 12
Hydrocarbon - 0
Detect
Other Detect - 57

Well ID - C046882A
Sampled - 11
Letter - 11
Hydrocarbon - 0
Detect
Other Detect - 27

Well ID - C0227A5A
Sampled - 12
Letter - 12
Hydrocarbon - 0
Detect
Other Detect - 41

Well ID - C00589DA
Sampled - 13
Letter - 12
Hydrocarbon - 0
Detect
Other Detect - 39

Well ID - C0789C3PW1
Sampled - 4
Letter - 3
Hydrocarbon - 0
Detect
Other Detect - 9

Well ID - C0872B9PW2
Sampled - 8
Letter - 8
Hydrocarbon - 0
Detect
Other Detect - 18

Well ID - C00928FA
Sampled - 10
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 23

Well ID - C00856DA
Sampled - 14
Letter - 13
Hydrocarbon - 0
Detect
Other Detect - 51

Well ID - C046713WP1
Sampled - 14
Letter - 12
Hydrocarbon - 0
Detect
Other Detect - 47

Well ID - C0048DCA
Sampled - 12
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 36

Well ID - C07824BPW1
Sampled - 10
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 24

Well ID - C03429BWP1
Sampled - 11
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 27

Well ID - C0872B9PW1
Sampled - 3
Letter - 3
Hydrocarbon - 0
Detect
Other Detect - 17

Well ID - C0337D3WP1
Sampled - 11
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 28

Well ID - C033645WP1
Sampled - 8
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 26

Well ID - C0335FFWP1
Sampled - 8
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 19

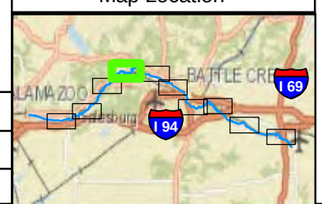
Well ID - C035755WP1
Sampled - 5
Letter - 5
Hydrocarbon - 0
Detect
Other Detect - 19

Well ID - C035755WP2
Sampled - 5
Letter - 5
Hydrocarbon - 0
Detect
Other Detect - 14

E E F Ave
N 46th St
Pin Oak Cir
Marsh Ridge Trl
Oriole Dr
Trail St
River Rd W
24.25
26.00
26.25
25.75
25.50
25.25
25.00
24.75
24.50
22.00
21.75
N 44th St
N Augusta Dr
Fort Custer Dr
Martin Dr
Ann Ln
James B Eads Dr
W County Line Rd
William Shafter Cir W
Paul Lambert Trl
Duane Dewey Ln
William Shafter Cir N
William Shafter Cir S
Clark Rd

| | | |
|---|---|---|
| Drawn: | NS | 9/6/2012 |
| Approved: | EE | 9/6/2012 |
| Project #: | 60246209 | |

Map Location




**Legend**

**Well Eligibility Status**

- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

***Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.***

N

0 1,000 2,000

Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF AUGUST 31, 2012
SHEET 7 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

Aerial Photography Date: April 2011 over 2010

Well ID - C086970PW1
Sampled - 17
Letter - 13
Hydrocarbon - 0
Detect
Other Detect - 43

Well ID - C086970PW2
Sampled - 16
Letter - 13
Hydrocarbon - 0
Detect
Other Detect - 40

Well ID - C033469WP1
Sampled - 7
Letter - 6
Hydrocarbon - 0
Detect
Other Detect - 24

Well ID - C0678ADA
Sampled - 12
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 32

Well ID - C14332AWP1
Sampled - 9
Letter - 8
Hydrocarbon - 0
Detect
Other Detect - 22

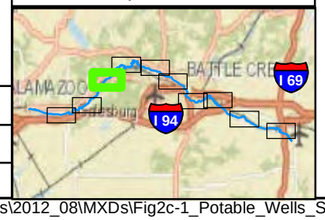
N Augusta Dr
W Jefferson St
W Washington St
W Jackson St
W Van Buren St
W Michigan Ave
W Clinton St
Fayette St
N Lincoln St
N Chestnut St
N Webster St
W Canal St
E Canal St
N 29th St
E F G Ave
E G Ave
Circle Dr
Meadow Dr
Meadow St
S Lincoln St
S Cherry St
S Webster St
E Michigan Ave
E Clinton St
E Augusta Dr
Fort Custer Dr
Harmonia Rd
Eagle Lake Dr
Chippewa Way
Fort Custer Rec Area Service
Fort Custer Rec Area Service
E Augusta Dr
M 96
Fort Custer Rec Area BAS
Fort Custer Rec Area Access
Augusta Climax Rd
Fort Custer Rec Area Compound
Fort Custer Rec Area Service

27.75
28.00
28.25
28.50
28.75
29.00
29.25
29.50
29.75
30.00
30.25
30.50
30.75

ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/6/2012 |
| Approved: | EE | 9/6/2012 |
| Project #: | 60246209 | |

Map Location




**Legend**

**Well Eligibility Status**
- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

***Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.***

N

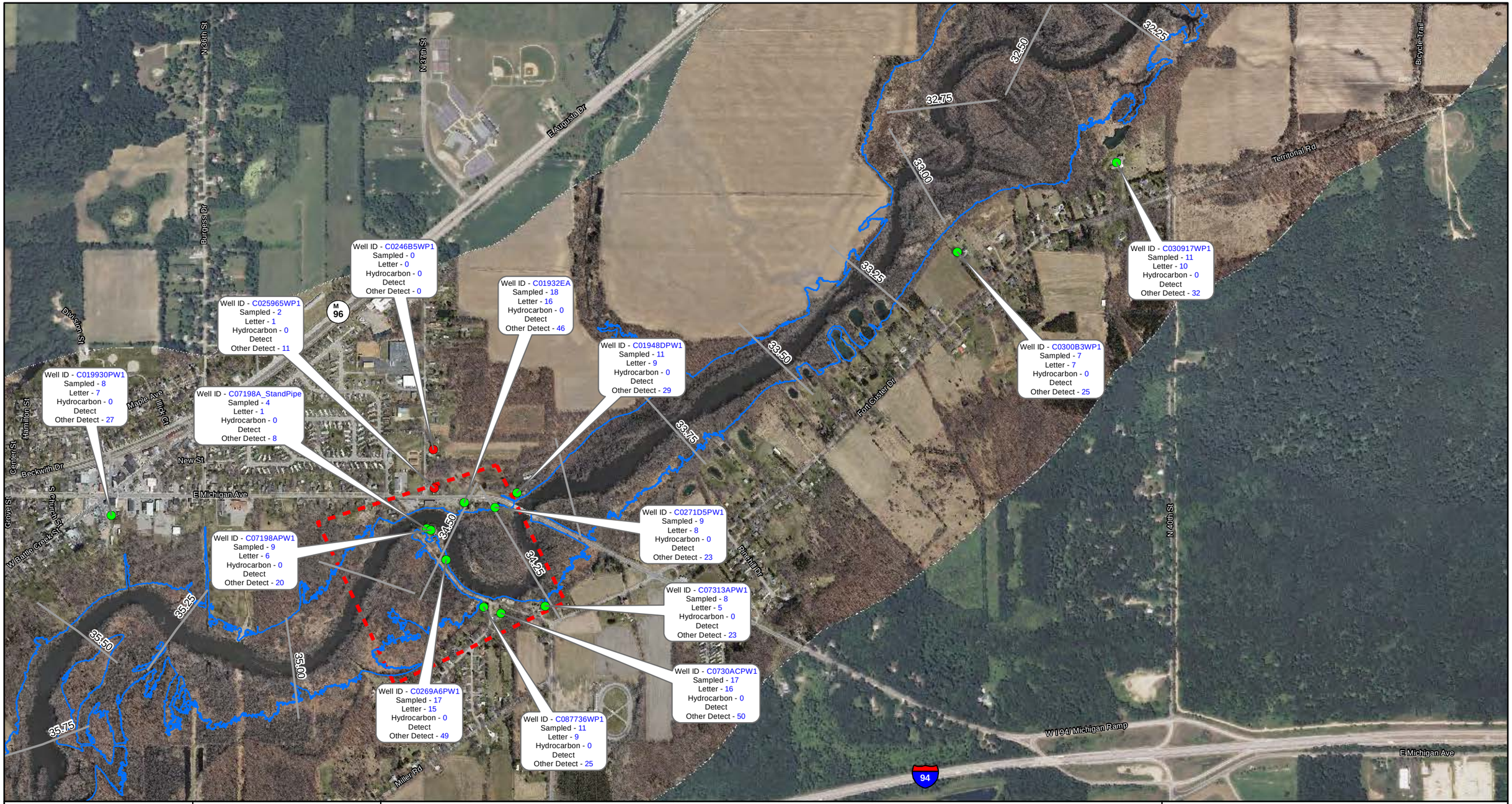
0 1,000 2,000
Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF AUGUST 31, 2012
SHEET 8 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

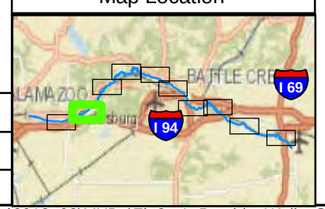
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/6/2012 |
| Approved: | EE | 9/6/2012 |
| Project #: | 60246209 | |

Map Location




**Legend**

**Well Eligibility Status**

- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

***Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.***

N

0 1,000 2,000

Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF AUGUST 31, 2012
SHEET 9 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

Aerial Photography Date: April 2011 over 2010

Well ID - C1346E7WP1
Sampled - 7
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 14

Well ID - C0889FEWP1
Sampled - 10
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 21

Well ID - C018776A
Sampled - 11
Letter - 10
Hydrocarbon - 0
Detect
Other Detect - 29

Well ID - C0883E0WP1
Sampled - 0
Letter - 0
Hydrocarbon - 0
Detect
Other Detect - 0

Well ID - C01855AA
Sampled - 12
Letter - 11
Hydrocarbon - 0
Detect
Other Detect - 32

Well ID - C090249WP1
Sampled - 11
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 20

Well ID - C0250C1WP1
Sampled - 10
Letter - 7
Hydrocarbon - 0
Detect
Other Detect - 31

Well ID - C0252EDA
Sampled - 12
Letter - 11
Hydrocarbon - 0
Detect
Other Detect - 31

Well ID - C0250C1WP2
Sampled - 3
Letter - 3
Hydrocarbon - 0
Detect
Other Detect - 11

Well ID - C0248B2PW1
Sampled - 11
Letter - 9
Hydrocarbon - 0
Detect
Other Detect - 35

Well ID - C024723PW1
Sampled - 16
Letter - 14
Hydrocarbon - 0
Detect
Other Detect - 42

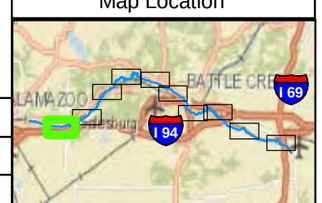
Krum Ave
Sparks St
Blake Blvd
Nichole St
Ilene St
Beth Anne Ave
Miah St
Courtney St
Cynthia St
Kimberly St
Woodlark Dr
S 35th St
Fullerton Ave
Grove St
W Battle Creek St
Sarah St
Mildred St
Shadowlane Ave
Miller Rd
Miller Dr
Larivee Ave
Carriage St
E MI Ave
S 31st St
S 33rd St
94

38.75
38.50
38.25
38.00
37.75
37.50
37.25
37.00
36.75
35.75
35.50
35.25

ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/6/2012 |
| Approved: | EE | 9/6/2012 |
| Project #: | 60246209 | |

Map Location




**Legend**

**Well Eligibility Status**
- Eligible
- Not Accessible
- Winterized
- Refused Permission

- Target Area
- Kalamazoo River Flood Inundation Boundary
- Talmadge Creek
- Quarter Mile Grid Segments
- Hydrocarbon Detection

***Well ID C14255EWP1 is not shown as owner refused permission to have a GPS location taken.***

N

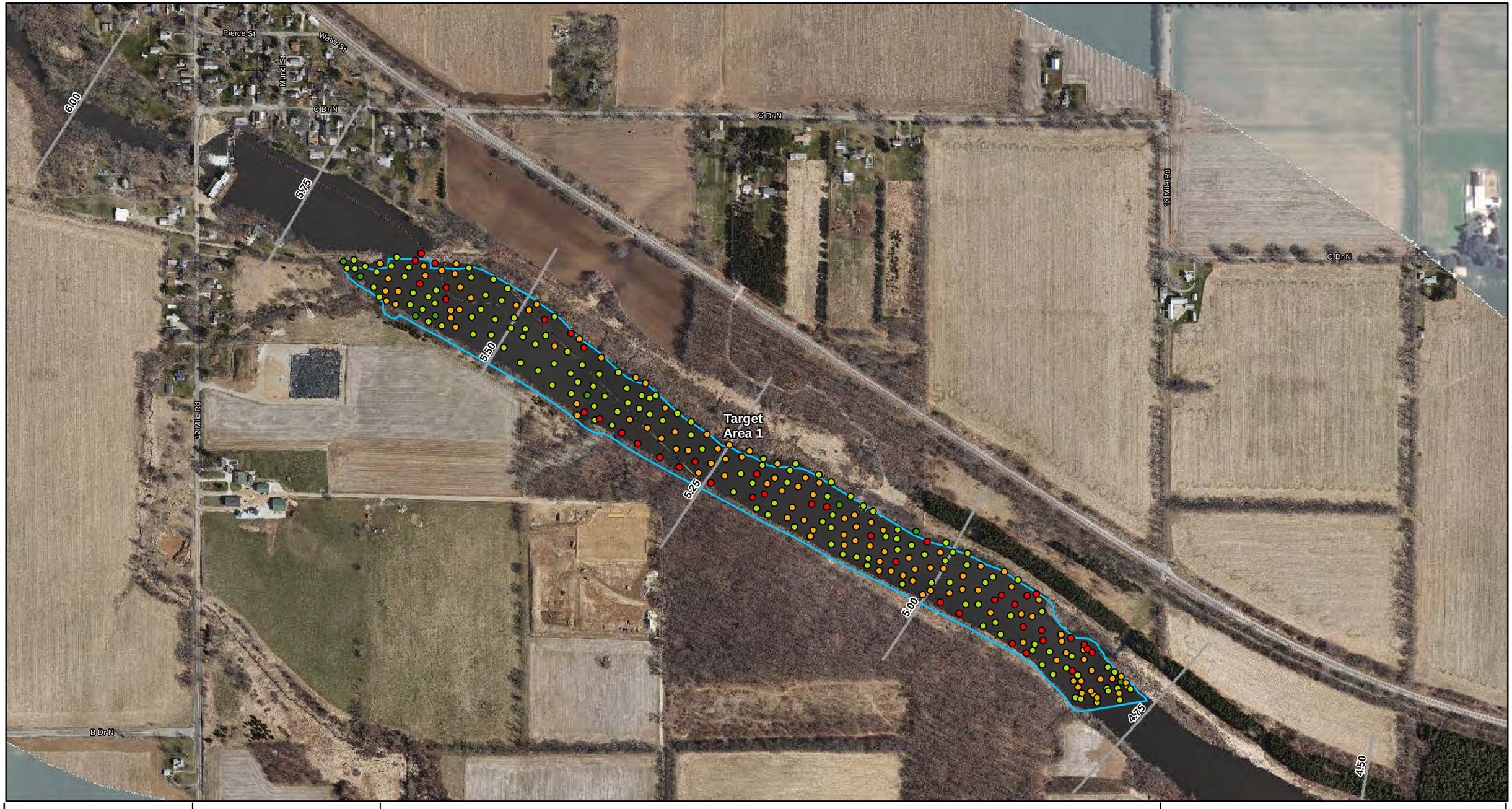
0 1,000 2,000
Scale in Feet

FIGURE 2c-1
POTABLE WELL LOCATIONS, ELIGIBILITY STATUS, AND WELLS SAMPLED AS OF AUGUST 31, 2012
SHEET 10 OF 10

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

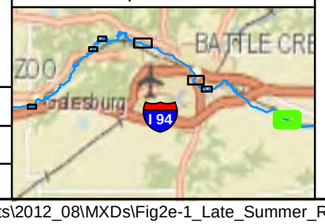
Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2c-1_Potable_Wells_Sampled.mxd

Aerial Photography Date: April 2011 over 2010




| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**2012 LSR Poling**

**Submerged Oil Category**

- Heavy
- Moderate
- Light
- None

**2012 LSR Target Points**

- Inaccessible by Boat
- Dry Target Location
- 2012 LSR Target Area
- Quarter Mile Grid Segments

N

0 250 500 1,000

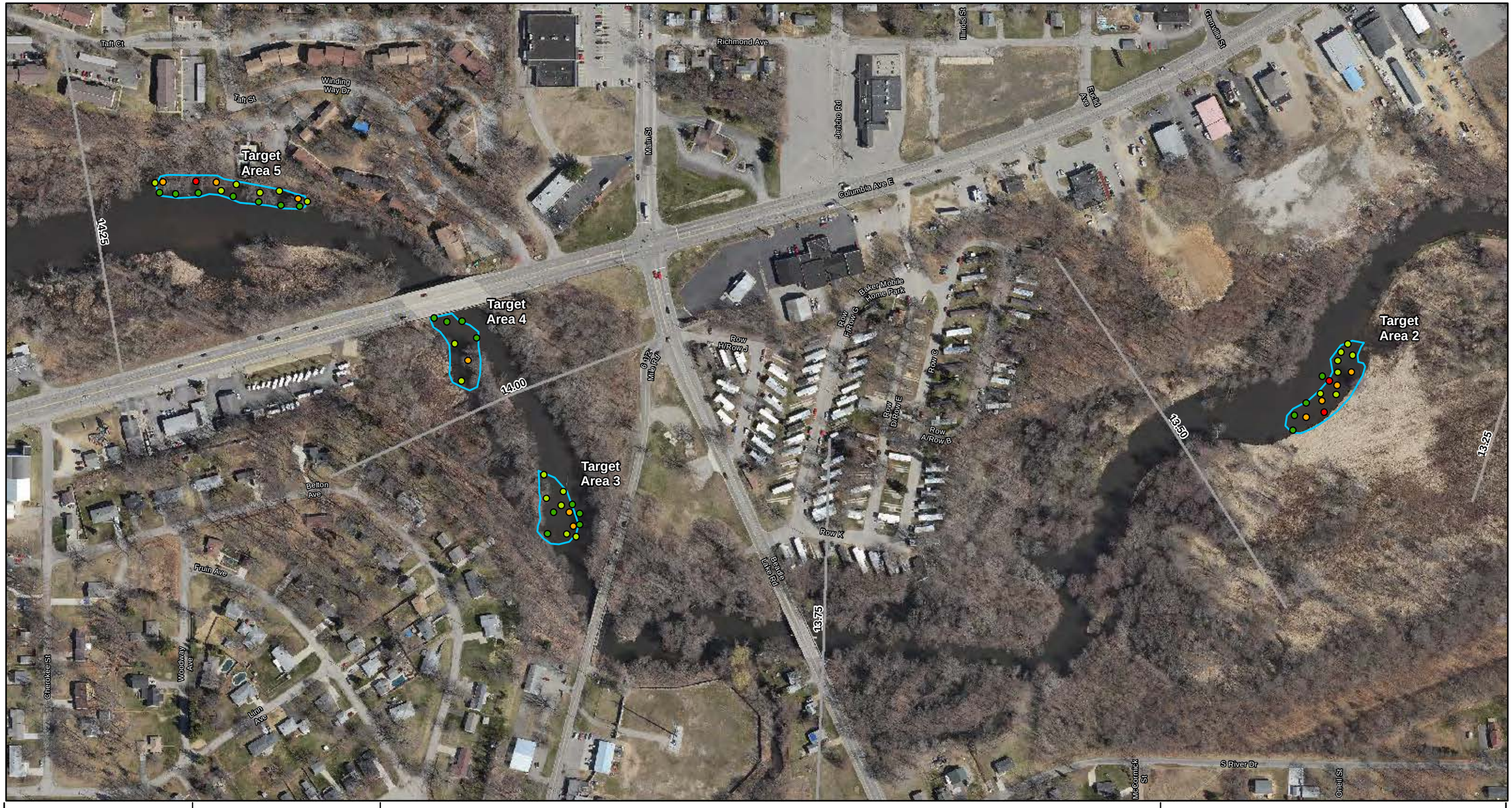
Scale in Feet

FIGURE 2e-1
2012 LATE SUMMER REASSESSMENT POLING LOCATIONS AND RESULTS AUGUST 2012
SHEET 1 OF 7

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

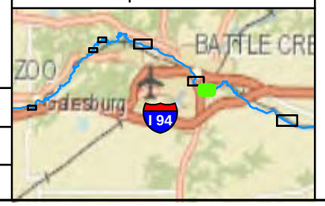
Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-1_Late_Summer_Reassessment_Poling.mxd

Aerial Photography Date: April 2011 over 2010




| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**2012 LSR Poling**

**Submerged Oil Category**

- Heavy
- Moderate
- Light
- None

**2012 LSR Target Points**

- Inaccessible by Boat
- Dry Target Location
- 2012 LSR Target Area
- Quarter Mile Grid Segments

N

0 125 250 500

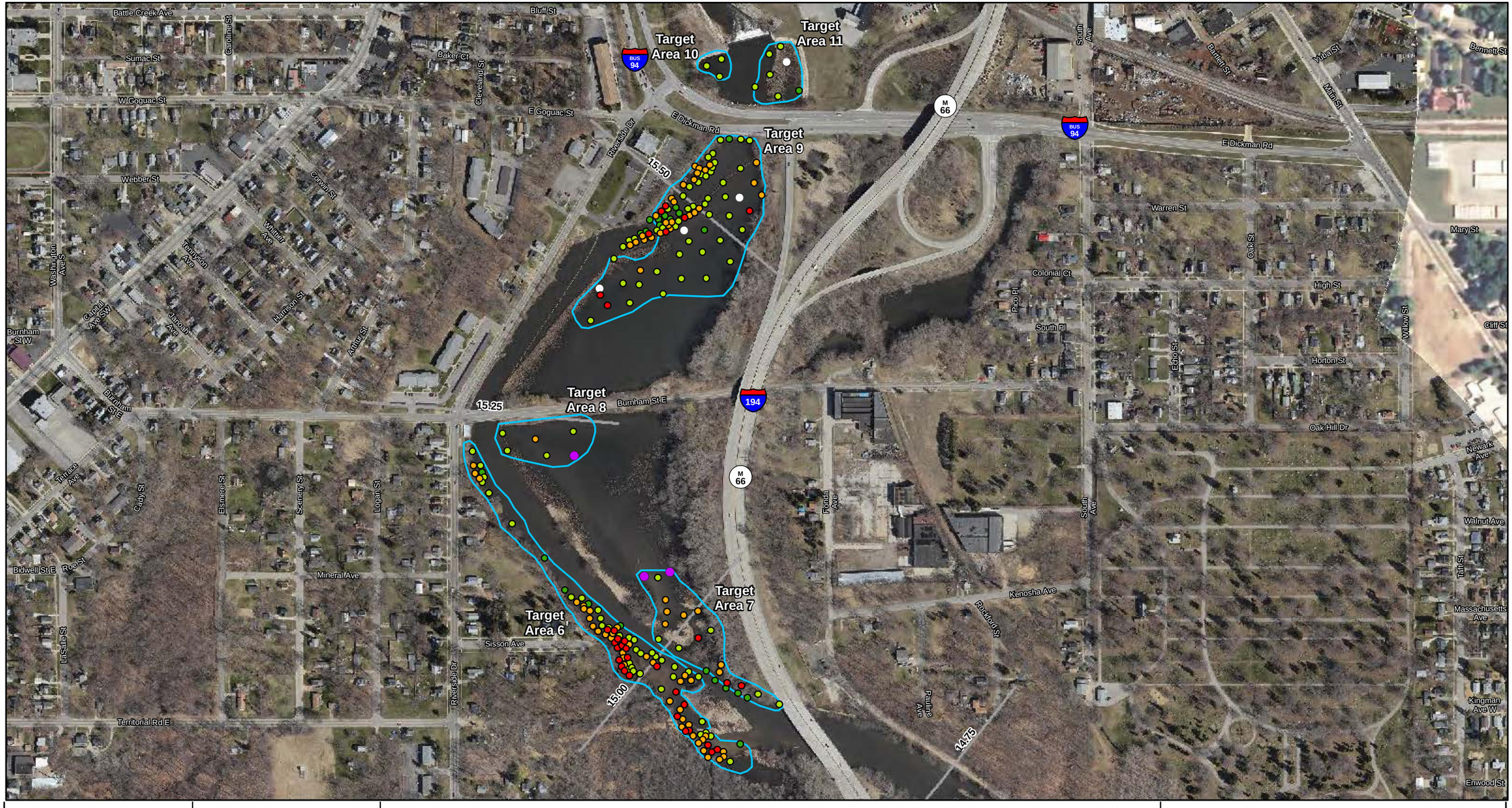
Scale in Feet

FIGURE 2e-1
2012 LATE SUMMER REASSESSMENT POLING LOCATIONS AND RESULTS AUGUST 2012
SHEET 2 OF 7

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-1_Late_Summer_Reassessment_Poling.mxd

Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**2012 LSR Poling**

**Submerged Oil Category**

- Heavy
- Moderate
- Light
- None

**2012 LSR Target Points**

- Inaccessible by Boat
- Dry Target Location
- 2012 LSR Target Area
- Quarter Mile Grid Segments

N

0 200 400 800

Scale in Feet

FIGURE 2e-1
2012 LATE SUMMER REASSESSMENT POLING LOCATIONS AND RESULTS AUGUST 2012
SHEET 3 OF 7

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-1_Late_Summer_Reassessment_Poling.mxd

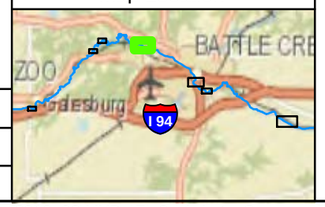
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**2012 LSR Poling**

**Submerged Oil Category**

- Heavy
- Moderate
- Light
- None

**2012 LSR Target Points**

- Inaccessible by Boat
- Dry Target Location
- 2012 LSR Target Area
- Quarter Mile Grid Segments

N

0 225 450 900

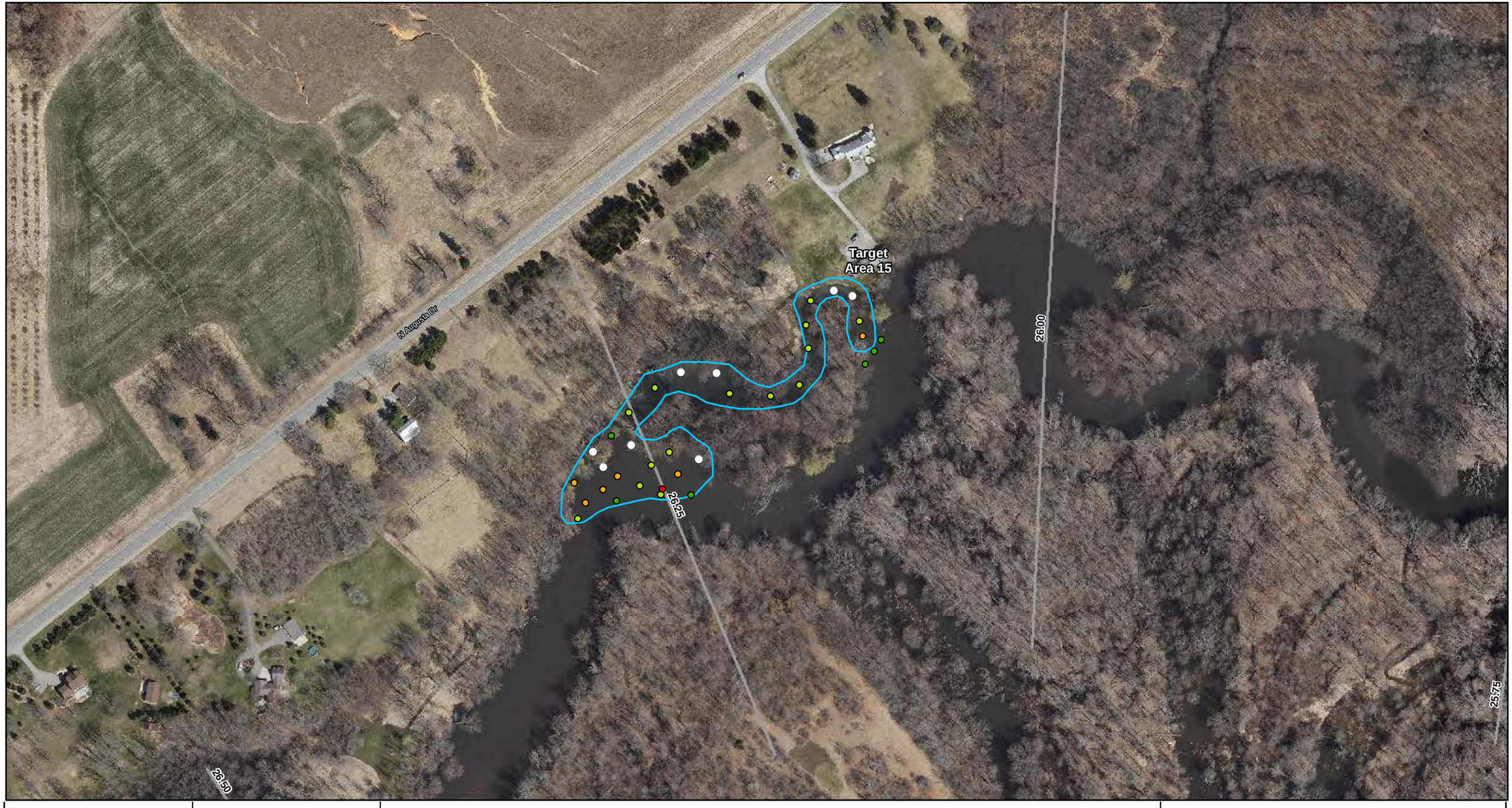
Scale in Feet

FIGURE 2e-1
2012 LATE SUMMER REASSESSMENT POLING LOCATIONS AND RESULTS AUGUST 2012
SHEET 4 OF 7

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

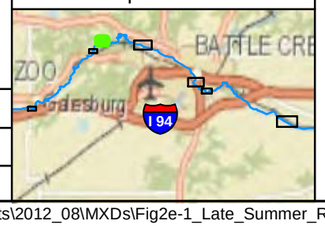
Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-1_Late_Summer_Reassessment_Poling.mxd

Aerial Photography Date: April 2011 over 2010




| | | |
|---|---|---|
| ENBRIDGE | | |
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**2012 LSR Poling**

**Submerged Oil Category**

- Heavy
- Moderate
- Light
- None

**2012 LSR Target Points**

- Inaccessible by Boat
- Dry Target Location
- 2012 LSR Target Area
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-1
2012 LATE SUMMER REASSESSMENT POLING
LOCATIONS AND RESULTS AUGUST 2012
SHEET 5 OF 7

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-1_Late_Summer_Reassessment_Poling.mxd

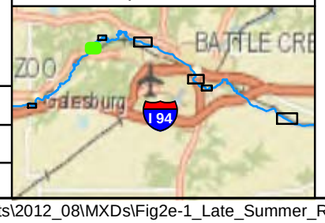
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**2012 LSR Poling**

**Submerged Oil Category**

- Heavy
- Moderate
- Light
- None

**2012 LSR Target Points**

- Inaccessible by Boat
- Dry Target Location
- 2012 LSR Target Area
- Quarter Mile Grid Segments

N

0 100 200 400

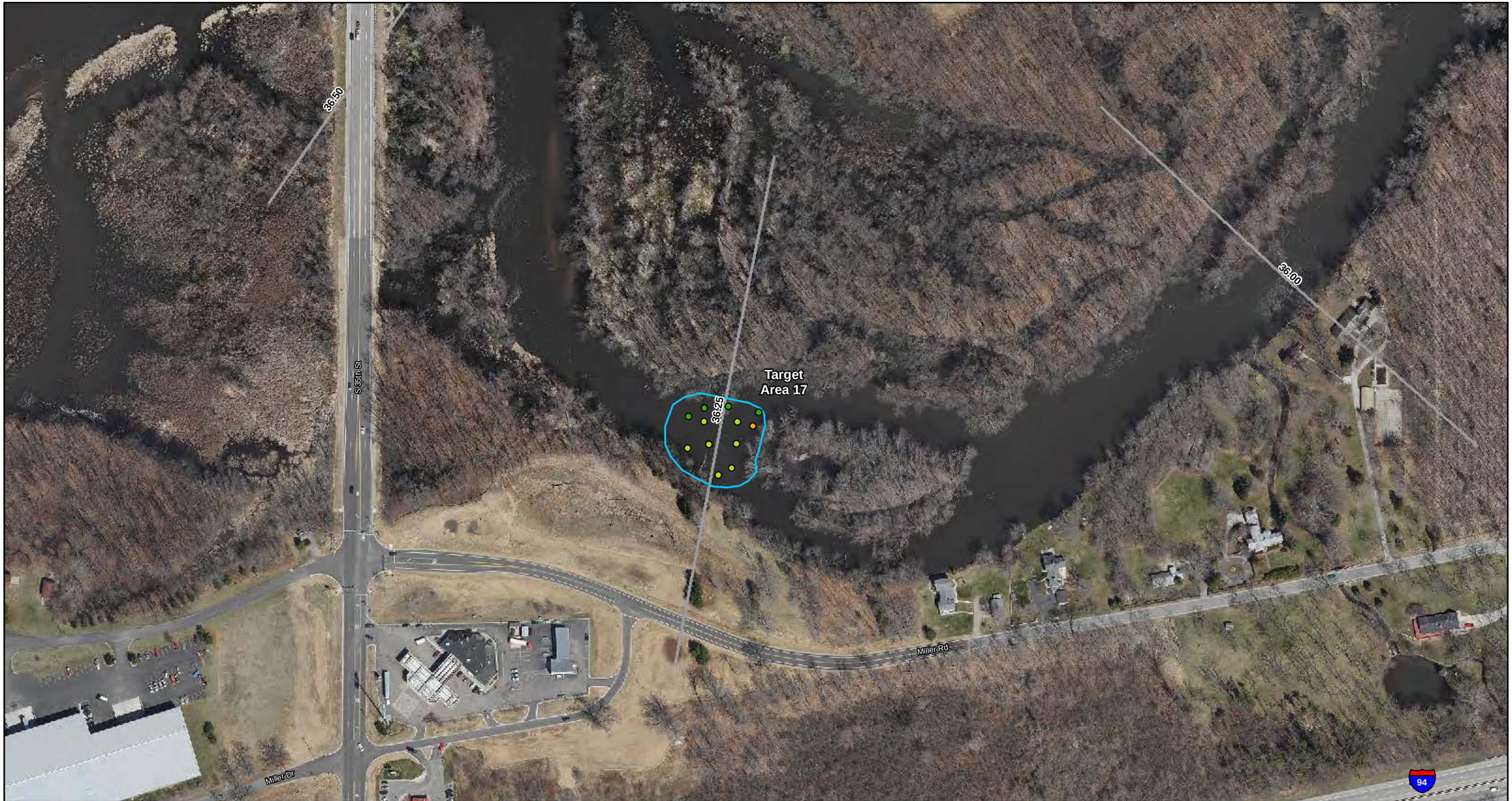
Scale in Feet

FIGURE 2e-1
2012 LATE SUMMER REASSESSMENT POLING
LOCATIONS AND RESULTS AUGUST 2012
SHEET 6 OF 7

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-1_Late_Summer_Reassessment_Poling.mxd

Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**2012 LSR Poling**

**Submerged Oil Category**

- Heavy
- Moderate
- Light
- None

**2012 LSR Target Points**

- Inaccessible by Boat
- Dry Target Location
- 2012 LSR Target Area
- Quarter Mile Grid Segments

N

0 100 200 400

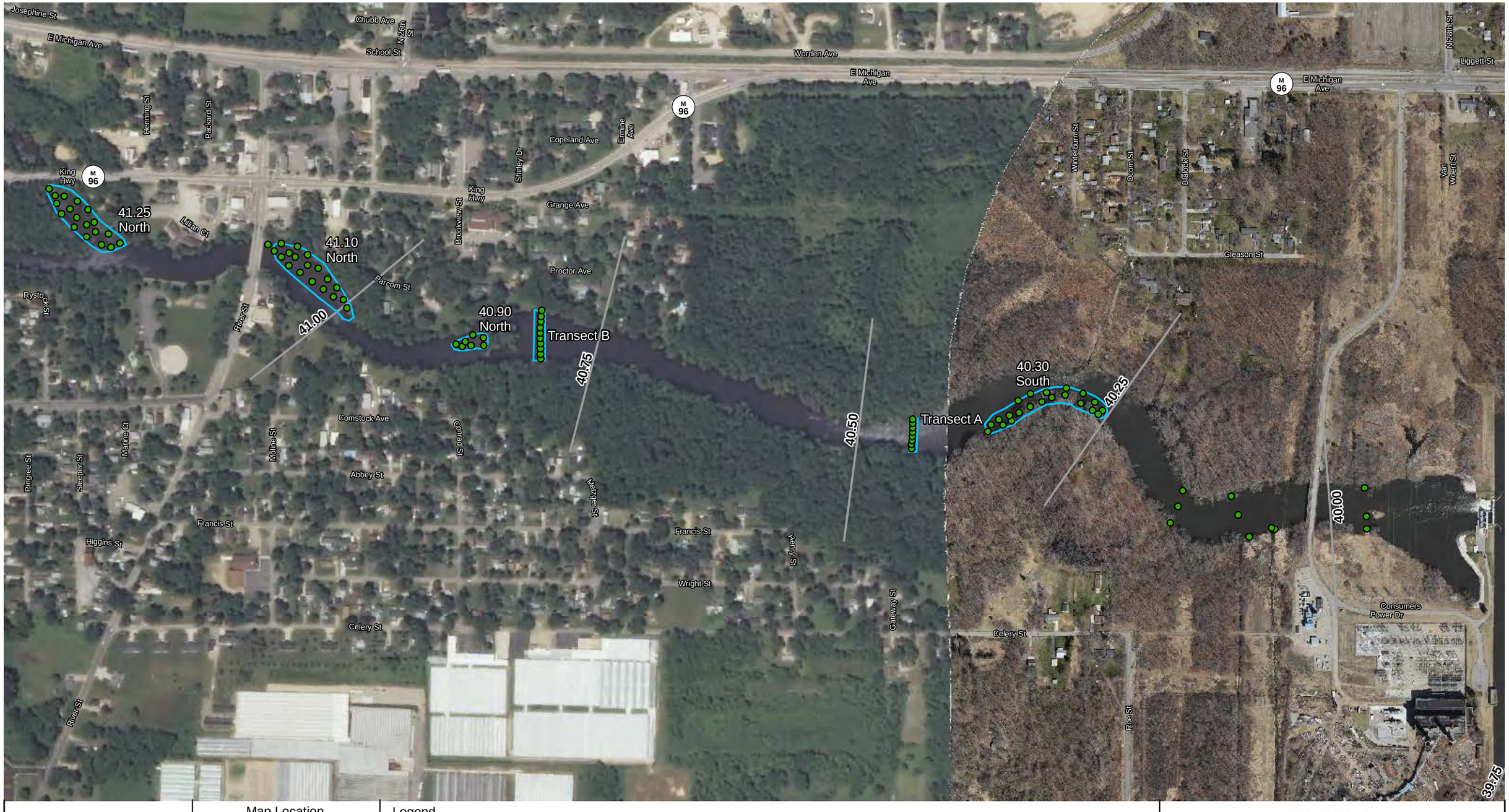
Scale in Feet

FIGURE 2e-1
2012 LATE SUMMER REASSESSMENT POLING
LOCATIONS AND RESULTS AUGUST 2012
SHEET 7 OF 7

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

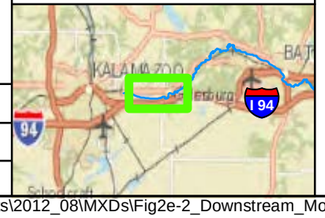
Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-1_Late_Summer_Reassessment_Poling.mxd

Aerial Photography Date: April 2011 over 2010




| | | |
|---|---|---|
| ENBRIDGE | | |
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Downstream Morrow Lake Dam Poling**

**Submerged Oil Category**

- Heavy
- Moderate
- Light
- None

- Focus Area
- Quarter Mile Grid Segments

N

0 225 450 900

Scale in Feet

FIGURE 2e-2
DOWNSTREAM OF MORROW LAKE DAM POLING
LOCATIONS AND RESULTS AUGUST 2012
SHEET 1 OF 1

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-2_Downstream_Morrow_Dam_Poling.mxd

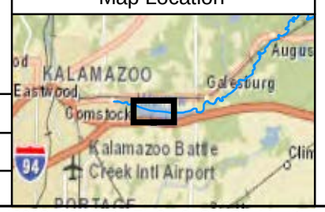
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Round 24 Monitoring Poling**

**Submerged Oil Category**

- Heavy
- Moderate
- Light
- None

Spring 2012 Sediment Fan and Lake Monitoring Poling Location

Quarter Mile Grid Segments

M - Morrow Lake

N

0 350 700 1,400

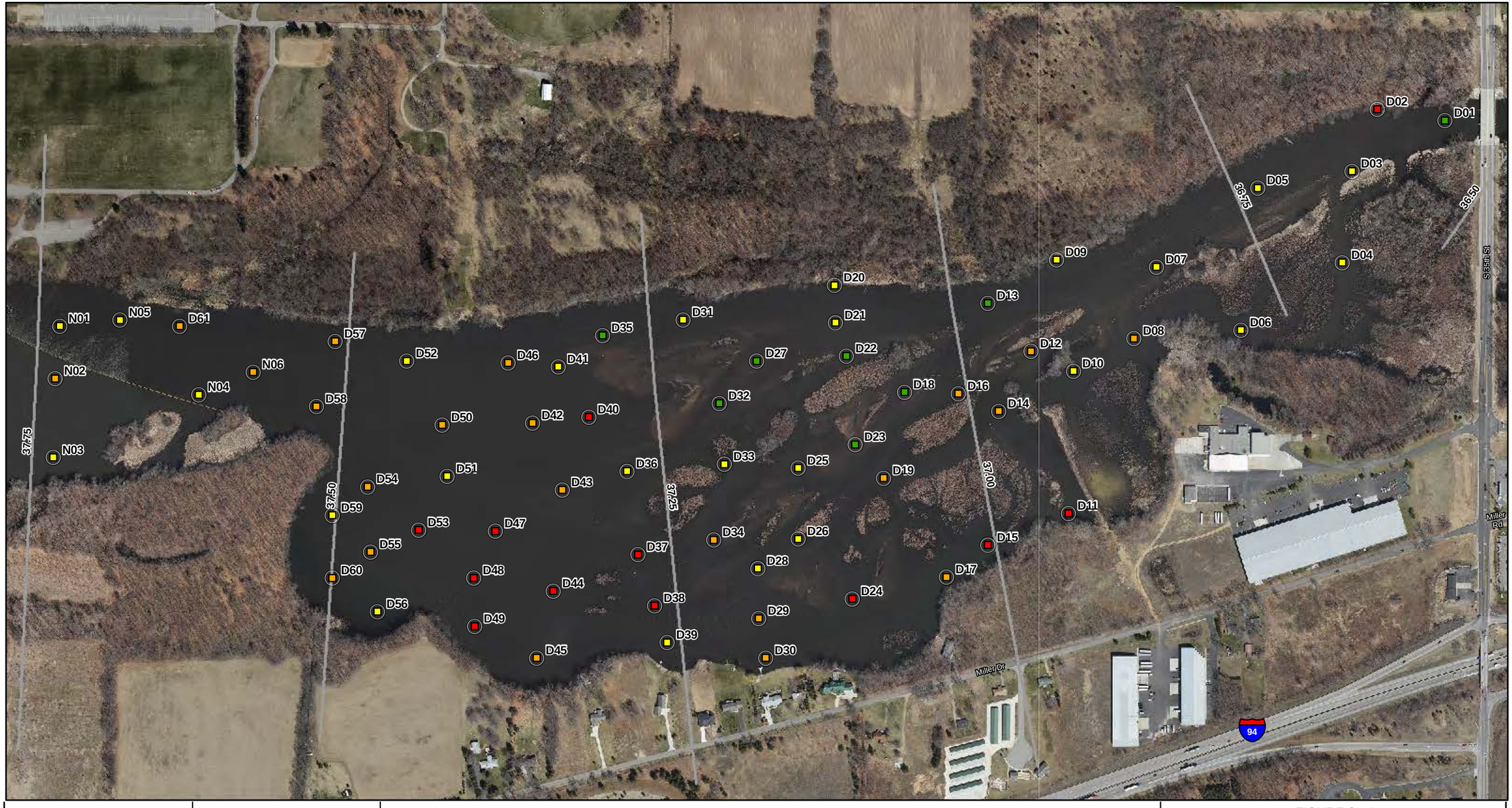
Scale in Feet

FIGURE 2e-3
SUBMERGED OIL POLING LOCATIONS AND RESULTS
SEDIMENT FAN AND MORROW LAKE (ROUND 24)
AUGUST 1, 2012
SHEET 1 OF 1

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

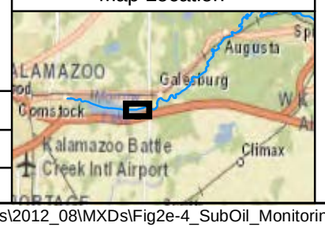
Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-3_SubOil_Monitoring_Morrow_Sheet1.mxd

Aerial Photography Date: April 2011




| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Round 8 Monitoring Poling**

**Submerged Oil Category**

- Heavy
- Moderate
- Light
- None

Spring 2012 Delta Monitoring Poling Location (Primary)

Quarter Mile Grid Segments

D - Morrow Lake Delta
N - Morrow Lake Neck

N

0 200 400 800

Scale in Feet

FIGURE 2e-4
SUBMERGED OIL POLING LOCATIONS AND RESULTS MORROW LAKE DELTA (ROUND 8)
AUGUST 1 - AUGUST 3, 2012
SHEET 1 OF 1

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-4_SubOil_Monitoring_Delta_Sheet1.mxd

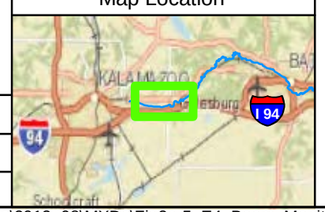
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Boom Monitoring**

**Submerged Oil Category**

| Up-stream | Down-stream | |
|---|---|---|
| | | Heavy |
| | | Moderate |
| | | Light |
| | | None |

**E 4.0 Containment Curtain**

- X-TEX Sediment Curtain
- No Curtain

Quarter Mile Grid Segments

N

0 75 150 300

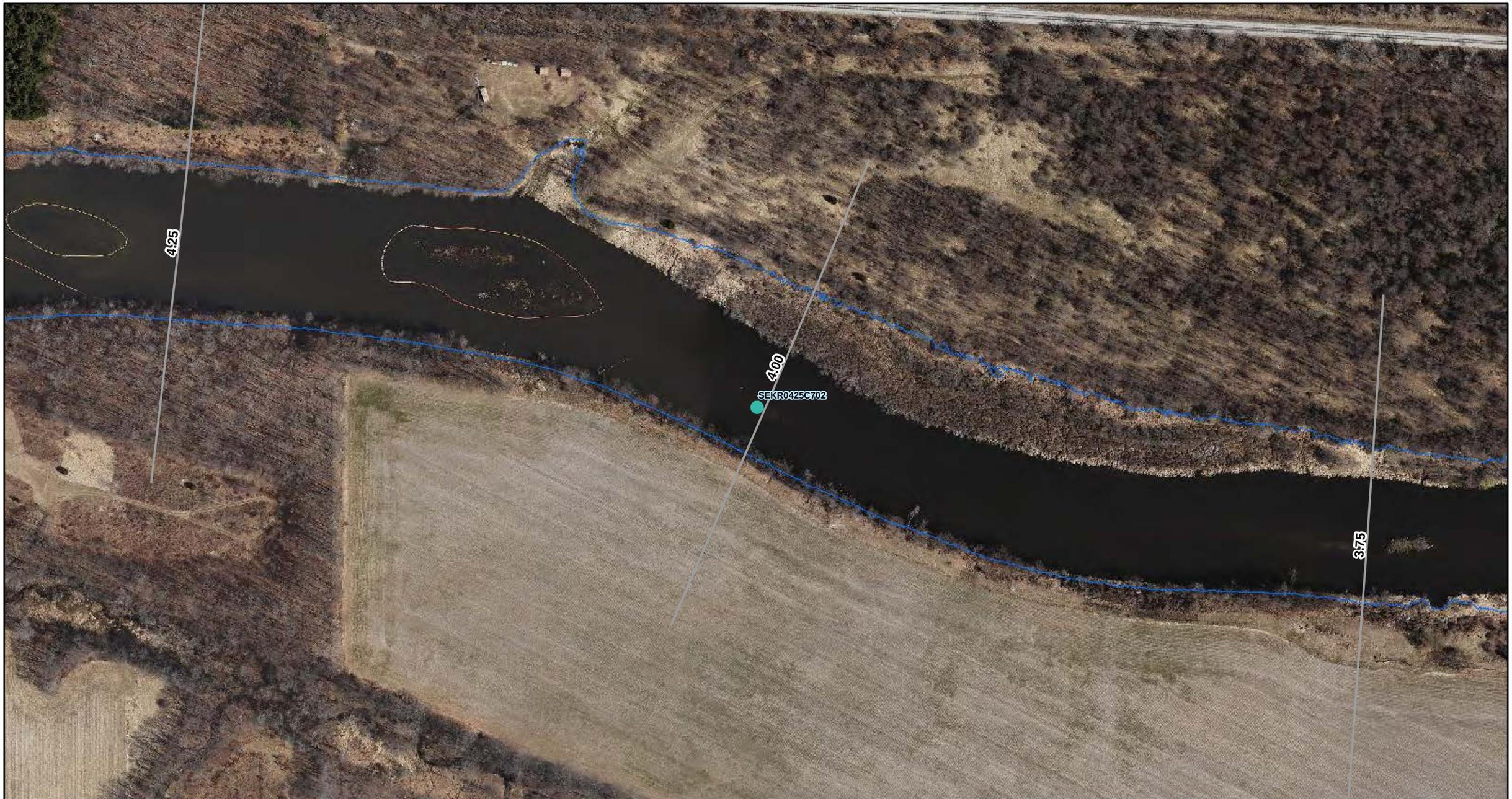
Scale in Feet

FIGURE 2e-5
E 4.0 BOOM MONITORING
AUGUST 2012
SHEET 1 OF 1

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-5_E4_Boom_Monitoring.mxd

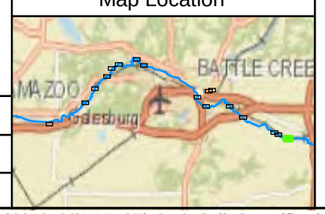
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 1 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

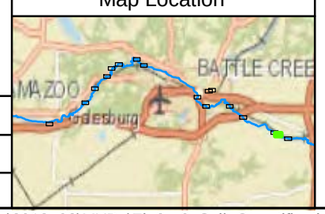
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 2 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**

- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**

- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 3 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

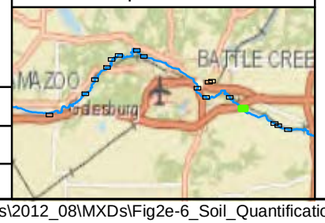
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 4 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

Aerial Photography Date: April 2011 over 2010

River Rd E

SEKR1100C701

1075

SEKR1075C702

SEKR1075C703

Kimball Pines Park Rd

SEKR1075C701

1050

ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**

- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**

- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 5 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

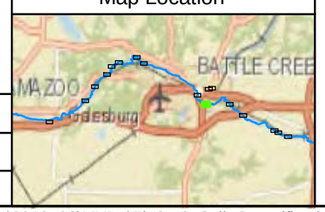
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 6 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

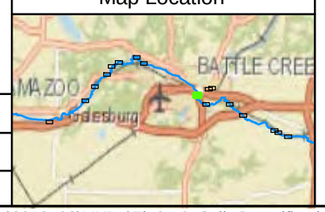
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 7 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 8 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

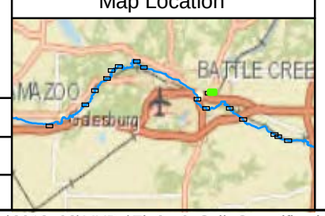
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 9 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

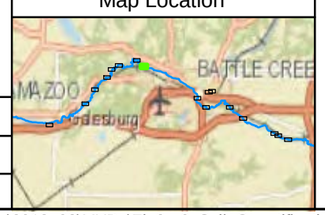
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 10 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

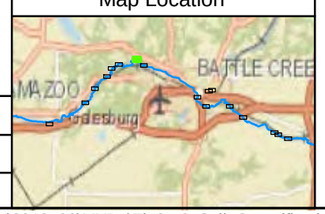
Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

Aerial Photography Date: April 2011 over 2010




| | | |
|---|---|---|
| ENBRIDGE | | |
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

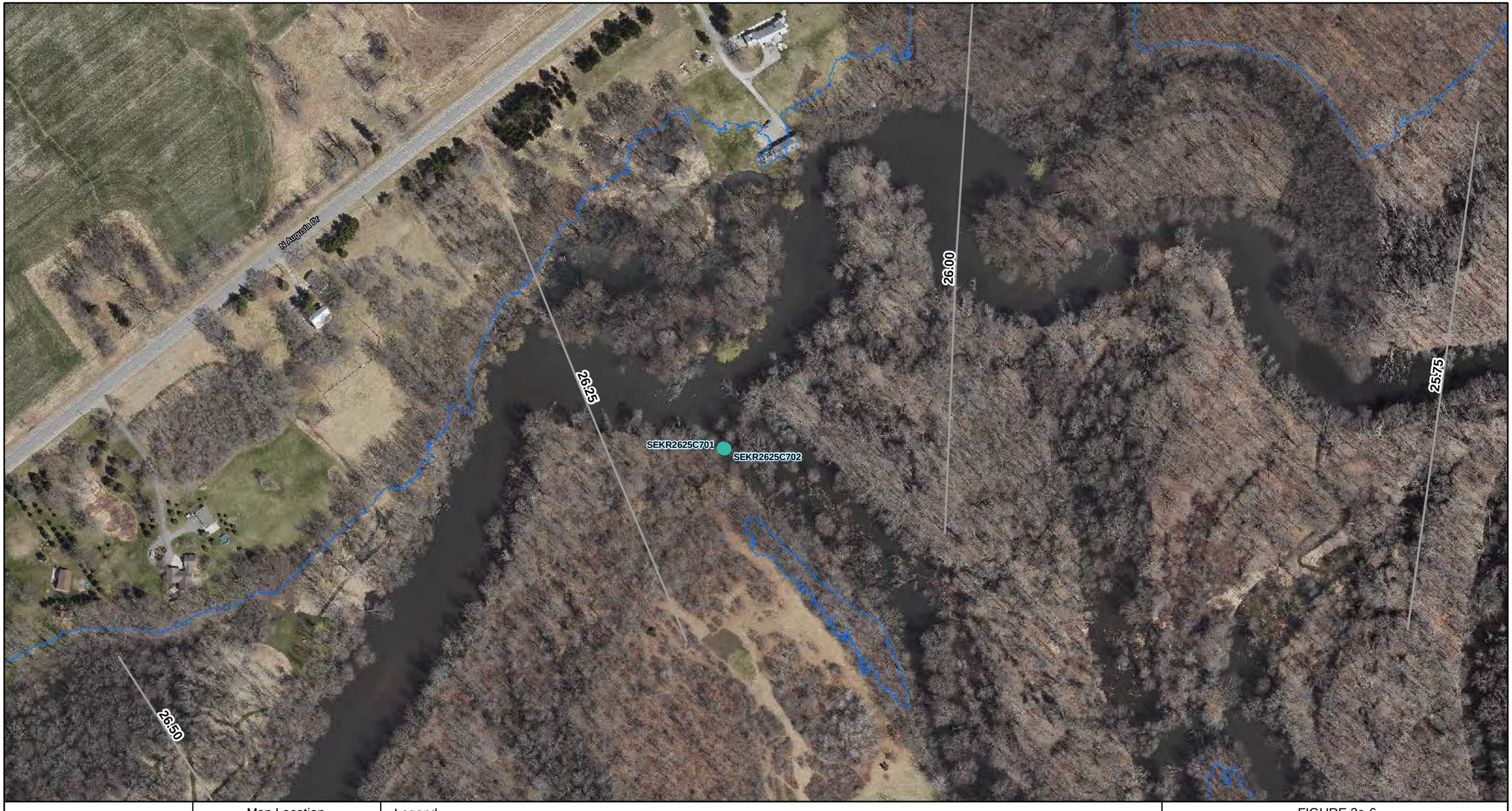
Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 11 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

Aerial Photography Date: April 2011 over 2010




| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

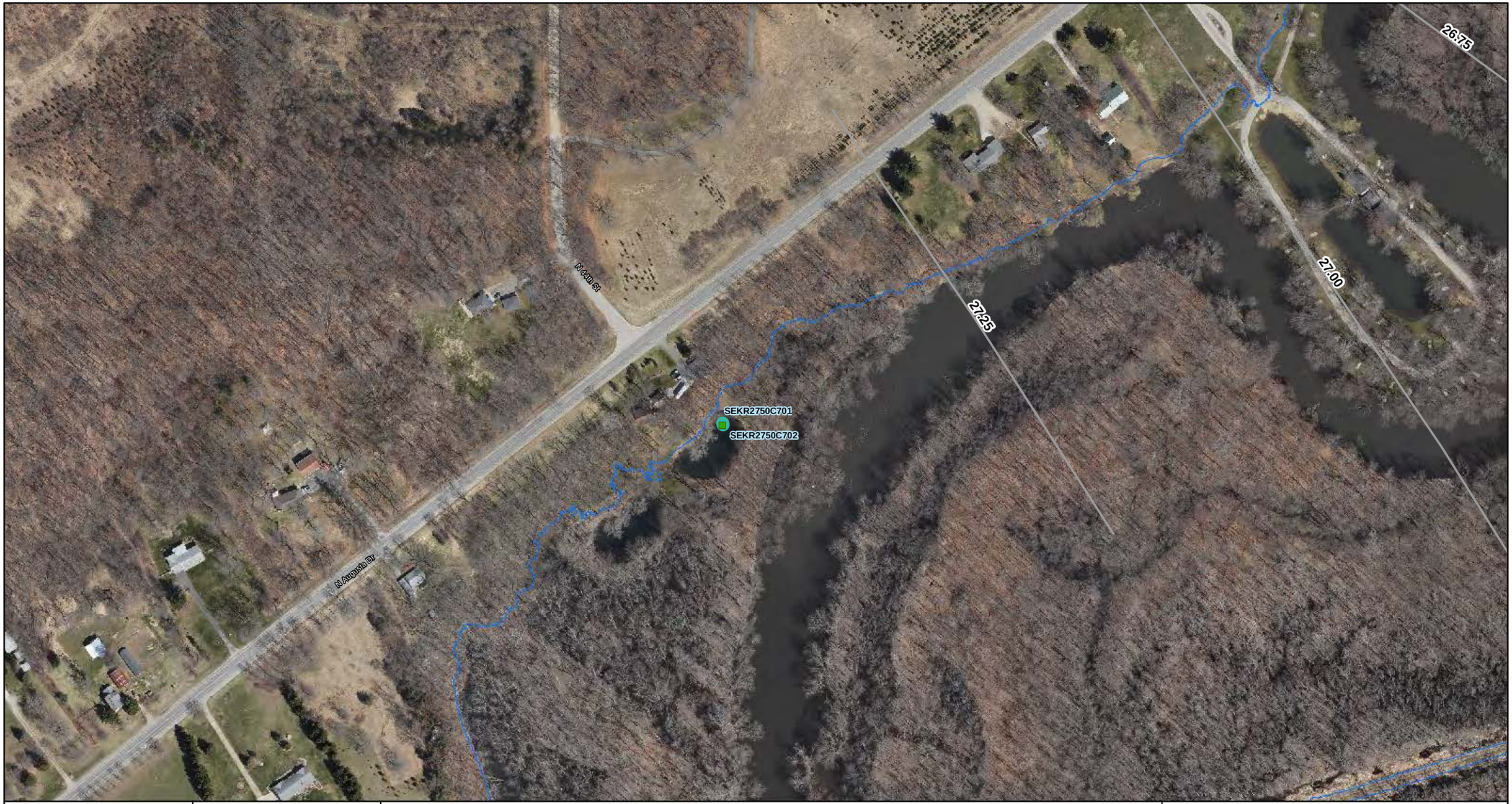
Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 12 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

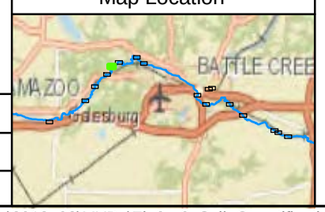
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 13 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

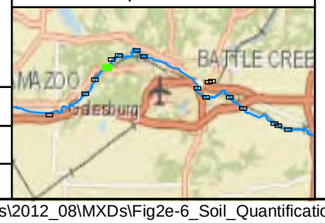
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 14 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

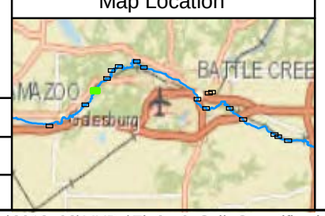
Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

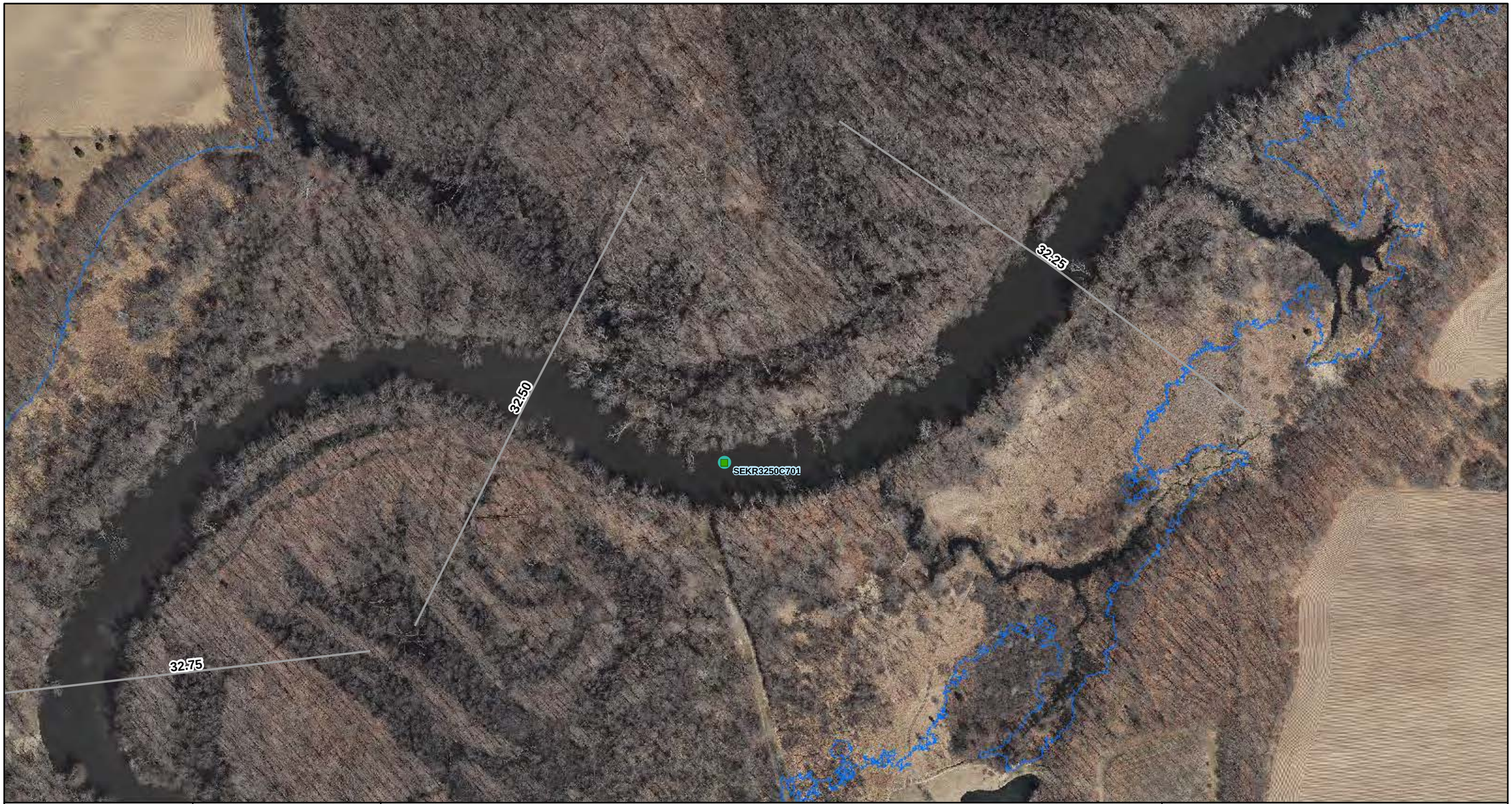
Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 15 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 16 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Soil Quantification Coring**
**Observations**
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Soil Quantification Poling**
**Submerged Oil Category**
- Heavy
- Moderate
- Light
- None

- Kalamazoo River Flood Inundation Boundary
- Battle Creek River
- Quarter Mile Grid Segments

N

0 100 200 400

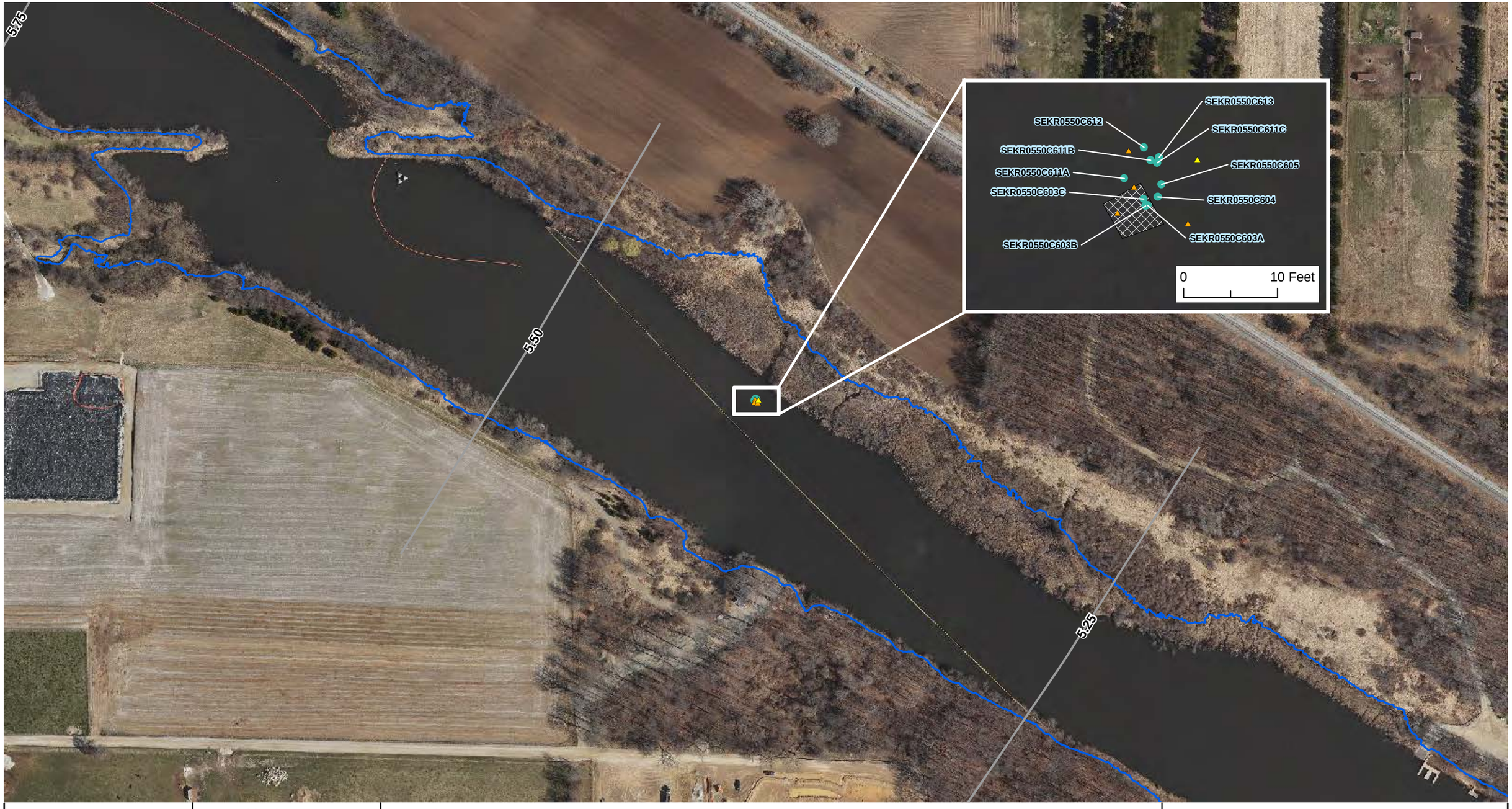
Scale in Feet

FIGURE 2e-6
KALAMAZOO RIVER SOIL QUANTIFICATION
CORES AND POLING
AUGUST 2012
SHEET 17 OF 17

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-6_Soil_Quantification.mxd

Aerial Photography Date: April 2011 over 2010




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Agitation Coring**
Observations
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Agitation Poling**
Submerged Oil Category
- Heavy
- Moderate
- Light
- None

- Agitation Box
- Kalamazoo River Final Inundation Boundary
- Quarter Mile Grid Segments

N

0 100 200 400
Scale in Feet

FIGURE 2e-7
AGITATION STUDY SAMPLE LOCATIONS AUGUST 2012
MP 5.55 NORTH
SHEET 1 OF 3

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-7_Agitation_Study_Sheet1.mxd

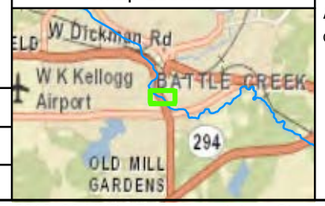
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Agitation Coring**
Observations
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Agitation Poling**
Submerged Oil Category
- Heavy
- Moderate
- Light
- None

- Agitation Box
- Kalamazoo River Final Inundation Boundary
- Quarter Mile Grid Segments

N

0 100 200 400
Scale in Feet

FIGURE 2e-7
AGITATION STUDY SAMPLE LOCATIONS AUGUST 2012
MP 14.80
SHEET 2 OF 3

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-7_Agitation_Study_Sheet2.mxd

Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Agitation Coring**
Observations
- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed
- Not Logged

**Agitation Poling**
Submerged Oil Category
- Heavy
- Moderate
- Light
- None

- Agitation Box
- Kalamazoo River Final Inundation Boundary
- Quarter Mile Grid Segments

N

0 100 200 400

Scale in Feet

FIGURE 2e-7
AGITATION STUDY SAMPLE LOCATIONS AUGUST 2012
MORROW LAKE DELTA
SHEET 3 OF 3

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2e-7_Agitation_Study_Sheet3.mxd

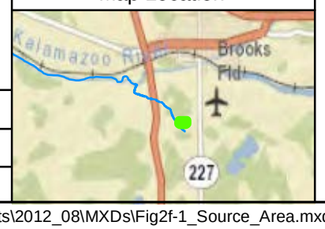
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/5/2012 |
| Approved: | EE | 9/5/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Source Area RI**

**Observations**

- Oil
- Visible Sheen
- Fluoresced Oil
- Trace Fluorescence
- No Oil Observed

- Temporary Well
- Source Area Sub-unit Boundary
- Vector Pipeline
- Line 6B Pipeline
- Quarter Mile Grid Segments

N

0 35 70 140

Scale in Feet

FIGURE 2f-1
SOURCE AREA REMEDIAL INVESTIGATION
BORING LOCATIONS
AUGUST 2012
SHEET 1 OF 1

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2f-1_Source_Area.mxd

Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Sediment Trap Monitoring**

**Round 6 Poling Result**

- Heavy
- Moderate
- Light
- None

- Sediment Trap Site Boundary
- Quarter Mile Grid Segments

N

0 25 50 100

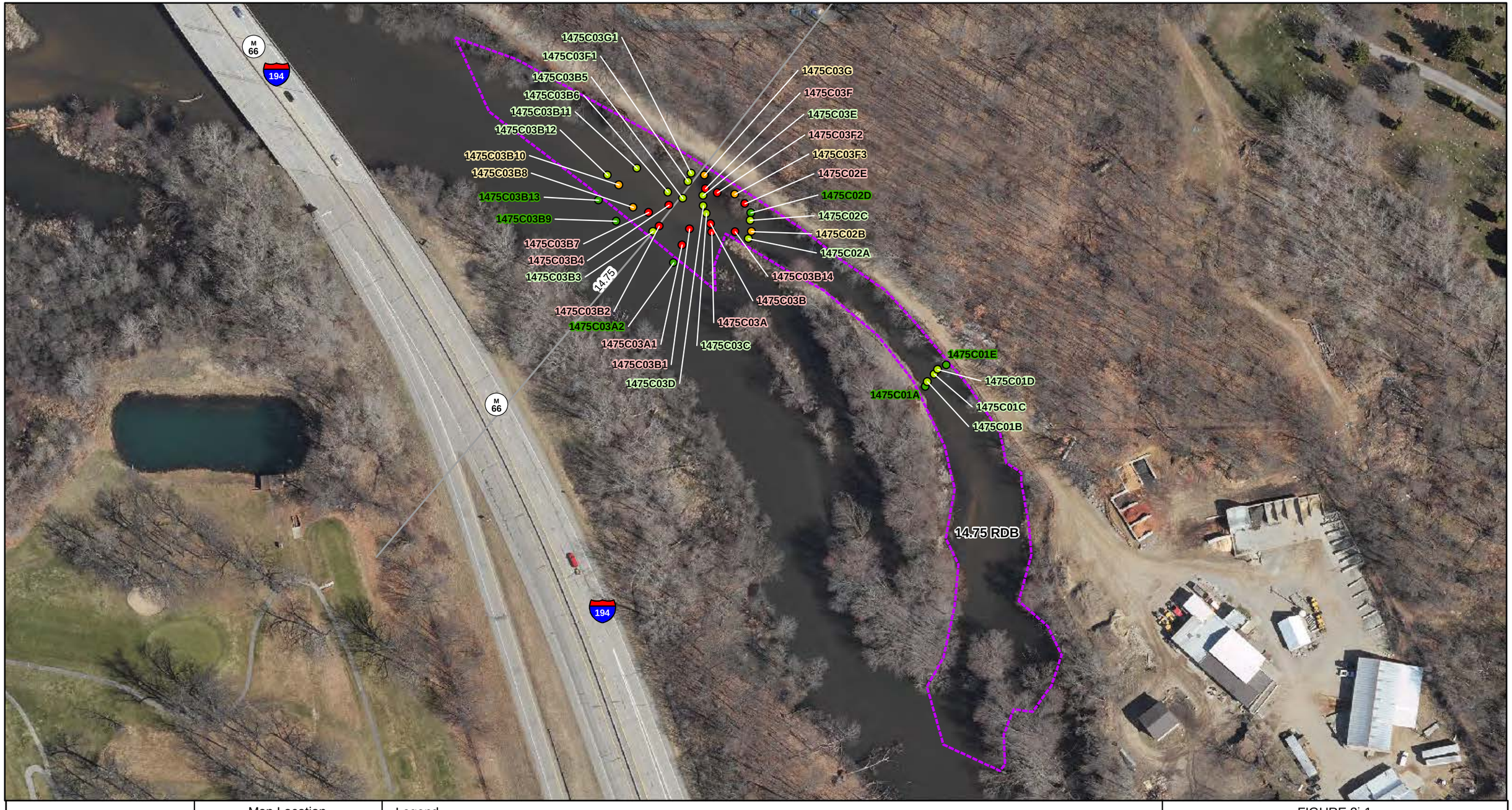
Scale in Feet

FIGURE 2i-1
SEDIMENT TRAP MONITORING
ROUND 6 POLING RESULTS: AUGUST 13-21, 2012
MP 10.75 LDB
SHEET 1 OF 6

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-1_Sediment_Trap_Monitoring.mxd

Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Sediment Trap Monitoring**

**Round 6 Poling Result**

- Heavy
- Moderate
- Light
- None

Sediment Trap Site Boundary

Quarter Mile Grid Segments

N

0 60 120 240

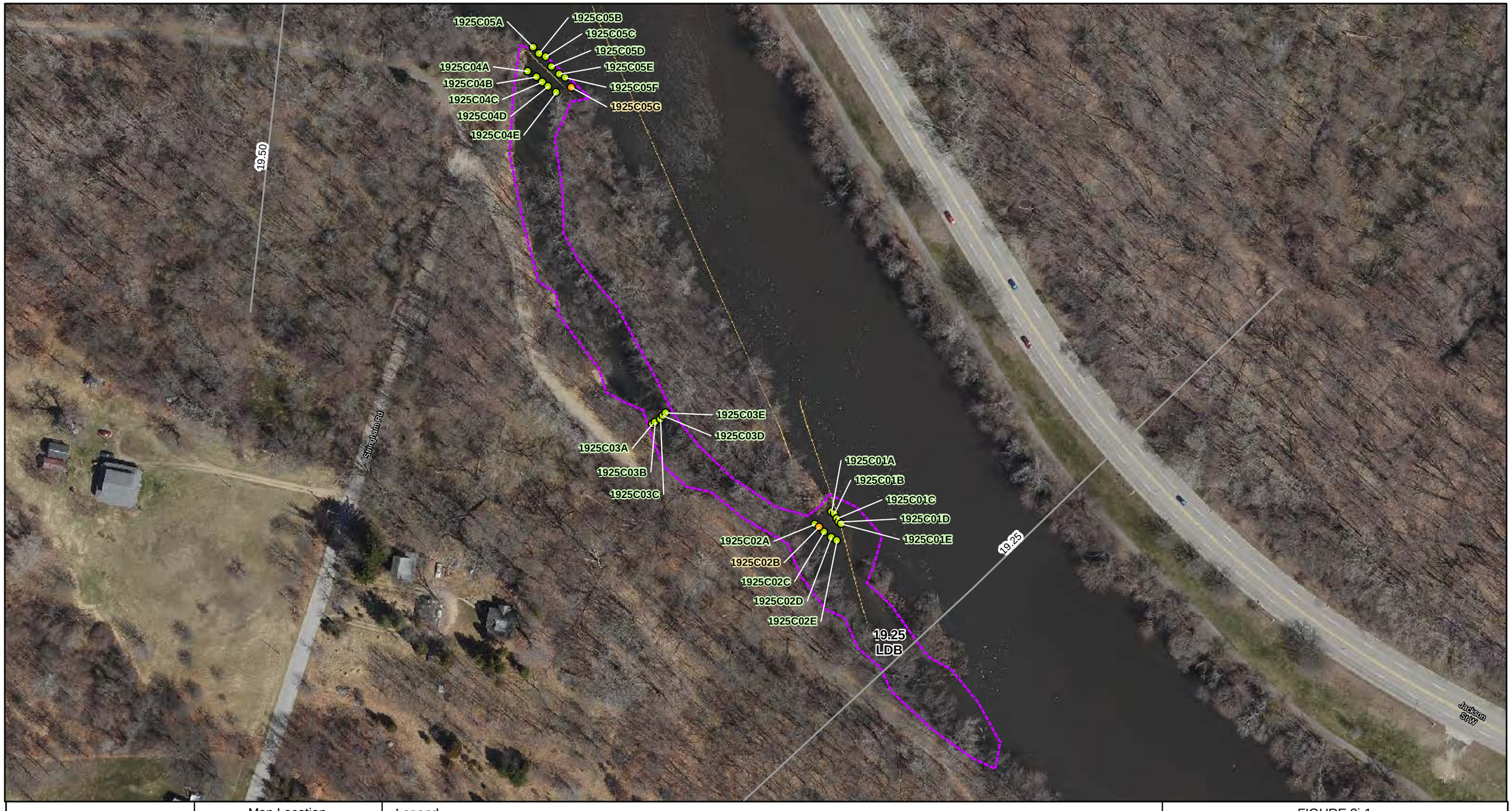
Scale in Feet

FIGURE 2i-1
SEDIMENT TRAP MONITORING
ROUND 6 POLING RESULTS: AUGUST 13-21, 2012
MP 14.75 RDB
SHEET 2 OF 6

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-1_Sediment_Trap_Monitoring.mxd

Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Sediment Trap Monitoring**

**Round 6 Poling Result**

- Heavy
- Moderate
- Light
- None

Sediment Trap Site Boundary

Quarter Mile Grid Segments

N

0 60 120 240

Scale in Feet

FIGURE 2i-1
SEDIMENT TRAP MONITORING
ROUND 6 POLING RESULTS: AUGUST 13-21, 2012
MP 19.25 LDB
SHEET 3 OF 6

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-1_Sediment_Trap_Monitoring.mxd

Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Sediment Trap Monitoring**

**Round 6 Poling Result**

- Heavy
- Moderate
- Light
- None

- Sediment Trap Site Boundary
- Quarter Mile Grid Segments

N

0 45 90 180

Scale in Feet

FIGURE 2i-1
SEDIMENT TRAP MONITORING
ROUND 6 POLING RESULTS: AUGUST 13-21, 2012
MP 21.50 RDB
SHEET 4 OF 6

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-1_Sediment_Trap_Monitoring.mxd

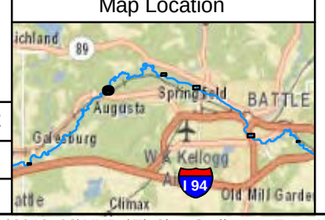
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Sediment Trap Monitoring**

**Round 6 Poling Result**

- Heavy
- Moderate
- Light
- None

- Sediment Trap Site Boundary
- Quarter Mile Grid Segments

N

0 40 80 160

Scale in Feet

FIGURE 2i-1
SEDIMENT TRAP MONITORING
ROUND 6 POLING RESULTS: AUGUST 13-21, 2012
MP 28.25 RDB
SHEET 5 OF 6

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-1_Sediment_Trap_Monitoring.mxd

Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Sediment Trap Monitoring**

**Round 6 Poling Result**

- Heavy
- Moderate
- Light
- None

Sediment Trap Site Boundary

Quarter Mile Grid Segments

N

0 30 60 120

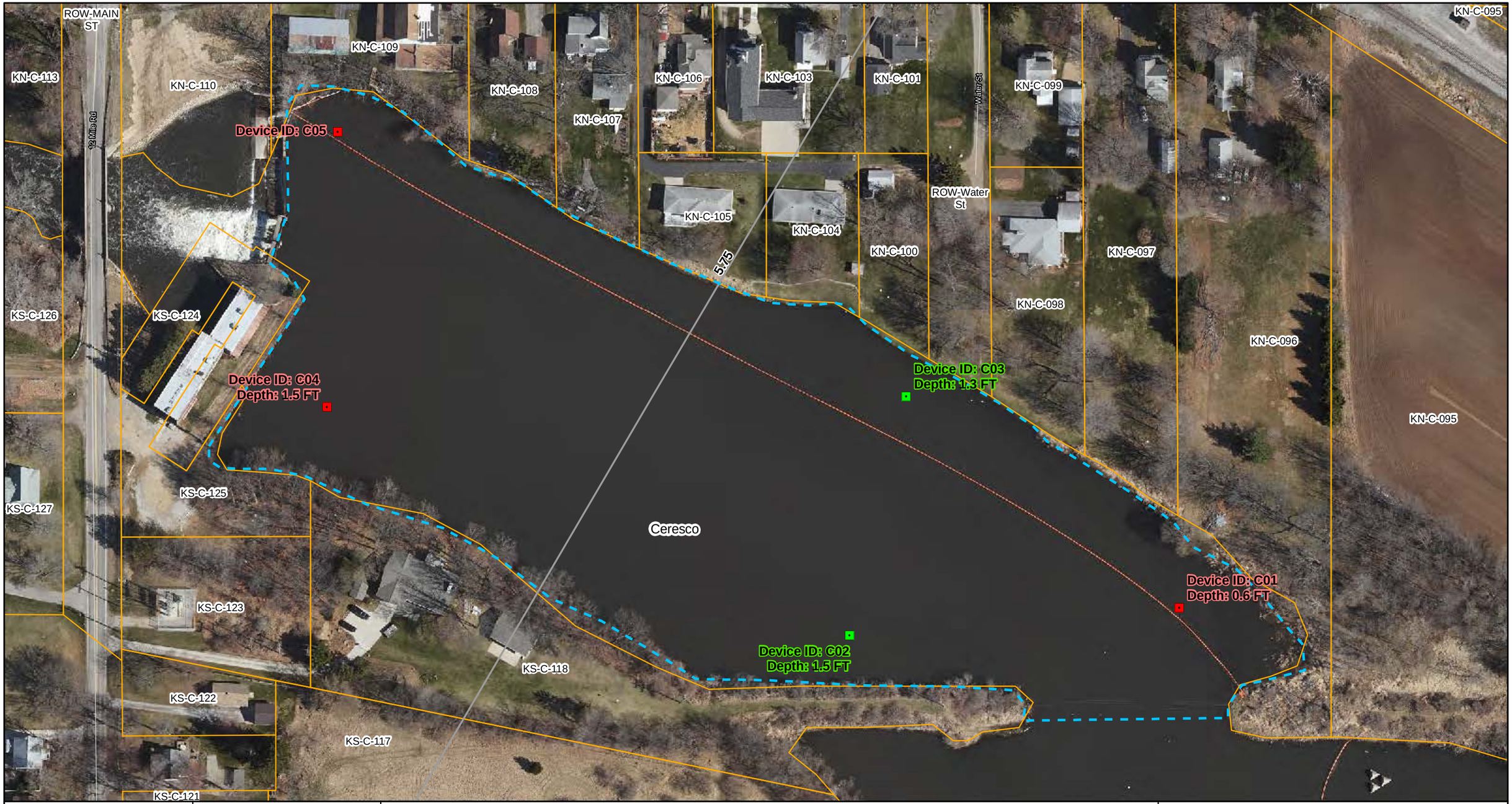
Scale in Feet

FIGURE 2i-1
SEDIMENT TRAP MONITORING
ROUND 6 POLING RESULTS: AUGUST 13-21, 2012
MP 36.10 NW
SHEET 6 OF 6

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-1_Sediment_Trap_Monitoring.mxd

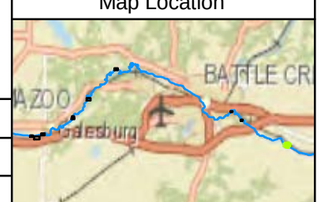
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

Cylindrical Sampling Device Locations
- Fully Submerged
- Not Submerged
- No Access

- Sediment Trap Area
- Parcel
- Quarter Mile Grid Segments

N

0 50 100 200

Scale in Feet

FIGURE 2i-2
CYLINDRICAL SAMPLING DEVICES
AUGUST 2012
CERESCO
SHEET 1 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-2_Cylindrical_Sampling_Devices.mxd

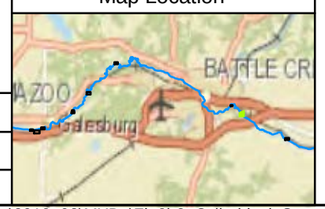
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

Cylindrical Sampling Device Locations
- Fully Submerged
- Not Submerged
- No Access

- Sediment Trap Area
- Parcel
- Quarter Mile Grid Segments

N

0 25 50 100

Scale in Feet

FIGURE 2i-2
CYLINDRICAL SAMPLING DEVICES
AUGUST 2012
MP 10.40 N
SHEET 2 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-2_Cylindrical_Sampling_Devices.mxd

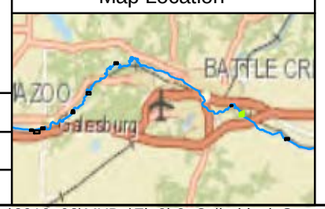
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

Cylindrical Sampling Device Locations
- Fully Submerged
- Not Submerged
- No Access

- Sediment Trap Area
- Parcel
- Quarter Mile Grid Segments

N

0 25 50 100

Scale in Feet

FIGURE 2i-2
CYLINDRICAL SAMPLING DEVICES
AUGUST 2012
MP 10.50 L2
SHEET 3 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-2_Cylindrical_Sampling_Devices.mxd

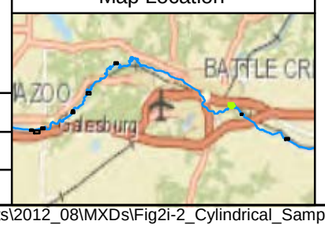
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

Cylindrical Sampling Device Locations
- Fully Submerged
- Not Submerged
- No Access

- Sediment Trap Area
- Parcel
- Quarter Mile Grid Segments

N

0 40 80 160

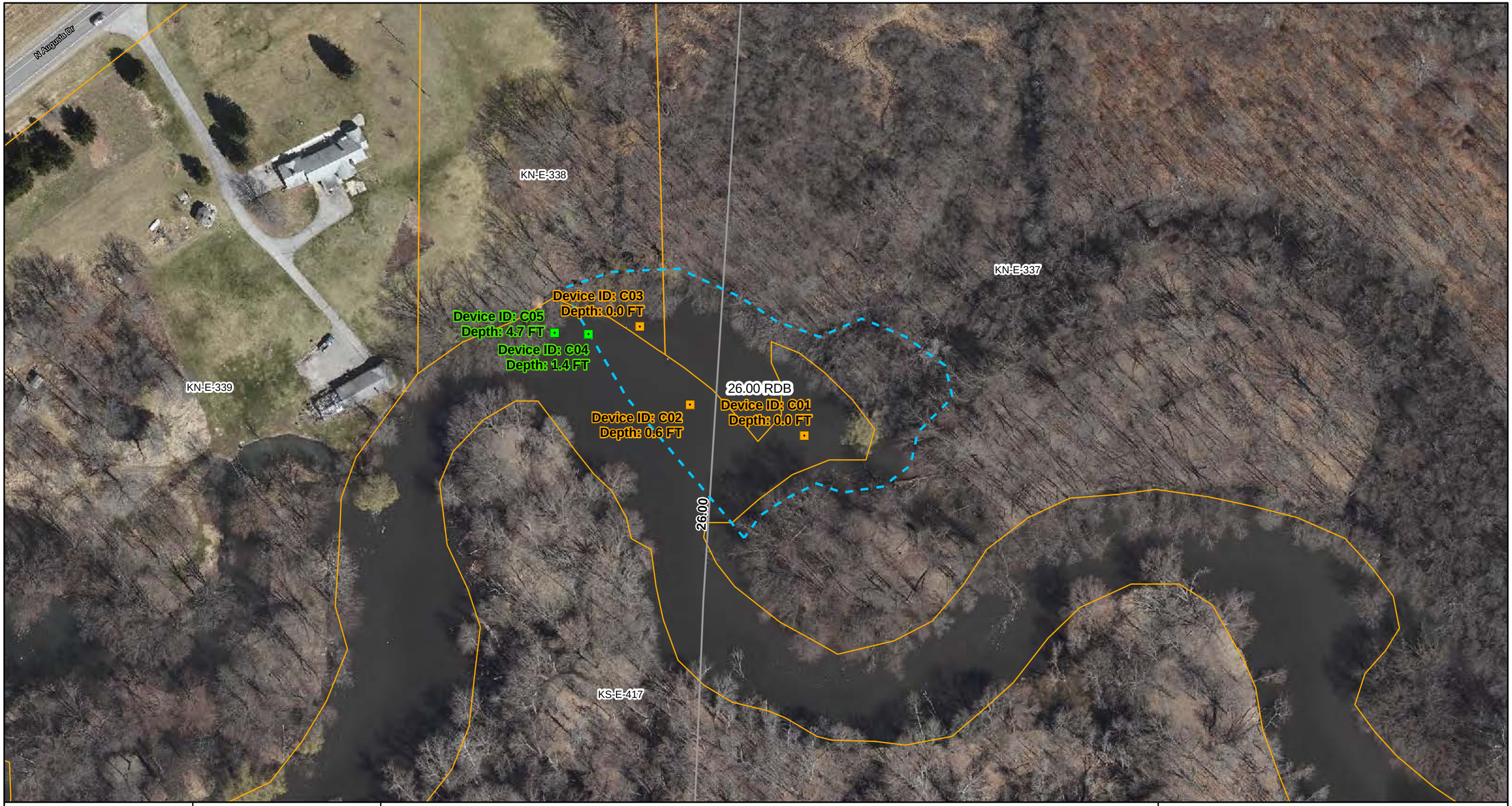
Scale in Feet

FIGURE 2i-2
CYLINDRICAL SAMPLING DEVICES
AUGUST 2012
OB 11.79 LDB
SHEET 4 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-2_Cylindrical_Sampling_Devices.mxd

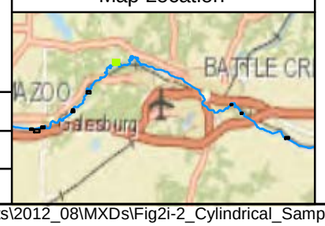
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

Cylindrical Sampling Device Locations
- Fully Submerged
- Not Submerged
- No Access

- Sediment Trap Area
- Parcel
- Quarter Mile Grid Segments

N

0 50 100 200

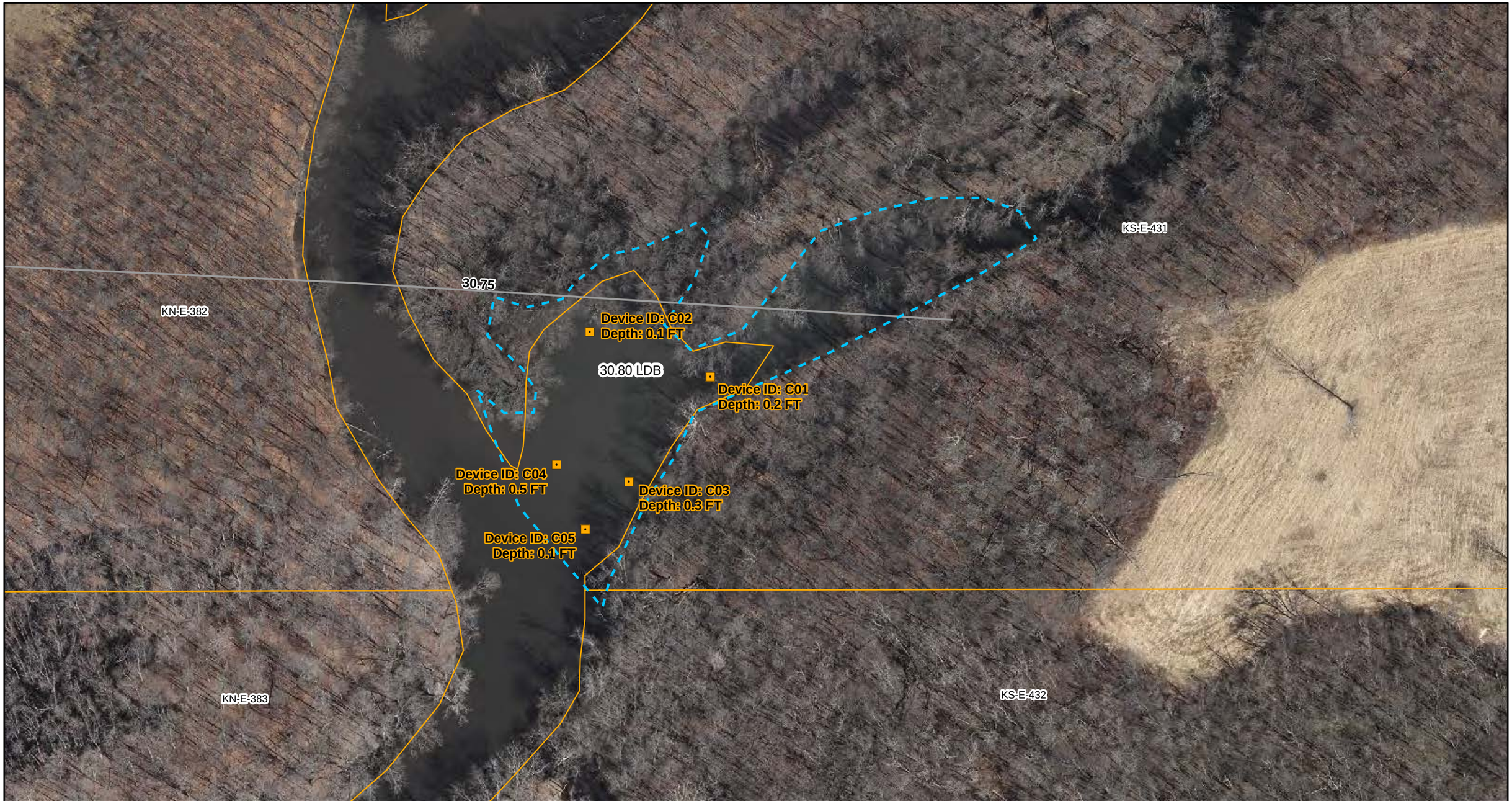
Scale in Feet

FIGURE 2i-2
CYLINDRICAL SAMPLING DEVICES
AUGUST 2012
MP 26.00 RDB
SHEET 5 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

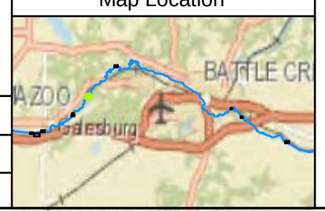
Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-2_Cylindrical_Sampling_Devices.mxd

Aerial Photography Date: April 2011




| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

Cylindrical Sampling Device Locations
- Fully Submerged
- Not Submerged
- No Access

- Sediment Trap Area
- Parcel
- Quarter Mile Grid Segments

N

0 50 100 200

Scale in Feet

FIGURE 2i-2
CYLINDRICAL SAMPLING DEVICES
AUGUST 2012
MP 30.80 LDB
SHEET 6 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-2_Cylindrical_Sampling_Devices.mxd

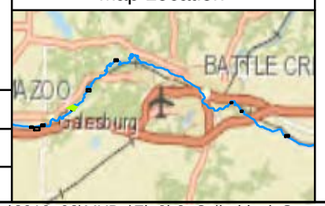
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

Cylindrical Sampling Device Locations
- Fully Submerged
- Not Submerged
- No Access

- Sediment Trap Area
- Parcel
- Quarter Mile Grid Segments

N

0 25 50 100

Scale in Feet

FIGURE 2i-2
CYLINDRICAL SAMPLING DEVICES
AUGUST 2012
MP 33.00 A
SHEET 7 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-2_Cylindrical_Sampling_Devices.mxd

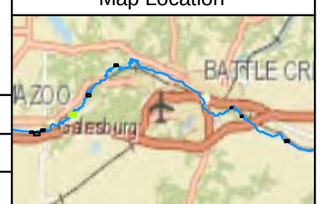
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

Cylindrical Sampling Device Locations
- Fully Submerged
- Not Submerged
- No Access

- Sediment Trap Area
- Parcel
- Quarter Mile Grid Segments

N

0 40 80 160

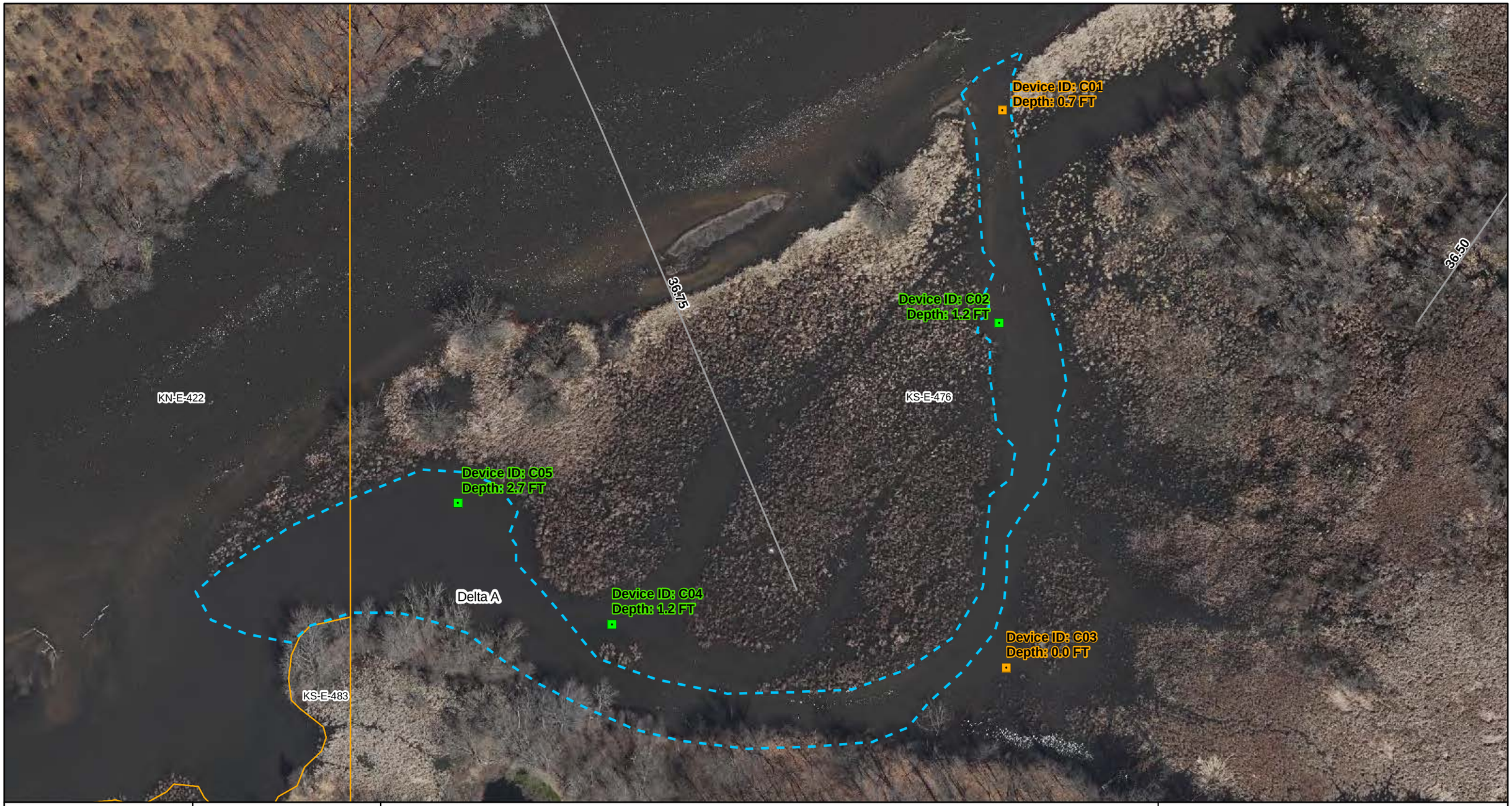
Scale in Feet

FIGURE 2i-2
CYLINDRICAL SAMPLING DEVICES
AUGUST 2012
MP 33.00 B
SHEET 8 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-2_Cylindrical_Sampling_Devices.mxd

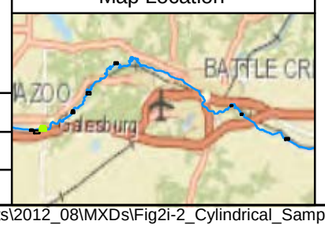
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

Cylindrical Sampling Device Locations
- Fully Submerged
- Not Submerged
- No Access

- Sediment Trap Area
- Parcel
- Quarter Mile Grid Segments

N

0 50 100 200

Scale in Feet

FIGURE 2i-2
CYLINDRICAL SAMPLING DEVICES
AUGUST 2012
DELTA A
SHEET 9 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-2_Cylindrical_Sampling_Devices.mxd

Aerial Photography Date: April 2011

KN-E-423

KS-E-488

37.25

KN-E-422

Device ID: C02
Depth: 0.6 FT

Device ID: C10
Depth: 1.0 FT

Device ID: C09
Depth: 1.1 FT

Device ID: C08
Depth: 1.2 FT

Device ID: C06
Depth: 0.7 FT

Delta Z

Device ID: C07
Depth: 0.6 FT

Device ID: C05
Depth: 0.7 FT

Device ID: C01
Depth: 0.7 FT

Device ID: C03
Depth: 0.1 FT

Device ID: C04
Depth: 0.9 FT

KS-E-492

KS-E-499

KS-E-498

KS-E-497

KS-E-496

KS-E-495

KS-E-494

KS-E-493

KS-E-491

KS-E-489

KS-E-500

TBD

KS-E-501

ROW-Miller Dr

Miller Dr

KS-E-490

ROW-Galesburg Rest Area

ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

Cylindrical Sampling Device Locations
- Fully Submerged
- Not Submerged
- No Access

- Sediment Trap Area
- Parcel
- Quarter Mile Grid Segments

N

0 70 140 280

Scale in Feet

FIGURE 2i-2
CYLINDRICAL SAMPLING DEVICES
AUGUST 2012
DELTA Z
SHEET 10 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-2_Cylindrical_Sampling_Devices.mxd

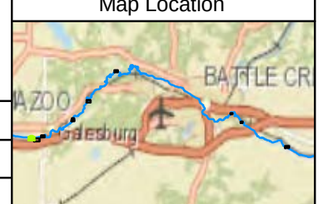
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

Cylindrical Sampling Device Locations
- Fully Submerged
- Not Submerged
- No Access

- Sediment Trap Area
- Parcel
- Quarter Mile Grid Segments

N

0 40 80 160

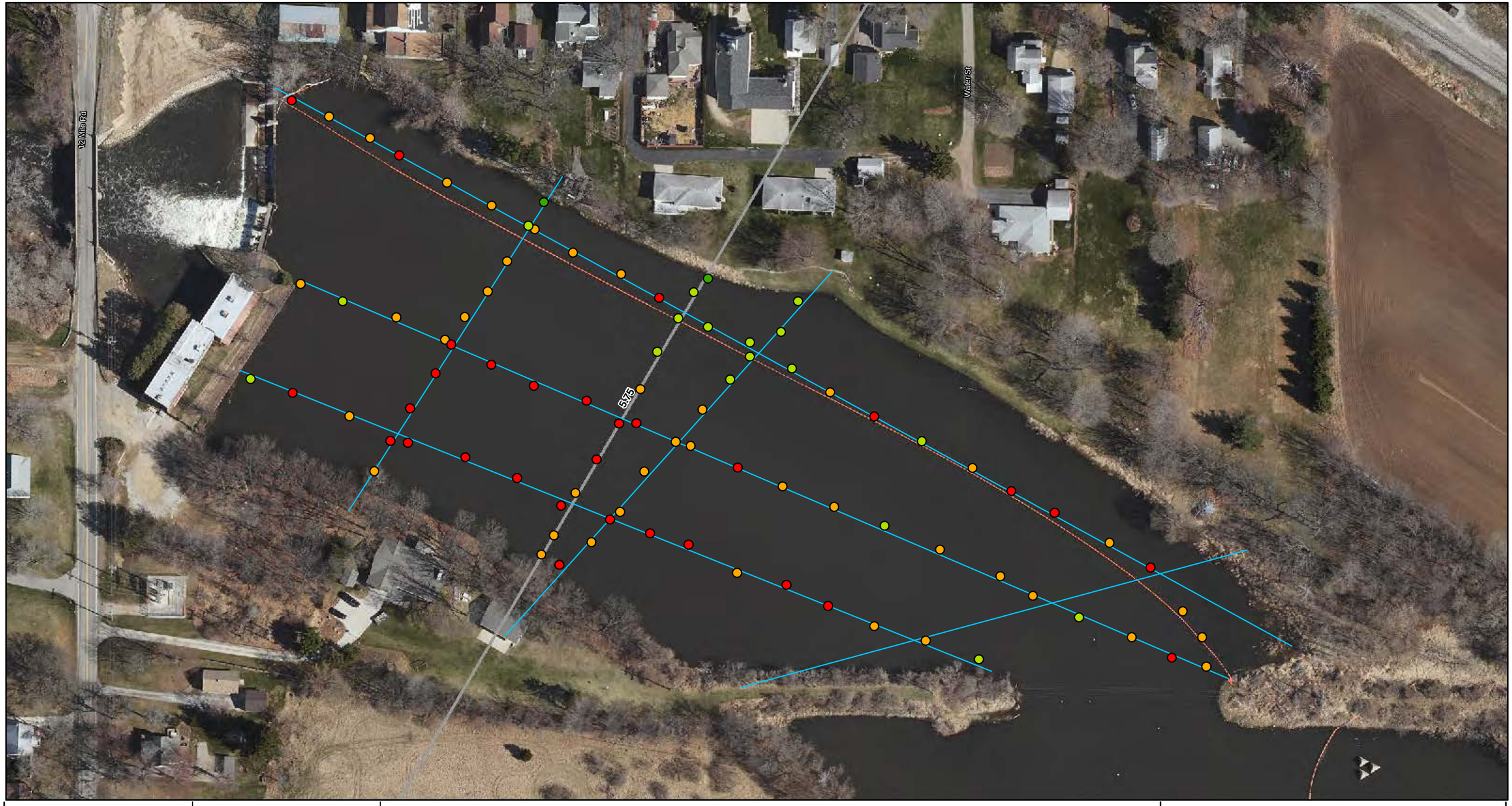
Scale in Feet

FIGURE 2i-2
CYLINDRICAL SAMPLING DEVICES
AUGUST 2012
MP 37.75 ISLANDS
SHEET 11 OF 11

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-2_Cylindrical_Sampling_Devices.mxd

Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Sediment Trap Transect Poling**

**Submerged Oil Category**

- Heavy
- Moderate
- Light
- None

- Target Transect
- Quarter Mile Grid Segments

N

0 50 100 200

Scale in Feet

FIGURE 2i-3
SEDIMENT TRAP TRANSECT POLING
AUGUST 2012
CERESCO
SHEET 1 OF 1

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-3_Sediment_Trap_Transect_Poling.mxd

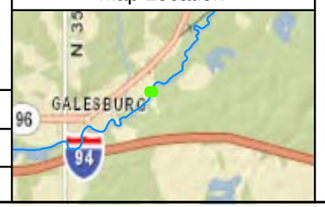
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Bed Elevation (Feet)**

- 775.0 - 775.5
- 775.5 - 776.0
- 776.0 - 776.5
- 776.5 - 777.0
- 777.0 - 777.5
- 777.5 - 778.0
- 778.0 - 778.5
- 778.5 - 779.0
- 779.0 - 779.5
- 779.5 - 780.0
- 780.0 - 780.5
- 780.5 - 781.0
- 781.0 - 781.5

*Bed Elevation Accuracy Value: +/- 0.2 Feet*

- Bed Elevation Contour (0.5 Foot Interval)
- Sediment Trap Area
- Cylindrical Sampling Device
- Quarter Mile Grid Segments

N

0 20 40 80

Scale in Feet

FIGURE 2i-4
SEDIMENT TRAP BATHYMETRY
BED ELEVATION CONTOURS
AUGUST 2012
MP 33.00 A
SHEET 1 OF 2

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-4_Sed_Traps_Bathymetry_Sheet1.mxd

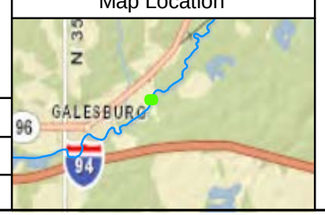
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 9/13/2012 |
| Approved: | EE | 9/13/2012 |
| Project #: | 60246209 | |

Map Location




Legend

**Water Depth (Feet)**

- 0.0 - 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- 2.0 - 2.5
- 2.5 - 3.0
- 3.0 - 3.5
- 3.5 - 4.0

- Water Depth Contour (0.5 Foot Interval)
- Sediment Trap Area
- Cylindrical Sampling Device
- Quarter Mile Grid Segments

N

0 20 40 80

Scale in Feet

FIGURE 2i-4
SEDIMENT TRAP BATHYMETRY
WATER DEPTH CONTOURS
AUGUST 2012
MP 33.00 A
SHEET 2 OF 2

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\Monthly_Progress_Reports\2012_08\MXDs\Fig2i-4_Sed_Traps_Bathymetry_Sheet2.mxd

Aerial Photography Date: April 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Ceresco Dam Area



Legend

Flow Direction and Velocity

0.6 Z Depth Fraction

- < 0.2 ft/sec
- 0.2 - 0.4 ft/sec
- 0.4 - 0.6 ft/sec
- 0.6 - 0.8 ft/sec
- 0.8 - 1.0 ft/sec
- > 1.0 ft/sec

Quarter Mile Grid Segment

ft/sec = feet per second

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

0 125 250 500

Scale in Feet

FIGURE 2m-1
FLOW DIRECTION AND VELOCITY:
MP 04.90 - MP 05.65 - STATION LOCATIONS
0.6 Z DEPTH FRACTION
JUNE 21 - JUNE 22, 2012
SHEET 1 OF 7
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-1.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Ceresco Dam Area



Legend

Flow Direction and Velocity

0.6 Z Depth Fraction

- < 0.2 ft/sec
- 0.2 - 0.4 ft/sec
- 0.4 - 0.6 ft/sec
- 0.6 - 0.8 ft/sec
- 0.8 - 1.0 ft/sec
- > 1.0 ft/sec

Quarter Mile Grid Segment

ft/sec = feet per second

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

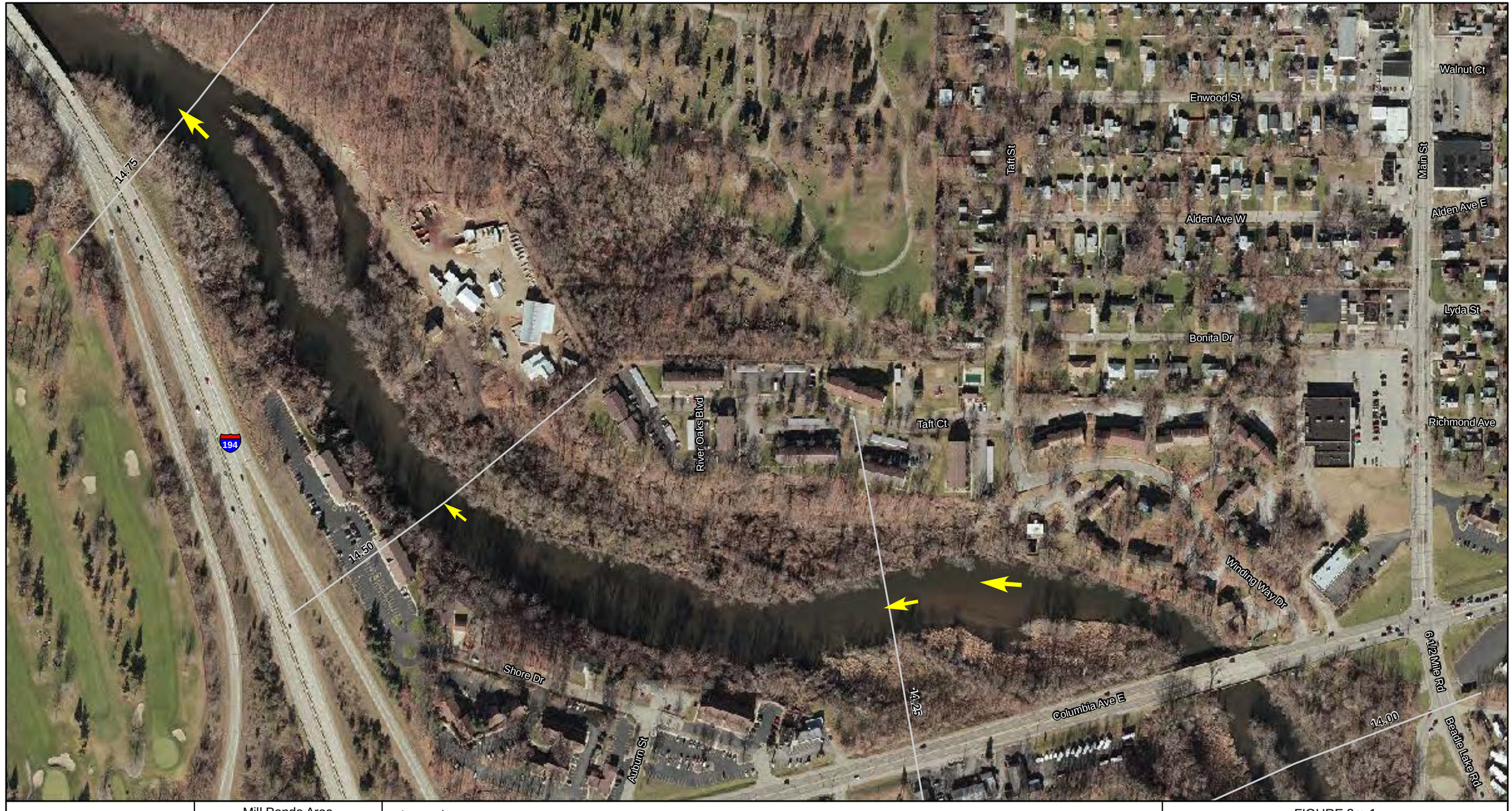
0 125 250 500

Scale in Feet

FIGURE 2m-1
FLOW DIRECTION AND VELOCITY:
MP 05.65 - MP 06.30 - STATION LOCATIONS
0.6 Z DEPTH FRACTION
JUNE 21 - JUNE 22, 2012
SHEET 2 OF 7
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-1.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Mill Ponds Area



Legend

Flow Direction and Velocity

0.6 Z Depth Fraction

- < 0.2 ft/sec
- 0.2 - 0.4 ft/sec
- 0.4 - 0.6 ft/sec
- 0.6 - 0.8 ft/sec
- 0.8 - 1.0 ft/sec
- > 1.0 ft/sec

Quarter Mile Grid Segment

ft/sec = feet per second

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

0 125 250 500

Scale in Feet

FIGURE 2m-1
FLOW DIRECTION AND VELOCITY:
MP 14.00 - MP 14.85 - STATION LOCATIONS
0.6 Z DEPTH FRACTION
JUNE 12, 2012
SHEET 3 OF 7
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-1.mxd

Aerial Photography Date: November 2011

Burnham St E
15.25
Echo St
Oak Hill Dr
Scenery St
Logan St
Fonda Ave
194
Mineral Ave
Kenosha Ave
Sisson Ave
Pauline Ave
Rockford St
South Ave
Riverside Dr
15.00
Territorial Rd E
Riverside Ct
14.75
Riverside Pkwy

ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Mill Ponds Area



Legend

Flow Direction and Velocity

0.6 Z Depth Fraction

- < 0.2 ft/sec
- 0.2 - 0.4 ft/sec
- 0.4 - 0.6 ft/sec
- 0.6 - 0.8 ft/sec
- 0.8 - 1.0 ft/sec
- > 1.0 ft/sec

Quarter Mile Grid Segment

ft/sec = feet per second

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

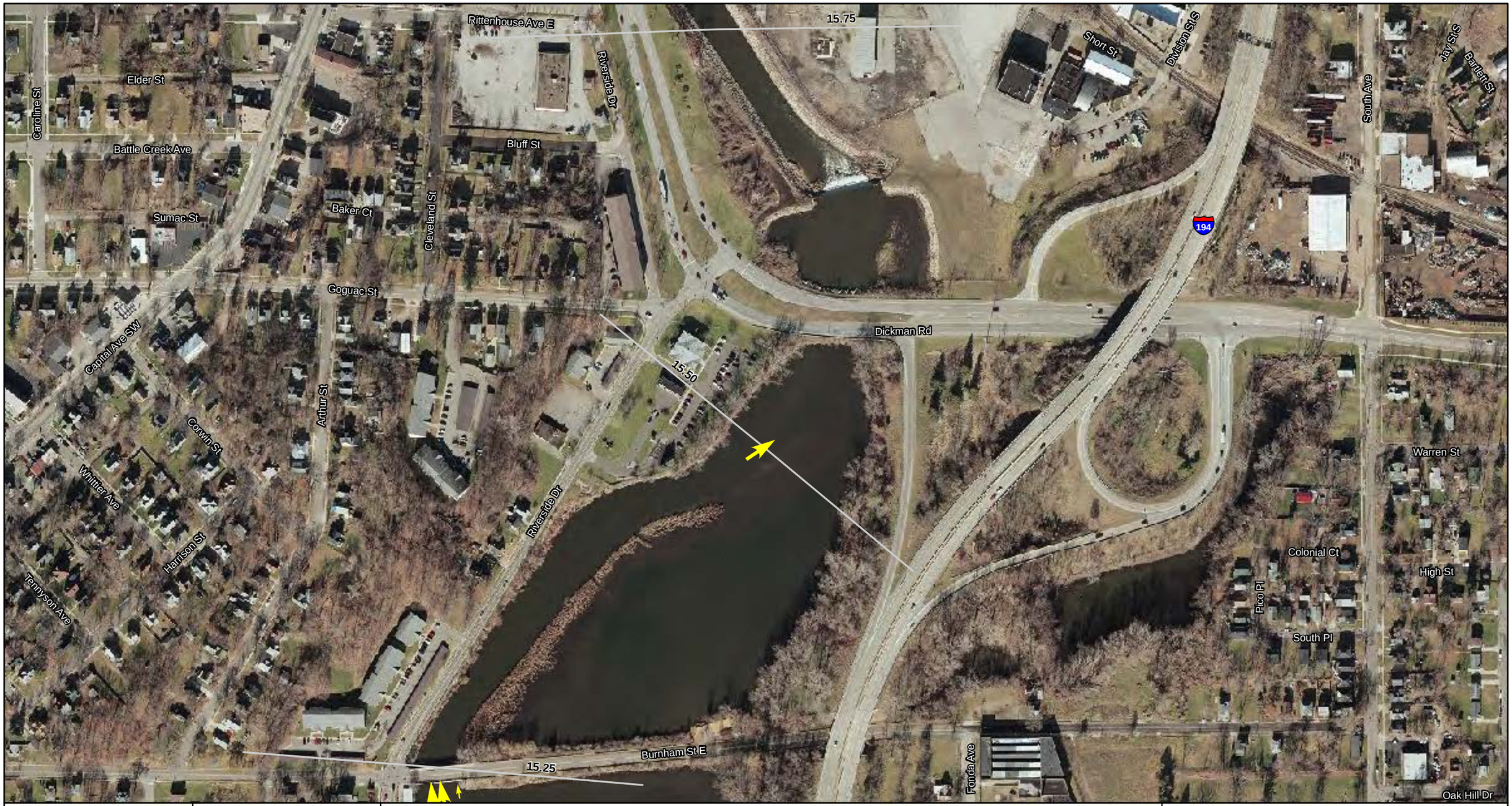
0 125 250 500

Scale in Feet

FIGURE 2m-1
FLOW DIRECTION AND VELOCITY:
MP 14.65 - MP 15.25 - STATION LOCATIONS
0.6 Z DEPTH FRACTION
JUNE 12, 2012
SHEET 4 OF 7
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-1.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Mill Ponds Area



Legend

Flow Direction and Velocity

0.6 Z Depth Fraction

- < 0.2 ft/sec
- 0.2 - 0.4 ft/sec
- 0.4 - 0.6 ft/sec
- 0.6 - 0.8 ft/sec
- 0.8 - 1.0 ft/sec
- > 1.0 ft/sec

Quarter Mile Grid Segment

ft/sec = feet per second

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

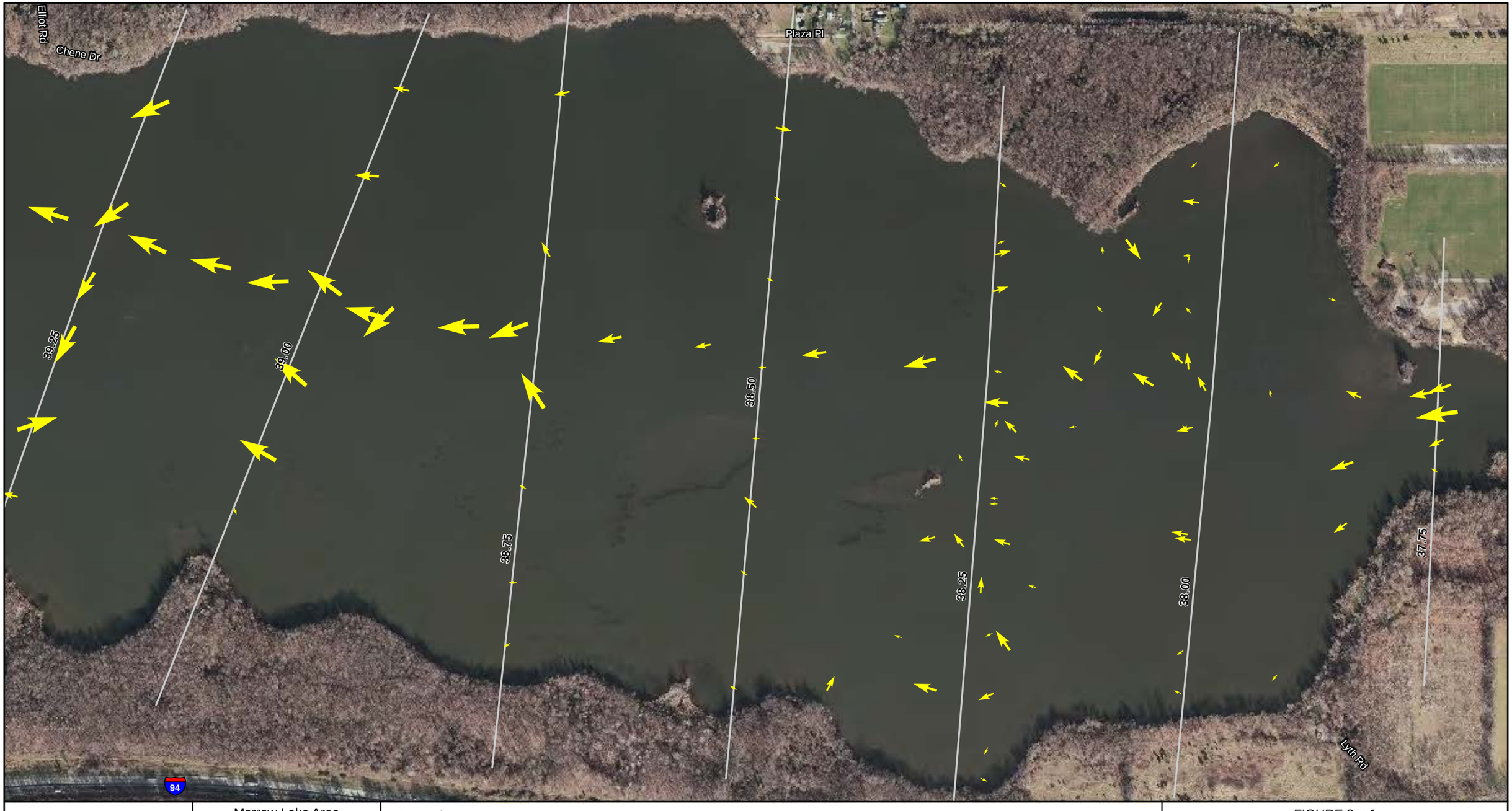
0 125 250 500

Scale in Feet

FIGURE 2m-1
FLOW DIRECTION AND VELOCITY:
MP 15.25 - MP 15.75 - STATION LOCATIONS
0.6 Z DEPTH FRACTION
JUNE 12, 2012
SHEET 5 OF 7
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-1.mxd

Aerial Photography Date: November 2011




| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area



Legend

Flow Direction and Velocity

0.6 Z Depth Fraction

- < 0.1 ft/sec
- 0.1 - 0.2 ft/sec
- 0.2 - 0.3 ft/sec
- 0.3 - 0.4 ft/sec
- > 0.4 ft/sec

Quarter Mile Grid Segment

ft/sec = feet per second

Z-value is the fractional depth of the full ADP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

0 250 500 1,000

Scale in Feet

FIGURE 2m-1
FLOW DIRECTION AND VELOCITY:
MP 37.75 - MP 39.00 - STATION LOCATIONS
0.6 Z DEPTH FRACTION
JUNE 4 - JUNE 19, 2012
SHEET 6 OF 7
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-1.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area



Legend

Flow Direction and Velocity

0.6 Z Depth Fraction

- < 0.1 ft/sec
- 0.1 - 0.2 ft/sec
- 0.2 - 0.3 ft/sec
- 0.3 - 0.4 ft/sec
- > 0.4 ft/sec

Quarter Mile Grid Segment

ft/sec = feet per second

Z-value is the fractional depth of the full ADP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

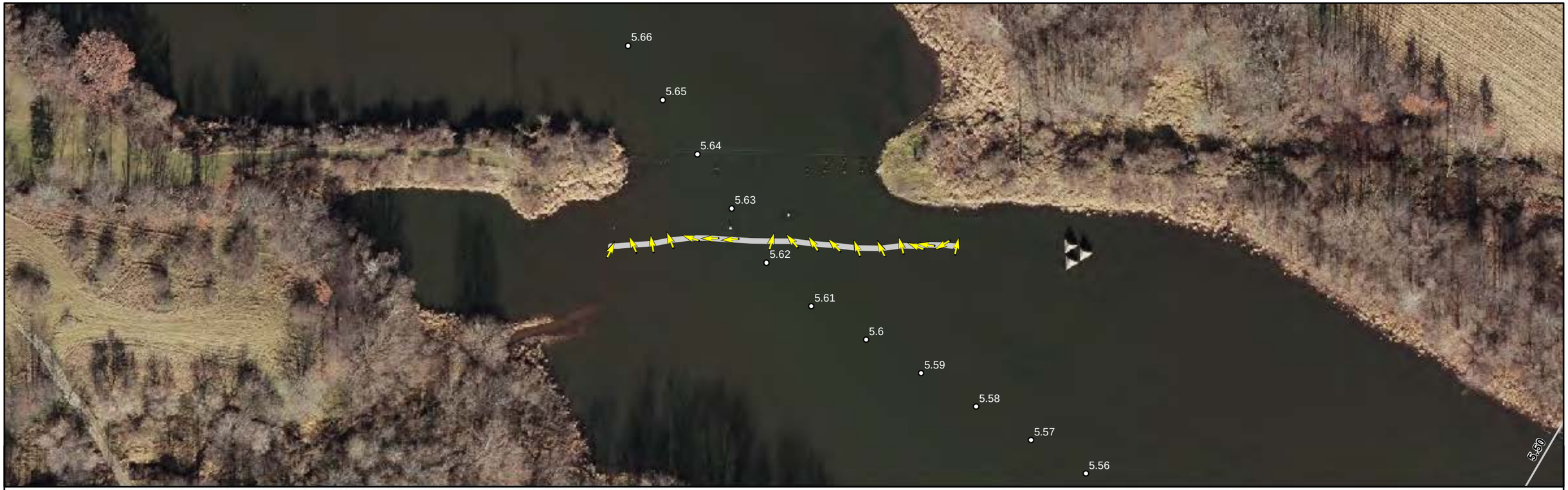
0 250 500 1,000

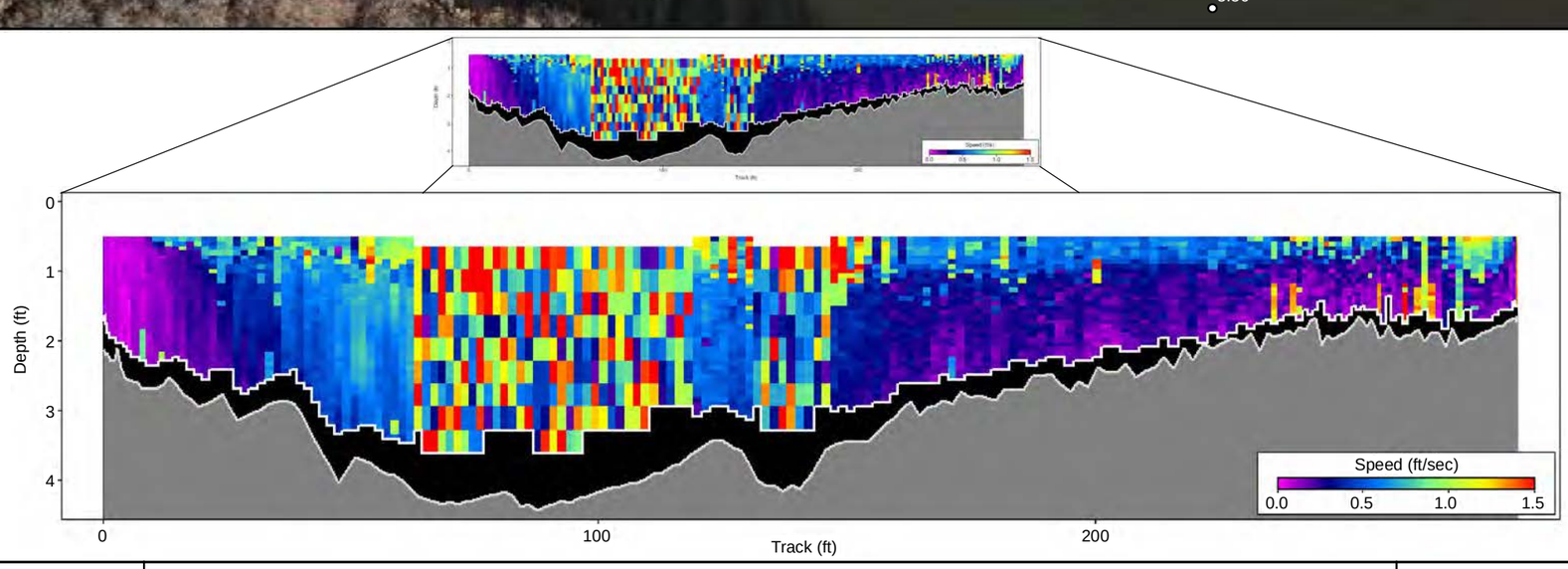
Scale in Feet

FIGURE 2m-1
FLOW DIRECTION AND VELOCITY:
MP 39.00 - MP 39.85 - STATION LOCATIONS
0.6 Z DEPTH FRACTION
JUNE 14 - JUNE 19, 2012
SHEET 7 OF 7
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-1.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Ceresco Dam Area




Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

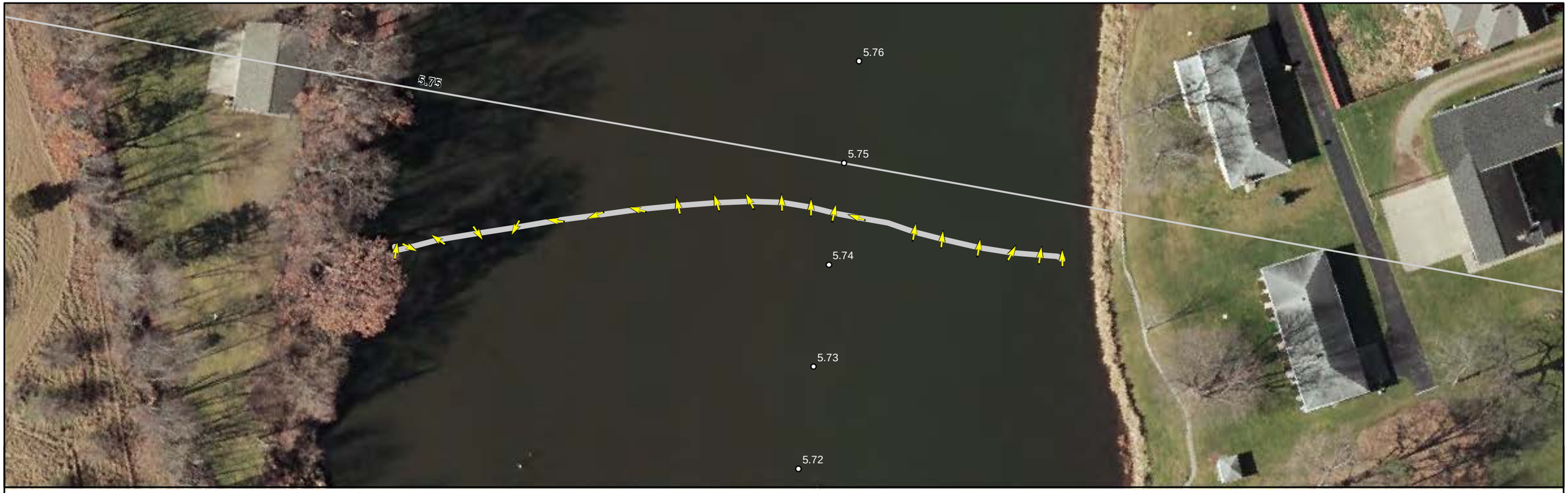
0 40 80 160

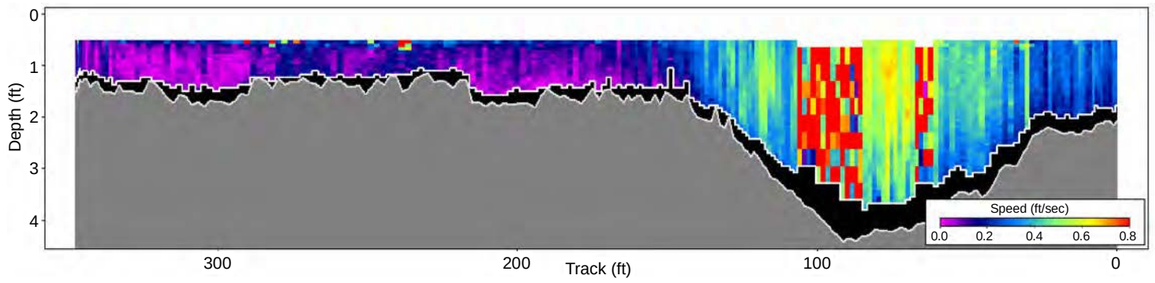
Scale in Feet

FIGURE 2m-2
FLOW DIRECTION AND VELOCITY:
MP 5.75 - TRANSECT 1
0.6 Z DEPTH FRACTION
JUNE 22, 2012 - FIRST PASS
SHEET 1 OF 4
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-2.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Ceresco Dam Area




Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

0 25 50 100

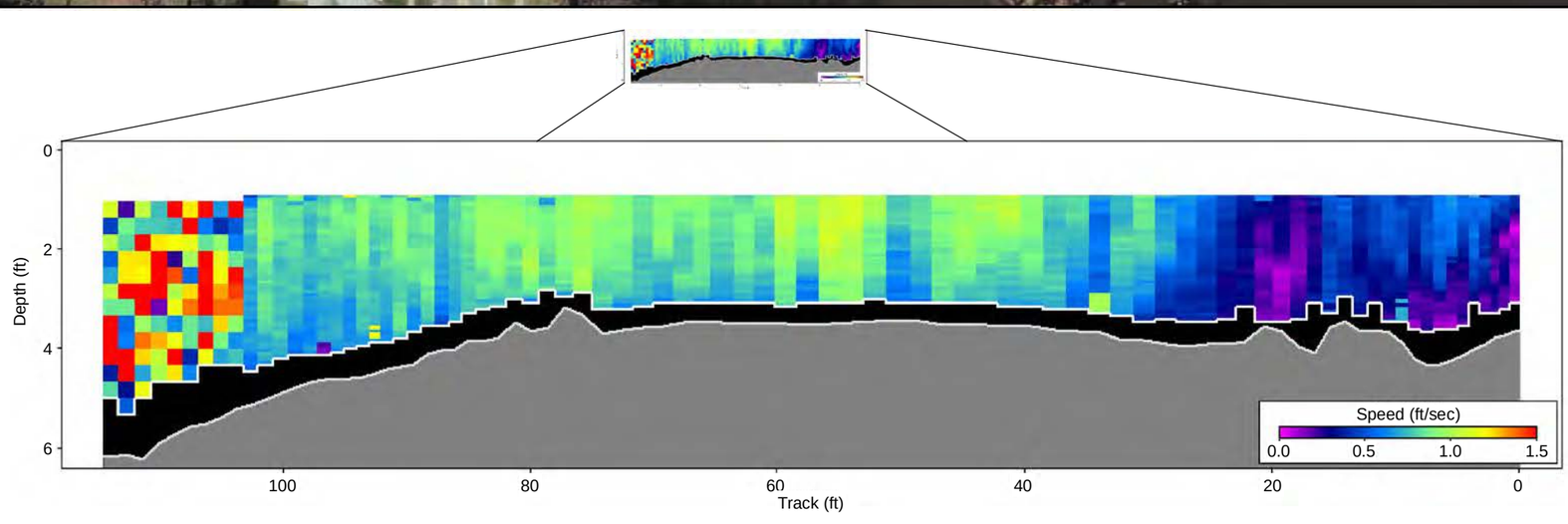
Scale in Feet

FIGURE 2m-2
FLOW DIRECTION AND VELOCITY:
MP 5.75 - TRANSECT 2
0.6 Z DEPTH FRACTION
JUNE 22, 2012 - FIRST PASS
SHEET 2 OF 4
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-2.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Mill Ponds Area




Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

N

0 40 80 160

Scale in Feet

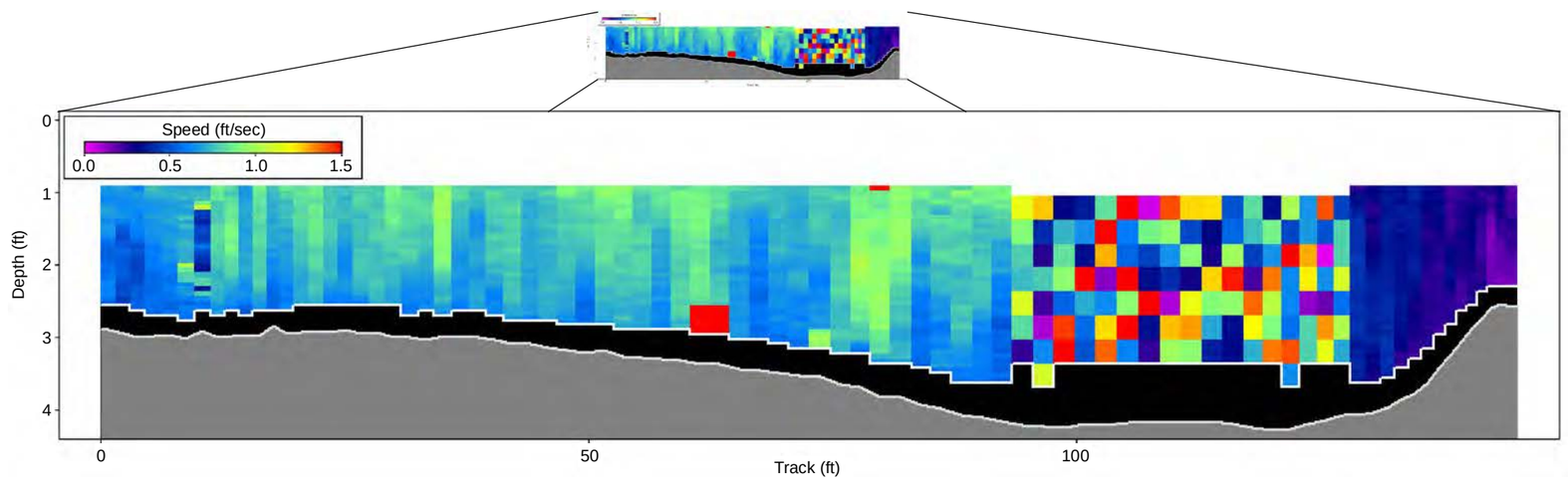
Z-value is the fractional depth of the full ADP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

FIGURE 2m-2
FLOW DIRECTION AND VELOCITY:
MP 15.25 - FULL TRANSECT
0.6 Z DEPTH FRACTION
JUNE 12, 2012 - FIRST PASS
SHEET 3 OF 4
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-2.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Mill Ponds Area




Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

N

0 40 80 160

Scale in Feet

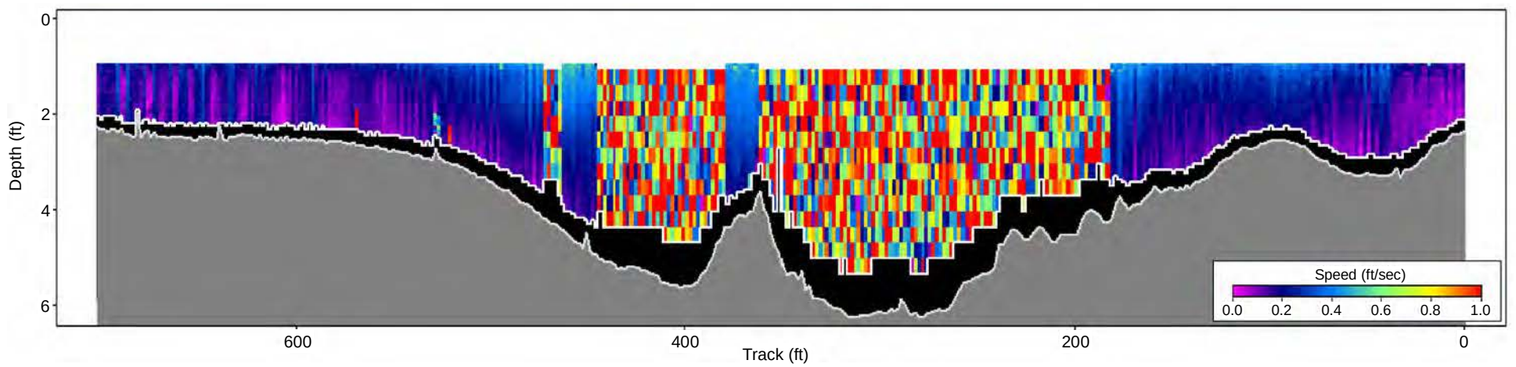
Z-value is the fractional depth of the full ADP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

FIGURE 2m-2
FLOW DIRECTION AND VELOCITY:
MP 15.50 - FULL TRANSECT
0.6 Z DEPTH FRACTION
JUNE 12, 2012 - FIRST PASS
SHEET 4 OF 4
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-2.mxd

Aerial Photography Date: November 2011

37.78
37.77
37.76
37.75
37.75
37.74
37.73
37.72
37.71




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area




Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

Z-value is the fractional depth of the full ADP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

Z

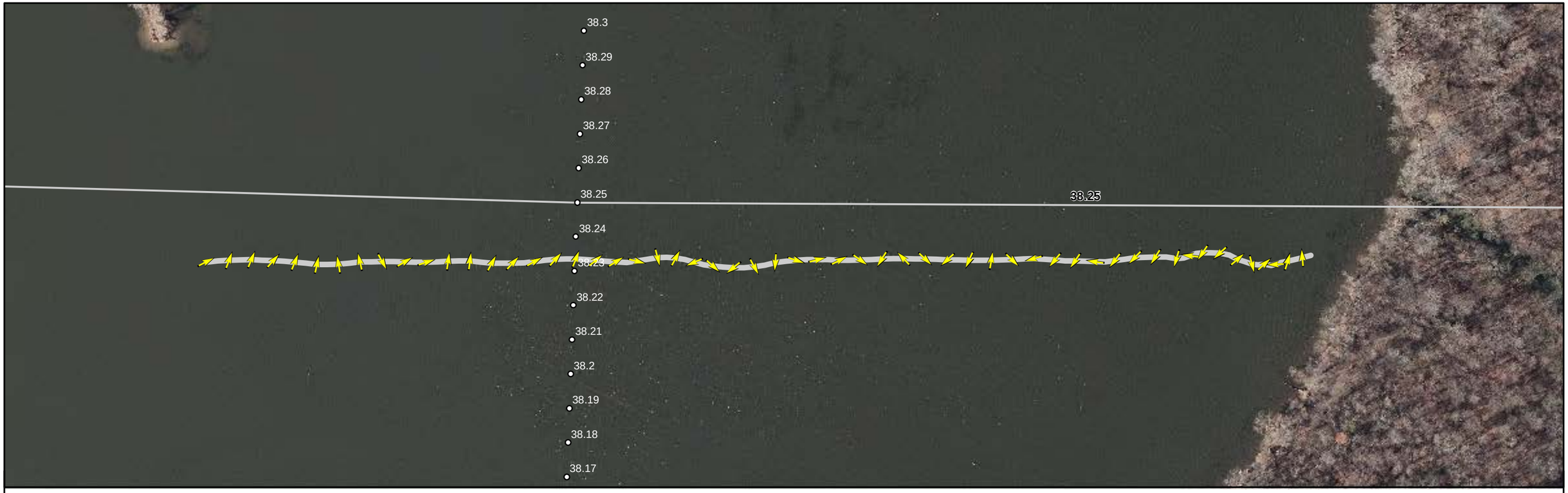
0 40 80 160

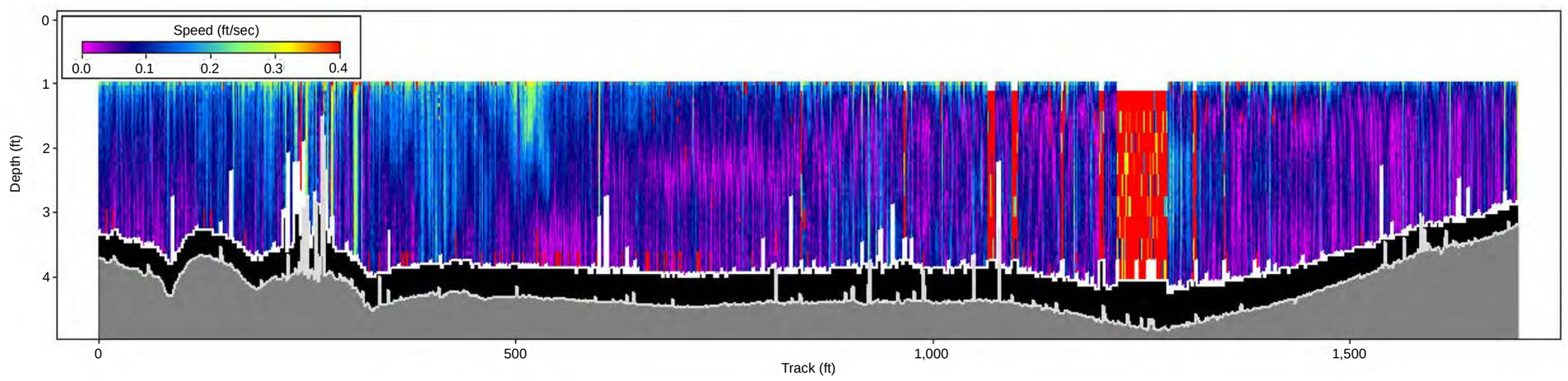
Scale in Feet

FIGURE 2m-3
FLOW DIRECTION AND VELOCITY:
MP 37.75 - FULL TRANSECT
0.6 Z DEPTH FRACTION
JUNE 15, 2012 - FIRST PASS
SHEET 1 OF 3
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-3.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area




Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

N

0 75 150 300

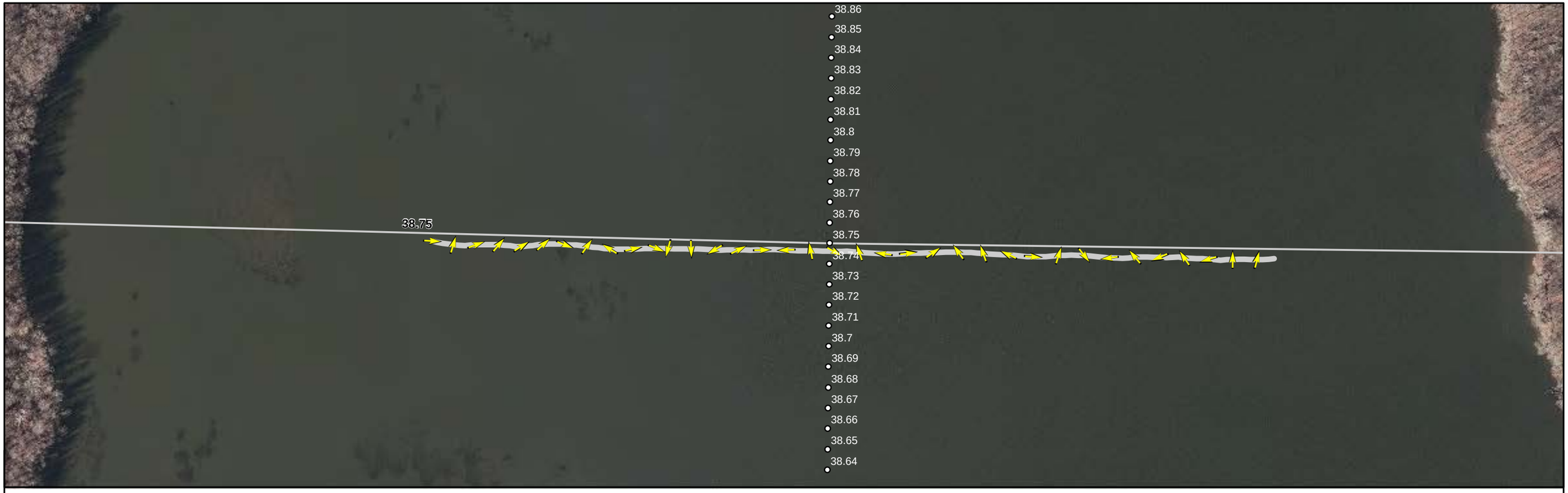
Scale in Feet

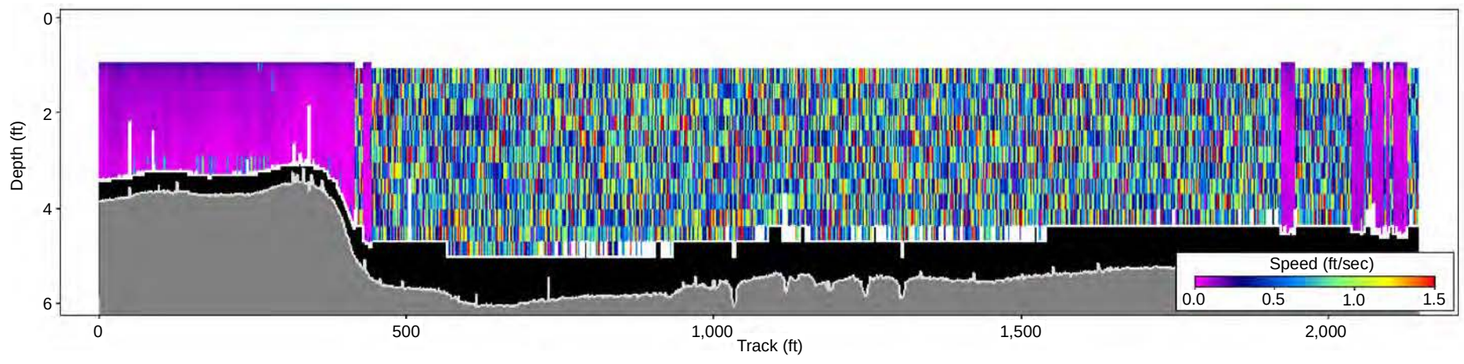
Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

FIGURE 2m-3
FLOW DIRECTION AND VELOCITY:
MP 38.25 - PARTIAL TRANSECT
0.6 Z DEPTH FRACTION
JUNE 13, 2012 - FIRST PASS
SHEET 2 OF 3
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-3.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area




Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

0 125 250 500

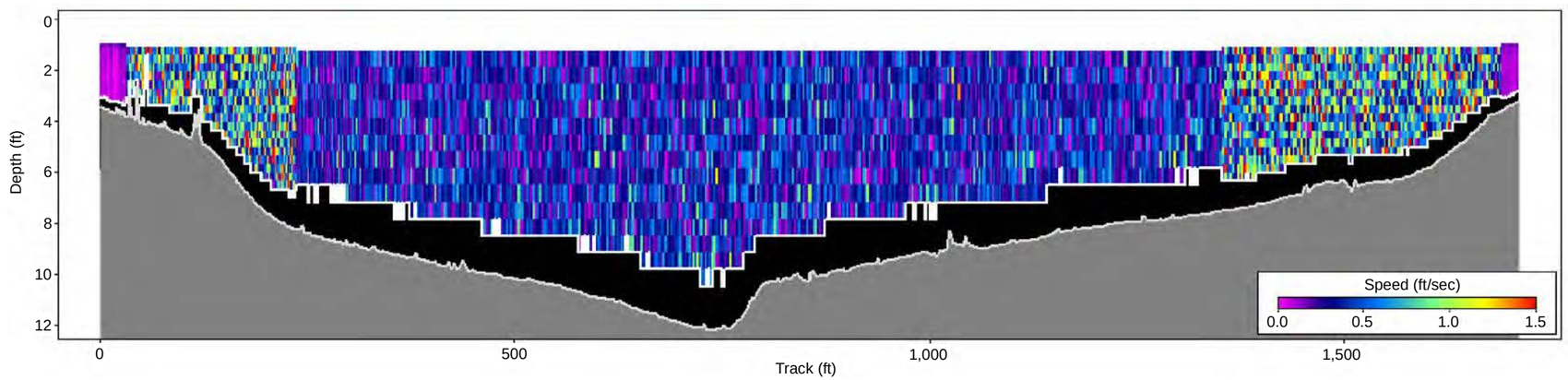
Scale in Feet

FIGURE 2m-3
FLOW DIRECTION AND VELOCITY:
MP 38.75 - PARTIAL TRANSECT
0.6 Z DEPTH FRACTION
JUNE 15, 2012 - FIRST PASS
SHEET 3 OF 3
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-3.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area



Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

Z-value is the fractional depth of the full ADP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

0 75 150 300

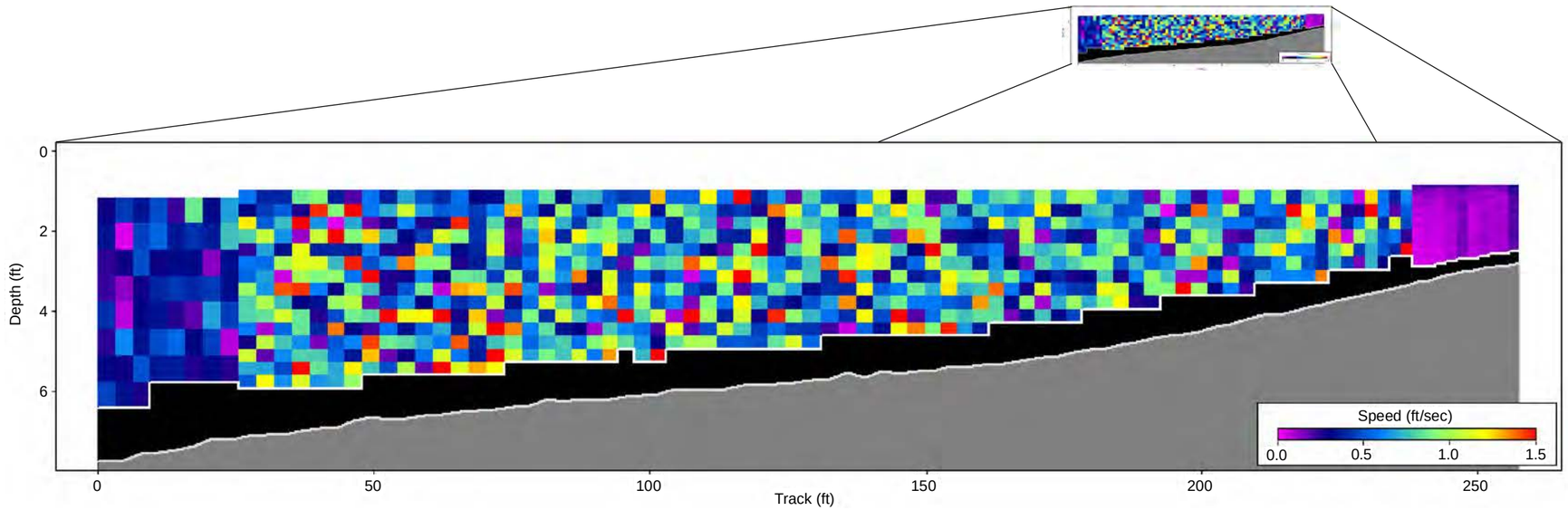
Scale in Feet

FIGURE 2m-4
FLOW DIRECTION AND VELOCITY:
MP 39.75 - FULL TRANSECT
0.6 Z DEPTH FRACTION
JUNE 1, 2012 - FIRST PASS
SHEET 1 OF 10
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-4.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area



Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

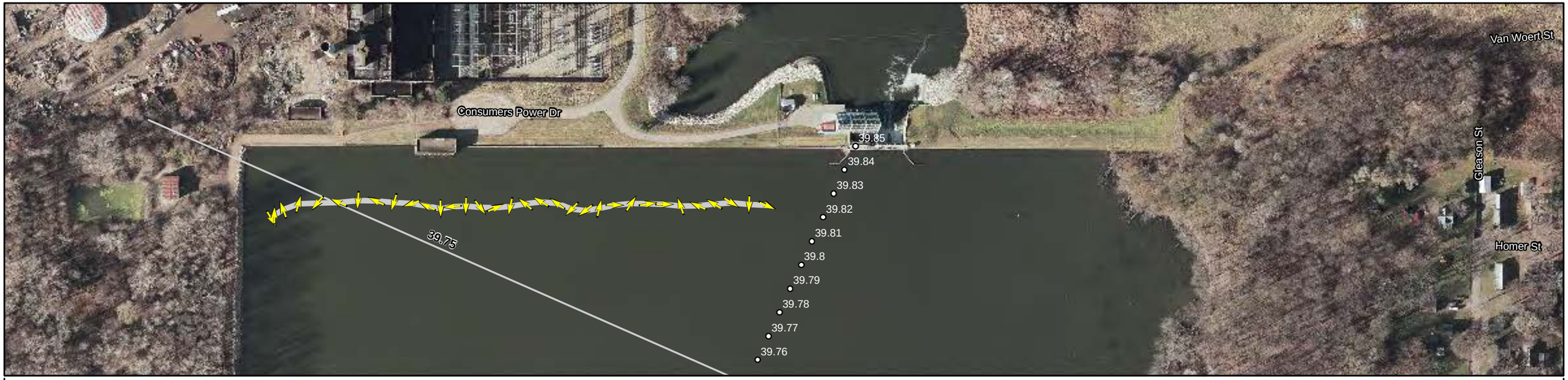
0 75 150 300

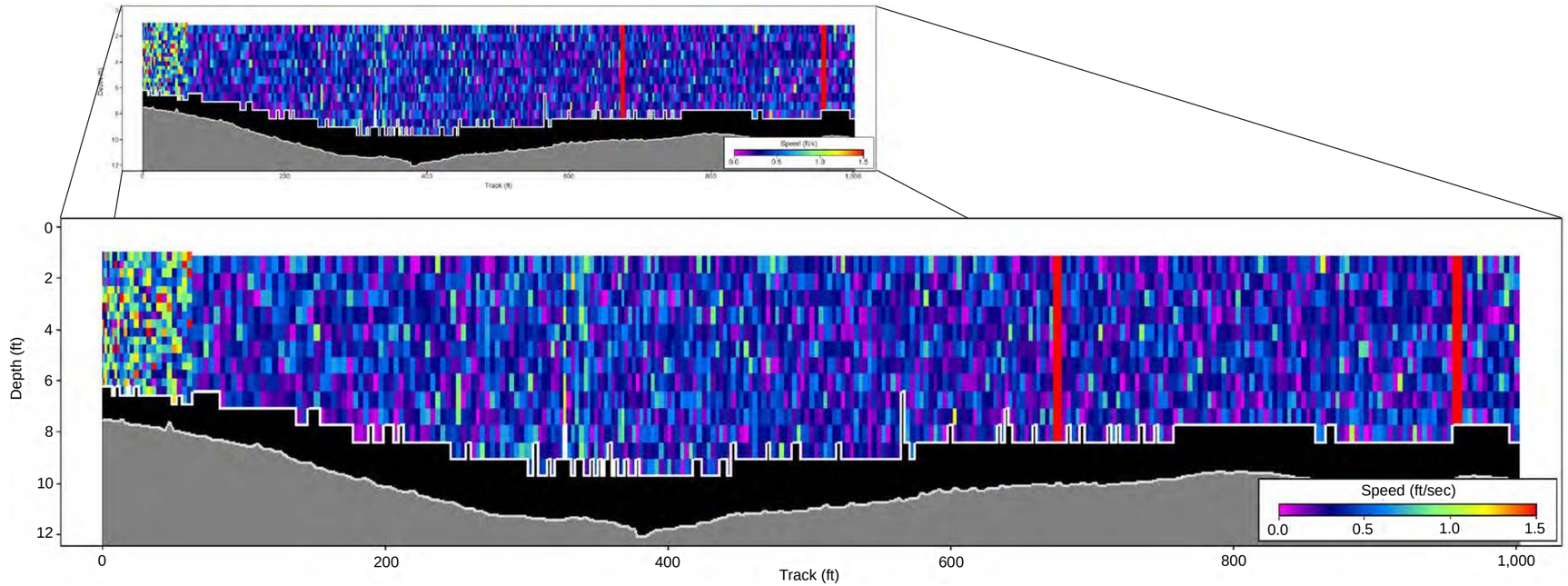
Scale in Feet

FIGURE 2m-4
FLOW DIRECTION AND VELOCITY:
MP 39.85 - NORTH TRANSECT
0.6 Z DEPTH FRACTION
JUNE 2, 2012 - FIRST PASS
SHEET 2 OF 10
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-4.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area



Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

0 75 150 300

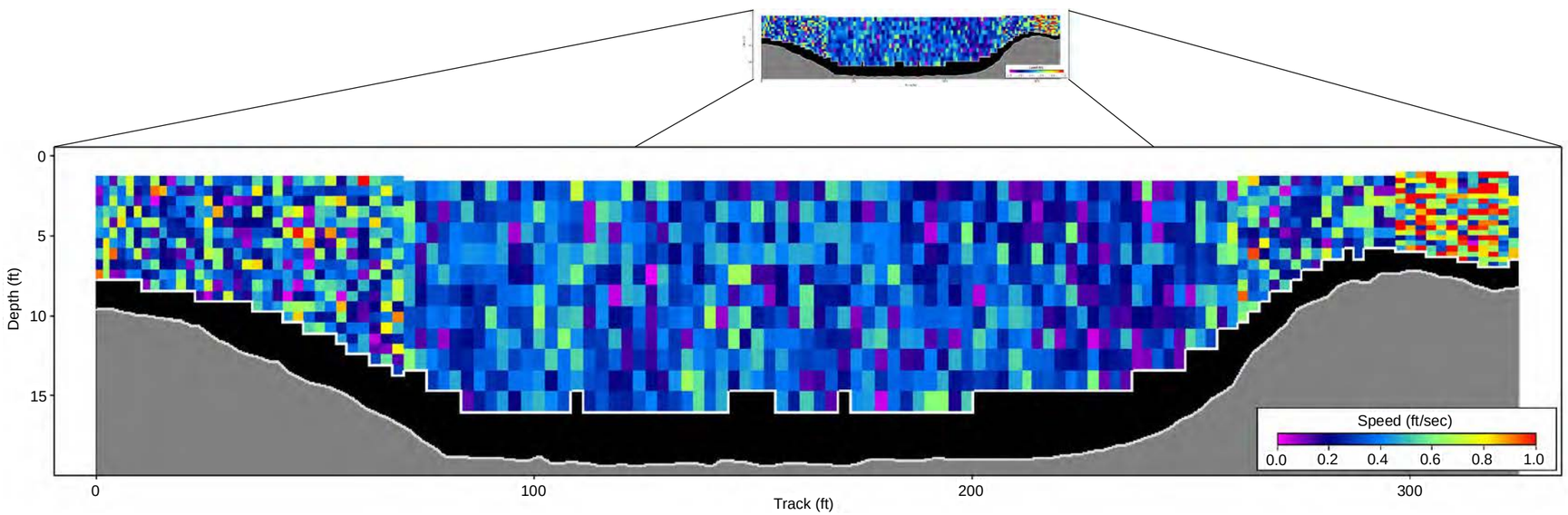
Scale in Feet

FIGURE 2m-4
FLOW DIRECTION AND VELOCITY:
MP 39.85 - SOUTH TRANSECT
0.6 Z DEPTH FRACTION
JUNE 2, 2012 - FIRST PASS
SHEET 3 OF 10
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-4.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area



Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

0 75 150 300

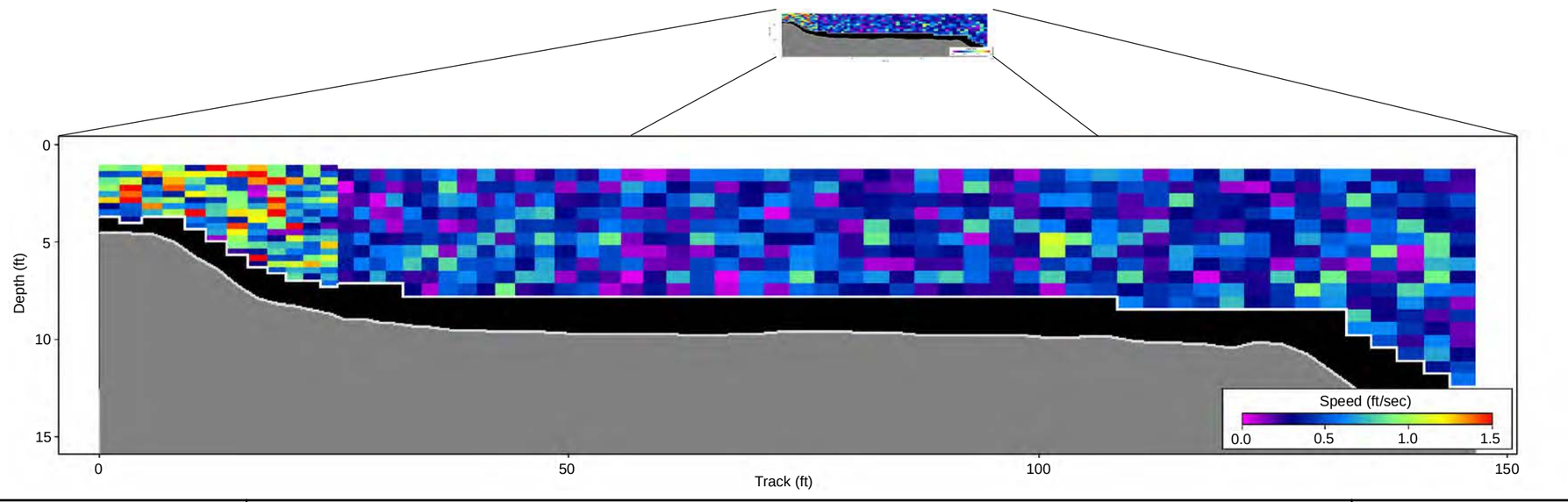
Scale in Feet

FIGURE 2m-4
FLOW DIRECTION AND VELOCITY:
MORROW LAKE DAM - INNER
0.6 Z DEPTH FRACTION
JUNE 1, 2012 - FIRST PASS
SHEET 4 OF 10
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-4.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area



Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

N

0 50 100 200

Scale in Feet

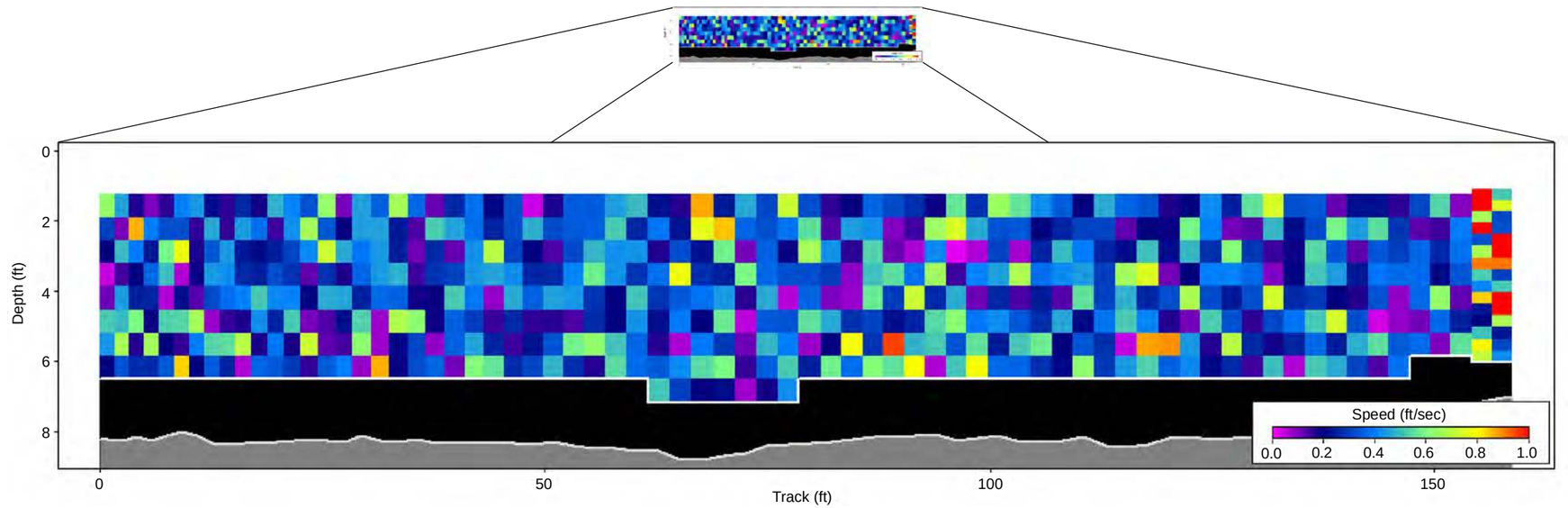
Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

FIGURE 2m-4
FLOW DIRECTION AND VELOCITY:
MORROW LAKE DAM LDB - INNER
0.6 Z DEPTH FRACTION
JUNE 1, 2012 - FIRST PASS
SHEET 5 OF 10
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-4.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area



Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

N

0 50 100 200

Scale in Feet

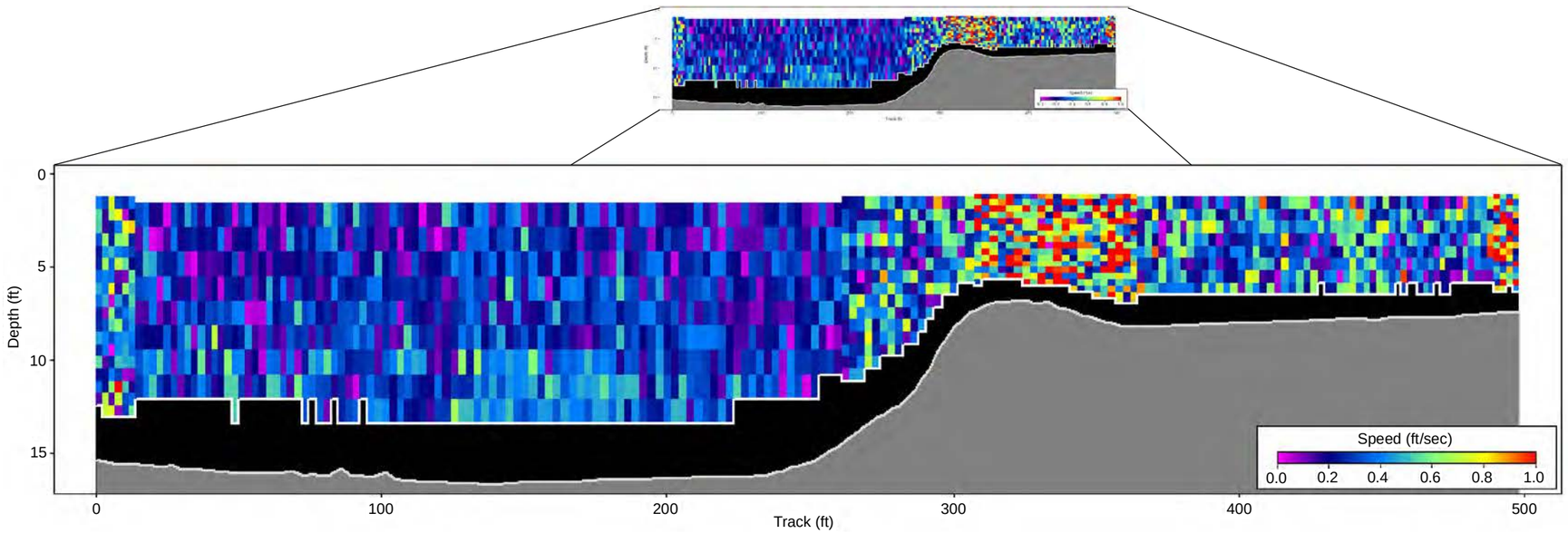
Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

FIGURE 2m-4
FLOW DIRECTION AND VELOCITY:
MORROW LAKE DAM RDB - INNER
0.6 Z DEPTH FRACTION
JUNE 1, 2012 - FIRST PASS
SHEET 6 OF 10
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-4.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area



Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

N

0 75 150 300

Scale in Feet

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

FIGURE 2m-4
FLOW DIRECTION AND VELOCITY:
MORROW LAKE DAM - OUTER
0.6 Z DEPTH FRACTION
JUNE 1, 2012 - FIRST PASS
SHEET 7 OF 10
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-4.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area



Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

0 50 100 200

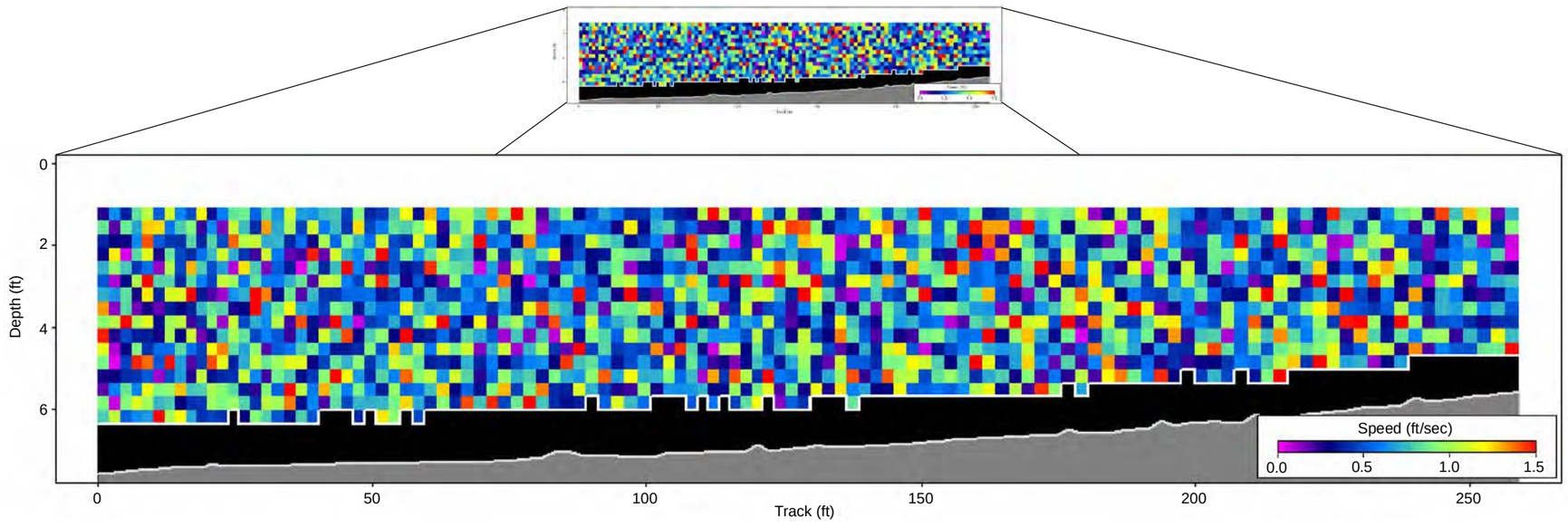
Scale in Feet

FIGURE 2m-4
FLOW DIRECTION AND VELOCITY:
MORROW LAKE DAM LDB - OUTER
0.6 Z DEPTH FRACTION
JUNE 1, 2012 - FIRST PASS
SHEET 8 OF 10
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-4.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area



Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

N

0 50 100 200

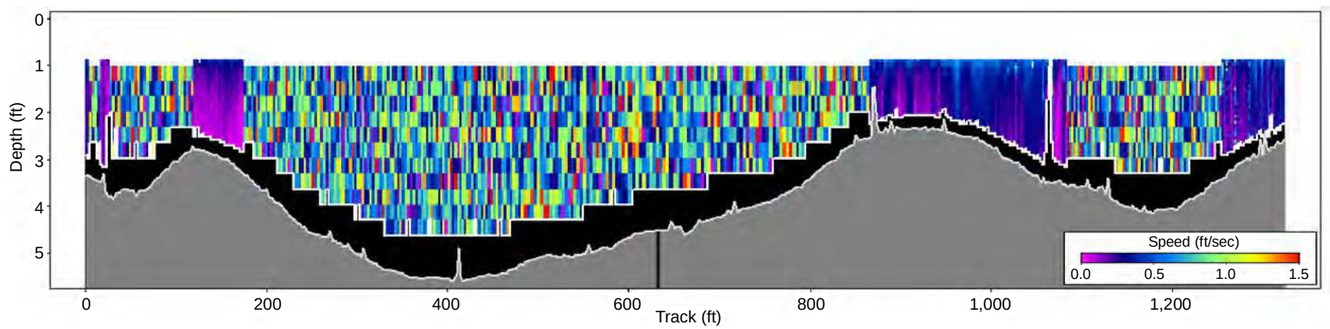
Scale in Feet

FIGURE 2m-4
FLOW DIRECTION AND VELOCITY:
MORROW LAKE DAM RDB - OUTER
0.6 Z DEPTH FRACTION
JUNE 1, 2012 - FIRST PASS
SHEET 9 OF 10
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-4.mxd

Aerial Photography Date: November 2011




ENBRIDGE

| | |
|---|---|
| Drawn: | BRS 9/5/2012 |
| Approved: | DBR 9/5/2012 |
| Project #: | 106-4186 |

Morrow Lake Area



Legend

- Survey Track
- Flow Direction - 0.6 Z Depth Fraction
- Station
- Quarter Mile Grid Segment

ft = feet

ft/sec = feet per second

N

0 75 150 300

Scale in Feet

Z-value is the fractional depth of the full ADCP profile to which flow vectors plotted above correspond. 1.0 Z = 100% of profile depth.

FIGURE 2m-4
FLOW DIRECTION AND VELOCITY:
NORTH SHORE - PARTIAL TRANSECT
0.6 Z DEPTH FRACTION
JUNE 2, 2012
SHEET 10 OF 10
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

X:\ArcMap Project Files\Report Maps\August 2012 Monthly Report\Figure 2m-4.mxd

Aerial Photography Date: November 2011

# Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

## Appendix A

Planning Resources

Form 214's

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

| 1. Incident Name | 2. Date Prepared | 3. Time Prepared | UNIT LOG ICS 214 |
|---|---|---|---|
| Kalamazoo River/Enbridge Spill Response | 8/01/2012 | 12:00 | |

| 4. Unit Name/Designators | 5. Unit Leader | | 6. Operational Period : DATE/TIME | |
|---|---|---|---|---|
| Enbridge Operations | Name: | John Sobojinski | From: | July 26, 2012; 0700 |
| | Position: | Incident Commander | To: | August 02, 2012; 0700 |

**7. Personnel Roster Assigned**

| Name | ICS Position | DUTY CELL |
|---|---|---|
| John Sobojinski | Enbridge Incident Commander | [redacted] |
| Bob Steede | Environment | |
| Christopher Haux | Operations | |
| Jason Manshum | Public Information | |
| Dale Gross | Safety & Security | |
| Mark Fuller | Air Operations | |
| John Wallace | Waste Management | |
| Jack Spates | Overbank | |
| David Bareham | Submerged Oil | |
| Kevin Oscar | Containment | |
| John Bohrmann | River Reopening | |
| Bryan Stiemsma | Kalamazoo River | |

**8. Activity Log**

| Activity Areas | Safety & Security, Air Operations, Waste Management, Overbank, Submerged Oil, Containment, Talmadge Creek, Kalamazoo River |
|---|---|

**Health and Safety Issues**

**Safety & Security (Dale Gross)**

**General Safety Message:**

**7-26-12: Life Saving Rule #4 – Ground Disturbance**

Dig Safely. Always follow procedures for locating, positively identifying and excavating buried facilities. Protect yourself, your community and the environment by protecting our pipelines – ensure that all buried facilities are identified and marked prior to excavation.

By building a strong foundation of safe practices we can protect our most valuable resource – our people.

**** Make certain you know and obey the Enbridge 10-2-1 Rule ****

**Safety Items for July 26, 2012:** No issues to report.

**7-27-12: Task Hazard Assessment**

Take proactive approach to safety with the following best practices for planning and executing your work:

- Before beginning work, assess the site hazards and the task hazards.
- Identify appropriate controls for the hazard identified.
- Implement the controls and document the controls on the work permit.
- Monitor effectiveness of controls and adjust if necessary.

Activities that incorporate safety for the beginning will not only reduce the possibility of incidents, but also increase operational efficiencies.

**Safety Items for July 27, 2012:** No issues to report.

**7-28-12 and 7-29-12: Manual Lifting – Back Care**

Manual lifting hazards should be assessed before any lifting is done. Hazards may include:

- High lifting frequency; large number of lifts.
- Lifting unstable objects; Top heavy loads.
- Difficult to hold loads.
- Unstable footing and slippery walking surfaces.
- Heavy object weight.
- Blocked vision by the objects being lifted.

| | |
|---|---|
| **Health and Safety Issues (Cont.)** | Follow the Eight Commandments of Safe Lifting:<br><br>1) Plan your lift and test your load.<br>2) Ask for help.<br>3) Get a firm footing.<br>4) Bend your knees.<br>5) Tighten your stomach muscles.<br>6) Lift with your legs.<br>7) Keep the load close.<br>8) Keep your back upright.<br>Whether lifting or putting down a load, do not add the weight of your body to the load – avoid twisting.<br>**Safety Items for July 28th and July 29th:** There are no issues to report.<br><br>**7-30-12: Pinch Points**<br><br>Pinch points can occur anywhere a part of the body can get caught between two objects. This hazard is everywhere in the workplace. Any place where equipment is transmitting energy, there is a pinch point.<br><br><u>Shortcuts Lead to Danger</u><br>Never perform a task without proper training, by taking shortcuts, or bypassing procedures; the consequences could be serious.<br><br><u>Keep Your Guard Up</u><br>Ensure that all moving parts on equipment and machinery are properly guarded.<br><br><u>Everyone's Responsibility</u><br>The best protection from pinch-point hazards comes not from procedures, but from personal attention to potential hazards.<br>**Safety Items for July 30th:** There are no issues to report.<br><br>**7-31-12: Situational Awareness**<br><br>Every day we do similar tasks, but there are changes due to the weather, river conditions, and intangible things we cannot control. Please consider the following:<br><br>➢ Prior to work commencing check for potential hazards. Think of what could go wrong and have a plan to deal with that event.<br>➢ If new to the area, ask people with experience in that area what to expect for working conditions and different tools<br>➢ Share information with team member and other who will be working in the area.<br>➢ If there are storms/lightning in the area – have a plan for what you will do in case of an occurrence.<br>➢ Make sure you have all the safety tools in place to do the job safely.<br>**Safety Items for July 31th:** Source Area Remedial Investigation - Weston/MDEQ individual was stung by a bee on the right inner forearm. Individual put ice on the sting and resumed work.<br><br>**8-1-12: Preventing Slips, Trips, and Falls**<br><br>In order to prevent slips, trips and/or falls, please adhere to the following safety tips:<br><br>➢ Do not hurry when conditions are likely to be slippery.<br>➢ Practice good housekeeping habits.<br>➢ Prevent/Cleanup indoor puddles.<br>➢ Anticipate hazards as you are walking - take short steps.<br>➢ Plan lifts carefully.<br>**Safety Items for August 1st, 2012:** No issues to report. |

| | |
|---|---|
| **Activities / Comments** | **Waste Management (John Wallace):**<br>**7-26-12:**<br>Decon: No activities.<br><br>T&D: No activities.<br><br>Waste Management Characterization: No liquid waste was hauled in or out of FTC. Continuing waste management characterization, documentation and coordination.<br><br>**7-27-12:**<br>Decon: No activities.<br><br>T&D: Soil and water were hauled in from the R.I. team at the wildlife center.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination.<br><br>**7-28-12 and 7-29-12:**<br>Decon: No activities.<br><br>T&D: No activities.<br><br>Waste Management Characterization: No activities.<br><br>**7-30-12:**<br>Decon: No activities.<br><br>T&D: A MSW and multiple oily debris roll-offs were hauled to C&C landfill for disposal.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination.<br><br>**7-31-12 and 8-1-12:**<br>Decon: No activities.<br><br>T&D: No activities.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination. |
| **Activities / Comments (Cont.)** | **Submerged Oil (David Bareham):**<br>**7-26-12:**<br>Science: Collected one hundred and two (102) sediment samples for the Quantification Study. Collected two (2) oil globules for the Quantification Study. Collected one (1) sheen sample for the Agitation Study. Collected two (2) oil globules samples for the Agitation Study. Collected two (2) sediment samples for the Agitation Study.<br><br>Recovery: No activities.<br><br>**7-27-12:**<br>Science: Collected one hundred eighteen (118) sediment samples for the Quantification Study. Collected seven (7) oil globules for the Quantification Study.<br>Recovery: No activities.<br><br>**7-28-12 and 7-29-12:**<br>Science: No activities.<br><br>Recovery: No activities. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | **7-30-12, 7-31-12 and 8-1-12:**<br>Science: No activities.<br><br>Recovery: Conducted poling monitoring activities throughout Morrow Lake and Delta.<br><br>**Containment (Kevin Oscar) :**<br>**7-26-12:**<br>Completed river inspections. Provided 2 boats for Situational Awareness. Provided 2 boats for Quantification. Provided 2 boats for Agitation. Boom: Configuration F: North and South legs checked no adjustments needed. Buoys: Buoy inspections completed. Sheen Sweep: E4 to MP 38.75: 40' snare used. Delta: 25' of snare used. Shady Bend: 25' of snare used. C5 Mill pond/14.25: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 165. Talmadge Creek: No activity. Ceresco: Recovered 12 bags of debris. E4 Boat launch: Recovered 2 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to Frac Tank City for temporary storage in the Oily Waste Roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**7-27-12:**<br>Completed river inspections. Provided 2 boats for Situational Awareness. Provided 2 boats for Quantification. Provided 2 boats for Agitation. Boom: Configuration E: North/Side both adjusted 100'. Buoys: N/A. Sheen Sweep: E4 to MP 38.75: 40' snare used. Delta: 25' of snare used. C5 Mill pond/14.25: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 140. Talmadge Creek: No activity. Ceresco: Recovered 48 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to Frac Tank City for temporary storage in the Oily Waste Roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**7-28-12:**<br>Completed river inspections. Provided 1 boat for Situational Awareness. Boom: Nothing to Report. Buoys: Nothing to Report. Sheen Sweep: E4 to MP 38.75: 70' snare used. Delta: 25' of snare used. C5 Mill pond/14.25: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 170. Talmadge Creek: No activity. Ceresco: Recovered 44 bags of debris. Configuration B: Recovered 2 bags of debris. Configuration C: Recovered 6 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to Frac Tank City for temporary storage in the Oily Waste Roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**7-29-12:** No activities.<br><br>**7-30-12:**<br>Completed river inspections. Provided 2 boats for Situational Awareness. Boom: Configuration D: Bottom Leg Adjusted 25'. Configuration C: Adjusted 100'. Buoys: Nothing to Report. Sheen Sweep: E4 to MP 38.75: 70' snare used. Delta: 25' of snare used. C5 Mill pond/14.25: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 170. Talmadge Creek: No activity. Ceresco: Recovered 213 bags of debris. Configuration B: Recovered 25 bags of debris. Configuration C: Recovered 62 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to Frac Tank City for temporary storage in the Oily Waste Roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**7-31-12:**<br>Completed River Inspections. Provided 1 boat for Situational Awareness. Provided 1 boat for Lake/Delta Monitoring. Provided 1 boat for Sediment Traps. Boom: C0.4: Removed 50' of 4' x-tex from river at boat launch. Configuration C: Monitored 300', adjusted 75' of curtain up at CW 250-325. Buoys: Nothing to Report. Sheen Sweep: E4 to MP 38.75: 70' snare used. Delta: 25' of snare used. C5 Mill pond/14.25: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 170. Talmadge Creek: No activity. Ceresco: Recovered 66 bags of debris. Configuration C: Recovered 10 bags of debris. Configuration E: Recovered 9 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to Frac Tank City for temporary storage in the Oily Waste Roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**8-1-12:**<br>Completed River Inspections. Provided 1 boat for Situational Awareness. Provided 1 boat for Lake/Delta Monitoring. Provided 1 boat for Sediment Traps/Buoys. Provided 1 boat for Cleaning Walling Samplers. Boom: Configurations A, B, C, D, E, and F: Visual inspection of boom. Buoys: Nothing to Report. Sheen Sweep: |

| | |
|---|---|
| **Activities / Comments (Cont.)** | E4 to MP 38.75: 70' snare used. MP 21.25 to MP 29: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 145. Talmadge Creek: No activity. Ceresco: Recovered 114 bags of debris. Configuration C: Recovered 55 bags of debris. Configuration E: Recovered 12 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to Frac Tank City for temporary storage in the Oily Waste Roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**Kalamazoo River (Bryan Stiemsma):**<br>**7-26-12:**<br>Remedial Investigation: No activities. No field work conducted. Crew temporarily de-mobed from Marshall.<br><br>Remedial Action: No activities.<br><br>Monitoring: No activities.<br><br>**7-27-12, 7-28-12 and 7-29-12:**<br>Remedial Investigation: No activities.<br><br>Remedial Action: No activities.<br><br>Monitoring: No activities.<br><br>**7-30-12:**<br>Remedial Investigation: No activities. MP 26.80 RDB – Bradley ERO Site – Received delivery of restoration fill material, installed 30 cubic yards of 2-3" diameter stone as the stone footing for bank restoration activities, and constructed approximately 30 linear feet of soil lift using Bio-D-block and backfilled with 12 cubic yards of clay loam.<br><br>Remedial Action: No activities.<br><br>Monitoring: No activities.<br><br>**7-31-12:**<br>Remedial Investigation: Collected six (6) soil samples from the Source Area. MP 26.80 RDB – Bradley ERO Site – Installed 100 linear feet of Bio-D-block and constructed soil lifts through the installation of 21 cubic yards of clay loam.<br><br>Remedial Action: No activities.<br><br>Monitoring: Began weekly buoy inspections.<br><br>**8-1-12:**<br>Remedial Investigation: Collected eleven (11) soil samples from Source Area. MP 26.80 RDB – Bradley ERO Site – Installed 110 linear feet of Bio-D-block and constructed soil lifts through the installation of 22 cubic yards of clay loam. Assisted SET and Safety with removing a downed tree in the river near MP 22.0.<br><br>Remedial Action: No activities.<br><br>Monitoring: Continued weekly buoy inspections. |

| 1. Incident Name | 2. Date Prepared | 3. Time Prepared | UNIT LOG ICS 214 |
|---|---|---|---|
| Kalamazoo River/Enbridge Spill Response | 8/08/2012 | 12:00 | |

| 4. Unit Name/Designators | 5. Unit Leader | | 6. Operational Period : DATE/TIME | |
|---|---|---|---|---|
| Enbridge Operations | Name: | John Sobojinski | From: | August 02, 2012; 0700 |
| | Position: | Incident Commander | To: | August 09, 2012; 0700 |

**7. Personnel Roster Assigned**

| Name | ICS Position | DUTY CELL |
|---|---|---|
| John Sobojinski | Enbridge Incident Commander | [redacted] |
| Bob Steede | Environment | |
| Christopher Haux | Operations | |
| Jason Manshum | Public Information | |
| Dale Gross | Safety & Security | |
| John Wallace | Waste Management | |
| David Bareham | Submerged Oil | |
| Dean Sahara | Containment | |
| Bryan Stiemsma | Kalamazoo River | |

**8. Activity Log**

| Activity Areas | Safety & Security, Air Operations, Waste Management, Overbank, Submerged Oil, Containment, Talmadge Creek, Kalamazoo River |
|---|---|

**Health and Safety Issues**

**Safety & Security (Dale Gross)**

**General Safety Message:**

**8-02-12: Life Saving Rule #5 – Isolate Energized Systems**

Always follow procedures for lockout/ tag-out. Equipment, facilities and piping systems could have stored or residual energy that poses a danger.

Each and every one of us must do everything in our power to protect ourselves, and to protect those around us.

***You are the power behind lifesaving rules***

**Safety Items for August 2st, 2012:** No issues to report.

**8-03-12: Dump Truck Tailgates**

Dump truck tailgates pose potential pinch point hazards. Pinch points are present at the latch mechanism and between the box and the gate.
Keep hands clear of these areas. Do not attempt to pull the gate open and use your hand to sweep material to clean the lip of the box.

**Safety Items for August 3rd, 2012:** Source Area RI - AECOM individual was stung by a bee on the upper left upper inner arm. Individual resumed work after reporting the incident.

**8-04-12 and 8-05-12: Preventing Tick Bites**

While it is a good idea to take preventive measures against ticks year-round, be extra vigilant in warmer months (April-September) when ticks are most active.

Repel Ticks with DEET - Use repellents that contain 20% or more for protection that lasts up to several hours. Always follow product instructions and do not spray directly to the face – apply to hands and rub on.

Find and Remove Ticks from Body:

- Bathe or shower as soon as possible after coming indoors (preferably within two hours) to wash off and more easily find ticks that are crawling on you.
- Conduct a full-body tick check using a hand-held or full-length mirror to view all parts of your body upon return from tick-infested areas.
- Examine gear. Ticks can ride into the home on clothing, then attach to a person later, so carefully examine clothing day packs. Tumble clothes in a dryer on high heat for an hour to kill remaining ticks.

**Safety Items for August 4th and August 5th:** There are no issues to report.

| | |
|---|---|
| **Health and Safety Issues (Cont.)** | **8-6-12: Storage Containers and Labeling**<br>➢ Use only containers approved for the type of hazardous chemical/liquid being stored.<br>➢ Gas and Diesel – use only approved metal containers.<br>➢ Properly store containers when not in use.<br>➢ Ensure a fire extinguisher is in close proximity to any flammable/combustible liquids being stored or dispensed.<br>➢ Ensure any leaks/spills from temporary containers are contained, cleaned up and reported.<br>Labeling:<br>Hazardous chemical/liquid containers provided by suppliers must list:<br>➢ Product Name<br>➢ Hazardous Chemical Ingredients<br>➢ Hazard Warnings<br>➢ Manufacturer<br>Temporary containers used more than one day/or accessible to more than one worker require labels that lists the product name.<br>**Safety Items for August 6th:** There are no issues to report.<br><br>**8-7-12: Personal Hygiene**<br>Whether you work in the office or in the field, practicing good personal hygiene is part of any safe work place. A key element to personal hygiene is proper hand washing.<br><br>Proper Hand Washing Technique:<br>➢ Wet your hands with clean water and apply soap. Use warm water if available.<br>➢ Rub hands together to make a lather and scrub all surfaces.<br>➢ Rinse and dry well.<br>➢ If soap and water are not available, use a commercially available hand sanitizer.<br>**Safety Items for August 7th, 2012:** No issues to report.<br><br>**8-8-12: Jobsite Security**<br>➢ Inform security if you see suspicious person(s) loitering around jobsites.<br>➢ Secure high value tools and equipment.<br>➢ Vehicles, boats, trailers, and other equipment should be secured if left unattended.<br>➢ In vehicles, stow valuables out of sight.<br>➢ Remain aware of what's going on around you.<br>**Safety Items for August 8th, 2012:** No issues to report. |
| **Activities / Comments** | **Waste Management (John Wallace):**<br>**8-02-12:**<br>Decon: No activities.<br><br>T&D: An oily debris roll-off from C0.4 (Vegetation) was hauled to C&C landfill for disposal.<br><br>Waste Management Characterization: No liquid waste was hauled in or out of FTC. Continuing waste management characterization, documentation and coordination.<br><br>**8-03-12:**<br>Decon: No activities. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | T&D: No activities.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination.<br><br>**8-04-12 and 8-05-12:**<br>Decon: No activities.<br><br>T&D: No activities.<br><br>Waste Management Characterization: No activities.<br><br>**8-6-12, 8-7-12 and 8-8-12:**<br>Decon: No activities.<br><br>T&D: No activities.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination.<br><br>**Submerged Oil (David Bareham):**<br>**8-02-12:**<br>Science: No activities.<br><br>Recovery: Conducted poling activities throughout Morrow Lake and Delta.<br><br>**8-03-12, 8-04-12 and 8-05-12:**<br>Science: No activities.<br><br>Recovery: No activities.<br><br>**8-6-12, 8-7-12 and 8-8-12:**<br>Science: Conducted Agitation Study.<br><br>Recovery: Conducted poling activities throughout Morrow Lake and Delta.<br><br>**Containment (Dean Sahara) :**<br>**8-02-12:**<br>Completed River Inspections. Provided 1 boat for Situational Awareness. Provided 1 boat for Safety. Provided 1 boat for Lake/Delta Monitoring. Provided 1 boat for Sediment Temperatures. Provided 1 boat for Cleaning Walling Samplers. Boom: Configuration C: Monitored Configuration and Adjusted 200'. Configuration B: Monitored 125' No adjustments needed. Configuration B: Numbered 200' of Boom. Configuration F: Numbered 675' of Boom. Buoys: Nothing to Report. Sheen Sweep: E4 to MP 38.75: 70' snare used. MP 21.25 to MP 29: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 145. Talmadge Creek: No activity. Ceresco: Recovered 81 bags of debris. Configuration C: Recovered 7 bags of debris. Configuration E: Recovered 9 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to Frac Tank City for temporary storage in the Oily Waste Roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**8-03-12:**<br>Completed River Inspections. Provided 1 boat for Situational Awareness. Provided 1 boat for Safety. Provided 1 boat for Lake/Delta Monitoring. Provided 1 boat for Sediment Temperatures. Provided 1 boat for Cleaning Walling Samplers. Boom: Configuration C: Monitored 400' No adjustments needed. Configuration F: Monitored 675' No adjustments needed. Buoys: Nothing to Report. Sheen Sweep: E4 to MP 38.75: 70' snare used. MP 21.25 to MP 29: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 145. Talmadge Creek: No activity. Ceresco: Recovered 73 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to Frac Tank City for temporary storage in the Oily Waste Roll off for disposal at a later date. Completed gas monitoring during all recovery operations. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | **8-04-12:**<br>Completed River Inspections. Provided 1 boat for Situational Awareness. Boom: Nothing to Report. Buoys: Nothing to Report. Sheen Sweep: E4 to MP 38.75: 70' snare used. MP 21.25 to MP 29: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 145. Debris Recovered: Ceresco: Recovered 35 bags of debris. E4: Recovered 10 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to Frac Tank City for temporary storage in the Oily Waste Roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**8-05-12:** No activities.<br><br>**8-6-12:**<br>Completed River Inspections. Provided 1 boat for Situational Awareness. Provided 4 boats for Quantification study. Provided 2 boats for Agitation study. Provided 1 boat for Safety. Provided 1 boat for E4 containment maintenance and monitoring. Provided 1 boat for E4 Lake/Delta Monitoring. Boom: Inspected 275' of A, all of B, West end of C and F. Adjusted 100' of A, 25' of C. Agitation: Finished location Delta Z and set box at location near MP 14.80. Buoys: Nothing to Report. Sheen Sweep: 3 boats provided. E4.5 to MP 37.75: 70' snare used. MP 21.25 - MP 27.75: 25 of snare used. Ceresco: MP 5.25 – 5.75: 50' of snare used. Total Footage Snare used: 145. Debris Recovered: Ceresco: Recovered 93 bags of debris. E4: Recovered 3 bags of debris. Config. B: 3 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to Frac Tank City for temporary storage in the Oily Waste Roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**8-7-12:**<br>Completed River Inspections. Provided 1 boat for Situational Awareness. Provided 4 boats for Quantification study. Provided 2 boats for Agitation Study. Provided 1 boat for Safety. Provided 1 boat for E4 containment maintenance and monitoring. Provided 1 boat for E4 Lake/Delta Monitoring. Boom: Inspected all of E adjusted one faulty strap. Agitation: Finished location MP 14.8 (approx.) and set box at location near MP 5.5. Buoys: Nothing to Report. Sheen Sweep: 3 boats provided. E4.5 to MP 37.75: 70' snare used. MP 21.25 - MP 27.75: 25 of snare used. Ceresco: MP 5.25 – 5.75: 50' of snare used. Total Footage Snare used: 145. Debris Recovered: Ceresco: Recovered 217 bags of debris. E4: Recovered 9 bags of debris. Config. C: 5 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to Frac Tank City for temporary storage in the Oily Waste Roll off for disposal at a later date. All vegetation was taken to C0.4 and placed into roll-off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**8-8-12:**<br>Completed River Inspections. Provided 1 boat for Situational Awareness. Provided 4 boats for Quantification study. Provided 2 boats for Agitation study. Provided 1 boat for Safety. Provided 1 boat for E4 containment maintenance and monitoring. Provided 1 boat for E4 Lake/Delta Monitoring. Boom: Cleaned all debris from boom. Agitation: Finished location MP 5.5(approx.). Buoys: Nothing to Report. Sheen Sweep: 3 boats provided. E4.5 to MP 37.75: 70' snare used. MP 21.25 - MP 27.75: 25 of snare used. Ceresco: MP 5.25 – 5.75: 50' of snare used.<br>Total Footage Snare used: 145. Debris Recovered: Ceresco: Recovered 94 bags of debris. E4: Recovered 23 bags of debris. Config. C: 80 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to Frac Tank City for temporary storage in the Oily Waste Roll off for disposal at a later date. All Vegetation was taken to C0.4 and placed into Roll-Off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**<u>Kalamazoo River (Bryan Stiemsma):</u>**<br>**8-02-12:**<br><u>Remedial Investigation:</u> Collected three (3) soil samples from Source Area. Collected three (3) sediment samples from the Source Area. MP 26.80 RDB – Bradley ERO Site – Installed Bio-D-block and clay loam to construct soil lifts; installed emergent wetland seed, grass seed, jute blanket, straw (7 bales) and 266 bare root shrubs to complete the restoration of the riverbank site and construction access corridor.<br><br><u>Remedial Action</u>: No activities.<br><br><u>Monitoring</u>: No activities.<br><br>**8-03-12:**<br><u>Remedial Investigation:</u> Collected four (4) groundwater samples from the Source Area. MP 26.80 RDB – |

| | |
|---|---|
| **Activities / Comments (Cont.)** | Bradley ERO Site – Photo-documented site completion for future construction monitoring reporting. C 3.7 Boat Launch, MP 21.5 (Custer Road Restoration), and Talmadge Creek Station 77+50 (Monaweck buffer) – Watered all previously installed plant material. Talmadge Creek (MP 0.5 – MP 1.0) – Organized and prepared for plant material installation proposed to commence on 8/06/12.<br><br>Remedial Action: No activities.<br><br>Monitoring: No activities.<br><br>**8-04-12 and 8-05-12:**<br>Remedial Investigation: No activities.<br><br>Remedial Action: No activities.<br><br>Monitoring: No activities.<br><br>**8-6-12:**<br>Remedial Investigation: Talmadge Creek (MP 0.5 – MP 1.0) – Installed shrubs along the left bank of Talmadge Creek north of Division Drive.<br><br>Remedial Action: No activities.<br><br>Monitoring: No activities.<br><br>**8-7-12:**<br>Remedial Investigation: Talmadge Creek (MP 0.5 – MP 1.0) – Installed shrubs, completing the left bank and beginning of the right bank of Talmadge Creek north of Division Drive.<br><br>Remedial Action: No activities.<br><br>Monitoring: No activities.<br><br>**8-8-12:**<br>Remedial Investigation: Talmadge Creek (MP 0.5 – MP 1.0) – Installed shrubs and trees along the left and right bank of Talmadge Creek north of Division Drive to complete the current planting effort.<br><br>Remedial Action: No activities.<br><br>Monitoring: Completed weekly buoy inspections. |

| 1. Incident Name | 2. Date Prepared | 3. Time Prepared | UNIT LOG ICS 214 |
|---|---|---|---|
| Kalamazoo River/Enbridge Spill Response | 8/15/2012 | 12:00 | |

| 4. Unit Name/Designators | 5. Unit Leader | | 6. Operational Period : DATE/TIME | |
|---|---|---|---|---|
| Enbridge Operations | Name: | John Sobojinski | From: | August 09, 2012; 0700 |
| | Position: | Incident Commander | To: | August 16, 2012; 0700 |

**7. Personnel Roster Assigned**

| Name | ICS Position | DUTY CELL |
|---|---|---|
| John Sobojinski | Enbridge Incident Commander | [redacted] |
| Bob Steede | Environment | |
| Christopher Haux | Operations | |
| Jason Manshum | Public Information | |
| Dale Gross | Safety & Security | |
| John Wallace | Waste Management | |
| David Bareham | Submerged Oil | |
| Dean Sahara | Containment | |
| Bryan Stiemsma | Kalamazoo River | |

**8. Activity Log**

| Activity Areas | Safety & Security, Air Operations, Waste Management, Overbank, Submerged Oil, Containment, Talmadge Creek, Kalamazoo River |
|---|---|

**Health and Safety Issues**

**Safety & Security (Dale Gross)**

**General Safety Message:**

**8-09-12: Life Saving Rule #6 – Report Incidents**

Always report significant safety related incidents. We believe all injuries and incidents are preventable. Reporting incidents allows us to understand what happened and prevent it from happening again.

***When you speak up for safety, everyone benefits. You are the voice of lifesaving rules***.

**Safety Items for August 9th, 2012:** No issues to report.

**8-10-12: Preventing Skin Cancer**

- Avoid deliberate tanning.
- Get vitamin D safely through a healthy diet that includes vitamin supplements.
- Generously apply sunscreen to all exposed skin every day.
- Wear protective clothing, such as a long-sleeved shirt, pants, a wide-brimmed hat, and sunglasses, where possible.
- Seek shade when appropriate. The sun's rays are strongest between 10 a.m. and 4 p.m.
- Use extra caution near water, snow, and sand as they reflect the damaging rays of the sun.

**Safety Items for August 10th, 2012:** No issues to report.

**8-11-12 and 8-12-12: Ticks and Insects**

Ticks

Ticks continue to be prevalent, especially around Talmadge Creek.

- Use an insect repellent containing DEET.
- Check your clothing and body for ticks.
- Examine your gear.

Mosquitos

Mosquitos have not been as numerous recently, because of the lack of rain, but are still present near bodies of water.

- Use an insect repellent containing DEET.

Bees, wasps, and hornets

| | |
|---|---|
| **Health and Safety Issues (Cont.)** | Potential nest locations for these insects include:<br>➢ Hanging tree limbs.<br>➢ Hardened, previously muddy ground.<br>➢ Rodent burrows.<br>➢ Outbuildings and barns.<br>**Safety Items for August 11th and August 12th:** There are no issues to report.<br><br>**8-13-12: Ergonomics**<br><br>Ergonomics is the study of how to improve the fit between the physical demands of the workplace and the employees who perform the work. That means considering the variability in human capabilities when selecting, designing, or modifying equipment, tools, work tasks, and the work environment.<br>Contributing factors are aspects of work tasks which can lead to fatigue, musculoskeletal disorder (MSD) symptoms and injuries. The contributing factors you should be aware of include:<br><br>➢ Awkward postures<br>➢ Repetitive motions<br>➢ Forceful exertions<br>➢ Pressure points (e.g., local contact stress)<br>➢ Vibration<br>**Safety Items for August 13th, 2012:** No issues to report.<br><br>**8-14-12: River Use by the Public**<br><br>Boat operators and passengers should be aware that the public is using the river now and the number of public users is increasing, especially on the weekends.<br><br>➢ Be aware that recreational users of the river may be anywhere on the river.<br>➢ Kayaker and canoeists may not follow navigation rules and may not be in full control.<br>➢ The public always has the right of way on the river.<br>➢ Swimmers have been observed in the river and may be difficult to see. When you see swimmers - get off step.<br>➢ When in doubt, stop and evaluate the situation.<br>➢ Know what to do in case of an emergency.<br>➢ Be courteous when interacting with the public.<br>**Safety Items for August 14th, 2012:** No issues to report.<br><br>**8-15-12 : First Aid Kits**<br><br>Contractors shall ensure that all First Aid supplies as required by applicable regulations are available and accessible. First aid kits shall be located on site or in each crew vehicle.<br><br>The contents of each first aid kit shall be checked before being sent out to the job site and on a regular basis to ensure the kits are properly stocked.<br>**Safety Items for August 15th, 2012:** No issues to report. |
| **Activities / Comments** | **Waste Management (John Wallace):**<br>**8-09-12:**<br>Decon: No activities.<br><br>T&D: An oily debris roll off box and a MSW box was hauled to C&C landfill for disposal. Soil and water were hauled from C3.2 R.I work and disposed of FTC.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | **8-10-12:**<br>Decon: No activities.<br><br>T&D: No activities.<br><br>Waste Management: Continuing waste management characterization, documentation and coordination. Collected one (1) oily debris sample from roll off box RT2650 at Frac Tank City.<br><br>**8-11-12 and 8-12-12:**<br>Decon: No activities.<br><br>T&D: No activities.<br><br>Waste Management: No activities.<br><br>**8-13-12:**<br>Decon: No activities.<br><br>T&D: MSW roll-offs were hauled to C&C landfill as well as water from the A/B sump in FTC was hauled to Plummer's Environmental for disposal.<br><br>Waste Management: Continuing waste management characterization, documentation and coordination.<br><br>**8-14-12:**<br>Decon: No activities.<br><br>T&D: Water from the R.I at the wildlife center was hauled into FTC and disposed of in the A/B sump.<br><br>Waste Management: Continuing waste management characterization, documentation and coordination.<br><br>**8-15-12:**<br>Decon: No activities.<br><br>T&D: No activities.<br><br>Waste Management: Continuing waste management characterization, documentation and coordination.<br><br>**Submerged Oil (David Bareham):**<br>**8-09-12 and 8-10-12:**<br>Science: No activities.<br><br>Recovery: Conducted poling monitoring activities throughout Morrow Lake and Delta.<br><br>**8-11-12 and 8-12-12:**<br>Science: No activities.<br><br>Recovery: No activities.<br><br>**8-13-12:**<br>Science: No activities.<br><br>Recovery: Conducted poling monitoring activities throughout Morrow Lake and Delta. Collected Walling Tubes from location along the Kalamazoo River. Conducted sediment trap monitoring.<br><br>**8-14-12:**<br>Science: No activities.<br><br>Recovery: Conducted poling monitoring activities throughout Morrow Lake and Delta. Collected one (1) sediment sample from a sediment trap. Collected Walling Tubes from location along the Kalamazoo River. Conducted sediment trap monitoring. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | **8-15-12:**<br>Science: No activities.<br><br>Recovery: Conducted poling monitoring activities throughout Morrow Lake and Delta. Collected thirty-three (33) sediment samples from Walling Tubes. Conducted sediment trap monitoring.<br><br>**Containment (Dean Sahara) :**<br>**8-09-12:**<br>Completed river inspections. Provided 1 boat for Situational Awareness. Provided 1 boat for Safety. Provided 1 boat for Lake/Delta Monitoring. Provided 1 boat for Sediment Temperatures. Provided 1 boat for E4 Configuration Monitoring. Boom: MP 21.5: Removed anchor and 30' of curtain. MP 22.75: Removed 30' of curtain. MP 23.15: Removed anchors and 30' of curtain. MP 26: Removed 100' of curtain. Visual inspection of all configurations. Buoys: Completed buoy inspections. Sheen Sweep: E4 to MP 38.75: 70' snare used. MP 21.25 to MP 29: 25' of snare used. Ceresco: 50' of snare used.<br>Total Footage Snare used: 145. Ceresco: Recovered 45 bags of debris. E4 Boat Launch: Recovered 50 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to C 0.4 for temporary storage in the Oily Waste Roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**8-10-12:**<br>Completed river inspections. Provided 1 boat for Situational Awareness. Provided 1 boat for Safety. Provided 1 boat for Lake/Delta Monitoring. Provided 1 boat for Sediment Temperatures. Provided 1 boat for E4 Configuration Monitoring. Boom: Visual inspection of all configurations. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 70' snare used. MP 21.25 to MP 29: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 145. Ceresco: Recovered 73 bags of debris. E4 Boat Launch: Recovered 3 bags of debris. Inspected all containment on the river, completed adjustments as required. All debris was taken to C 0.4 for temporary storage in the oily waste roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**8-11-12:**<br>Completed river inspections. Provided 1 boat for Situational Awareness. Boom: NTR. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 70' snare used. MP 21.25 to MP 29: 25' of snare used. Total Footage Snare used: 95 Ceresco: Recovered 34 bags of debris. Configuration B: Recovered 8 bags of debris. E4 Boat Launch: Recovered 3 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**8-12-12:** No activities.<br><br>**8-13-12:**<br>Completed river inspections. Provided 1 boat for Situational Awareness. Provided 1 boat for Safety. Provided 2 boats for Sediment Monitoring. Provided 2 boats for Walling Sampler Removal. Provided 1 boat for Buoy Inspections. Provided 1 boat for E4 Configuration Monitoring. Boom: Configuration A-E: Monitored visually. Configuration F: Monitored with camera 1250'. Buoys: Inspected buoys at MP 0 to MP 21.5. Sheen Sweep: E4 to MP 38.75: 70' snare used. MP 21.25 to MP 29: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 145. Ceresco: Recovered 79 bags of debris. Configuration C: Recovered 50 bags of debris. E4 Boat Launch: Recovered 20 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; All oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**8-14-12:**<br>Completed river inspections. Provided 2 boats for Situational Awareness. Provided 1 boat for Safety. Provided 2 boats for Sediment Monitoring. Provided 1 boat for Surface Water Monitoring. Provided 1 boat for E4 Configuration Monitoring. Boom: Configuration D: Monitored and recorded 250', No adjustments needed. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 70' snare used. MP 21.25 to MP 29: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 145. Ceresco: Recovered 33 bags of debris. E4 Boat Launch: Recovered 17 bags of debris. Inspected all containment on the river, completed adjustments as required.<br>All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all recovery operations. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | **8-15-12:**<br>Completed River Inspections. Provided 2 boats for Situational Awareness. Provided 1 boat for Safety. Provided 2 boats for Sediment Monitoring. Provided 2 boats for Walling. Provided 1 boat for E4 Configuration Monitoring. Boom: NTR. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 0' snare used. MP 21.25 to MP 29: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 75. Ceresco: Recovered 74 bags of debris. Configuration C: Recovered 75 Bags of debris. E4 Boat Launch: Recovered 37 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**<u>Kalamazoo River (Bryan Stiemsma):</u>**<br>**8-09-12:**<br><u>Remedial Investigation:</u> No activities.<br><br><u>Remedial Action</u>: No activities.<br><br><u>Monitoring</u>: Completed weekly buoy inspections.<br><br>**8-10-12, 8-11-12 and 8-12-12:**<br><u>Remedial Investigation:</u> No activities.<br><br><u>Remedial Action</u>: No activities.<br><br><u>Monitoring</u>: No activities.<br><br>**8-13-12:**<br><u>Remedial Investigation:</u> MP 26.80 RDB (Bradley ERO Site) – Met with Carr Brothers at Shady Bend Campground and received delivery of 15 cubic yards of 2-4" stone and 20 cubic yards of clay loam soil proposed for use in the bank restoration project; transported 15 Bio-D-Blocks to the subject site for use in restoration activities; prepared field equipment for use on the restoration effort being initiated on August 14, 2012.<br><br><u>Remedial Action</u>: No activities.<br><br><u>Monitoring</u>: No activities.<br><br>**8-14-12:**<br><u>Remedial Investigation:</u> MP 26.80 RDB (Bradley ERO Site) – Installed 8 cubic yards of 2-4" stone, 30 linear feet of Bio-D-Block, and 10 yards of clay loam soil to complete the construction of 30 linear feet of bank stabilization soil lifts on the subject site.<br><br><u>Remedial Action</u>: No activities.<br><br><u>Monitoring</u>: Collected ten (10) surface water samples on the Kalamazoo River. Collected eight (8) surface water samples on Morrow Lake. Began weekly buoy inspections.<br><br>**8-15-12:**<br><u>Remedial Investigation:</u> MP 26.80 RDB (Bradley ERO Site) – Installed 8 Bio-D-Blocks, 15 yards of clay loam soil and 500 square feet of native emergent wetland seed to complete the construction of 80 linear feet of bank stabilization soil lifts at the subject site.<br><br><u>Remedial Action</u>: No activities.<br><br><u>Monitoring</u>: Began weekly buoy inspections. |

| 1. Incident Name | 2. Date Prepared | 3. Time Prepared | UNIT LOG ICS 214 |
|---|---|---|---|
| Kalamazoo River/Enbridge Spill Response | 8/22/2012 | 12:00 | |

| 4. Unit Name/Designators | 5. Unit Leader | | 6. Operational Period : DATE/TIME | |
|---|---|---|---|---|
| Enbridge Operations | Name: | John Sobojinski | From: | August 16, 2012; 0700 |
| | Position: | Incident Commander | To: | August 23, 2012; 0700 |

**7. Personnel Roster Assigned**

| Name | ICS Position | DUTY CELL |
|---|---|---|
| John Sobojinski | Enbridge Incident Commander | [redacted] |
| Bob Steede | Environment | |
| Christopher Haux | Operations | |
| Jason Manshum | Public Information | |
| Dale Gross | Safety & Security | |
| John Wallace | Waste Management | |
| David Bareham | Submerged Oil | |
| Dean Sahara | Containment | |
| Bryan Stiemsma | Kalamazoo River | |

**8. Activity Log**

| Activity Areas | Safety & Security, Air Operations, Waste Management, Overbank, Submerged Oil, Containment, Talmadge Creek, Kalamazoo River |
|---|---|

**Health and Safety Issues**

**Safety & Security (Dale Gross)**

**General Safety Message:**

**8-16-12: Life Saving Rule #1 – Hazard Management**

- Always ensure an analysis has been performed for any potential hazards that may arise.
- Proper authorization must be received prior to starting any work.
- Follow the guidance that is provided in the hazard identification documentation to ensure the safety and security of the workers and the work site.

**Safety Items for August 16th, 2012:** No issues to report.

**8-17-12: Driving/Traffic Safety**

1) Always Wear Seatbelt
2) Follow all Traffic Signals/ Signs/ Speed Limits
3) Adjust Speed for Road/ Weather Conditions
4) Maintain Safe Following Distance
5) Secure Loads (Boats/ Waste/ Equipment, etc.)
6) Avoid Distractions
   a. Cell Phone/ Radio/ Electronic Devices
7) Pedestrians/ Cyclists/ Children/ Wildlife
8) Adequate Clearance - Fixed Objects/ Vehicles/ Equipment
9) Parking:
   a. Car Pooling
   b. Designated Areas
   c. Pulling Through
   d. Back-In/ Honk Horn
10) Vehicle Inspection – Brakes/ Horn/ Wipers/ Tire Pressure/ Windshield/ Lights/ Operating Controls

**Safety Items for August 17th, 2012:** No issues to report.

**8-18-12 and 8-19-12: School Activity Traffic Safety**

All motorists need to take special care while driving. Although school is not in session until September, there has been an increase in pedestrian traffic due to pre-school year activities and sports. Younger children often lack the skills to negotiate traffic safely. Please adhere to the following rules:

1) Be ready to stop at all times
2) If there are no sidewalks – drive cautiously
3) Always try to make eye contact with children waiting to cross road(s)
4) Be patient and wait for children to complete their crossing before proceeding

**Safety Items for August 18th and August 19th:** There are no issues to report.

| | |
|---|---|
| **Health and Safety Issues (Cont.)** | **8-20-12: Fire Prevention**<br>Be aware that with the hot, dry weather, we need to be extra careful about ignition sources and combustible materials at the work sites. Items to be aware of include:<br><br>➢ Vehicles and equipment located in areas where the exhaust components contact or discharge against combustible materials, such as tall grass and weeds.<br>➢ Oily Rags: Oily rags and similar material shall be stored in metal or other approved containers equipped with tight-fitting covers<br>➢ Smoking materials. Only smoke in prepared, designated areas and be sure extinguish and dispose of materials properly.<br>➢ Good Housekeeping is an important part of fire prevention. Trash is to be collected and secured daily until it can be properly disposed of.<br><br>**Safety Items for August 20th:** There are no issues to report.<br><br>**8-21-12: Yellow Jacket/Wasp/Bee Awareness**<br>Yellow Jackets:<br>• Most Aggressive<br>• Can Sting Repeatedly – Quite Painful<br>• Extremely Defensive When Nest Disturbed<br>Wasps:<br>• Can Sting Repeatedly – Quite Painful<br>Bees:<br>• Least Aggressive<br>• Some Species Sting Repeatedly - Painful<br>Potential Nest Locations:<br>• Hanging Tree Limbs<br>• Ground Level – Hardened Mud<br>• Rodent Burrows<br>• Stand Alone Objects/ Buildings<br>If Stung – Seek First Aid Immediately and Report to Enbridge Safety. Closely Monitor & Address Severe Allergic Reactions.<br><br>**Safety Items for August 21st:** ICP – An Enbridge employee tripped on a rubber mat and fell while walking out the door from the front office area. No first aid was required and the individual resumed work.<br><br>**8-22-12: Severe Weather – Lightning**<br>Lightning is one of the most underrated severe weather hazards, yet it ranks as one of the top weather killers in the U.S. During thunderstorms no place outside is safe. If you can hear thunder, lightning is close enough to strike.<br><br>**If a co-worker is struck by lightning -** Lightning victims do not carry an electrical charge, they are safe to touch, and need urgent medical attention. Cardiac arrest is the immediate cause of death for those who die. Some deaths can be prevented if the victim receives the proper first aid immediately. Call 9-1-1 and perform CPR if the person is unresponsive or not breathing. Use an Automatic External Defibrillator if one is available.<br><br>**Safety Items for August 22nd:** Incident – A SWAT boat operator working near C0.4 punctured his finger approximately 3/16ths of an inch deep while clearing vegetation from the intake of the boat's jet outboard motor. Triple antibiotic ointment was applied and the individual resumed work. |
| **Activities / Comments** | **<u>Waste Management (John Wallace):</u>**<br>**8-16-12:**<br><u>Decon:</u> No activities.<br><br><u>T&D</u>: An oily debris roll off was hauled out of C0.4 and taken to C&C landfill for disposal. A roll off of MSW was hauled to C&C as well as a trailer of MSW to C&C for disposal. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | Waste Management Characterization: Continuing waste management characterization, documentation and coordination.<br><br>**8-17-12:**<br>Decon: No activities.<br><br>T&D: MSW roll off boxes were hauled out of FTC to C&C landfill for disposal.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination.<br><br>**8-18-12 and 8-19- 12:**<br>Decon: No activities.<br><br>T&D: No activities.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination.<br><br>**8-20-12:**<br>Decon: No activities.<br><br>T&D: Water was hauled out Valley City and disposed of at Plummer's Environmental.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination.<br><br>**8-21-12 and 8-22-12:**<br>Decon: No activities.<br><br>T&D: No activities.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination.<br><br>**Submerged Oil (David Bareham):**<br>**8-16-12:**<br>Science: No activities.<br><br>Recovery: Conducted poling monitoring activities throughout Morrow Lake and Delta. Collected four (4) sediment samples from Walling Tubes. Conducted sediment trap monitoring.<br><br>**8-17-12:**<br>Science: No activities.<br><br>Recovery: Conducted poling monitoring activities throughout Morrow Lake and Delta. Collected three (3) sediment samples from sediment traps. Conducted sediment trap monitoring.<br><br>**8-18-12 and 8-19-12:**<br>Science: No activities.<br><br>Recovery: No activities.<br><br>**8-20-12:**<br>Science: No activities.<br><br>Recovery: Conducted poling monitoring activities downstream of Morrow Lake. Conducted sediment trap monitoring. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | **8-21-12:**<br>Science: No activities.<br><br>Recovery: Conducted poling monitoring activities downstream of Morrow Lake. Conducted sediment trap monitoring. Collected three (3) sediment samples from sediment trap monitoring.<br><br>**8-22-12:**<br>Science: No activities.<br>Recovery: Conducted sediment trap monitoring. Late Summer 2012 Poling Reassessment.<br><br>**Containment (Dean Sahara) :**<br>**8-16-12:**<br>Completed River Inspections. Provided 2 boats for Situational Awareness. Provided 1 boat for Safety. Provided 2 boats for Sediment Monitoring. Provided 1 boat for E4 Configuration Monitoring. Boom: E4 Configurations: Visually monitored. Configuration D: Removed 3 Logs. Buoys: MP 36.1 to Lake: Visually monitored buoys. Sheen Sweep: MP 21.25 to MP 29: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 75. Ceresco: Recovered 66 bags of debris. Configuration C: Recovered 20 bags of debris. E4 Boat Launch: Recovered 7 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**8-17-12:**<br>Completed River Inspections. Provided 2 boats for Situational Awareness. Provided 1 boat for Safety. Provided 1 boat for Buoy Monitoring. Provided 2 boats for Sediment Monitoring. Provided 1 boat for E4 Configuration Monitoring. Boom: Configuration B: Monitored 100'. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 70' of snare used. MP 21.25 to MP 29: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 145. Ceresco: Recovered 69 bags of debris. Configuration C: Recovered 68 bags of debris. E4 Boat launch: Recovered 5 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**8-18-12:**<br>Completed River Inspections. Provided 1 boat for Situational Awareness. Boom: NTR. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 70' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 120. Ceresco: Recovered 24 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all recovery operations.<br><br>**8-19-12:** No activities.<br><br>**8-20-12:**<br>Completed River Inspections. Provided 1 boat for Situational Awareness. Provided 1 boat for Sediment Traps. Provided 1 boat for Safety. Provided 2 boats for Sediment Monitoring. Provided 1 boat for Poling. Boom: E4 Configurations: Visually Inspected. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 40' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 90. Ceresco: Recovered 196 bags of debris. Configuration C: Recovered 100 bags of debris. E4 Boat Launch: Recovered 178 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations.<br><br>**8-21-12:**<br>Completed River Inspections. Provided 2 boats for Situational Awareness. Provided 1 boat for Buoys/Sediment Traps. Provided 1 boat for Safety. Provided 2 boats for Sediment Monitoring. Provided 1 boat for Poling. Boom: E4 Configuration A: Monitored Configuration, and Adjusted 275'. Buoys: Inspected buoys above Confluence to MP 28.25. Sheen Sweep: E4 to MP 38.75: 50' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 100. Ceresco: Recovered 211 bags of debris. Configuration C: Recovered 175 bags of debris. E4 Boat Launch: Recovered 274 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | **8-22-12:**<br>Completed River Inspections. Provided 2 boats for Situational Awareness. Provided 2 boats for Erosion Tour. Provided 1 boat for Walling Sampler Cleaning. Provided 1 boat for Safety. Provided 1 boat for Sediment Monitoring. Provided 5 boats for Poling. Boom: Configuration A: Monitored 250'. Configuration B: Monitored 175'. Configuration C-East: Monitored 100'. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 40' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 90. Ceresco: Recovered 161 bags of debris. Configuration C: Recovered 125 bags of debris. E4 Boat Launch: Recovered 81 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations.<br><br>**<u>Kalamazoo River (Bryan Stiemsma):</u>**<br>**8-16-12:**<br><u>Remedial Investigation:</u> MP 26.80 RDB (Bradley ERO Site) – Installed jute fabric and planted 27 dogwood plugs to complete restoration of the river bank at the subject site. Installed grass seed and straw (10 bales) to restore the project staging area and access route.<br><br><u>Remedial Action</u>: No activities.<br><br><u>Monitoring</u>: No activities.<br><br>**8-17-12:**<br><u>Remedial Investigation:</u> C 0.4 – Crew worked at handling and relocating all stored coir logs, erosion control blanket, jute blanket and other restoration materials from the storage barn at C 0.4 to alternative Enbridge storage locations on Division Drive.<br><br><u>Remedial Action</u>: No activities.<br><br><u>Monitoring</u>: No activities.<br><br>**8-18-12 and 8-19-12:**<br><u>Remedial Investigation:</u> No activities.<br><br><u>Remedial Action</u>: No activities.<br><br><u>Monitoring</u>: No activities.<br><br>**8-20-12:**<br><u>Remedial Investigation:</u> MP 15.66 Access Site (Battle Creek Dam) – Crew raked access corridor and installed Mesic prairie seed, 2,000 square feet of ryegrass seed and installed straw mulch over the entire area to restore the previous vehicle access corridor.<br><br><u>Remedial Action</u>: No activities.<br><br><u>Monitoring</u>: No activities.<br><br>**8-21-12:**<br><u>Remedial Investigation:</u> Crew cut woody material available at the Enbridge owned property near MP 13.40 (KS-C-182) to assemble and prepare 10 brush wattles for use in completing upcoming bank restoration work on multiple KRBEAS sites.<br><br><u>Remedial Action</u>: No activities.<br><br><u>Monitoring</u>: Began weekly buoy inspections. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | **8-22-12:**<br>Remedial Investigation: MP 22.50 (KRBEAS Site) – Installed brush bundles and 15 willow live stakes to stabilize the eroding river bank. Sediment Trap Structures – Received and unloaded 50 trees at the Shady Bend campground site and an additional 50 trees at the SWAT office location for future use in constructing sediment trap structures at MP 26.0 RDB and MP 33.0 A. Walling Structures – Assisted SWAT crew in emptying/cleaning Walling Structures at various locations along the river.<br><br>Remedial Action: No activities.<br><br>Monitoring: Completed weekly buoy inspections. KREBEAS Erosion Monitoring Trip. |

| 1. Incident Name | 2. Date Prepared | 3. Time Prepared | UNIT LOG ICS 214 |
|---|---|---|---|
| Kalamazoo River/Enbridge Spill Response | 8/29/2012 | 12:00 | |

| 4. Unit Name/Designators | 5. Unit Leader | | 6. Operational Period : DATE/TIME | |
|---|---|---|---|---|
| Enbridge Operations | Name: | John Sobojinski | From: | August 23, 2012; 0700 |
| | Position: | Incident Commander | To: | August 30, 2012; 0700 |

**7. Personnel Roster Assigned**

| Name | ICS Position | DUTY CELL |
|---|---|---|
| John Sobojinski | Enbridge Incident Commander | [redacted] |
| Bob Steede | Environment | |
| Christopher Haux | Operations | |
| Jason Manshum | Public Information | |
| Dale Gross | Safety & Security | |
| John Wallace | Waste Management | |
| David Bareham | Submerged Oil | |
| Dean Sahara | Containment | |
| Bryan Stiemsma | Kalamazoo River | |

**8. Activity Log**

| Activity Areas | Safety & Security, Air Operations, Waste Management, Overbank, Submerged Oil, Containment, Talmadge Creek, Kalamazoo River |
|---|---|

**Health and Safety Issues**

**Safety & Security (Dale Gross)**
**General Safety Message:**
**8-23-12: Lifesaving Rule #2 – Driving Safety**

Only drive a vehicle or operate equipment when not under the effect of alcohol or any substances that cause impairment.

Driving a vehicle or operating equipment is a high-risk activity. Focus on the task.

***Remember: When it comes to safety – you are at the wheel.***
***People are relying on your professional integrity to be safe in everything you do.***

**Safety Items for August 23rd, 2012:** A steel cable was discovered stretched across the Kalamazoo River at MP 12.75 from a dock to an island. Emmett Township police spoke with the landowner and requested that the cable be removed. The landowner complied and the removal was verified.

**8-24-12: Boat Trailer Inspections**

A ten point inspection for boat trailers:

1.) Lighting – Check running, turn, reverse and stop indicator lights.
2.) Lug nuts. Are they tight?
3.) Boat trailer tire inspection – how's the tread? Check the air pressure with a gauge.
4.) Wheel bearings – when was the last time they were greased?
5.) Check bolts for tightness. The bolts on the leaf springs are notorious for coming loose.
6.) Make sure your safety chain is in proper order and always hook it up. Make sure all pins are in place.
7.) Check the bunks on which the boat sits. Are the carpet and wooden boards in good condition?
8.) Check for corrosion and welds for cracks.
9.) Check straps for wear.
10.) Check that ball and trailer hitch ball coupler are the same size and the load doesn't exceed the hitch rating.

**Safety Items for August 24th, 2012:** There are no issues to report.

**8-25-12 and 8-26-12: Other Poisonous Plants**

In addition to poison ivy, poison oak, and poison sumac, there are two plants that you should also be aware of that can cause serious skin problems – Giant Hogweed and Wild Parsnip. These plants contain chemicals which can cause a serious skin inflammation.

Giant Hogweed

Giant hogweed can grow to 14 feet or more. Its hollow, ridged stems grow 2-4 inches in diameter and have dark reddish-purple blotches. Its large compound leaves can grow up to 5 feet wide. Its white flower heads can grow up to 2 1/2 feet in diameter.

| | |
|---|---|
| **Health and Safety Issues (Cont.)** | Wild Parsnip<br>Wild parsnip has large leaves that resemble celery leaves. The stem is hollow and grooved, two to five feet tall. The flowers are small, yellow, five-petaled and look like a yellow Queen's Anne's Lace.<br>**Safety Items for August 25th and August 26th:** There are no issues to report.<br><br>**8-27-12: Mosquitoes**<br>Michigan monitors and tests for mosquito-borne diseases - Eastern Equine Encephalitis (EEE), West Nile Virus (WNV) and other viruses. Use a repellent that contains DEET (always follow the instructions on the product label).<br>➢ Cover exposed skin or clothing. Do not apply repellent under clothing.<br>➢ Do not apply repellent to cuts, wounds, or irritated skin.<br>➢ Do not spray aerosol or pump products in enclosed areas.<br>➢ Do not apply aerosol or pump products directly to the face. Spray hands and then rub them carefully over the face, avoiding the eyes and mouth. Do not forget the ears.<br>**Safety Items for August 27th:** Medical Aid - A JF New employee was stung by yellow jackets while collecting material to make wattles at MP 13.4. Individual resumed work after reporting the incident. He began to have worsening symptoms. He self-administered Benedryl. The symptoms did not get better and was transported to Oaklawn ER by a coworker. At the ER, prescribed medication was administered and he was released without work restrictions.<br><br>**8-28-12: Grounding of Portable Equipment**<br>All portable equipment (i.e. welding units, generators, portable light plants, air compressors, etc.) shall be properly grounded according to the manufacturer's instructions.<br>Contractors shall ensure that all First Aid supplies as required by applicable regulations are available and accessible. First aid kits shall be located on site or in each crew vehicle.<br>**Safety Items for August 28th, 2012:** No issues to report.<br><br>**8-29-12: Choose the Right Gloves for the Job**<br>Wearing gloves will help protect hands against many hazards. Gloves are personal protective equipment and need to be selected for the hazard.<br>➢ Equipment with sharp edges, saw operation – Cut resistant gloves, such as leather or dipped cotton.<br>➢ Oil exposure – Nitrile.<br>➢ Providing first aid to another – Disposable Latex or Nitrile Exam Gloves.<br>**Safety Items for August 29th, 2012:** No issues to report. |
| **Activities / Comments** | **Waste Management (John Wallace):**<br>**8-23-12:**<br>Decon: No activities.<br><br>T&D: Roll offs of MSW were hauled out to C&C landfill for disposal.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination.<br><br>**8-24-12:**<br>Decon: No activities.<br><br>T&D: No activities.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination. Collected one (1) waste characterization sample for landfill disposal facility.<br><br>**8-25-12 and 8-26-12:**<br>Decon: No activities. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | T&D: No activities.<br><br>Waste Management Characterization: No Activities.<br><br>**8-27-12:**<br>Decon: No activities.<br><br>T&D: Roll off boxes of MSW was hauled out to C&C landfill for disposal.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination.<br><br>**8-28-12 and 8-29-12:**<br>Decon: No activities.<br><br>T&D: No activities.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination.<br><br>**Submerged Oil (David Bareham):**<br>**8-23-12 and 8-24-12:**<br>Science: No activities.<br><br>Recovery: Conducted sediment trap monitoring. Late Summer 2012 Poling Reassessment.<br><br>**8-25-12 and 8-26-12:**<br>Science: No activities.<br><br>Recovery: No activities.<br><br>**8-27-12:**<br>Science: No activities.<br><br>Recovery: Conducted sediment trap baseline survey. Late Summer 2012 Poling Reassessment.<br><br>**8-28-12:**<br>Science: No activities.<br><br>Recovery: Conducted sediment trap monitoring at trap 33.00A. Late Summer 2012 Poling Reassessment.<br><br>**8-29-12:**<br>Science: Submitted fifteen (15) surface water samples that were previously on hold for the Agitation Study. Submitted twenty-five (25) sheen samples that were previously on hold for the Agitation Study.<br><br>Recovery: Conducted sediment trap monitoring at trap 33.00A. Conducted sediment trap poling at Ceresco. Late Summer 2012 Poling Reassessment.<br><br>**Containment (Dean Sahara) :**<br>**8-23-12:**<br>Completed River Inspections. Provided 2 Boats for Situational Awareness. Provided 2 Boats for Erosion Tour. Provided 1 Boat for Buoys and Kiosks. Provided 1 Boat for Safety. Provided 1 Boat for Sediment Monitoring. Provided 6 Boats for Poling. Boom: Configuration D: Monitored and adjustments made. Configuration E: Monitored and adjustments made. Buoys: Inspected Buoys From C0.4 to MP 40. Sheen Sweep: Ceresco: 50' of snare used. Total Footage Snare used: 50. Ceresco: Recovered 50 bags of debris. Configuration C: Recovered 112 bags of debris. E4 Boat Launch: Recovered 62 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | **8-24-12:**<br>Completed River Inspections. Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 8 Boats for Poling. Boom: Configuration F: Monitored and adjusted 150' on North Section. Monitored and adjusted 75' on South Section. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 50' of snare used. MP 21.25 to MP 29: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 125'. Ceresco: Recovered 72 bags of debris. Configuration C: Recovered 50 bags of debris. E4 Boat Launch: Recovered 50 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations.<br><br>**8-25-12:**<br>Completed River Inspections. Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 6 Boats for Poling. Boom: NTR. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 75'. Ceresco: Recovered 84 bags of debris. Configuration C: Recovered 100 bags of debris. E4 Boat Launch: Recovered 75 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations.<br><br>**8-26-12:** No activities.<br><br>**8-27-12:**<br>Completed River Inspections. Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 6 Boats for Poling. Provided 2 Boats for Sediment Monitoring Baselines. Boom: Configuration E: Monitored boom, adjusted 50'. Configuration A: Monitored boom, adjusted 25'. Configuration B: Monitored Boom, no adjustments needed. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 40' of snare used. MP 21.25 to MP 29: 25' of snare used. Ceresco: 45' of snare used. Total Footage Snare used: 110'. Ceresco: Recovered 102 bags of debris. E4 Boat Launch: Recovered 48 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations.<br><br>**8-28-12:**<br>Completed River Inspections. Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 6 Boats for Poling. Provided 2 Boats for Sediment Monitoring Baselines. Boom: Configuration C: Monitored East Boom, Adjusted 100'. West Boom Monitored and adjusted 300'. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 100' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 175'. Ceresco: Recovered 117 bags of debris. Configuration C: Recovered 18 bags of debris. E4 Boat Launch: Recovered 75 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris were taken to C 0.4 for temporary storage; all oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations.<br><br>**8-29-12:**<br>Completed River Inspections. Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 1 Boat for JFNew. Provided 2 Boats for Poling. Provided 2 Boats for Sediment Monitoring Baselines. Boom: Visually inspected all boom. Configuration D: Monitored and adjusted 100'. Configuration E: South Boom Monitored and adjusted 125'. Buoys: NTR. Restoration: MP 22.6: Installation of trees, 40' along bank. Sheen Sweep: E4 to MP 38.75: 100' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 175'. Ceresco: Recovered 161 bags of debris. Configuration C: Recovered 58 bags of debris. E4 Boat Launch: Recovered 124 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations.<br><br>**<u>Kalamazoo River (Bryan Stiemsma):</u>**<br>**8-23-12 and 8-24-12:**<br><u>Remedial Investigation:</u> No activities.<br><br><u>Remedial Action</u>: No activities. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | Monitoring: KREBEAS Erosion Monitoring Trip.<br><br>**8-25-12 and 8-26-12:**<br>Remedial Investigation: No activities.<br><br>Remedial Action: No activities.<br><br>Monitoring: No activities.<br><br>**8-27-12:**<br>Remedial Investigation: Cut woody debris and constructed 60 linear feet of brush bundles for use in upcoming riverbank restoration projects.<br><br>Remedial Action: No activities.<br><br>Monitoring: No activities.<br><br>**8-28-12:**<br>Remedial Investigation: Cut woody debris and constructed 160 linear feet of brush bundles. Transport and stage constructed brush bundles at the Shady Bend Campground site (MP27.00) for use in upcoming riverbank restoration projects.<br><br>Remedial Action: No activities.<br><br>Monitoring: Conducted weekly buoy inspections.<br><br>**8-29-12:**<br>Remedial Investigation: MP 22.60 L1 - (KRBEAS Site) Installed 160 linear feet of brush bundles to complete riverbank restoration of the subject site. MP 12.20 L (Raymond Road KRBEAS Site) – Attended the Raymond Road Pre-construction meeting at the Marshall Community Center in preparation for initiation of bank restoration activities.<br><br>Remedial Action: No activities.<br><br>Monitoring: No activities. |

| 1. Incident Name | 2. Date Prepared | 3. Time Prepared | UNIT LOG ICS 214 |
|---|---|---|---|
| Kalamazoo River/Enbridge Spill Response | 9/05/2012 | 12:00 | |

| 4. Unit Name/Designators | 5. Unit Leader | | 6. Operational Period : DATE/TIME | |
|---|---|---|---|---|
| Enbridge Operations | **Name:** | John Sobojinski | **From:** | **August 30, 2012; 0700** |
| | **Position:** | Incident Commander | **To:** | **September 06, 2012;0700** |

**7. Personnel Roster Assigned**

| Name | ICS Position | DUTY CELL |
|---|---|---|
| John Sobojinski | Enbridge Incident Commander | [redacted] |
| Bob Steede | Environment | |
| Christopher Haux | Operations | |
| Jason Manshum | Public Information | |
| Dale Gross | Safety & Security | |
| John Wallace | Waste Management | |
| David Bareham | Submerged Oil | |
| Dean Sahara | Containment | |
| Bryan Stiemsma | Kalamazoo River | |

**8. Activity Log**

| Activity Areas | Safety & Security, Air Operations, Waste Management, Overbank, Submerged Oil, Containment, Talmadge Creek, Kalamazoo River |
|---|---|

**Health and Safety Issues**

**Safety & Security (Dale Gross)**

**General Safety Message:**

**8-30-12: Travel Awareness**

The time is here to enjoy the final holiday as we wrap up the summer season. Be sure to promote safe and responsible driving for the Labor Day weekend. Please obey all traffic laws and:

- Have an adequate amount of rest prior to traveling.
- Inspect your vehicle tire pressure and make sure wind shield is clean.
- Inform a friend or family member of travel plans.
- If you become drowsy during commute, be sure to pull over at a rest area. Do not take chances by pushing yourself to drive if you are tired.

***To a safe and relaxing Labor Day weekend!***

**Safety Items for August 30th, 2012:** No issues to report.

**8-31-12, 9-1-12, 9-2-12, 9-3-12 and 9-4-12: Labor Day Holiday**

**Safety Items for August 30th, August 31st, September 1st, September 2nd, September 3rd and September 4th, 2012:** No issues to report.

**9-5-12: Back to School Safety**

Schools have reopened for fall, increasing the presence of children, buses and traffic near our worksites. Particularly in the mornings, this may be an issue when heading to work at the same time as the school buses and parents taking kids to school.

To share the roads safely, please remember to:

- Pay attention when approaching School Zones, slow down to posted limits.
- Always stop for flashing school bus lights.
- Plan road crossings and other disruptive traffic activities so they do not hinder school bus routes.
- Watch for children at the edge of the road when driving past rural homes, particularly in the mornings before school and afternoons after school.

Your cooperation is appreciated and reflects our shared commitment to community respectfulness.

**Safety Items for September 5th, 2012:** No issues to report.

**Activities / Comments**

**Waste Management (John Wallace):**

**8-30-12:**

Decon: No activities.

T&D: Roll offs of MSW were hauled out to C&C landfill for disposal.

Waste Management Characterization: Continuing waste management characterization, documentation and coordination.

| | |
|---|---|
| **Activities / Comments (Cont.)** | **8-31-12, 9-1-12, 9-2-12, 9-3-12 and 9-4-12:**<br>Decon: No activities.<br><br>T&D: No activities.<br><br>Waste Management Characterization: No activities.<br><br>**9-5-12:**<br>Decon: No activities.<br><br>T&D: There was no MSW roll off boxes sent out on 9-5-12. There were multiple boxes of oily debris sent.<br><br>Waste Management Characterization: Continuing waste management characterization, documentation and coordination.<br><br>**Submerged Oil (David Bareham):**<br>**8-30-12:**<br>Science: No activities.<br><br>Recovery: Conducted sediment trap baseline survey at trap 33.00A. Conducted sediment trap poling in Ceresco.<br><br>**8-31-12, 9-1-12, 9-2-12, 9-3-12, and 9-4-12:**<br>Science: No activities.<br><br>Recovery: No activities.<br><br>**9-5-12:**<br>Science: No activities.<br><br>Recovery: Conducted sediment trap baseline survey at trap 33.00A. Conducted sediment trap poling. Morrow Lake poling monitoring.<br><br>**Containment (Dean Sahara) :**<br>**8-30-12:**<br>Completed River Inspections. Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 2 Boats for Poling. Provided 2 Boats for Sediment Monitoring Baselines. Boom: Configuration E: North and South Monitored. No adjustments needed. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 100' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Ceresco: 50' of snare used. Total Footage Snare used: 175'. Ceresco: Recovered 127 bags of debris. Configuration C: Recovered 72 bags of debris. E4 Boat Launch: Recovered 60 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations.<br><br>**8-31-12:**<br>Completed River Inspections. Situational Awareness (Transported on Sheen Boat). Boom: NTR. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 100' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Ceresco: 35' of snare used. Total Footage Snare used: 160'. Ceresco: Recovered 100 bags of debris. Configuration C: Recovered 60 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations.<br><br>**9-1-12:**<br>Completed River Inspections. Situational Awareness (Transported on Sheen Boat). Boom: NTR. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 100' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Ceresco: 25' of snare used. Total Footage Snare used: 150'. Ceresco: Recovered 50 bags of debris. Configuration C: Recovered 72 bags of debris. E4 Boat Launch: Recovered 10 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations. |

| | |
|---|---|
| **Activities / Comments (Cont.)** | **9-2-12: No activities.**<br><br>**9-3-12:**<br>Completed No River Inspections. Boom: NTR. Buoys: NTR. Sheen Sweep: No Sheen Sweeping Conducted. Total Footage Snare used: 0'. E4 Boat Launch: Recovered 125 bags of debris. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations.<br><br>**9-4-12:**<br>Completed River Inspections. Situational Awareness (Transported on Sheen Boat). Boom: NTR. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 100' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Ceresco: 30' of snare used. Total Footage Snare used: 155'. Ceresco: Recovered 75 bags of debris. Configuration C: Recovered 42 bags of debris. E4 Boat Launch: Recovered 75 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations.<br><br>**9-5-12:**<br>Completed River Inspections. Provided 2 Boats for Situational Awareness. Provided 1 Boat for Safety. Provided 4 Boats for Poling. Provided 1 Boat for Sediment Monitoring Baselines. Boom: NTR. Buoys: NTR. Sheen Sweep: E4 to MP 38.75: 150' of snare used. MP 21.25 to MP 33.1: 25' of snare used. Ceresco: 25' of snare used. Total Footage Snare used: 200'. Ceresco: Recovered 130 bags of debris. E4 Boat Launch: Recovered 12 bags of debris. Inspected all containment on the river, completed adjustments as required. All vegetation debris taken to C 0.4 for temporary storage; oily waste taken to Frac Tank City, stored in the oily waste roll off for disposal at a later date. Completed gas monitoring during all debris recovery operations.<br><br>**<u>Kalamazoo River (Bryan Stiemsma):</u>**<br>**8-30-12, 8-31-12, 9-1-12, 9-2-12, 9-3-12 and 9-4-12:**<br><u>Remedial Investigation:</u> No activities.<br><br><u>Remedial Action</u>: No activities.<br><br><u>Monitoring</u>: No activities.<br><br>**9-5-12:**<br><u>Remedial Investigation:</u> Raymond Road – Cardno-JF New staff met with LHB Inc. staff and conducted a site review of construction status and proposed vegetation removal areas. Coordinated plant material ordering for the subject site.<br><br><u>Remedial Action</u>: No activities.<br><br><u>Monitoring</u>: No activities. |

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

# Appendix A

## Planning Resources

## IAP's

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill** | 2. Operational Period (Date/Time)<br>Starting: **July 26, 2012, 0700**<br>End: **August 02, 2012, 0700** | **IAP Cover Sheet** |
|---|---|---|

3. Approved by Incident Commander(s):

Michelle DeLong, Michigan Department Environmental Quality
Ralph Dollhopf, U.S. EPA
John Sobojinski, Enbridge

## INCIDENT ACTION PLAN

The items below are included in this Incident Action Plan:


- ICS 202 (Response Objectives) ..... 1
- ICS 207 (Organizational Chart & OPS Chart) ..... 2
- ICS 204 (Assignment List) ..... 5
- River Overview Map ..... 14
- Meeting Locations and Traffic Plans ..... 15
- ICS 205 (Communication List) ..... 25
- ICS 205a (Communications Attachment) ..... 27
- ICS 206 (Medical Plan) ..... 28
- Safety Message/Evacuation Plan ..... 33
- Weather Forecast ..... 36
- ICS 230 Meeting Schedule ..... 37





4. Prepared By:
Emma Cook, Enbridge

Date/Time
07/25/2012#

| 1. Incident Name | 2. Operational Period (Date/Time) | INCIDENT OBJECTIVES ICS 202-EPA |
|---|---|---|
| **Kalamazoo River/Enbridge Spill** | From: July 26, 2012 @ 0700<br>To: August 02, 2012 @ 0700 | |

**3. Incident Objective(s)**

1. Ensure health and safety of the public and response and recovery personnel.
2. Ensure absolute containment of submerged oil and oil-containing sediments within the Delta and the Fan of Morrow Lake.
3. Ensure effective transition of regulatory oversight from EPA to Michigan DEQ jurisdiction as appropriate.
4. Perform recovery and containment of oil from affected public and private areas of river and river system.
5. Perform remediation and restoration of affected public and private areas of river and river system.
6. Maintain effective communications with cooperating and assisting agencies, the public, including regular coordination with the Multi-Agency Coordination Group (MAC).
7. Provide protection of environmentally and culturally sensitive areas including wildlife and historic properties.
8. Collect, coordinate, manage and communicate environmental and public health data including maintenance of Joint Information Center function.

**4. Operational Period Command Emphasis**

1. Focus on implementation of volume calculation and sediment agitation effectiveness field work.
2. Respond to and document emerging oil throughout the Kalamazoo River system, incorporating new protocols regarding which sheen to capture.
3. Complete installation of sediment trap structures if conditions warrant. Monitor and maintain the sediment traps.
4. Continue with efforts to prepare for the Source Area work activities.

**5. Safety Objectives for the Operational Period**

1. Assure effective integration of public safety and worker safety on the river. Focus on public and worker interaction.
2. Safe implementation of agitation and oil quantification field activities.

| | | |
|---|---|---|
| **6. Prepared by Planning Section Chief (Enbridge):** Amy Back | **Date/Time:** 7/25/2012 | 1246 |
| **7. Approved by Incident Commander (DEQ):** Michelle DeLong | **Date/Time:** 7/25/2012 | 1400 |
| **8. Approved by Incident Commander (US EPA):** Ralph Dollhopf | **Date/Time:** 7/25/2012 | 1600 |
| **10. Approved by Deputy Incident Commander (Enbridge):** John Sobojinski | **Date/Time:** 7/25/2012 | 1350 |

# Enbridge Pipelines Response Unified Command

**INCIDENT COMMANDERS**
US EPA/MDEQ
Michelle DeLong
Ralph Dollhopf
Dan Capone (Weston/US EPA)
ENBRIDGE
John Sobojinski (Enbridge)
Christopher Haux (Enbridge), Deputy

**FOSC**

US EPA Scientific Support Coordination Group

**PUBLIC INFORMATION OFFICERS**
US EPA/MDEQ
Brad Wurfel (Off-site)
Don Deblasio (Off-site)
ENBRIDGE
Jason Manshum (Enbridge)

**ON-SITE SAFETY OFFICERS**
US EPA/MDEQ
Mike Stuart (Weston/US EPA)
Ted Blackburn (Weston/US EPA)
ENBRIDGE
Dale Gross (Superior/Enbridge)

**OPERATIONS SECTION**
US EPA/MDEQ
Steve Noble, Chief
Dan Capone (Weston/US EPA), Chief
Joe Victory (Weston/US EPA), Deputy
ENBRIDGE
David Bareham (Enbridge), Chief
James Snider (Enbridge), Deputy

(See Operations Chart)

**PLANNING SECTION**
US EPA/MDEQ
Mark DuCharme, Chief
Mindy Luetke (Weston/US EPA), Chief
ENBRIDGE
Amy Back (Avery/Enbridge), Chief
Brad Nelson (Avery/Enbridge), Deputy
Alex Olson (Avery/Enbridge), Deputy

(See Planning Chart)

**LOGISTICS SECTION**
US EPA/MDEQ
Shauna Ross (Weston/US EPA), Chief
ENBRIDGE
Charmaine Rosenbaum (Enbridge), Chief
Berl Back (Avery/Enbridge), Deputy

**FACILITIES UNIT**
Berl Back (Avery/Enbridge), Leader

**COMMUNICATIONS UNIT**
Alyssa Meny (Enbridge), Leader

**SECURITY UNIT**
Ricardo Cedillo (Manpower/ Enbridge), Leader

**FINANCE SECTION**
ENBRIDGE
Ron Motley (Enbridge) (Off-Site), Chief

**PROCUREMENT UNIT**
Nyekah Guest (Enbridge), Leader



ICS 207
7/26– 8/2

**OPERATIONS SECTION**
US EPA/MDEQ
Steve Noble, Chief
Dan Capone (Weston/US EPA), Chief
Joe Victory (Weston/US EPA), Deputy
ENBRIDGE
David Bareham (Enbridge), Chief
James Snider (Enbridge), Deputy

**Waste Management Branch**
US EPA/MDEQ
Tim Laquerre (Weston/US EPA), Director
ENBRIDGE
John Wallace (Avery/Enbridge), Director

**Submerged Oil Branch**
US EPA/MDEQ
Dan Zahner (Weston/US EPA), Director
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Director

**OSCAR Group**
US EPA/MDEQ
Steve Noble, Supervisor
Joe Victory (Weston/US EPA), Supervisor
ENBRIDGE
Dave Bareham (Enbridge), Supervisor

**Submerged Oil Science Group**
US EPA/MDEQ/USGS
Faith Fitzpatrick, Supervisor
Ron Zelt, Supervisor
ENBRIDGE
Dave Dryburgh (AECOM/Enbridge), Supervisor

**Submerged Oil Compliance Group**
ENBRIDGE
Mark Berninger
(Cardno JFNEW/Enbridge), Supervisor

**Containment Branch**
US EPA/MDEQ
Rex Johnson (Weston/US EPA), Director
ENBRIDGE
Dean Sahara (SWAT/Enbridge), Director
Mike Wekseth (SWAT/Enbridge), Deputy

**Containment Compliance Group**
ENBRIDGE
Mike Zambetis
(Cardno JFNEW/Enbridge), Supervisor

**Containment Recovery Group**
ENBRIDGE
Oliver Webb (SWAT/Enbridge), Supervisor

**Kalamazoo River System Branch**
MDEQ
Steve Noble, Director
ENBRIDGE
Bryan Stiemsma (AECOM/Enbridge), Director

**Talmadge Creek/Kalamazoo River Remedial Investigation Group**
MDEQ
Jeff Spruit (Off-site), Leader
Doug Thompson, Assistant
ENBRIDGE
Brian Albig
(AECOM/Enbridge), Supervisor

**Kalamazoo River Compliance Group**
ENBRIDGE
Mike Zambetis
(Cardno JFNew/Enbridge), Supervisor

**Kalamazoo River Remedial Action Group**
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Supervisor

**Talmadge Creek/Kalamazoo River Monitoring Group**
ENBRIDGE
Alison Schoeff (AECOM/Enbridge), Supervisor



ICS 207
7/26 – 8/2

**PLANNING SECTION**
US EPA/MDEQ
Mark DuCharme, Chief
Mindy Luetke (Weston/US EPA), Chief
ENBRIDGE
Amy Back (Avery/Enbridge), Chief
Brad Nelson (Avery/Enbridge), Deputy
Alex Olson (Avery/Enbridge), Deputy

**SITUATION UNIT**
US EPA/MDEQ
Ben Schmitt, Leader
Matt Haak (Weston/US EPA), Leader
ENBRIDGE
Mark Fuller (AECOM/Enbridge), Leader

**RESOURCE UNIT**
US EPA/MDEQ
Shauna Ross (Weston/US EPA), Leader
ENBRIDGE
Brad Nelson (Avery/Enbridge), Leader
Emma Cook (Enbridge), Assistant

**ENVIRONMENTAL UNIT**
US EPA/MDEQ/USGS
Jeff Spruit (Off-site), Leader
Mike Alexander (Off-site), Assistant
Doug Thompson, Assistant
Kim Churchill (Weston/DEQ), Leader
Isaac Aboulafia (Weston/US EPA), Leader
Elizabeth Wessling (Weston/US EPA)(Off-site), Leader
Faith Fitzpatrick (USGS), Leader
Ron Zelt (USGS)(Off-site), Assistant
Rex Johnson (Weston/US EPA), Assistant
Tom Graan (Weston/US EPA), Assistant
ENBRIDGE
John Bohrmann (Enbridge), Leader

**DOCUMENTATION UNIT**
US EPA/MDEQ
Crystal Laskey, Leader
Carolyn Giles-Smith (Weston/DEQ), Leader
Paul Moisan (Weston/US EPA), Leader
ENBRIDGE
Brad Nelson (Avery/Enbridge), Leader

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill Response** | 2. Operational Period (Date/Time)<br>From: July 26, 2012, 0700<br>To: August 02, 2012, 0700 | **Assignment List<br>ICS 204- EPA** |
|---|---|---|
| 3. Branch<br>**Waste Management** | 4. Division/Group/Staging | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | DEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Tim Laquerre | Weston/US EPA | |
| | John Wallace | Avery/Enbridge | |

**6. Resources Assigned** — **"X" indicates 204a attachment with additional instructions**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| See Branch Directors | | | |

**7. Work Assignments**

1. Field decon operations for: personnel, hand equipment, and boats for preparation of transport shall be installed prior to work beginning at boat launches / staging areas for individual work sites.
2. Haul contaminated soil, water, media and debris to staging areas for waste characterization and oil recovery sampling prior to offsite disposal.
3. Waste shall be collected at a minimum of daily for direct haul to the landfill or transported to Frac Tank City (FTC) for consolidation with similar waste streams as necessary. Waste generated from coring will be consolidated daily and transported to Frac Tank City.
4. Waste management characterization, manifesting, and coordination of transportation and disposal.

For Weston/US EPA/MDEQ:

1. Provide oversight of all waste management activities.
2. Ensure appropriate sampling, tracking and disposal is performed on oil impacted debris, water and soil.
3. Review manifests, weight tickets and bills of lading for correlation to waste stream analytical data.
4. Review weekly oil recovery and waste disposal report.

**8. Special Instructions**

Ensure all Best Management Practices (BMPs) are in place and utilized.

In accordance with the Fatigue Management Plan, all work permit activities will be completed no later than 1900.

SAFETY INSTRUCTIONS:

For vacuum truck operation guidelines, please refer the HASP.

**At Frac Tank City:**

1. The following procedure shall be used for initial opening of hatch or rear doors of liquid vacuum trucks and hatches of vacuum excavation units:
   a. Approach the hatch to be opened with a calibrated five gas monitor and a benzene monitor.
   b. Personnel performing this task must wear a full face respirator with organic vapor cartridge.
   c. Slightly open the hatch and take VOC, H2S, LEL, Oxygen, CO and benzene readings.
   d. If readings are greater than 10 ppm H2S, 10% LEL, 25 ppm CO or 25 ppm benzene then personnel shall close the hatch and utilize SCBA prior to opening the hatch.
2. Operations - Respiratory protection may be required depending on periodic monitoring results. Wear a half-mask respirator equipped with an organic vapor cartridge when 0.5 ppm benzene is detected. Wear a full-face respirator equipped with an organic vapor/acid gas cartridge when benzene is at 5 ppm to 25 ppm.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| E. Donaldson, Enbridge | 7/25/2012 1244 | A. Back, Avery/Enbridge | 7/25/2012 1248 | D. Bareham, Enbridge | 7/25/2012 1252 |

| 1. Incident Name | 2. Operational Period (Date/Time) | Assignment List |
|---|---|---|
| **Kalamazoo River/Enbridge Spill Response** | From: July 26, 2012, 0700<br>To: August 02, 2012, 0700 | **ICS 204 - EPA** |
| **3. Branch**<br>**Submerged Oil** | **4. Division/Group/Staging** | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | MDEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Dan Zahner | Weston/US EPA | |
| | Matt Sumner | AECOM/Enbridge | |

**6. Resources Assigned**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Outstanding Sites Characterization and Reconciliation | Steve Noble<br>Joe Victory (Weston/US EPA)<br>Dave Bareham (Enbridge) | [redacted] | |
| Submerged Oil Science | Faith Fitzpatrick<br>Ron Zelt (Off Site)<br>Dave Dryburgh (AECOM/Enbridge) | | 1 MDEQ<br>1 Other<br>4 Weston/US EPA<br>30 Contractors |
| Submerged Oil Compliance | Mark Berninger (Cardno JFNEW/Enbridge) | | |

**7. Work Assignments**

**Outstanding Sites Characterization and Reconciliation (OSCAR):**

1. Participate in data review, quality control, and site closure process to ensure that all pending issues are addressed.
2. Direct field evaluations and request information for site determination.
3. Oversee transfer of sites between the various branches.

**Submerged Oil Science**

1. Conduct coring activities throughout the Kalamazoo River, Morrow Lake Delta, and Morrow Lake. (2 Core Collection Teams, 1 Logging Teams)
2. Complete Agitation Effects Study. (1 Team)
3. Conduct Morrow Lake and Delta monitoring activities. (1 Team)

For US EPA/MDEQ/Weston:

1. Oversee and document Submerged Oil Science work activities.

**Submerged Oil Compliance**

1. Track previously submitted MDEQ permit applications for toolbox methods.

**8. Special Instructions**

NRDA Trustees will be conducting recreational use surveys along the Kalamazoo River at river access points.

Rowe Island, MP 38.50 to MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:

All in water activities of workers in water depths over fifty percent (50%) of thigh height will require tethering. Please refer to the HASP for further instructions.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| E. Donaldson, Enbridge | 7/25/2012 1244 | A. Back, Avery/Enbridge | 7/25/2012 1248 | D. Bareham, Enbridge | 7/25/2012 1252 |

| 1. Incident Name | 2. Operational Period (Date/Time) | Assignment List |
|---|---|---|
| **Kalamazoo River/Enbridge Spill Response** | From: July 26, 2012, 0700<br>To: August 02, 2012, 0700 | **ICS 204 - EPA** |
| **3. Branch**<br>**Containment** | **4. Division/Group/Staging** | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | MDEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Rex Johnson | Weston/US EPA | |
| | Dean Sahara | SWAT/Enbridge | |
| | Mike Wekseth, Deputy | SWAT/Enbridge | |

**6. Resources Assigned** — **"X" indicates 204a attachment with additional instructions**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Containment Compliance | Mike Zambetis (Cardno JFNEW/Enbridge) | [redacted] | 1 Contractor |
| Containment Recovery | Oliver Webb (SWAT/Enbridge) | | 1 Weston/US EPA<br>14 Contractors |

**7. Work Assignments**

**Containment Compliance**

1. Monitor submitted MDEQ permit application for sediment structures in the Kalamazoo River.
2. Submit E4.0 boom HEC-RAS calculations to MDEQ.

**Containment Recovery**

1. Perform containment strategies along the Kalamazoo River including the following tasks:
   a. Deploy and maintain shoreline containment boom as required.
   b. Complete sheen management as required.
2. Monitor and maintain the E4.0 containment system and Ceresco control point.
3. Install and maintain Kalamazoo River Sediment Traps, including the cylindrical sampling devices.

For US EPA/MDEQ/Weston:

1. Oversee and document Containment Recovery activities.

**8. Special Instructions**

NRDA Trustees will be conducting recreational use surveys along the Kalamazoo River at river access points.

Rowe Island, MP 38.50-MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:
Photo Ionization (VOCs) / Four Gas Detectors (O2, CO, LEL and H2S) and Direct Reading Instrument for Benzene will be used for air monitoring during debris removal activities.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| E. Donaldson, Enbridge | 7/25/2012 1244 | A. Back, Avery/Enbridge | 7/25/2012 1248 | D. Bareham, Enbridge | 7/25/2012 1252 |

| 1. Incident Name | 2. Operational Period (Date/Time) | Assignment List |
|---|---|---|
| **Kalamazoo River/Enbridge Spill Response** | From: July 26, 2012, 0700<br>To: August 02, 2012, 0700 | **ICS 204 - EPA** |
| **3. Branch**<br>**Kalamazoo River System Branch** | **4. Division/Group/Staging** | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | MDEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Steve Noble | MDEQ | |
| | Bryan Stiemsma | AECOM/Enbridge | |

**6. Resources Assigned**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Talmadge Creek/Kalamazoo River Remedial Investigation | Jeff Spruit (Off-site)<br>Doug Thompson, Assistant<br>Brian Albig (AECOM/Enbridge) | [redacted] | |
| Kalamazoo River Compliance | Mike Zambetis (Cardno JFNew/Enbridge) | | 2 Contractors |
| Talmadge Creek/Kalamazoo River Remedial Action | Matt Sumner (AECOM/Enbridge) | | 1 Weston/US EPA<br>1 MDEQ<br>8 Contractors |
| Talmadge Creek/Kalamazoo River Monitoring | Alison Schoeff (AECOM/Enbridge) | | |

**7. Work Assignments**

**Talmadge Creek/Kalamazoo River Remedial Investigation**

1. No activities until August 6, 2012.

**Kalamazoo River Compliance**

1. Continue restoration/stabilization of the Kalamazoo River Bank Erosion Assessment Sites (KRBEAS).
2. Develop and review the source area MDEQ permit application and submit for agency review.

**Talmadge Creek/Kalamazoo River Remedial Action**

1. Execute tasks assigned by ERO as requested.

**Talmadge Creek/Kalamazoo River Monitoring**

1. Monitor erosion control devices.
2. Conduct daily monitoring of river conditions, recording observations of sheen or oil.
3. Conduct weekly monitoring of buoys and signage in the river.

**8. Special Instructions**

NRDA Trustees will be conducting recreational use surveys along the Kalamazoo River at river access points.

Rowe Island, MP 38.50 to MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:
When operating or working in the vicinity of ultra violet testing equipment, wear approved safety glasses that provide protection from UV A rays and never look directly into the illuminator.

All in water activities of workers in water depths over fifty percent (50%) of thigh height will require tethering. Please refer to the HASP for further instructions.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| E. Donaldson, Enbridge | 7/25/2012 1244 | A. Back, Avery/Enbridge | 7/25/2012 1248 | D. Bareham, Enbridge | 7/25/2012 1252 |

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill Response** | 2. Operational Period (Date/Time)<br>From: July 26, 2012, 0700<br>To: August 02, 2012, 0700 | **Assignment List<br>ICS 204 - EPA** |
|---|---|---|
| 3. Branch<br>**Planning Section** | 4. Division/Group/Staging | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Planning Section Chief: | Mark DuCharme<br>Mindy Luetke<br>Amy Back<br>Brad Nelson, Deputy<br>Alex Olson, Deputy | DEQ<br>Weston<br>Avery/Enbridge<br>Avery/Enbridge<br>Avery/Enbridge | [redacted] |

**6. Resources Assigned** "X" indicates 204a attachment with additional instructions

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Situation Unit | Ben Schmitt<br>Matt Haak (Weston/US EPA)<br>Mark Fuller (AECOM/Enbridge) | [redacted] | 1 Weston/US EPA<br>1 Contractor |
| Resource Unit | Shauna Ross (Weston/US EPA)<br>Brad Nelson (Avery/Enbridge)<br>Emma Cook (Enbridge) | | 1 Weston/US EPA<br>1 Weston/DEQ<br>1 Contractor |
| Environmental Unit | Jeff Spruit (Off-site)<br>Mike Alexander (Off-site), Assistant<br>Doug Thompson, Assistant<br>Kim Churchill (Weston/DEQ)<br>Isaac Aboulafia (Weston/US EPA)<br>Elizabeth Wessling (Weston/US EPA)(Off-site)<br>Faith Fitzpatrick<br>Ron Zelt, Assistant<br>Rex Johnson (Weston/US EPA), Assistant<br>Tom Graan (Weston/US EPA) , Assistant<br>John Bohrmann (Enbridge) | | 1 Weston/DEQ<br>2 DEQ<br>1 Enbridge<br>9 Contractors |
| Documentation Unit | Crystal Laskey<br>Carolyn Giles-Smith (Weston/DEQ)<br>Paul Moisan (Weston/US EPA)<br>Brad Nelson (Avery/Enbridge) | | 1 DEQ<br>1 Weston/DEQ<br>3 Contractors |

**7. Work Assignments**

**Situation Unit:**

1. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.
2. Conduct weekly overflights; photo-document areas of sheen from source area to Morrow Lake dam and report observations back to operations section chiefs for monitoring and response. Additional flights will be scheduled as needed.
3. Organize field metrics, prepare for and facilitate presentations, and monitor action tracking. Maintain situational awareness around operational activities and plan for operational needs.
4. All odor complaints will be reported to US EPA and MDCH within 30 minutes of receipt by the odor response team (Monday through Friday 0700 – 1900). Complainants will then be contacted to schedule an odor response site visit or receive additional complaint information if no on-site response requested. Response evaluation will be reported to agencies and complainants upon completion. Samples will be analyzed at a 24-hour turnaround time.

For US EPA/MDEQ/Weston:

1. Maintain situational awareness around operational activities.
2. Communicate observations to the Operations Section Chief.
3. Provide daily situational photo log summaries.
4. Conduct daily monitoring of river conditions, recording observations of sheen and/or oil.
5. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.

**Resource Unit:**

1. Produce an Incident Action Plan as required by the Incident Commanders.
2. Support the planning efforts of operations and provide information to Logistics in order to properly prepare and order resources.

**Environmental Unit:**

1. Conduct strategic assessment, modeling, and environmental monitoring.
2. Review sheen tracking information from the field.
3. Finalize submerged oil quantification for Spring 2012.
4. Refine subsurface containment strategies throughout the Kalamazoo River system to prevent recontamination of the Morrow Lake fan.
5. Review and track RI progress.

For Weston/US EPA/MDEQ:

1. Continue to coordinate efforts to calculate the quantity of submerged oil remaining as of Spring 2012.
2. Continue supporting the evaluation of the hydrogeomorphology of the Kalamazoo River, the Morrow Lake Delta, and Morrow Lake.
3. Interface with Enbridge and assist with the refinement of surface and subsurface containment strategies throughout the Kalamazoo River system to prevent the continued migration of oil, oil sheen, submerged oil, and oil-containing sediments into Morrow Lake.
4. Review and comment on RI progress submittals

**Documentation Unit:**

1. Maintain accurate, up-to-date incident files.
2. Store files for post-incident use.

**8. Special Instructions**

In accordance with the Fatigue Management Plan, all work permit activities will be completed no later than 1900.

SAFETY INSTRUCTIONS:
Hexane is flammable and may be harmful in contact with skin. When handling hexane and sheen test samples containing hexane, wear approved safety glasses, disposable nitrile gloves and keep away from ignition sources. Properly dispose of sheen test samples containing hexane.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

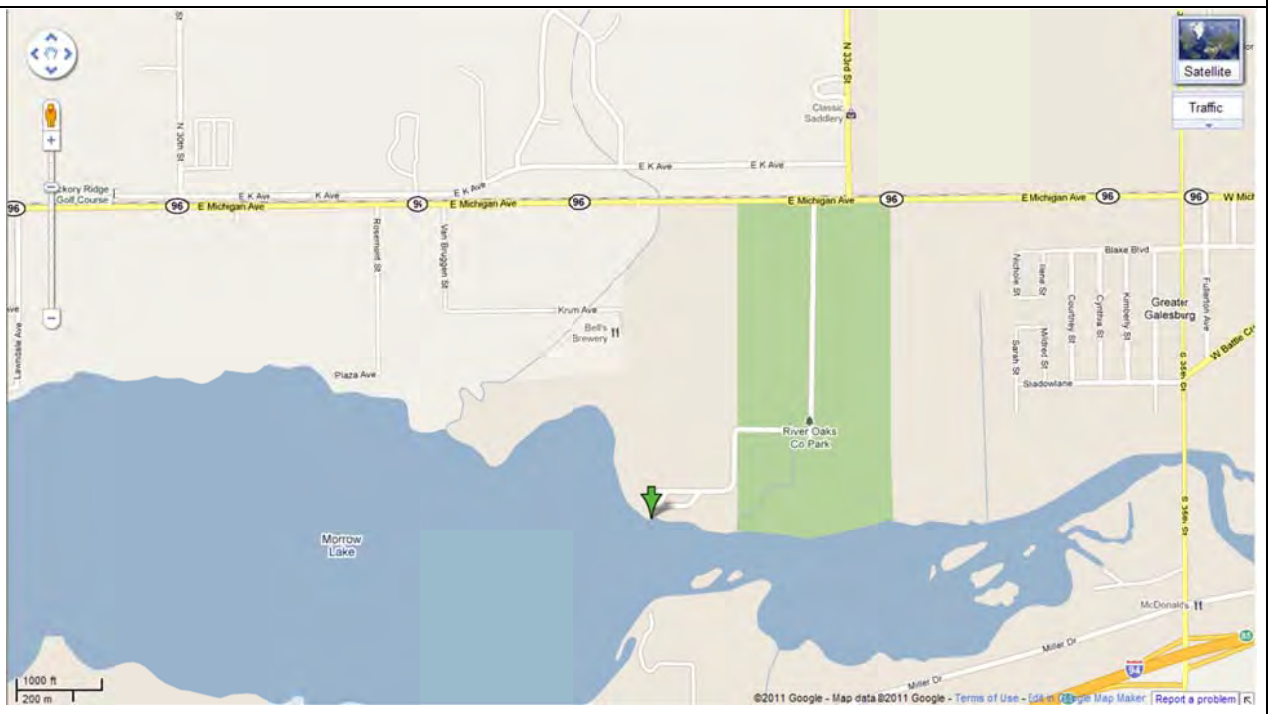
Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

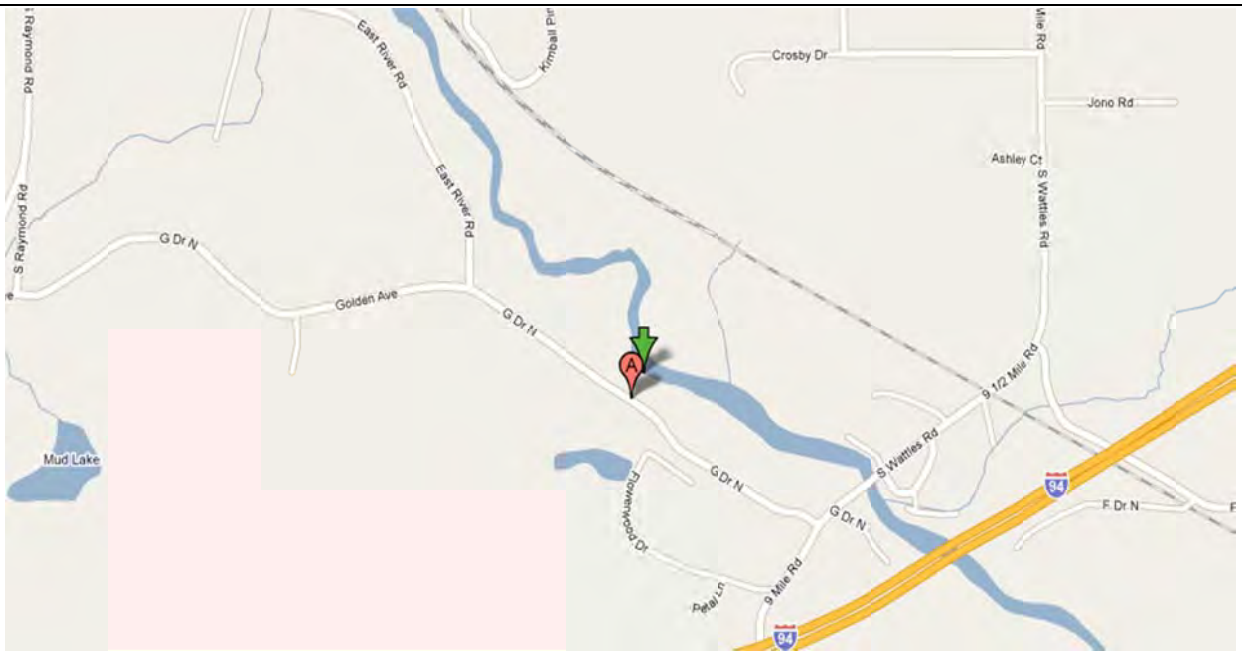
| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| E. Donaldson, Enbridge | 7/25/2012 1244 | A. Back, Avery/Enbridge | 7/25/2012 1248 | D. Bareham, Enbridge | 7/25/2012 1252 |

**Toolbox Meeting Locations**

E4 - [redacted] Galesburg, MI 49053 GPS Coordinates Lat: 42.278265 Long: -85.452295




C3.2 [redacted] Battle Creek, MI 49014 GPS Coordinates Lat: 42.293492 Long: -85.124479




Refer to traffic plan for detailed access instructions.

| 1. Incident Name | 2. Operational Period (Date / Time) | Traffic Plan |
|---|---|---|
| **Kalamazoo River / Enbridge Spill** | From: **07/26/2012 / 0700 hrs**<br>To: **08/02/2012 / 0700 hrs** | |

# Traffic Safety Alert for Parking at Incident Command Post 1601 Pratt Avenue




- Slow speeds are imperative at all times.
- There is very limited parking with two-way traffic and pedestrian traffic. Watch vehicle speeds.
- Only large truck deliveries will be allowed entrance at the back entrance. Large truck deliveries are to check in at the Security Check Point.
- Everyone must check in at the Security Check Point as shown at the Pratt Avenue entrance.

Any further questions or concerns, contact the Safety Office.

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 07/26/2012 0700<br>To: 08/02/2012 0700 | |

## 3.TRAFFIC PLAN: C 5




[redacted] Battle Creek, MI 49014

GPS Coordinates Lat: 42.304905 Long: -85.183463

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 7-25-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 07/26/2012 0700<br>To: 08/02/2012 0700 | |

## 3.TRAFFIC PLAN: C 0.4




[redacted] Ceresco, MI 49033

GPS Coordinates: Lat: 42.265127, Long:-85.048364

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 7-25-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 07/26/2012 0700<br>To: 08/02/2012 0700 | |

## 3.TRAFFIC PLAN: C 3.2




[redacted] Battle Creek, MI 49014

GPS Coordinates: Lat: 42.293492 Long: -85.124479

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 7-25-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 07/26/2012 0700<br>To: 08/02/2012 0700 | |

## 3.TRAFFIC PLAN: D2




ess from

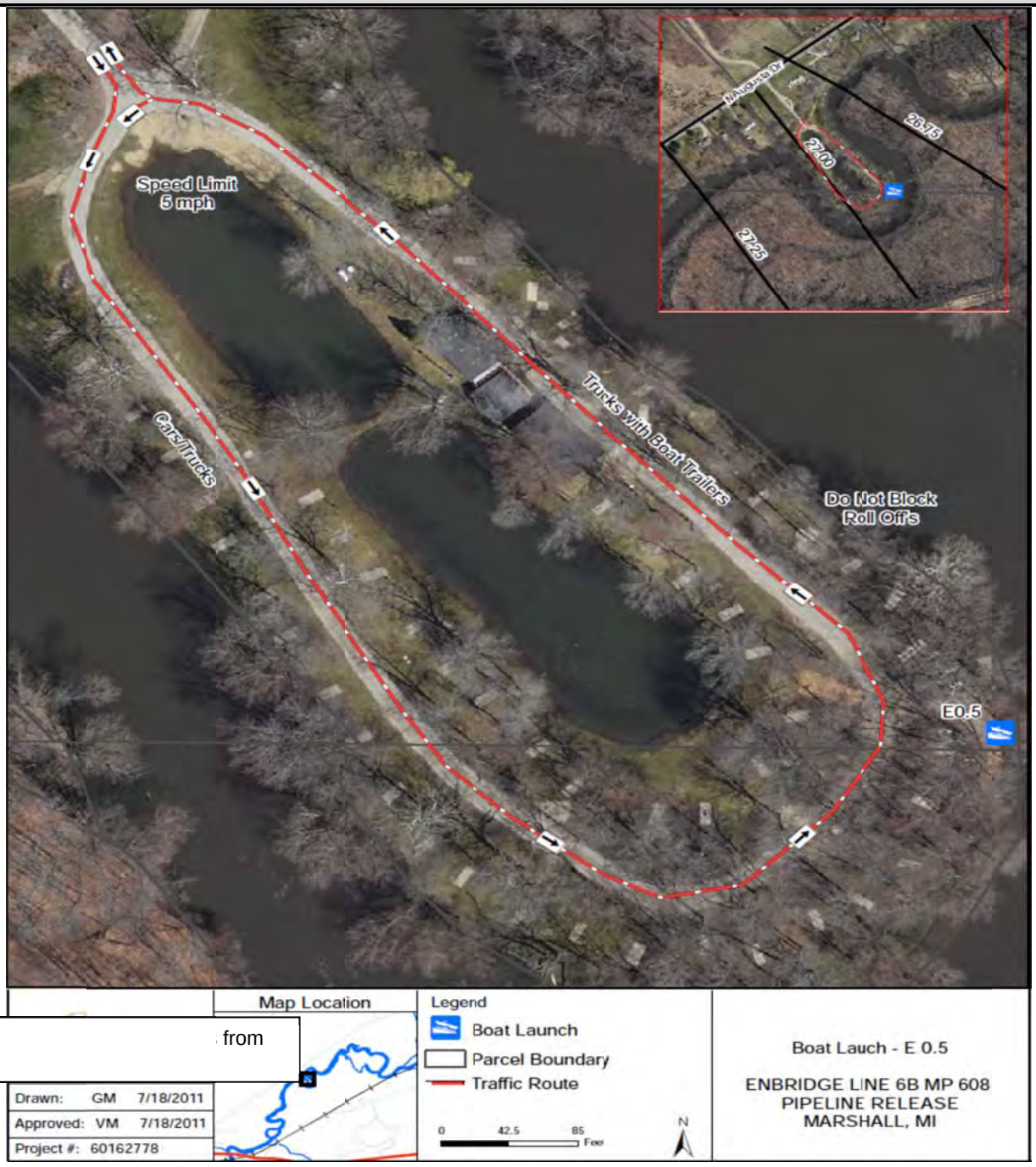
[redacted] Battle Creek, MI 49037

GPS Coordinates: Lat: 42.338427 Long:-85.232309

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 7-25-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 07/26/2012 0700<br>To: 08/02/2012 0700 | |

## 3.TRAFFIC PLAN: E 0.5




from

(Shady Bend Camp Ground), 15320 East Augusta Dr, Augusta, MI 49012
GPS Coordinates:Lat: 42.347408 Long: -85.3295

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 7-25-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 07/26/2012 0700<br>To: 08/02/2012 0700 | |

## 3.TRAFFIC PLAN: E 2




[redacted] Augusta, MI 49053

GPS Coordinates: Lat: 42.32412 Long: -85.358041

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 7-25-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 07/26/2012 0700<br>To: 08/02/2012 0700 | |

## 3.TRAFFIC PLAN: E 3



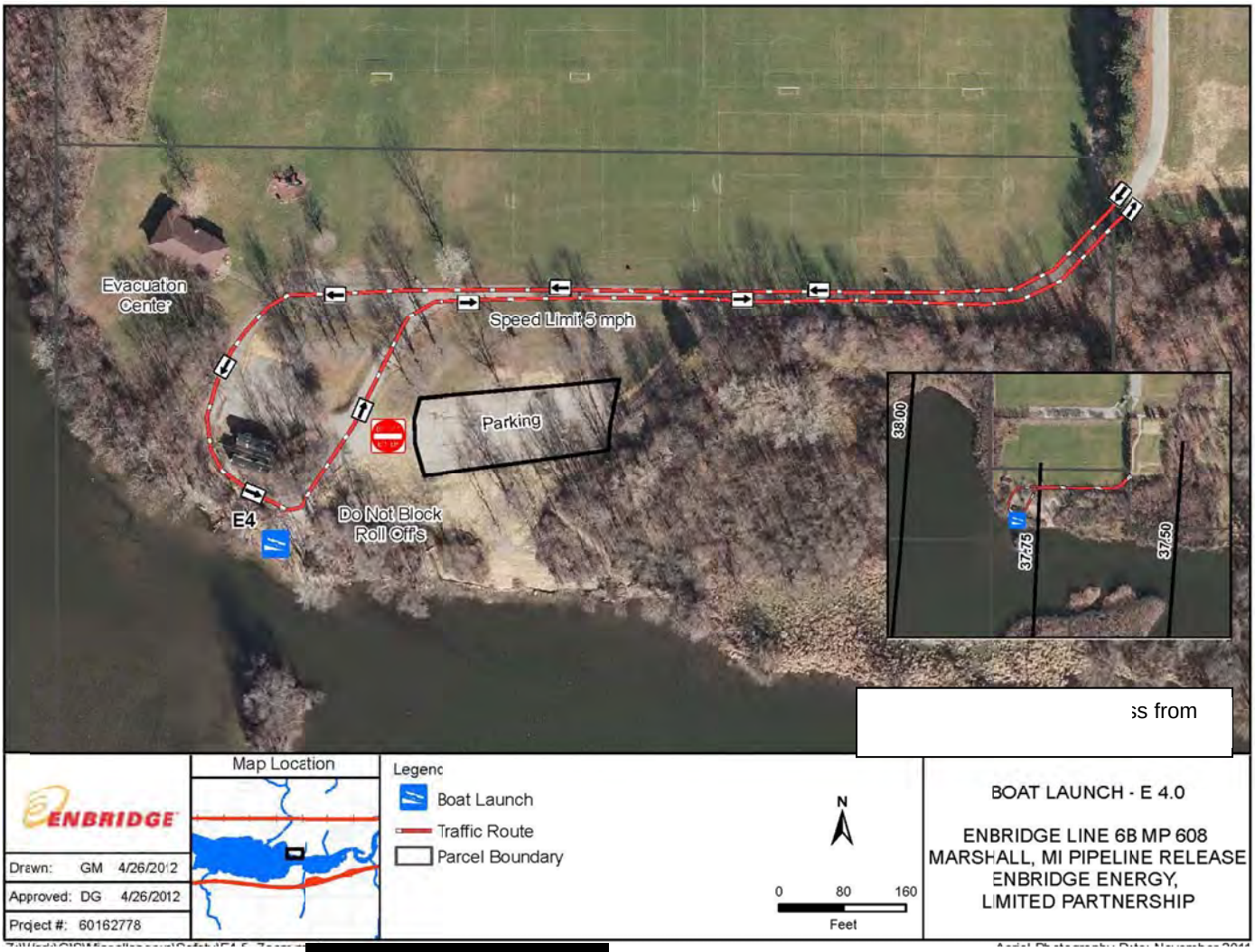

[redacted] Galesburg, MI 49053

GPS Coordinates: Lat: 42.284663 Long: -85.412855

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 7-25-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 07/26/2012 0700<br>To: 08/02/2012 0700 | |

## 3.TRAFFIC PLAN: E 4




[redacted] Galesburg, MI 49053

GPS Coordinates: Lat: 42.278265 Long: -85.452295

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 7-25-2012 |

| 1. Kalamazoo River/ Enbridge Spill | 2. Operational Period (Date / Time)<br>From: 07/26/2012/ 0700 hrs<br>To: 08/02/2012/ 0700 hrs | Operations Communications Plan |
|---|---|---|

**3. Communication Contact List**

| NAME | PHONE NUMBER | EMAIL ADDRESS | AGENCY / AFFILIATION | POSITION |
|---|---|---|---|---|
| Aboulafia, Isaac | [redacted] | [redacted] | START/US EPA | Planning |
| Adams, Rich | | | Enbridge | Operations |
| Aguilera, Jose | | | START/US EPA | O&M |
| Albig, Brian | | | AECOM/Enbridge | Environment |
| Arcaute, Francisco | | | US EPA | Public & Govt. Affairs |
| Back, Amy | | | Avery/Enbridge | PSC |
| Back, Berl | | | Avery/Enbridge | Facilities Manager |
| Baker, Paul | | | Kalamazoo OEM | MAC |
| Bareham, Dave | | | Enbridge | Environment |
| Berecz, Karen | | | START/US EPA | O & M |
| Berninger, Mark | | | Cardno JFNEW/Enbridge | Restoration |
| Blackburn, Ted | | | START/US EPA | Safety Officer |
| Blanchard, Mark | | | START/US EPA | |
| Bohrmann, John | | | Enbridge | Environment |
| Brettmann, Gregg | | | DEQ | Environmental Unit Leader |
| Bretz, Ryan | | | Manpower/Enbridge | IT |
| Brown , Kevin | | | Weston/DEQ | GIS Support |
| Bukowski, Breanna | | | Weston/DEQ | Planning |
| Burrous, Lauren | | | USGS | USGS |
| Capone, Dan | | | START/US EPA | Operations |
| Castor , Andrew | | | START/ US EPA | Operations |
| Cavazos, Lupe | | | START/US EPA | Planning |
| Cedillo, Ricardo | | | Manpower/Enbridge | Security Unit Leader |
| Churchill, Kim | | | Weston/DEQ | Environmental Unit |
| Cox, Renee | | | Manpower/Enbridge | Documentation |
| Daniel, Pat | | | Enbridge | MAC |
| Deblasio, Don | | | US EPA | Public Information |
| Dekker, Shaun | | | SET/Enbridge | Waste Management |
| DelloRusso, Vincent | | | Weston/DEQ | Operations |
| DeLong, Michelle | | | DEQ | Incident Commander |
| Dennis, Kate | | | Manpower/Enbridge | Admin Support |
| Dobrowski, Ed | | | USGS | USGS |
| Doherty, Bob | | | Enbridge | Environment |
| Dollhopf, Ralph | | | US EPA | Incident Commander (FOSC) |
| Donaldson, Elizabeth | | | Enbridge | Planning |
| Dougherty, Kelly | | | START/US EPA | Public Information |
| Dryburgh, Dave | | | AECOM/Enbridge | Environment |
| Dubois, Amy | | | US EPA | |
| DuCharme, Mark | | | DEQ | Incident Commander |
| Dunham, Durk | | | Calhoun County EMA | MAC |
| Eversole, Elijah | | | Enbridge/AECOM | Containment |
| Fitzpatrick, Faith | | | USGS | Tech Specialist |
| Fizzell, Chad | | | DEQ | GIS Support |
| Frost, Joe | | | Calhoun County Health | MAC |
| Fuller, Mark | | | AECOM/Enbridge | Environment |
| Giles-Smith, Carolyn | | | Weston/DEQ | Documentation |
| Good, Gena | | | START/US EPA | |
| Graan, Tom | | | START/US EPA | Submerged Oil Lead |
| Gross, Dale | | | Superior/Enbridge | Safety Officer |
| Guest, Nyekah | | | Enbridge | Procurement |
| Haak, Matt | | | START/US EPA | Sit Unit Leader |
| Hackley, Richard | | | US EPA | Finance |
| Haux, Christopher | | | Enbridge | OSC |
| Hehir, Nate | | | Superior/Enbridge | Environment |
| Hendrix, Kristen | | | START/US EPA | Operations |
| Hoard, Chris | | | USGS | USGS |
| Hogan, Charlene | | | AECOM/Enbridge | Environment |
| Hong, Lorie | | | START/US EPA | Logistics |
| Hummel, Rebecca | | | Manpower/Enbridge | Finance |
| Johnson, Rex | | | START/US EPA | Operations |
| Jones, Susan | | | DEQ | Operations |
| Kaiser, Ken | | | AECOM/Enbridge | GIS Specialist |
| Kent, Norm | | | AECOM/Enbridge | Environment |
| Kerpash, Paul | | | SWAT/Enbridge | Control Point Management |
| Kidder, Steven | | | START/US EPA | Operations SOS |
| Kirby-Miles, Leslie | | | US EPA | Legal |
| Kogge, Stu | | | Cardno JFNEW/Enbridge | Operations |
| Kosmowski, Christine | | | City of Battle Creek | MAC |
| Lantinga, Chris | | | START/US EPA | Operations |
| Laquerre, Tim | | | START/US EPA | Operations |
| Laskey, Crystal | | | MDEQ | Planning |
| Lisabeth, Nicole | | | MSP | PIO |
| Luetke, Mindy | | | START/US EPA | PSC |
| Lundholm, Mark | | | Weston/DEQ | Operations |
| Makoski, Paul | | | Calhoun County Health | MAC |
| Manshum, Jason | | | Enbridge | Public Affairs |
| Massey, Dylan | | | LBG/Enbridge | Environmental Inspector |
| McKay, John | | | Enbridge | ROW |
| McKenzie, Michael | | | Battle Creek Emer. Srvs. | MAC |
| Mehl, Rick | | | START/US EPA | |
| Meny, Alyssa | | | Enbridge | Communications Unit |
| Moisan, Paul | | | START/US EPA | Documentation |
| Muccianti, Marcus | | | START/US EPA | Operations |
| Nelson, Brad | | | Avery/Enbridge | DPSC |
| Neumeier, Laura | | | Trimedia/Enbridge | Air Monitoring |
| Newberry, Christina | | | Manpower/Enbridge | Documentation |
| Noble, Steve | | | DEQ | Water Resources Division |
| Nye, Dennis | | | START/US EPA | Recovery |
| Oleschuk, Rick | | | Enbridge | Safety Officer |
| Olson, Alex | | | Avery/Enbridge | Planning |
| Ostrodka, Steve | | | US EPA | Submerged Oil Lead |
| Periard, Debora | | | AECOM/Enbridge | GIS Support |
| Pesses, David | | | LBG/Enbridge | Environmental Inspector |
| Pierce, Brennan | | | START/US EPA | Documentation |
| Piescher, Matthew | | | Avery/Enbridge | Field Inspector |
| Porter, Pete | | | Salem/Enbridge | Right of Way Agent |
| Powell, Meredith | | | Hill & Knowlton/Enbridge | Public & Govt. Affairs |
| Pratt, Catherine | | | AECOM/Enbridge | Environment |
| Quiggle, Lisa | | | MDCH | |
| Rader, Larry | | | START/US EPA | Sit Unit Leader |
| Reber, Lt. Barry | | | MSP EMHSD | MAC |
| Reigner, Selma | | | Kelly Services/Enbridge | Admin. Assistant |
| Rosenbaum, Charmaine | | | Enbridge | Project Support Manager |
| Ross, Shauna | | | START/US EPA | |
| Roubik, Jonathan | | | START/US EPA | Operations |
| Rutherford, James | | | Calhoun County Health | MAC |
| Rutkowski, Sonny | | | START/US EPA | Technical Specialist |
| Sahara, Dean | | | SWAT/Enbridge | Operations |



Prepared by:
Matt Hetzner

**Email Corrections To**
**matt.hetzner@enbridge.com**

DATE /TIME
7/25/201211:35 AM

| 1. Kalamazoo River/ Enbridge Spill | 2. Operational Period (Date / Time)<br>From: 07/26/2012/ 0700 hrs<br>To: 08/02/2012/ 0700 hrs | Operations Communications Plan |
|---|---|---|

**3. Communication Contact List**

| NAME | PHONE NUMBER | EMAIL ADDRESS | AGENCY / AFFILIATION | POSITION |
|---|---|---|---|---|
| Sarkipato, Ernie | [redacted] | [redacted] | DEQ | |
| Saylor, Andy | | | SET/Enbridge | |
| Schmitt, Ben | | | DEQ | Operations |
| Schneider, Dave | | | Kalamazoo County | MAC |
| Schoeff, Alison | | | AECOM/Enbridge | Water Monitoring Supervisor |
| Shattuck, Terri | | | Weston/DEQ | Operations |
| Smith, Brian | | | Tulsa/ Enbridge | Overbank Excavation Field Inspector |
| Snider, Jim | | | Enbridge | Environment Director |
| Sobojinski, John | | | Enbridge | Incident Commander |
| Spruit, Jeff | | | DEQ | Environment |
| Standen, Joe | | | LBG/Enbridge | River Opening Implementation |
| Steede, Bob | | | Enbridge | DOSC |
| Stiemsma, Bryan | | | AECOM/Enbridge | Environment Supervisor |
| Stuart, Mike | | | START/US EPA | Safety Officer |
| Sumner, Matt | | | AECOM/Enbridge | Environment |
| Taft, Bill | | | DEQ | Wildlife Environmental NRDA Group |
| Thierry, Mike | | | START/US EPA | Operations |
| Thomas, Brittany | | | START/US EPA | Finance |
| Thompson, Doug | | | DEQ | |
| Torres, Jason | | | START/US EPA | GIS Specialist |
| Ushio, Miako | | | AECOM/Enbridge | Talmadge Creek Remediation Lead |
| Vail, Linda | | | Kalamazoo County Health | MAC |
| Valenza, James | | | START/US EPA | GIS Specialist |
| Vega, Sonia | | | US EPA | Deputy Incident Commander |
| Victory, Joe | | | START/US EPA | DOSC |
| Vilhauer, Eric | | | Enbridge | ROW Agent |
| Vosburg, Cheryl | | | City of Marshall | MAC |
| Wagner, Greg | | | START/US EPA | Submerged Oil Recovery |
| Wahrer, Marc | | | START/US EPA | Operations |
| Wallace, John | | | Avery/Enbridge | Operations Inspector |
| Watt, Tammy | | | Enbridge | Finance |
| Webb, Oliver | | | SWAT/Enbridge | Control Point Management |
| Weir, Karen | | | START/US EPA | |
| Wekseth, Mike | | | SWAT/Enbridge | Operations Inspector |
| Wellman, John | | | START/US EPA | Operations |
| Wessling, Elizabeth | | | START/US EPA | PSC |
| Williams, Lisa | | | USFWS | |
| Wilson, Lee | | | Weston/DEQ | Operations |
| Wiswell, Amber | | | Kelly Services/Enbridge | Admin. Assistant |
| Wolf, Mike | | | AECOM/Enbridge | Monitoring |
| Yokom, Brett | | | Trimedia/Enbridge | Environment |
| Zahner, Dan | | | START/US EPA | Operations |
| Zambetis, Mike | | | Cardno JFNEW/Enbridge | Restoration |
| Zelt, Ron | | | USGS | Environmental Unit Leader Assistant |

# Enbridge Oil Spill Incident - Campbell ICP, Marshall, MI
# U.S. EPA Trailer Phone Directory

| Trailer No. | Trailer Designations | Phone Number | Ext No. |
|---|---|---|---|
| 1 | Deputy IC Office (SW) | 269-781-1995 | 11995 |
| 1 | IC Fax Line | 269-781-1110 | 11127 |
| 1 | IC Conference Area | 269-781-1026 | 11026 |
| 1 | Operations Section Chief | 269-781-1994 | 11994 |
| 1 | Health & Safety (West End) | 269-781-1991 | 11991 |
| 2 | Work Room (NW) | 269-781-1955 | 11955 |
| 2A | Large Conference Room (MID) | 269-781-1591 | 11591 |
| 2B | Conference Room (NE) | 269-781-1954 | 11954 |
| 3 | MDEQ Field Trailer | 269-781-1953 | 11953 |
| 3 | MDEQ Documentation | 269-781-1951 | 11951 |
| 4 | Operations | 269-781-1958 | 11958 |
| 4 | Operations | 269-781-1971 | 11971 |
| 4 | River Opening | 269-781-1972 | 11972 |
| 7 | Copy Center | No Phone | |
| 8 | Logistics | 269-781- 1997 | 11997 |
| 8 | EPA Hotline | 269-781-1992 | 11992 |
| 8 | Weston IC (East End) | 269-781-1988 | 11988 |
| 9 | Planning | 269-781-1015 | 11015 |
| 9 | EPA Documentation | 269-781-1905 | 11905 |
| 9 | GIS | 269-781-1018 | 11018 |
| 9 | Environmental Unit | 269-781-1019 | 11019 |
| 9 | Conference Room | 269-781-1963 | 11963 |
| 9 | Wate Management Branch | 269-781-1955 | 11955 |
| 9 | Environmental Unit (USGS) | 269-781-1582 | 11582 |
| 9 | PIO | 269-781-1587 | 11587 |
| 10 | MDEQ-WRD | 269-781-1014 | 11014 |
| 10 | MDEQ-WRD | 269-781-1023 | 11023 |
| 10 | MDEQ-WRD | 269-781-1022 | 11022 |
| 11 | MDEQ-RD & Weston | 269-781-1024 | 11024 |
| 11 | MDEQ-RD & Weston | 269-781-1012 | 11012 |
| 11 | MDEQ-RD & Weston | 269-781-1013 | 11013 |
| Indoor | Weston Indoor Area | 269-781-1961 | 11961 |

**To dial between trailers, use the extension number, 1-1997 for Logistics**

To place a conference call within the VOIP network, dial first number, select button under "more", scroll down to Confrm and select. Dial next number, press confirm again to connect all. Repeat steps to connect more numbers.

Repeat the same steps to conference in one outside line.

| MEDICAL PLAN ICS – 206 | Kalamazoo River/Enbridge Spill | 1. Date Prepared 7/25/2012 | 2. Time Prepared 0800 | 3. Operational Period 07/26/2012 0700 08/02/2012 0700 |
|---|---|---|---|---|

## 4. Transportation

Ambulance Services

| Name | Address | Phone | Paramedics Yes | Paramedics No |
|---|---|---|---|---|
| Lifecare Ambulance | 330 West Hamblin Avenue, Battle Creek, MI 49015 | 9-1-1 | X | |
| City of Marshall Fire Dept | 323 West Michigan Avenue, Marshall, MI 49068 | 9-1-1 | X | |

## 5. Hospitals

| Name | Address | Travel Time Air | Travel Time Ground | Phone | Helipad Yes | Helipad No | Burn Center Yes | Burn Center No |
|---|---|---|---|---|---|---|---|---|
| Bronson Methodist Hospital | 601 John Street Kalamazoo, MI | 15 Min | 50 min | 269-341-7654 | X | | X | |
| Borgess Medical Center | 1521 Gull Road Kalamazoo, MI | 15 min | 50 min | 269-226-7000 | X | | | X |
| Oaklawn Hospital | 200 N. Madison Ave Marshall, MI | | 5 min | 269-781-4271 | | X | | X |
| Battle Creek Health System | 300 North Avenue Battle Creek, MI | | 20 min | 269-966-8000 | | X | | X |

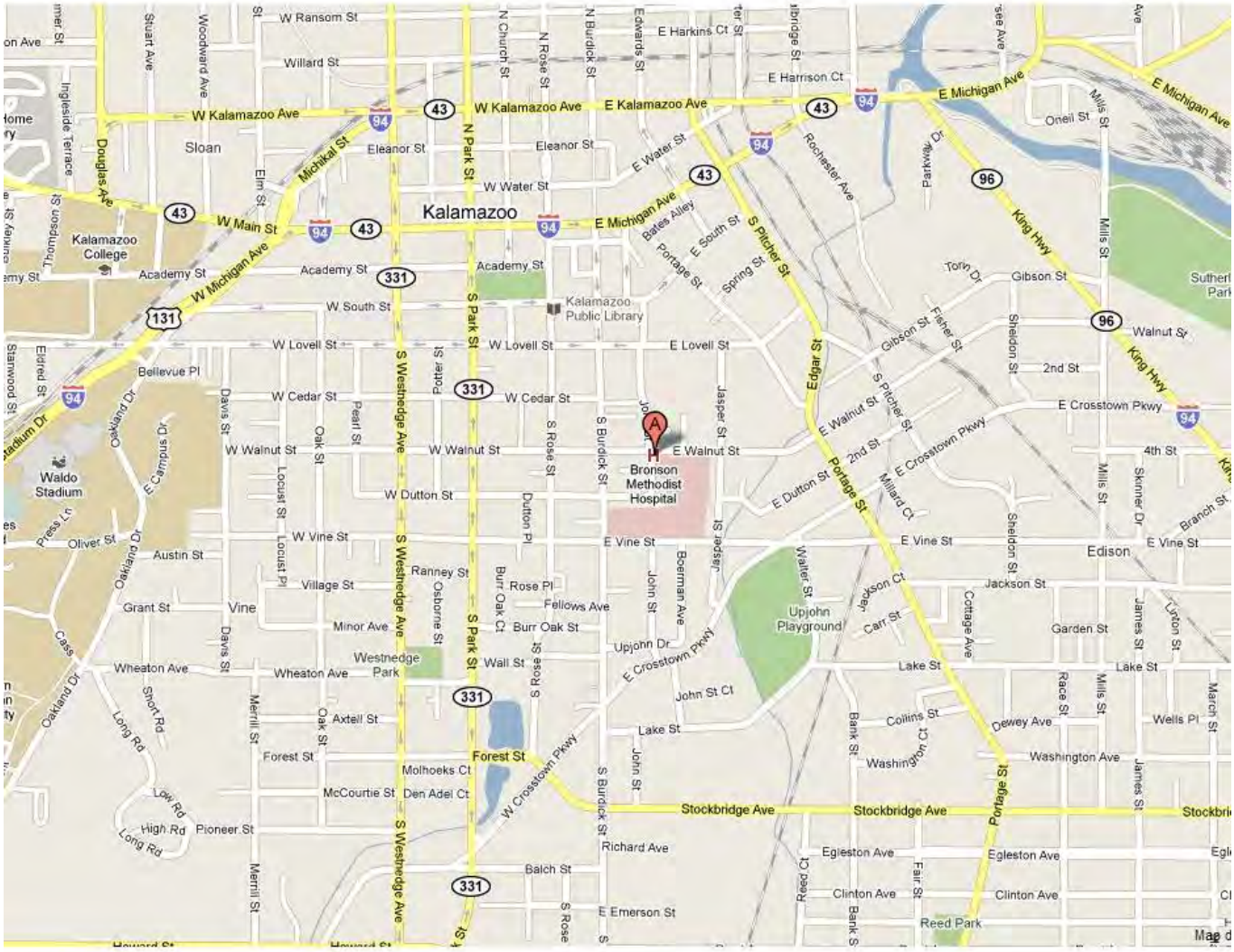
## 6. Medical Emergency Procedures

1. Dial 9-1-1 for all emergencies. Give 9-1-1 operators as much information as possible. Stay on the line and answer all questions – information may be radioed to responders. On-site personnel trained and certified in first aid should attempt to stabilize victim until fire department/EMS personnel arrive.
2. Report all incidents to the Project Safety Officer. Keep a log of events. Secure the area. Identify witnesses for later investigation.

NOTE: Suspend all operations during an actual emergency situation!

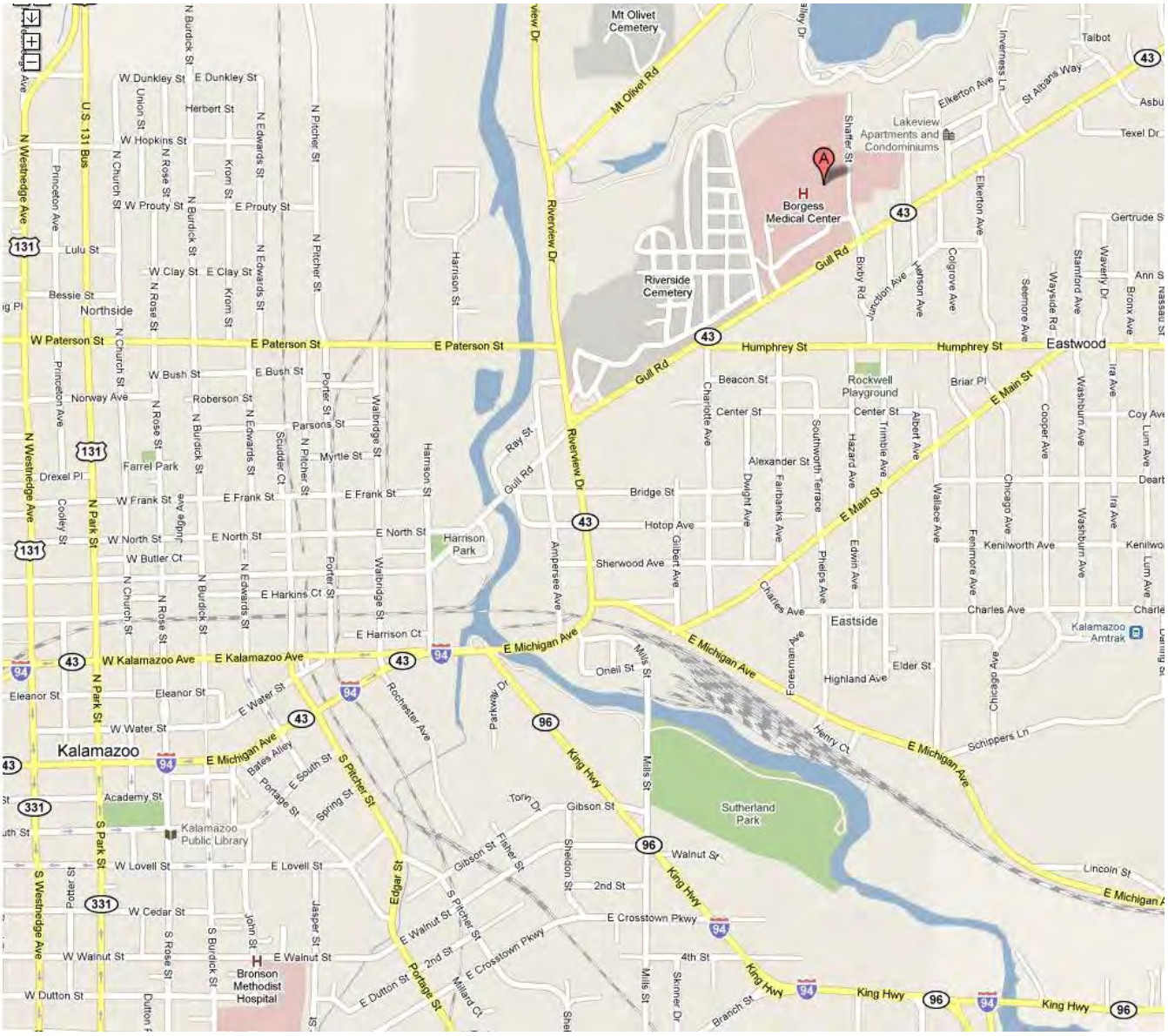
| Prepared by | 10. Reviewed by (Safety Officer) |
|---|---|
| Dale Gross 7/25/2012 | Dale Gross 7/25/2012 |

# Hospital Route Map – Bronson Methodist Hospital – Kalamazoo, MI



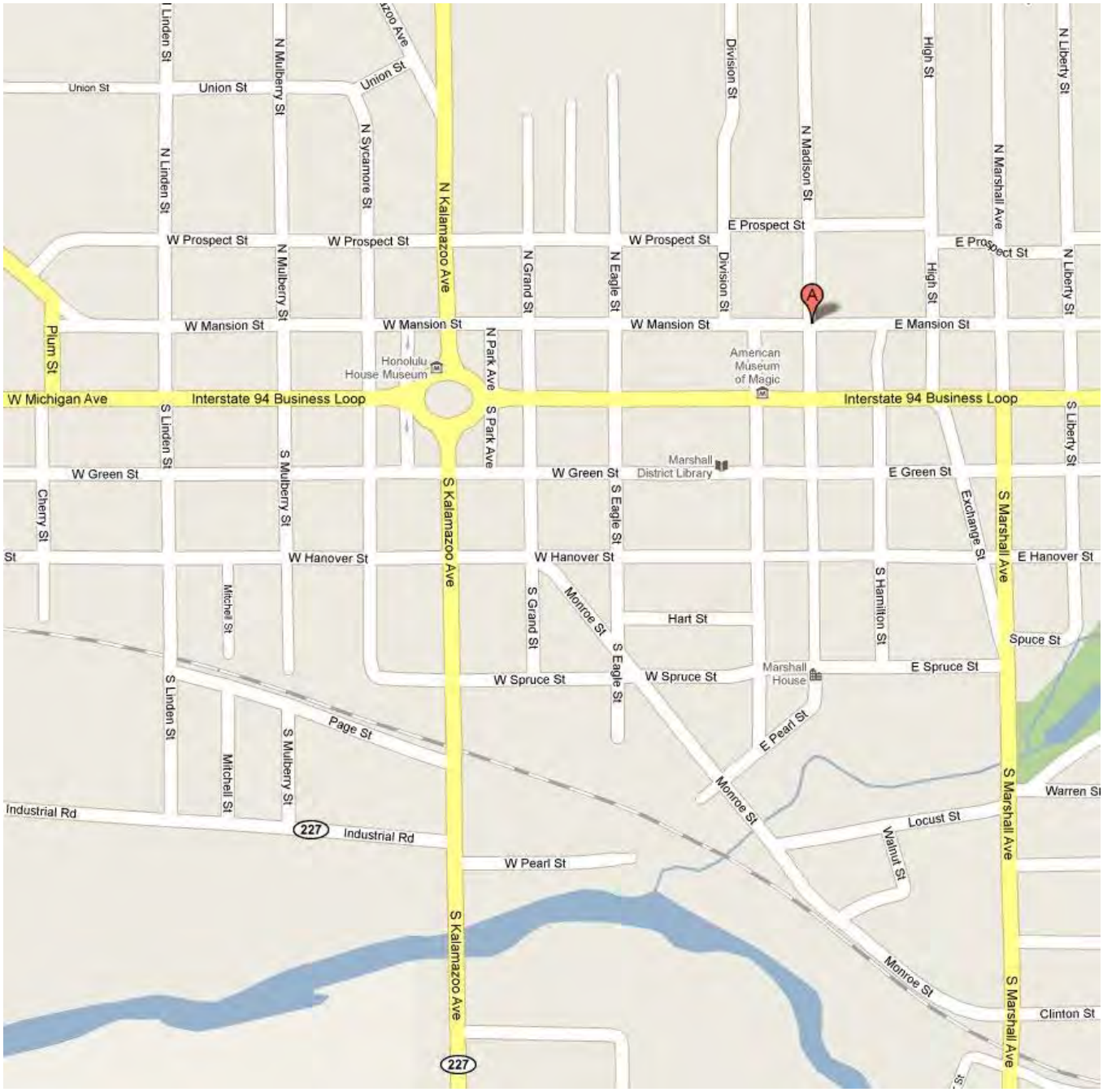

Bronson Methodist Hospital
601 John St
Kalamazoo, MI 49007
(269) 341 - 7979

# Hospital Route Map – Borgess Medical Center – Kalamazoo, MI



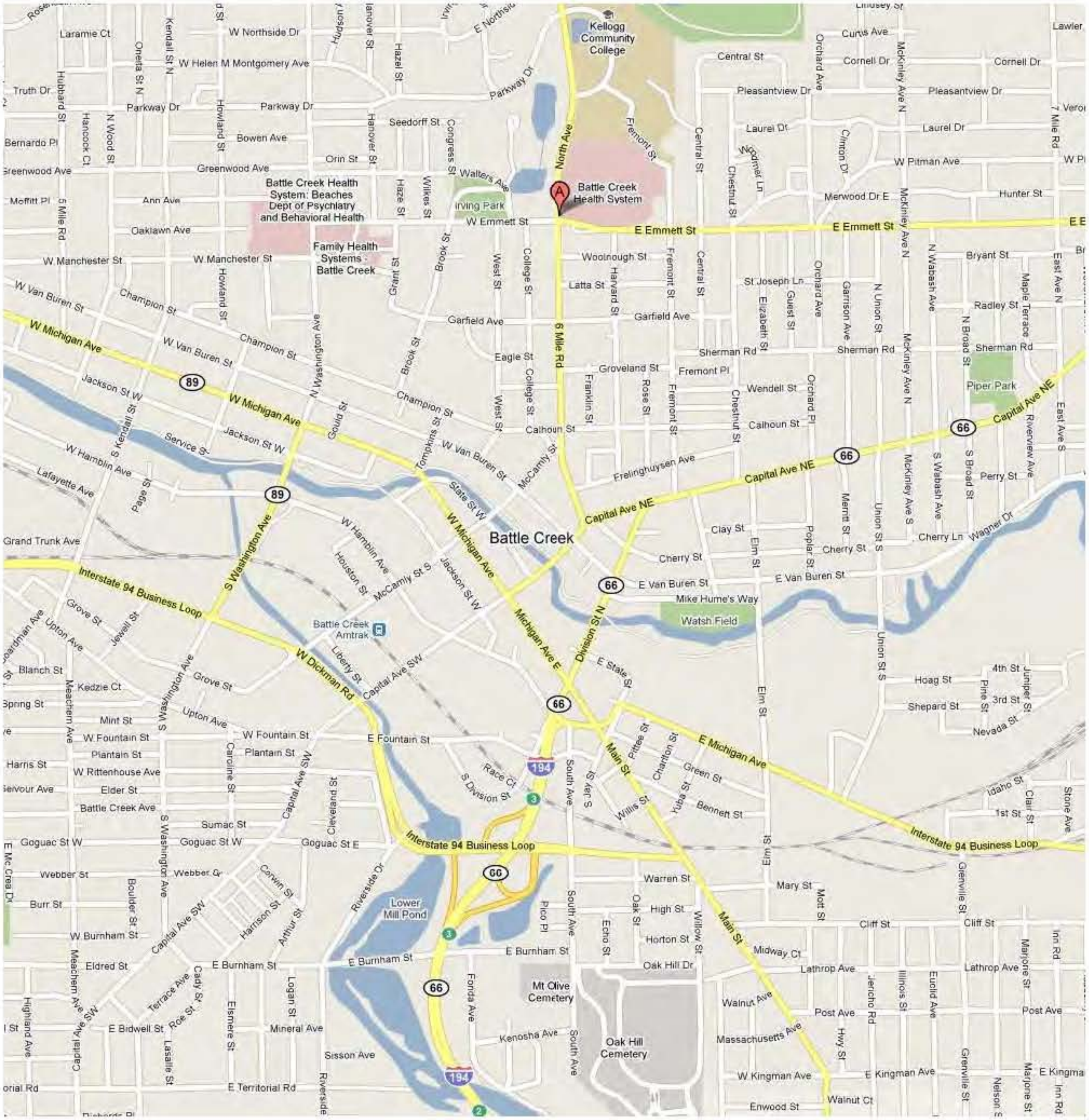

Borgess Medical Center
1521 Gull Road
Kalamazoo, MI 49048
(269) 226 - 7000

# Hospital Route Map – Oaklawn Hospital – Marshall, MI




Oaklawn Hospital
200 North Madison St.
Marshall, MI
(269) 781-4271

# Hospital Route Map – Battle Creek Health System – Battle Creek, MI




Battle Creek Health System
300 North Avenue
Battle Creek, MI
(269) 966-8000

# KALAMAZOO RIVER/ENBRIDGE SPILL
## General Safety Instructions
Operational Period: 7/26/12 (0700hrs) to 8/2/12 (0700hrs)

**River Opening:** Be advised that the Kalamazoo River has been opened to the public except for work areas marked by buoys. Public recreational activities are to be expected on the river. Be courteous and respectful to members of the public at all times. Be aware that members of the public may be present in work areas.

**Weather:** Review weather information prior to commencing work each day. Be aware of changes in the weather conditions and ensure proper controls are implemented to address the weather hazards such as: Lightning, Rain, Fog, etc. Take actions in accordance with instructions provided by supervisory personnel and as received through the Call-Em-All system.

**Sunscreen:** Sunscreen should be applied to exposed skin, and not just if you are going to be in the sun. UVB rays cannot penetrate glass windows, but UVA rays can, leaving you prone to these damaging effects if unprotected.

**PPE:** Be prepared for changing weather conditions by wearing, and/or having available, appropriate rain gear and approved safety footwear with appropriate soles for use on slippery ground conditions. When PFDs are required you must ensure that they are United States Coast Guard approved and are the outermost layer, with reflective vest worn under the PFD.

**Vehicles:** Follow speed limits and adjust speed as necessary for road conditions. Make sure your vehicle is in proper working condition.

**Process for Reporting Potentially Hazardous Materials:** If you observe a potentially hazardous material which is not spill related, notify field safety officer and evacuate the area. Do not let anyone into the area unless it is Enbridge Safety and/or Operations Inspector. Immediately report all details to the Enbridge Safety Office at 269-781-1913. The Enbridge Safety Office will alert the Emergency Response Center or call (911). Notifications will go to Calhoun County EMS or Kalamazoo County EMS, EPA, DEQ and Pollution Emergencies.

**SPECIAL NOTATION ON WEATHER and HAZARD ALERT MESSAGING:**

(See daily updates for additional weather information).

Enbridge Safety will maintain consistent weather messages by compiling information and present through daily briefings. Weather forecast updates will be distributed to field safety staff for further communication in the field. Enbridge Safety is responsible for communicating weather alerts based on information received through the Weather TAP system and text messages received from the National Weather Service in Grand Rapids.

In the event of severe weather warnings and alerts, Enbridge Safety will be monitoring via the Weather TAP system. Enbridge Safety will initiate the notification process by using the Call-Em-All system to Field Safety Staff and Operations. Operations in turn will contact their Operation Field Inspectors. The Operation Field Inspector will communicate the necessary plan with their field work crews. DK Security will be notified by Enbridge Safety by phone from 1800 – 0700 hours.

**Severe Weather Alerts:** Take appropriate shelter when the county activates their tornado warning sirens. In the Incident Command Post, report to the designated tornado shelter rooms. Where appropriate shelter is not available, lie flat in a nearby ditch or depression and cover your head with your hands. Be aware of potential for flooding and flying debris.

*Note:* Emergency notification siren systems will be tested on the first (1st) Saturday of each month in Calhoun and Kalamazoo Counties. Typically a siren is sounded at 1200 hours; however, this could be delayed due to current circumstances in the county.

**Fire/Building Evacuation Alert:** In the event of a fire, utilize air horn to initiate series of three 1 second blasts. Must report to the designated evacuation point upon hearing a series of three 1 second air horn blasts. **Please close all doors, and turn lights out upon leaving your area.**

***Call the Safety Office at 269-781-1914 if you have weather related concerns. Call 269-781-1913 for other Safety related issues.***

**Safety Orientations: Held Monday - Friday at 0800 at the Operations Center (1601 Pratt Avenue)**

**Boat Safety Awareness Orientation: Available by appointment Monday – Friday, contact the Safety Office.**

**If you see wildlife (dead or alive) that is impacted by the oil, call Bob Doherty** [redacted]

| ***Field Safety Staff*** | |
|---|---|
| **Name** | **Phone** |
| Barry Vavrina | [redacted] |
| Matt Piescher | |

**Call-Em-All:** Will be tested by Enbridge Safety office on Wednesday's at 1200 hours.

**First Aid Kits:** There are four (4) kits located within the Incident Command Post Facility. Please review the Evacuation Plan map for locations.

**KALAMAZOO RIVER/ENBRIDGE SPILL**
**General Safety Message**
Operational Period: 7/27/12 (0700hrs) to 8/2/12 (0700hrs)

**DAY 1:**
Thursday, July 27, 2012

**Life Saving Rule #4 – Ground Disturbance**

Dig Safely. Always follow procedures for locating, positively identifying and excavating buried facilities. Protect yourself, your community and the environment by protecting our pipelines – ensure that all buried facilities are identified and marked prior to excavation.

By building a strong foundation of safe practices we can protect our most valuable resource – our people.

**** Make certain you know and obey the Enbridge 10-2-1 Rule ****

**DAY 2:**
Friday, July 28, 2012

**Task Hazard Assessment**

Take proactive approach to safety with the following best practices for planning and executing your work:

- Before beginning work, assess the site hazards and the task hazards.
- Identify appropriate controls for the hazard identified.
- Implement the controls and document the controls on the work permit.
- Monitor effectiveness of controls and adjust if necessary.

Activities that incorporate safety for the beginning will not only reduce the possibility of incidents, but also increase operational efficiencies.

**DAY 3/ DAY 4:**
Saturday, July 29– Sunday, July 30, 2012

**Manual Lifting – Back Care**

Manual lifting hazards should be assessed before any lifting is done. Hazards may include:

- High lifting frequency; large number of lifts.
- Lifting unstable objects; Top heavy loads.
- Difficult to hold loads.
- Unstable footing and slippery walking surfaces.
- Heavy object weight.
- Blocked vision by the objects being lifted.

Follow the Eight Commandments of Safe Lifting:

1) Plan your lift and test your load.
2) Ask for help.
3) Get a firm footing.
4) Bend your knees.
5) Tighten your stomach muscles.
6) Lift with your legs.
7) Keep the load close.
8) Keep your back upright.

Whether lifting or putting down a load, do not add the weight of your body to the load – avoid twisting.

**DAY 5:**
Monday, July 31, 2012

**Pinch Points**

Pinch points can occur anywhere a part of the body can get caught between two objects. This hazard is everywhere in the workplace. Any place where equipment is transmitting energy, there is a pinch point.

Shortcuts Lead to Danger

Never perform a task without proper training, by taking shortcuts, or bypassing procedures; the consequences could be serious.

Keep Your Guard Up

Ensure that all moving parts on equipment and machinery are properly guarded.

Everyone's Responsibility

The best protection from pinch-point hazards comes not from procedures, but from personal attention to potential hazards.

**DAY 6:**
Tuesday, August 1, 2012

**Situational Awareness**

Every day we do similar tasks, but there are changes due to the weather, river conditions, and intangible things we cannot control. Please consider the following:

- Prior to work commencing check for potential hazards. Think of what could go wrong and have a plan to deal with that event.
- If new to the area, ask people with experience in that area what to expect for working conditions and different tools
- Share information with team member and other who will be working in the area.
- If there are storms/lightning in the area – have a plan for what you will do in case of an occurrence.
- Make sure you have all the safety tools in place to do the job safely.

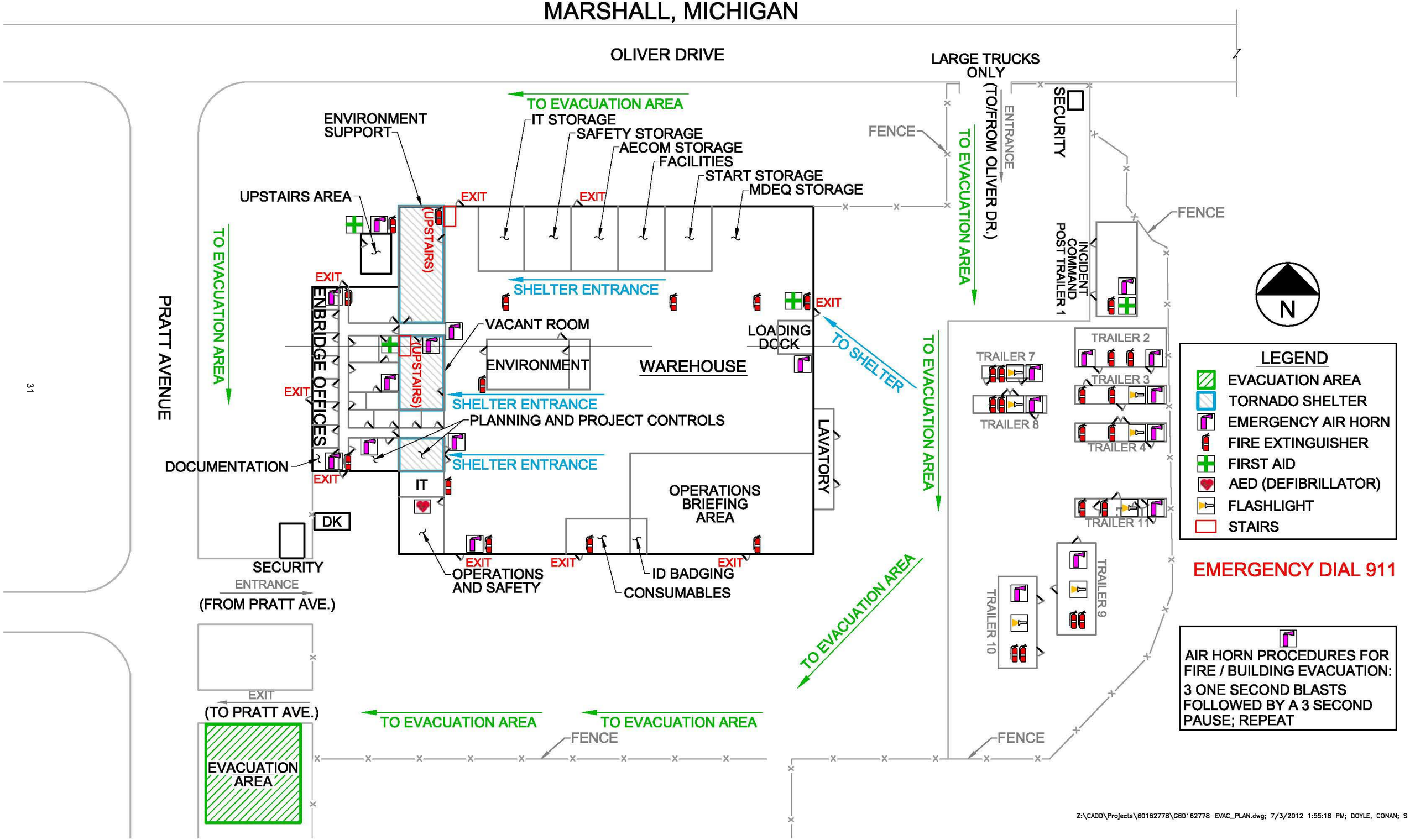
**DAY 7:**
Wednesday August 2, 2012

**Preventing Slips, Trips, and Falls**

In order to prevent slips, trips and/or falls, please adhere to the following safety tips:

- Do not hurry when conditions are likely to be slippery.
- Practice good housekeeping habits.
- Prevent/Cleanup indoor puddles.
- Anticipate hazards as you are walking - take short steps.
- Plan lifts carefully.

# ENBRIDGE INCIDENT COMMAND POST FACILITY
# EMERGENCY RESPONSE / EVACUATION PLAN
# MARSHALL, MICHIGAN



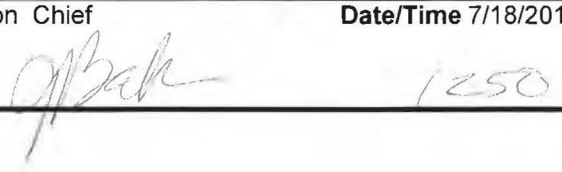

Z:\CADD\Projects\60162778\G60162778-EVAC_PLAN.dwg; 7/3/2012 1:55:18 PM; DOYLE, CONAN; S

| 1. Incident Name | 2. Operational Period (Date/Time) | DAILY MEETING SCHEDULE |
|---|---|---|
| KALAMAZOO RIVER / ENBRIDGE SPILL RESPONSE | From: July 26, 2012 0700 | ICS-230 |
| | To: August 02, 2012 0700 | |

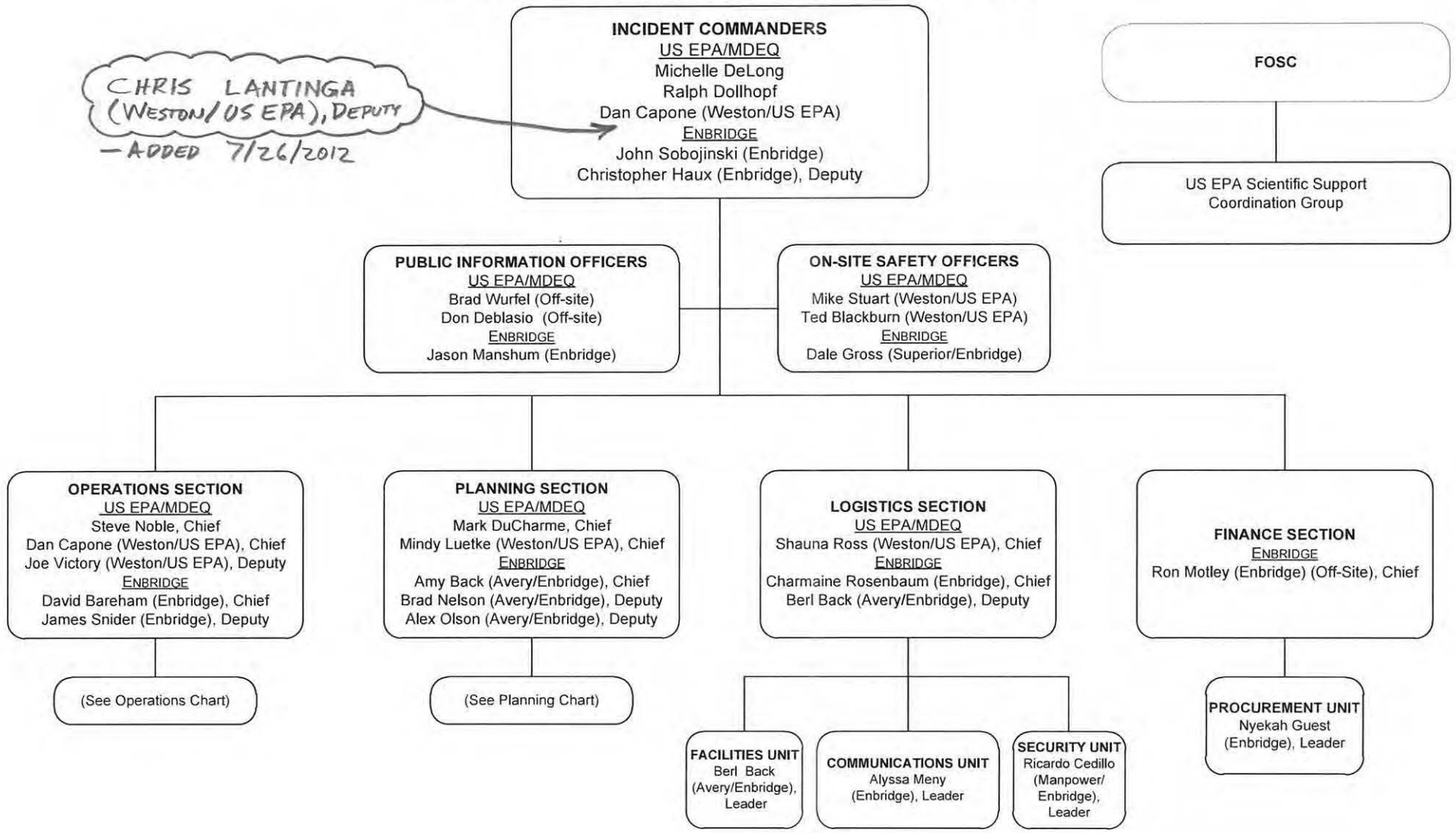
**3. Meeting Schedule (Commonly-held meetings are included)**

| Date/ Time | Meeting Name | Purpose | Attendees | Location |
|---|---|---|---|---|
| **7/26/2012** | **Thursday** | | | |
| **0700**<br>**0730** | Operations Briefing | Present IAP for the next Operational Period to Field Staff | Branch Directors and Field Staff | Field Locations |
| **0900**<br>**0945** | MAC Meeting | Update MAC with situation metrics and briefings of common interest. | UC, Command and General Staff, Multi-Agency Coordination Group, Invited attendees | UC Meeting Room (Trailer #2) |
| **1400**<br>**1600** | Kalamazoo River System Branch Special Purpose Meeting | Coordinate future Kalamazoo River System Branch activities | Kalamazoo River System Branch Directors and Group Supervisors | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **7/27/2012** | **Friday** | | | |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **7/28/2012** | **Saturday** | | | |
| **7/29/2012** | **Sunday** | | | |
| **7/30/2012** | **Monday** | | | |
| **0900**<br>**0945** | Tactics | Finalize primary and alternate tactics and strategies to achieve UC | Operations, Planning, Safety | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **7/31/2012** | **Tuesday** | | | |
| **1400**<br>**1600** | Kalamazoo River System Branch Special Purpose Meeting | Coordinate future Kalamazoo River System Branch activities | Kalamazoo River System Branch Directors and Group Supervisors | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **8/1/2012** | **Wednesday** | | | |
| **0900**<br>**0930** | Command and General Staff Meeting | UC presents direction to Command and General Staff. | UC, Command and General Staff, SITL | UC Meeting Room (Trailer #2) |
| **0930**<br>**0945** | Planning Meeting | Review tactics and assignments to meet the project Objectives for the next Operational Period. | UC, Command and General Staff, Scribe | UC Meeting Room (Trailer #2) |
| **0945**<br>**1000** | Objectives Meeting | Review current objectives and identify objectives for the next Operational Period. | UC, Operations, Safety, Planning, Scribe | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |

**4. Prepared by: Amy Back**, Planning Section Chief **Date/Time** 7/18/2012



# Enbridge Pipelines Response Unified Command




ENBRIDGE

ICS 207
7/26– 8/2

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill** | 2. Operational Period (Date/Time)<br>Starting: **August 16, 2012, 0700**<br>End: **August 23, 2012, 0700** | **IAP Cover Sheet** |
|---|---|---|

3. Approved by Incident Commander(s):

Michelle DeLong, Michigan Department Environmental Quality
Ralph Dollhopf, U.S. EPA
John Sobojinski, Enbridge

## INCIDENT ACTION PLAN

The items below are included in this Incident Action Plan:


- ICS 202 (Response Objectives) ..... 1
- ICS 207 (Organizational Chart & OPS Chart) ..... 2
- ICS 204 (Assignment List) ..... 5
- River Overview Map ..... 14
- Meeting Locations and Traffic Plans ..... 15
- ICS 205 (Communication List) ..... 25
- ICS 205a (Communications Attachment) ..... 27
- ICS 206 (Medical Plan) ..... 28
- Safety Message/Evacuation Plan ..... 33
- Weather Forecast ..... 36
- ICS 230 Meeting Schedule ..... 37





| 4. Prepared By:<br>Alex Olson, Avery/Enbridge | Date/Time<br>08/15/2012# |
|---|---|

| 1. Incident Name | 2. Operational Period (Date/Time) | INCIDENT OBJECTIVES ICS 202-EPA |
|---|---|---|
| **Kalamazoo River/Enbridge Spill** | From: August 16, 2012 @ 0700<br>To: August 23, 2012 @ 0700 | |

**3. Incident Objective(s)**

1. Ensure health and safety of the public and response and recovery personnel.
2. Ensure absolute containment of submerged oil and oil-containing sediments within the Delta and the Fan of Morrow Lake.
3. Ensure effective transition of regulatory oversight from EPA to Michigan DEQ jurisdiction as appropriate.
4. Perform recovery and containment of oil from affected public and private areas of river and river system.
5. Perform remediation and restoration of affected public and private areas of river and river system.
6. Maintain effective communications with cooperating and assisting agencies, the public, including regular coordination with the Multi-Agency Coordination Group (MAC).
7. Provide protection of environmentally and culturally sensitive areas including wildlife and historic properties.
8. Collect, coordinate, manage and communicate environmental and public health data including maintenance of Joint Information Center function.

**4. Operational Period Command Emphasis**

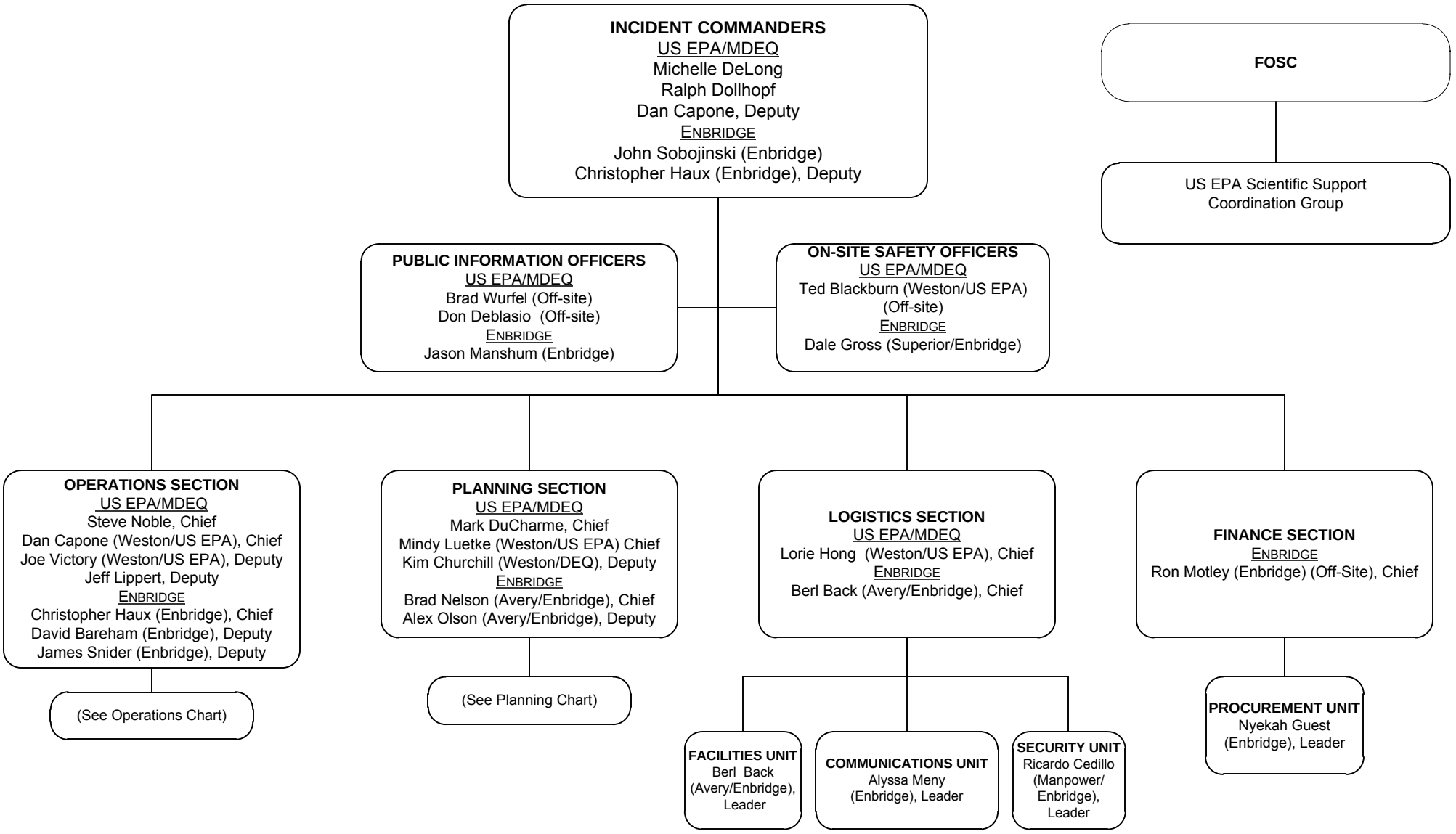
1. Respond to and document emerging oil throughout the Kalamazoo River system, incorporating new protocols regarding which sheen to capture.
2. Complete installation of sediment trap structures if conditions warrant. Monitor and maintain the sediment traps.
3. Continue with efforts to prepare for the Source Area work activities.
4. Implement modifications to site wide monitoring.
5. Begin development of work plan for oil recovery between MP 4.5 and Ceresco dam.

**5. Safety Objectives for the Operational Period**

1. Assure effective integration of public safety and worker safety on the river. Focus on public and worker interaction.
2. Focus on housekeeping and inspections within work areas.

| | | |
|---|---|---|
| **6. Prepared by Planning Section Chief (Enbridge):** Brad Nelson | **Date/Time:** 8/15/2012 | 1435 |
| **7. Approved by Incident Commander (DEQ):** Michelle DeLong Michelle DeLong | **Date/Time:** 8/15/2012 | 1438 |
| **8. Approved by Incident Commander (US EPA):** Ralph Dollhopf | **Date/Time:** 8/15/2012 | 1436 |
| **10. Approved by Incident Commander (Enbridge):** John Sobojinski | **Date/Time:** 8/15/2012 | 1435 |

# Enbridge Pipelines Response Unified Command




ICS 207
8/16– 8/23



**OPERATIONS SECTION**
US EPA/MDEQ
Steve Noble, Chief
Dan Capone (Weston/US EPA), Chief
Joe Victory (Weston/US EPA), Deputy
Jeff Lippert, Deputy
ENBRIDGE
Christopher Haux (Enbridge), Chief
David Bareham (Enbridge), Deputy
James Snider (Enbridge), Deputy




**Waste Management Branch**
US EPA/MDEQ
Dan Zahner (Weston/US EPA), Director
ENBRIDGE
John Wallace (Avery/Enbridge), Director

**Submerged Oil Branch**
US EPA/MDEQ
Dan Zahner (Weston/US EPA), Director
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Director

**Submerged Oil Science Group**
US EPA/MDEQ/USGS
Faith Fitzpatrick, Supervisor
Ron Zelt, Supervisor
ENBRIDGE
Dave Dryburgh (AECOM/Enbridge), Supervisor

**Submerged Oil Compliance Group**
ENBRIDGE
Mark Berninger
(Cardno JFNEW/Enbridge), Supervisor

**Containment Branch**
US EPA/MDEQ
Rex Johnson (Weston/US EPA), Director
ENBRIDGE
Dean Sahara (SWAT/Enbridge), Director
Mike Wekseth (SWAT/Enbridge), Deputy

**Containment Compliance Group**
ENBRIDGE
Mike Zambetis
(Cardno JFNEW/Enbridge), Supervisor

Containment Recovery Group
US EPA/MDEQ
Chris Lantinga (Weston/US EPA), Supervisor
Enbridge
Oliver Webb (SWAT/Enbridge), Supervisor

**Kalamazoo River System Branch**
MDEQ
Steve Noble, Director
ENBRIDGE
Bryan Stiemsma (AECOM/Enbridge), Director

**Talmadge Creek/Kalamazoo River Remedial Investigation Group**
MDEQ
Doug Thompson
Ben Schmitt, Assistant
ENBRIDGE
Brian Albig
(AECOM/Enbridge), Supervisor

**Kalamazoo River Compliance Group**
ENBRIDGE
Mike Zambetis
(Cardno JFNew/Enbridge), Supervisor

**Kalamazoo River Remedial Action Group**
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Supervisor

**Talmadge Creek/Kalamazoo River Monitoring Group**
ENBRIDGE
Alison Schoeff (AECOM/Enbridge), Supervisor

ENBRIDGE

ICS 207
8/16 – 8/23

**PLANNING SECTION**
US EPA/MDEQ
Mark DuCharme, Chief
Kim Churchill, Deputy
Mindy Luetke (Weston/US EPA), Chief
ENBRIDGE
Brad Nelson (Avery/Enbridge), Chief
Alex Olson (Avery/Enbridge), Deputy

**SITUATION UNIT**
US EPA/MDEQ
Ben Schmitt, Leader
Matt Haak (Weston/US EPA), Leader
ENBRIDGE
Mark Fuller (AECOM/Enbridge), Leader

**RESOURCE UNIT**
US EPA/MDEQ
Lorie Hong (Weston/US EPA), Leader
ENBRIDGE
Brad Nelson (Avery/Enbridge), Leader
Emma Cook (Enbridge), Assistant

**ENVIRONMENTAL UNIT**
US EPA/MDEQ/USGS
Jeff Spruit (Off-site), Leader
Mike Alexander (Off-site), Assistant
Kim Churchill (Weston/DEQ), Leader
Isaac Aboulafia (Weston/US EPA), Leader (Off-site)
Elizabeth Wessling (Weston/US EPA)(Off-site), Leader
Faith Fitzpatrick (USGS), Leader
Ron Zelt (USGS)(Off-site), Assistant
Rex Johnson (Weston/US EPA), Assistant
Tom Graan (Weston/US EPA), Assistant
ENBRIDGE
John Bohrmann (Enbridge), Leader

**DOCUMENTATION UNIT**
US EPA/MDEQ
Crystal Laskey, Leader
Carolyn Giles-Smith (Weston/DEQ), Leader
Brennan Pierce (Weston/ US EPA), Leader
ENBRIDGE
Brad Nelson (Avery/Enbridge), Leader

| 1. Incident Name | 2. Operational Period (Date/Time) | Assignment List |
|---|---|---|
| **Kalamazoo River/Enbridge Spill Response** | From: August 16, 2012, 0700<br>To: August 23, 2012, 0700 | **ICS 204- EPA** |
| **3. Branch**<br>**Waste Management** | **4. Division/Group/Staging** | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | DEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Jeff Lippert, Deputy | EPA | |
| | Christopher Haux | Enbridge | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Dan Zahner | Weston/US EPA | |
| | John Wallace | Avery/Enbridge | |

**6. Resources Assigned** — **"X" indicates 204a attachment with additional instructions**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| See Branch Directors | | | |

**7. Work Assignments**

1. Field decon operations for: personnel, hand equipment, and boats for preparation of transport shall be installed prior to work beginning at boat launches / staging areas for individual work sites.
2. Haul contaminated soil, water, media and debris to staging areas for waste characterization and oil recovery sampling prior to offsite disposal.
3. Waste shall be collected as needed for direct haul to the landfill or transported to Frac Tank City (FTC) for consolidation with similar waste streams as necessary. Waste generated from coring will be consolidated and transported to Frac Tank City as needed.
4. Waste management characterization, manifesting, and coordination of transportation and disposal.

For Weston/US EPA/MDEQ:

1. Provide oversight of all waste management activities.
2. Ensure appropriate sampling, tracking and disposal is performed on oil impacted debris, water and soil.
3. Review manifests, weight tickets and bills of lading for correlation to waste stream analytical data.
4. Review weekly oil recovery and waste disposal report.

**8. Special Instructions**

Ensure all Best Management Practices (BMPs) are in place and utilized.

In accordance with the Fatigue Management Plan, all work permit activities will be completed no later than 1900.

SAFETY INSTRUCTIONS:
For vacuum truck operation guidelines, please refer the HASP.

**At Frac Tank City:**

1. The following procedure shall be used for initial opening of hatch or rear doors of liquid vacuum trucks and hatches of vacuum excavation units:
   a. Approach the hatch to be opened with a calibrated five gas monitor and a benzene monitor.
   b. Personnel performing this task must wear a full face respirator with organic vapor cartridge.
   c. Slightly open the hatch and take VOC, H2S, LEL, Oxygen, CO and benzene readings.
   d. If readings are greater than 10 ppm H2S, 10% LEL, 25 ppm CO or 25 ppm benzene then personnel shall close the hatch and utilize SCBA prior to opening the hatch.
2. Operations - Respiratory protection may be required depending on periodic monitoring results. Wear a half-mask respirator equipped with an organic vapor cartridge when 0.5 ppm benzene is detected. Wear a full-face respirator equipped with an organic vapor/acid gas cartridge when benzene is at 5 ppm to 25 ppm.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| A. Olson, Avery/Enbridge | 8/15/2012 1200 | B. Nelson, Avery/Enbridge | 8/15/2012 1202 | C. Haux, Enbridge | 8/15/2012 1202 |

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill Response** | 2. Operational Period (Date/Time)<br>From: August 16, 2012, 0700<br>To: August 23, 2012, 0700 | **Assignment List<br>ICS 204 - EPA** |
|---|---|---|
| 3. Branch<br>**Submerged Oil** | 4. Division/Group/Staging | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | MDEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Jeff Lippert, Deputy | EPA | |
| | Christopher Haux | Enbridge | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Dan Zahner | Weston/US EPA | |
| | Matt Sumner | AECOM/Enbridge | |

**6. Resources Assigned**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Submerged Oil Science | Faith Fitzpatrick<br>Ron Zelt (Off Site)<br>Dave Dryburgh (AECOM/Enbridge) | [redacted] | 2 MDEQ<br>2 Weston/ US EPA<br>6 Contractors |
| Submerged Oil Compliance | Mark Berninger (Cardno JFNEW/Enbridge) | | |

**7. Work Assignments**

**Submerged Oil Science**

1. Conduct site wide monitoring activities as necessary. (1 Team)
2. Conduct Walling Tube sediment sampling. (1 Team)

For US EPA/MDEQ/Weston:

1. Oversee and document Submerged Oil Science work activities.

**Submerged Oil Compliance**

1. Track previously submitted MDEQ permit applications for toolbox methods.

**8. Special Instructions**

NRDA Trustees will be conducting recreational use surveys along the Kalamazoo River at river access points.

Rowe Island, MP 38.50 to MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:

All in water activities of workers in water depths over fifty percent (50%) of thigh height will require tethering. Please refer to the HASP for further instructions.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| A. Olson, Avery/Enbridge | 8/15/2012 1200 | B. Nelson, Avery/Enbridge | 8/15/2012 1202 | C. Haux, Enbridge | 8/15/2012 1202 |

| 1. Incident Name | 2. Operational Period (Date/Time) | Assignment List |
|---|---|---|
| **Kalamazoo River/Enbridge Spill Response** | From: August 16, 2012, 0700<br>To: August 23, 2012, 0700 | **ICS 204 - EPA** |
| **3. Branch**<br>**Containment** | **4. Division/Group/Staging** | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | MDEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Jeff Lippert, Deputy | US EPA | |
| | Christopher Haux | Enbridge | |
| | Dave Bareham, Deputy | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Rex Johnson | Weston/US EPA | |
| | Dean Sahara | SWAT/Enbridge | |
| | Mike Wekseth, Deputy | SWAT/Enbridge | |

**6. Resources Assigned** — **"X" indicates 204a attachment with additional instructions**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Containment Compliance | Mike Zambetis (Cardno JFNEW/Enbridge) | [redacted] | 1 Contractor |
| Containment Recovery | Chris Lantinga | | 1 Weston/US EPA |
| | Oliver Webb (SWAT/Enbridge) | | 14 Contractors |

**7. Work Assignments**

**Containment Compliance**

1. Continue preparation of E4.0 boom HEC-RAS calculations for submittal to MDEQ.

**Containment Recovery**

1. Perform containment strategies along the Kalamazoo River including the following tasks:
   a. Deploy and maintain shoreline containment boom as required.
   b. Complete sheen management as required.
2. Monitor and maintain the E4.0 containment system and Ceresco control point.
3. Install and maintain Kalamazoo River Sediment Traps, including the cylindrical sampling devices.

For US EPA/MDEQ/Weston:

1. Oversee and document Containment Recovery activities.

**8. Special Instructions**

NRDA Trustees will be conducting recreational use surveys along the Kalamazoo River at river access points.

Rowe Island, MP 38.50-MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:
Photo Ionization (VOCs) / Four Gas Detectors (O2, CO, LEL and H2S) and Direct Reading Instrument for Benzene will be used for air monitoring during debris removal activities.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| A. Olson, Avery/Enbridge | 8/15/2012 1200 | B. Nelson, Avery/Enbridge | 8/15/2012 1202 | C. Haux, Enbridge | 8/15/2012 1207 |

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill Response** | 2. Operational Period (Date/Time)<br>From: August 16, 2012, 0700<br>To: August 23, 2012, 0700 | **Assignment List<br>ICS 204 - EPA** |
|---|---|---|
| 3. Branch<br>**Kalamazoo River System Branch** | 4. Division/Group/Staging | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | MDEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Jeff Lippert, Deputy | EPA | |
| | Christopher Haux | Enbridge | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Steve Noble | MDEQ | |
| | Bryan Stiemsma | AECOM/Enbridge | |

**6. Resources Assigned**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Talmadge Creek/Kalamazoo River Remedial Investigation | Ben Schmitt (MDEQ)<br>Doug Thompson, Assistant<br>Brian Albig (AECOM/Enbridge) | [redacted] | |
| Kalamazoo River Compliance | Mike Zambetis (Cardno JFNew/Enbridge) | | 5 Contractors |
| Talmadge Creek/Kalamazoo River Remedial Action | Matt Sumner (AECOM/Enbridge) | | |
| Talmadge Creek/Kalamazoo River Monitoring | Alison Schoeff (AECOM/Enbridge) | | 1 Contractor |

**7. Work Assignments**

**Talmadge Creek/Kalamazoo River Remedial Investigation**

1. Resume Kalamazoo River remedial investigation August 27, 2012.

**Kalamazoo River Compliance**

1. Continue restoration/stabilization of the Kalamazoo River Bank Erosion Assessment Sites. (KRBEAS).
2. Monitor the source area MDEQ permit application currently under agency review.
3. Monitor the Raymond Road MDEQ permit application currently under agency review.
4. Conduct Kalamazoo River Bank Erosion Tour.

**Talmadge Creek/Kalamazoo River Remedial Action**

1. Execute tasks assigned by ERO as requested.

**Talmadge Creek/Kalamazoo River Monitoring**

1. Monitor erosion control devices.
2. Conduct daily monitoring of river conditions, recording observations of sheen or oil.
3. Conduct weekly monitoring of buoys and signage in the river.
4. Conduct monthly SESC inspection.

**8. Special Instructions**

NRDA Trustees will be conducting recreational use surveys along the Kalamazoo River at river access points.

Rowe Island, MP 38.50 to MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:
When operating or working in the vicinity of ultra violet testing equipment, wear approved safety glasses that provide protection from UV A rays and never look directly into the illuminator.

All in water activities of workers in water depths over fifty percent (50%) of thigh height will require tethering. Please refer to the HASP for further instructions.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| A. Olson, Avery/Enbridge | 8/15/2012 | B. Nelson, Avery/Enbridge | 8/15/2012 1202 | C. Haux, Enbridge | 8/15/2012 1202 |

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill Response** | 2. Operational Period (Date/Time)<br>From: August 16, 2012, 0700<br>To: August 23, 2012, 0700 | **Assignment List<br>ICS 204 - EPA** |
|---|---|---|
| 3. Branch<br>**Planning Section** | 4. Division/Group/Staging | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Planning Section Chief: | Mark DuCharme<br>Mindy Luetke<br>Kim Churchill, Deputy<br>Brad Nelson<br>Alex Olson, Deputy | MDEQ<br>Weston/US EPA<br>Weston/ DEQ<br>Avery/Enbridge<br>Avery/Enbridge | [redacted] |

**6. Resources Assigned** "X" indicates 204a attachment with additional instructions

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Situation Unit | Ben Schmitt (MDEQ)<br>Matt Haak (Weston/ US EPA)<br>Mark Fuller (AECOM/Enbridge) | [redacted] | 1 Contractor<br>1 Weston/EPA |
| Resource Unit | Lorie Hong (Weston/US EPA)<br>Emma Cook (Enbridge), Assistant | | 1 Contractor |
| Environmental Unit | Jeff Spruit (Off-site)<br>Mike Alexander (Off-site), Assistant<br>Kim Churchill (Weston/DEQ)<br>Elizabeth Wessling (Weston/US EPA)(Off-site)<br>Faith Fitzpatrick (USGS)<br>Ron Zelt (USGS), Assistant<br>Rex Johnson (Weston/US EPA), Assistant<br>Tom Graan (Weston/US EPA) , Assistant<br>John Bohrmann (Enbridge) | | 1 Weston/DEQ<br>1 DEQ<br>4 Contractors |
| Documentation Unit | Crystal Laskey<br>Carolyn Giles-Smith (Weston/DEQ)<br>Brennan Pierce (Weston/ US EPA) | | 1 Contractors |

**7. Work Assignments**

**Situation Unit:**

1. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.
2. Conduct weekly overflights; photo-document areas of sheen from source area to Morrow Lake dam and report observations back to operations section chiefs for monitoring and response. Additional flights will be scheduled as needed.
3. Organize field metrics, prepare for and facilitate presentations, and monitor action tracking. Maintain situational awareness around operational activities and plan for operational needs.
4. All odor complaints will be reported to US EPA and MDCH within 30 minutes of receipt by the odor response team (Monday through Friday 0700 – 1900). Complainants will then be contacted to schedule an odor response site visit or receive additional complaint information if no on-site response requested. Response evaluation will be reported to agencies and complainants upon completion. Samples will be analyzed at a 24-hour turnaround time.

For US EPA/MDEQ/Weston:

1. Maintain situational awareness around operational activities.
2. Communicate observations to the Operations Section Chief.
3. Provide daily situational photo log summaries.
4. Conduct daily monitoring of river conditions, recording observations of sheen and/or oil.
5. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.

**Resource Unit:**

1. Produce an Incident Action Plan as required by the Incident Commanders.
2. Support the planning efforts of operations and provide information to Logistics in order to properly prepare and order resources.

**Environmental Unit:**

1. Conduct strategic assessment, modeling, and environmental monitoring.
2. Review sheen tracking information from the field.

3. Finalize submerged oil quantification for Spring 2012.
4. Refine subsurface containment strategies throughout the Kalamazoo River system to prevent recontamination of the Morrow Lake fan.
5. Review and track RI progress.
6. Continue discussions on NAPL.
7. Review of property parcels for MDEQ end points.

For Weston/US EPA/MDEQ:
1. Continue to coordinate efforts to calculate the quantity of submerged oil remaining as of Spring 2012.
2. Continue supporting the evaluation of the hydrogeomorphology of the Kalamazoo River, the Morrow Lake Delta, and Morrow Lake.
3. Interface with Enbridge and assist with the refinement of surface and subsurface containment strategies throughout the Kalamazoo River system to prevent the continued migration of oil, oil sheen, submerged oil, and oil-containing sediments into Morrow Lake.
4. Review and comment on RI progress submittals
5. Support development of NAPL CSM.
6. Review Enbridge submittals with compliance with state endpoints.

**Documentation Unit:**
1. Maintain accurate, up-to-date incident files.
2. Store files for post-incident use.

**8. Special Instructions**

In accordance with the Fatigue Management Plan, all work permit activities will be completed no later than 1900.

SAFETY INSTRUCTIONS:
Hexane is flammable and may be harmful in contact with skin. When handling hexane and sheen test samples containing hexane, wear approved safety glasses, disposable nitrile gloves and keep away from ignition sources. Properly dispose of sheen test samples containing hexane.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

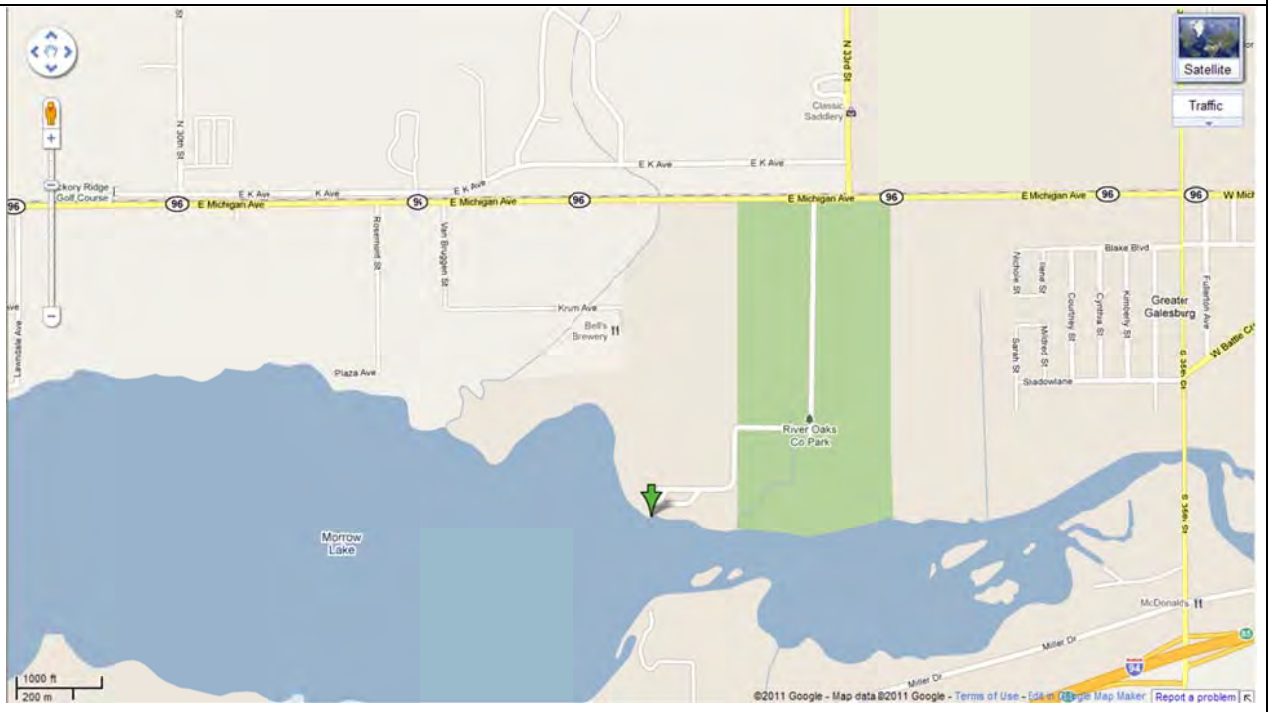
Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

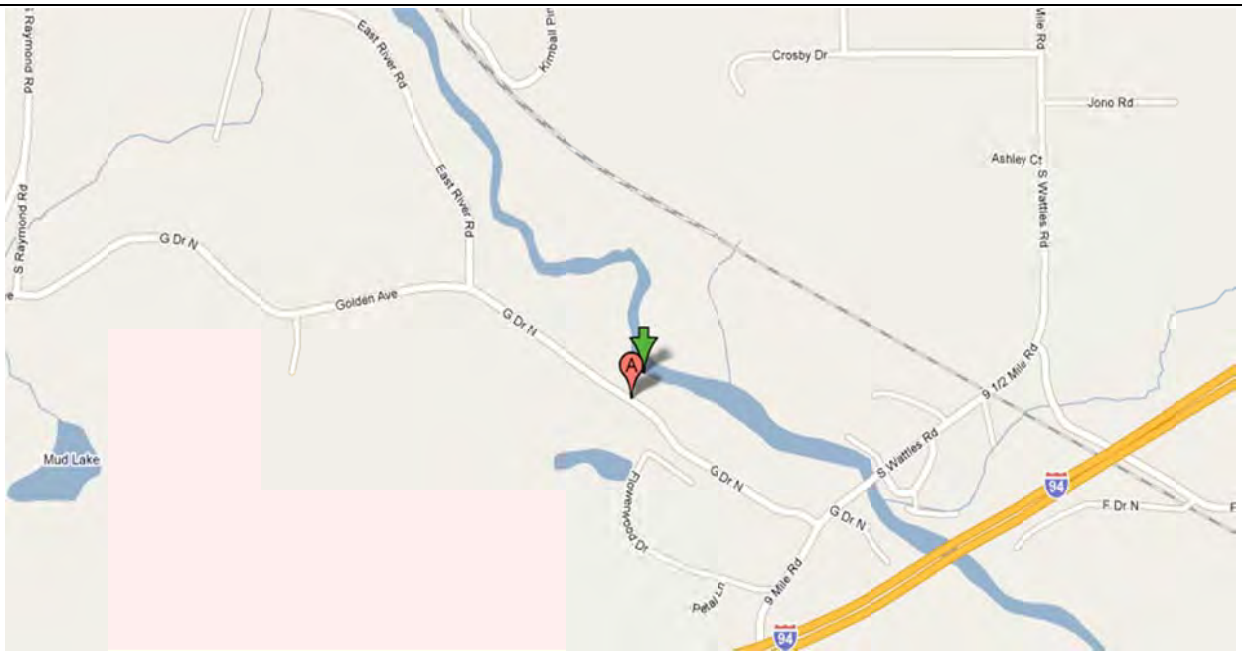
| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| A. Olson, Avery/Enbridge | 8/15/2012 1200 | B. Nelson, Avery/Enbridge | 8/15/2012 1202 | C. Haux, Enbridge | 8/15/2012 1202 |

**Toolbox Meeting Locations**

E4 - [redacted], Galesburg, MI 49053 GPS Coordinates Lat: 42.278265 Long: -85.452295




C3.2 [redacted] Battle Creek, MI 49014 GPS Coordinates Lat: 42.293492 Long: -85.124479




Refer to traffic plan for detailed access instructions.

| 1. Incident Name | 2. Operational Period (Date / Time) | Traffic Plan |
|---|---|---|
| **Kalamazoo River / Enbridge Spill** | From: **08/16/2012 / 0700 hrs**<br>To: **08/23/2012 / 0700 hrs** | |

# Traffic Safety Alert for Parking at Incident Command Post 1601 Pratt Avenue




- Slow speeds are imperative at all times.
- There is very limited parking with two-way traffic and pedestrian traffic. Watch vehicle speeds.
- Only large truck deliveries will be allowed entrance at the back entrance. Large truck deliveries are to check in at the Security Check Point.
- Everyone must check in at the Security Check Point as shown at the Pratt Avenue entrance.

Any further questions or concerns, contact the Safety Office.

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/16/2012 0700<br>To: 08/23/2012 0700 | |

## 3.TRAFFIC PLAN: C 5




[redacted] Battle Creek, MI 49014
GPS Coordinates Lat: 42.304905 Long: -85.183463

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-15-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/16/2012 0700<br>To: 08/23/2012 0700 | |

## 3.TRAFFIC PLAN: C 0.4




[redacted] Ceresco, MI 49033

GPS Coordinates: Lat: 42.265127, Long:-85.048364

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-15-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/16/2012 0700<br>To: 08/23/2012 0700 | |

## 3.TRAFFIC PLAN: C 3.2




ENBRIDGE

Drawn: NS 8/6/2012
Approved: BN 8/6/2012
Project #: 60246209

Map Location



Legend
Boat Launch
Parcel Boundary
Traffic Route
0 30 60 Feet
N

BOAT LAUNCH - C 3.2

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY,
LIMITED PARTNERSHIP

[redacted] Battle Creek, MI 49014

GPS Coordinates: Lat: 42.293492 Long: -85.124479

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-15-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/16/2012 0700<br>To: 08/23/2012 0700 | |

## 3.TRAFFIC PLAN: Wildlife Center




[redacted] Battle Creek, MI 49014

GPS Coordinates: Lat: 42.292173, Long: -85.123578

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-15-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/16/2012 0700<br>To: 08/23/2012 0700 | |

## 3.TRAFFIC PLAN: D2




This launch provides access from MP 15.75 to MP 23.25.

[redacted] Battle Creek, MI 49037

GPS Coordinates: Lat: 42.338427 Long:-85.232309

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-15-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/16/2012 0700<br>To: 08/23/2012 0700 | |

## 3.TRAFFIC PLAN: E 0.5




(Shady Bend Camp Ground), 15320 East Augusta Dr, Augusta, MI 49012
GPS Coordinates:Lat: 42.347408 Long: -85.3295

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-15-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/16/2012 0700<br>To: 08/23/2012 0700 | |

## 3.TRAFFIC PLAN: E 2




[redacted] Augusta, MI 49053

GPS Coordinates: Lat: 42.32412 Long: -85.358041

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-15-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/16/2012 0700<br>To: 08/23/2012 0700 | |

## 3.TRAFFIC PLAN: E 3



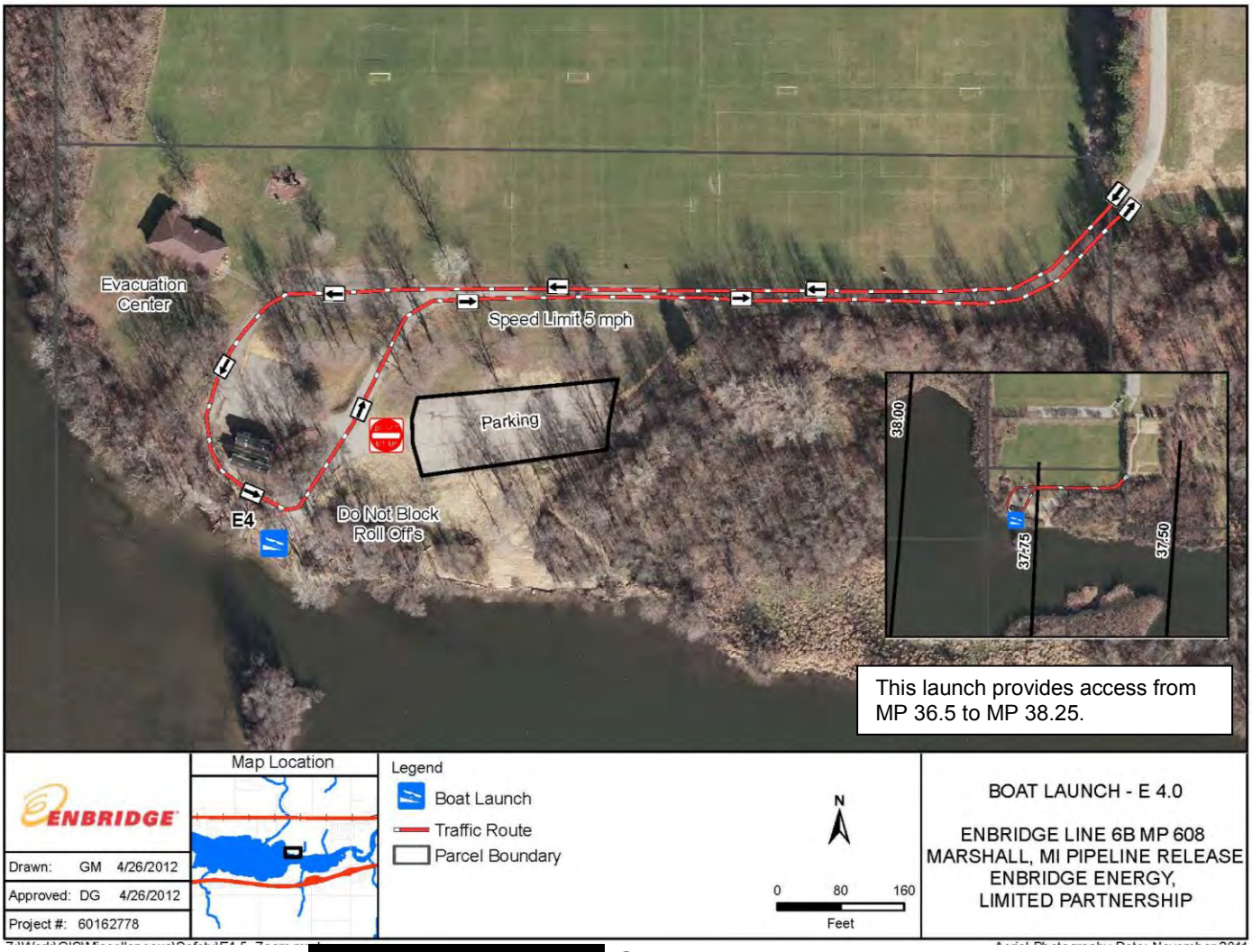

[redacted] Galesburg, MI 49053

GPS Coordinates: Lat: 42.284663 Long: -85.412855

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-15-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/16/2012 0700<br>To: 08/23/2012 0700 | |

## 3.TRAFFIC PLAN: E 4




[redacted] Galesburg, MI 49053

GPS Coordinates: Lat: 42.278265 Long: -85.452295

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-15-2012 |

| 1. Kalamazoo River/ Enbridge Spill | 2. Operational Period (Date / Time)<br>From: 08/16/2012/ 0700 hrs<br>To: 08/23/2012/ 0700 hrs | Operations Communications Plan |
|---|---|---|

3. Communication Contact List

| NAME | PHONE NUMBER | EMAIL ADDRESS | AGENCY / AFFILIATION | POSITION |
|---|---|---|---|---|
| Aboulafia, Isaac | [redacted] | [redacted] | START/US EPA | Planning |
| Adams, Rich | | | Enbridge | Operations |
| Aguilera, Jose | | | START/US EPA | O&M |
| Albig, Brian | | | AECOM/Enbridge | Environment |
| Arcaute, Francisco | | | US EPA | Public & Govt. Affairs |
| Back, Amy | | | Avery/Enbridge | PSC |
| Back, Berl | | | Avery/Enbridge | Facilities Manager |
| Baker, Paul | | | Kalamazoo OEM | MAC |
| Bareham, Dave | | | Enbridge | Environment |
| Berecz, Karen | | | START/US EPA | O & M |
| Berninger, Mark | | | Cardno JFNEW/Enbridge | Restoration |
| Blackburn, Ted | | | START/US EPA | Safety Officer |
| Blanchard, Mark | | | START/US EPA | |
| Bohrmann, John | | | Enbridge | Environment |
| Brettmann, Gregg | | | DEQ | Environmental Unit Leader |
| Bretz, Ryan | | | Manpower/Enbridge | IT |
| Brown , Kevin | | | Weston/DEQ | GIS Support |
| Bukowski, Breanna | | | Weston/DEQ | Planning |
| Burrous, Lauren | | | USGS | USGS |
| Capone, Dan | | | START/US EPA | Operations |
| Castor , Andrew | | | START/ US EPA | Operations |
| Cavazos, Lupe | | | START/US EPA | Planning |
| Cedillo, Ricardo | | | Manpower/Enbridge | Security Unit Leader |
| Churchill, Kim | | | Weston/DEQ | Environmental Unit |
| Cox, Renee | | | Manpower/Enbridge | Documentation |
| Daniel, Pat | | | Enbridge | MAC |
| Deblasio, Don | | | US EPA | Public Information |
| Dekker, Shaun | | | SET/Enbridge | Waste Management |
| DelloRusso, Vincent | | | Weston/DEQ | Operations |
| DeLong, Michelle | | | DEQ | Incident Commander |
| Dennis, Kate | | | Manpower/Enbridge | Admin Support |
| Dobrowski, Ed | | | USGS | USGS |
| Doherty, Bob | | | Enbridge | Environment |
| Dollhopf, Ralph | | | US EPA | Incident Commander (FOSC) |
| Dougherty, Kelly | | | START/US EPA | Public Information |
| Dryburgh, Dave | | | AECOM/Enbridge | Environment |
| Dubois, Amy | | | US EPA | |
| DuCharme, Mark | | | DEQ | Incident Commander |
| Dunham, Durk | | | Calhoun County EMA | MAC |
| Eversole, Elijah | | | Enbridge/AECOM | Containment |
| Fitzpatrick, Faith | | | USGS | Tech Specialist |
| Fizzell, Chad | | | DEQ | GIS Support |
| Frost, Joe | | | Calhoun County Health | MAC |
| Fuller, Mark | | | AECOM/Enbridge | Environment |
| Giles-Smith, Carolyn | | | Weston/DEQ | Documentation |
| Good, Gena | | | START/US EPA | |
| Graan, Tom | | | START/US EPA | Submerged Oil Lead |
| Gross, Dale | | | Superior/Enbridge | Safety Officer |
| Guest, Nyekah | | | Enbridge | Procurement |
| Haak, Matt | | | START/US EPA | Sit Unit Leader |
| Hackley, Richard | | | US EPA | Finance |
| Haux, Christopher | | | Enbridge | OSC |
| Hehir, Nate | | | Superior/Enbridge | Environment |
| Hendrix, Kristen | | | START/US EPA | Operations |
| Hoard, Chris | | | USGS | USGS |
| Hogan, Charlene | | | AECOM/Enbridge | Environment |
| Hong, Lorie | | | START/US EPA | Logistics |
| Hummel, Rebecca | | | Manpower/Enbridge | Finance |
| Johnson, Rex | | | START/US EPA | Operations |
| Jones, Susan | | | DEQ | Operations |
| Kaiser, Ken | | | AECOM/Enbridge | GIS Specialist |
| Kent, Norm | | | AECOM/Enbridge | Environment |
| Kerpash, Paul | | | SWAT/Enbridge | Control Point Management |
| Kidder, Steven | | | START/US EPA | Operations SOS |
| Kirby-Miles, Leslie | | | US EPA | Legal |
| Kogge, Stu | | | Cardno JFNEW/Enbridge | Operations |
| Kosmowski, Christine | | | City of Battle Creek | MAC |
| Lantinga, Chris | | | START/US EPA | Operations |
| Laquerre, Tim | | | START/US EPA | Operations |
| Laskey, Crystal | | | MDEQ | Planning |
| Lisabeth, Nicole | | | MSP | PIO |
| Luetke, Mindy | | | START/US EPA | PSC |
| Lundholm, Mark | | | Weston/DEQ | Operations |
| Makoski, Paul | | | Calhoun County Health | MAC |
| Manshum, Jason | | | Enbridge | Public Affairs |
| Massey, Dylan | | | LBG/Enbridge | Environmental Inspector |
| McKay, John | | | Enbridge | ROW |
| McKenzie, Michael | | | Battle Creek Emer. Srvs. | MAC |
| Mehl, Rick | | | START/US EPA | |
| Meny, Alyssa | | | Enbridge | Communications Unit |
| Moisan, Paul | | | START/US EPA | Documentation |
| Muccianti, Marcus | | | START/US EPA | Operations |

| 1. Kalamazoo River/ Enbridge Spill | 2. Operational Period (Date / Time)<br>From: 08/16/2012/ 0700 hrs<br>To: 08/23/2012/ 0700 hrs | Operations Communications Plan |
|---|---|---|

**3. Communication Contact List**

| NAME | PHONE NUMBER | EMAIL ADDRESS | AGENCY / AFFILIATION | POSITION |
|---|---|---|---|---|
| Nelson, Brad | [redacted] | [redacted] | Avery/Enbridge | DPSC |
| Neumeier, Laura | | | Trimedia/Enbridge | Air Monitoring |
| Newberry, Christina | | | Manpower/Enbridge | Documentation |
| Noble, Steve | | | DEQ | Water Resources Division |
| Nye, Dennis | | | START/US EPA | Recovery |
| Oleschuk, Rick | | | Enbridge | Safety Officer |
| Olson, Alex | | | Avery/Enbridge | Planning |
| Ostrodka, Steve | | | US EPA | Submerged Oil Lead |
| Periard, Debora | | | AECOM/Enbridge | GIS Support |
| Pesses, David | | | LBG/Enbridge | Environmental Inspector |
| Pierce, Brennan | | | START/US EPA | Documentation |
| Piescher, Matthew | | | Avery/Enbridge | Field Inspector |
| Porter, Pete | | | Salem/Enbridge | Right of Way Agent |
| Powell, Meredith | | | Hill & Knowlton/Enbridge | Public & Govt. Affairs |
| Pratt, Catherine | | | AECOM/Enbridge | Environment |
| Quiggle, Lisa | | | MDCH | |
| Rader, Larry | | | START/US EPA | Sit Unit Leader |
| Reber, Lt. Barry | | | MSP EMHSD | MAC |
| Reigner, Selma | | | Kelly Services/Enbridge | Admin. Assistant |
| Rosenbaum, Charmaine | | | Enbridge | Project Support Manager |
| Ross, Shauna | | | START/US EPA | |
| Roubik, Jonathan | | | START/US EPA | Operations |
| Rutherford, James | | | Calhoun County Health | MAC |
| Rutkowski, Sonny | | | START/US EPA | Technical Specialist |
| Sahara, Dean | | | SWAT/Enbridge | Operations |
| Sarkipato, Ernie | | | DEQ | |
| Saylor, Andy | | | SET/Enbridge | |
| Schmitt, Ben | | | DEQ | Operations |
| Schneider, Dave | | | Kalamazoo County | MAC |
| Schoeff, Alison | | | AECOM/Enbridge | Water Monitoring Supervisor |
| Shattuck, Terri | | | Weston/DEQ | Operations |
| Smith, Brian | | | Tulsa/ Enbridge | Overbank Excavation Field Inspector |
| Snider, Jim | | | Enbridge | Environment Director |
| Sobojinski, John | | | Enbridge | Incident Commander |
| Spruit, Jeff | | | DEQ | Environment |
| Standen, Joe | | | LBG/Enbridge | River Opening Implementation |
| Steede, Bob | | | Enbridge | DOSC |
| Stiemsma, Bryan | | | AECOM/Enbridge | Environment Supervisor |
| Stuart, Mike | | | START/US EPA | Safety Officer |
| Sumner, Matt | | | AECOM/Enbridge | Environment |
| Taft, Bill | | | DEQ | Wildlife Environmental NRDA Group |
| Thierry, Mike | | | START/US EPA | Operations |
| Thomas, Brittany | | | START/US EPA | Finance |
| Thompson, Doug | | | DEQ | |
| Torres, Jason | | | START/US EPA | GIS Specialist |
| Ushio, Miako | | | AECOM/Enbridge | Talmadge Creek Remediation Lead |
| Vail, Linda | | | Kalamazoo County Health | MAC |
| Valenza, James | | | START/US EPA | GIS Specialist |
| Vega, Sonia | | | US EPA | Deputy Incident Commander |
| Victory, Joe | | | START/US EPA | DOSC |
| Vilhauer, Eric | | | Enbridge | ROW Agent |
| Vosburg, Cheryl | | | City of Marshall | MAC |
| Wagner, Greg | | | START/US EPA | Submerged Oil Recovery |
| Wahrer, Marc | | | START/US EPA | Operations |
| Wallace, John | | | Avery/Enbridge | Operations Inspector |
| Watt, Tammy | | | Enbridge | Finance |
| Webb, Oliver | | | SWAT/Enbridge | Control Point Management |
| Weir, Karen | | | START/US EPA | |
| Wekseth, Mike | | | SWAT/Enbridge | Operations Inspector |
| Wellman, John | | | START/US EPA | Operations |
| Wessling, Elizabeth | | | START/US EPA | PSC |
| Williams, Lisa | | | USFWS | |
| Wilson, Lee | | | Weston/DEQ | Operations |
| Wiswell, Amber | | | Kelly Services/Enbridge | Admin. Assistant |
| Wolf, Mike | | | AECOM/Enbridge | Monitoring |
| Wurfel, Brad | | | DEQ | Public Information |
| Yokom, Brett | | | Trimedia/Enbridge | Environment |
| Zahner, Dan | | | START/US EPA | Operations |
| Zambetis, Mike | | | Cardno JFNEW/Enbridge | Restoration |
| Zelt, Ron | | | USGS | Environmental Unit Leader Assistant |

# Enbridge Oil Spill Incident - Campbell ICP, Marshall, MI
# U.S. EPA Trailer Phone Directory

| Trailer No. | Trailer Designations | Phone Number | Ext No. |
|---|---|---|---|
| 1 | Deputy IC Office (SW) | 269-781-1995 | 11995 |
| 1 | IC Fax Line | 269-781-1110 | 11127 |
| 1 | IC Conference Area | 269-781-1026 | 11026 |
| 1 | Operations Section Chief | 269-781-1994 | 11994 |
| 1 | Health & Safety (West End) | 269-781-1991 | 11991 |
| 2 | Work Room (NW) | 269-781-1955 | 11955 |
| 2A | Large Conference Room (MID) | 269-781-1591 | 11591 |
| 2B | Conference Room (NE) | 269-781-1954 | 11954 |
| 3 | MDEQ Field Trailer | 269-781-1953 | 11953 |
| 3 | MDEQ Documentation | 269-781-1951 | 11951 |
| 4 | Operations | 269-781-1958 | 11958 |
| 4 | Operations | 269-781-1971 | 11971 |
| 4 | River Opening | 269-781-1972 | 11972 |
| 7 | Copy Center | No Phone | |
| 8 | Logistics | 269-781- 1997 | 11997 |
| 8 | EPA Hotline | 269-781-1992 | 11992 |
| 8 | Weston IC (East End) | 269-781-1988 | 11988 |
| 9 | Planning | 269-781-1015 | 11015 |
| 9 | EPA Documentation | 269-781-1905 | 11905 |
| 9 | GIS | 269-781-1018 | 11018 |
| 9 | Environmental Unit | 269-781-1019 | 11019 |
| 9 | Conference Room | 269-781-1963 | 11963 |
| 9 | Wate Management Branch | 269-781-1955 | 11955 |
| 9 | Environmental Unit (USGS) | 269-781-1582 | 11582 |
| 9 | PIO | 269-781-1587 | 11587 |
| 10 | MDEQ-WRD | 269-781-1014 | 11014 |
| 10 | MDEQ-WRD | 269-781-1023 | 11023 |
| 10 | MDEQ-WRD | 269-781-1022 | 11022 |
| 11 | MDEQ-RD & Weston | 269-781-1024 | 11024 |
| 11 | MDEQ-RD & Weston | 269-781-1012 | 11012 |
| 11 | MDEQ-RD & Weston | 269-781-1013 | 11013 |
| Indoor | Weston Indoor Area | 269-781-1961 | 11961 |

**To dial between trailers, use the extension number, 1-1997 for Logistics**

To place a conference call within the VOIP network, dial first number, select button under "more", scroll down to Confrm and select. Dial next number, press confirm again to connect all. Repeat steps to connect more numbers.

Repeat the same steps to conference in one outside line.

| MEDICAL PLAN<br>ICS – 206 | Kalamazoo River/Enbridge Spill | 1. Date Prepared<br>8/15/2012 | 2. Time Prepared<br>0800 | 3. Operational Period<br>08/16/2012 0700<br>08/23/2012 0700 |
|---|---|---|---|---|

## 4. Transportation

### Ambulance Services

| Name | Address | Phone | Paramedics Yes | Paramedics No |
|---|---|---|---|---|
| Lifecare Ambulance | 330 West Hamblin Avenue,<br>Battle Creek, MI 49015 | 9-1-1 | X | |
| City of Marshall Fire Dept | 323 West Michigan Avenue,<br>Marshall, MI 49068 | 9-1-1 | X | |

## 5. Hospitals

| Name | Address | Travel Time Air | Travel Time Ground | Phone | Helipad Yes | Helipad No | Burn Center Yes | Burn Center No |
|---|---|---|---|---|---|---|---|---|
| Bronson Methodist Hospital | 601 John Street<br>Kalamazoo, MI | 15 Min | 50 min | 269-341-7654 | X | | X | |
| Borgess Medical Center | 1521 Gull Road<br>Kalamazoo, MI | 15 min | 50 min | 269-226-7000 | X | | | X |
| Oaklawn Hospital | 200 N. Madison Ave<br>Marshall, MI | | 5 min | 269-781-4271 | | X | | X |
| Battle Creek Health System | 300 North Avenue<br>Battle Creek, MI | | 20 min | 269-966-8000 | | X | | X |

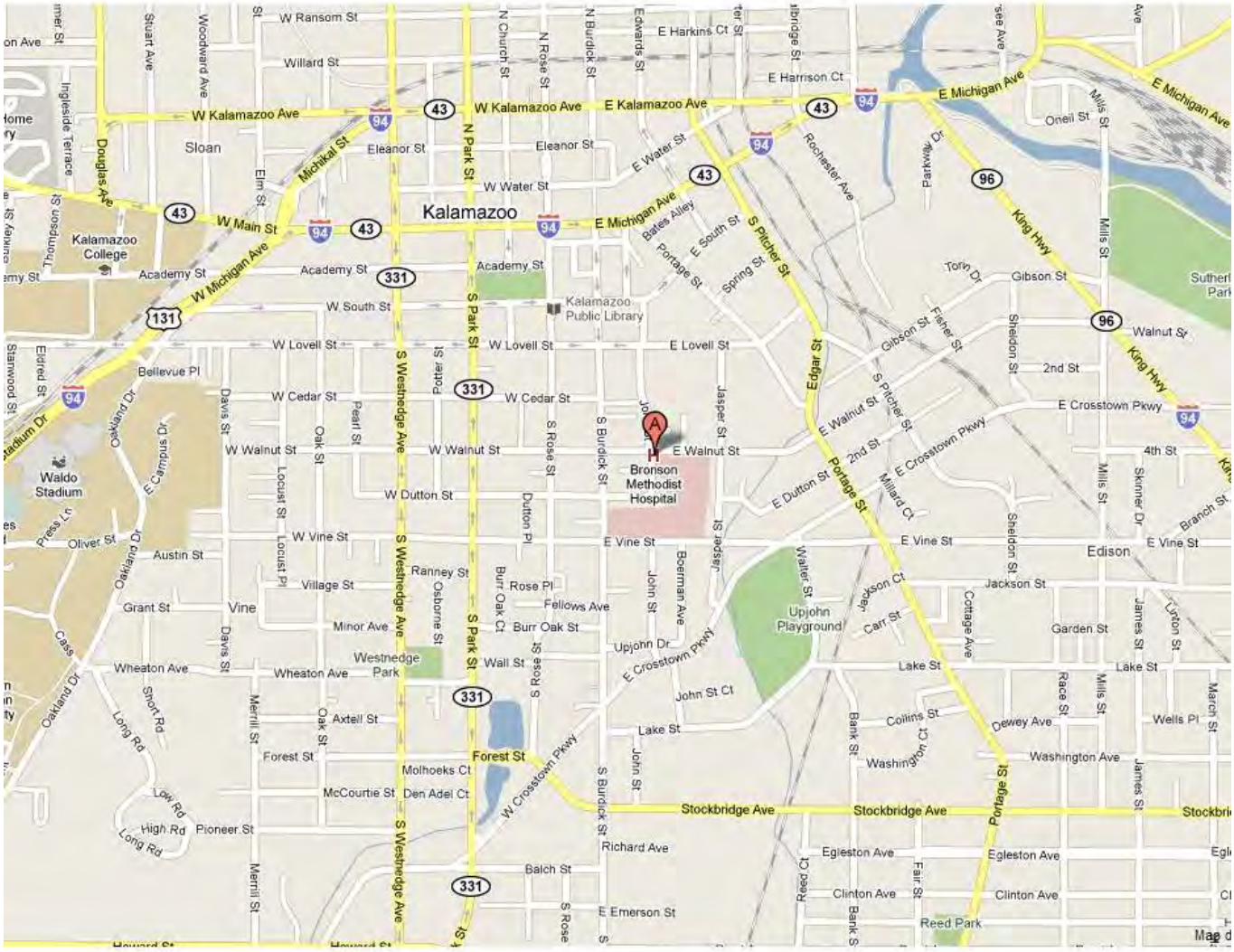
## 6. Medical Emergency Procedures

1. Dial 9-1-1 for all emergencies. Give 9-1-1 operators as much information as possible. Stay on the line and answer all questions – information may be radioed to responders. On-site personnel trained and certified in first aid should attempt to stabilize victim until fire department/EMS personnel arrive.
2. Report all incidents to the Project Safety Officer. Keep a log of events. Secure the area. Identify witnesses for later investigation.

NOTE: Suspend all operations during an actual emergency situation!

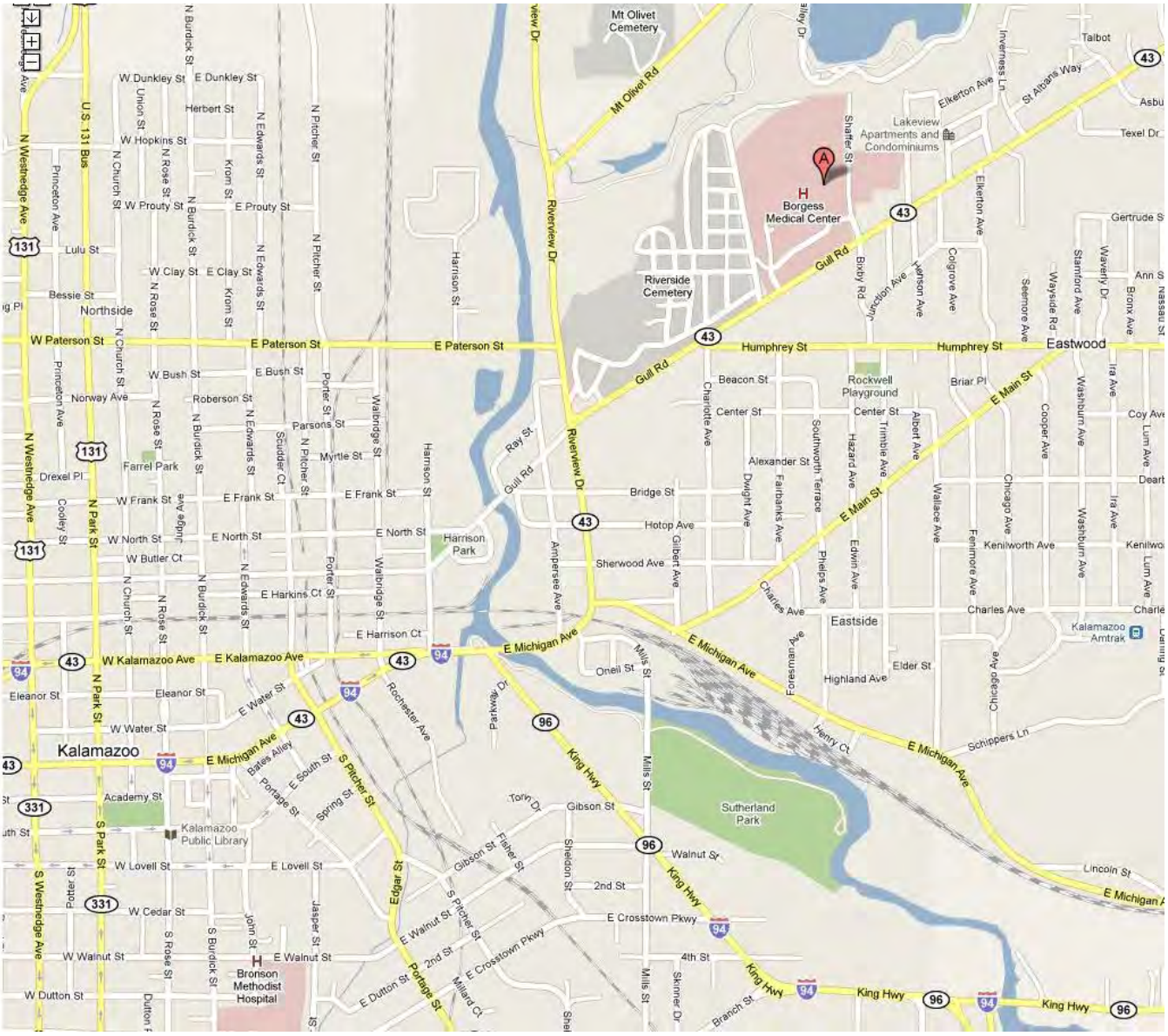
| Prepared by | 10. Reviewed by (Safety Officer) |
|---|---|
| Dale Gross 8/15/2012 | Dale Gross 8/15/2012 |

# Hospital Route Map – Bronson Methodist Hospital – Kalamazoo, MI



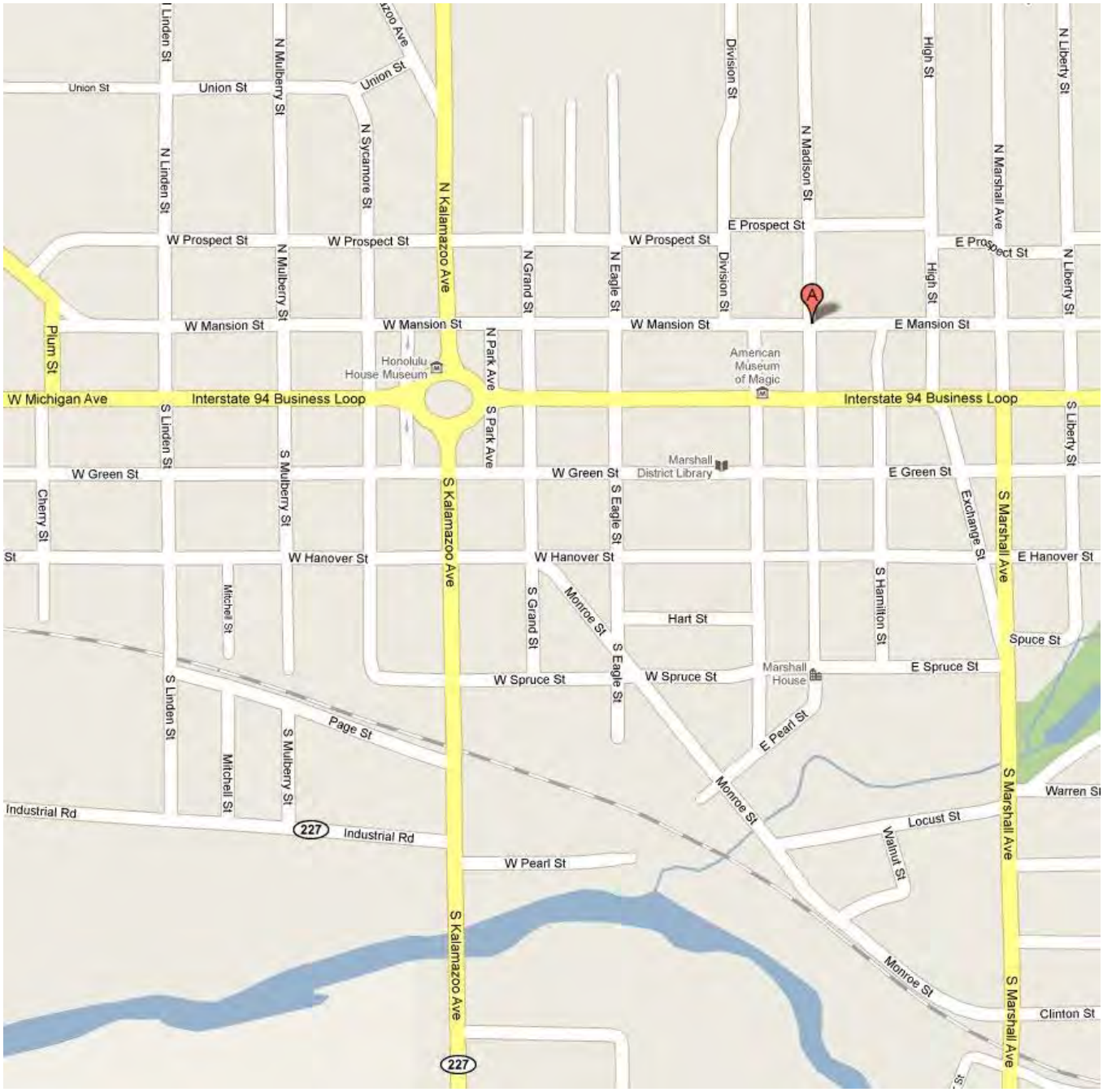

Bronson Methodist Hospital
601 John St
Kalamazoo, MI 49007
(269) 341 - 7979

# Hospital Route Map – Borgess Medical Center – Kalamazoo, MI



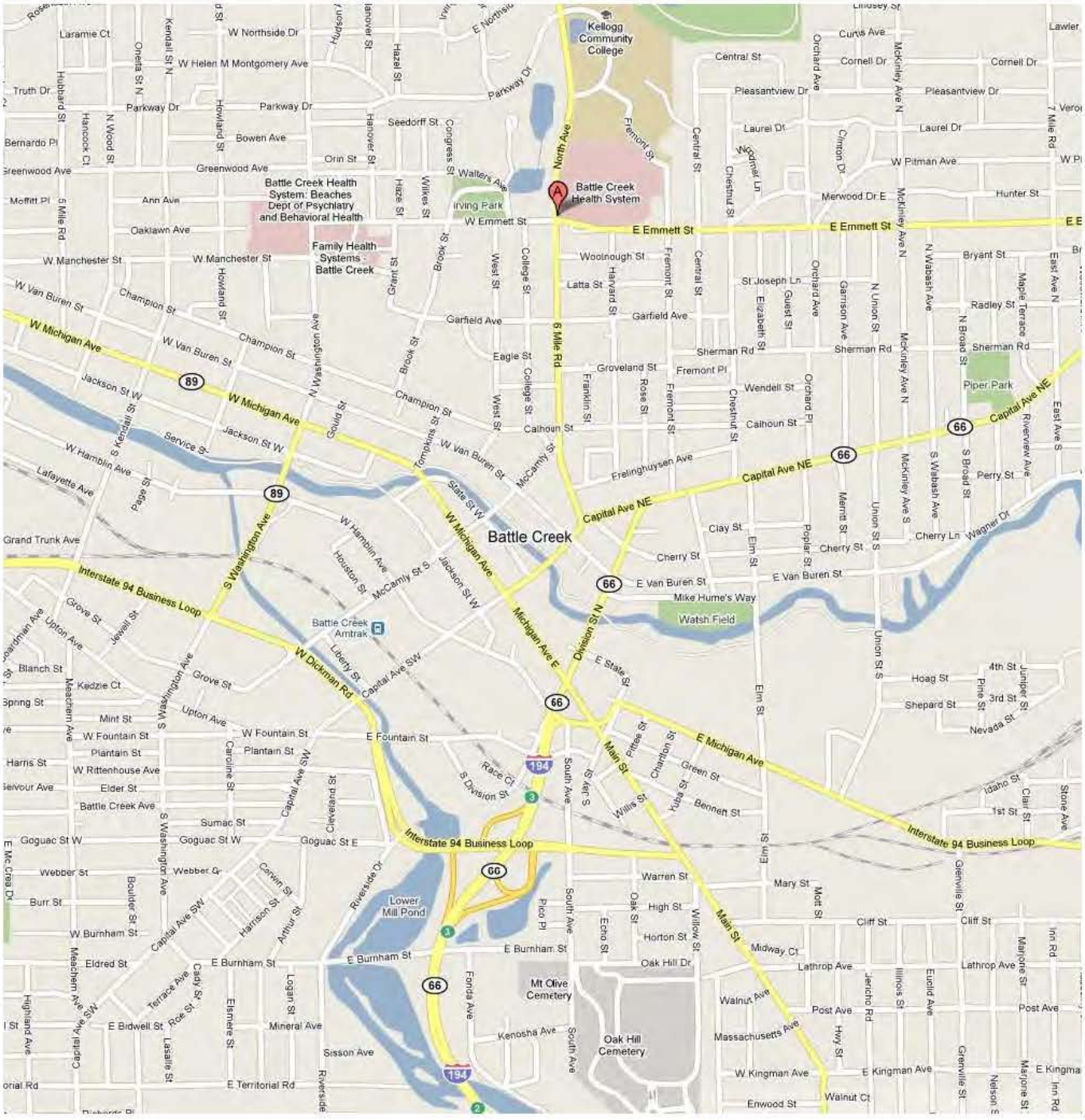

Borgess Medical Center
1521 Gull Road
Kalamazoo, MI 49048
(269) 226 - 7000

# Hospital Route Map – Oaklawn Hospital – Marshall, MI




Oaklawn Hospital
200 North Madison St.
Marshall, MI
(269) 781-4271

# Hospital Route Map – Battle Creek Health System – Battle Creek, MI




Battle Creek Health System
300 North Avenue
Battle Creek, MI
(269) 966-8000

# KALAMAZOO RIVER/ENBRIDGE SPILL
## General Safety Instructions
Operational Period: 8/16/12 (0700hrs) to 8/23/12 (0700hrs)

**River Opening:** Be advised that the Kalamazoo River has been opened to the public except for work areas marked by buoys. Public recreational activities are to be expected on the river. Be courteous and respectful to members of the public at all times. Be aware that members of the public may be present in work areas.

**No Wake Zone:** A no wake zone has been established in the Southern Delta and Neck area. The zone extends 100 feet from the new containment boom locations, as well as when traveling through the gates.

**Weather:** Review weather information prior to commencing work each day. Be aware of changes in the weather conditions and ensure proper controls are implemented to address the weather hazards such as: Lightning, Rain, Fog, etc. Take actions in accordance with instructions provided by supervisory personnel and as received through the Call-Em-All system.

**Sunscreen:** Sunscreen should be applied to exposed skin, and not just if you are going to be in the sun. UVB rays cannot penetrate glass windows, but UVA rays can, leaving you prone to these damaging effects if unprotected.

**PPE:** Be prepared for changing weather conditions by wearing, and/or having available, appropriate rain gear and approved safety footwear with appropriate soles for use on slippery ground conditions. When PFDs are required you must ensure that they are United States Coast Guard approved and are the outermost layer, with reflective vest worn under the PFD.

**Vehicles:** Follow speed limits and adjust speed as necessary for road conditions. Make sure your vehicle is in proper working condition.

**Process for Reporting Potentially Hazardous Materials:** If you observe a potentially hazardous material which is not spill related, notify field safety officer and evacuate the area. Do not let anyone into the area unless it is Enbridge Safety and/or Operations Inspector. Immediately report all details to the Enbridge Safety Office at 269-781-1913. The Enbridge Safety Office will alert the Emergency Response Center or call (911). Notifications will go to Calhoun County EMS or Kalamazoo County EMS, EPA, DEQ and Pollution Emergencies.

**SPECIAL NOTATION ON WEATHER and HAZARD ALERT MESSAGING:**

(See daily updates for additional weather information).

Enbridge Safety will maintain consistent weather messages by compiling information and present through daily briefings. Weather forecast updates will be distributed to field safety staff for further communication in the field. Enbridge Safety is responsible for communicating weather alerts based on information received through the Weather TAP system and text messages received from the National Weather Service in Grand Rapids.

In the event of severe weather warnings and alerts, Enbridge Safety will be monitoring via the Weather TAP system. Enbridge Safety will initiate the notification process by using the Call-Em-All system to Field Safety Staff and Operations. Operations in turn will contact their Operation Field Inspectors. The Operation Field Inspector will communicate the necessary plan with their field work crews. DK Security will be notified by Enbridge Safety by phone from 1800 – 0700 hours.

**Severe Weather Alerts:** Take appropriate shelter when the county activates their tornado warning sirens. In the Incident Command Post, report to the designated tornado shelter rooms. Where appropriate shelter is not available, lie flat in a nearby ditch or depression and cover your head with your hands. Be aware of potential for flooding and flying debris.

*Note:* Emergency notification siren systems will be tested on the first (1st) Saturday of each month in Calhoun and Kalamazoo Counties. Typically a siren is sounded at 1200 hours; however, this could be delayed due to current circumstances in the county.

**Fire/Building Evacuation Alert:** In the event of a fire, utilize air horn to initiate series of three 1 second blasts. Must report to the designated evacuation point upon hearing a series of three 1 second air horn blasts. **Please close all doors, and turn lights out upon leaving your area.**

***Call the Safety Office at 269-781-1914 if you have weather related concerns. Call 269-781-1913 for other Safety related issues.***

**Safety Orientations: Held Monday - Friday at 0800 at the Operations Center (1601 Pratt Avenue)**

**Boat Safety Awareness Orientation: Available by appointment Monday – Friday, contact the Safety Office.**

**If you see wildlife (dead or alive) that is impacted by the oil, call Bob Doherty** [redacted]

| ***Field Safety Staff*** | |
|---|---|
| **Name** | **Phone** |
| Barry Vavrina | [redacted] |

**Call-Em-All:** Will be tested by Enbridge Safety office on Wednesday's at 1200 hours.

**First Aid Kits:** There are four (4) kits located within the Incident Command Post Facility. Please review the Evacuation Plan map for locations.

**KALAMAZOO RIVER/ENBRIDGE SPILL**
**General Safety Message**
Operational Period: 8/16/12 (0700hrs) to 8/23/12 (0700hrs)

**DAY 1:**
Thursday, August 16, 2012

**Life Saving Rule #1 – Hazard Management**

- Always ensure an analysis has been performed for any potential hazards that may arise.
- Proper authorization must be received prior to starting any work.
- Follow the guidance that is provided in the hazard identification documentation to ensure the safety and security of the workers and the work site.

**DAY 2:**
Friday, August 17, 2012

**Driving/Traffic Safety**

1) Always Wear Seatbelt
2) Follow all Traffic Signals/ Signs/ Speed Limits
3) Adjust Speed for Road/ Weather Conditions
4) Maintain Safe Following Distance
5) Secure Loads (Boats/ Waste/ Equipment, etc.)
6) Avoid Distractions
    a. Cell Phone/ Radio/ Electronic Devices
7) Pedestrians/ Cyclists/ Children/ Wildlife
8) Adequate Clearance - Fixed Objects/ Vehicles/ Equipment
9) Parking:
    a. Car Pooling
    b. Designated Areas
    c. Pulling Through
    d. Back-In/ Honk Horn
10) Vehicle Inspection – Brakes/ Horn/ Wipers/ Tire Pressure/ Windshield/ Lights/ Operating Controls

**DAY 3/ DAY 4:**
Saturday, August 18– Sunday, August 19, 2012

**School Activity Traffic Safety**

All motorists need to take special care while driving. Although school is not in session until September, there has been an increase in pedestrian traffic due to pre-school year activities and sports. Younger children often lack the skills to negotiate traffic safely. Please adhere to the following rules:

1) Be ready to stop at all times
2) If there are no sidewalks – drive cautiously
3) Always try to make eye contact with children waiting to cross road(s)
4) Be patient and wait for children to complete their crossing before proceeding

**DAY 5:**
Monday, August 20, 2012

**Fire Prevention**

Be aware that with the hot, dry weather, we need to be extra careful about ignition sources and combustible materials at the work sites. Items to be aware of include:

- Vehicles and equipment located in areas where the exhaust components contact or discharge against combustible materials, such as tall grass and weeds.
- Oily Rags: Oily rags and similar material shall be stored in metal or other approved containers equipped with tight-fitting covers
- Smoking materials. Only smoke in prepared, designated areas and be sure extinguish and dispose of materials properly.
- Good Housekeeping is an important part of fire prevention. Trash is to be collected and secured daily until it can be properly disposed of.

**DAY 6:**
Tuesday, August 21, 2012

**Yellow Jacket/Wasp/Bee Awareness**

Yellow Jackets:

- Most Aggressive
- Can Sting Repeatedly – Quite Painful
- Extremely Defensive When Nest Disturbed

Wasps:

- Can Sting Repeatedly – Quite Painful

Bees:

- Least Aggressive
- Some Species Sting Repeatedly - Painful

Potential Nest Locations:

- Hanging Tree Limbs
- Ground Level – Hardened Mud
- Rodent Burrows
- Stand Alone Objects/ Buildings

If Stung – Seek First Aid Immediately and Report to Enbridge Safety

Closely Monitor & Address Severe Allergic Reactions

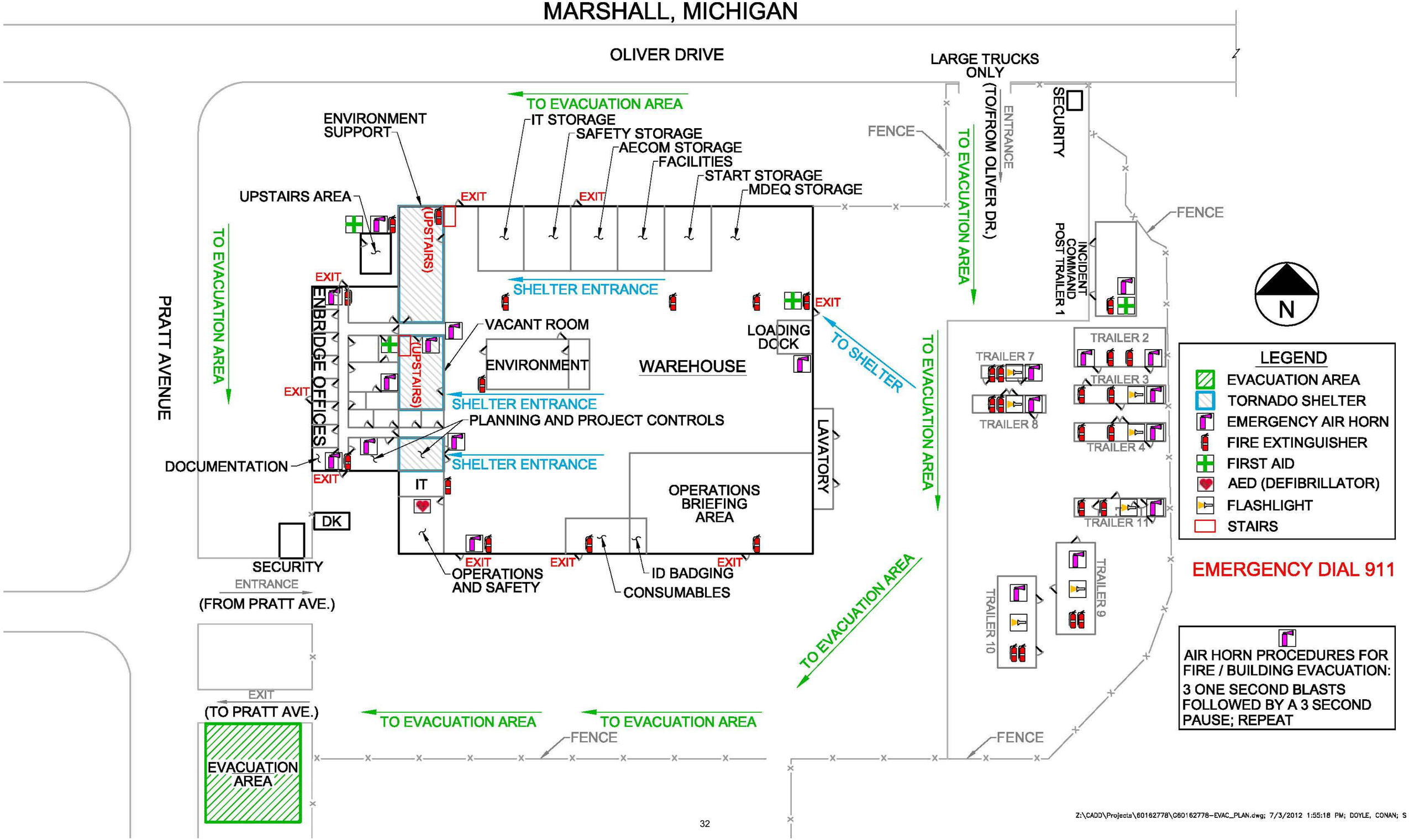
**DAY 7:**
Wednesday, August 22, 2012

**Severe Weather – Lightning**

Lightning is one of the most underrated severe weather hazards, yet it ranks as one of the top weather killers in the U.S. During thunderstorms no place outside is safe. If you can hear thunder, lightning is close enough to strike.

**If a co-worker is struck by lightning -** Lightning victims do not carry an electrical charge, they are safe to touch, and need urgent medical attention. Cardiac arrest is the immediate cause of death for those who die. Some deaths can be prevented if the victim receives the proper first aid immediately. Call 9-1-1 and perform CPR if the person is unresponsive or not breathing. Use an Automatic External Defibrillator if one is available.

# ENBRIDGE INCIDENT COMMAND POST FACILITY
# EMERGENCY RESPONSE / EVACUATION PLAN
# MARSHALL, MICHIGAN






Z:\CADD\Projects\60162778\G60162778-EVAC_PLAN.dwg; 7/3/2012 1:55:18 PM; DOYLE, CONAN; S

# Weather Forecast



| 1. Incident Name | 2. Operational Period (Date/Time) | DAILY MEETING SCHEDULE |
|---|---|---|
| KALAMAZOO RIVER / ENBRIDGE SPILL RESPONSE | From: August 16, 2012 0700 | ICS-230 |
| | To: August 23, 2012 0700 | |

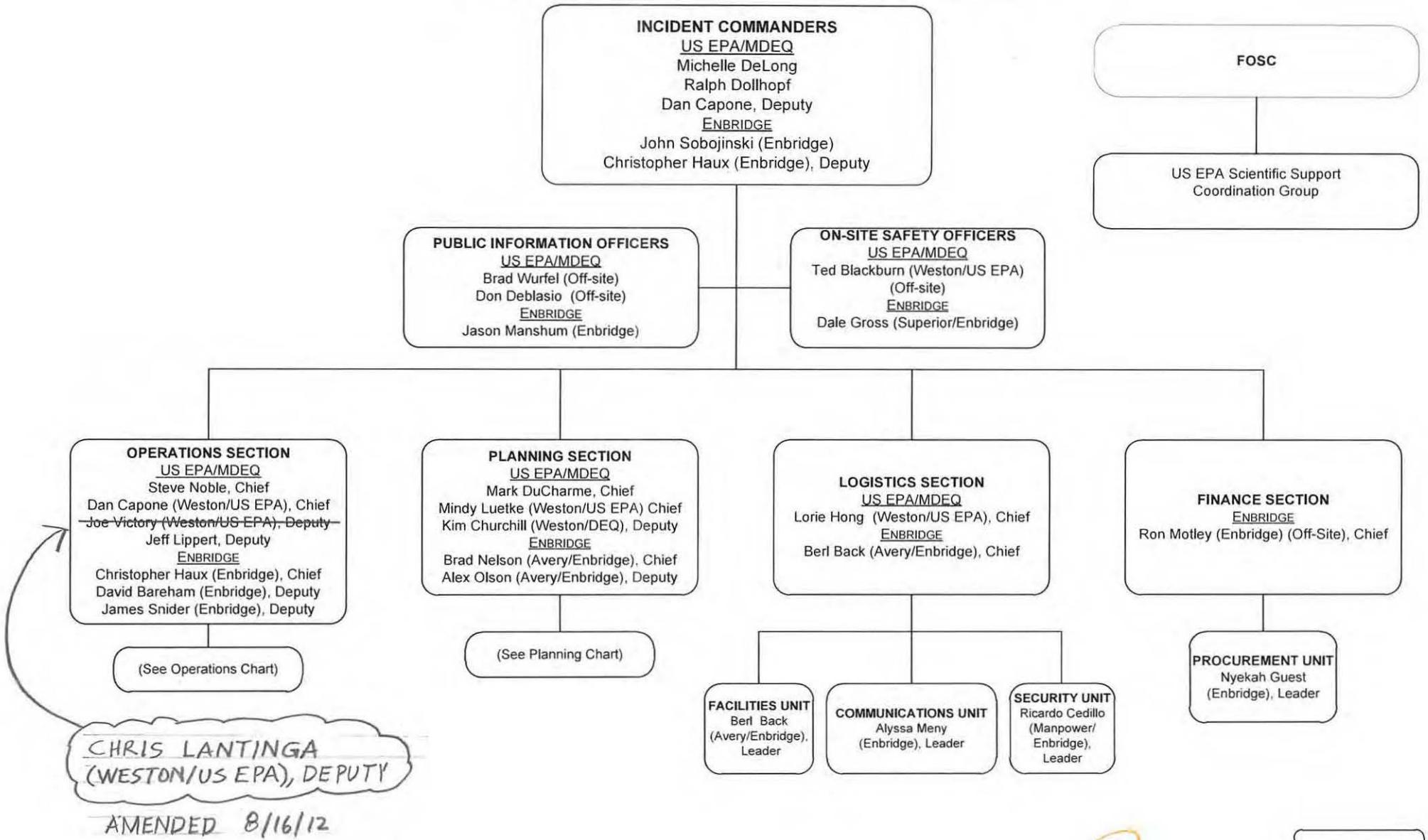
**3. Meeting Schedule (Commonly-held meetings are included)**

| Date/ Time | Meeting Name | Purpose | Attendees | Location |
|---|---|---|---|---|
| **8/16/2012** | **Thursday** | | | |
| **0700**<br>**0730** | Operations Briefing | Present IAP for the next Operational Period to Field Staff | Branch Directors and Field Staff | Field Locations |
| **1400**<br>**1600** | Kalamazoo River System Branch Special Purpose Meeting | Coordinate future Kalamazoo River System Branch activities | Kalamazoo River System Branch Directors and Group Supervisors | ICP (Conf Rm #11) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **8/17/2012** | **Friday** | | | |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **8/18/2012** | **Saturday** | | | |
| **8/19/2012** | **Sunday** | | | |
| **8/20/2012** | **Monday** | | | |
| **0900**<br>**0945** | Tactics | Finalize primary and alternate tactics and strategies to achieve UC | Operations, Planning, Safety | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **8/21/2012** | **Tuesday** | | | |
| **1400**<br>**1600** | Kalamazoo River System Branch Special Purpose Meeting | Coordinate future Kalamazoo River System Branch activities | Kalamazoo River System Branch Directors and Group Supervisors | ICP (Conf Rm #11) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **8/22/2012** | **Wednesday** | | | |
| **0900**<br>**0930** | Command and General Staff Meeting | UC presents direction to Command and General Staff. | UC, Command and General Staff, SITL | UC Meeting Room (Trailer #2) |
| **0930**<br>**0945** | Planning Meeting | Review tactics and assignments to meet the project Objectives for the next Operational Period. | UC, Command and General Staff, Scribe | UC Meeting Room (Trailer #2) |
| **0945**<br>**1000** | Objectives Meeting | Review current objectives and identify objectives for the next Operational Period. | UC, Operations, Safety, Planning, Scribe | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |

**4. Prepared by: Brad Nelson, Planning Section Chief** **Date/Time 8/15/2012**

1202

# Enbridge Pipelines Response Unified Command




CHRIS LANTINGA
(WESTON/US EPA), DEPUTY

AMENDED 8/16/12

ENBRIDGE

ICS 207
8/16– 8/23

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill** | 2. Operational Period (Date/Time)<br>Starting: **August 02, 2012, 0700**<br>End: **August 09, 2012, 0700** | **IAP Cover Sheet** |
|---|---|---|

3. Approved by Incident Commander(s):

M DeLong Michelle DeLong, Michigan Department Environmental Quality

Ralph Dollhopf, U.S. EPA

Sonia Vega, U.S. EPA

John Sobojinski, Enbridge

## INCIDENT ACTION PLAN

The items below are included in this Incident Action Plan:


- ICS 202 (Response Objectives) ..... 1
- ICS 207 (Organizational Chart & OPS Chart) ..... 2
- ICS 204 (Assignment List) ..... 5
- River Overview Map ..... 14
- Meeting Locations and Traffic Plans ..... 15
- ICS 205 (Communication List) ..... 25
- ICS 205a (Communications Attachment) ..... 27
- ICS 206 (Medical Plan) ..... 28
- Safety Message/Evacuation Plan ..... 33
- Weather Forecast ..... 36
- ICS 230 Meeting Schedule ..... 37





| 4. Prepared By: | Date/Time |
|---|---|
| Elizabeth Donaldson, Enbridge | 08/01/2012 |

| 1. Incident Name | 2. Operational Period (Date/Time) | INCIDENT OBJECTIVES ICS 202-EPA |
|---|---|---|
| **Kalamazoo River/Enbridge Spill** | From: August 02, 2012 @ 0700<br>To: August 09, 2012 @ 0700 | |

**3. Incident Objective(s)**

1. Ensure health and safety of the public and response and recovery personnel.
2. Ensure absolute containment of submerged oil and oil-containing sediments within the Delta and the Fan of Morrow Lake.
3. Ensure effective transition of regulatory oversight from EPA to Michigan DEQ jurisdiction as appropriate.
4. Perform recovery and containment of oil from affected public and private areas of river and river system.
5. Perform remediation and restoration of affected public and private areas of river and river system.
6. Maintain effective communications with cooperating and assisting agencies, the public, including regular coordination with the Multi-Agency Coordination Group (MAC).
7. Provide protection of environmentally and culturally sensitive areas including wildlife and historic properties.
8. Collect, coordinate, manage and communicate environmental and public health data including maintenance of Joint Information Center function.

**4. Operational Period Command Emphasis**

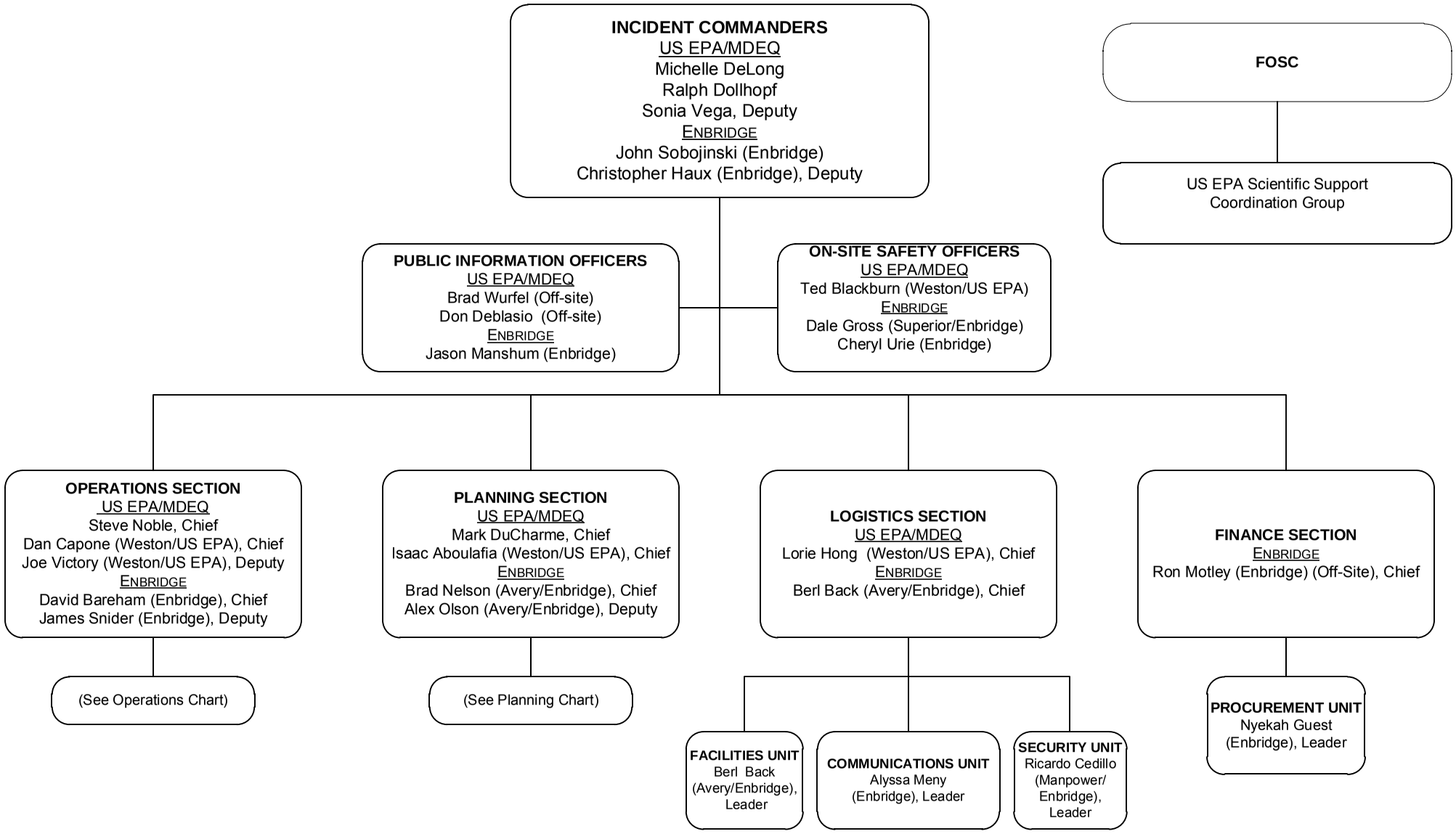
1. Focus on implementation of volume calculation field work.
2. Respond to and document emerging oil throughout the Kalamazoo River system, incorporating new protocols regarding which sheen to capture.
3. Complete installation of sediment trap structures if conditions warrant. Monitor and maintain the sediment traps.
4. Continue with efforts to prepare for the Source Area work activities.

**5. Safety Objectives for the Operational Period**

1. Assure effective integration of public safety and worker safety on the river. Focus on public and worker interaction.
2. Safe implementation of oil quantification field activities.

| | | |
|---|---|---|
| **6. Prepared by Planning Section Chief (Enbridge):**<br>Brad Nelson | **Date/Time:**<br>8/1/2012 | 1015 |
| **7. Approved by Incident Commander (DEQ):**<br>Michelle DeLong Michelle DeLong | **Date/Time:**<br>8/1/2012 | 1108 |
| **8. Approved by Incident Commander (US EPA):**<br>Sonia Vega | **Date/Time:**<br>8/1/2012 | 1135 |
| **10. Approved by Deputy Incident Commander (Enbridge):**<br>John Sobojinski | **Date/Time:**<br>8/1/2012 | 1103 |

# Enbridge Pipelines Response Unified Command






ICS 207
8/2– 8/9

**OPERATIONS SECTION**
US EPA/MDEQ
Steve Noble, Chief
Dan Capone (Weston/US EPA), Chief
Joe Victory (Weston/US EPA), Deputy
ENBRIDGE
David Bareham (Enbridge), Chief
James Snider (Enbridge), Deputy

**Waste Management Branch**
US EPA/MDEQ
Tim Laquerre (Weston/US EPA), Director
ENBRIDGE
John Wallace (Avery/Enbridge), Director

**Submerged Oil Branch**
US EPA/MDEQ
Dan Zahner (Weston/US EPA), Director
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Director

**OSCAR Group**
US EPA/MDEQ
Steve Noble, Supervisor
Joe Victory (Weston/US EPA), Supervisor
ENBRIDGE
Dave Bareham (Enbridge), Supervisor

**Submerged Oil Science Group**
US EPA/MDEQ/USGS
Faith Fitzpatrick, Supervisor
Ron Zelt, Supervisor
ENBRIDGE
Dave Dryburgh (AECOM/Enbridge), Supervisor

**Submerged Oil Compliance Group**
ENBRIDGE
Mark Berninger
(Cardno JFNEW/Enbridge), Supervisor

**Containment Branch**
US EPA/MDEQ
Rex Johnson (Weston/US EPA), Director
ENBRIDGE
Dean Sahara (SWAT/Enbridge), Director
Mike Wekseth (SWAT/Enbridge), Deputy

**Containment Compliance Group**
ENBRIDGE
Mike Zambetis
(Cardno JFNEW/Enbridge), Supervisor

**Containment Recovery Group**
ENBRIDGE
Oliver Webb (SWAT/Enbridge), Supervisor

**Kalamazoo River System Branch**
MDEQ
Steve Noble, Director
ENBRIDGE
Bryan Stiemsma (AECOM/Enbridge), Director

**Talmadge Creek/Kalamazoo River Remedial Investigation Group**
MDEQ
Doug Thompson
Ben Schmitt, Assistant
ENBRIDGE
Brian Albig
(AECOM/Enbridge), Supervisor

**Kalamazoo River Compliance Group**
ENBRIDGE
Mike Zambetis
(Cardno JFNew/Enbridge), Supervisor

**Kalamazoo River Remedial Action Group**
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Supervisor

**Talmadge Creek/Kalamazoo River Monitoring Group**
ENBRIDGE
Alison Schoeff (AECOM/Enbridge), Supervisor



ICS 207
8/2 – 8/9

**PLANNING SECTION**
US EPA/MDEQ
Mark DuCharme, Chief
Isaac Aboulafia (Weston/US EPA), Chief
ENBRIDGE
Brad Nelson (Avery/Enbridge), Chief
Alex Olson (Avery/Enbridge), Deputy

**SITUATION UNIT**
US EPA/MDEQ
Ben Schmitt, Leader
Ted Blackburn (Weston/US EPA), Leader
ENBRIDGE
Mark Fuller (AECOM/Enbridge), Leader

**RESOURCE UNIT**
US EPA/MDEQ
Lorie Hong (Weston/US EPA), Leader
ENBRIDGE
Brad Nelson (Avery/Enbridge), Leader
Emma Cook (Enbridge), Assistant

**ENVIRONMENTAL UNIT**
US EPA/MDEQ/USGS
Jeff Spruit (Off-site), Leader
Mike Alexander (Off-site), Assistant
Doug Thompson, Assistant
Kim Churchill (Weston/DEQ), Leader
Isaac Aboulafia (Weston/US EPA), Leader
Elizabeth Wessling (Weston/US EPA)(Off-site), Leader
Faith Fitzpatrick (USGS), Leader
Ron Zelt (USGS)(Off-site), Assistant
Rex Johnson (Weston/US EPA), Assistant
Tom Graan (Weston/US EPA), Assistant
ENBRIDGE
John Bohrmann (Enbridge), Leader

**DOCUMENTATION UNIT**
US EPA/MDEQ
Crystal Laskey, Leader
Carolyn Giles-Smith (Weston/DEQ), Leader
Paul Moisan (Weston/US EPA), Leader
ENBRIDGE
Brad Nelson (Avery/Enbridge), Leader

4

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill Response** | 2. Operational Period (Date/Time)<br>From: August 02, 2012, 0700<br>To: August 09, 2012, 0700 | **Assignment List<br>ICS 204- EPA** |
|---|---|---|
| 3. Branch<br>**Waste Management** | 4. Division/Group/Staging | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | DEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Tim Laquerre | Weston/US EPA | |
| | John Wallace | Avery/Enbridge | |

**6. Resources Assigned** — **"X" indicates 204a attachment with additional instructions**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| See Branch Directors | | | |

**7. Work Assignments**

1. Field decon operations for: personnel, hand equipment, and boats for preparation of transport shall be installed prior to work beginning at boat launches / staging areas for individual work sites.
2. Haul contaminated soil, water, media and debris to staging areas for waste characterization and oil recovery sampling prior to offsite disposal.
3. Waste shall be collected at a minimum of daily for direct haul to the landfill or transported to Frac Tank City (FTC) for consolidation with similar waste streams as necessary. Waste generated from coring will be consolidated and transported to Frac Tank City as needed.
4. Waste management characterization, manifesting, and coordination of transportation and disposal.

For Weston/US EPA/MDEQ:

1. Provide oversight of all waste management activities.
2. Ensure appropriate sampling, tracking and disposal is performed on oil impacted debris, water and soil.
3. Review manifests, weight tickets and bills of lading for correlation to waste stream analytical data.
4. Review weekly oil recovery and waste disposal report.

**8. Special Instructions**

Ensure all Best Management Practices (BMPs) are in place and utilized.

In accordance with the Fatigue Management Plan, all work permit activities will be completed no later than 1900.

SAFETY INSTRUCTIONS:

For vacuum truck operation guidelines, please refer the HASP.

**At Frac Tank City:**

1. The following procedure shall be used for initial opening of hatch or rear doors of liquid vacuum trucks and hatches of vacuum excavation units:
   a. Approach the hatch to be opened with a calibrated five gas monitor and a benzene monitor.
   b. Personnel performing this task must wear a full face respirator with organic vapor cartridge.
   c. Slightly open the hatch and take VOC, H2S, LEL, Oxygen, CO and benzene readings.
   d. If readings are greater than 10 ppm H2S, 10% LEL, 25 ppm CO or 25 ppm benzene then personnel shall close the hatch and utilize SCBA prior to opening the hatch.
2. Operations - Respiratory protection may be required depending on periodic monitoring results. Wear a half-mask respirator equipped with an organic vapor cartridge when 0.5 ppm benzene is detected. Wear a full-face respirator equipped with an organic vapor/acid gas cartridge when benzene is at 5 ppm to 25 ppm.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| E. Donaldson, Enbridge | 8/01/2012 1003 | B. Nelson, Avery/Enbridge | 8/01/2012 1015 | D. Bareham, Enbridge | 8/01/2012 1050 |

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill Response** | 2. Operational Period (Date/Time)<br>From: August 02, 2012, 0700<br>To: August 09, 2012, 0700 | **Assignment List<br>ICS 204 - EPA** |
|---|---|---|
| 3. Branch<br>**Submerged Oil** | 4. Division/Group/Staging | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | MDEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Dan Zahner | Weston/US EPA | |
| | Matt Sumner | AECOM/Enbridge | |

**6. Resources Assigned**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Outstanding Sites Characterization and Reconciliation | Steve Noble<br>Joe Victory (Weston/US EPA)<br>Dave Bareham (Enbridge) | [redacted] | |
| Submerged Oil Science | Faith Fitzpatrick<br>Ron Zelt (Off Site)<br>Dave Dryburgh (AECOM/Enbridge) | | 1 MDEQ<br>1 Other<br>4 Weston/US EPA<br>30 Contractors |
| Submerged Oil Compliance | Mark Berninger (Cardno JFNEW/Enbridge) | | |

**7. Work Assignments**

**Outstanding Sites Characterization and Reconciliation (OSCAR):**

1. Participate in data review, quality control, and site closure process to ensure that all pending issues are addressed.
2. Direct field evaluations and request information for site determination.
3. Oversee transfer of sites between the various branches.

**Submerged Oil Science**

1. Conduct coring activities throughout the Kalamazoo River, Morrow Lake Delta, and Morrow Lake. (2 Core Collection Teams, 1 Logging Teams)
2. Conduct Morrow Lake and Delta monitoring activities. (1 Team)
3. Continue Agitation Effects Study. (1Team)

For US EPA/MDEQ/Weston:

1. Oversee and document Submerged Oil Science work activities.

**Submerged Oil Compliance**

1. Track previously submitted MDEQ permit applications for toolbox methods.

**8. Special Instructions**

NRDA Trustees will be conducting recreational use surveys along the Kalamazoo River at river access points.

Rowe Island, MP 38.50 to MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:

All in water activities of workers in water depths over fifty percent (50%) of thigh height will require tethering. Please refer to the HASP for further instructions.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| E. Donaldson, Enbridge | 8/01/2012 1003 | B. Nelson, Avery/Enbridge | 8/01/2012 1015 | D. Bareham, Enbridge | 8/01/2012 1050 |

| 1. Incident Name | 2. Operational Period (Date/Time) | Assignment List |
|---|---|---|
| **Kalamazoo River/Enbridge Spill Response** | From: August 02, 2012, 0700<br>To: August 09, 2012, 0700 | **ICS 204 - EPA** |
| **3. Branch**<br>**Containment** | **4. Division/Group/Staging** | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | MDEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Rex Johnson | Weston/US EPA | |
| | Dean Sahara | SWAT/Enbridge | |
| | Mike Wekseth, Deputy | SWAT/Enbridge | |

**6. Resources Assigned** — **"X" indicates 204a attachment with additional instructions**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Containment Compliance | Mike Zambetis (Cardno JFNEW/Enbridge) | [redacted] | 1 Contractor |
| Containment Recovery | Oliver Webb (SWAT/Enbridge) | | 1 Weston/US EPA<br>14 Contractors |

**7. Work Assignments**

**Containment Compliance**

1. Submit E4.0 boom HEC-RAS calculations to MDEQ.

**Containment Recovery**

1. Perform containment strategies along the Kalamazoo River including the following tasks:
   a. Deploy and maintain shoreline containment boom as required.
   b. Complete sheen management as required.
2. Monitor and maintain the E4.0 containment system and Ceresco control point.
3. Install and maintain Kalamazoo River Sediment Traps, including the cylindrical sampling devices.

For US EPA/MDEQ/Weston:

1. Oversee and document Containment Recovery activities.

**8. Special Instructions**

NRDA Trustees will be conducting recreational use surveys along the Kalamazoo River at river access points.

Rowe Island, MP 38.50-MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:
Photo Ionization (VOCs) / Four Gas Detectors (O2, CO, LEL and H2S) and Direct Reading Instrument for Benzene will be used for air monitoring during debris removal activities.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| E. Donaldson, Enbridge | 8/01/2012 1003 | B. Nelson, Avery/Enbridge | 8/01/2012 1015 | D. Bareham, Enbridge | 8/01/2012 1050 |

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill Response** | 2. Operational Period (Date/Time)<br>From: August 02, 2012, 0700<br>To: August 09, 2012, 0700 | **Assignment List<br>ICS 204 - EPA** |
|---|---|---|
| 3. Branch<br>**Kalamazoo River System Branch** | 4. Division/Group/Staging | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | MDEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Steve Noble | MDEQ | |
| | Bryan Stiemsma | AECOM/Enbridge | |

**6. Resources Assigned**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Talmadge Creek/Kalamazoo River Remedial Investigation | Doug Thompson (MDEQ)<br>Ben Schmitt (MDEQ), Assistant<br>Brian Albig (AECOM/Enbridge) | [redacted] | 8 Contractors<br>1 MDEQ |
| Kalamazoo River Compliance | Mike Zambetis (Cardno JFNew/Enbridge) | | 1 Contractors |
| Talmadge Creek/Kalamazoo River Remedial Action | Matt Sumner (AECOM/Enbridge) | | |
| Talmadge Creek/Kalamazoo River Monitoring | Alison Schoeff (AECOM/Enbridge) | | |

**7. Work Assignments**

**Talmadge Creek/Kalamazoo River Remedial Investigation**

1. Resume Kalamazoo River remedial investigation August 6, 2012.

**Kalamazoo River Compliance**

1. Continue restoration/stabilization of the Kalamazoo River Bank Erosion Assessment Sites (KRBEAS).
2. Develop the source area MDEQ permit application and submit for agency review.

**Talmadge Creek/Kalamazoo River Remedial Action**

1. Execute tasks assigned by ERO as requested.

**Talmadge Creek/Kalamazoo River Monitoring**

1. Monitor erosion control devices.
2. Conduct daily monitoring of river conditions, recording observations of sheen or oil.
3. Conduct weekly monitoring of buoys and signage in the river.

**8. Special Instructions**

NRDA Trustees will be conducting recreational use surveys along the Kalamazoo River at river access points.

Rowe Island, MP 38.50 to MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:
When operating or working in the vicinity of ultra violet testing equipment, wear approved safety glasses that provide protection from UV A rays and never look directly into the illuminator.

All in water activities of workers in water depths over fifty percent (50%) of thigh height will require tethering. Please refer to the HASP for further instructions.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| E. Donaldson, Enbridge | 8/01/2012<br>1003 | B. Nelson, Avery/Enbridge | 8/01/2012<br>1015 | D. Bareham, Enbridge | 8/01/2012<br>1050 |

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill Response** | 2. Operational Period (Date/Time)<br>From: August 02, 2012, 0700<br>To: August 09, 2012, 0700 | **Assignment List<br>ICS 204 - EPA** |
|---|---|---|
| 3. Branch<br>**Planning Section** | 4. Division/Group/Staging | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Planning Section Chief: | Mark DuCharme<br>Isaac Aboulafia<br>Brad Nelson<br>Alex Olson, Deputy | MDEQ<br>Weston/US EPA<br>Avery/Enbridge<br>Avery/Enbridge | [redacted] |

**6. Resources Assigned** "X" indicates 204a attachment with additional instructions

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Situation Unit | Ben Schmitt<br>Ted Blackburn (Weston/US EPA)<br>Mark Fuller (AECOM/Enbridge) | [redacted] | 1 Weston/US EPA<br>1 Contractor |
| Resource Unit | Lorie Hong (Weston/US EPA)<br>Brad Nelson (Avery/Enbridge)<br>Emma Cook (Enbridge), Assistant | | 1 Weston/US EPA<br>1 Contractor |
| Environmental Unit | Jeff Spruit (Off-site)<br>Mike Alexander (Off-site), Assistant<br>Doug Thompson, Assistant<br>Kim Churchill (Weston/DEQ)<br>Isaac Aboulafia (Weston/US EPA)<br>Elizabeth Wessling (Weston/US EPA)(Off-site)<br>Faith Fitzpatrick (USGS)<br>Ron Zelt (USGS), Assistant<br>Rex Johnson (Weston/US EPA), Assistant<br>Tom Graan (Weston/US EPA) , Assistant<br>John Bohrmann (Enbridge) | | 1 Weston/DEQ<br>3 MDEQ<br>1 Enbridge<br>9 Contractors |
| Documentation Unit | Crystal Laskey<br>Carolyn Giles-Smith (Weston/DEQ)<br>Paul Moisan (Weston/US EPA)<br>Brad Nelson (Avery/Enbridge) | | 1 MDEQ<br>2 Weston/DEQ<br>3 Contractors |

**7. Work Assignments**

**Situation Unit:**

1. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.
2. Conduct weekly overflights; photo-document areas of sheen from source area to Morrow Lake dam and report observations back to operations section chiefs for monitoring and response. Additional flights will be scheduled as needed.
3. Organize field metrics, prepare for and facilitate presentations, and monitor action tracking. Maintain situational awareness around operational activities and plan for operational needs.
4. All odor complaints will be reported to US EPA and MDCH within 30 minutes of receipt by the odor response team (Monday through Friday 0700 – 1900). Complainants will then be contacted to schedule an odor response site visit or receive additional complaint information if no on-site response requested. Response evaluation will be reported to agencies and complainants upon completion. Samples will be analyzed at a 24-hour turnaround time.

For US EPA/MDEQ/Weston:

1. Maintain situational awareness around operational activities.
2. Communicate observations to the Operations Section Chief.
3. Provide daily situational photo log summaries.
4. Conduct daily monitoring of river conditions, recording observations of sheen and/or oil.
5. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.

**Resource Unit:**

1. Produce an Incident Action Plan as required by the Incident Commanders.
2. Support the planning efforts of operations and provide information to Logistics in order to properly prepare and order resources.

**Environmental Unit:**

1. Conduct strategic assessment, modeling, and environmental monitoring.
2. Review sheen tracking information from the field.
3. Finalize submerged oil quantification for Spring 2012.
4. Refine subsurface containment strategies throughout the Kalamazoo River system to prevent recontamination of the Morrow Lake fan.
5. Review and track RI progress.

For Weston/US EPA/MDEQ:

1. Continue to coordinate efforts to calculate the quantity of submerged oil remaining as of Spring 2012.
2. Continue supporting the evaluation of the hydrogeomorphology of the Kalamazoo River, the Morrow Lake Delta, and Morrow Lake.
3. Interface with Enbridge and assist with the refinement of surface and subsurface containment strategies throughout the Kalamazoo River system to prevent the continued migration of oil, oil sheen, submerged oil, and oil-containing sediments into Morrow Lake.
4. Review and comment on RI progress submittals

**Documentation Unit:**

1. Maintain accurate, up-to-date incident files.
2. Store files for post-incident use.

**8. Special Instructions**

In accordance with the Fatigue Management Plan, all work permit activities will be completed no later than 1900.

SAFETY INSTRUCTIONS:
Hexane is flammable and may be harmful in contact with skin. When handling hexane and sheen test samples containing hexane, wear approved safety glasses, disposable nitrile gloves and keep away from ignition sources. Properly dispose of sheen test samples containing hexane.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

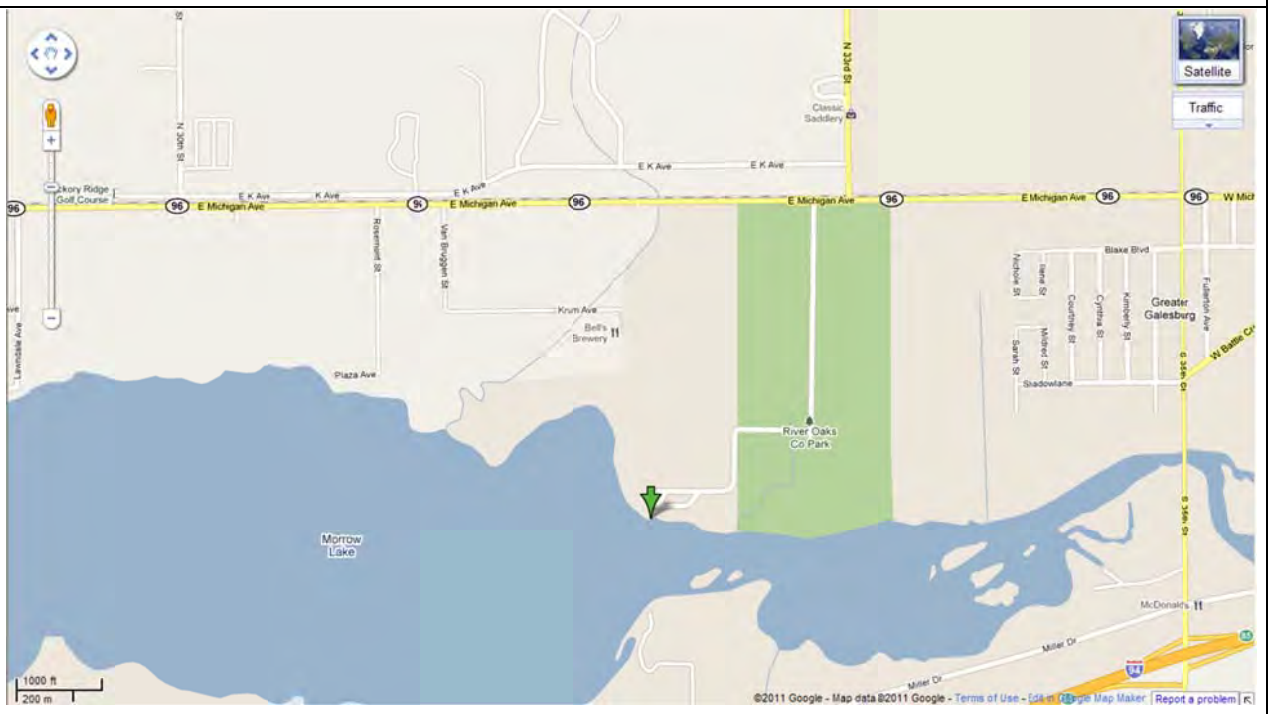
Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

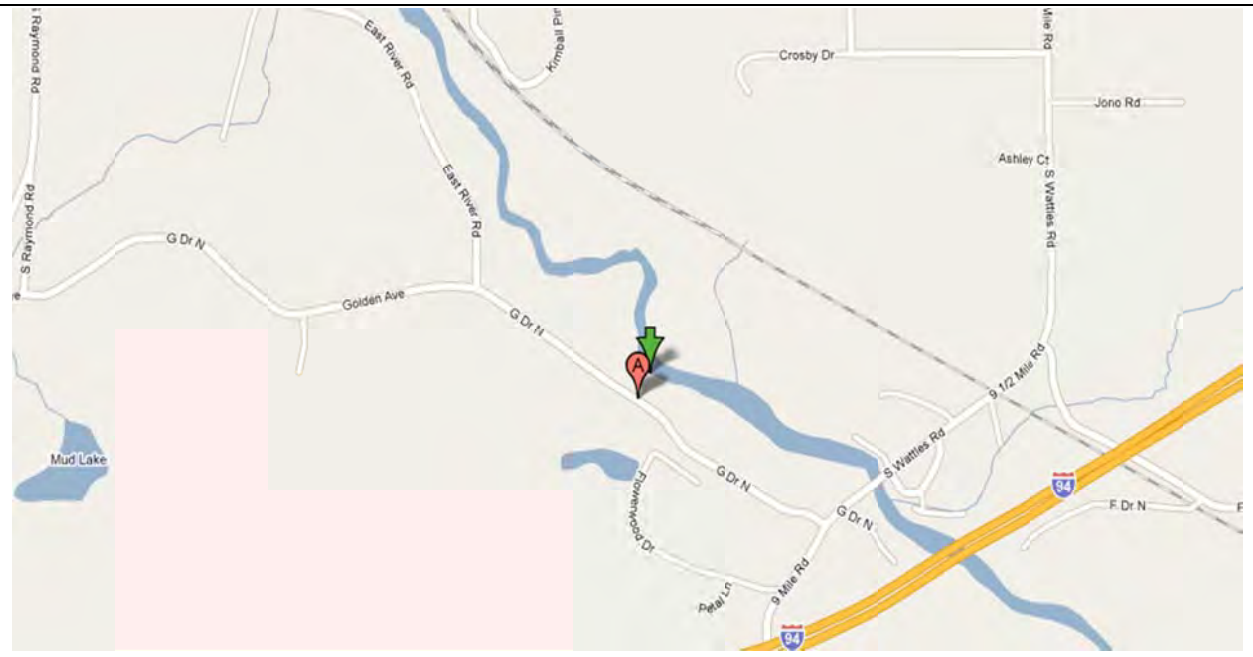
| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| E. Donaldson, Enbridge | 8/01/2012 1003 | B. Nelson, Avery/Enbridge | 8/01/2012 1015 | D. Bareham, Enbridge | 8/01/2012 1050 |

**Toolbox Meeting Locations**

E4 - [redacted], Galesburg, MI 49053 GPS Coordinates Lat: 42.278265 Long: -85.452295




C3.2 [redacted] Battle Creek, MI 49014 GPS Coordinates Lat: 42.293492 Long: -85.124479




Refer to traffic plan for detailed access instructions.

| 1. Incident Name | 2. Operational Period (Date / Time) | Traffic Plan |
|---|---|---|
| **Kalamazoo River / Enbridge Spill** | From: **08/02/2012 / 0700 hrs**<br>To: **08/09/2012 / 0700 hrs** | |

# Traffic Safety Alert for Parking at Incident Command Post 1601 Pratt Avenue




- Slow speeds are imperative at all times.
- There is very limited parking with two-way traffic and pedestrian traffic. Watch vehicle speeds.
- Only large truck deliveries will be allowed entrance at the back entrance. Large truck deliveries are to check in at the Security Check Point.
- Everyone must check in at the Security Check Point as shown at the Pratt Avenue entrance.

Any further questions or concerns, contact the Safety Office.

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/02/2012 0700<br>To: 08/09/2012 0700 | |

## 3.TRAFFIC PLAN: C 5




[redacted] Battle Creek, MI 49014

GPS Coordinates Lat: 42.304905 Long: -85.183463

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-01-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/02/2012 0700<br>To: 08/09/2012 0700 | |

## 3.TRAFFIC PLAN: C 0.4




[redacted] Ceresco, MI 49033

GPS Coordinates: Lat: 42.265127, Long:-85.048364

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-01-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/02/2012 0700<br>To: 08/09/2012 0700 | |

## 3.TRAFFIC PLAN: C 3.2



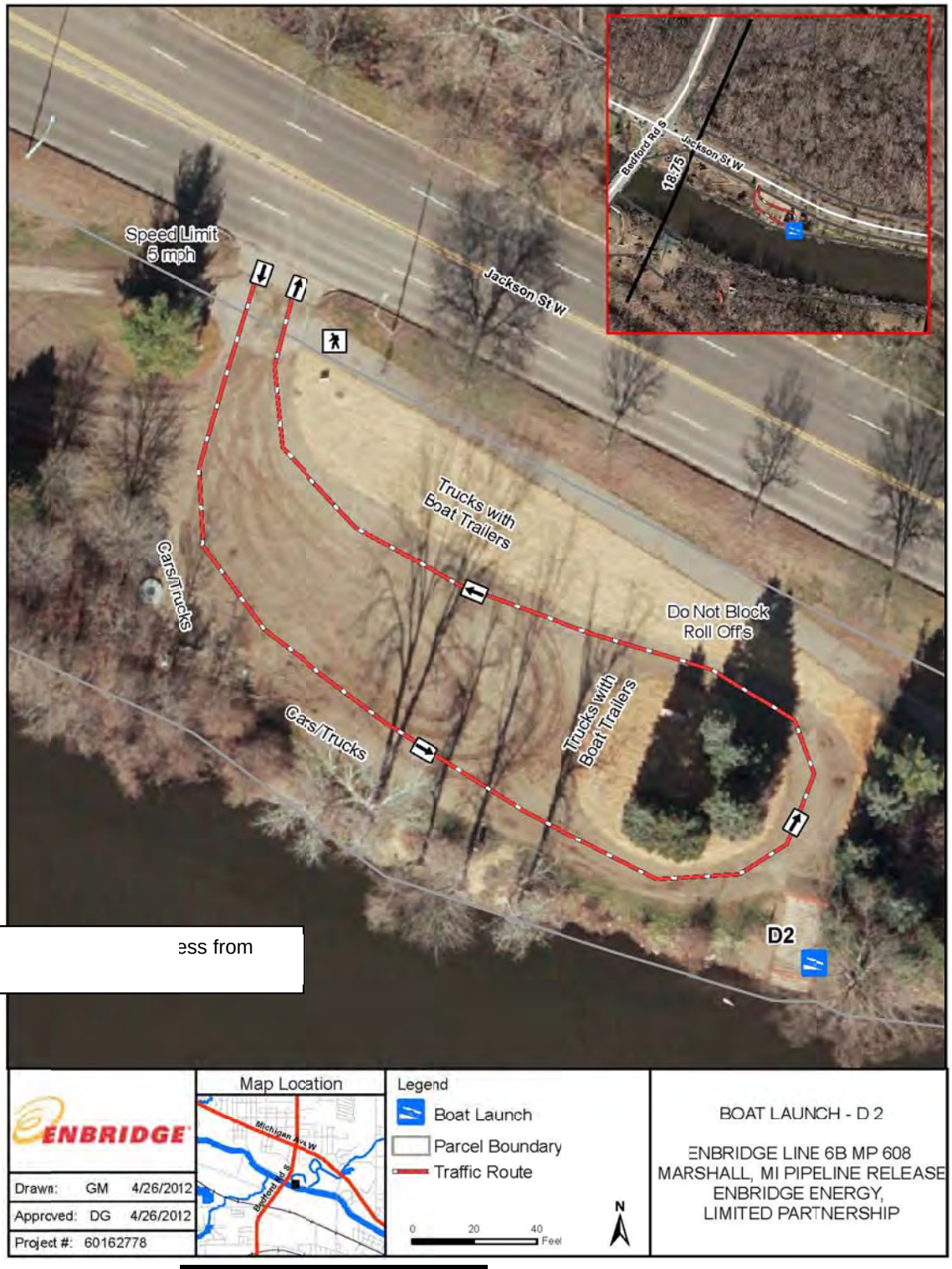

[redacted] Battle Creek, MI 49014

GPS Coordinates: Lat: 42.293492 Long: -85.124479

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-01-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/02/2012 0700<br>To: 08/09/2012 0700 | |

## 3.TRAFFIC PLAN: D2




ess from

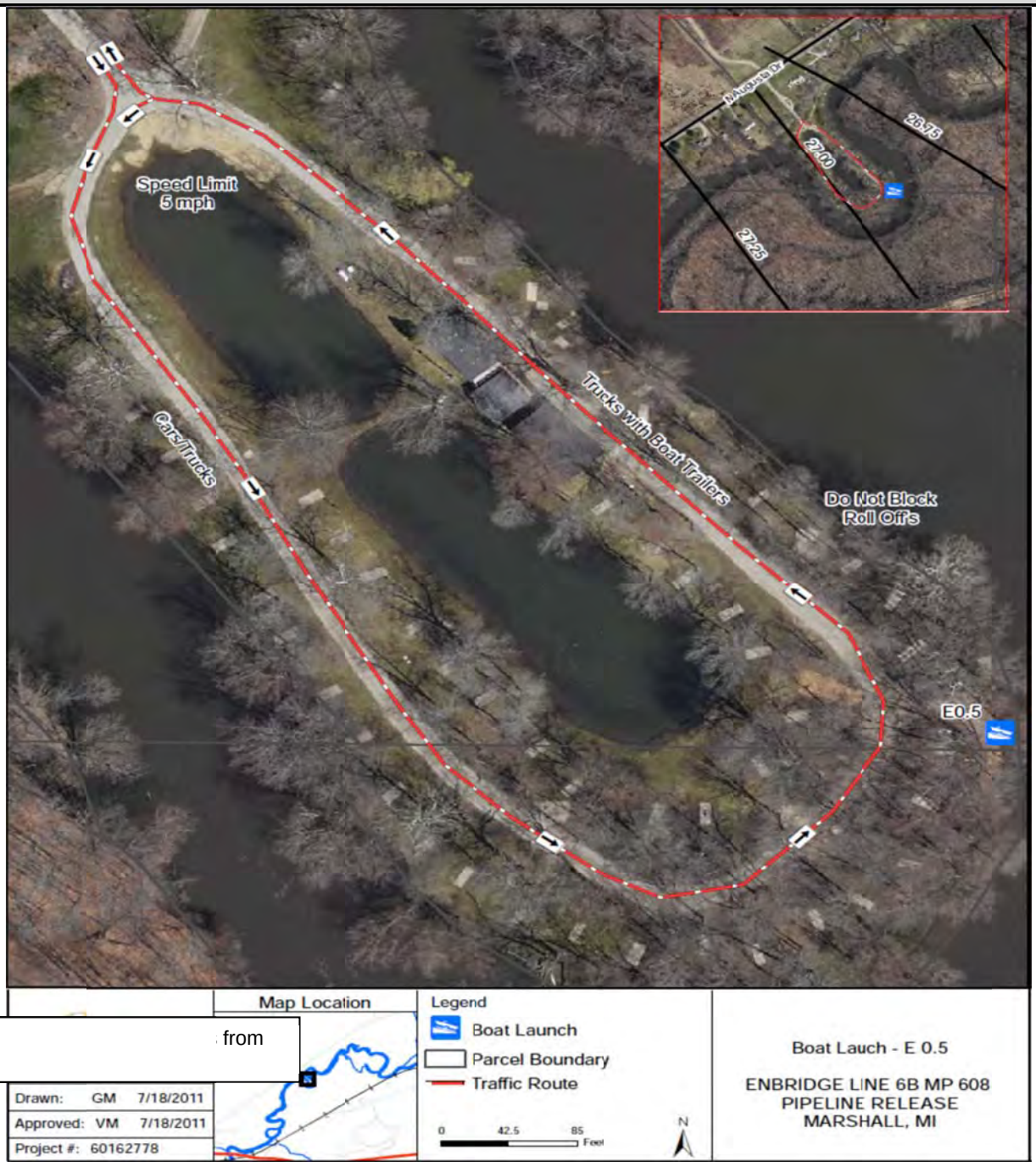
[redacted] Battle Creek, MI 49037

GPS Coordinates: Lat: 42.338427 Long:-85.232309

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-01-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/02/2012 0700<br>To: 08/09/2012 0700 | |

## 3.TRAFFIC PLAN: E 0.5




from

(Shady Bend Camp Ground), 15320 East Augusta Dr, Augusta, MI 49012
GPS Coordinates:Lat: 42.347408 Long: -85.3295

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-01-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/02/2012 0700<br>To: 08/09/2012 0700 | |

## 3.TRAFFIC PLAN: E 2




[redacted] Augusta, MI 49053

GPS [redacted] 32412 Long: -85.358041

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-01-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/02/2012 0700<br>To: 08/09/2012 0700 | |

## 3.TRAFFIC PLAN: E 3



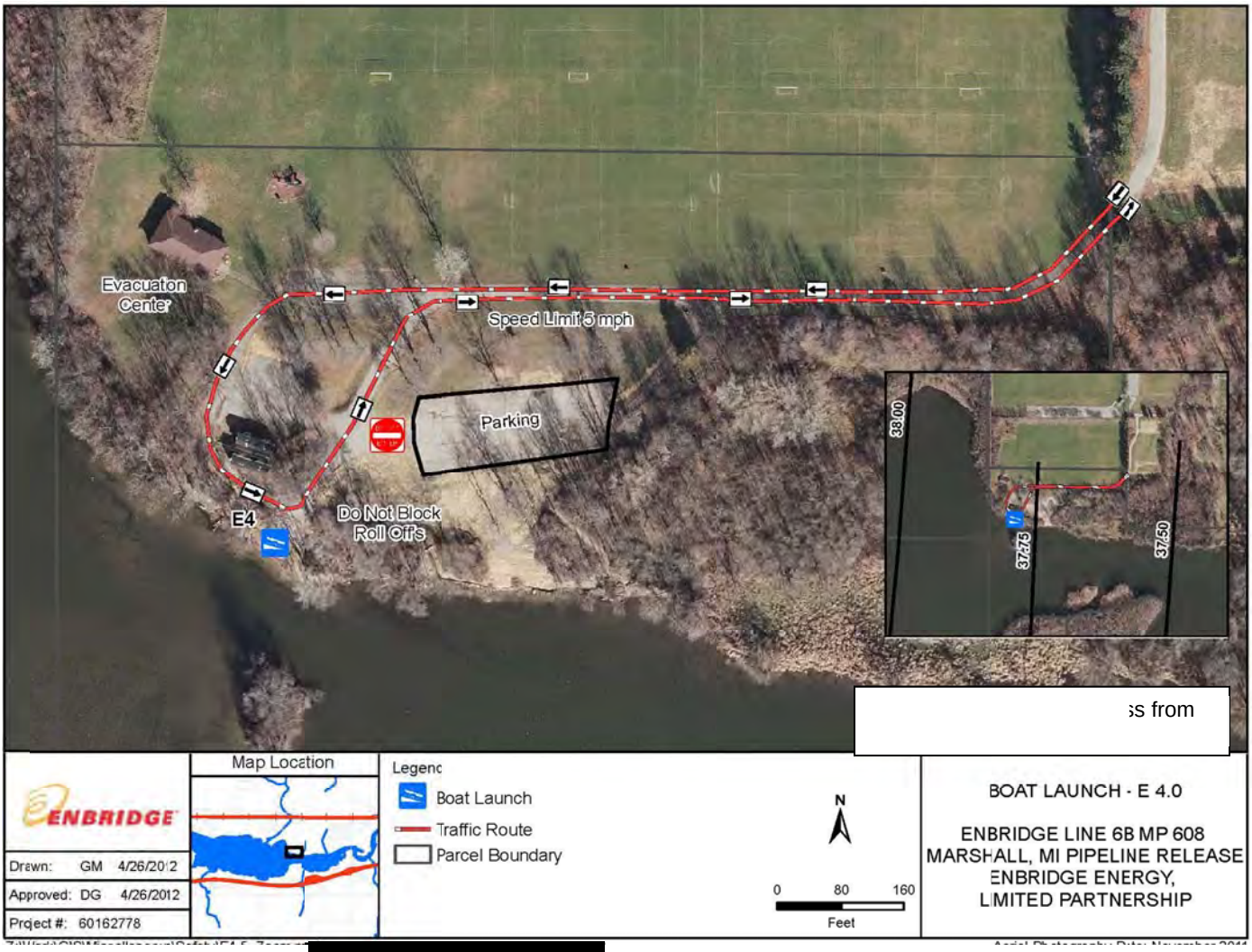

[redacted] Galesburg, MI 49053

GPS Coordinates: Lat: 42.284663 Long: -85.412855

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-01-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/02/2012 0700<br>To: 08/09/2012 0700 | |

## 3.TRAFFIC PLAN: E 4




[redacted] Galesburg, MI 49053

GPS Coordinates: Lat: 42.278265 Long: -85.452295

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-01-2012 |

| 1. Kalamazoo River/ Enbridge Spill | 2. Operational Period (Date / Time)<br>From: 08/02/2012/ 0700 hrs<br>To: 08/09/2012/ 0700 hrs | Operations Communications Plan |
|---|---|---|

**3. Communication Contact List**

| NAME | PHONE NUMBER | EMAIL ADDRESS | AGENCY / AFFILIATION | POSITION |
|---|---|---|---|---|
| Aboulafia, Isaac | [redacted] | [redacted] | START/US EPA | Planning |
| Adams, Rich | | | Enbridge | Operations |
| Aguilera, Jose | | | START/US EPA | O&M |
| Albig, Brian | | | AECOM/Enbridge | Environment |
| Arcaute, Francisco | | | US EPA | Public & Govt. Affairs |
| Back, Amy | | | Avery/Enbridge | PSC |
| Back, Berl | | | Avery/Enbridge | Facilities Manager |
| Baker, Paul | | | Kalamazoo OEM | MAC |
| Bareham, Dave | | | Enbridge | Environment |
| Berecz, Karen | | | START/US EPA | O & M |
| Berninger, Mark | | | Cardno JFNEW/Enbridge | Restoration |
| Blackburn, Ted | | | START/US EPA | Safety Officer |
| Blanchard, Mark | | | START/US EPA | |
| Bohrmann, John | | | Enbridge | Environment |
| Brettmann, Gregg | | | DEQ | Environmental Unit Leader |
| Bretz, Ryan | | | Manpower/Enbridge | IT |
| Brown , Kevin | | | Weston/DEQ | GIS Support |
| Bukowski, Breanna | | | Weston/DEQ | Planning |
| Burrous, Lauren | | | USGS | USGS |
| Capone, Dan | | | START/US EPA | Operations |
| Castor , Andrew | | | START/ US EPA | Operations |
| Cavazos, Lupe | | | START/US EPA | Planning |
| Cedillo, Ricardo | | | Manpower/Enbridge | Security Unit Leader |
| Churchill, Kim | | | Weston/DEQ | Environmental Unit |
| Cox, Renee | | | Manpower/Enbridge | Documentation |
| Daniel, Pat | | | Enbridge | MAC |
| Deblasio, Don | | | US EPA | Public Information |
| Dekker, Shaun | | | SET/Enbridge | Waste Management |
| DelloRusso, Vincent | | | Weston/DEQ | Operations |
| DeLong, Michelle | | | DEQ | Incident Commander |
| Dennis, Kate | | | Manpower/Enbridge | Admin Support |
| Dobrowski, Ed | | | USGS | USGS |
| Doherty, Bob | | | Enbridge | Environment |
| Dollhopf, Ralph | | | US EPA | Incident Commander (FOSC) |
| Donaldson, Elizabeth | | | Enbridge | Planning |
| Dougherty, Kelly | | | START/US EPA | Public Information |
| Dryburgh, Dave | | | AECOM/Enbridge | Environment |
| Dubois, Amy | | | US EPA | |
| DuCharme, Mark | | | DEQ | Incident Commander |
| Dunham, Durk | | | Calhoun County EMA | MAC |
| Eversole, Elijah | | | Enbridge/AECOM | Containment |
| Fitzpatrick, Faith | | | USGS | Tech Specialist |
| Fizzell, Chad | | | DEQ | GIS Support |
| Frost, Joe | | | Calhoun County Health | MAC |
| Fuller, Mark | | | AECOM/Enbridge | Environment |
| Giles-Smith, Carolyn | | | Weston/DEQ | Documentation |
| Good, Gena | | | START/US EPA | |
| Graan, Tom | | | START/US EPA | Submerged Oil Lead |
| Gross, Dale | | | Superior/Enbridge | Safety Officer |
| Guest, Nyekah | | | Enbridge | Procurement |
| Haak, Matt | | | START/US EPA | Sit Unit Leader |
| Hackley, Richard | | | US EPA | Finance |
| Haux, Christopher | | | Enbridge | OSC |
| Hehir, Nate | | | Superior/Enbridge | Environment |
| Hendrix, Kristen | | | START/US EPA | Operations |
| Hoard, Chris | | | USGS | USGS |
| Hogan, Charlene | | | AECOM/Enbridge | Environment |
| Hong, Lorie | | | START/US EPA | Logistics |
| Hummel, Rebecca | | | Manpower/Enbridge | Finance |
| Johnson, Rex | | | START/US EPA | Operations |
| Jones, Susan | | | DEQ | Operations |
| Kaiser, Ken | | | AECOM/Enbridge | GIS Specialist |
| Kent, Norm | | | AECOM/Enbridge | Environment |
| Kerpash, Paul | | | SWAT/Enbridge | Control Point Management |
| Kidder, Steven | | | START/US EPA | Operations SOS |
| Kirby-Miles, Leslie | | | US EPA | Legal |
| Kogge, Stu | | | Cardno JFNEW/Enbridge | Operations |
| Kosmowski, Christine | | | City of Battle Creek | MAC |
| Lantinga, Chris | | | START/US EPA | Operations |
| Laquerre, Tim | | | START/US EPA | Operations |
| Laskey, Crystal | | | MDEQ | Planning |
| Lisabeth, Nicole | | | MSP | PIO |
| Luetke, Mindy | | | START/US EPA | PSC |
| Lundholm, Mark | | | Weston/DEQ | Operations |
| Makoski, Paul | | | Calhoun County Health | MAC |
| Manshum, Jason | | | Enbridge | Public Affairs |
| Massey, Dylan | | | LBG/Enbridge | Environmental Inspector |
| McKay, John | | | Enbridge | ROW |
| McKenzie, Michael | | | Battle Creek Emer. Srvs. | MAC |
| Mehl, Rick | | | START/US EPA | |
| Meny, Alyssa | | | Enbridge | Communications Unit |
| Moisan, Paul | | | START/US EPA | Documentation |
| Muccianti, Marcus | | | START/US EPA | Operations |
| Nelson, Brad | | | Avery/Enbridge | DPSC |
| Neumeier, Laura | | | Trimedia/Enbridge | Air Monitoring |
| Newberry, Christina | | | Manpower/Enbridge | Documentation |
| Noble, Steve | | | DEQ | Water Resources Division |
| Nye, Dennis | | | START/US EPA | Recovery |
| Oleschuk, Rick | | | Enbridge | Safety Officer |
| Olson, Alex | | | Avery/Enbridge | Planning |
| Ostrodka, Steve | | | US EPA | Submerged Oil Lead |
| Periard, Debora | | | AECOM/Enbridge | GIS Support |
| Pesses, David | | | LBG/Enbridge | Environmental Inspector |
| Pierce, Brennan | | | START/US EPA | Documentation |
| Piescher, Matthew | | | Avery/Enbridge | Field Inspector |
| Porter, Pete | | | Salem/Enbridge | Right of Way Agent |
| Powell, Meredith | | | Hill & Knowlton/Enbridge | Public & Govt. Affairs |
| Pratt, Catherine | | | AECOM/Enbridge | Environment |
| Quiggle, Lisa | | | MDCH | |
| Rader, Larry | | | START/US EPA | Sit Unit Leader |
| Reber, Lt. Barry | | | MSP EMHSD | MAC |
| Reigner, Selma | | | Kelly Services/Enbridge | Admin. Assistant |
| Rosenbaum, Charmaine | | | Enbridge | Project Support Manager |
| Ross, Shauna | | | START/US EPA | |
| Roubik, Jonathan | | | START/US EPA | Operations |
| Rutherford, James | | | Calhoun County Health | MAC |
| Rutkowski, Sonny | | | START/US EPA | Technical Specialist |
| Sahara, Dean | | | SWAT/Enbridge | Operations |



Prepared by:
Matt Hetzner

**Email Corrections To**
**matt.hetzner@enbridge.com**

DATE /TIME
7/30/201212:14 PM

| 1. Kalamazoo River/ Enbridge Spill | 2. Operational Period (Date / Time)<br>From: 08/02/2012/ 0700 hrs<br>To: 08/09/2012/ 0700 hrs | Operations Communications Plan |
|---|---|---|

3. Communication Contact List

| NAME | PHONE NUMBER | EMAIL ADDRESS | AGENCY / AFFILIATION | POSITION |
|---|---|---|---|---|
| Sarkipato, Ernie | [redacted] | | DEQ | |
| Saylor, Andy | | | SET/Enbridge | |
| Schmitt, Ben | | | DEQ | Operations |
| Schneider, Dave | | | Kalamazoo County | MAC |
| Schoeff, Alison | | | AECOM/Enbridge | Water Monitoring Supervisor |
| Shattuck, Terri | | | Weston/DEQ | Operations |
| Smith, Brian | | | Tulsa/ Enbridge | Overbank Excavation Field Inspector |
| Snider, Jim | | | Enbridge | Environment Director |
| Sobojinski, John | | | Enbridge | Incident Commander |
| Spruit, Jeff | | | DEQ | Environment |
| Standen, Joe | | | LBG/Enbridge | River Opening Implementation |
| Steede, Bob | | | Enbridge | DOSC |
| Stiemsma, Bryan | | | AECOM/Enbridge | Environment Supervisor |
| Stuart, Mike | | | START/US EPA | Safety Officer |
| Sumner, Matt | | | AECOM/Enbridge | Environment |
| Taft, Bill | | | DEQ | Wildlife Environmental NRDA Group |
| Thierry, Mike | | | START/US EPA | Operations |
| Thomas, Brittany | | | START/US EPA | Finance |
| Thompson, Doug | | | DEQ | |
| Torres, Jason | | | START/US EPA | GIS Specialist |
| Ushio, Miako | | | AECOM/Enbridge | Talmadge Creek Remediation Lead |
| Vail, Linda | | | Kalamazoo County Health | MAC |
| Valenza, James | | | START/US EPA | GIS Specialist |
| Vega, Sonia | | | US EPA | Deputy Incident Commander |
| Victory, Joe | | | START/US EPA | DOSC |
| Vilhauer, Eric | | | Enbridge | ROW Agent |
| Vosburg, Cheryl | | | City of Marshall | MAC |
| Wagner, Greg | | | START/US EPA | Submerged Oil Recovery |
| Wahrer, Marc | | | START/US EPA | Operations |
| Wallace, John | | | Avery/Enbridge | Operations Inspector |
| Watt, Tammy | | | Enbridge | Finance |
| Webb, Oliver | | | SWAT/Enbridge | Control Point Management |
| Weir, Karen | | | START/US EPA | |
| Wekseth, Mike | | | SWAT/Enbridge | Operations Inspector |
| Wellman, John | | | START/US EPA | Operations |
| Wessling, Elizabeth | | | START/US EPA | PSC |
| Williams, Lisa | | | USFWS | |
| Wilson, Lee | | | Weston/DEQ | Operations |
| Wiswell, Amber | | | Kelly Services/Enbridge | Admin. Assistant |
| Wolf, Mike | | | AECOM/Enbridge | Monitoring |
| Wurfel, Brad | | | DEQ | Public Information |
| Yokom, Brett | | | Trimedia/Enbridge | Environment |
| Zahner, Dan | | | START/US EPA | Operations |
| Zambetis, Mike | | | Cardno JFNEW/Enbridge | Restoration |
| Zelt, Ron | | | USGS | Environmental Unit Leader Assistant |



Prepared by:
Matt Hetzner

**Email Corrections To**
**matt.hetzner@enbridge.com**

DATE /TIME
7/30/201212:14 PM

# Enbridge Oil Spill Incident - Campbell ICP, Marshall, MI
# U.S. EPA Trailer Phone Directory

| Trailer No. | Trailer Designations | Phone Number | Ext No. |
|---|---|---|---|
| 1 | Deputy IC Office (SW) | 269-781-1995 | 11995 |
| 1 | IC Fax Line | 269-781-1110 | 11127 |
| 1 | IC Conference Area | 269-781-1026 | 11026 |
| 1 | Operations Section Chief | 269-781-1994 | 11994 |
| 1 | Health & Safety (West End) | 269-781-1991 | 11991 |
| 2 | Work Room (NW) | 269-781-1955 | 11955 |
| 2A | Large Conference Room (MID) | 269-781-1591 | 11591 |
| 2B | Conference Room (NE) | 269-781-1954 | 11954 |
| 3 | MDEQ Field Trailer | 269-781-1953 | 11953 |
| 3 | MDEQ Documentation | 269-781-1951 | 11951 |
| 4 | Operations | 269-781-1958 | 11958 |
| 4 | Operations | 269-781-1971 | 11971 |
| 4 | River Opening | 269-781-1972 | 11972 |
| 7 | Copy Center | No Phone | |
| 8 | Logistics | 269-781- 1997 | 11997 |
| 8 | EPA Hotline | 269-781-1992 | 11992 |
| 8 | Weston IC (East End) | 269-781-1988 | 11988 |
| 9 | Planning | 269-781-1015 | 11015 |
| 9 | EPA Documentation | 269-781-1905 | 11905 |
| 9 | GIS | 269-781-1018 | 11018 |
| 9 | Environmental Unit | 269-781-1019 | 11019 |
| 9 | Conference Room | 269-781-1963 | 11963 |
| 9 | Wate Management Branch | 269-781-1955 | 11955 |
| 9 | Environmental Unit (USGS) | 269-781-1582 | 11582 |
| 9 | PIO | 269-781-1587 | 11587 |
| 10 | MDEQ-WRD | 269-781-1014 | 11014 |
| 10 | MDEQ-WRD | 269-781-1023 | 11023 |
| 10 | MDEQ-WRD | 269-781-1022 | 11022 |
| 11 | MDEQ-RD & Weston | 269-781-1024 | 11024 |
| 11 | MDEQ-RD & Weston | 269-781-1012 | 11012 |
| 11 | MDEQ-RD & Weston | 269-781-1013 | 11013 |
| Indoor | Weston Indoor Area | 269-781-1961 | 11961 |

**To dial between trailers, use the extension number, 1-1997 for Logistics**

To place a conference call within the VOIP network, dial first number, select button under "more", scroll down to Confrm and select. Dial next number, press confirm again to connect all. Repeat steps to connect more numbers.

Repeat the same steps to conference in one outside line.

| MEDICAL PLAN<br>ICS – 206 | Kalamazoo River/Enbridge Spill | 1. Date Prepared<br>8/01/2012 | 2. Time Prepared<br>0800 | 3. Operational Period<br>08/02/2012 0700<br>08/09/2012 0700 |
|---|---|---|---|---|

## 4. Transportation

### Ambulance Services

| Name | Address | Phone | Paramedics Yes | Paramedics No |
|---|---|---|---|---|
| Lifecare Ambulance | 330 West Hamblin Avenue,<br>Battle Creek, MI 49015 | 9-1-1 | X | |
| City of Marshall Fire Dept | 323 West Michigan Avenue,<br>Marshall, MI 49068 | 9-1-1 | X | |

## 5. Hospitals

| Name | Address | Travel Time Air | Travel Time Ground | Phone | Helipad Yes | Helipad No | Burn Center Yes | Burn Center No |
|---|---|---|---|---|---|---|---|---|
| Bronson Methodist Hospital | 601 John Street<br>Kalamazoo, MI | 15 Min | 50 min | 269-341-7654 | X | | X | |
| Borgess Medical Center | 1521 Gull Road<br>Kalamazoo, MI | 15 min | 50 min | 269-226-7000 | X | | | X |
| Oaklawn Hospital | 200 N. Madison Ave<br>Marshall, MI | | 5 min | 269-781-4271 | | X | | X |
| Battle Creek Health System | 300 North Avenue<br>Battle Creek, MI | | 20 min | 269-966-8000 | | X | | X |

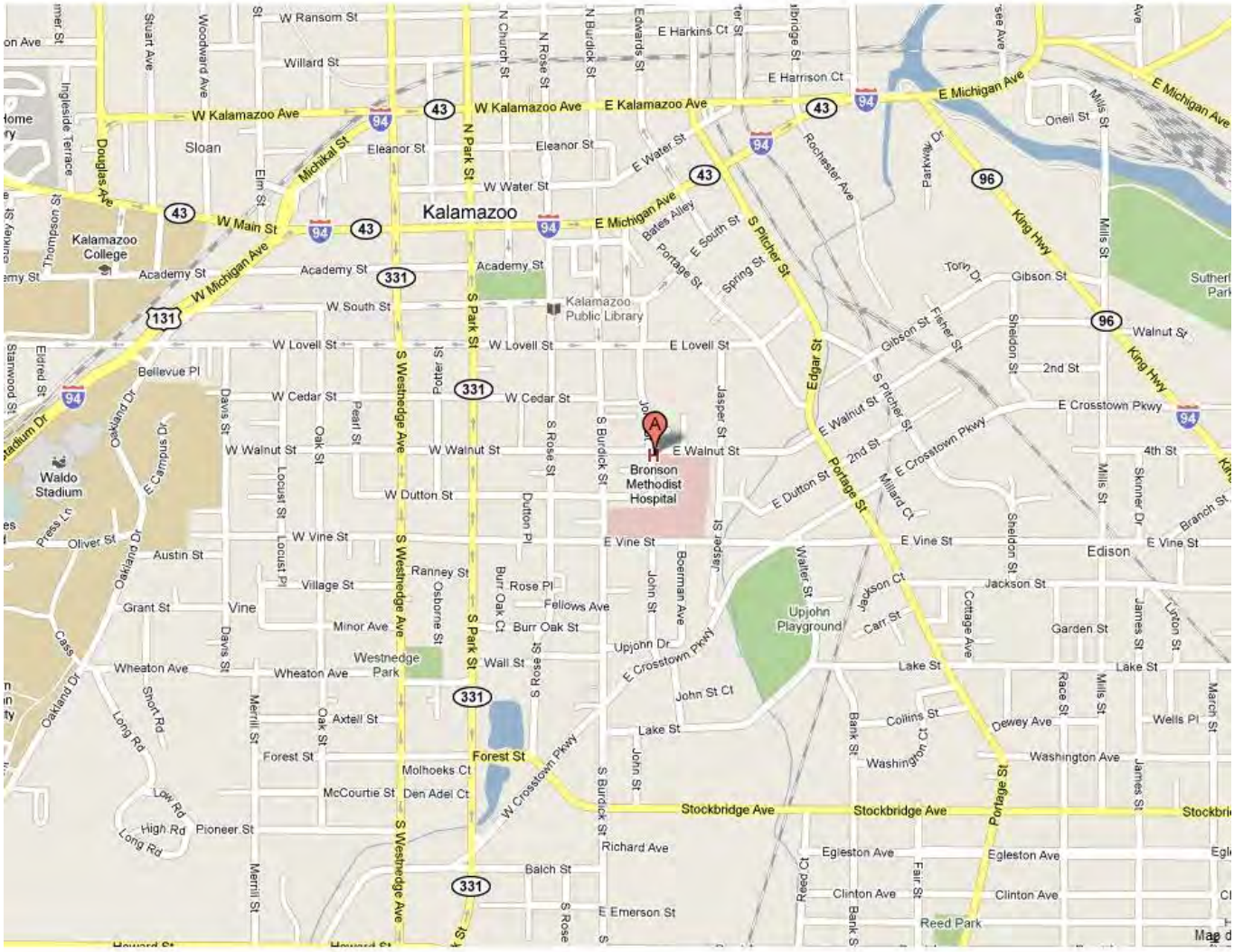
## 6. Medical Emergency Procedures

1. Dial 9-1-1 for all emergencies. Give 9-1-1 operators as much information as possible. Stay on the line and answer all questions – information may be radioed to responders. On-site personnel trained and certified in first aid should attempt to stabilize victim until fire department/EMS personnel arrive.
2. Report all incidents to the Project Safety Officer. Keep a log of events. Secure the area. Identify witnesses for later investigation.

NOTE: Suspend all operations during an actual emergency situation!

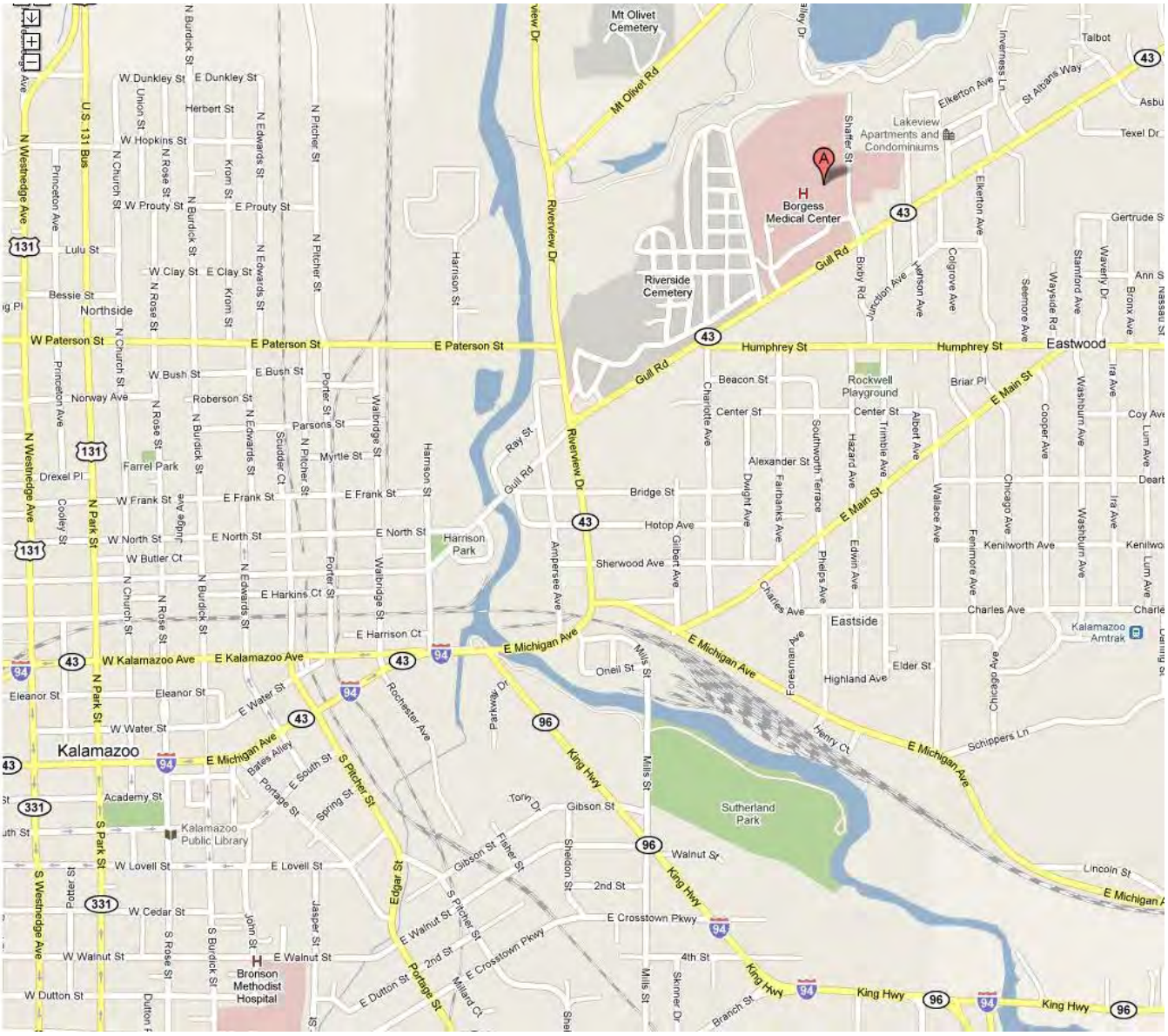
| Prepared by | 10. Reviewed by (Safety Officer) |
|---|---|
| Dale Gross 8/01/2012 | Dale Gross 8/01/2012 |

# Hospital Route Map – Bronson Methodist Hospital – Kalamazoo, MI



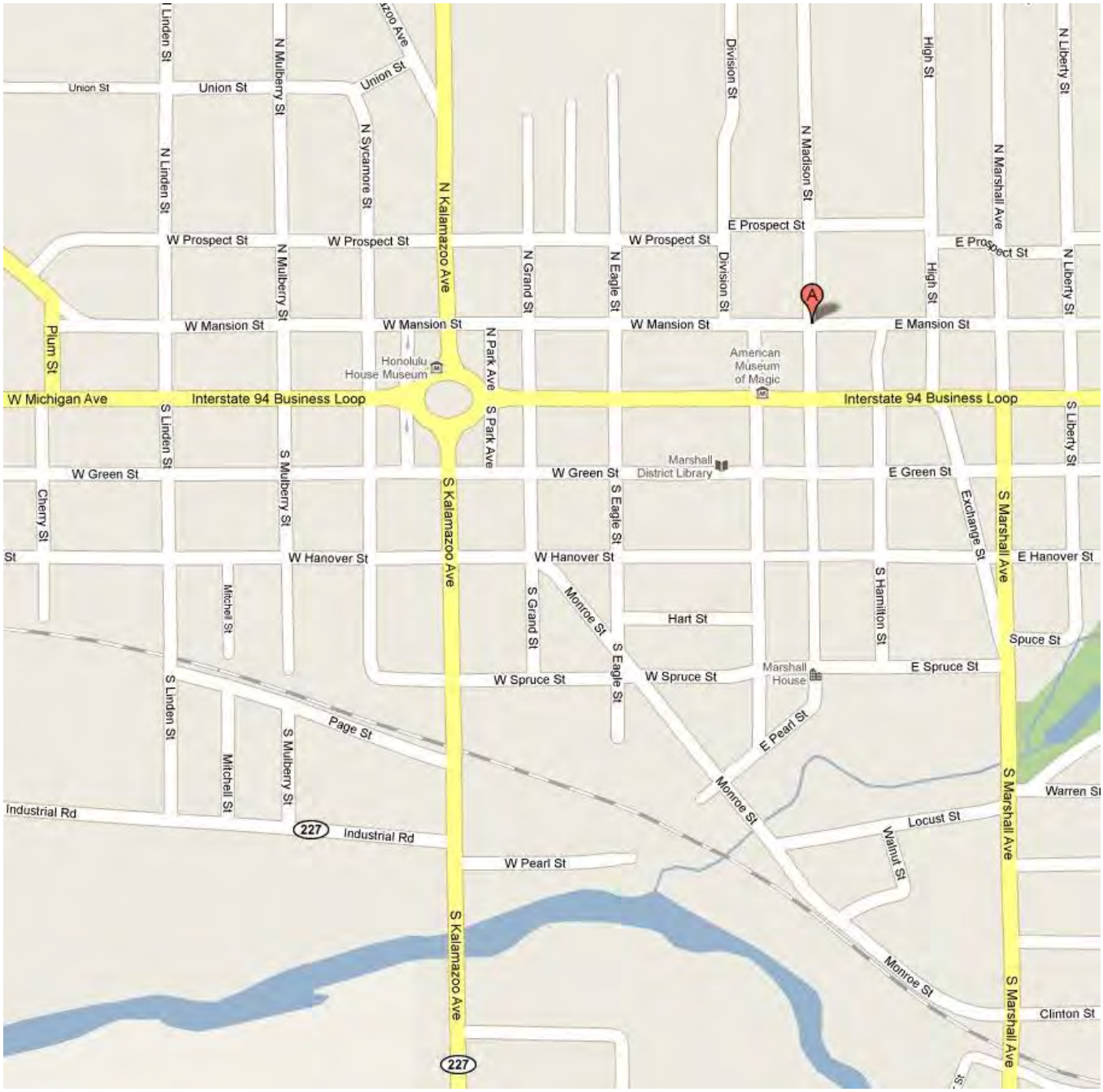

Bronson Methodist Hospital
601 John St
Kalamazoo, MI 49007
(269) 341 - 7979

# Hospital Route Map – Borgess Medical Center – Kalamazoo, MI



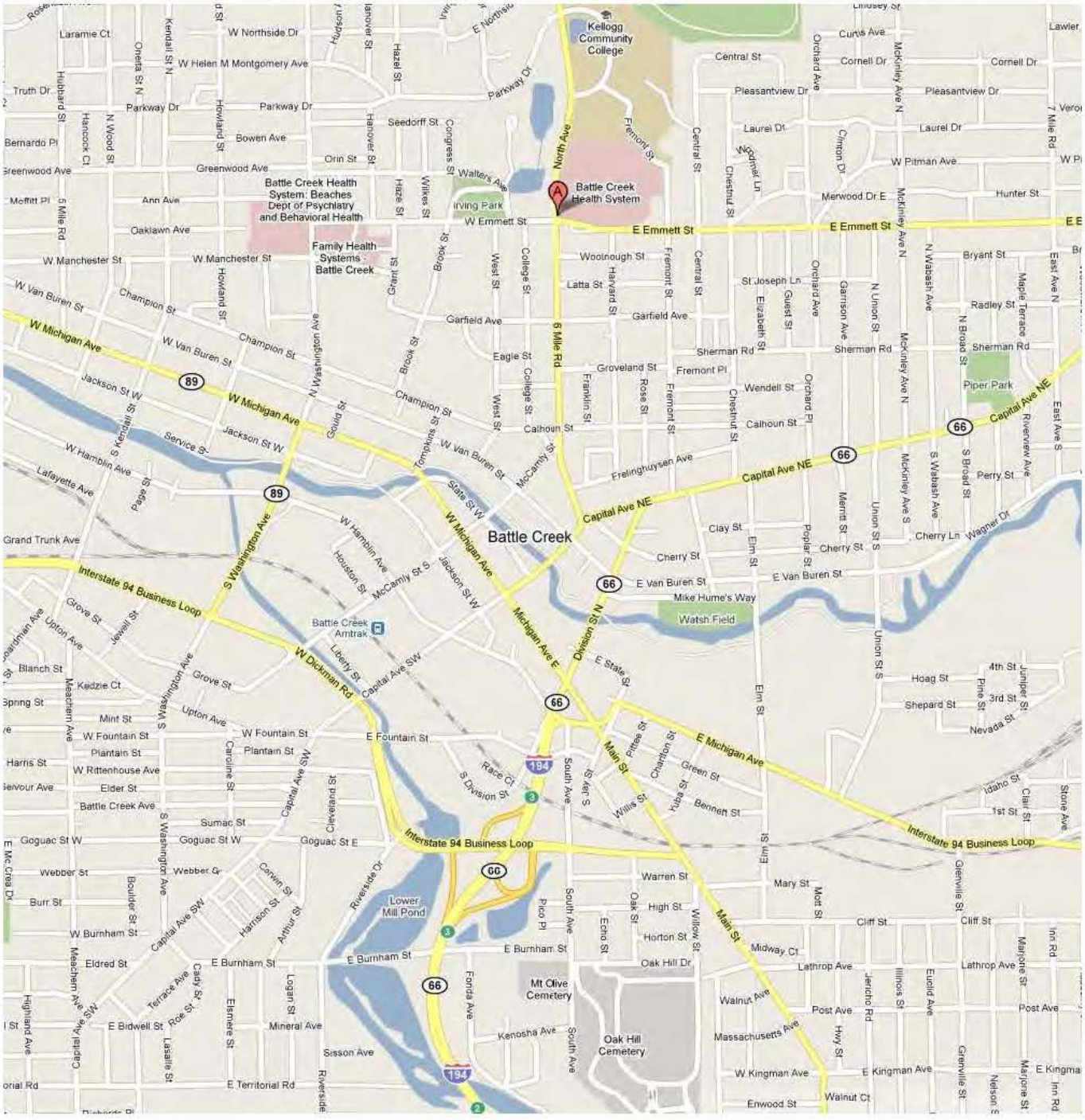

Borgess Medical Center
1521 Gull Road
Kalamazoo, MI 49048
(269) 226 - 7000

# Hospital Route Map – Oaklawn Hospital – Marshall, MI




Oaklawn Hospital
200 North Madison St.
Marshall, MI
(269) 781-4271

# Hospital Route Map – Battle Creek Health System – Battle Creek, MI




Battle Creek Health System
300 North Avenue
Battle Creek, MI
(269) 966-8000

# KALAMAZOO RIVER/ENBRIDGE SPILL
## General Safety Instructions
Operational Period: 8/2/12 (0700hrs) to 8/9/12 (0700hrs)

**River Opening:** Be advised that the Kalamazoo River has been opened to the public except for work areas marked by buoys. Public recreational activities are to be expected on the river. Be courteous and respectful to members of the public at all times. Be aware that members of the public may be present in work areas.

**No Wake Zone:** A no wake zone has been established in the Southern Delta and Neck area. The zone extends 100 feet from the new containment boom locations, as well as when traveling through the gates.

**Weather:** Review weather information prior to commencing work each day. Be aware of changes in the weather conditions and ensure proper controls are implemented to address the weather hazards such as: Lightning, Rain, Fog, etc. Take actions in accordance with instructions provided by supervisory personnel and as received through the Call-Em-All system.

**Sunscreen:** Sunscreen should be applied to exposed skin, and not just if you are going to be in the sun. UVB rays cannot penetrate glass windows, but UVA rays can, leaving you prone to these damaging effects if unprotected.

**PPE:** Be prepared for changing weather conditions by wearing, and/or having available, appropriate rain gear and approved safety footwear with appropriate soles for use on slippery ground conditions. When PFDs are required you must ensure that they are United States Coast Guard approved and are the outermost layer, with reflective vest worn under the PFD.

**Vehicles:** Follow speed limits and adjust speed as necessary for road conditions. Make sure your vehicle is in proper working condition.

**Process for Reporting Potentially Hazardous Materials:** If you observe a potentially hazardous material which is not spill related, notify field safety officer and evacuate the area. Do not let anyone into the area unless it is Enbridge Safety and/or Operations Inspector. Immediately report all details to the Enbridge Safety Office at 269-781-1913. The Enbridge Safety Office will alert the Emergency Response Center or call (911). Notifications will go to Calhoun County EMS or Kalamazoo County EMS, EPA, DEQ and Pollution Emergencies.

**SPECIAL NOTATION ON WEATHER and HAZARD ALERT MESSAGING:**

(See daily updates for additional weather information).

Enbridge Safety will maintain consistent weather messages by compiling information and present through daily briefings. Weather forecast updates will be distributed to field safety staff for further communication in the field. Enbridge Safety is responsible for communicating weather alerts based on information received through the Weather TAP system and text messages received from the National Weather Service in Grand Rapids.

In the event of severe weather warnings and alerts, Enbridge Safety will be monitoring via the Weather TAP system. Enbridge Safety will initiate the notification process by using the Call-Em-All system to Field Safety Staff and Operations. Operations in turn will contact their Operation Field Inspectors. The Operation Field Inspector will communicate the necessary plan with their field work crews. DK Security will be notified by Enbridge Safety by phone from 1800 – 0700 hours.

**Severe Weather Alerts:** Take appropriate shelter when the county activates their tornado warning sirens. In the Incident Command Post, report to the designated tornado shelter rooms. Where appropriate shelter is not available, lie flat in a nearby ditch or depression and cover your head with your hands. Be aware of potential for flooding and flying debris.

*Note:* Emergency notification siren systems will be tested on the first (1st) Saturday of each month in Calhoun and Kalamazoo Counties. Typically a siren is sounded at 1200 hours; however, this could be delayed due to current circumstances in the county.

**Fire/Building Evacuation Alert:** In the event of a fire, utilize air horn to initiate series of three 1 second blasts. Must report to the designated evacuation point upon hearing a series of three 1 second air horn blasts. **Please close all doors, and turn lights out upon leaving your area.**

***Call the Safety Office at 269-781-1914 if you have weather related concerns. Call 269-781-1913 for other Safety related issues.***

**Safety Orientations: Held Monday - Friday at 0800 at the Operations Center (1601 Pratt Avenue)**

**Boat Safety Awareness Orientation: Available by appointment Monday – Friday, contact the Safety Office.**

**If you see wildlife (dead or alive) that is impacted by the oil, call Bob Doherty** [redacted]

| ***Field Safety Staff*** | |
|---|---|
| **Name** | **Phone** |
| Barry Vavrina | [redacted] |
| Matt Piescher | |

**Call-Em-All:** Will be tested by Enbridge Safety office on Wednesday's at 1200 hours.

**First Aid Kits:** There are four (4) kits located within the Incident Command Post Facility. Please review the Evacuation Plan map for locations.

**KALAMAZOO RIVER/ENBRIDGE SPILL**
**General Safety Message**
Operational Period: 8/2/12 (0700hrs) to 8/9/12 (0700hrs)

**DAY 1:**
Thursday, August 2, 2012

**Life Saving Rule #5 – Isolate Energized Systems**

Always follow procedures for lockout/ tag-out. Equipment, facilities and piping systems could have stored or residual energy that poses a danger.

Each and every one of us must do everything in our power to protect ourselves, and to protect those around us.

***You are the power behind lifesaving rules***

**DAY 2:**
Friday, August 3, 2012

**Dump Truck Tailgates**

Dump truck tailgates pose potential pinch point hazards. Pinch points are present at the latch mechanism and between the box and the gate.

Keep hands clear of these areas. Do not attempt to pull the gate open and use your hand to sweep material to clean the lip of the box.

**DAY 3/ DAY 4:**
Saturday, August 4 – Sunday, August 5, 2012

**Preventing Tick Bites**

While it is a good idea to take preventive measures against ticks year-round, be extra vigilant in warmer months (April-September) when ticks are most active.

Repel Ticks with DEET - Use repellents that contain 20% or more for protection that lasts up to several hours. Always follow product instructions and do not spray directly to the face – apply to hands and rub on.

Find and Remove Ticks from Body:

- Bathe or shower as soon as possible after coming indoors (preferably within two hours) to wash off and more easily find ticks that are crawling on you.
- Conduct a full-body tick check using a hand-held or full-length mirror to view all parts of your body upon return from tick-infested areas.
- Examine gear. Ticks can ride into the home on clothing, then attach to a person later, so carefully examine clothing day packs. Tumble clothes in a dryer on high heat for an hour to kill remaining ticks.

**DAY 5:**
Monday, August 6, 2012

**Storage Containers and Labeling**

- Use only containers approved for the type of hazardous chemical/liquid being stored.
- Gas and Diesel – use only approved metal containers.
- Properly store containers when not in use.
- Ensure a fire extinguisher is in close proximity to any flammable/combustible liquids being stored or dispensed.
- Ensure any leaks/spills from temporary containers are contained, cleaned up and reported.

Labeling:
Hazardous chemical/liquid containers provided by suppliers must list:

- Product Name
- Hazardous Chemical Ingredients
- Hazard Warnings
- Manufacturer

Temporary containers used more than one day/or accessible to more than one worker require labels that lists the product name.

**DAY 6:**
Tuesday, August 7, 2012

**Personal Hygiene**

Whether you work in the office or in the field, practicing good personal hygiene is part of any safe work place. A key element to personal hygiene is proper hand washing.

Proper Hand Washing Technique:

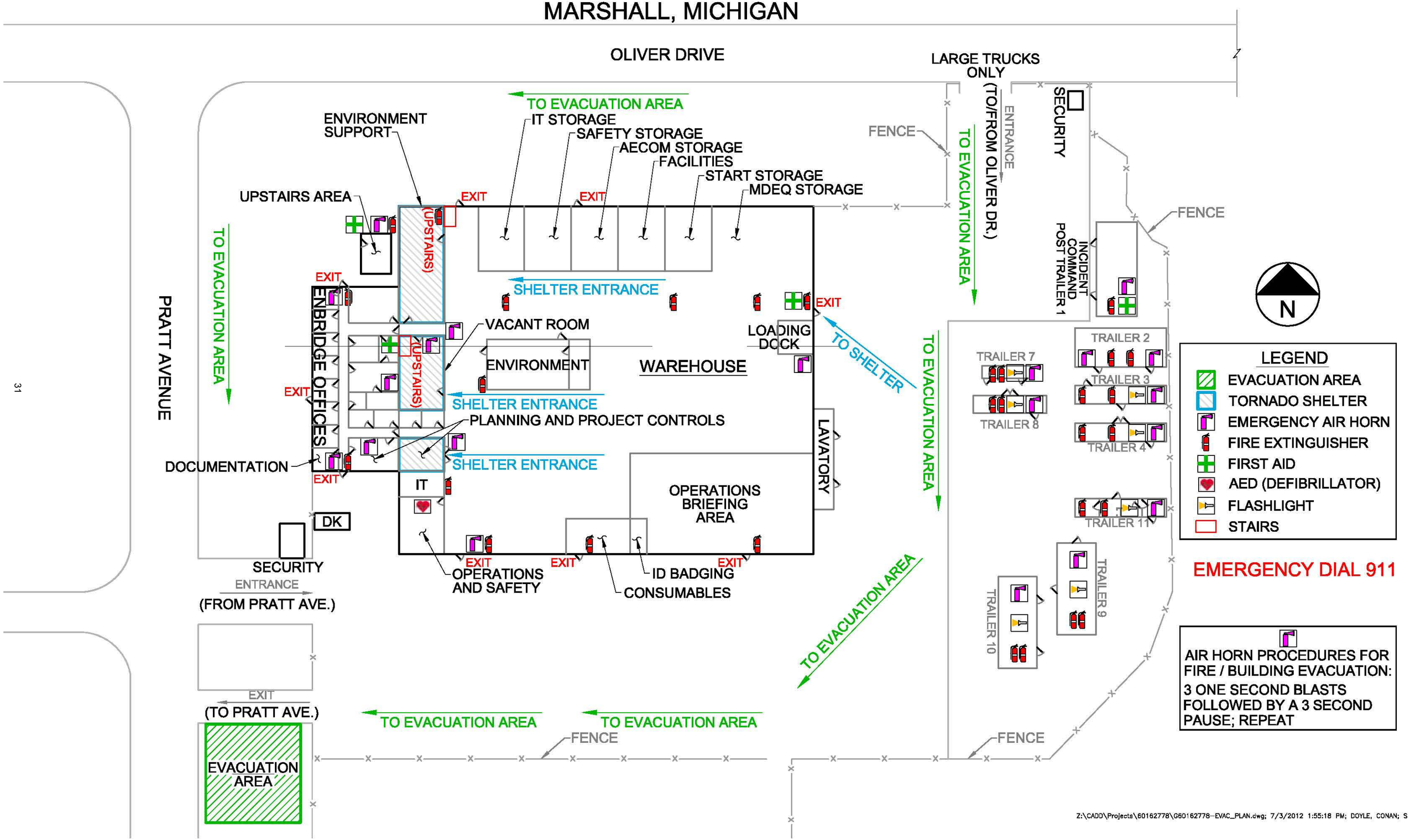
- Wet your hands with clean water and apply soap. Use warm water if available.
- Rub hands together to make a lather and scrub all surfaces.
- Rinse and dry well.
- If soap and water are not available, use a commercially available hand sanitizer.

**DAY 7:**
Wednesday, August 8, 2012

**Jobsite Security**

- Inform security if you see suspicious person(s) loitering around jobsites.
- Secure high value tools and equipment.
- Vehicles, boats, trailers, and other equipment should be secured if left unattended.
- In vehicles, stow valuables out of sight.
- Remain aware of what's going on around you.

# ENBRIDGE INCIDENT COMMAND POST FACILITY
# EMERGENCY RESPONSE / EVACUATION PLAN
# MARSHALL, MICHIGAN



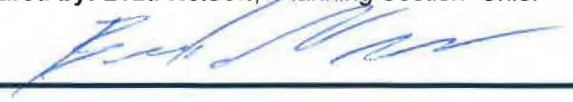

Z:\CADD\Projects\60162778\G60162778-EVAC_PLAN.dwg; 7/3/2012 1:55:18 PM; DOYLE, CONAN; S

| 1. Incident Name | 2. Operational Period (Date/Time) | DAILY MEETING SCHEDULE |
|---|---|---|
| KALAMAZOO RIVER / ENBRIDGE SPILL RESPONSE | From: August 02, 2012 0700 | ICS-230 |
| | To: August 09, 2012 0700 | |

**3. Meeting Schedule (Commonly-held meetings are included)**

| Date/ Time | Meeting Name | Purpose | Attendees | Location |
|---|---|---|---|---|
| **8/2/2012** | **Thursday** | | | |
| **0700**<br>**0730** | Operations Briefing | Present IAP for the next Operational Period to Field Staff | Branch Directors and Field Staff | Field Locations |
| **1400**<br>**1600** | Kalamazoo River System Branch Special Purpose Meeting | Coordinate future Kalamazoo River System Branch activities | Kalamazoo River System Branch Directors and Group Supervisors | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **8/3/2012** | **Friday** | | | |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **8/4/2012** | **Saturday** | | | |
| **8/5/2012** | **Sunday** | | | |
| **8/6/2012** | **Monday** | | | |
| **0900**<br>**0945** | Tactics | Finalize primary and alternate tactics and strategies to achieve UC | Operations, Planning, Safety | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **8/7/2012** | **Tuesday** | | | |
| **1400**<br>**1600** | Kalamazoo River System Branch Special Purpose Meeting | Coordinate future Kalamazoo River System Branch activities | Kalamazoo River System Branch Directors and Group Supervisors | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **8/8/2012** | **Wednesday** | | | |
| **0900**<br>**0930** | Command and General Staff Meeting | UC presents direction to Command and General Staff. | UC, Command and General Staff, SITL | UC Meeting Room (Trailer #2) |
| **0930**<br>**0945** | Planning Meeting | Review tactics and assignments to meet the project Objectives for the next Operational Period. | UC, Command and General Staff, Scribe | UC Meeting Room (Trailer #2) |
| **0945**<br>**1000** | Objectives Meeting | Review current objectives and identify objectives for the next Operational Period. | UC, Operations, Safety, Planning, Scribe | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |

**4. Prepared by: Brad Nelson**, Planning Section Chief **Date/Time** 8/1/2012





**OPERATIONS SECTION**
US EPA/MDEQ
Steve Noble, Chief
Dan Capone (Weston/US EPA), Chief
Joe Victory (Weston/US EPA), Deputy
ENBRIDGE
David Bareham (Enbridge), Chief
James Snider (Enbridge), Deputy



**Waste Management Branch**
US EPA/MDEQ
~~Tim Laquerre~~ (Weston/US EPA), Director
ENBRIDGE
John Wallace (Avery/Enbridge), Director

DAN ZAHNER
(WESTON/US EPA), DIRECTOR

REVISED 8/2/2012

**Submerged Oil Branch**
US EPA/MDEQ
Dan Zahner (Weston/US EPA), Director
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Director

**OSCAR Group**
US EPA/MDEQ
Steve Noble, Supervisor
Joe Victory (Weston/US EPA), Supervisor
ENBRIDGE
Dave Bareham (Enbridge), Supervisor

**Submerged Oil Science Group**
US EPA/MDEQ/USGS
Faith Fitzpatrick, Supervisor
Ron Zelt, Supervisor
ENBRIDGE
Dave Dryburgh (AECOM/Enbridge), Supervisor

**Submerged Oil Compliance Group**
ENBRIDGE
Mark Berninger
(Cardno JFNEW/Enbridge), Supervisor

**Containment Branch**
US EPA/MDEQ
Rex Johnson (Weston/US EPA), Director
ENBRIDGE
Dean Sahara (SWAT/Enbridge), Director
Mike Wekseth (SWAT/Enbridge), Deputy

**Containment Compliance Group**
ENBRIDGE
Mike Zambetis
(Cardno JFNEW/Enbridge), Supervisor

**Containment Recovery Group**
ENBRIDGE
Oliver Webb (SWAT/Enbridge), Supervisor

**Kalamazoo River System Branch**
MDEQ
Steve Noble, Director
ENBRIDGE
Bryan Stiemsma (AECOM/Enbridge), Director

**Talmadge Creek/Kalamazoo River Remedial Investigation Group**
MDEQ
Doug Thompson
Ben Schmitt, Assistant
ENBRIDGE
Brian Albig
(AECOM/Enbridge), Supervisor

**Kalamazoo River Compliance Group**
ENBRIDGE
Mike Zambetis
(Cardno JFNew/Enbridge), Supervisor

**Kalamazoo River Remedial Action Group**
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Supervisor

**Talmadge Creek/Kalamazoo River Monitoring Group**
ENBRIDGE
Alison Schoeff (AECOM/Enbridge), Supervisor

ENBRIDGE

ICS 207
8/2 – 8/9

**PLANNING SECTION**
US EPA/MDEQ
Mark DuCharme, Chief
Isaac Aboulafia (Weston/US EPA), Chief
ENBRIDGE
Brad Nelson (Avery/Enbridge), Chief
Alex Olson (Avery/Enbridge), Deputy

**SITUATION UNIT**
US EPA/MDEQ
Ben Schmitt, Leader
~~Ted Blackburn~~ (Weston/US EPA), Leader
ENBRIDGE
Mark Fuller (AECOM/Enbridge), Leader

KAREN BERECZ
(WESTON/US EPA), LEADER
REVISED 8/2/2012

**RESOURCE UNIT**
US EPA/MDEQ
Lorie Hong (Weston/US EPA), Leader
ENBRIDGE
Brad Nelson (Avery/Enbridge), Leader
Emma Cook (Enbridge), Assistant

**ENVIRONMENTAL UNIT**
US EPA/MDEQ/USGS
Jeff Spruit (Off-site), Leader
Mike Alexander (Off-site), Assistant
Doug Thompson, Assistant
Kim Churchill (Weston/DEQ), Leader
Isaac Aboulafia (Weston/US EPA), Leader
Elizabeth Wessling (Weston/US EPA)(Off-site), Leader
Faith Fitzpatrick (USGS), Leader
Ron Zelt (USGS)(Off-site), Assistant
Rex Johnson (Weston/US EPA), Assistant
Tom Graan (Weston/US EPA), Assistant
ENBRIDGE
John Bohrmann (Enbridge), Leader

**DOCUMENTATION UNIT**
US EPA/MDEQ
Crystal Laskey, Leader
Carolyn Giles-Smith (Weston/DEQ), Leader
Paul Moisan (Weston/US EPA), Leader
ENBRIDGE
Brad Nelson (Avery/Enbridge), Leader

ENBRIDGE

ICS 207
8/2 – 8/9

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill** | 2. Operational Period (Date/Time)<br>Starting: **August 09, 2012, 0700**<br>End: **August 16, 2012, 0700** | **IAP Cover Sheet** |
|---|---|---|

3. Approved by Incident Commander(s):

Michelle DeLong, Michigan Department Environmental Quality
Ralph Dollhopf, U.S. EPA
Sonia Vega, U.S. EPA
John Sobojinski, Enbridge

## INCIDENT ACTION PLAN

The items below are included in this Incident Action Plan:


- ICS 202 (Response Objectives) ..... 1
- ICS 207 (Organizational Chart & OPS Chart) ..... 2
- ICS 204 (Assignment List) ..... 6
- River Overview Map ..... 12
- Meeting Locations and Traffic Plans ..... 13
- ICS 205 (Communication List) ..... 23
- ICS 205a (Communications Attachment) ..... 25
- ICS 206 (Medical Plan) ..... 26
- Safety Message/Evacuation Plan ..... 31
- ICS 230 Meeting Schedule ..... 34





| 4. Prepared By:<br>Alex Olson, Enbridge | Date/Time<br>08/08/2012# |
|---|---|

| 1. Incident Name | 2. Operational Period (Date/Time) | INCIDENT OBJECTIVES ICS 202-EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: August 09, 2012 @ 0700<br>To: August 16, 2012 @ 0700 | |

**3. Incident Objective(s)**

1. Ensure health and safety of the public and response and recovery personnel.
2. Ensure absolute containment of submerged oil and oil-containing sediments within the Delta and the Fan of Morrow Lake.
3. Ensure effective transition of regulatory oversight from EPA to Michigan DEQ jurisdiction as appropriate.
4. Perform recovery and containment of oil from affected public and private areas of river and river system.
5. Perform remediation and restoration of affected public and private areas of river and river system.
6. Maintain effective communications with cooperating and assisting agencies, the public, including regular coordination with the Multi-Agency Coordination Group (MAC).
7. Provide protection of environmentally and culturally sensitive areas including wildlife and historic properties.
8. Collect, coordinate, manage and communicate environmental and public health data including maintenance of Joint Information Center function.

**4. Operational Period Command Emphasis**

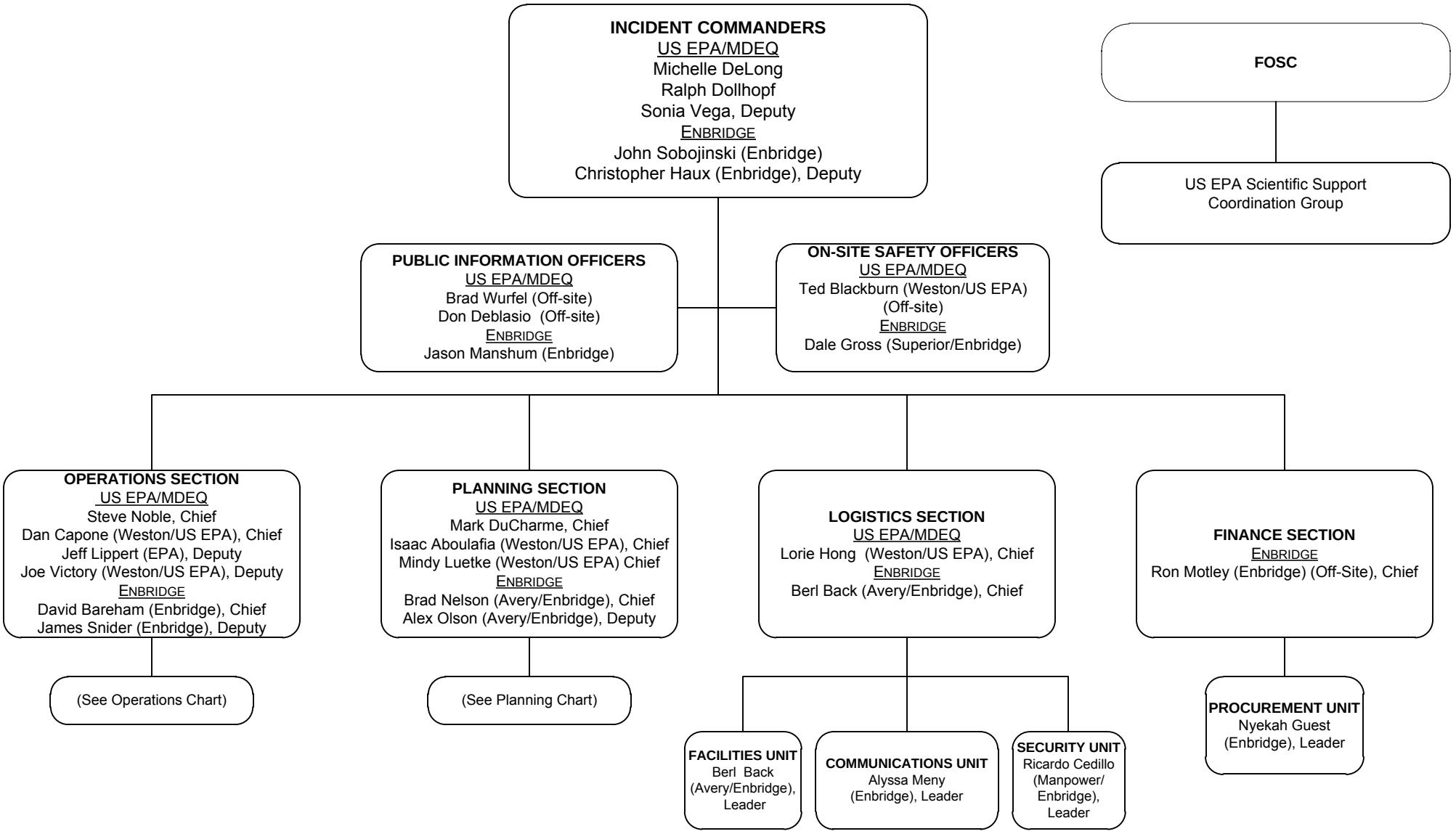
1. Respond to and document emerging oil throughout the Kalamazoo River system, incorporating new protocols regarding which sheen to capture.
2. Complete installation of sediment trap structures if conditions warrant. Monitor and maintain the sediment traps.
3. Continue with efforts to prepare for the Source Area work activities.

**5. Safety Objectives for the Operational Period**

1. Assure effective integration of public safety and worker safety on the river. Focus on public and worker interaction.
2. Focus on safe driving behaviors and policies.
3. Focus on avoidance of insect hazards within work areas.

| | | |
|---|---|---|
| **6. Prepared by Planning Section Chief (Enbridge):** Brad Nelson | | **Date/Time:** 8/8/2012 1340 |
| **7. Approved by Incident Commander (DEQ):** Michelle DeLong | Michelle DeLong | **Date/Time:** 8/8/2012 1414 |
| **8. Approved by Incident Commander (US EPA):** Ralph Dollhopf | | **Date/Time:** 8/8/2012 1443 |
| **10. Approved by Deputy Incident Commander (Enbridge):** John Sobojinski | | **Date/Time:** 8/8/2012 1400 |

# Enbridge Pipelines Response Unified Command




ICS 207
8/9– 8/16



**OPERATIONS SECTION**
US EPA/MDEQ
Steve Noble, Chief
Dan Capone (Weston/US EPA), Chief
Jeff Lippert (EPA), Deputy
Joe Victory (Weston/US EPA), Deputy
ENBRIDGE
David Bareham (Enbridge), Chief
James Snider (Enbridge), Deputy




**Waste Management Branch**
US EPA/MDEQ
Dan Zahner (Weston/US EPA), Director
ENBRIDGE
John Wallace (Avery/Enbridge), Director

**Submerged Oil Branch**
US EPA/MDEQ
Dan Zahner (Weston/US EPA), Director
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Director

**Submerged Oil Science Group**
US EPA/MDEQ/USGS
Faith Fitzpatrick, Supervisor
Ron Zelt, Supervisor
ENBRIDGE
Dave Dryburgh (AECOM/Enbridge), Supervisor

**Submerged Oil Compliance Group**
ENBRIDGE
Mark Berninger
(Cardno JFNEW/Enbridge), Supervisor

**Containment Branch**
US EPA/MDEQ
Rex Johnson (Weston/US EPA), Director
ENBRIDGE
Dean Sahara (SWAT/Enbridge), Director
Mike Wekseth (SWAT/Enbridge), Deputy

**Containment Compliance Group**
ENBRIDGE
Mike Zambetis
(Cardno JFNEW/Enbridge), Supervisor

**Containment Recovery Group**
ENBRIDGE
Oliver Webb (SWAT/Enbridge), Supervisor

**Kalamazoo River System Branch**
MDEQ
Steve Noble, Director
ENBRIDGE
Bryan Stiemsma (AECOM/Enbridge), Director

**Talmadge Creek/Kalamazoo River Remedial Investigation Group**
MDEQ
Doug Thompson
Ben Schmitt, Assistant
ENBRIDGE
Brian Albig
(AECOM/Enbridge), Supervisor

**Kalamazoo River Compliance Group**
ENBRIDGE
Mike Zambetis
(Cardno JFNew/Enbridge), Supervisor

**Kalamazoo River Remedial Action Group**
ENBRIDGE
Matt Sumner (AECOM/Enbridge), Supervisor

**Talmadge Creek/Kalamazoo River Monitoring Group**
ENBRIDGE
Alison Schoeff (AECOM/Enbridge), Supervisor



ENBRIDGE

ICS 207
8/9 – 8/16

**PLANNING SECTION**
US EPA/MDEQ
Mark DuCharme, Chief
Isaac Aboulafia (Weston/US EPA), Chief
Mindy Luetke (Weston/US EPA), Chief
ENBRIDGE
Brad Nelson (Avery/Enbridge), Chief
Alex Olson (Avery/Enbridge), Deputy

**SITUATION UNIT**
US EPA/MDEQ
Ben Schmitt, Leader
Karen Berecz (Weston/US EPA), Leader
Matt Haak (Weston/US EPA), Leader
ENBRIDGE
Mark Fuller (AECOM/Enbridge), Leader

**RESOURCE UNIT**
US EPA/MDEQ
Lorie Hong (Weston/US EPA), Leader
ENBRIDGE
Brad Nelson (Avery/Enbridge), Leader
Emma Cook (Enbridge), Assistant

**ENVIRONMENTAL UNIT**
US EPA/MDEQ/USGS
Jeff Spruit (Off-site), Leader
Mike Alexander (Off-site), Assistant
Doug Thompson, Assistant
Kim Churchill (Weston/DEQ), Leader
Isaac Aboulafia (Weston/US EPA), Leader
Elizabeth Wessling (Weston/US EPA)(Off-site), Leader
Faith Fitzpatrick (USGS), Leader
Ron Zelt (USGS)(Off-site), Assistant
Rex Johnson (Weston/US EPA), Assistant
Tom Graan (Weston/US EPA), Assistant
ENBRIDGE
John Bohrmann (Enbridge), Leader

**DOCUMENTATION UNIT**
US EPA/MDEQ
Crystal Laskey, Leader
Carolyn Giles-Smith (Weston/DEQ), Leader
Paul Moisan (Weston/US EPA), Leader
Gena Good (Weston/ US EPA), Leader
ENBRIDGE
Brad Nelson (Avery/Enbridge), Leader



ICS 207
8/9 – 8/16

| 1. Incident Name | 2. Operational Period (Date/Time) | Assignment List ICS 204 - EPA |
|---|---|---|
| **Kalamazoo River/Enbridge Spill Response** | From: August 09, 2012, 0700<br>To: August 16, 2012, 0700 | |
| **3. Branch**<br>**Kalamazoo River System Branch** | **4. Division/Group/Staging** | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | MDEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Jeff Lippert, Deputy | US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Steve Noble | MDEQ | |
| | Bryan Stiemsma | AECOM/Enbridge | |

**6. Resources Assigned**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Talmadge Creek/Kalamazoo River Remedial Investigation | Ben Schmitt (MDEQ)<br>Brian Albig (AECOM/Enbridge) | [redacted] | 8 Contractors |
| Kalamazoo River Compliance | Mike Zambetis (Cardno JFNew/Enbridge) | | 1 Contractors |
| Talmadge Creek/Kalamazoo River Remedial Action | Matt Sumner (AECOM/Enbridge) | | |
| Talmadge Creek/Kalamazoo River Monitoring | Alison Schoeff (AECOM/Enbridge) | | 2 Contractors |

**7. Work Assignments**

**Talmadge Creek/Kalamazoo River Remedial Investigation**

1. Resume Kalamazoo River remedial investigation August 13, 2012.

**Kalamazoo River Compliance**

1. Continue restoration/stabilization of the Kalamazoo River Bank Erosion Assessment Sites (KRBEAS).
2. Monitor the source area MDEQ permit application currently under agency review.
3. Monitor the Raymond Road MDEQ permit application currently under agency review.

**Talmadge Creek/Kalamazoo River Remedial Action**

1. Execute tasks assigned by ERO as requested.

**Talmadge Creek/Kalamazoo River Monitoring**

1. Monitor erosion control devices.
2. Conduct daily monitoring of river conditions, recording observations of sheen or oil.
3. Conduct weekly monitoring of buoys and signage in the river.
4. Conduct monthly surface water monitoring on Morrow Lake and the Kalamazoo River.

**8. Special Instructions**

NRDA Trustees will be conducting recreational use surveys along the Kalamazoo River at river access points.

Rowe Island, MP 38.50 to MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:
When operating or working in the vicinity of ultra violet testing equipment, wear approved safety glasses that provide protection from UV A rays and never look directly into the illuminator.

All in water activities of workers in water depths over fifty percent (50%) of thigh height will require tethering. Please refer to the HASP for further instructions.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| A. Olson, Avery/Enbridge | 8/08/2012 1338 | B. Nelson, Avery/Enbridge | 8/08/2012 1340 | D. Bareham, Enbridge | 8/08/2012 1350 |

| 1. Incident Name | 2. Operational Period (Date/Time) | Assignment List |
|---|---|---|
| **Kalamazoo River/Enbridge Spill Response** | From: August 09, 2012, 0700<br>To: August 16, 2012, 0700 | **ICS 204- EPA** |
| **3. Branch**<br>**Waste Management** | **4. Division/Group/Staging** | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | DEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Jeff Lippert, Deputy | US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Dan Zahner | Weston/US EPA | |
| | John Wallace | Avery/Enbridge | |

**6. Resources Assigned** "X" indicates 204a attachment with additional instructions

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| See Branch Directors | | | |

**7. Work Assignments**

1. Field decon operations for: personnel, hand equipment, and boats for preparation of transport shall be installed prior to work beginning at boat launches / staging areas for individual work sites.
2. Haul contaminated soil, water, media and debris to staging areas for waste characterization and oil recovery sampling prior to offsite disposal.
3. Waste shall be collected at a minimum of daily for direct haul to the landfill or transported to Frac Tank City (FTC) for consolidation with similar waste streams as necessary. Waste generated from coring will be consolidated and transported to Frac Tank City as needed.
4. Waste management characterization, manifesting, and coordination of transportation and disposal.

For Weston/US EPA/MDEQ:

1. Provide oversight of all waste management activities.
2. Ensure appropriate sampling, tracking and disposal is performed on oil impacted debris, water and soil.
3. Review manifests, weight tickets and bills of lading for correlation to waste stream analytical data.
4. Review weekly oil recovery and waste disposal report.

**8. Special Instructions**

Ensure all Best Management Practices (BMPs) are in place and utilized.

In accordance with the Fatigue Management Plan, all work permit activities will be completed no later than 1900.

SAFETY INSTRUCTIONS:

For vacuum truck operation guidelines, please refer the HASP.

**At Frac Tank City:**

1. The following procedure shall be used for initial opening of hatch or rear doors of liquid vacuum trucks and hatches of vacuum excavation units:
   a. Approach the hatch to be opened with a calibrated five gas monitor and a benzene monitor.
   b. Personnel performing this task must wear a full face respirator with organic vapor cartridge.
   c. Slightly open the hatch and take VOC, H2S, LEL, Oxygen, CO and benzene readings.
   d. If readings are greater than 10 ppm H2S, 10% LEL, 25 ppm CO or 25 ppm benzene then personnel shall close the hatch and utilize SCBA prior to opening the hatch.
2. Operations - Respiratory protection may be required depending on periodic monitoring results. Wear a half-mask respirator equipped with an organic vapor cartridge when 0.5 ppm benzene is detected. Wear a full-face respirator equipped with an organic vapor/acid gas cartridge when benzene is at 5 ppm to 25 ppm.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| A. Olson, Avery/Enbridge | 8/08/2012 1338 | B. Nelson, Avery/Enbridge | 8/08/2012 1340 | D. Bareham, Enbridge | 8/08/2012 1350 |

| 1. Incident Name | 2. Operational Period (Date/Time) | Assignment List |
|---|---|---|
| **Kalamazoo River/Enbridge Spill Response** | From: August 09, 2012, 0700<br>To: August 16, 2012, 0700 | **ICS 204 - EPA** |
| **3. Branch**<br>**Containment** | **4. Division/Group/Staging** | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | MDEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Jeff Lippert, Deputy | US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Rex Johnson | Weston/US EPA | |
| | Dean Sahara | SWAT/Enbridge | |
| | Mike Wekseth, Deputy | SWAT/Enbridge | |

**6. Resources Assigned** — **"X" indicates 204a attachment with additional instructions**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Containment Compliance | Mike Zambetis (Cardno JFNEW/Enbridge) | [redacted] | 1 Contractor |
| Containment Recovery | Sonny Rutkowski (Weston/ US EPA) | | 1 Weston/US EPA |
| | Oliver Webb (SWAT/Enbridge) | | 14 Contractors |

**7. Work Assignments**

**Containment Compliance**

1. Continue preparation of E4.0 boom HEC-RAS calculations for submittal to MDEQ.

**Containment Recovery**

1. Perform containment strategies along the Kalamazoo River including the following tasks:
   a. Deploy and maintain shoreline containment boom as required.
   b. Complete sheen management as required.
2. Monitor and maintain the E4.0 containment system and Ceresco control point.
3. Install and maintain Kalamazoo River Sediment Traps, including the cylindrical sampling devices.

For US EPA/MDEQ/Weston:

1. Oversee and document Containment Recovery activities.

**8. Special Instructions**

NRDA Trustees will be conducting recreational use surveys along the Kalamazoo River at river access points.

Rowe Island, MP 38.50-MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:
Photo Ionization (VOCs) / Four Gas Detectors (O2, CO, LEL and H2S) and Direct Reading Instrument for Benzene will be used for air monitoring during debris removal activities.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| A. Olson, Avery/Enbridge | 8/08/2012 1338 | B. Nelson, Avery/Enbridge | 8/08/2012 1340 | D. Bareham, Enbridge | 8/08/2012 1350 |

| 1. Incident Name | 2. Operational Period (Date/Time) | Assignment List |
|---|---|---|
| **Kalamazoo River/Enbridge Spill Response** | From: August 09, 2012, 0700<br>To: August 16, 2012, 0700 | **ICS 204 - EPA** |
| **3. Branch**<br>**Submerged Oil** | **4. Division/Group/Staging** | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Operations Section Chief: | Steve Noble | MDEQ | [redacted] |
| | Dan Capone | Weston/US EPA | |
| | Jeff Lippert, Deputy | US EPA | |
| | Joe Victory, Deputy | Weston/US EPA | |
| | Dave Bareham | Enbridge | |
| | James Snider, Deputy | Enbridge | |
| Branch Director: | Dan Zahner | Weston/US EPA | |
| | Matt Sumner | AECOM/Enbridge | |

**6. Resources Assigned**

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Submerged Oil Science | Faith Fitzpatrick<br>Ron Zelt (Off Site)<br>Dave Dryburgh (AECOM/Enbridge) | [redacted] | 1 MDEQ<br>1 Weston/ US EPA<br>6 Contractors |
| Submerged Oil Compliance | Mark Berninger (Cardno JFNEW/Enbridge) | | |

**7. Work Assignments**

**Submerged Oil Science**

1. Conduct Morrow Lake and Delta monitoring activities as necessary. (1 Team)
2. Conduct sediment trap sampling and monitoring. (1 Team)
3. Conduct Walling Tube sediment sampling. (1 Team)

For US EPA/MDEQ/Weston:

1. Oversee and document Submerged Oil Science work activities.

**Submerged Oil Compliance**

Track previously submitted MDEQ permit applications for toolbox methods.

**8. Special Instructions**

NRDA Trustees will be conducting recreational use surveys along the Kalamazoo River at river access points.

Rowe Island, MP 38.50 to MP 38.75, is a No Go Zone – Environmental Sensitive Area.

SAFETY INSTRUCTIONS:

All in water activities of workers in water depths over fifty percent (50%) of thigh height will require tethering. Please refer to the HASP for further instructions.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| A. Olson, Avery/Enbridge | 8/08/2012 1338 | B. Nelson, Avery/Enbridge | 8/08/2012 1340 | D. Bareham, Enbridge | 8/08/2012 1350 |

| 1. Incident Name<br>**Kalamazoo River/Enbridge Spill Response** | 2. Operational Period (Date/Time)<br>From: August 09, 2012, 0700<br>To: August 16, 2012, 0700 | **Assignment List<br>ICS 204 - EPA** |
|---|---|---|
| 3. Branch<br>**Planning Section** | 4. Division/Group/Staging | |

**5. Operations Personnel**

| | Name | Affiliation | Contact # (s) |
|---|---|---|---|
| Planning Section Chief: | Mark DuCharme | MDEQ | [redacted] |
| | Isaac Aboulafia | Weston/US EPA | |
| | Mindy Luetke | Weston/US EPA | |
| | Brad Nelson | Avery/Enbridge | |
| | Alex Olson, Deputy | Avery/Enbridge | |

**6. Resources Assigned** "X" indicates 204a attachment with additional instructions

| Division Identifier | Leader | Contact Info. # | # of Persons |
|---|---|---|---|
| Situation Unit | Ben Schmitt (MDEQ)<br>Karen Berecz (Weston/US EPA)<br>Matt Haak (Weston/ US EPA)<br>Mark Fuller (AECOM/Enbridge) | [redacted] | 1 Contractor |
| Resource Unit | Lorie Hong (Weston/US EPA)<br>Emma Cook (Enbridge), Assistant | | 1 Contractor |
| Environmental Unit | Jeff Spruit (Off-site)<br>Mike Alexander (Off-site), Assistant<br>Doug Thompson, Assistant<br>Kim Churchill (Weston/DEQ)<br>Elizabeth Wessling (Weston/US EPA)(Off-site)<br>Faith Fitzpatrick (USGS)<br>Ron Zelt (USGS), Assistant<br>Rex Johnson (Weston/US EPA), Assistant<br>Tom Graan (Weston/US EPA) , Assistant<br>John Bohrmann (Enbridge) | | 1 Weston/DEQ<br>4 Contractors |
| Documentation Unit | Crystal Laskey<br>Carolyn Giles-Smith (Weston/DEQ)<br>Paul Moisan (Weston/US EPA)<br>Gena Good (Weston/ US EPA) | | 1 Contractors |

**7. Work Assignments**

**Situation Unit:**

1. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.
2. Conduct weekly overflights; photo-document areas of sheen from source area to Morrow Lake dam and report observations back to operations section chiefs for monitoring and response. Additional flights will be scheduled as needed.
3. Organize field metrics, prepare for and facilitate presentations, and monitor action tracking. Maintain situational awareness around operational activities and plan for operational needs.
4. All odor complaints will be reported to US EPA and MDCH within 30 minutes of receipt by the odor response team (Monday through Friday 0700 – 1900). Complainants will then be contacted to schedule an odor response site visit or receive additional complaint information if no on-site response requested. Response evaluation will be reported to agencies and complainants upon completion. Samples will be analyzed at a 24-hour turnaround time.

For US EPA/MDEQ/Weston:

1. Maintain situational awareness around operational activities.
2. Communicate observations to the Operations Section Chief.
3. Provide daily situational photo log summaries.
4. Conduct daily monitoring of river conditions, recording observations of sheen and/or oil.
5. Record and document sheen observations in main channel and overbank areas, and conduct sheen testing, if necessary. Report sheen observations back to operations section chiefs for monitoring and response.

**Resource Unit:**

1. Produce an Incident Action Plan as required by the Incident Commanders.
2. Support the planning efforts of operations and provide information to Logistics in order to properly prepare and order resources.

**Environmental Unit:**

1. Conduct strategic assessment, modeling, and environmental monitoring.
2. Review sheen tracking information from the field.
3. Finalize submerged oil quantification for Spring 2012.
4. Refine subsurface containment strategies throughout the Kalamazoo River system to prevent recontamination of the Morrow Lake fan.
5. Review and track RI progress.

For Weston/US EPA/MDEQ:

1. Continue to coordinate efforts to calculate the quantity of submerged oil remaining as of Spring 2012.
2. Continue supporting the evaluation of the hydrogeomorphology of the Kalamazoo River, the Morrow Lake Delta, and Morrow Lake.
3. Interface with Enbridge and assist with the refinement of surface and subsurface containment strategies throughout the Kalamazoo River system to prevent the continued migration of oil, oil sheen, submerged oil, and oil-containing sediments into Morrow Lake.
4. Review and comment on RI progress submittals

**Documentation Unit:**

1. Maintain accurate, up-to-date incident files.
2. Store files for post-incident use.

**8. Special Instructions**

In accordance with the Fatigue Management Plan, all work permit activities will be completed no later than 1900.

SAFETY INSTRUCTIONS:
Hexane is flammable and may be harmful in contact with skin. When handling hexane and sheen test samples containing hexane, wear approved safety glasses, disposable nitrile gloves and keep away from ignition sources. Properly dispose of sheen test samples containing hexane.

**9. Communications (radio and/or phone contact numbers needed for this assignment)**

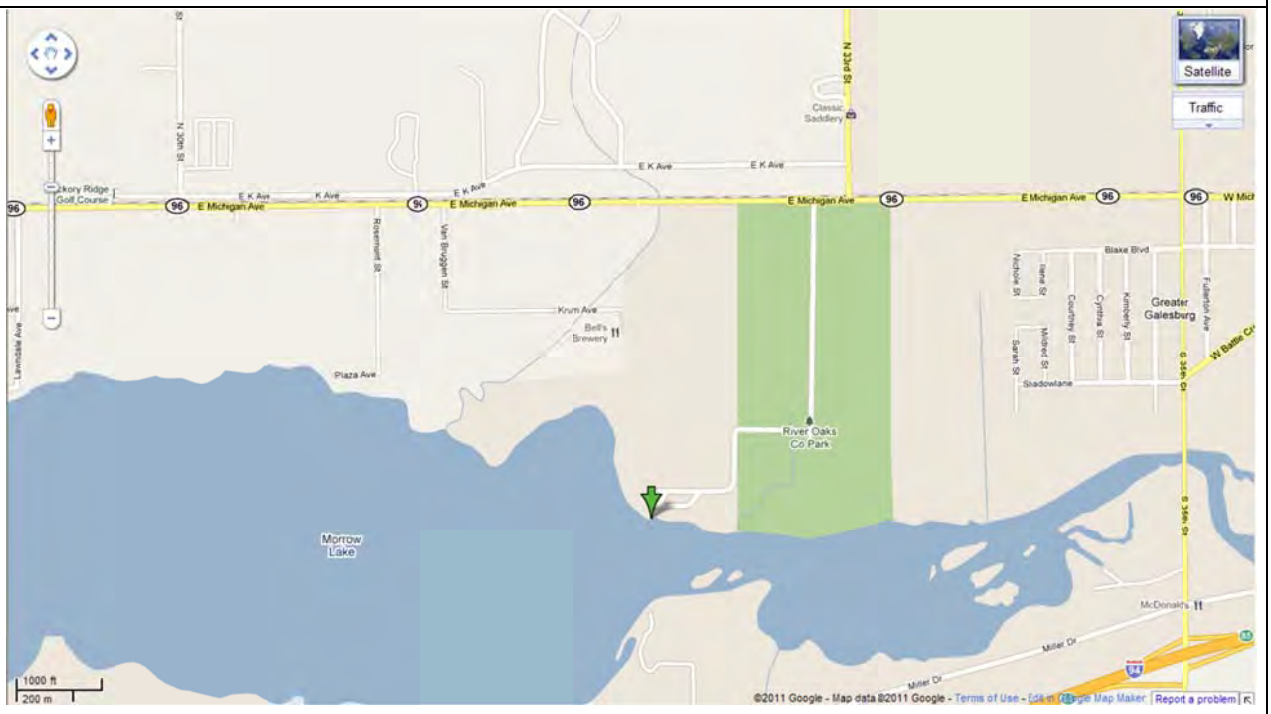
Incident Command Safety Office: 269-781-1913

**Emergency Communications:** Use IAP Medical Plan/IAP Phone list. Dial 911 for Medical Emergency.

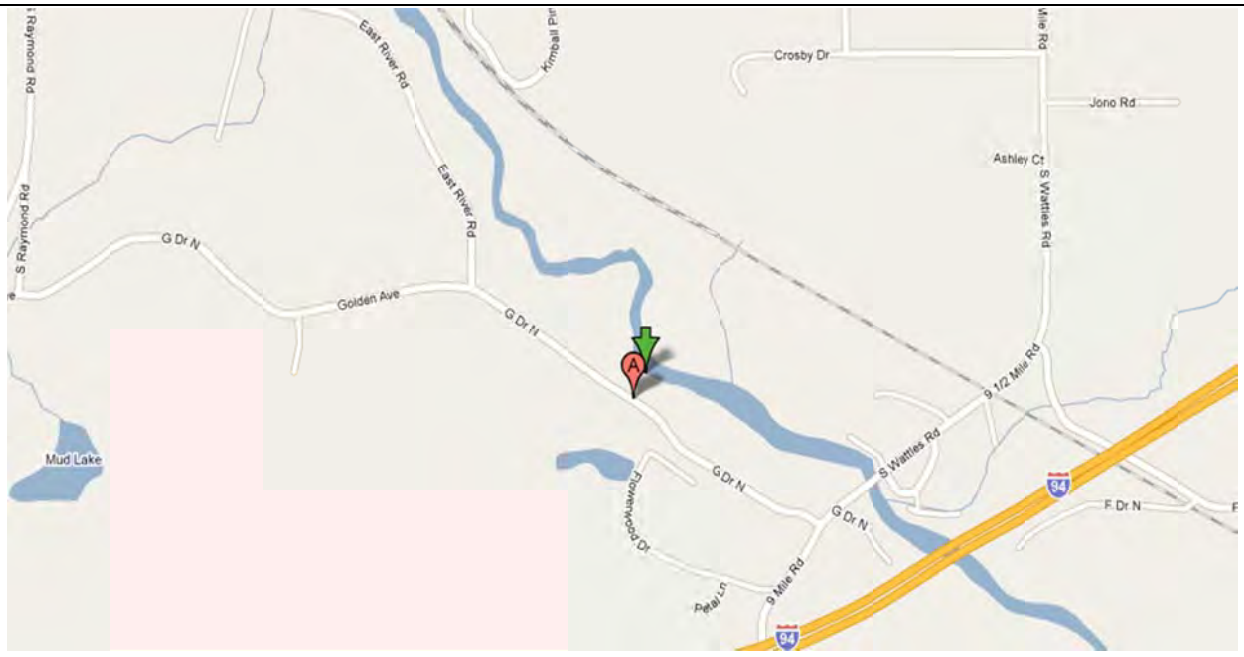
| 10. Prepared by | Date/Time | 11. Reviewed by (PSC), | Date/Time | 12. Reviewed by (OSC), | Date/Time |
|---|---|---|---|---|---|
| A. Olson, Avery/Enbridge | 8/08/2012 1338 | B. Nelson, Avery/Enbridge | 8/08/2012 1340 | D. Bareham, Enbridge | 8/08/2012 1350 |

**Toolbox Meeting Locations**

E4 - [redacted], Galesburg, MI 49053 GPS Coordinates Lat: 42.278265 Long: -85.452295




C3.2 [redacted] Battle Creek, MI 49014 GPS Coordinates Lat: 42.293492 Long: -85.124479




Refer to traffic plan for detailed access instructions.

| 1. Incident Name | 2. Operational Period (Date / Time) | Traffic Plan |
|---|---|---|
| **Kalamazoo River / Enbridge Spill** | From: **08/09/2012 / 0700 hrs**<br>To: **08/16/2012 / 0700 hrs** | |

# Traffic Safety Alert for Parking at Incident Command Post 1601 Pratt Avenue




- Slow speeds are imperative at all times.
- There is very limited parking with two-way traffic and pedestrian traffic. Watch vehicle speeds.
- Only large truck deliveries will be allowed entrance at the back entrance. Large truck deliveries are to check in at the Security Check Point.
- Everyone must check in at the Security Check Point as shown at the Pratt Avenue entrance.

Any further questions or concerns, contact the Safety Office.

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/09/2012 0700<br>To: 08/16/2012 0700 | |

## 3.TRAFFIC PLAN: C 5




[redacted] Battle Creek, MI 49014

GPS Coordinates Lat: 42.304905 Long: -85.183463

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-08-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/09/2012 0700<br>To: 08/16/2012 0700 | |

## 3.TRAFFIC PLAN: C 0.4




[redacted]C-Drive N, Ceresco, MI 49033

GPS Coordinates: Lat: 42.265127, Long:-85.048364

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-08-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/09/2012 0700<br>To: 08/16/2012 0700 | |

## 3.TRAFFIC PLAN: C 3.2




[redacted] Battle Creek, MI 49014

GPS Coordinates: Lat: 42.293492 Long: -85.124479

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-08-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/09/2012 0700<br>To: 08/16/2012 0700 | |

## 3.TRAFFIC PLAN: Wildlife Center




[redacted] Battle Creek, MI 49014

GPS Coordinates: Lat: 42.292173, Long: -85.123578

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-08-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/09/2012 0700<br>To: 08/16/2012 0700 | |

## 3.TRAFFIC PLAN: D2




This launch provides access from MP 15.75 to MP 23.25.

[redacted] Battle Creek, MI 49037

GPS Coordinates: Lat: 42.338427 Long:-85.232309

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-08-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/09/2012 0700<br>To: 08/16/2012 0700 | |

## 3.TRAFFIC PLAN: E 0.5




(Shady Bend Camp Ground), 15320 East Augusta Dr, Augusta, MI 49012
GPS Coordinates:Lat: 42.347408 Long: -85.3295

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-08-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/09/2012 0700<br>To: 08/16/2012 0700 | |

## 3.TRAFFIC PLAN: E 2




[redacted] Augusta, MI 49053

GPS Coordinates: Lat: 42.32412 Long: -85.358041

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-08-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/09/2012 0700<br>To: 08/16/2012 0700 | |

## 3.TRAFFIC PLAN: E 3



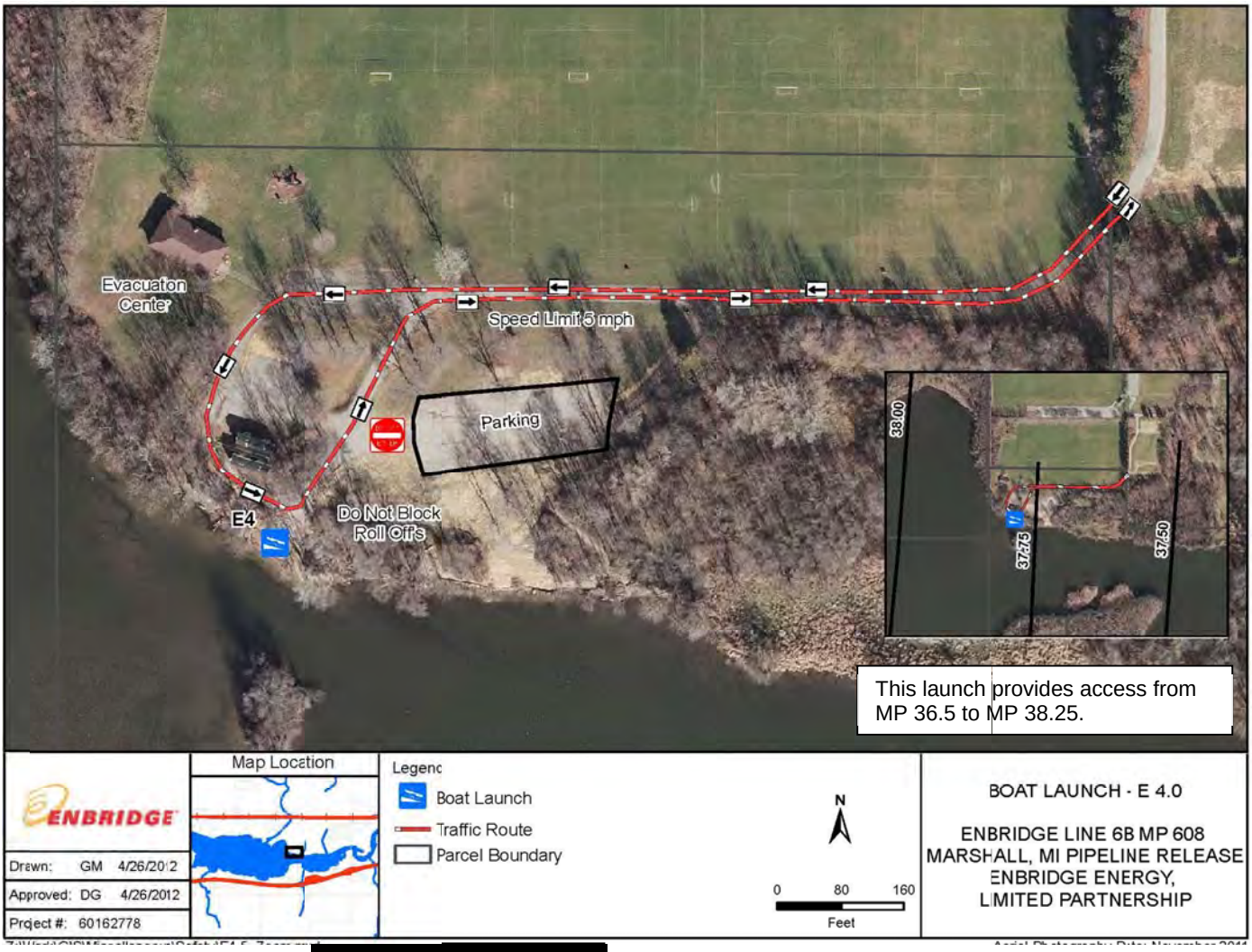

[redacted] Galesburg, MI 49053

GPS Coordinates: Lat: 42.284663 Long: -85.412855

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-08-2012 |

| 1. Incident Name | 2. Operational Period (Date / Time) | TRAFFIC PLAN<br>ICS - EPA |
|---|---|---|
| Kalamazoo River/Enbridge Spill | From: 08/09/2012 0700<br>To: 08/16/2012 0700 | |

## 3.TRAFFIC PLAN: E 4




[redacted] Galesburg, MI 49053

GPS Coordinates: Lat: 42.278265 Long: -85.452295

| 4. Prepared by: | Date/Time |
|---|---|
| Name/Position: Dale Gross, Safety Officer | 8-08-2012 |

| 1. Kalamazoo River/ Enbridge Spill | 2. Operational Period (Date / Time)<br>From: 08/09/2012/ 0700 hrs<br>To: 08/16/2012/ 0700 hrs | Operations Communications Plan |
|---|---|---|

3. Communication Contact List

| NAME | PHONE NUMBER | EMAIL ADDRESS | AGENCY / AFFILIATION | POSITION |
|---|---|---|---|---|
| Aboulafia, Isaac | [redacted] | [redacted] | START/US EPA | Planning |
| Adams, Rich | | | Enbridge | Operations |
| Aguilera, Jose | | | START/US EPA | O&M |
| Albig, Brian | | | AECOM/Enbridge | Environment |
| Arcaute, Francisco | | | US EPA | Public & Govt. Affairs |
| Back, Amy | | | Avery/Enbridge | PSC |
| Back, Berl | | | Avery/Enbridge | Facilities Manager |
| Baker, Paul | | | Kalamazoo OEM | MAC |
| Bareham, Dave | | | Enbridge | Environment |
| Berecz, Karen | | | START/US EPA | O & M |
| Berninger, Mark | | | Cardno JFNEW/Enbridge | Restoration |
| Blackburn, Ted | | | START/US EPA | Safety Officer |
| Blanchard, Mark | | | START/US EPA | |
| Bohrmann, John | | | Enbridge | Environment |
| Brettmann, Gregg | | | DEQ | Environmental Unit Leader |
| Bretz, Ryan | | | Manpower/Enbridge | IT |
| Brown , Kevin | | | Weston/DEQ | GIS Support |
| Bukowski, Breanna | | | Weston/DEQ | Planning |
| Burrous, Lauren | | | USGS | USGS |
| Capone, Dan | | | START/US EPA | Operations |
| Castor , Andrew | | | START/ US EPA | Operations |
| Cavazos, Lupe | | | START/US EPA | Planning |
| Cedillo, Ricardo | | | Manpower/Enbridge | Security Unit Leader |
| Churchill, Kim | | | Weston/DEQ | Environmental Unit |
| Cox, Renee | | | Manpower/Enbridge | Documentation |
| Daniel, Pat | | | Enbridge | MAC |
| Deblasio, Don | | | US EPA | Public Information |
| Dekker, Shaun | | | SET/Enbridge | Waste Management |
| DelloRusso, Vincent | | | Weston/DEQ | Operations |
| DeLong, Michelle | | | DEQ | Incident Commander |
| Dennis, Kate | | | Manpower/Enbridge | Admin Support |
| Dobrowski, Ed | | | USGS | USGS |
| Doherty, Bob | | | Enbridge | Environment |
| Dollhopf, Ralph | | | US EPA | Incident Commander (FOSC) |
| Donaldson, Elizabeth | | | Enbridge | Planning |
| Dougherty, Kelly | | | START/US EPA | Public Information |
| Dryburgh, Dave | | | AECOM/Enbridge | Environment |
| Dubois, Amy | | | US EPA | |
| DuCharme, Mark | | | DEQ | Incident Commander |
| Dunham, Durk | | | Calhoun County EMA | MAC |
| Eversole, Elijah | | | Enbridge/AECOM | Containment |
| Fitzpatrick, Faith | | | USGS | Tech Specialist |
| Fizzell, Chad | | | DEQ | GIS Support |
| Frost, Joe | | | Calhoun County Health | MAC |
| Fuller, Mark | | | AECOM/Enbridge | Environment |
| Giles-Smith, Carolyn | | | Weston/DEQ | Documentation |
| Good, Gena | | | START/US EPA | |
| Graan, Tom | | | START/US EPA | Submerged Oil Lead |
| Gross, Dale | | | Superior/Enbridge | Safety Officer |
| Guest, Nyekah | | | Enbridge | Procurement |
| Haak, Matt | | | START/US EPA | Sit Unit Leader |
| Hackley, Richard | | | US EPA | Finance |
| Haux, Christopher | | | Enbridge | OSC |
| Hehir, Nate | | | Superior/Enbridge | Environment |
| Hendrix, Kristen | | | START/US EPA | Operations |
| Hoard, Chris | | | USGS | USGS |
| Hogan, Charlene | | | AECOM/Enbridge | Environment |
| Hong, Lorie | | | START/US EPA | Logistics |
| Hummel, Rebecca | | | Manpower/Enbridge | Finance |
| Johnson, Rex | | | START/US EPA | Operations |
| Jones, Susan | | | DEQ | Operations |
| Jordan, Gina | | | Enbridge | |
| Kaiser, Ken | | | AECOM/Enbridge | GIS Specialist |
| Kent, Norm | | | AECOM/Enbridge | Environment |
| Kerpash, Paul | | | SWAT/Enbridge | Control Point Management |
| Kidder, Steven | | | START/US EPA | Operations SOS |
| Kirby-Miles, Leslie | | | US EPA | Legal |
| Kogge, Stu | | | Cardno JFNEW/Enbridge | Operations |
| Kosmowski, Christine | | | City of Battle Creek | MAC |
| Lantinga, Chris | | | START/US EPA | Operations |
| Laquerre, Tim | | | START/US EPA | Operations |
| Laskey, Crystal | | | MDEQ | Planning |
| Lippert, Jeff | | | US EPA | |
| Lisabeth, Nicole | | | MSP | PIO |
| Luetke, Mindy | | | START/US EPA | PSC |
| Lundholm, Mark | | | Weston/DEQ | Operations |
| Makoski, Paul | | | Calhoun County Health | MAC |
| Manshum, Jason | | | Enbridge | Public Affairs |
| Massey, Dylan | | | LBG/Enbridge | Environmental Inspector |
| McKay, John | | | Enbridge | ROW |
| McKenzie, Michael | | | Battle Creek Emer. Srvs. | MAC |
| Mehl, Rick | | | START/US EPA | |

| 1. Kalamazoo River/ Enbridge Spill | 2. Operational Period (Date / Time)<br>From: 08/09/2012/ 0700 hrs<br>To: 08/16/2012/ 0700 hrs | Operations Communications Plan |
|---|---|---|

**3. Communication Contact List**

| NAME | PHONE NUMBER | EMAIL ADDRESS | AGENCY / AFFILIATION | POSITION |
|---|---|---|---|---|
| Meny, Alyssa | [redacted] | [redacted] | Enbridge | Communications Unit |
| Moisan, Paul | | | START/US EPA | Documentation |
| Muccianti, Marcus | | | START/US EPA | Operations |
| Nelson, Brad | | | Avery/Enbridge | DPSC |
| Neumeier, Laura | | | Trimedia/Enbridge | Air Monitoring |
| Noble, Steve | | | DEQ | Water Resources Division |
| Nye, Dennis | | | START/US EPA | Recovery |
| Oleschuk, Rick | | | Enbridge | Safety Officer |
| Olson, Alex | | | Avery/Enbridge | Planning |
| Ostrodka, Steve | | | US EPA | Submerged Oil Lead |
| Palmiter, Nigel | | | Avery/Enbridge | Facilities |
| Periard, Debora | | | AECOM/Enbridge | GIS Support |
| Pesses, David | | | LBG/Enbridge | Environmental Inspector |
| Pierce, Brennan | | | START/US EPA | Documentation |
| Piescher, Matthew | | | Avery/Enbridge | Field Inspector |
| Porter, Pete | | | Salem/Enbridge | Right of Way Agent |
| Powell, Meredith | | | Hill & Knowlton/Enbridge | Public & Govt. Affairs |
| Pratt, Catherine | | | AECOM/Enbridge | Environment |
| Quiggle, Lisa | | | MDCH | |
| Rader, Larry | | | START/US EPA | Sit Unit Leader |
| Reber, Lt. Barry | | | MSP EMHSD | MAC |
| Reigner, Selma | | | Kelly Services/Enbridge | Admin. Assistant |
| Ross, Shauna | | | START/US EPA | |
| Roubik, Jonathan | | | START/US EPA | Operations |
| Rutherford, James | | | Calhoun County Health | MAC |
| Rutkowski, Sonny | | | START/US EPA | Technical Specialist |
| Sahara, Dean | | | SWAT/Enbridge | Operations |
| Sarkipato, Ernie | | | DEQ | |
| Saylor, Andy | | | SET/Enbridge | |
| Schmitt, Ben | | | DEQ | Operations |
| Schneider, Dave | | | Kalamazoo County | MAC |
| Schoeff, Alison | | | AECOM/Enbridge | Water Monitoring Supervisor |
| Shattuck, Terri | | | Weston/DEQ | Operations |
| Smith, Brian | | | Tulsa/ Enbridge | Overbank Excavation Field Inspector |
| Snider, Jim | | | Enbridge | Environment Director |
| Sobojinski, John | | | Enbridge | Incident Commander |
| Spruit, Jeff | | | DEQ | Environment |
| Standen, Joe | | | LBG/Enbridge | River Opening Implementation |
| Steede, Bob | | | Enbridge | DOSC |
| Stiemsma, Bryan | | | AECOM/Enbridge | Environment Supervisor |
| Stuart, Mike | | | START/US EPA | Safety Officer |
| Sumner, Matt | | | AECOM/Enbridge | Environment |
| Taft, Bill | | | DEQ | Wildlife Environmental NRDA Group |
| Thierry, Mike | | | START/US EPA | Operations |
| Thomas, Brittany | | | START/US EPA | Finance |
| Thompson, Doug | | | DEQ | |
| Torres, Jason | | | START/US EPA | GIS Specialist |
| Urie, Cheryl | | | Enbridge | |
| Ushio, Miako | | | AECOM/Enbridge | Talmadge Creek Remediation Lead |
| Vail, Linda | | | Kalamazoo County Health | MAC |
| Valenza, James | | | START/US EPA | GIS Specialist |
| Vega, Sonia | | | US EPA | Deputy Incident Commander |
| Victory, Joe | | | START/US EPA | DOSC |
| Vilhauer, Eric | | | Enbridge | ROW Agent |
| Vosburg, Cheryl | | | City of Marshall | MAC |
| Wagner, Greg | | | START/US EPA | Submerged Oil Recovery |
| Wahrer, Marc | | | START/US EPA | Operations |
| Wallace, John | | | Avery/Enbridge | Operations Inspector |
| Watt, Tammy | | | Enbridge | Finance |
| Webb, Oliver | | | SWAT/Enbridge | Control Point Management |
| Weir, Karen | | | START/US EPA | |
| Wekseth, Mike | | | SWAT/Enbridge | Operations Inspector |
| Wellman, John | | | START/US EPA | Operations |
| Wessling, Elizabeth | | | START/US EPA | PSC |
| Williams, Lisa | | | USFWS | |
| Wilson, Lee | | | Weston/DEQ | Operations |
| Wiswell, Amber | | | Kelly Services/Enbridge | Admin. Assistant |
| Wolf, Mike | | | AECOM/Enbridge | Monitoring |
| Wurfel, Brad | | | DEQ | Public Information |
| Yokom, Brett | | | Trimedia/Enbridge | Environment |
| Zahner, Dan | | | START/US EPA | Operations |
| Zambetis, Mike | | | Cardno JFNEW/Enbridge | Restoration |
| Zelt, Ron | | | USGS | Environmental Unit Leader Assistant |

# Enbridge Oil Spill Incident - Campbell ICP, Marshall, MI
# U.S. EPA Trailer Phone Directory

| Trailer No. | Trailer Designations | Phone Number | Ext No. |
|---|---|---|---|
| 1 | Deputy IC Office (SW) | 269-781-1995 | 11995 |
| 1 | IC Fax Line | 269-781-1110 | 11127 |
| 1 | IC Conference Area | 269-781-1026 | 11026 |
| 1 | Operations Section Chief | 269-781-1994 | 11994 |
| 1 | Health & Safety (West End) | 269-781-1991 | 11991 |
| 2 | Work Room (NW) | 269-781-1955 | 11955 |
| 2A | Large Conference Room (MID) | 269-781-1591 | 11591 |
| 2B | Conference Room (NE) | 269-781-1954 | 11954 |
| 3 | MDEQ Field Trailer | 269-781-1953 | 11953 |
| 3 | MDEQ Documentation | 269-781-1951 | 11951 |
| 4 | Operations | 269-781-1958 | 11958 |
| 4 | Operations | 269-781-1971 | 11971 |
| 4 | River Opening | 269-781-1972 | 11972 |
| 7 | Copy Center | No Phone | |
| 8 | Logistics | 269-781- 1997 | 11997 |
| 8 | EPA Hotline | 269-781-1992 | 11992 |
| 8 | Weston IC (East End) | 269-781-1988 | 11988 |
| 9 | Planning | 269-781-1015 | 11015 |
| 9 | EPA Documentation | 269-781-1905 | 11905 |
| 9 | GIS | 269-781-1018 | 11018 |
| 9 | Environmental Unit | 269-781-1019 | 11019 |
| 9 | Conference Room | 269-781-1963 | 11963 |
| 9 | Wate Management Branch | 269-781-1955 | 11955 |
| 9 | Environmental Unit (USGS) | 269-781-1582 | 11582 |
| 9 | PIO | 269-781-1587 | 11587 |
| 10 | MDEQ-WRD | 269-781-1014 | 11014 |
| 10 | MDEQ-WRD | 269-781-1023 | 11023 |
| 10 | MDEQ-WRD | 269-781-1022 | 11022 |
| 11 | MDEQ-RD & Weston | 269-781-1024 | 11024 |
| 11 | MDEQ-RD & Weston | 269-781-1012 | 11012 |
| 11 | MDEQ-RD & Weston | 269-781-1013 | 11013 |
| Indoor | Weston Indoor Area | 269-781-1961 | 11961 |

**To dial between trailers, use the extension number, 1-1997 for Logistics**

To place a conference call within the VOIP network, dial first number, select button under "more", scroll down to Confrm and select. Dial next number, press confirm again to connect all. Repeat steps to connect more numbers.

Repeat the same steps to conference in one outside line.

| MEDICAL PLAN<br>ICS – 206 | Kalamazoo River/Enbridge Spill | 1. Date Prepared<br>8/08/2012 | 2. Time Prepared<br>0800 | 3. Operational Period<br>08/09/2012 0700<br>08/16/2012 0700 |
|---|---|---|---|---|

## 4. Transportation

### Ambulance Services

| Name | Address | Phone | Paramedics Yes | Paramedics No |
|---|---|---|---|---|
| Lifecare Ambulance | 330 West Hamblin Avenue,<br>Battle Creek, MI 49015 | 9-1-1 | X | |
| City of Marshall Fire Dept | 323 West Michigan Avenue,<br>Marshall, MI 49068 | 9-1-1 | X | |

## 5. Hospitals

| Name | Address | Travel Time Air | Travel Time Ground | Phone | Helipad Yes | Helipad No | Burn Center Yes | Burn Center No |
|---|---|---|---|---|---|---|---|---|
| Bronson Methodist Hospital | 601 John Street<br>Kalamazoo, MI | 15 Min | 50 min | 269-341-7654 | X | | X | |
| Borgess Medical Center | 1521 Gull Road<br>Kalamazoo, MI | 15 min | 50 min | 269-226-7000 | X | | | X |
| Oaklawn Hospital | 200 N. Madison Ave<br>Marshall, MI | | 5 min | 269-781-4271 | | X | | X |
| Battle Creek Health System | 300 North Avenue<br>Battle Creek, MI | | 20 min | 269-966-8000 | | X | | X |

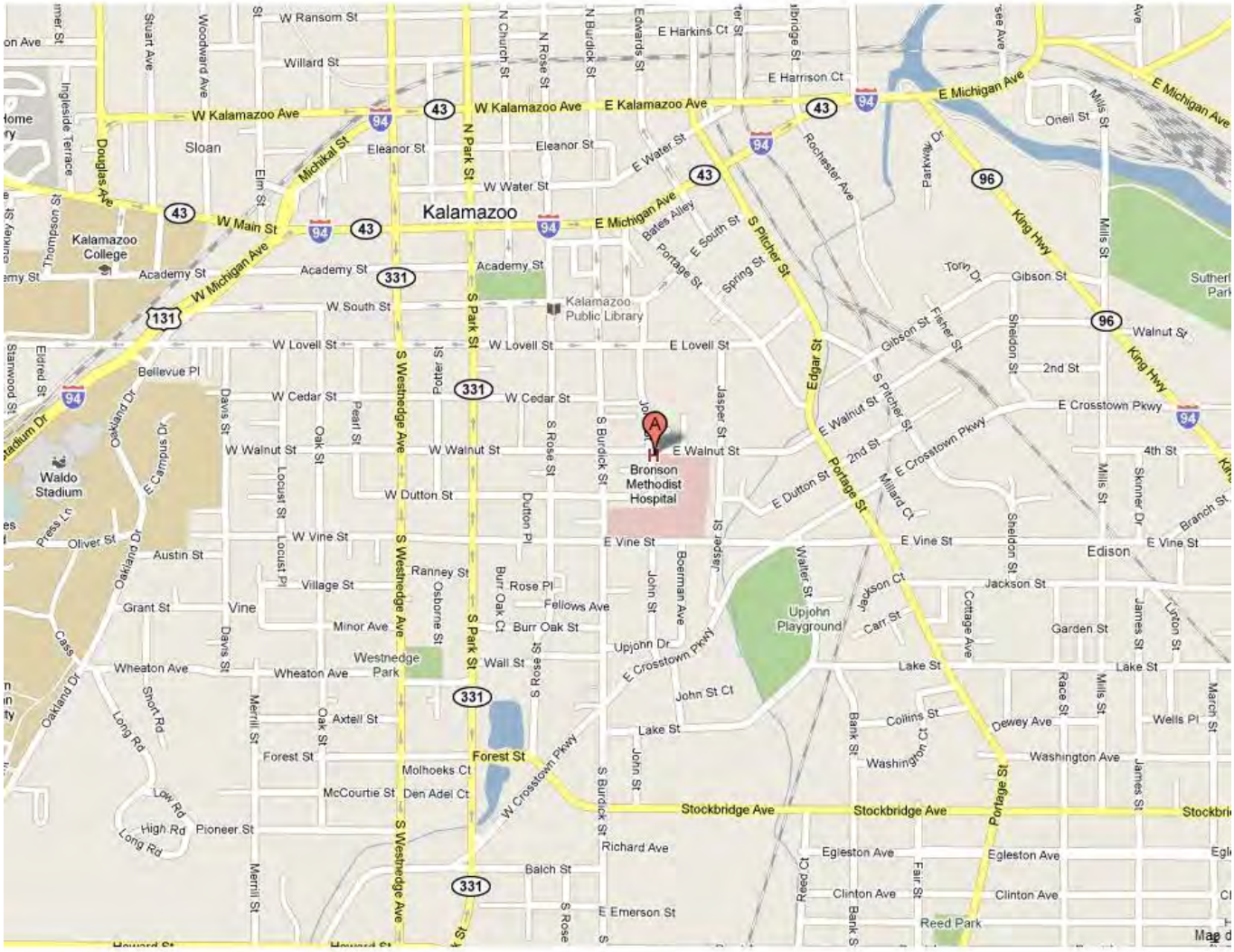
## 6. Medical Emergency Procedures

1. Dial 9-1-1 for all emergencies. Give 9-1-1 operators as much information as possible. Stay on the line and answer all questions – information may be radioed to responders. On-site personnel trained and certified in first aid should attempt to stabilize victim until fire department/EMS personnel arrive.
2. Report all incidents to the Project Safety Officer. Keep a log of events. Secure the area. Identify witnesses for later investigation.

NOTE: Suspend all operations during an actual emergency situation!

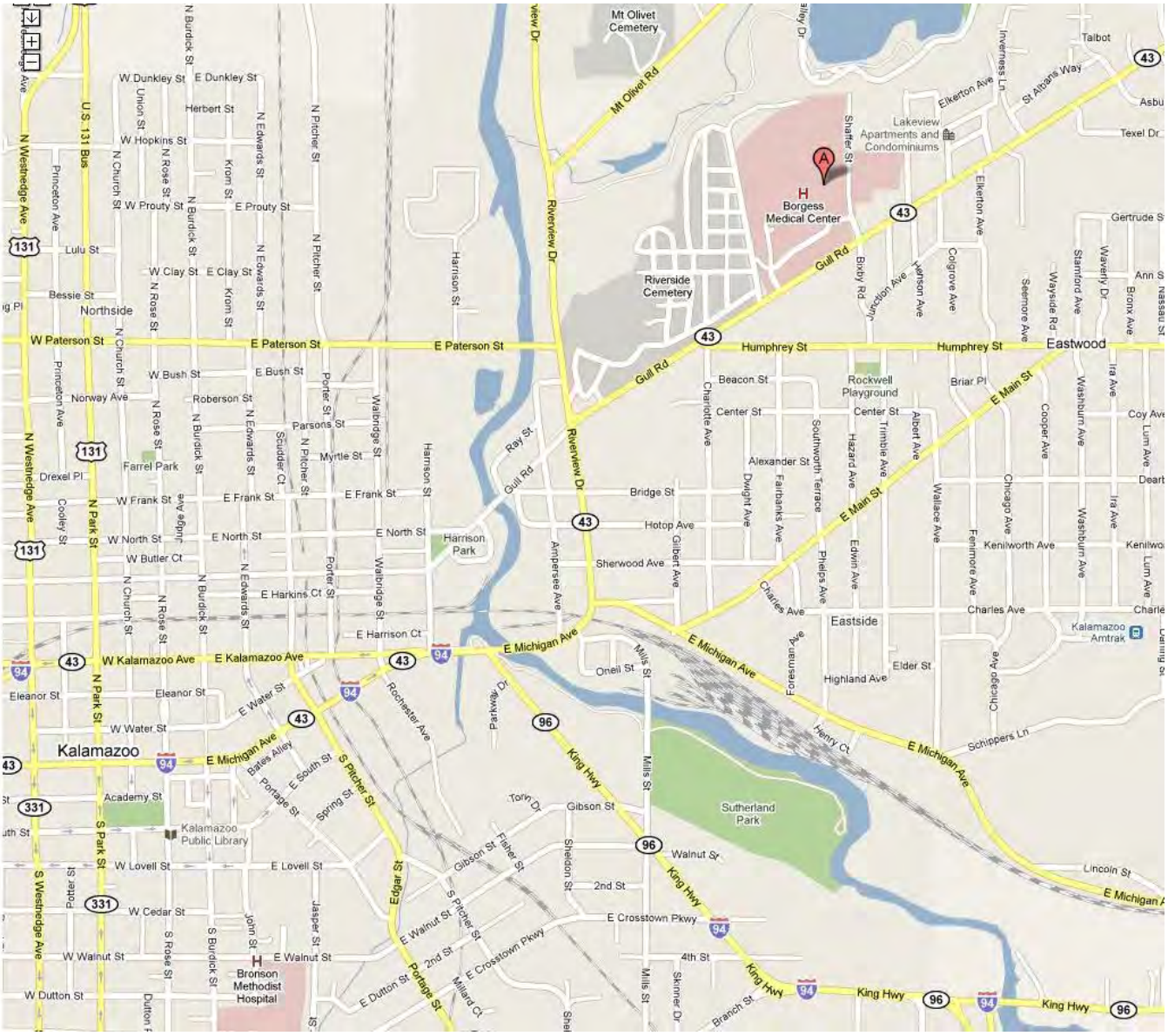
| Prepared by | 10. Reviewed by (Safety Officer) |
|---|---|
| Dale Gross 8/08/2012 | Dale Gross 8/08/2012 |

# Hospital Route Map – Bronson Methodist Hospital – Kalamazoo, MI



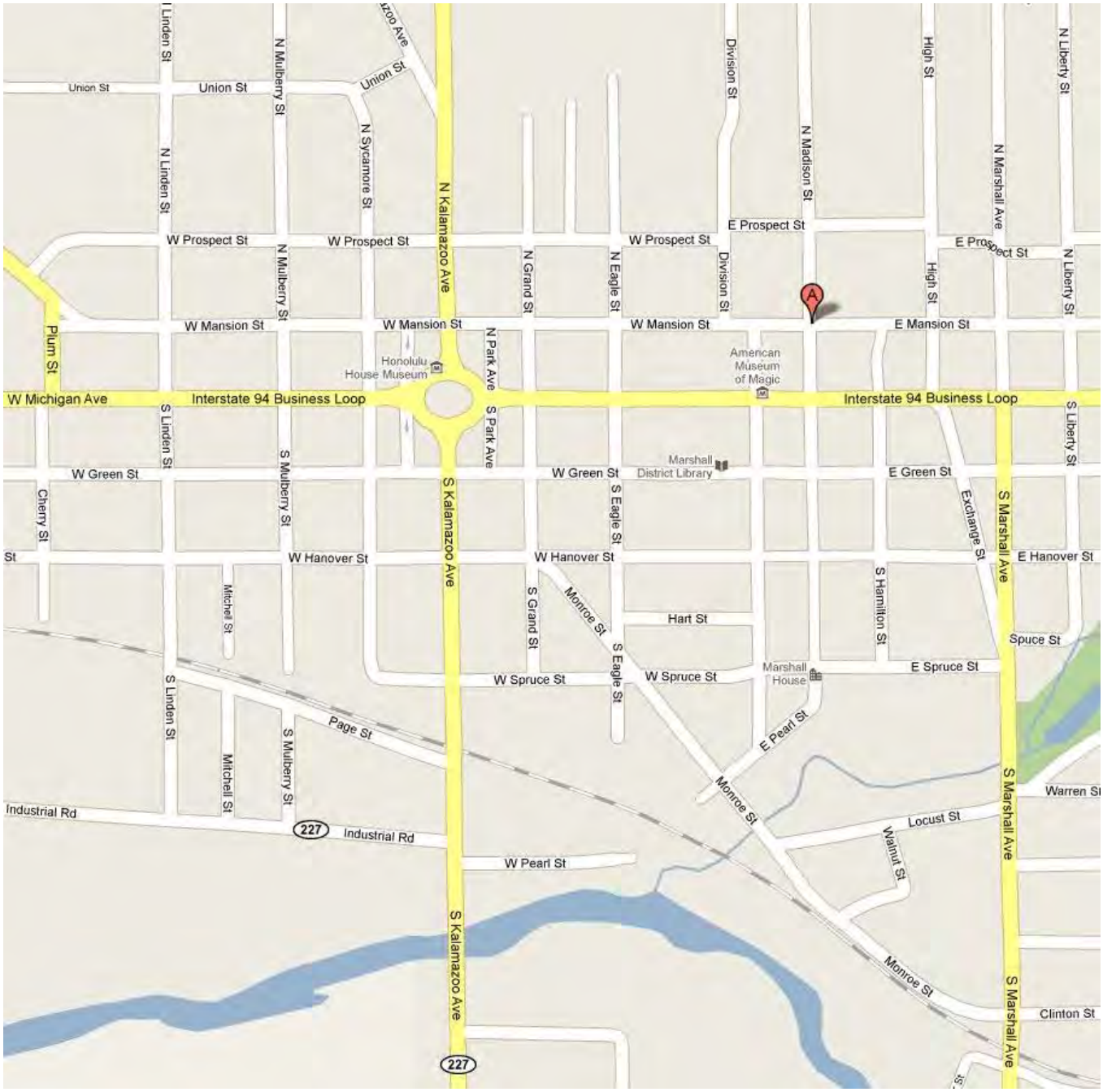

Bronson Methodist Hospital
601 John St
Kalamazoo, MI 49007
(269) 341 - 7979

# Hospital Route Map – Borgess Medical Center – Kalamazoo, MI



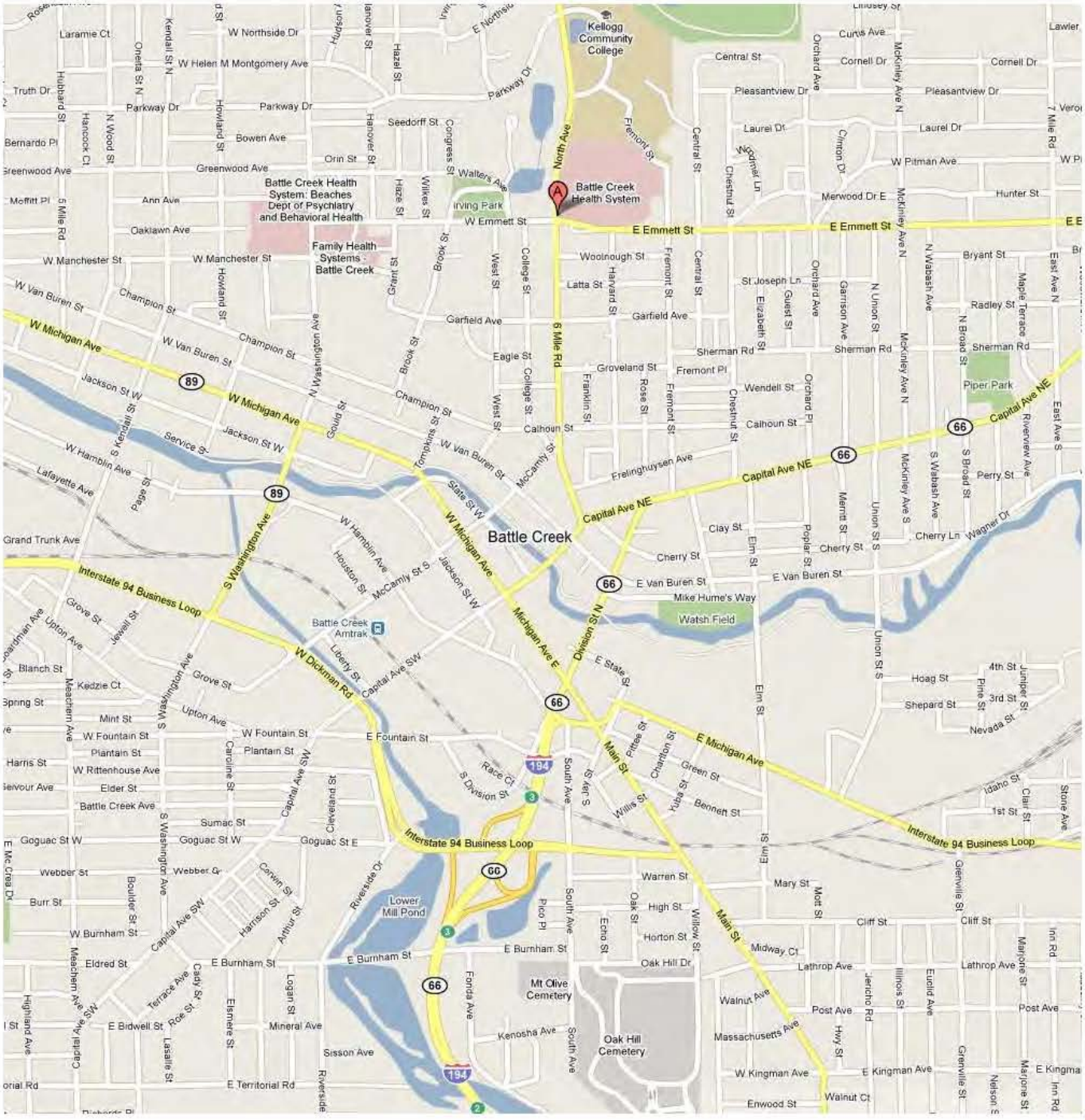

Borgess Medical Center
1521 Gull Road
Kalamazoo, MI 49048
(269) 226 - 7000

# Hospital Route Map – Oaklawn Hospital – Marshall, MI




Oaklawn Hospital
200 North Madison St.
Marshall, MI
(269) 781-4271

# Hospital Route Map – Battle Creek Health System – Battle Creek, MI




Battle Creek Health System
300 North Avenue
Battle Creek, MI
(269) 966-8000

# KALAMAZOO RIVER/ENBRIDGE SPILL
## General Safety Instructions
Operational Period: 8/9/12 (0700hrs) to 8/16/12 (0700hrs)

**River Opening:** Be advised that the Kalamazoo River has been opened to the public except for work areas marked by buoys. Public recreational activities are to be expected on the river. Be courteous and respectful to members of the public at all times. Be aware that members of the public may be present in work areas.

**No Wake Zone:** A no wake zone has been established in the Southern Delta and Neck area. The zone extends 100 feet from the new containment boom locations, as well as when traveling through the gates.

**Weather:** Review weather information prior to commencing work each day. Be aware of changes in the weather conditions and ensure proper controls are implemented to address the weather hazards such as: Lightning, Rain, Fog, etc. Take actions in accordance with instructions provided by supervisory personnel and as received through the Call-Em-All system.

**Sunscreen:** Sunscreen should be applied to exposed skin, and not just if you are going to be in the sun. UVB rays cannot penetrate glass windows, but UVA rays can, leaving you prone to these damaging effects if unprotected.

**PPE:** Be prepared for changing weather conditions by wearing, and/or having available, appropriate rain gear and approved safety footwear with appropriate soles for use on slippery ground conditions. When PFDs are required you must ensure that they are United States Coast Guard approved and are the outermost layer, with reflective vest worn under the PFD.

**Vehicles:** Follow speed limits and adjust speed as necessary for road conditions. Make sure your vehicle is in proper working condition.

**Process for Reporting Potentially Hazardous Materials:** If you observe a potentially hazardous material which is not spill related, notify field safety officer and evacuate the area. Do not let anyone into the area unless it is Enbridge Safety and/or Operations Inspector. Immediately report all details to the Enbridge Safety Office at 269-781-1913. The Enbridge Safety Office will alert the Emergency Response Center or call (911). Notifications will go to Calhoun County EMS or Kalamazoo County EMS, EPA, DEQ and Pollution Emergencies.

**SPECIAL NOTATION ON WEATHER and HAZARD ALERT MESSAGING:**

(See daily updates for additional weather information).

Enbridge Safety will maintain consistent weather messages by compiling information and present through daily briefings. Weather forecast updates will be distributed to field safety staff for further communication in the field. Enbridge Safety is responsible for communicating weather alerts based on information received through the Weather TAP system and text messages received from the National Weather Service in Grand Rapids.

In the event of severe weather warnings and alerts, Enbridge Safety will be monitoring via the Weather TAP system. Enbridge Safety will initiate the notification process by using the Call-Em-All system to Field Safety Staff and Operations. Operations in turn will contact their Operation Field Inspectors. The Operation Field Inspector will communicate the necessary plan with their field work crews. DK Security will be notified by Enbridge Safety by phone from 1800 – 0700 hours.

**Severe Weather Alerts:** Take appropriate shelter when the county activates their tornado warning sirens. In the Incident Command Post, report to the designated tornado shelter rooms. Where appropriate shelter is not available, lie flat in a nearby ditch or depression and cover your head with your hands. Be aware of potential for flooding and flying debris.

*Note:* Emergency notification siren systems will be tested on the first (1st) Saturday of each month in Calhoun and Kalamazoo Counties. Typically a siren is sounded at 1200 hours; however, this could be delayed due to current circumstances in the county.

**Fire/Building Evacuation Alert:** In the event of a fire, utilize air horn to initiate series of three 1 second blasts. Must report to the designated evacuation point upon hearing a series of three 1 second air horn blasts. **Please close all doors, and turn lights out upon leaving your area.**

***Call the Safety Office at 269-781-1914 if you have weather related concerns. Call 269-781-1913 for other Safety related issues.***

**Safety Orientations: Held Monday - Friday at 0800 at the Operations Center (1601 Pratt Avenue)**

**Boat Safety Awareness Orientation: Available by appointment Monday – Friday, contact the Safety Office.**

**If you see wildlife (dead or alive) that is impacted by the oil, call Bob Doherty** [redacted]

| ***Field Safety Staff*** | |
|---|---|
| **Name** | **Phone** |
| Barry Vavrina | [redacted] |
| Matt Piescher | |

**Call-Em-All:** Will be tested by Enbridge Safety office on Wednesday's at 1200 hours.

**First Aid Kits:** There are four (4) kits located within the Incident Command Post Facility. Please review the Evacuation Plan map for locations.

**KALAMAZOO RIVER/ENBRIDGE SPILL**
**General Safety Message**
Operational Period: 8/9/12 (0700hrs) to 8/16/12 (0700hrs)

**DAY 1:**
Thursday, August 9, 2012

**Life Saving Rule #6 – Report Incidents**

Always report significant safety related incidents. We believe all injuries and incidents are preventable. Reporting incidents allows us to understand what happened and prevent it from happening again.

***When you speak up for safety, everyone benefits. You are the voice of lifesaving rules***.

**DAY 2:**
Friday, August 10, 2012

**Preventing Skin Cancer**

- Avoid deliberate tanning.
- Get vitamin D safely through a healthy diet that includes vitamin supplements.
- Generously apply sunscreen to all exposed skin every day.
- Wear protective clothing, such as a long-sleeved shirt, pants, a wide-brimmed hat, and sunglasses, where possible.
- Seek shade when appropriate. The sun's rays are strongest between 10 a.m. and 4 p.m.
- Use extra caution near water, snow, and sand as they reflect the damaging rays of the sun.

**DAY 3/ DAY 4:**
Saturday, August 11 – Sunday, August 12, 2012

**Ticks and Insects**

Ticks

Ticks continue to be prevalent, especially around Talmadge Creek.

- Use an insect repellent containing DEET.
- Check your clothing and body for ticks.
- Examine your gear.

Mosquitos

Mosquitos have not been as numerous recently, because of the lack of rain, but are still present near bodies of water.

- Use an insect repellent containing DEET.

Bees, wasps, and hornets

Potential nest locations for these insects include:

- Hanging tree limbs.
- Hardened, previously muddy ground.
- Rodent burrows.
- Outbuildings and barns.

**DAY 5:**
Monday, August 13, 2012

**Ergonomics**

Ergonomics is the study of how to improve the fit between the physical demands of the workplace and the employees who perform the work. That means considering the variability in human capabilities when selecting, designing, or modifying equipment, tools, work tasks, and the work environment.

Contributing factors are aspects of work tasks which can lead to fatigue, musculoskeletal disorder (MSD) symptoms and injuries. The contributing factors you should be aware of include:

- Awkward postures
- Repetitive motions
- Forceful exertions
- Pressure points (e.g., local contact stress)
- Vibration

**DAY 6:**
Tuesday, August 14, 2012

**River Use by the Public**

Boat operators and passengers should be aware that the public is using the river now and the number of public users is increasing, especially on the weekends.

- Be aware that recreational users of the river may be anywhere on the river.
- Kayaker and canoeists may not follow navigation rules and may not be in full control.
- The public always has the right of way on the river.
- Swimmers have been observed in the river and may be difficult to see. When you see swimmers - get off step.
- When in doubt, stop and evaluate the situation.
- Know what to do in case of an emergency.
- Be courteous when interacting with the public.

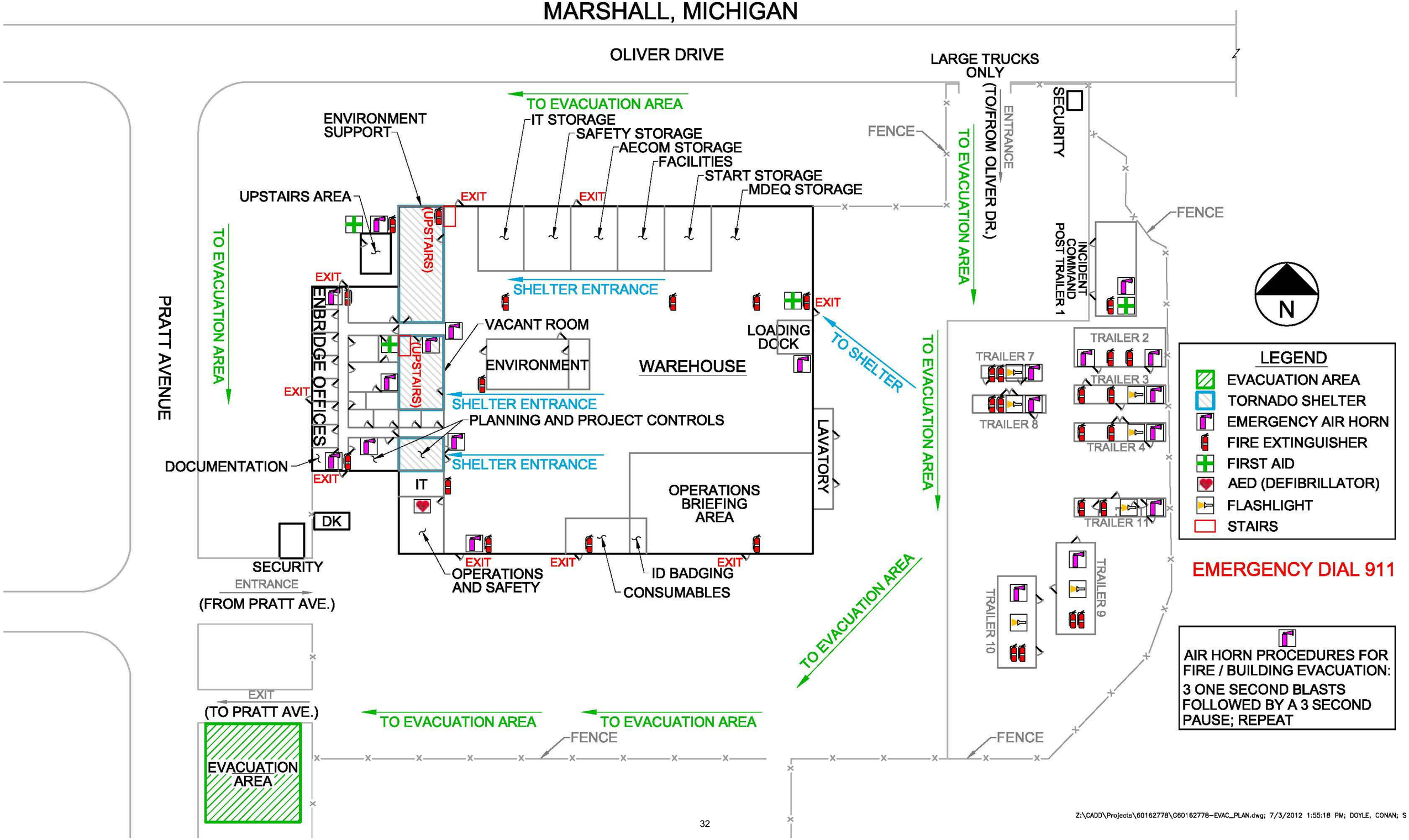
**DAY 7:**
Wednesday, August 15, 2012

**First Aid Kits**

Contractors shall ensure that all First Aid supplies as required by applicable regulations are available and accessible. First aid kits shall be located on site or in each crew vehicle.

The contents of each first aid kit shall be checked before being sent out to the job site and on a regular basis to ensure the kits are properly stocked.

# ENBRIDGE INCIDENT COMMAND POST FACILITY
# EMERGENCY RESPONSE / EVACUATION PLAN
# MARSHALL, MICHIGAN






Z:\CADD\Projects\60162778\G60162778-EVAC_PLAN.dwg; 7/3/2012 1:55:18 PM; DOYLE, CONAN; S

| 1. Incident Name | 2. Operational Period (Date/Time) | DAILY MEETING SCHEDULE |
|---|---|---|
| KALAMAZOO RIVER / ENBRIDGE SPILL RESPONSE | From: August 09, 2012 0700 | ICS-230 |
| | To: August 16, 2012 0700 | |

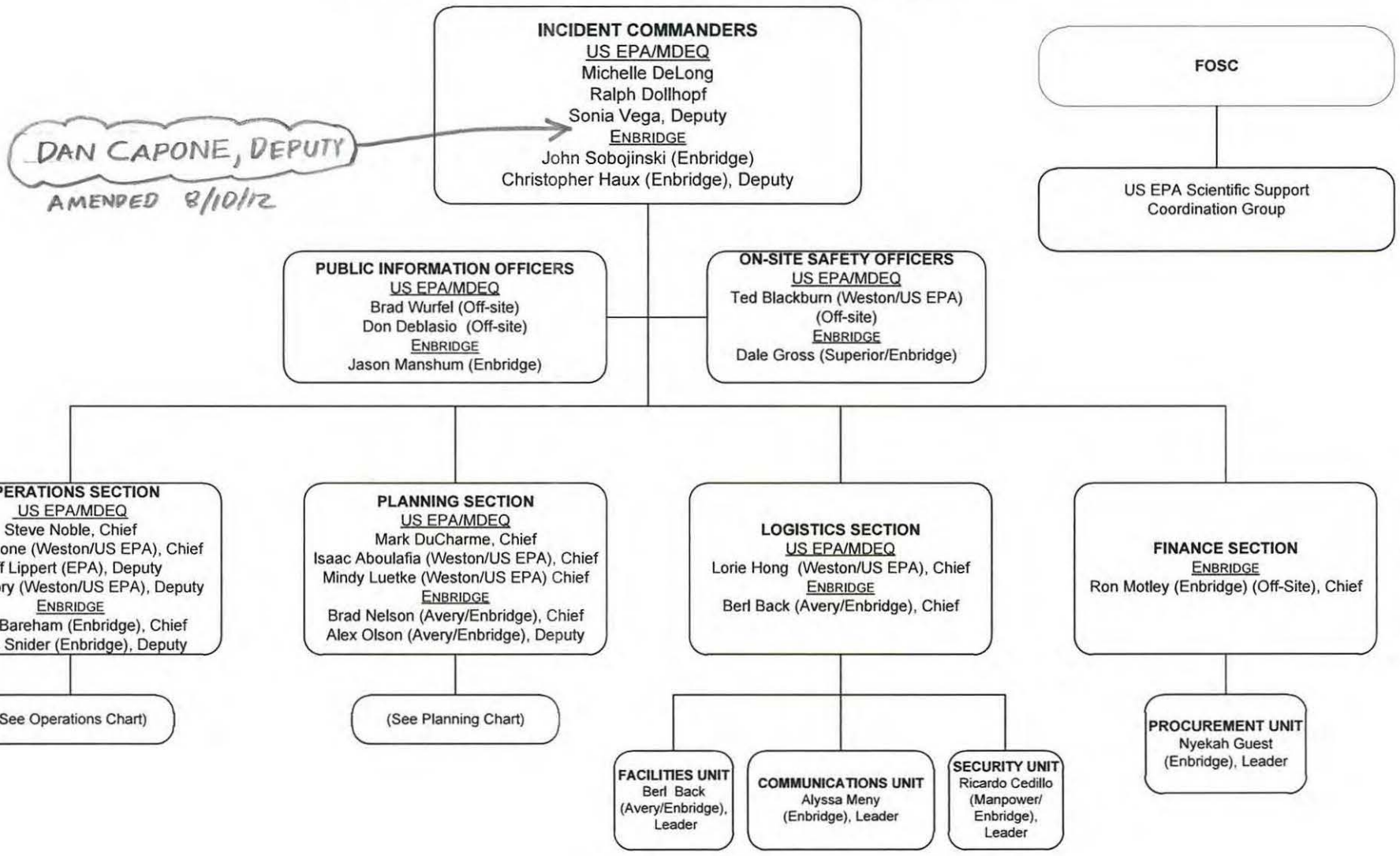
**3. Meeting Schedule (Commonly-held meetings are included)**

| Date/ Time | Meeting Name | Purpose | Attendees | Location |
|---|---|---|---|---|
| **8/9/2012** | **Thursday** | | | |
| **0700**<br>**0730** | Operations Briefing | Present IAP for the next Operational Period to Field Staff | Branch Directors and Field Staff | Field Locations |
| **0900**<br>**0945** | MAC Meeting | Update MAC with situation metrics and briefings of common interest. | UC, Command and General Staff, Multi-Agency Coordination Group, | UC Meeting Room (Trailer #2) |
| **1400**<br>**1600** | Kalamazoo River System Branch Special Purpose Meeting | Coordinate future Kalamazoo River System Branch activities | Kalamazoo River System Branch Directors and Group Supervisors | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **8/10/2012** | **Friday** | | | |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **8/11/2012** | **Saturday** | | | |
| **8/12/2012** | **Sunday** | | | |
| **8/13/2012** | **Monday** | | | |
| **0900**<br>**0945** | Tactics | Finalize primary and alternate tactics and strategies to achieve UC | Operations, Planning, Safety | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **8/14/2012** | **Tuesday** | | | |
| **1400**<br>**1600** | Kalamazoo River System Branch Special Purpose Meeting | Coordinate future Kalamazoo River System Branch activities | Kalamazoo River System Branch Directors and Group Supervisors | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |
| **8/15/2012** | **Wednesday** | | | |
| **0900**<br>**0930** | Command and General Staff Meeting | UC presents direction to Command and General Staff. | UC, Command and General Staff, SITL | UC Meeting Room (Trailer #2) |
| **0930**<br>**0945** | Planning Meeting | Review tactics and assignments to meet the project Objectives for the next Operational Period. | UC, Command and General Staff, Scribe | UC Meeting Room (Trailer #2) |
| **0945**<br>**1000** | Objectives Meeting | Review current objectives and identify objectives for the next Operational Period. | UC, Operations, Safety, Planning, Scribe | UC Meeting Room (Trailer #2) |
| **1600**<br>**1630** | Operations Meeting | Summary of daily activities | Operations Section Branch Directors | UC Meeting Room (Trailer #2) |

**4. Prepared by: Brad Nelson**, Planning Section Chief **Date/Time** 8/1/2012

1340

# Enbridge Pipelines Response Unified Command




ENBRIDGE

ICS 207
8/9– 8/16

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

# Appendix A

## Planning Resources

## Work Orders

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

# Line 6B Response

## Daily Work Orders

## Wednesday, August 01, 2012

Table of Contents


| | |
|---|---|
| Submerged Oil Branch Work Orders | 2 |
| Kalamazoo River Branch Work Orders | 3 |

## Submerged Oil Branch Work Orders

| Date: **8/1/2012** | **Morrow Lake & Delta Monitoring** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** | |
| Meeting Location: **0700 at ICP for Morning Briefing** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0900** | Field Work Stop Time: **1900** |

Proposed Work for August 1, 2012:

**Conduct poling on Morrow Lake and Morrow Lake Delta at the monitoring locations.**

# Kalamazoo River Branch Work Orders

| | | | |
|---|---|---|---|
| Date: **8/1/2012** | **Source Area** | | **Team 2** |
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Reed Rector** | | |
| Meeting Location: **0700 at ICP for Morning Briefing** | Project Lead: **Brian Albig** | | |
| Starting Field Area: **Source Area** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** | |

Proposed Work for August 1, 2012:

**Conduct borings along the pipeline and install temporary monitoring wells.**

# Line 6B Response

## Daily Work Orders

## Thursday, August 02, 2012

Table of Contents


| | |
|---|---|
| Submerged Oil Branch Work Orders | 2 |
| Kalamazoo River Branch Work Orders | 3 |

## Submerged Oil Branch Work Orders

| Date: **8/2/2012** | **Morrow Lake & Delta Monitoring** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0900** | Field Work Stop Time: **1900** |

Proposed Work for August 2, 2012:

**Conduct poling on Morrow Lake and Morrow Lake Delta at the monitoring locations.**

# Kalamazoo River Branch Work Orders

| | | | |
|---|---|---|---|
| Date: **8/2/2012** | **Source Area** | | **Team 2** |
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Reed Rector** | | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Brian Albig** | | |
| Starting Field Area: **Source Area** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** | |

Proposed Work for August 2, 2012:

**Conduct borings along the pipeline and install temporary monitoring wells.**

# Line 6B Response

## Daily Work Orders

## Friday, August 03, 2012

Table of Contents


| | |
|---|---|
| Submerged Oil Branch Work Orders | 2 |
| Kalamazoo River Branch Work Orders | 3 |

## Submerged Oil Branch Work Orders

| Date: **8/3/2012** | **Morrow Lake & Delta Monitoring** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** [redacted] | |
| Meeting Location: **0700 at ICP** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0900** | Field Work Stop Time: **1900** |

Proposed Work for August 3, 2012:

**Conduct poling on Morrow Lake and Morrow Lake Delta at the monitoring locations.**

## Kalamazoo River Branch Work Orders

| Date: **8/3/2012** | **Source Area** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDou** [redacted] | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **Source Area** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |

Proposed Work for August 3, 2012:

**Collect groundwater sampling from temporary monitoring wells in the Source Area.**

# Line 6B Response

## Daily Work Orders

## Monday, August 06, 2012

Table of Contents


| | |
|---|---|
| Submerged Oil Branch Work Orders | 2 |
| Kalamazoo River Branch Work Orders | 3 |

## Submerged Oil Branch Work Orders

| Date: **8/6/2012** | **E4 Monitoring** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte:** [redacted] | |
| Meeting Location: **0800 at E4 Boat Launch** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |

Proposed Work for August 6, 2012:

**Monitor the E4 boom locations and curtain.**

| Date: **8/6/2012** | **Agitation Study** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Eli Eversole** | |
| Meeting Location: **0700 at E4 Boat Launch** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |

Proposed Work for August 6, 2012:

**Conduct agitation study on Delta Z.**

| Date: **8/6/2012** | **Quantification** | **Team 3** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Reed Rector** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **TBD** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |

Proposed Work for August 6, 2012:

**Collect sediment borings to be placed in cold storage.**

# Line 6B Response

## Daily Work Orders

## Monday, August 06, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

# Submerged Oil Branch Work Orders

| Date: **8/6/2012** | **E4 Monitoring** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** [redacted] | |
| Meeting Location: **0800 at E4 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |

Proposed Work for August 6, 2012:

**Monitor the E4 boom locations and curtain.**

| Date: **8/6/2012** | **Agitation Study** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Eli Eversole** | |
| Meeting Location: **0700 at E4 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |

Proposed Work for August 6, 2012:

**Conduct agitation study on Delta Z.**

| Date: **8/6/2012** | **Quantification** | **Teams 3 & 4** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Leads: **Reed Rector**<br>**Luke Hodges** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **TBD** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |

Proposed Work for August 6, 2012:

**Collect sediment borings to be placed in cold storage. The sediment coring will be completed by 2 teams.**

# Line 6B Response

## Daily Work Orders

## Tuesday, August 07, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/7/2012** | **E4 Monitoring** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte:** [redacted] | |
| Meeting Location: **0800 at E4 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |

Proposed Work for August 7, 2012:

**Monitor the E4 boom locations and curtain.**

| Date: **8/7/2012** | **Agitation Study** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Eli Eversole** | |
| Meeting Location: **0700 at C5 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C5 Boat Launch** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |

Proposed Work for August 7, 2012:

**Conduct agitation study at 14.80 downstream of sediment trap.**

| Date: **8/7/2012** | **Quantification** | **Teams 3 & 4** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Leads: **Reed Rector**<br>**Luke Hodges** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **TBD** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |

Proposed Work for August 7, 2012:

**Collect sediment borings to be placed in cold storage. The sediment coring will be completed by 2 teams.**

# Line 6B Response

## Daily Work Orders

## Wednesday, August 08, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

# Submerged Oil Branch Work Orders

| Date: **8/8/2012** | **E4 Monitoring** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte: 269-832-3702** | |
| Meeting Location: **0800 at E4 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |

Proposed Work for August 8, 2012:

**Monitor the E4 boom locations and curtain.**

| Date: **8/8/2012** | **Agitation Study** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Eli Eversole** | |
| Meeting Location: **0700 at C0.4 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |

Proposed Work for August 8, 2012:

**Conduct agitation study at 5.55 North.**

| Date: **8/8/2012** | **Quantification** | **Teams 3 & 4** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Leads: **Reed Rector**<br>**Luke Hodges** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **TBD** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |

Proposed Work for August 8, 2012:

**Collect sediment borings to be placed in cold storage. The sediment coring will be completed by 2 teams.**

# Line 6B Response

## Daily Work Orders

## Thursday, August 09, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/9/2012** | **E4 Monitoring** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** [redacted] | |
| Meeting Location: **0800 at E4 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |

Proposed Work for August 9, 2012:

**Monitor the E4 boom locations and curtain.**

# Line 6B Response

## Daily Work Orders

## Friday, August 10, 2012

Table of Contents


| | |
|---|---|
| Submerged Oil Branch Work Orders | 2 |
| Waste Branch Work Orders | 3 |

## Submerged Oil Branch Work Orders

| Date: **8/10/2012** | **E4 Monitoring** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** [redacted] | |
| Meeting Location: **0800 at E4 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |

Proposed Work for August 10, 2012:

**Monitor the E4 boom locations and curtain.**

| | |
|---|---|
| Date: | **8/10/2012** |
| Work Site Name: | **Marshall, Line 6B Response** |
| Meeting Location: | **0730 at FTC** |
| Starting Field Area: | **FTC** |

Proposed Work for August 10, 2012:

**Sample oily debris and media out of roll-off box.**

# Waste Branch Work Orders

**Waste Sampling**

Team Lead: **April Modert**

Project Lead: **Alison Schoeff**

| Field Work Start Time: **0730** | Field Work Stop Time: |
|---|---|

| Team 2 |
| --- |
| |
| |
| **1900** |
| |

# Line 6B Response

## Daily Work Orders

## Monday, August 13, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/13/2012** | **Walling Sediment Samping** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Jon Stark** | |
| Meeting Location: **0700 at C3.2 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C3.2 Boat Launch** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |

Proposed Work for August 13, 2012:

**Collect Walling tube samplers from along the Kalamazoo River and Morrow Lake.**

| Date: **8/13/2012** | **Sediment Trap Sampling** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0700 at C3.2 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C3.2 Boat Launch** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |

Proposed Work for August 13, 2012:

**Monitor and sample sediment traps at MP 10.75 and MP 14.75.**

# Line 6B Response

## Daily Work Orders

## Tuesday, August 14, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/14/2012** | **Sediment Trap Sampling** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0730 at C5 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C5 Boat Launch** | Field Work Start Time: **0730** | Field Work Stop Time: **1900** |
| Proposed Work for August 14, 2012: | | |
| **Monitor and sample MP 14.75 sediment trap.** | | |

| Date: **8/14/2012** | **Walling Tube Sampling** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Jerry Kraemer** | |
| Meeting Location: **0700 at C3.2 CPC** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C3.2 CPC** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |
| Proposed Work for August 14, 2012: | | |
| **Sample the Walling tube sediments.** | | |

# Line 6B Response

## Daily Work Orders

## Wednesday, August 15, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/15/2012** | **Sediment Trap Sampling** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0800 at D2 Boat Launch** | Project Lead: **Matt Sumner: 5** [redacted] | |
| Starting Field Area: **D2 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |

Proposed Work for August 15, 2012:

**Monitor and sample MP 19.25 sediment trap.**

| Date: **8/15/2012** | **Walling Tube Replacement** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Chad Khodl** | |
| Meeting Location: **0700 at C3.2 CPC** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C3.2 CPC** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |

Proposed Work for August 15, 2012:

**Replace Walling Tubes and sample the 2 remaining locations in late afternoon at C 3.2 CPC.**

| Date: **8/15/2012** | **Walling Tube Replacement** | **Team 3** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Luke Hodges** | |
| Meeting Location: **0700 at C3.2 CPC** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **C3.2 CPC** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |

Proposed Work for August 15, 2012:

**Replace Walling Tubes.**

# Line 6B Response

## Daily Work Orders

## Thursday, August 16, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| | | |
|---|---|---|
| Date: **8/16/2012** | **Sediment Trap Sampling** | **Team 1** |
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0800 E0.5 Shady Bend Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E0.5 Shady Bend Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |

Proposed Work for August 16, 2012:

**Monitor and sample sediment traps.**

# Line 6B Response

## Daily Work Orders

## Friday, August 17, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/17/2012** | **Sediment Trap Monitoring** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0800 E0.5 Shady Bend Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E0.5 Shady Bend Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |

Proposed Work for August 17, 2012:

**Monitor and sample sediment traps at MP 21.50 and MP 36.10.**

# Line 6B Response

## Daily Work Orders

## Monday, August 20, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/20/2012** | **Sediment Trap Sampling** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0800 E4 Boat Launch** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |
| Proposed Work for August 20, 2012: | | |
| **Monitor and sample the sediment trap at MP 36.10.** | | |

| Date: **8/20/2012** | **Poling Below Morrow Lake Dam** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** | |
| Meeting Location: **0700 at ICP** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **ICP** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 20, 2012: | | |
| **Conduct poling activites below Morrow Lake Dam.** | | |

# Line 6B Response

## Daily Work Orders

## Tuesday, August 21, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/21/2012** | **Sediment Trap Sampling** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0800 E4 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |
| Proposed Work for August 21, 2012: | | |
| **Monitor and sample the sediment trap at MP 36.10.** | | |

| Date: **8/21/2012** | **Poling Below Morrow Lake Dam** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** | |
| Meeting Location: **0700 at ICP** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **Private Property Boat Launch** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 21, 2012: | | |
| **Conduct poling activites below Morrow Lake Dam.** | | |

# Line 6B Response

## Daily Work Orders

## Wednesday, August 22, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/22/2012** | **Sediment Trap Water Levels** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0700 at C3.2 Boat Lauch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C3.2 Boat Launch** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |
| Proposed Work for August 22, 2012: | | |
| **Check water levels at the secondary sediment trap locations.** | | |

| Date: **8/22/2012** | **2012 Late Summer Poling** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** | |
| Meeting Location: **0630 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0730** | Field Work Stop Time: **1900** |
| Proposed Work for August 22, 2012: | | |
| **Conduct poling activites at Ceresco Dam.** | | |

| Date: **8/22/2012** | **2012 Late Summer Poling** | **Team 3** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Chad Khodl** | |
| Meeting Location: **0630 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0730** | Field Work Stop Time: **1900** |
| Proposed Work for August 22, 2012: | | |
| **Conduct poling activites at Ceresco Dam.** | | |

| Date: **8/22/2012** | **2012 Late Summer Poling** | **Team 4** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Luke Hodges** | |
| Meeting Location: **0630 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C5 Boat Launch** | Field Work Start Time: **0730** | Field Work Stop Time: **1900** |
| Proposed Work for August 22, 2012: | | |
| **Conduct poling activites out of C5 boat launch upstream of Mill Ponds.** | | |

# Line 6B Response

## Daily Work Orders

## Wednesday, August 22, 2012

Table of Contents


| | |
|---|---|
| Submerged Oil Branch Work Orders | 2 |
| Kalamazoo River Branch Work Orders | 3 |

## Submerged Oil Branch Work Orders

| Date: **8/22/2012** | **Sediment Trap Water Levels** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0700 at C3.2 Boat Lauch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C3.2 Boat Launch** | Field Work Start Time: **0700** | Field Work Stop Time: **1900** |
| Proposed Work for August 22, 2012: | | |
| **Check water levels at the secondary sediment trap locations.** | | |

| Date: **8/22/2012** | **2012 Late Summer Poling** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** | |
| Meeting Location: **0630 at C3.2 Building** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0730** | Field Work Stop Time: **1900** |
| Proposed Work for August 22, 2012: | | |
| **Conduct poling activites at Ceresco Dam.** | | |

| Date: **8/22/2012** | **2012 Late Summer Poling** | **Team 3** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Chad Khodl** | |
| Meeting Location: **0630 at C3.2 Building** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0730** | Field Work Stop Time: **1900** |
| Proposed Work for August 22, 2012: | | |
| **Conduct poling activites at Ceresco Dam.** | | |

| Date: **8/22/2012** | **2012 Late Summer Poling** | **Team 4** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Luke Hodges** | |
| Meeting Location: **0630 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C5 Boat Launch** | Field Work Start Time: **0730** | Field Work Stop Time: **1900** |
| Proposed Work for August 22, 2012: | | |
| **Conduct poling activites out of C5 boat launch upstream of Mill Ponds.** | | |

## Kalamazoo River System Branch Work Orders

| Date: **8/22/2012** | **Sediment Trap Water Levels** | **Team 5** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Craig Simon** [redacted] | |
| Meeting Location: **0900 at C0.4 Boat Lauch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C0.4 Boat Lauch** | Field Work Start Time: **0900** | Field Work Stop Time: **1900** |

Proposed Work for August 22, 2012:

**River bank erosion tour.**

# Line 6B Response

## Daily Work Orders

## Thursday, August 23, 2012

Table of Contents


| | |
|---|---|
| Submerged Oil Branch Work Orders | 2 |
| Kalamazoo River Branch Work Orders | 3 |

## Submerged Oil Branch Work Orders

| Date: **8/23/2012** | **Sediment Trap Water Levels** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 23, 2012: | | |
| **Check water levels at the secondary sediment trap locations.** | | |

| Date: **8/23/2012** | **2012 Late Summer Poling** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E0.5 Boat Launch** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 23, 2012: | | |
| **Conduct poling activites at target areas out of Shady Bend boat launch.** | | |

| Date: **8/23/2012** | **2012 Late Summer Poling** | **Team 3** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Chad Khodl** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |
| Proposed Work for August 23, 2012: | | |
| **Conduct poling activites at Ceresco Dam.** | | |

| Date: **8/23/2012** | **2012 Late Summer Poling** | **Team 4** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Luke Hodges** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |
| Proposed Work for August 23, 2012: | | |
| **Conduct poling activites at Ceresco Dam.** | | |

## Kalamazoo River System Branch Work Orders

| Date: **8/23/2012** | **Erosion Tour** | **Team 5** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Craig Simon** [redacted] | |
| Meeting Location: **0800 at D2 Boat Lauch** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **D2 Boat Lauch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |

Proposed Work for August 23, 2012:

**River bank erosion tour.**

# Line 6B Response

## Daily Work Orders

## Friday, August 24, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/24/2012** | **Poling Below Morrow Lake Dam** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **Private Property Boat Launch** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 24, 2012: | | |
| **Conduct poling activities at target areas west of the island staying at least 300 feet away from Dam.** | | |

| Date: **8/24/2012** | **2012 Late Summer Poling** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E0.5 Boat Launch** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 24, 2012: | | |
| **Conduct poling activites at target areas out of Shady Bend boat launch.** | | |

| Date: **8/24/2012** | **2012 Late Summer Poling** | **Team 3** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Chad Khodl** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |
| Proposed Work for August 24, 2012: | | |
| **Conduct poling activites at Ceresco Dam.** | | |

| Date: **8/24/2012** | **2012 Late Summer Poling** | **Team 4** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Luke Hodges** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |
| Proposed Work for August 24, 2012: | | |
| **Conduct poling activites at Ceresco Dam.** | | |

# Line 6B Response

## Daily Work Orders

## Saturday, August 25, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/25/2012** | **2012 Late Summer Poling** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E0.5 Boat Launch** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |

Proposed Work for August 25, 2012:

**Conduct poling activites at target areas out of Shady Bend boat launch.**

| Date: **8/25/2012** | **2012 Late Summer Poling** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Chad Khodl** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C5 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |

Proposed Work for August 25, 2012:

**Conduct poling activites at the Mill Ponds.**

| Date: **8/25/2012** | **2012 Late Summer Poling** | **Team 3** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Luke Hodges** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0800** | Field Work Stop Time: **1900** |

Proposed Work for August 25, 2012:

**Conduct poling activites at Ceresco Dam.**

# Line 6B Response

## Daily Work Orders

## Monday, August 27, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/27/2012** | **Sediment Trap Baseline Survey** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 27, 2012: | | |
| **Conduct baseline survey at MP 33.00A sediment trap.** | | |

| Date: **8/27/2012** | **2012 Late Summer Poling** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **E0.5 Boat Launch** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 27, 2012: | | |
| **Conduct poling activites at target areas out of Shady Bend boat launch.** | | |

| Date: **8/27/2012** | **2012 Late Summer Poling** | **Team 3** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Chad Khodl** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 27, 2012: | | |
| **Conduct poling activites at Ceresco Dam.** | | |

| Date: **8/27/2012** | **2012 Late Summer Poling** | **Team 4** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Luke Hodges** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 27, 2012: | | |
| **Conduct poling activites at Ceresco Dam.** | | |

# Line 6B Response

## Daily Work Orders

## Tuesday, August 28, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/28/2012** | **Sediment Trap Baseline Survey** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0730 at E4 Boat Launch** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 28, 2012: | | |
| **Conduct baseline survey at MP 33.00A sediment trap.** | | |

| Date: **8/28/2012** | **2012 Late Summer Poling** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Russell Platte** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **Mill Ponds** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 28, 2012: | | |
| **Conduct poling activites at the Mill Ponds.** | | |

| Date: **8/28/2012** | **2012 Late Summer Poling** | **Team 3** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Chad Khodl** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **Mill Ponds** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 28, 2012: | | |
| **Conduct poling activites at the Mill Ponds.** | | |

| Date: **8/28/2012** | **2012 Late Summer Poling** | **Team 4** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Luke Hodges** | |
| Meeting Location: **0700 at C3.2 Building** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **Mill Ponds** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |
| Proposed Work for August 28, 2012: | | |
| **Conduct poling activites at the Mill Ponds.** | | |

# Line 6B Response

## Daily Work Orders

## Wednesday, August 29, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/29/2012** | **Sediment Trap Baseline Survey** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0830 at E4 Boat Launch** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **E4 Boat Launch** | Field Work Start Time: **0830** | Field Work Stop Time: **1900** |

Proposed Work for August 29, 2012:

**Conduct baseline survey at MP 33.00A sediment trap.**

| Date: **8/29/2012** | **Sediment Trap Baseline Survey** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Eric Celebreeze** | |
| Meeting Location: **0730 at C0.4 Boat Launch** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0730** | Field Work Stop Time: **1900** |

Proposed Work for August 29, 2012:

**Conduct baseline survey at the Ceresco sediment trap.**

# Line 6B Response

## Daily Work Orders

## Wednesday, August 29, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/29/2012** | **Sediment Trap Baseline Survey** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0730 at E2 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **E2 Boat Launch** | Field Work Start Time: **0730** | Field Work Stop Time: **1900** |

Proposed Work for August 29, 2012:

**Conduct baseline survey at MP 33.00A sediment trap.**

| Date: **8/29/2012** | **Sediment Trap Poling** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Eric Celebreeze** | |
| Meeting Location: **0730 at C0.4 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0730** | Field Work Stop Time: **1900** |

Proposed Work for August 29, 2012:

**Conduct poling at the Ceresco sediment trap.**

# Line 6B Response

## Daily Work Orders

## Thursday, August 30, 2012

Table of Contents

Submerged Oil Branch Work Orders 2

## Submerged Oil Branch Work Orders

| Date: **8/30/2012** | **Sediment Trap Baseline Survey** | **Team 1** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Amber McDougle** | |
| Meeting Location: **0730 at E2 Boat Launch** | Project Lead: **Matt Sumner** [redacted] | |
| Starting Field Area: **E2 Boat Launch** | Field Work Start Time: **0730** | Field Work Stop Time: **1900** |

Proposed Work for August 30, 2012:

**Conduct baseline survey at MP 33.00A sediment trap and start Delta A sediment trap baseline survey.**

| Date: **8/30/2012** | **Sediment Trap Poling** | **Team 2** |
|---|---|---|
| Work Site Name: **Marshall, Line 6B Response** | Team Lead: **Eric Celebreeze** | |
| Meeting Location: **0730 at C0.4 Boat Launch** | Project Lead: **Matt Sumner:** [redacted] | |
| Starting Field Area: **C0.4 Boat Launch** | Field Work Start Time: **0730** | Field Work Stop Time: **1900** |

Proposed Work for August 30, 2012:

**Conduct poling at the Ceresco sediment trap.**

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

# Appendix B

# Surface Water Monitoring Activities

# Analytical Data Reports

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

ALS Environmental

23-Aug-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Surface Water 8/14/12** Work Order: **1208484**

Dear Alison,

ALS Environmental received 19 samples on 15-Aug-2012 01:54 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 30.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

NELAP ACCREDITED TNI LABORATORY

Certificate No: MN331938

## ALS Group USA, Corp

Date: 23-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Surface Water 8/14/12
**Work Order:** **1208484**

# Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1208484-01 | WSE08141150LJL1 | Surface Water | | 8/14/2012 11:50 | 8/15/2012 13:54 | ☐ |
| 1208484-02 | WSE08141057LJL1 | Surface Water | | 8/14/2012 10:57 | 8/15/2012 13:54 | ☐ |
| 1208484-03 | WSE08141057LJL2 | Surface Water | | 8/14/2012 10:57 | 8/15/2012 13:54 | ☐ |
| 1208484-04 | WSE08141045LJL1 | Surface Water | | 8/14/2012 10:45 | 8/15/2012 13:54 | ☐ |
| 1208484-05 | WSB08141730LJL1 | Surface Water | | 8/14/2012 17:30 | 8/15/2012 13:54 | ☐ |
| 1208484-06 | WSE08141242LJL3 | Surface Water | | 8/14/2012 12:42 | 8/15/2012 13:54 | ☐ |
| 1208484-07 | WSF08140845LJL1 | Surface Water | | 8/14/2012 08:45 | 8/15/2012 13:54 | ☐ |
| 1208484-08 | WSE08141354LJL1 | Surface Water | | 8/14/2012 13:54 | 8/15/2012 13:54 | ☐ |
| 1208484-09 | WSE08141421LJL1 | Surface Water | | 8/14/2012 14:21 | 8/15/2012 13:54 | ☐ |
| 1208484-10 | WSE08141117LJL1 | Surface Water | | 8/14/2012 11:17 | 8/15/2012 13:54 | ☐ |
| 1208484-11 | WSE08141202LJL1 | Surface Water | | 8/14/2012 12:02 | 8/15/2012 13:54 | ☐ |
| 1208484-12 | WSE08141027LJL1 | Surface Water | | 8/14/2012 10:27 | 8/15/2012 13:54 | ☐ |
| 1208484-13 | WSC08141655LJL1 | Surface Water | | 8/14/2012 16:55 | 8/15/2012 13:54 | ☐ |
| 1208484-14 | WSC08141625LJL1 | Surface Water | | 8/14/2012 16:25 | 8/15/2012 13:54 | ☐ |
| 1208484-15 | WSC08141537LJL1 | Surface Water | | 8/14/2012 15:37 | 8/15/2012 13:54 | ☐ |
| 1208484-16 | WSC08141508LJL1 | Surface Water | | 8/14/2012 15:08 | 8/15/2012 13:54 | ☐ |
| 1208484-17 | WSE08141441LJL1 | Surface Water | | 8/14/2012 14:41 | 8/15/2012 13:54 | ☐ |
| 1208484-18 | WSE08141132LJL1 | Surface Water | | 8/14/2012 11:32 | 8/15/2012 13:54 | ☐ |
| 1208484-19 | WSE08140925LJL1 | Surface Water | | 8/14/2012 09:25 | 8/15/2012 13:54 | ☐ |

**Client:** AECOM Environment
**Project:** Marshall Surface Water 8/14/12
**WorkOrder:** **1208484**

# QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| µg/L | Micrograms per Liter |
| mg/L | Milligrams per Liter |

# ALS Group USA, Corp

**Date:** *23-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208484
**Project:** Marshall Surface Water 8/14/12
**Lab ID:** 1208484-01

**Client Sample ID:** WSE08141150LJL1
**Collection Date:** 8/14/2012 11:50:00 AM
**Matrix:** SURFACE WATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/21/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/21/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/21/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *65.6* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *100* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *73.9* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSE08141057LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 10:57:00 AM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-02 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/21/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/21/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/21/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *68.2* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *98.3* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *76.5* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSE08141057LJL2 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 10:57:00 AM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-03 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/21/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/21/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/21/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *68.4* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *93.4* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *76.4* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSE08141045LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 10:45:00 AM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-04 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/21/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/21/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/21/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *62.5* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *93.5* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *69.9* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSB08141730LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 5:30:00 PM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-05 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/21/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/21/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/21/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *69.6* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *95.8* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *76.7* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSE08141242LJL3 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 12:42:00 PM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-06 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/21/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/21/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/21/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *56.6* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *87.0* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *62.8* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSF08140845LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 8:45:00 AM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-07 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/22/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/22/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/22/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *62.4* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *97.0* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *68.8* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSE08141354LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 1:54:00 PM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-08 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/22/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/22/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/22/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *70.0* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *96.3* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *77.0* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSE08141421LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 2:21:00 PM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-09 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/22/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/22/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/22/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *68.6* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *103* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *75.9* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSE08141117LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 11:17:00 AM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-10 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/22/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/22/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/22/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *45.8* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *83.8* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *50.5* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSE08141202LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 12:02:00 PM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-11 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/22/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/22/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/22/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *68.6* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *97.2* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *75.4* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSE08141027LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 10:27:00 AM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-12 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/22/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/22/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/22/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *68.7* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *91.9* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *74.9* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSC08141655LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 4:55:00 PM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-13 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/22/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/22/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/22/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *68.7* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *97.5* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *75.7* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSC08141625LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 4:25:00 PM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-14 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/22/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/22/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/22/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *67.9* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *96.7* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *74.1* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSC08141537LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 3:37:00 PM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-15 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/22/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/22/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/22/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *68.3* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *95.0* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *75.4* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSC08141508LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 3:08:00 PM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-16 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/22/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/22/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/22/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *67.3* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *93.9* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *72.8* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSE08141441LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 2:41:00 PM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-17 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/22/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/22/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/22/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *53.5* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *89.7* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *58.7* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSE08141132LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 11:32:00 AM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-18 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/22/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/22/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/22/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *69.7* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *95.9* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *76.5* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *23-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | WSE08140925LJL1 |
| **Work Order:** | 1208484 | **Collection Date:** | 8/14/2012 9:25:00 AM |
| **Project:** | Marshall Surface Water 8/14/12 | | |
| **Lab ID:** | 1208484-19 | **Matrix:** | SURFACE WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/20/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/22/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/22/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/22/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/20/2012** | | Analyst: **RM** |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/21/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/21/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/21/2012 |
| *Surr: 2-Fluorobiphenyl* | *70.0* | *32-100* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: 4-Terphenyl-d14* | *99.0* | *23-112* | | | *%REC* | 1 | 8/21/2012 |
| *Surr: Nitrobenzene-d5* | *77.5* | *31-93* | | | *%REC* | 1 | 8/21/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

Batch ID: **43064** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-43064-43064** Units: **mg/L** Analysis Date: **8/21/2012 09:50 PM**
Client ID: Run ID: **ICPMS1_120821A** SeqNo: **2058840** Prep Date: **8/20/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.0020 | | | | | | | | |
| Molybdenum | ND | 0.0050 | | | | | | | | |
| Vanadium | ND | 0.0050 | | | | | | | | |

**LCS** Sample ID: **LCS-43064-43064** Units: **mg/L** Analysis Date: **8/21/2012 09:55 PM**
Client ID: Run ID: **ICPMS1_120821A** SeqNo: **2058841** Prep Date: **8/20/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.09009 | 0.0020 | 0.1 | 0 | 90.1 | 80-120 | 0 | | | |
| Molybdenum | 0.0924 | 0.0050 | 0.1 | 0 | 92.4 | 80-120 | 0 | | | |
| Vanadium | 0.08925 | 0.0050 | 0.1 | 0 | 89.2 | 80-120 | 0 | | | |

**MS** Sample ID: **1208484-06AMS** Units: **mg/L** Analysis Date: **8/22/2012 12:35 AM**
Client ID: **WSE08141242LJL3** Run ID: **ICPMS1_120821A** SeqNo: **2058895** Prep Date: **8/20/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.1002 | 0.0020 | 0.1 | -0.00003656 | 100 | 75-125 | 0 | | | |
| Molybdenum | 0.1056 | 0.0050 | 0.1 | 0.0009495 | 105 | 75-125 | 0 | | | |
| Vanadium | 0.1035 | 0.0050 | 0.1 | 0.0003619 | 103 | 75-125 | 0 | | | |

**MSD** Sample ID: **1208484-06AMSD** Units: **mg/L** Analysis Date: **8/22/2012 12:40 AM**
Client ID: **WSE08141242LJL3** Run ID: **ICPMS1_120821A** SeqNo: **2058896** Prep Date: **8/20/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.09529 | 0.0020 | 0.1 | -0.00003656 | 95.3 | 75-125 | 0.1002 | 5.02 | 20 | |
| Molybdenum | 0.09953 | 0.0050 | 0.1 | 0.0009495 | 98.6 | 75-125 | 0.1056 | 5.92 | 20 | |
| Vanadium | 0.09739 | 0.0050 | 0.1 | 0.0003619 | 97 | 75-125 | 0.1035 | 6.08 | 20 | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208484-01A | 1208484-02A | 1208484-03A |
| 1208484-04A | 1208484-05A | 1208484-06A |
| 1208484-07A | 1208484-08A | 1208484-09A |
| 1208484-10A | 1208484-11A | 1208484-12A |
| 1208484-13A | 1208484-14A | 1208484-15A |
| 1208484-16A | 1208484-17A | 1208484-18A |
| 1208484-19A | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **43058** Instrument ID **SVMS6** Method: **SW8270**

**MBLK** Sample ID: **SBLKW1-43058-43058** Units: **µg/L** Analysis Date: **8/21/2012 02:35 PM**
Client ID: Run ID: **SVMS6_120821A** SeqNo: **2060348** Prep Date: **8/20/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | ND | 5.0 | | | | | | | | |
| Acenaphthylene | ND | 5.0 | | | | | | | | |
| Anthracene | ND | 5.0 | | | | | | | | |
| Benzo(a)anthracene | ND | 5.0 | | | | | | | | |
| Benzo(a)pyrene | ND | 5.0 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 5.0 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 5.0 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 5.0 | | | | | | | | |
| Chrysene | ND | 5.0 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 5.0 | | | | | | | | |
| Fluoranthene | ND | 5.0 | | | | | | | | |
| Fluorene | ND | 5.0 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 5.0 | | | | | | | | |
| Phenanthrene | ND | 5.0 | | | | | | | | |
| Pyrene | ND | 5.0 | | | | | | | | |
| *Surr: 2-Fluorobiphenyl* | *38.13* | 0 | *50* | 0 | *76.3* | *32-100* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *46.19* | 0 | *50* | 0 | *92.4* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *41.83* | 0 | *50* | 0 | *83.7* | *31-93* | 0 | | | |

**MBLK** Sample ID: **SBLKW1-43058-43058** Units: **µg/L** Analysis Date: **8/21/2012 02:35 PM**
Client ID: Run ID: **SVMS6_120821A** SeqNo: **2060388** Prep Date: **8/20/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(a)anthracene | ND | 5.0 | | | | | | | | |
| Benzo(a)pyrene | ND | 5.0 | | | | | | | | |
| Chrysene | ND | 5.0 | | | | | | | | |
| Fluoranthene | ND | 5.0 | | | | | | | | |
| Phenanthrene | ND | 5.0 | | | | | | | | |
| Pyrene | ND | 5.0 | | | | | | | | |
| *Surr: 2-Fluorobiphenyl* | *38.13* | 0 | *50* | 0 | *76.3* | *32-100* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *46.19* | 0 | *50* | 0 | *92.4* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *41.83* | 0 | *50* | 0 | *83.7* | *31-93* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208484
**Project:** Marshall Surface Water 8/14/12

# QC BATCH REPORT

Batch ID: **43058** Instrument ID **SVMS6** Method: **SW8270**

**LCS** Sample ID: **SLCSW1-43058-43058** Units: **µg/L** Analysis Date: **8/21/2012 11:08 AM**
Client ID: Run ID: **SVMS6_120821A** SeqNo: **2060343** Prep Date: **8/20/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 15.2 | 5.0 | 20 | 0 | 76 | 45-110 | 0 | | | |
| Acenaphthylene | 15.93 | 5.0 | 20 | 0 | 79.6 | 50-105 | 0 | | | |
| Anthracene | 16.8 | 5.0 | 20 | 0 | 84 | 55-110 | 0 | | | |
| Benzo(a)anthracene | 16.49 | 5.0 | 20 | 0 | 82.4 | 55-110 | 0 | | | |
| Benzo(a)pyrene | 17.29 | 5.0 | 20 | 0 | 86.4 | 55-110 | 0 | | | |
| Benzo(b)fluoranthene | 16.17 | 5.0 | 20 | 0 | 80.8 | 45-120 | 0 | | | |
| Benzo(g,h,i)perylene | 17.32 | 5.0 | 20 | 0 | 86.6 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 18.93 | 5.0 | 20 | 0 | 94.6 | 45-125 | 0 | | | |
| Chrysene | 17.66 | 5.0 | 20 | 0 | 88.3 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 17.95 | 5.0 | 20 | 0 | 89.8 | 40-125 | 0 | | | |
| Fluoranthene | 16.45 | 5.0 | 20 | 0 | 82.2 | 55-115 | 0 | | | |
| Fluorene | 15.86 | 5.0 | 20 | 0 | 79.3 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 17.7 | 5.0 | 20 | 0 | 88.5 | 45-125 | 0 | | | |
| Phenanthrene | 16.45 | 5.0 | 20 | 0 | 82.2 | 50-115 | 0 | | | |
| Pyrene | 18.54 | 5.0 | 20 | 0 | 92.7 | 50-130 | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *35.53* | 0 | *50* | 0 | *71.1* | *32-100* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *47.01* | 0 | *50* | 0 | *94* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *39.82* | 0 | *50* | 0 | *79.6* | *31-93* | 0 | | | |

**LCS** Sample ID: **SLCSW1-43058-43058** Units: **µg/L** Analysis Date: **8/21/2012 11:08 AM**
Client ID: Run ID: **SVMS6_120821A** SeqNo: **2060384** Prep Date: **8/20/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(a)anthracene | 16.49 | 5.0 | 20 | 0 | 82.4 | 55-110 | 0 | | | |
| Benzo(a)pyrene | 17.29 | 5.0 | 20 | 0 | 86.4 | 55-110 | 0 | | | |
| Chrysene | 17.66 | 5.0 | 20 | 0 | 88.3 | 55-110 | 0 | | | |
| Fluoranthene | 16.45 | 5.0 | 20 | 0 | 82.2 | 55-115 | 0 | | | |
| Phenanthrene | 16.45 | 5.0 | 20 | 0 | 82.2 | 50-115 | 0 | | | |
| Pyrene | 18.54 | 5.0 | 20 | 0 | 92.7 | 50-130 | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *35.53* | 0 | *50* | 0 | *71.1* | *32-100* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *47.01* | 0 | *50* | 0 | *94* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *39.82* | 0 | *50* | 0 | *79.6* | *31-93* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **43058** Instrument ID **SVMS6** Method: **SW8270**

**MS** Sample ID: **1208484-06B MS** Units: **µg/L** Analysis Date: **8/21/2012 11:33 AM**
Client ID: **WSE08141242LJL3** Run ID: **SVMS6_120821A** SeqNo: **2060344** Prep Date: **8/20/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 141.7 | 50 | 200 | 0 | 70.8 | 45-110 | 0 | | | |
| Acenaphthylene | 147.9 | 50 | 200 | 0 | 74 | 50-105 | 0 | | | |
| Anthracene | 157 | 50 | 200 | 0 | 78.5 | 55-110 | 0 | | | |
| Benzo(a)anthracene | 155.3 | 50 | 200 | 0 | 77.6 | 55-110 | 0 | | | |
| Benzo(a)pyrene | 160.5 | 50 | 200 | 0 | 80.2 | 55-110 | 0 | | | |
| Benzo(b)fluoranthene | 154.3 | 50 | 200 | 0 | 77.2 | 45-120 | 0 | | | |
| Benzo(g,h,i)perylene | 159.9 | 50 | 200 | 0 | 80 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 168.2 | 50 | 200 | 0 | 84.1 | 45-125 | 0 | | | |
| Chrysene | 163.9 | 50 | 200 | 0 | 82 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 167.2 | 50 | 200 | 0 | 83.6 | 40-125 | 0 | | | |
| Fluoranthene | 153.5 | 50 | 200 | 0 | 76.8 | 55-115 | 0 | | | |
| Fluorene | 147.7 | 50 | 200 | 0 | 73.8 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 164.5 | 50 | 200 | 0 | 82.2 | 45-125 | 0 | | | |
| Phenanthrene | 154.7 | 50 | 200 | 0 | 77.4 | 50-115 | 0 | | | |
| Pyrene | 174.9 | 50 | 200 | 0 | 87.4 | 50-130 | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *333.2* | 0 | *500* | 0 | *66.6* | *32-100* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *479.5* | 0 | *500* | 0 | *95.9* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *373.3* | 0 | *500* | 0 | *74.7* | *31-93* | 0 | | | |

**MS** Sample ID: **1208484-06B MS** Units: **µg/L** Analysis Date: **8/21/2012 11:33 AM**
Client ID: **WSE08141242LJL3** Run ID: **SVMS6_120821A** SeqNo: **2060385** Prep Date: **8/20/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(a)anthracene | 155.3 | 50 | 200 | 0 | 77.6 | 55-110 | 0 | | | |
| Benzo(a)pyrene | 160.5 | 50 | 200 | 0 | 80.2 | 55-110 | 0 | | | |
| Chrysene | 163.9 | 50 | 200 | 0 | 82 | 55-110 | 0 | | | |
| Fluoranthene | 153.5 | 50 | 200 | 0 | 76.8 | 55-115 | 0 | | | |
| Phenanthrene | 154.7 | 50 | 200 | 0 | 77.4 | 50-115 | 0 | | | |
| Pyrene | 174.9 | 50 | 200 | 0 | 87.4 | 50-130 | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *333.2* | 0 | *500* | 0 | *66.6* | *32-100* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *479.5* | 0 | *500* | 0 | *95.9* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *373.3* | 0 | *500* | 0 | *74.7* | *31-93* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208484
**Project:** Marshall Surface Water 8/14/12

# QC BATCH REPORT

Batch ID: **43058** Instrument ID **SVMS6** Method: **SW8270**

**MSD** Sample ID: **1208484-06B MSD** Units: **µg/L** Analysis Date: **8/21/2012 01:44 PM**
Client ID: **WSE08141242LJL3** Run ID: **SVMS6_120821A** SeqNo: **2060346** Prep Date: **8/20/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 142.1 | 50 | 200 | 0 | 71 | 45-110 | 141.7 | 0.282 | 30 | |
| Acenaphthylene | 148.7 | 50 | 200 | 0 | 74.4 | 50-105 | 147.9 | 0.539 | 30 | |
| Anthracene | 156.1 | 50 | 200 | 0 | 78 | 55-110 | 157 | 0.575 | 30 | |
| Benzo(a)anthracene | 153.8 | 50 | 200 | 0 | 76.9 | 55-110 | 155.3 | 0.971 | 30 | |
| Benzo(a)pyrene | 163.7 | 50 | 200 | 0 | 81.8 | 55-110 | 160.5 | 1.97 | 30 | |
| Benzo(b)fluoranthene | 164.4 | 50 | 200 | 0 | 82.2 | 45-120 | 154.3 | 6.34 | 30 | |
| Benzo(g,h,i)perylene | 158.3 | 50 | 200 | 0 | 79.2 | 40-125 | 159.9 | 1.01 | 30 | |
| Benzo(k)fluoranthene | 163.2 | 50 | 200 | 0 | 81.6 | 45-125 | 168.2 | 3.02 | 30 | |
| Chrysene | 163.1 | 50 | 200 | 0 | 81.6 | 55-110 | 163.9 | 0.489 | 30 | |
| Dibenzo(a,h)anthracene | 166.1 | 50 | 200 | 0 | 83 | 40-125 | 167.2 | 0.66 | 30 | |
| Fluoranthene | 154.2 | 50 | 200 | 0 | 77.1 | 55-115 | 153.5 | 0.455 | 30 | |
| Fluorene | 150.1 | 50 | 200 | 0 | 75 | 50-110 | 147.7 | 1.61 | 30 | |
| Indeno(1,2,3-cd)pyrene | 164.4 | 50 | 200 | 0 | 82.2 | 45-125 | 164.5 | 0.0608 | 30 | |
| Phenanthrene | 155 | 50 | 200 | 0 | 77.5 | 50-115 | 154.7 | 0.194 | 30 | |
| Pyrene | 172.3 | 50 | 200 | 0 | 86.2 | 50-130 | 174.9 | 1.5 | 30 | |
| *Surr: 2-Fluorobiphenyl* | *328.9* | 0 | *500* | 0 | *65.8* | *32-100* | 333.2 | *1.3* | *40* | |
| *Surr: 4-Terphenyl-d14* | *459.6* | 0 | *500* | 0 | *91.9* | *23-112* | 479.5 | *4.24* | *40* | |
| *Surr: Nitrobenzene-d5* | *364.9* | 0 | *500* | 0 | *73* | *31-93* | 373.3 | *2.28* | *40* | |

**MSD** Sample ID: **1208484-06B MSD** Units: **µg/L** Analysis Date: **8/21/2012 01:44 PM**
Client ID: **WSE08141242LJL3** Run ID: **SVMS6_120821A** SeqNo: **2060386** Prep Date: **8/20/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(a)anthracene | 153.8 | 50 | 200 | 0 | 76.9 | 55-110 | 155.3 | 0.971 | 30 | |
| Benzo(a)pyrene | 163.7 | 50 | 200 | 0 | 81.8 | 55-110 | 160.5 | 1.97 | 30 | |
| Chrysene | 163.1 | 50 | 200 | 0 | 81.6 | 55-110 | 163.9 | 0.489 | 30 | |
| Fluoranthene | 154.2 | 50 | 200 | 0 | 77.1 | 55-115 | 153.5 | 0.455 | 30 | |
| Phenanthrene | 155 | 50 | 200 | 0 | 77.5 | 50-115 | 154.7 | 0.194 | 30 | |
| Pyrene | 172.3 | 50 | 200 | 0 | 86.2 | 50-130 | 174.9 | 1.5 | 30 | |
| *Surr: 2-Fluorobiphenyl* | *328.9* | 0 | *500* | 0 | *65.8* | *32-100* | 333.2 | *1.3* | *40* | |
| *Surr: 4-Terphenyl-d14* | *459.6* | 0 | *500* | 0 | *91.9* | *23-112* | 479.5 | *4.24* | *40* | |
| *Surr: Nitrobenzene-d5* | *364.9* | 0 | *500* | 0 | *73* | *31-93* | 373.3 | *2.28* | *40* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208484-01B | 1208484-02B | 1208484-03B |
| 1208484-04B | 1208484-05B | 1208484-06B |
| 1208484-07B | 1208484-08B | 1208484-09B |
| 1208484-10B | 1208484-11B | 1208484-12B |
| 1208484-13B | 1208484-14B | 1208484-15B |
| 1208484-16B | 1208484-17B | 1208484-18B |
| 1208484-19B | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

~~1208483~~ KW
1208484

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_081412_LJL1 | Task: SWMON | |
|---|---|---|---|
| | Total # of Samples: 19 | | Event Complete? |
| Turn Around Time | 5 Day | Rush | No |
| BILLING CODE: 7.00 | | | |

**Lab Information:**

| | |
|---|---|
| Lab Name: | ALS Laboratory Group |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 |
| Lab PM: | Ann Preston |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 |
| Lab PM email | ann.preston@alsglobal.com |
| Applicable Lab Quote #: | |

**Project Information:**

| | | | | |
|---|---|---|---|---|
| Site ID #: | | | | |
| Project # | 60162778 | | | |
| Site Address | 5555 Glenwood Parkway SE Suite 200 | | | |
| City | Grand Rapids | State, Zip | MI | |
| Site PM Name | Bryan Stiemsma | | | |
| Phone/Fax: | [redacted] | | | |
| Site PM Email: | Bryan.Stiemsma@aecom.com | | | |

**Other Information:**

| | | | |
|---|---|---|---|
| Send Invoice to: | Enbridge Energy - ATTN Accounts Payable | | |
| Address: | 1100 Louisiana Suite 1100 | | |
| City/State, | Houson, TX | Phone #: | 713-821-2000 |
| PO # | | | |
| Send EDD to | | | |
| CC Hardcopy report | | | |
| CC Hardcopy report | | | |

| ITEM # | SAMPLE ID Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative: HCl | Preservative: None | Analysis: Be,Mo,V | Analysis: PNAs by 8270 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | WSE08141150LJL1 | ML-1 | WS | G | 08/14/2012 11:50 | 3 | | | | X | X |
| 2 | WSE08141057LJL1 | ML-10 | WS | G | 08/14/2012 10:57 | 3 | | | | X | X |
| 3 | WSE08141057LJL2 | ML-10 | WS | G | 08/14/2012 10:57 | 3 | DUPLICATE | | | X | X |
| 4 | WSE08141045LJL1 | ML-7 | WS | G | 08/14/2012 10:45 | 3 | | | | X | X |
| 5 | WSB08141730LJL1 | SW-105 | WS | G | 08/14/2012 17:30 | 3 | | | | X | X |
| 6 | WSE08141242LJL3 | SW-110 | WS | G | 08/14/2012 12:42 | 9 | MS/MSD | | | X | X |
| 7 | WSF08140845LJL1 | SW-112 | WS | G | 08/14/2012 08:45 | 3 | | | | X | X |
| 8 | WSE08141354LJL1 | SW-115 | WS | G | 08/14/2012 13:54 | 3 | | | | X | X |
| 9 | WSE08141421LJL1 | SW-120 | WS | G | 08/14/2012 14:21 | 3 | | | | X | X |
| 10 | WSE08141117LJL1 | SW-935 | WS | G | 08/14/2012 11:17 | 3 | | | | X | X |
| 11 | WSE08141202LJL1 | SW-936 | WS | G | 08/14/2012 12:02 | 3 | | | | X | X |
| 12 | WSE08141027LJL1 | SW-937 | WS | G | 08/14/2012 10:27 | 3 | | | | X | X |
| 13 | WSC08141655LJL1 | SWKR0540C01 | WS | G | 08/14/2012 16:55 | 3 | | | | X | X |
| 14 | WSC08141625LJL1 | SWKR0600C01 | WS | G | 08/14/2012 16:25 | 3 | | | | X | X |
| 15 | WSC08141537LJL1 | SWKR1480C01 | WS | G | 08/14/2012 15:37 | 3 | | | | X | X |
| 16 | WSC08141508LJL1 | SWKR1565C01 | WS | G | 08/14/2012 15:08 | 3 | | | | X | X |
| 17 | WSE08141441LJL1 | SWKR1948C01 | WS | G | 08/14/2012 14:41 | 3 | | | | X | X |
| 18 | WSE08141132LJL1 | SWKR3840C02 | WS | G | 08/14/2012 11:32 | 3 | | | | X | X |
| 19 | WSE08140925LJL1 | SWKR3980C01 | WS | G | 08/14/2012 09:25 | 3 | | | | X | X |

Additional Comments/Special Instructions:

| RELINQUISHED BY: AFFILIATION | DATE | TIME | ACCEPTED BY: AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| Lorri Lego | 8.15.12 | 0848 | | 8-15-12 | 0848 |
| [redacted] | 8.15.12 | 1354 | | 8.15.12 | 1354 |
| | 8/15/12 | 1535 | | | |

**Sample Receipt Conditions**

| Temp in ºC | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|
| 2°-4.6° | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: LORRI LEGO (LJL1), JON CARVETH
SIGNATURE of SAMPLER: DATE Signed: Time:

8/16/12

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **15-Aug-12 13:54**

Work Order: **1208484** Received by: **PD**

Checklist completed by Keith Wierenga (eSignature) 16-Aug-12 (Date) Reviewed by: Ann Preston (eSignature) 16-Aug-12 (Date)

Matrices: Water
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 2.4 - 4.6 C | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 8/16/2012 8:35:09 AM | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☑ | No ☐ | N/A ☐ |
| pH adjusted? | Yes ☐ | No ☑ | N/A ☐ |
| pH adjusted by: | - | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

**ALS Environmental**
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

**CUSTODY SEAL**
Date: 8-15-12 Time:
Name: [signature]
Company:

Seal Broken By:
Date:

**ALS Environmental**
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

**CUSTODY SEAL**
Date: 8-15-12 Time:
Name: [signature]
Company:

Seal Broken By:
Date:

**ALS Environmental**
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

**CUSTODY SEAL**
Date: 7-15-12 Time:
Name: [signature]
Company:

Seal Broken By:
Date:

**ALS Environmental**
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

**CUSTODY SEAL**
Date: 8-15-12 Time:
Name: [signature]
Company:

Seal Broken By:
Date:

**ALS Environmental**
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

**CUSTODY SEAL**
Date: 8-15-12 Time:
Name: [signature]
Company:

Seal Broken By:
Date:

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

# Appendix B

# Remedial Investigation Activities

# Analytical Data Reports

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

ALS Environmental

09-Aug-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI Source Area 8/1/12** Work Order: **1208120**

Dear Bryan,

ALS Environmental received 13 samples on 02-Aug-2012 05:35 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 86.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

NELAP ACCREDITED TNI LABORATORY

Certificate No: MN331938

## ALS Group USA, Corp

Date: 09-Aug-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 8/1/12
**Work Order:** **1208120**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1208120-01 | SBSA0136S080112S006 | Soil | | 8/1/2012 08:15 | 8/2/2012 17:35 | ☐ |
| 1208120-02 | SBSA0136S080112S090 | Soil | | 8/1/2012 08:55 | 8/2/2012 17:35 | ☐ |
| 1208120-03 | SBSA0138S080112S003 | Soil | | 8/1/2012 11:40 | 8/2/2012 17:35 | ☐ |
| 1208120-04 | SBSA0138S080112S010 | Soil | | 8/1/2012 11:55 | 8/2/2012 17:35 | ☐ |
| 1208120-05 | SBSA0138S080112S095 | Soil | | 8/1/2012 12:50 | 8/2/2012 17:35 | ☐ |
| 1208120-06 | SBSA0139S080112S006 | Soil | | 8/1/2012 14:44 | 8/2/2012 17:35 | ☐ |
| 1208120-07 | SBSA0139S080112S017 | Soil | | 8/1/2012 14:47 | 8/2/2012 17:35 | ☐ |
| 1208120-08 | SBSA0139S080112S052 | Soil | | 8/1/2012 15:00 | 8/2/2012 17:35 | ☐ |
| 1208120-09 | SBSA0139D080112S052 | Soil | | 8/1/2012 15:00 | 8/2/2012 17:35 | ☐ |
| 1208120-10 | SBSA0139S080112S090 | Soil | | 8/1/2012 15:15 | 8/2/2012 17:35 | ☐ |
| 1208120-11 | SBSA0140S080112S004 | Soil | | 8/1/2012 15:56 | 8/2/2012 17:35 | ☐ |
| 1208120-12 | SBSA0140S080112S087 | Soil | | 8/1/2012 16:25 | 8/2/2012 17:35 | ☐ |
| 1208120-13 | SBSA0140T080112MX | Soil | | 8/1/2012 | 8/2/2012 17:35 | ☐ |

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 8/1/12
**Work Order:** 1208120

## Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 42810 MS/MSD data for DRO/ORO is not related to this project's samples. No data requires qualification.

Batch 42829 MS/MSD data for Metals is not related to this project's samples. No data requires qualification.

Batch 42817 MS/MSD data for Volatiles is not related to this project's samples. No data requires qualification.

Batch 42809 sample 1208120-04 PAH analysis had one surrogate recovery that was slightly low due to matrix interference. No data requires qualification.

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 8/1/12
**WorkOrder:** **1208120**

# QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| % of sample | Percent of Sample |
| µg/Kg | Micrograms per Kilogram |
| µg/Kg-dry | Micrograms per Kilogram Dry Weight |
| mg/Kg-dry | Milligrams per Kilogram Dry Weight |

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0136S080112S006 |
| **Work Order:** | 1208120 | **Collection Date:** | 8/1/2012 8:15:00 AM |
| **Project:** | Marshall KRRI Source Area 8/1/12 | | |
| **Lab ID:** | 1208120-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **58** | **14** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **570** | **29** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *48.0* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 8/8/2012 |
| **Molybdenum** | **2.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **8.9** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **14** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *79.9* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *50.0* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *47.7* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *68.1* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *41.4* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *44.0* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0136S080112S006
**Work Order:** 1208120
**Collection Date:** 8/1/2012 8:15:00 AM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-01
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 100 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 100 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 330 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0136S080112S006
**Work Order:** 1208120 **Collection Date:** 8/1/2012 8:15:00 AM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-01 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 100 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 100 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.8* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *104* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *97.6* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *102* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **36** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-02

**Client Sample ID:** SBSA0136S080112S090
**Collection Date:** 8/1/2012 8:55:00 AM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| DRO (C10-C20) | ND | 11 | 4.0 | | mg/Kg-dry | 1 | 8/7/2012 |
| ORO (C20-C34) | ND | 21 | 4.0 | | mg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *63.7* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 8/8/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Nickel** | **7.7** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **9.3** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *91.9* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *72.7* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *76.5* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *92.8* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *64.2* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *71.7* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-02

**Client Sample ID:** SBSA0136S080112S090
**Collection Date:** 8/1/2012 8:55:00 AM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 39 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 39 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0136S080112S090
**Work Order:** 1208120 **Collection Date:** 8/1/2012 8:55:00 AM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-02 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *96.1* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *103* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *94.4* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *101* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **8.3** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-03

**Client Sample ID:** SBSA0138S080112S003
**Collection Date:** 8/1/2012 11:40:00 AM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **130** | **30** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **980** | **60** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *82.0* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.53 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **1.1** | **1.1** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **8.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **22** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *108* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *59.8* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *54.8* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *86.1* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *47.0* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *41.5* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0138S080112S003
**Work Order:** 1208120
**Collection Date:** 8/1/2012 11:40:00 AM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-03
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 460 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 460 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 460 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 460 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 460 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 2,300 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 1,500 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 3,900 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 460 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 460 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 460 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 460 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 460 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 460 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 460 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 460 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-03

**Client Sample ID:** SBSA0138S080112S003
**Collection Date:** 8/1/2012 11:40:00 AM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 460 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 460 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 930 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 460 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 1,500 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 460 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,500 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 460 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 460 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 460 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.6* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *105* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *98.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *104* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **67** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0138S080112S010 |
| **Work Order:** | 1208120 | **Collection Date:** | 8/1/2012 11:55:00 AM |
| **Project:** | Marshall KRRI Source Area 8/1/12 | | |
| **Lab ID:** | 1208120-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **130** | **61** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **1,000** | **120** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *40.8* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 1.1 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| Molybdenum | ND | 2.1 | 1.0 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Nickel** | **8.0** | **1.8** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **5.8** | **1.8** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *75.7* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *45.9* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *44.2* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *64.0* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *36.4* | *37-107* | | S | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *40.3* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0138S080112S010
**Work Order:** 1208120
**Collection Date:** 8/1/2012 11:55:00 AM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-04
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 2,200 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 2,200 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 2,200 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 2,200 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 2,200 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 8,800 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 7,300 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 18,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 2,200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 2,200 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 7,300 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 2,200 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 2,200 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 2,200 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 2,200 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 2,200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 2,200 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 2,200 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-04

**Client Sample ID:** SBSA0138S080112S010
**Collection Date:** 8/1/2012 11:55:00 AM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 2,200 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 2,200 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 4,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 2,200 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 7,300 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 7,300 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 2,200 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 7,300 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 2,200 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 2,200 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 2,200 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *99.4* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *106* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *98.0* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *104* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **84** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-05

**Client Sample ID:** SBSA0138S080112S095
**Collection Date:** 8/1/2012 12:50:00 PM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **240** | **76** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **1,500** | **150** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *65.0* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 1.2 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **5.5** | **2.4** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **6.3** | **2.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **5.2** | **2.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *101* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *59.4* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *51.2* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *86.9* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *41.0* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *51.1* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-05

**Client Sample ID:** SBSA0138S080112S095
**Collection Date:** 8/1/2012 12:50:00 PM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 3,400 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 3,400 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 14,000 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 3,400 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 11,000 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 3,400 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 29,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 3,400 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 11,000 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 3,400 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 3,400 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-05

**Client Sample ID:** SBSA0138S080112S095
**Collection Date:** 8/1/2012 12:50:00 PM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 3,400 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 6,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 8,000 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 11,000 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 11,000 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 11,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 3,400 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *101* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *106* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *99.7* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *105* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **87** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0139S080112S006 |
| **Work Order:** | 1208120 | **Collection Date:** | 8/1/2012 2:44:00 PM |
| **Project:** | Marshall KRRI Source Area 8/1/12 | | |
| **Lab ID:** | 1208120-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **190** | **39** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **1,300** | **79** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *65.6* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.65 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **3.7** | **1.3** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **11** | **1.1** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **14** | **1.1** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *90.5* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *54.2* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *50.0* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *74.8* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *42.3* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *46.1* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0139S080112S006
**Work Order:** 1208120
**Collection Date:** 8/1/2012 2:44:00 PM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-06
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 860 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 860 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 860 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 860 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 860 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 3,400 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 2,900 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 7,200 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 860 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 860 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 2,900 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 860 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 860 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 860 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 860 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 860 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 860 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 860 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-06

**Client Sample ID:** SBSA0139S080112S006
**Collection Date:** 8/1/2012 2:44:00 PM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 860 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 860 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 1,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 860 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 2,000 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 2,900 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,900 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 860 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 2,900 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 860 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 860 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 860 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *97.6* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *103* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *94.7* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *101* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **75** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0139S080112S017 |
| **Work Order:** | 1208120 | **Collection Date:** | 8/1/2012 2:47:00 PM |
| **Project:** | Marshall KRRI Source Area 8/1/12 | | |
| **Lab ID:** | 1208120-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **310** | **55** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **1,800** | **110** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *62.1* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.92 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **3.3** | **1.8** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **11** | **1.5** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **14** | **1.5** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| **2-Methylnaphthalene** | **440** | **330** | **330** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *97.9* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *57.7* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *54.0* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *81.8* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *45.1* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *51.7* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0139S080112S017
**Work Order:** 1208120
**Collection Date:** 8/1/2012 2:47:00 PM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-07
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 1,900 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| **1,2,3-Trimethylbenzene** | **2,300** | **1,900** | **250** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 1,900 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| **1,2,4-Trimethylbenzene** | **6,100** | **1,900** | **100** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1,900 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 1,900 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| **1,3,5-Trimethylbenzene** | **2,600** | **1,900** | **100** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 7,500 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 6,300 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 16,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| **Benzene** | **4,400** | **1,900** | **50** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| Bromobenzene | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 1,900 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 1,900 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 6,300 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 1,900 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| **Cyclohexane** | **7,100** | **1,900** | **500** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 1,900 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 1,900 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 1,900 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 1,900 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 1,900 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0139S080112S017
**Work Order:** 1208120
**Collection Date:** 8/1/2012 2:47:00 PM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-07
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 1,900 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 1,900 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| **m,p-Xylene** | **20,000** | **3,800** | **100** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| Methyl iodide | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 1,900 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 6,300 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| **o-Xylene** | **6,100** | **1,900** | **50** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 6,300 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 1,900 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 6,300 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 1,900 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 1,900 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 1,900 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.3* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *105* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *96.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *104* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **83** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0139S080112S052 |
| **Work Order:** | 1208120 | **Collection Date:** | 8/1/2012 3:00:00 PM |
| **Project:** | Marshall KRRI Source Area 8/1/12 | | |
| **Lab ID:** | 1208120-08 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **300** | **76** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **2,300** | **150** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *56.1* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 1.6 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **5.6** | **3.2** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **5.7** | **2.7** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **4.6** | **2.7** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *88.7* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *55.1* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *51.5* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *76.0* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *44.1* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *48.1* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0139S080112S052
**Work Order:** 1208120 **Collection Date:** 8/1/2012 3:00:00 PM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-08 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 3,800 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 3,800 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 3,800 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 3,800 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 3,800 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 13,000 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 3,800 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 13,000 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 3,800 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 32,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 3,800 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 3,800 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 13,000 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 3,800 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 3,800 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 3,800 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 3,800 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 3,800 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 3,800 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 3,800 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0139S080112S052
**Work Order:** 1208120
**Collection Date:** 8/1/2012 3:00:00 PM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-08
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 3,800 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 3,800 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 7,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 3,800 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 13,000 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 13,000 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 3,800 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 13,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 3,800 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 3,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 3,800 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.3* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *102* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *99.0* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *106* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **88** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0139D080112S052 |
| **Work Order:** | 1208120 | **Collection Date:** | 8/1/2012 3:00:00 PM |
| **Project:** | Marshall KRRI Source Area 8/1/12 | | |
| **Lab ID:** | 1208120-09 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **240** | **76** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **1,900** | **150** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *54.0* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 1.3 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **6.3** | **2.6** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **6.7** | **2.1** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **6.2** | **2.1** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 380 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *89.9* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *55.2* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *51.8* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *77.4* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *42.6* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *48.1* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0139D080112S052
**Work Order:** 1208120
**Collection Date:** 8/1/2012 3:00:00 PM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-09
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 3,400 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 3,400 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 11,000 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 3,400 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 11,000 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 3,400 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 28,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 3,400 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 11,000 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 3,400 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 3,400 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0139D080112S052
**Work Order:** 1208120
**Collection Date:** 8/1/2012 3:00:00 PM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-09
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 3,400 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 6,800 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 5,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 11,000 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 11,000 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 11,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 3,400 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.9* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *98.6* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *104* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **87** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0139S080112S090 |
| **Work Order:** | 1208120 | **Collection Date:** | 8/1/2012 3:15:00 PM |
| **Project:** | Marshall KRRI Source Area 8/1/12 | | |
| **Lab ID:** | 1208120-10 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **96** | **35** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **750** | **70** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *63.1* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.74 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **2.6** | **1.5** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **3.1** | **1.2** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| Vanadium | ND | 1.2 | 1.0 | | mg/Kg-dry | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *106* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *66.7* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *64.7* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *88.6* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *55.5* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *60.1* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0139S080112S090
**Work Order:** 1208120
**Collection Date:** 8/1/2012 3:15:00 PM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-10
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 720 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 720 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 720 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 720 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 720 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 2,400 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 2,400 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 6,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 720 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 720 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 2,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 720 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 720 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 720 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 720 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 720 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 720 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 720 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0139S080112S090
**Work Order:** 1208120
**Collection Date:** 8/1/2012 3:15:00 PM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-10
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 720 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 720 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 1,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 720 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 2,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 2,400 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 720 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 2,400 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 720 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 720 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 720 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *100* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *107* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *99.8* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *104* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **73** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0140S080112S004 |
| **Work Order:** | 1208120 | **Collection Date:** | 8/1/2012 3:56:00 PM |
| **Project:** | Marshall KRRI Source Area 8/1/12 | | |
| **Lab ID:** | 1208120-11 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **19** | **11** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **120** | **22** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *57.2* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Nickel** | **5.7** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **11** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *105* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *64.6* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *61.4* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *88.7* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *52.1* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *52.6* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0140S080112S004
**Work Order:** 1208120
**Collection Date:** 8/1/2012 3:56:00 PM
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-11
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 39 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 39 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-11

**Client Sample ID:** SBSA0140S080112S004
**Collection Date:** 8/1/2012 3:56:00 PM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *95.7* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *103* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *94.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *101* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **8.9** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0140S080112S087 |
| **Work Order:** | 1208120 | **Collection Date:** | 8/1/2012 4:25:00 PM |
| **Project:** | Marshall KRRI Source Area 8/1/12 | | |
| **Lab ID:** | 1208120-12 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| DRO (C10-C20) | ND | 11 | 4.0 | | mg/Kg-dry | 1 | 8/7/2012 |
| ORO (C20-C34) | ND | 23 | 4.0 | | mg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *60.3* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Nickel** | **15** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **9.3** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *76.6* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *70.8* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *70.4* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *91.2* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *61.7* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *66.5* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0140S080112S087 |
| **Work Order:** | 1208120 | **Collection Date:** | 8/1/2012 4:25:00 PM |
| **Project:** | Marshall KRRI Source Area 8/1/12 | | |
| **Lab ID:** | 1208120-12 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 36 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 36 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-12

**Client Sample ID:** SBSA0140S080112S087
**Collection Date:** 8/1/2012 4:25:00 PM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *102* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *109* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *97.7* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *106* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **17** | **0.050** | **0** | | **% of sample** | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0140T080112MX |
| **Work Order:** | 1208120 | **Collection Date:** | 8/1/2012 |
| **Project:** | Marshall KRRI Source Area 8/1/12 | | |
| **Lab ID:** | 1208120-13 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 30 | 10 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 30 | 20 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0140T080112MX
**Work Order:** 1208120
**Collection Date:** 8/1/2012
**Project:** Marshall KRRI Source Area 8/1/12
**Lab ID:** 1208120-13
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Cyclohexane | ND | 500 | 500 | | µg/Kg | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Ethylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.9* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *106* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *97.8* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *104* | *70-130* | | | *%REC* | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 09-Aug-12

**Client:** AECOM Environment

**Work Order:** 1208120

**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42810** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42810-42810** Units: **mg/Kg** Analysis Date: **8/7/2012 08:42 AM**

Client ID: Run ID: **GC8_120807A** SeqNo: **2046728** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *3.019* | 0 | *5* | 0 | *60.4* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42810-42810** Units: **mg/Kg** Analysis Date: **8/7/2012 08:42 AM**

Client ID: Run ID: **GC8_120807A** SeqNo: **2046716** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 315.1 | 10 | 500 | 0 | 63 | 60-130 | 0 | | | |
| ORO (C20-C34) | 378.3 | 20 | 500 | 0 | 75.7 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.125* | 0 | *5* | 0 | *62.5* | *39-115* | 0 | | | |

**MS** Sample ID: **1208138-02A MS** Units: **mg/Kg** Analysis Date: **8/7/2012 09:08 AM**

Client ID: Run ID: **GC8_120807A** SeqNo: **2046729** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 282.2 | 9.8 | 490.9 | 43.75 | 48.6 | 60-130 | 0 | | | S |
| ORO (C20-C34) | 516 | 20 | 490.9 | 299.7 | 44.1 | 60-130 | 0 | | | S |
| *Surr: 4-Terphenyl-d14* | *2.429* | 0 | *4.909* | 0 | *49.5* | *39-115* | 0 | | | |

**MSD** Sample ID: **1208138-02A MSD** Units: **mg/Kg** Analysis Date: **8/7/2012 09:35 AM**

Client ID: Run ID: **GC8_120807A** SeqNo: **2046730** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 278.3 | 9.4 | 470.8 | 43.75 | 49.8 | 60-130 | 282.2 | 1.37 | 30 | S |
| ORO (C20-C34) | 477 | 19 | 470.8 | 299.7 | 37.7 | 60-130 | 516 | 7.86 | 30 | S |
| *Surr: 4-Terphenyl-d14* | *2.304* | 0 | *4.708* | 0 | *48.9* | *39-115* | 2.429 | *5.28* | *30* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208120-01A | 1208120-02A | 1208120-03A |
| 1208120-04A | 1208120-05A | 1208120-06A |
| 1208120-07A | 1208120-08A | 1208120-09A |
| 1208120-10A | 1208120-11A | 1208120-12A |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42829** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42829-42829** Units: **mg/Kg** Analysis Date: **8/7/2012 04:12 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047290** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | ND | 0.25 | | | | | | | | |
| Nickel | 0.01898 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**MBLK** Sample ID: **MBLK-42829-42829** Units: **mg/Kg** Analysis Date: **8/8/2012 01:45 PM**
Client ID: Run ID: **ICPMS1_120808A** SeqNo: **2048066** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |

**LCS** Sample ID: **LCS-42829-42829** Units: **mg/Kg** Analysis Date: **8/7/2012 04:18 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047291** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | 4.284 | 0.25 | 5 | 0 | 85.7 | 80-120 | 0 | | | |
| Nickel | 4.222 | 0.25 | 5 | 0 | 84.4 | 80-120 | 0 | | | |
| Vanadium | 4.414 | 0.25 | 5 | 0 | 88.3 | 80-120 | 0 | | | |

**LCS** Sample ID: **LCS-42829-42829** Units: **mg/Kg** Analysis Date: **8/8/2012 01:52 PM**
Client ID: Run ID: **ICPMS1_120808A** SeqNo: **2048069** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.558 | 0.10 | 5 | 0 | 91.2 | 80-120 | 0 | | | |

**MS** Sample ID: **1208138-02AMS** Units: **mg/Kg** Analysis Date: **8/7/2012 09:19 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047336** Prep Date: **8/6/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 7.535 | 0.65 | 8.13 | 0.08607 | 91.6 | 75-125 | 0 | | | |
| Molybdenum | 7.789 | 1.6 | 8.13 | 0.5575 | 88.9 | 75-125 | 0 | | | |
| Nickel | 10.91 | 1.6 | 8.13 | 3.879 | 86.5 | 75-125 | 0 | | | |
| Vanadium | 12.17 | 1.6 | 8.13 | 5.284 | 84.7 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42829** Instrument ID **ICPMS1** Method: **SW6020A**

**MSD** Sample ID: **1208138-02AMSD** Units: **mg/Kg** Analysis Date: **8/7/2012 09:25 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047337** Prep Date: **8/6/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.196 | 0.64 | 8.052 | 0.08607 | 75.9 | 75-125 | 7.535 | 19.5 | 25 | |
| Molybdenum | 6.551 | 1.6 | 8.052 | 0.5575 | 74.4 | 75-125 | 7.789 | 17.3 | 25 | S |
| Nickel | 8.815 | 1.6 | 8.052 | 3.879 | 61.3 | 75-125 | 10.91 | 21.3 | 25 | S |
| Vanadium | 9.855 | 1.6 | 8.052 | 5.284 | 56.8 | 75-125 | 12.17 | 21 | 25 | S |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208120-01A | 1208120-02A | 1208120-03A |
| 1208120-04A | 1208120-05A | 1208120-06A |
| 1208120-07A | 1208120-08A | 1208120-09A |
| 1208120-10A | 1208120-11A | 1208120-12A |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42809** Instrument ID **SVMS7** Method: **SW8270**

**MBLK** Sample ID: **SBLKS1-42809-42809** Units: **µg/Kg** Analysis Date: **8/7/2012 03:10 PM**
Client ID: Run ID: **SVMS7_120807A** SeqNo: **2047548** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 50 | | | | | | | | |
| Acenaphthene | ND | 50 | | | | | | | | |
| Acenaphthylene | ND | 50 | | | | | | | | |
| Anthracene | ND | 50 | | | | | | | | |
| Benzo(a)anthracene | ND | 50 | | | | | | | | |
| Benzo(a)pyrene | ND | 50 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 50 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 50 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 50 | | | | | | | | |
| Chrysene | ND | 50 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 50 | | | | | | | | |
| Fluoranthene | ND | 50 | | | | | | | | |
| Fluorene | ND | 50 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | | | | | | | |
| Naphthalene | ND | 50 | | | | | | | | |
| Phenanthrene | ND | 50 | | | | | | | | |
| Pyrene | ND | 50 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *4088* | 0 | *5000* | 0 | *81.8* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3801* | 0 | *5000* | 0 | *76* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *4363* | 0 | *5000* | 0 | *87.3* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *5711* | 0 | *5000* | 0 | *114* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3727* | 0 | *5000* | 0 | *74.5* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *4161* | 0 | *5000* | 0 | *83.2* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42809** Instrument ID **SVMS7** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42809-42809** Units: **µg/Kg** Analysis Date: **8/7/2012 03:39 PM**
Client ID: Run ID: **SVMS7_120807A** SeqNo: **2047552** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1597 | 50 | 2000 | 0 | 79.8 | 45-105 | 0 | | | |
| Acenaphthene | 1657 | 50 | 2000 | 0 | 82.8 | 45-110 | 0 | | | |
| Acenaphthylene | 1670 | 50 | 2000 | 0 | 83.5 | 45-105 | 0 | | | |
| Anthracene | 1842 | 50 | 2000 | 0 | 92.1 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1849 | 50 | 2000 | 0 | 92.4 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1904 | 50 | 2000 | 0 | 95.2 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1909 | 50 | 2000 | 0 | 95.4 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2149 | 50 | 2000 | 0 | 107 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 1825 | 50 | 2000 | 0 | 91.2 | 45-115 | 0 | | | |
| Chrysene | 1929 | 50 | 2000 | 0 | 96.4 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2080 | 50 | 2000 | 0 | 104 | 40-125 | 0 | | | |
| Fluoranthene | 1839 | 50 | 2000 | 0 | 92 | 55-115 | 0 | | | |
| Fluorene | 1730 | 50 | 2000 | 0 | 86.5 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2084 | 50 | 2000 | 0 | 104 | 40-120 | 0 | | | |
| Naphthalene | 1580 | 50 | 2000 | 0 | 79 | 40-105 | 0 | | | |
| Phenanthrene | 1824 | 50 | 2000 | 0 | 91.2 | 50-110 | 0 | | | |
| Pyrene | 1976 | 50 | 2000 | 0 | 98.8 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *4500* | 0 | *5000* | 0 | *90* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3342* | 0 | *5000* | 0 | *66.8* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3675* | 0 | *5000* | 0 | *73.5* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4912* | 0 | *5000* | 0 | *98.2* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3234* | 0 | *5000* | 0 | *64.7* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3418* | 0 | *5000* | 0 | *68.4* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42809** Instrument ID **SVMS7** Method: **SW8270**

**MS** Sample ID: **1208138-02A MS** Units: **µg/Kg** Analysis Date: **8/7/2012 04:38 PM**
Client ID: Run ID: **SVMS7_120807A** SeqNo: **2047553** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1263 | 50 | 1998 | 0 | 63.2 | 45-105 | 0 | | | |
| Acenaphthene | 1432 | 50 | 1998 | 0 | 71.6 | 45-110 | 0 | | | |
| Acenaphthylene | 1445 | 50 | 1998 | 0 | 72.3 | 45-105 | 0 | | | |
| Anthracene | 1499 | 50 | 1998 | 0 | 75 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1455 | 50 | 1998 | 0 | 72.8 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1517 | 50 | 1998 | 0 | 75.9 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1537 | 50 | 1998 | 0 | 76.9 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1616 | 50 | 1998 | 0 | 80.8 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 1497 | 50 | 1998 | 0 | 74.9 | 45-115 | 0 | | | |
| Chrysene | 1480 | 50 | 1998 | 0 | 74 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1590 | 50 | 1998 | 0 | 79.6 | 40-125 | 0 | | | |
| Fluoranthene | 1451 | 50 | 1998 | 0 | 72.6 | 55-115 | 0 | | | |
| Fluorene | 1473 | 50 | 1998 | 0 | 73.7 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1588 | 50 | 1998 | 0 | 79.4 | 40-120 | 0 | | | |
| Naphthalene | 1111 | 50 | 1998 | 0 | 55.6 | 40-105 | 0 | | | |
| Phenanthrene | 1489 | 50 | 1998 | 0 | 74.5 | 50-110 | 0 | | | |
| Pyrene | 1492 | 50 | 1998 | 0 | 74.6 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *3912* | 0 | *4996* | 0 | *78.3* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *2789* | 0 | *4996* | 0 | *55.8* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *2442* | 0 | *4996* | 0 | *48.9* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3671* | 0 | *4996* | 0 | *73.5* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2115* | 0 | *4996* | 0 | *42.3* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *2667* | 0 | *4996* | 0 | *53.4* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42809** Instrument ID **SVMS7** Method: **SW8270**

**MSD** Sample ID: **1208138-02A MSD** Units: **µg/Kg** Analysis Date: **8/7/2012 05:07 PM**
Client ID: Run ID: **SVMS7_120807A** SeqNo: **2047555** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1181 | 49 | 1974 | 0 | 59.8 | 45-105 | 1263 | 6.74 | 30 | |
| Acenaphthene | 1366 | 49 | 1974 | 0 | 69.2 | 45-110 | 1432 | 4.69 | 30 | |
| Acenaphthylene | 1402 | 49 | 1974 | 0 | 71 | 45-105 | 1445 | 3.03 | 30 | |
| Anthracene | 1534 | 49 | 1974 | 0 | 77.7 | 55-105 | 1499 | 2.33 | 30 | |
| Benzo(a)anthracene | 1452 | 49 | 1974 | 0 | 73.6 | 50-110 | 1455 | 0.187 | 30 | |
| Benzo(a)pyrene | 1531 | 49 | 1974 | 0 | 77.6 | 50-110 | 1517 | 0.939 | 30 | |
| Benzo(b)fluoranthene | 1621 | 49 | 1974 | 0 | 82.1 | 45-115 | 1537 | 5.33 | 30 | |
| Benzo(g,h,i)perylene | 1569 | 49 | 1974 | 0 | 79.5 | 40-125 | 1616 | 2.9 | 30 | |
| Benzo(k)fluoranthene | 1502 | 49 | 1974 | 0 | 76.1 | 45-115 | 1497 | 0.378 | 30 | |
| Chrysene | 1502 | 49 | 1974 | 0 | 76.1 | 55-110 | 1480 | 1.52 | 30 | |
| Dibenzo(a,h)anthracene | 1579 | 49 | 1974 | 0 | 80 | 40-125 | 1590 | 0.647 | 30 | |
| Fluoranthene | 1543 | 49 | 1974 | 0 | 78.2 | 55-115 | 1451 | 6.15 | 30 | |
| Fluorene | 1447 | 49 | 1974 | 0 | 73.3 | 50-110 | 1473 | 1.76 | 30 | |
| Indeno(1,2,3-cd)pyrene | 1568 | 49 | 1974 | 0 | 79.4 | 40-120 | 1588 | 1.21 | 30 | |
| Naphthalene | 1082 | 49 | 1974 | 0 | 54.8 | 40-105 | 1111 | 2.66 | 30 | |
| Phenanthrene | 1501 | 49 | 1974 | 0 | 76 | 50-110 | 1489 | 0.848 | 30 | |
| Pyrene | 1445 | 49 | 1974 | 0 | 73.2 | 45-125 | 1492 | 3.17 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *4016* | 0 | *4935* | 0 | *81.4* | *34-140* | 3912 | *2.62* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *2723* | 0 | *4935* | 0 | *55.2* | *12-100* | 2789 | *2.4* | *40* | |
| *Surr: 2-Fluorophenol* | *2549* | 0 | *4935* | 0 | *51.6* | *33-117* | 2442 | *4.28* | *40* | |
| *Surr: 4-Terphenyl-d14* | *3730* | 0 | *4935* | 0 | *75.6* | *25-137* | 3671 | *1.61* | *40* | |
| *Surr: Nitrobenzene-d5* | *2176* | 0 | *4935* | 0 | *44.1* | *37-107* | 2115 | *2.82* | *40* | |
| *Surr: Phenol-d6* | *2588* | 0 | *4935* | 0 | *52.4* | *40-106* | 2667 | *2.99* | *40* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208120-01A | 1208120-02A | 1208120-03A |
| 1208120-04A | 1208120-05A | 1208120-06A |
| 1208120-07A | 1208120-08A | 1208120-09A |
| 1208120-10A | 1208120-11A | 1208120-12A |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42817-42817** Units: **µg/Kg** Analysis Date: **8/7/2012 12:45 PM**
Client ID: Run ID: **VMS7_120806A** SeqNo: **2046428** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | 113 | 200 | | | | | | | | J |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 161.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 20 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *983.5* | 0 | *1000* | 0 | *98.4* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1082* | 0 | *1000* | 0 | *108* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *965.5* | 0 | *1000* | 0 | *96.6* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1020* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42817-42817** Units: **µg/Kg** Analysis Date: **8/7/2012 03:31 PM**
Client ID: Run ID: **VMS6_120807A** SeqNo: **2047215** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 185.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1107* | 0 | *1000* | 0 | *111* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1065* | 0 | *1000* | 0 | *106* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1002* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1086* | 0 | *1000* | 0 | *109* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42817-42817** Units: **µg/Kg** Analysis Date: **8/7/2012 01:31 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047268** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 229 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |
| Dichlorodifluoromethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **42817** | Instrument ID **VMS7** | | Method: **SW8260** | | | | |
|---|---|---|---|---|---|---|---|
| Diethyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *981.5* | 0 | *1000* | 0 | *98.2* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *991* | 0 | *1000* | 0 | *99.1* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *974* | 0 | *1000* | 0 | *97.4* | *70-130* | 0 |
| *Surr: Toluene-d8* | *990.5* | 0 | *1000* | 0 | *99* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42817-42817** Units: **µg/Kg** Analysis Date: **8/7/2012 08:46 AM**
Client ID: Run ID: **VMS7_120806A** SeqNo: **2046427** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1107 | 30 | 1000 | 0 | 111 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1232 | 30 | 1000 | 0 | 123 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1040 | 30 | 1000 | 0 | 104 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1075 | 30 | 1000 | 0 | 108 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1058 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1200 | 30 | 1000 | 0 | 120 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1065 | 30 | 1000 | 0 | 106 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1062 | 30 | 1000 | 0 | 106 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 945.5 | 30 | 1000 | 0 | 94.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1158 | 30 | 1000 | 0 | 116 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1119 | 30 | 1000 | 0 | 112 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 993.5 | 30 | 1000 | 0 | 99.4 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1074 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1104 | 30 | 1000 | 0 | 110 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1034 | 30 | 1000 | 0 | 103 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1084 | 30 | 1000 | 0 | 108 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1167 | 30 | 1000 | 0 | 117 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1128 | 30 | 1000 | 0 | 113 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1160 | 30 | 1000 | 0 | 116 | 70-125 | 0 | | | |
| 2-Butanone | 1084 | 200 | 1000 | 0 | 108 | 30-160 | 0 | | | |
| 2-Hexanone | 1074 | 30 | 1000 | 0 | 107 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1370 | 30 | 1000 | 0 | 137 | 45-145 | 0 | | | |
| Acetone | 771.5 | 100 | 1000 | 0 | 77.2 | 20-160 | 0 | | | B |
| Acrylonitrile | 934.5 | 100 | 1000 | 0 | 93.4 | 70-135 | 0 | | | |
| Benzene | 1136 | 30 | 1000 | 0 | 114 | 75-125 | 0 | | | |
| Bromobenzene | 1100 | 30 | 1000 | 0 | 110 | 65-120 | 0 | | | |
| Bromochloromethane | 1116 | 30 | 1000 | 0 | 112 | 70-125 | 0 | | | |
| Bromodichloromethane | 988.5 | 30 | 1000 | 0 | 98.8 | 70-130 | 0 | | | |
| Bromoform | 1051 | 30 | 1000 | 0 | 105 | 55-135 | 0 | | | |
| Bromomethane | 1238 | 75 | 1000 | 0 | 124 | 30-160 | 0 | | | |
| Carbon disulfide | 1187 | 30 | 1000 | 0 | 119 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1251 | 30 | 1000 | 0 | 125 | 65-135 | 0 | | | |
| Chlorobenzene | 1148 | 30 | 1000 | 0 | 115 | 75-125 | 0 | | | |
| Chloroethane | 1066 | 100 | 1000 | 0 | 107 | 40-155 | 0 | | | |
| Chloroform | 1080 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| Chloromethane | 1048 | 100 | 1000 | 0 | 105 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1096 | 30 | 1000 | 0 | 110 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1044 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| Dibromochloromethane | 1026 | 30 | 1000 | 0 | 103 | 65-135 | 0 | | | |
| Dibromomethane | 1025 | 30 | 1000 | 0 | 102 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 895 | 30 | 1000 | 0 | 89.5 | 35-135 | 0 | | | |
| Ethylbenzene | 1190 | 30 | 1000 | 0 | 119 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **42817** | Instrument ID **VMS7** | | Method: **SW8260** | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 981.5 | 30 | 1000 | 0 | 98.2 | 70-135 | 0 |
| Isopropylbenzene | 1196 | 30 | 1000 | 0 | 120 | 75-130 | 0 |
| m,p-Xylene | 2370 | 60 | 2000 | 0 | 118 | 80-125 | 0 |
| Methyl tert-butyl ether | 953.5 | 30 | 1000 | 0 | 95.4 | 75-125 | 0 |
| Methylene chloride | 1024 | 30 | 1000 | 0 | 102 | 55-145 | 0 |
| Naphthalene | 1163 | 100 | 1000 | 0 | 116 | 40-140 | 0 |
| n-Butylbenzene | 1232 | 30 | 1000 | 0 | 123 | 65-140 | 0 |
| n-Propylbenzene | 1148 | 30 | 1000 | 0 | 115 | 65-135 | 0 |
| o-Xylene | 1146 | 30 | 1000 | 0 | 115 | 75-125 | 0 |
| p-Isopropyltoluene | 1160 | 30 | 1000 | 0 | 116 | 75-135 | 0 |
| sec-Butylbenzene | 1162 | 30 | 1000 | 0 | 116 | 65-130 | 0 |
| Styrene | 1137 | 30 | 1000 | 0 | 114 | 75-125 | 0 |
| tert-Butylbenzene | 1116 | 30 | 1000 | 0 | 112 | 65-130 | 0 |
| Tetrachloroethene | 1394 | 30 | 1000 | 0 | 139 | 64-140 | 0 |
| Tetrahydrofuran | 985 | 200 | 1000 | 0 | 98.5 | 70-135 | 0 |
| Toluene | 1208 | 30 | 1000 | 0 | 121 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1118 | 30 | 1000 | 0 | 112 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1088 | 30 | 1000 | 0 | 109 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 1056 | 30 | 1000 | 0 | 106 | 70-135 | 0 |
| Trichloroethene | 1234 | 30 | 1000 | 0 | 123 | 75-125 | 0 |
| Trichlorofluoromethane | 1012 | 30 | 1000 | 0 | 101 | 25-185 | 0 |
| Vinyl chloride | 1032 | 30 | 1000 | 0 | 103 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *966.5* | 0 | *1000* | 0 | *96.6* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1002* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1038* | 0 | *1000* | 0 | *104* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42817-42817** Units: **µg/Kg** Analysis Date: **8/7/2012 02:18 PM**
Client ID: Run ID: **VMS6_120807A** SeqNo: **2047214** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 899 | 30 | 1000 | 0 | 89.9 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1068 | 30 | 1000 | 0 | 107 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 948.5 | 30 | 1000 | 0 | 94.8 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 938 | 30 | 1000 | 0 | 93.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 995 | 30 | 1000 | 0 | 99.5 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1070 | 30 | 1000 | 0 | 107 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1018 | 30 | 1000 | 0 | 102 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 972 | 30 | 1000 | 0 | 97.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 941.5 | 30 | 1000 | 0 | 94.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1032 | 30 | 1000 | 0 | 103 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1081 | 30 | 1000 | 0 | 108 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 883.5 | 30 | 1000 | 0 | 88.4 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 987.5 | 30 | 1000 | 0 | 98.8 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 976.5 | 30 | 1000 | 0 | 97.6 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1049 | 30 | 1000 | 0 | 105 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1008 | 30 | 1000 | 0 | 101 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1110 | 30 | 1000 | 0 | 111 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 997 | 30 | 1000 | 0 | 99.7 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1019 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| 2-Butanone | 767.5 | 200 | 1000 | 0 | 76.8 | 30-160 | 0 | | | |
| 2-Hexanone | 962 | 30 | 1000 | 0 | 96.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1132 | 30 | 1000 | 0 | 113 | 45-145 | 0 | | | |
| Acetone | 839.5 | 100 | 1000 | 0 | 84 | 20-160 | 0 | | | B |
| Acrylonitrile | 995.5 | 100 | 1000 | 0 | 99.6 | 70-135 | 0 | | | |
| Benzene | 1008 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Bromobenzene | 1058 | 30 | 1000 | 0 | 106 | 65-120 | 0 | | | |
| Bromochloromethane | 1056 | 30 | 1000 | 0 | 106 | 70-125 | 0 | | | |
| Bromodichloromethane | 1060 | 30 | 1000 | 0 | 106 | 70-130 | 0 | | | |
| Bromoform | 962 | 30 | 1000 | 0 | 96.2 | 55-135 | 0 | | | |
| Bromomethane | 969.5 | 75 | 1000 | 0 | 97 | 30-160 | 0 | | | |
| Carbon disulfide | 1198 | 30 | 1000 | 0 | 120 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1094 | 30 | 1000 | 0 | 109 | 65-135 | 0 | | | |
| Chlorobenzene | 1008 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 915.5 | 100 | 1000 | 0 | 91.6 | 40-155 | 0 | | | |
| Chloroform | 970 | 30 | 1000 | 0 | 97 | 70-125 | 0 | | | |
| Chloromethane | 875 | 100 | 1000 | 0 | 87.5 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1036 | 30 | 1000 | 0 | 104 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 961 | 30 | 1000 | 0 | 96.1 | 70-125 | 0 | | | |
| Dibromochloromethane | 881 | 30 | 1000 | 0 | 88.1 | 65-135 | 0 | | | |
| Dibromomethane | 967.5 | 30 | 1000 | 0 | 96.8 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 886 | 30 | 1000 | 0 | 88.6 | 35-135 | 0 | | | |
| Ethylbenzene | 1061 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **42817** | Instrument ID **VMS7** | | Method: **SW8260** | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1009 | 30 | 1000 | 0 | 101 | 70-135 | 0 |
| Isopropylbenzene | 1078 | 30 | 1000 | 0 | 108 | 75-130 | 0 |
| m,p-Xylene | 2132 | 60 | 2000 | 0 | 107 | 80-125 | 0 |
| Methyl tert-butyl ether | 1020 | 30 | 1000 | 0 | 102 | 75-125 | 0 |
| Methylene chloride | 1058 | 30 | 1000 | 0 | 106 | 55-145 | 0 |
| Naphthalene | 1015 | 100 | 1000 | 0 | 102 | 40-140 | 0 |
| n-Butylbenzene | 1095 | 30 | 1000 | 0 | 110 | 65-140 | 0 |
| n-Propylbenzene | 1075 | 30 | 1000 | 0 | 108 | 65-135 | 0 |
| o-Xylene | 1062 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| p-Isopropyltoluene | 1108 | 30 | 1000 | 0 | 111 | 75-135 | 0 |
| sec-Butylbenzene | 1146 | 30 | 1000 | 0 | 115 | 65-130 | 0 |
| Styrene | 1056 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| tert-Butylbenzene | 1116 | 30 | 1000 | 0 | 112 | 65-130 | 0 |
| Tetrachloroethene | 1030 | 30 | 1000 | 0 | 103 | 64-140 | 0 |
| Tetrahydrofuran | 1038 | 200 | 1000 | 0 | 104 | 70-135 | 0 |
| Toluene | 1066 | 30 | 1000 | 0 | 107 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1051 | 30 | 1000 | 0 | 105 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 992 | 30 | 1000 | 0 | 99.2 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 778 | 30 | 1000 | 0 | 77.8 | 70-135 | 0 |
| Trichloroethene | 944.5 | 30 | 1000 | 0 | 94.4 | 75-125 | 0 |
| Trichlorofluoromethane | 987 | 30 | 1000 | 0 | 98.7 | 25-185 | 0 |
| Vinyl chloride | 903 | 30 | 1000 | 0 | 90.3 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1104* | 0 | *1000* | 0 | *110* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1051* | 0 | *1000* | 0 | *105* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1061* | 0 | *1000* | 0 | *106* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42817-42817** Units: **µg/Kg** Analysis Date: **8/7/2012 09:37 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047269** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 962.5 | 30 | 1000 | 0 | 96.2 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1063 | 30 | 1000 | 0 | 106 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 971.5 | 30 | 1000 | 0 | 97.2 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 978 | 30 | 1000 | 0 | 97.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 992.5 | 30 | 1000 | 0 | 99.2 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1102 | 30 | 1000 | 0 | 110 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 909.5 | 30 | 1000 | 0 | 91 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1022 | 30 | 1000 | 0 | 102 | 65-130 | 0 | | | |
| 1,2,4-Trichlorobenzene | 968 | 30 | 1000 | 0 | 96.8 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1032 | 30 | 1000 | 0 | 103 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 886 | 30 | 1000 | 0 | 88.6 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1021 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 968.5 | 30 | 1000 | 0 | 96.8 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1027 | 30 | 1000 | 0 | 103 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1046 | 30 | 1000 | 0 | 105 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1065 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 972 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 973.5 | 30 | 1000 | 0 | 97.4 | 70-125 | 0 | | | |
| 2-Butanone | 1214 | 200 | 1000 | 0 | 121 | 30-160 | 0 | | | |
| 2-Hexanone | 1294 | 30 | 1000 | 0 | 129 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1304 | 30 | 1000 | 0 | 130 | 45-145 | 0 | | | |
| Acetone | 1163 | 100 | 1000 | 0 | 116 | 20-160 | 0 | | | B |
| Acrylonitrile | 1072 | 100 | 1000 | 0 | 107 | 70-135 | 0 | | | |
| Benzene | 1064 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |
| Bromobenzene | 1020 | 30 | 1000 | 0 | 102 | 65-120 | 0 | | | |
| Bromochloromethane | 1074 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| Bromodichloromethane | 968.5 | 30 | 1000 | 0 | 96.8 | 70-130 | 0 | | | |
| Bromoform | 958.5 | 30 | 1000 | 0 | 95.8 | 55-135 | 0 | | | |
| Bromomethane | 1236 | 75 | 1000 | 0 | 124 | 30-160 | 0 | | | |
| Carbon disulfide | 1158 | 30 | 1000 | 0 | 116 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1062 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| Chlorobenzene | 1014 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 1208 | 100 | 1000 | 0 | 121 | 40-155 | 0 | | | |
| Chloroform | 971.5 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| Chloromethane | 1179 | 100 | 1000 | 0 | 118 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1018 | 30 | 1000 | 0 | 102 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1008 | 30 | 1000 | 0 | 101 | 70-125 | 0 | | | |
| Dibromochloromethane | 896 | 30 | 1000 | 0 | 89.6 | 65-135 | 0 | | | |
| Dibromomethane | 1006 | 30 | 1000 | 0 | 101 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 1089 | 30 | 1000 | 0 | 109 | 35-135 | 0 | | | |
| Ethylbenzene | 1063 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |
| Hexachloroethane | 804 | 30 | 1000 | 0 | 80.4 | 70-135 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **42817** | Instrument ID **VMS7** | | Method: **SW8260** | | | | |
|---|---|---|---|---|---|---|---|
| Isopropylbenzene | 1044 | 30 | 1000 | 0 | 104 | 75-130 | 0 |
| m,p-Xylene | 2159 | 60 | 2000 | 0 | 108 | 80-125 | 0 |
| Methyl tert-butyl ether | 1013 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| Methylene chloride | 1024 | 30 | 1000 | 0 | 102 | 55-145 | 0 |
| Naphthalene | 929.5 | 100 | 1000 | 0 | 93 | 40-140 | 0 |
| n-Butylbenzene | 1026 | 30 | 1000 | 0 | 103 | 65-140 | 0 |
| n-Propylbenzene | 1039 | 30 | 1000 | 0 | 104 | 65-135 | 0 |
| o-Xylene | 1049 | 30 | 1000 | 0 | 105 | 75-125 | 0 |
| p-Isopropyltoluene | 999 | 30 | 1000 | 0 | 99.9 | 75-135 | 0 |
| sec-Butylbenzene | 1062 | 30 | 1000 | 0 | 106 | 65-130 | 0 |
| Styrene | 1018 | 30 | 1000 | 0 | 102 | 75-125 | 0 |
| tert-Butylbenzene | 1026 | 30 | 1000 | 0 | 103 | 65-130 | 0 |
| Tetrachloroethene | 1078 | 30 | 1000 | 0 | 108 | 64-140 | 0 |
| Tetrahydrofuran | 991.5 | 200 | 1000 | 0 | 99.2 | 70-135 | 0 |
| Toluene | 1076 | 30 | 1000 | 0 | 108 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1053 | 30 | 1000 | 0 | 105 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1009 | 30 | 1000 | 0 | 101 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 947 | 30 | 1000 | 0 | 94.7 | 70-135 | 0 |
| Trichloroethene | 1012 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| Trichlorofluoromethane | 933.5 | 30 | 1000 | 0 | 93.4 | 25-185 | 0 |
| Vinyl chloride | 1216 | 30 | 1000 | 0 | 122 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *887* | 0 | *1000* | 0 | *88.7* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1080* | 0 | *1000* | 0 | *108* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *873.5* | 0 | *1000* | 0 | *87.4* | *70-130* | 0 |
| *Surr: Toluene-d8* | *927* | 0 | *1000* | 0 | *92.7* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**MS** Sample ID: **1208140-01B MS** Units: **µg/Kg** Analysis Date: **8/7/2012 10:01 PM**
Client ID: Run ID: **VMS6_120807A** SeqNo: **2047550** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 966 | 30 | 1000 | 0 | 96.6 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1117 | 30 | 1000 | 0 | 112 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 969 | 30 | 1000 | 0 | 96.9 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 993.5 | 30 | 1000 | 0 | 99.4 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1044 | 30 | 1000 | 0 | 104 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1070 | 30 | 1000 | 0 | 107 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 919 | 30 | 1000 | 0 | 91.9 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 995.5 | 30 | 1000 | 0 | 99.6 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 926 | 30 | 1000 | 0 | 92.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 977.5 | 30 | 1000 | 0 | 97.8 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1094 | 30 | 1000 | 0 | 109 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 815 | 30 | 1000 | 0 | 81.5 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1033 | 30 | 1000 | 0 | 103 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 982 | 30 | 1000 | 0 | 98.2 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1106 | 30 | 1000 | 0 | 111 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1085 | 30 | 1000 | 0 | 108 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1116 | 30 | 1000 | 0 | 112 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 997.5 | 30 | 1000 | 0 | 99.8 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 990 | 30 | 1000 | 0 | 99 | 70-125 | 0 | | | |
| 2-Butanone | 984.5 | 100 | 1000 | 82.73 | 90.2 | 30-160 | 0 | | | |
| 2-Hexanone | 1034 | 30 | 1000 | 0 | 103 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1210 | 30 | 1000 | 0 | 121 | 45-145 | 0 | | | |
| Acetone | 995 | 100 | 1000 | 0 | 99.5 | 20-160 | 0 | | | B |
| Acrylonitrile | 1022 | 30 | 1000 | 0 | 102 | 70-135 | 0 | | | |
| Benzene | 1088 | 30 | 1000 | 0 | 109 | 75-125 | 0 | | | |
| Bromobenzene | 1104 | 30 | 1000 | 0 | 110 | 65-120 | 0 | | | |
| Bromochloromethane | 1104 | 30 | 1000 | 0 | 110 | 70-125 | 0 | | | |
| Bromodichloromethane | 1081 | 30 | 1000 | 0 | 108 | 70-130 | 0 | | | |
| Bromoform | 916.5 | 30 | 1000 | 0 | 91.6 | 55-135 | 0 | | | |
| Bromomethane | 747 | 30 | 1000 | 0 | 74.7 | 30-160 | 0 | | | |
| Carbon disulfide | 1160 | 30 | 1000 | 0 | 116 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1096 | 30 | 1000 | 0 | 110 | 65-135 | 0 | | | |
| Chlorobenzene | 1066 | 30 | 1000 | 0 | 107 | 75-125 | 0 | | | |
| Chloroethane | 987 | 100 | 1000 | 0 | 98.7 | 40-155 | 0 | | | |
| Chloroform | 1046 | 30 | 1000 | 0 | 105 | 70-125 | 0 | | | |
| Chloromethane | 921.5 | 30 | 1000 | 0 | 92.2 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1089 | 30 | 1000 | 0 | 109 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 970 | 30 | 1000 | 0 | 97 | 70-125 | 0 | | | |
| Dibromochloromethane | 871 | 30 | 1000 | 0 | 87.1 | 65-135 | 0 | | | |
| Dibromomethane | 1037 | 30 | 1000 | 0 | 104 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 812.5 | 30 | 1000 | 0 | 81.2 | 35-135 | 0 | | | |
| Ethylbenzene | 1112 | 30 | 1000 | 0 | 111 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **42817** | Instrument ID **VMS7** | | Method: **SW8260** | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 931.5 | 30 | 1000 | 0 | 93.2 | 70-135 | 0 | |
| Isopropylbenzene | 1100 | 30 | 1000 | 0 | 110 | 75-130 | 0 | |
| m,p-Xylene | 2266 | 60 | 2000 | 0 | 113 | 80-125 | 0 | |
| Methyl tert-butyl ether | 1108 | 30 | 1000 | 0 | 111 | 75-125 | 0 | |
| Methylene chloride | 1178 | 30 | 1000 | 73.82 | 110 | 55-145 | 0 | |
| Naphthalene | 939.5 | 100 | 1000 | 0 | 94 | 40-140 | 0 | |
| n-Butylbenzene | 1001 | 30 | 1000 | 0 | 100 | 65-140 | 0 | |
| n-Propylbenzene | 1079 | 30 | 1000 | 0 | 108 | 65-135 | 0 | |
| o-Xylene | 1126 | 30 | 1000 | 0 | 113 | 75-125 | 0 | |
| p-Isopropyltoluene | 1042 | 30 | 1000 | 0 | 104 | 75-135 | 0 | |
| sec-Butylbenzene | 1098 | 30 | 1000 | 0 | 110 | 65-130 | 0 | |
| Styrene | 1115 | 30 | 1000 | 0 | 112 | 75-125 | 0 | |
| tert-Butylbenzene | 1122 | 30 | 1000 | 0 | 112 | 65-130 | 0 | |
| Tetrachloroethene | 1042 | 30 | 1000 | 0 | 104 | 64-140 | 0 | |
| Tetrahydrofuran | 1078 | 100 | 1000 | 0 | 108 | 70-135 | 0 | |
| Toluene | 1139 | 30 | 1000 | 0 | 114 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 1103 | 30 | 1000 | 0 | 110 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 1000 | 30 | 1000 | 0 | 100 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 691 | 30 | 1000 | 0 | 69.1 | 70-135 | 0 | S |
| Trichloroethene | 1012 | 30 | 1000 | 0 | 101 | 75-125 | 0 | |
| Trichlorofluoromethane | 989.5 | 30 | 1000 | 0 | 99 | 25-185 | 0 | |
| Vinyl chloride | 913 | 30 | 1000 | 0 | 91.3 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *1102* | 0 | *1000* | 0 | *110* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1046* | 0 | *1000* | 0 | *105* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1026* | 0 | *1000* | 0 | *103* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1036* | 0 | *1000* | 0 | *104* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1208140-01B MSD** Units: **µg/Kg** Analysis Date: **8/7/2012 10:25 PM**
Client ID: Run ID: **VMS6_120807A** SeqNo: **2047551** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 896.5 | 30 | 1000 | 0 | 89.6 | 75-125 | 966 | 7.46 | 30 | |
| 1,1,1-Trichloroethane | 1031 | 30 | 1000 | 0 | 103 | 70-135 | 1117 | 8.01 | 30 | |
| 1,1,2,2-Tetrachloroethane | 951 | 30 | 1000 | 0 | 95.1 | 55-130 | 969 | 1.88 | 30 | |
| 1,1,2-Trichloroethane | 943.5 | 30 | 1000 | 0 | 94.4 | 60-125 | 993.5 | 5.16 | 30 | |
| 1,1-Dichloroethane | 1020 | 30 | 1000 | 0 | 102 | 75-125 | 1044 | 2.23 | 30 | |
| 1,1-Dichloroethene | 1022 | 30 | 1000 | 0 | 102 | 65-135 | 1070 | 4.59 | 30 | |
| 1,2,3-Trichlorobenzene | 905 | 30 | 1000 | 0 | 90.5 | 60-135 | 919 | 1.54 | 30 | |
| 1,2,3-Trichloropropane | 982 | 30 | 1000 | 0 | 98.2 | 65-130 | 995.5 | 1.37 | 30 | |
| 1,2,3-Trimethylbenzene | 913.5 | 30 | 1000 | 0 | 91.4 | 65-135 | 926 | 1.36 | 30 | |
| 1,2,4-Trichlorobenzene | 970 | 30 | 1000 | 0 | 97 | 65-130 | 977.5 | 0.77 | 30 | |
| 1,2,4-Trimethylbenzene | 1066 | 30 | 1000 | 0 | 107 | 65-135 | 1094 | 2.64 | 30 | |
| 1,2-Dibromo-3-chloropropane | 869.5 | 30 | 1000 | 0 | 87 | 40-135 | 815 | 6.47 | 30 | |
| 1,2-Dibromoethane | 969 | 30 | 1000 | 0 | 96.9 | 70-125 | 1033 | 6.39 | 30 | |
| 1,2-Dichlorobenzene | 973 | 30 | 1000 | 0 | 97.3 | 75-120 | 982 | 0.921 | 30 | |
| 1,2-Dichloroethane | 1046 | 30 | 1000 | 0 | 105 | 70-135 | 1106 | 5.62 | 30 | |
| 1,2-Dichloropropane | 1014 | 30 | 1000 | 0 | 101 | 70-120 | 1085 | 6.77 | 30 | |
| 1,3,5-Trimethylbenzene | 1063 | 30 | 1000 | 0 | 106 | 65-135 | 1116 | 4.82 | 30 | |
| 1,3-Dichlorobenzene | 961 | 30 | 1000 | 0 | 96.1 | 70-125 | 997.5 | 3.73 | 30 | |
| 1,4-Dichlorobenzene | 963.5 | 30 | 1000 | 0 | 96.4 | 70-125 | 990 | 2.71 | 30 | |
| 2-Butanone | 1015 | 100 | 1000 | 82.73 | 93.2 | 30-160 | 984.5 | 3.05 | 30 | |
| 2-Hexanone | 992.5 | 30 | 1000 | 0 | 99.2 | 45-145 | 1034 | 4.05 | 30 | |
| 4-Methyl-2-pentanone | 1216 | 30 | 1000 | 0 | 122 | 45-145 | 1210 | 0.495 | 30 | |
| Acetone | 1100 | 100 | 1000 | 0 | 110 | 20-160 | 995 | 10 | 30 | B |
| Acrylonitrile | 1037 | 30 | 1000 | 0 | 104 | 70-135 | 1022 | 1.46 | 30 | |
| Benzene | 1018 | 30 | 1000 | 0 | 102 | 75-125 | 1088 | 6.6 | 30 | |
| Bromobenzene | 1052 | 30 | 1000 | 0 | 105 | 65-120 | 1104 | 4.87 | 30 | |
| Bromochloromethane | 1024 | 30 | 1000 | 0 | 102 | 70-125 | 1104 | 7.61 | 30 | |
| Bromodichloromethane | 992 | 30 | 1000 | 0 | 99.2 | 70-130 | 1081 | 8.59 | 30 | |
| Bromoform | 890 | 30 | 1000 | 0 | 89 | 55-135 | 916.5 | 2.93 | 30 | |
| Bromomethane | 660 | 30 | 1000 | 0 | 66 | 30-160 | 747 | 12.4 | 30 | |
| Carbon disulfide | 1072 | 30 | 1000 | 0 | 107 | 45-160 | 1160 | 7.93 | 30 | |
| Carbon tetrachloride | 956.5 | 30 | 1000 | 0 | 95.6 | 65-135 | 1096 | 13.5 | 30 | |
| Chlorobenzene | 1006 | 30 | 1000 | 0 | 101 | 75-125 | 1066 | 5.79 | 30 | |
| Chloroethane | 934 | 100 | 1000 | 0 | 93.4 | 40-155 | 987 | 5.52 | 30 | |
| Chloroform | 999 | 30 | 1000 | 0 | 99.9 | 70-125 | 1046 | 4.55 | 30 | |
| Chloromethane | 873 | 30 | 1000 | 0 | 87.3 | 50-130 | 921.5 | 5.41 | 30 | |
| cis-1,2-Dichloroethene | 1032 | 30 | 1000 | 0 | 103 | 65-125 | 1089 | 5.33 | 30 | |
| cis-1,3-Dichloropropene | 918 | 30 | 1000 | 0 | 91.8 | 70-125 | 970 | 5.51 | 30 | |
| Dibromochloromethane | 816 | 30 | 1000 | 0 | 81.6 | 65-135 | 871 | 6.52 | 30 | |
| Dibromomethane | 978 | 30 | 1000 | 0 | 97.8 | 75-130 | 1037 | 5.86 | 30 | |
| Dichlorodifluoromethane | 775 | 30 | 1000 | 0 | 77.5 | 35-135 | 812.5 | 4.72 | 30 | |
| Ethylbenzene | 1054 | 30 | 1000 | 0 | 105 | 75-125 | 1112 | 5.26 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **42817** | Instrument ID **VMS7** | | Method: **SW8260** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 903.5 | 30 | 1000 | 0 | 90.4 | 70-135 | 931.5 | 3.05 | 30 |
| Isopropylbenzene | 1044 | 30 | 1000 | 0 | 104 | 75-130 | 1100 | 5.27 | 30 |
| m,p-Xylene | 2134 | 60 | 2000 | 0 | 107 | 80-125 | 2266 | 5.95 | 30 |
| Methyl tert-butyl ether | 1088 | 30 | 1000 | 0 | 109 | 75-125 | 1108 | 1.87 | 30 |
| Methylene chloride | 1158 | 30 | 1000 | 73.82 | 108 | 55-145 | 1178 | 1.67 | 30 |
| Naphthalene | 967.5 | 100 | 1000 | 0 | 96.8 | 40-140 | 939.5 | 2.94 | 30 |
| n-Butylbenzene | 985.5 | 30 | 1000 | 0 | 98.6 | 65-140 | 1001 | 1.56 | 30 |
| n-Propylbenzene | 1030 | 30 | 1000 | 0 | 103 | 65-135 | 1079 | 4.6 | 30 |
| o-Xylene | 1052 | 30 | 1000 | 0 | 105 | 75-125 | 1126 | 6.89 | 30 |
| p-Isopropyltoluene | 1028 | 30 | 1000 | 0 | 103 | 75-135 | 1042 | 1.3 | 30 |
| sec-Butylbenzene | 1092 | 30 | 1000 | 0 | 109 | 65-130 | 1098 | 0.502 | 30 |
| Styrene | 1050 | 30 | 1000 | 0 | 105 | 75-125 | 1115 | 6.05 | 30 |
| tert-Butylbenzene | 1088 | 30 | 1000 | 0 | 109 | 65-130 | 1122 | 3.03 | 30 |
| Tetrachloroethene | 976 | 30 | 1000 | 0 | 97.6 | 64-140 | 1042 | 6.59 | 30 |
| Tetrahydrofuran | 1132 | 100 | 1000 | 0 | 113 | 70-135 | 1078 | 4.89 | 30 |
| Toluene | 1067 | 30 | 1000 | 0 | 107 | 70-125 | 1139 | 6.53 | 30 |
| trans-1,2-Dichloroethene | 1058 | 30 | 1000 | 0 | 106 | 65-135 | 1103 | 4.16 | 30 |
| trans-1,3-Dichloropropene | 957 | 30 | 1000 | 0 | 95.7 | 65-125 | 1000 | 4.39 | 30 |
| trans-1,4-Dichloro-2-butene | 723.5 | 30 | 1000 | 0 | 72.4 | 70-135 | 691 | 4.6 | 30 |
| Trichloroethene | 935 | 30 | 1000 | 0 | 93.5 | 75-125 | 1012 | 7.86 | 30 |
| Trichlorofluoromethane | 904.5 | 30 | 1000 | 0 | 90.4 | 25-185 | 989.5 | 8.98 | 30 |
| Vinyl chloride | 850.5 | 30 | 1000 | 0 | 85 | 60-125 | 913 | 7.09 | 30 |
| *Surr: 1,2-Dichloroethane-d4* | *1083* | 0 | *1000* | 0 | *108* | *70-130* | 1102 | *1.69* | *30* |
| *Surr: 4-Bromofluorobenzene* | *1036* | 0 | *1000* | 0 | *104* | *70-130* | 1046 | *0.961* | *30* |
| *Surr: Dibromofluoromethane* | *1000* | 0 | *1000* | 0 | *100* | *70-130* | 1026 | *2.47* | *30* |
| *Surr: Toluene-d8* | *1048* | 0 | *1000* | 0 | *105* | *70-130* | 1036 | *1.1* | *30* |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208120-01B | 1208120-02B | 1208120-03B |
| 1208120-04B | 1208120-05B | 1208120-06B |
| 1208120-07B | 1208120-08B | 1208120-09B |
| 1208120-10B | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 12:45 PM**
Client ID: Run ID: **VMS7_120806A** SeqNo: **2046412** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | 113 | 200 | | | | | | | | J |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 161.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 20 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *983.5* | 0 | *1000* | 0 | *98.4* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1082* | 0 | *1000* | 0 | *108* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *965.5* | 0 | *1000* | 0 | *96.6* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1020* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 01:31 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047228** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 229 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *981.5* | 0 | *1000* | 0 | *98.2* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *991* | 0 | *1000* | 0 | *99.1* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *974* | 0 | *1000* | 0 | *97.4* | *70-130* | 0 |
| *Surr: Toluene-d8* | *990.5* | 0 | *1000* | 0 | *99* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 03:31 PM**
Client ID: Run ID: **VMS6_120807A** SeqNo: **2047558** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 185.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1107* | 0 | *1000* | 0 | *111* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1065* | 0 | *1000* | 0 | *106* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1002* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1086* | 0 | *1000* | 0 | *109* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 08:46 AM**
Client ID: Run ID: **VMS7_120806A** SeqNo: **2046411** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1107 | 30 | 1000 | 0 | 111 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1232 | 30 | 1000 | 0 | 123 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1040 | 30 | 1000 | 0 | 104 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1075 | 30 | 1000 | 0 | 108 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1058 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1200 | 30 | 1000 | 0 | 120 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1065 | 30 | 1000 | 0 | 106 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1062 | 30 | 1000 | 0 | 106 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 945.5 | 30 | 1000 | 0 | 94.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1158 | 30 | 1000 | 0 | 116 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1119 | 30 | 1000 | 0 | 112 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 993.5 | 30 | 1000 | 0 | 99.4 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1074 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1104 | 30 | 1000 | 0 | 110 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1034 | 30 | 1000 | 0 | 103 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1084 | 30 | 1000 | 0 | 108 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1167 | 30 | 1000 | 0 | 117 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1128 | 30 | 1000 | 0 | 113 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1160 | 30 | 1000 | 0 | 116 | 70-125 | 0 | | | |
| 2-Butanone | 1084 | 200 | 1000 | 0 | 108 | 30-160 | 0 | | | |
| 2-Hexanone | 1074 | 30 | 1000 | 0 | 107 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1370 | 30 | 1000 | 0 | 137 | 45-145 | 0 | | | |
| Acetone | 771.5 | 100 | 1000 | 0 | 77.2 | 20-160 | 0 | | | B |
| Acrylonitrile | 934.5 | 100 | 1000 | 0 | 93.4 | 70-135 | 0 | | | |
| Benzene | 1136 | 30 | 1000 | 0 | 114 | 75-125 | 0 | | | |
| Bromobenzene | 1100 | 30 | 1000 | 0 | 110 | 65-120 | 0 | | | |
| Bromochloromethane | 1116 | 30 | 1000 | 0 | 112 | 70-125 | 0 | | | |
| Bromodichloromethane | 988.5 | 30 | 1000 | 0 | 98.8 | 70-130 | 0 | | | |
| Bromoform | 1051 | 30 | 1000 | 0 | 105 | 55-135 | 0 | | | |
| Bromomethane | 1238 | 75 | 1000 | 0 | 124 | 30-160 | 0 | | | |
| Carbon disulfide | 1187 | 30 | 1000 | 0 | 119 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1251 | 30 | 1000 | 0 | 125 | 65-135 | 0 | | | |
| Chlorobenzene | 1148 | 30 | 1000 | 0 | 115 | 75-125 | 0 | | | |
| Chloroethane | 1066 | 100 | 1000 | 0 | 107 | 40-155 | 0 | | | |
| Chloroform | 1080 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| Chloromethane | 1048 | 100 | 1000 | 0 | 105 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1096 | 30 | 1000 | 0 | 110 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1044 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| Dibromochloromethane | 1026 | 30 | 1000 | 0 | 103 | 65-135 | 0 | | | |
| Dibromomethane | 1025 | 30 | 1000 | 0 | 102 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 895 | 30 | 1000 | 0 | 89.5 | 35-135 | 0 | | | |
| Ethylbenzene | 1190 | 30 | 1000 | 0 | 119 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **42826** | Instrument ID **VMS7** | | Method: **SW8260** | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 981.5 | 30 | 1000 | 0 | 98.2 | 70-135 | 0 |
| Isopropylbenzene | 1196 | 30 | 1000 | 0 | 120 | 75-130 | 0 |
| m,p-Xylene | 2370 | 60 | 2000 | 0 | 118 | 80-125 | 0 |
| Methyl tert-butyl ether | 953.5 | 30 | 1000 | 0 | 95.4 | 75-125 | 0 |
| Methylene chloride | 1024 | 30 | 1000 | 0 | 102 | 55-145 | 0 |
| Naphthalene | 1163 | 100 | 1000 | 0 | 116 | 40-140 | 0 |
| n-Butylbenzene | 1232 | 30 | 1000 | 0 | 123 | 65-140 | 0 |
| n-Propylbenzene | 1148 | 30 | 1000 | 0 | 115 | 65-135 | 0 |
| o-Xylene | 1146 | 30 | 1000 | 0 | 115 | 75-125 | 0 |
| p-Isopropyltoluene | 1160 | 30 | 1000 | 0 | 116 | 75-135 | 0 |
| sec-Butylbenzene | 1162 | 30 | 1000 | 0 | 116 | 65-130 | 0 |
| Styrene | 1137 | 30 | 1000 | 0 | 114 | 75-125 | 0 |
| tert-Butylbenzene | 1116 | 30 | 1000 | 0 | 112 | 65-130 | 0 |
| Tetrachloroethene | 1394 | 30 | 1000 | 0 | 139 | 64-140 | 0 |
| Tetrahydrofuran | 985 | 200 | 1000 | 0 | 98.5 | 70-135 | 0 |
| Toluene | 1208 | 30 | 1000 | 0 | 121 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1118 | 30 | 1000 | 0 | 112 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1088 | 30 | 1000 | 0 | 109 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 1056 | 30 | 1000 | 0 | 106 | 70-135 | 0 |
| Trichloroethene | 1234 | 30 | 1000 | 0 | 123 | 75-125 | 0 |
| Trichlorofluoromethane | 1012 | 30 | 1000 | 0 | 101 | 25-185 | 0 |
| Vinyl chloride | 1032 | 30 | 1000 | 0 | 103 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *966.5* | 0 | *1000* | 0 | *96.6* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1002* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1038* | 0 | *1000* | 0 | *104* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 09:37 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047229** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 962.5 | 30 | 1000 | 0 | 96.2 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1063 | 30 | 1000 | 0 | 106 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 971.5 | 30 | 1000 | 0 | 97.2 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 978 | 30 | 1000 | 0 | 97.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 992.5 | 30 | 1000 | 0 | 99.2 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1102 | 30 | 1000 | 0 | 110 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 909.5 | 30 | 1000 | 0 | 91 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1022 | 30 | 1000 | 0 | 102 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 867.5 | 30 | 1000 | 0 | 86.8 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 968 | 30 | 1000 | 0 | 96.8 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1032 | 30 | 1000 | 0 | 103 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 886 | 30 | 1000 | 0 | 88.6 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1021 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 968.5 | 30 | 1000 | 0 | 96.8 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1027 | 30 | 1000 | 0 | 103 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1046 | 30 | 1000 | 0 | 105 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1065 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 972 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 973.5 | 30 | 1000 | 0 | 97.4 | 70-125 | 0 | | | |
| 2-Butanone | 1214 | 200 | 1000 | 0 | 121 | 30-160 | 0 | | | |
| 2-Hexanone | 1294 | 30 | 1000 | 0 | 129 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1304 | 30 | 1000 | 0 | 130 | 45-145 | 0 | | | |
| Acetone | 1163 | 100 | 1000 | 0 | 116 | 20-160 | 0 | | | B |
| Acrylonitrile | 1072 | 100 | 1000 | 0 | 107 | 70-135 | 0 | | | |
| Benzene | 1064 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |
| Bromobenzene | 1020 | 30 | 1000 | 0 | 102 | 65-120 | 0 | | | |
| Bromochloromethane | 1074 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| Bromodichloromethane | 968.5 | 30 | 1000 | 0 | 96.8 | 70-130 | 0 | | | |
| Bromoform | 958.5 | 30 | 1000 | 0 | 95.8 | 55-135 | 0 | | | |
| Bromomethane | 1236 | 75 | 1000 | 0 | 124 | 30-160 | 0 | | | |
| Carbon disulfide | 1158 | 30 | 1000 | 0 | 116 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1062 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| Chlorobenzene | 1014 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 1208 | 100 | 1000 | 0 | 121 | 40-155 | 0 | | | |
| Chloroform | 971.5 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| Chloromethane | 1179 | 100 | 1000 | 0 | 118 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1018 | 30 | 1000 | 0 | 102 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1008 | 30 | 1000 | 0 | 101 | 70-125 | 0 | | | |
| Dibromochloromethane | 896 | 30 | 1000 | 0 | 89.6 | 65-135 | 0 | | | |
| Dibromomethane | 1006 | 30 | 1000 | 0 | 101 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 1089 | 30 | 1000 | 0 | 109 | 35-135 | 0 | | | |
| Ethylbenzene | 1063 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **42826** | Instrument ID **VMS7** | | Method: **SW8260** | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 804 | 30 | 1000 | 0 | 80.4 | 70-135 | 0 |
| Isopropylbenzene | 1044 | 30 | 1000 | 0 | 104 | 75-130 | 0 |
| m,p-Xylene | 2159 | 60 | 2000 | 0 | 108 | 80-125 | 0 |
| Methyl tert-butyl ether | 1013 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| Methylene chloride | 1024 | 30 | 1000 | 0 | 102 | 55-145 | 0 |
| Naphthalene | 929.5 | 100 | 1000 | 0 | 93 | 40-140 | 0 |
| n-Butylbenzene | 1026 | 30 | 1000 | 0 | 103 | 65-140 | 0 |
| n-Propylbenzene | 1039 | 30 | 1000 | 0 | 104 | 65-135 | 0 |
| o-Xylene | 1049 | 30 | 1000 | 0 | 105 | 75-125 | 0 |
| p-Isopropyltoluene | 999 | 30 | 1000 | 0 | 99.9 | 75-135 | 0 |
| sec-Butylbenzene | 1062 | 30 | 1000 | 0 | 106 | 65-130 | 0 |
| Styrene | 1018 | 30 | 1000 | 0 | 102 | 75-125 | 0 |
| tert-Butylbenzene | 1026 | 30 | 1000 | 0 | 103 | 65-130 | 0 |
| Tetrachloroethene | 1078 | 30 | 1000 | 0 | 108 | 64-140 | 0 |
| Tetrahydrofuran | 991.5 | 200 | 1000 | 0 | 99.2 | 70-135 | 0 |
| Toluene | 1076 | 30 | 1000 | 0 | 108 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1053 | 30 | 1000 | 0 | 105 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1009 | 30 | 1000 | 0 | 101 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 947 | 30 | 1000 | 0 | 94.7 | 70-135 | 0 |
| Trichloroethene | 1012 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| Trichlorofluoromethane | 933.5 | 30 | 1000 | 0 | 93.4 | 25-185 | 0 |
| Vinyl chloride | 1216 | 30 | 1000 | 0 | 122 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *887* | 0 | *1000* | 0 | *88.7* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1080* | 0 | *1000* | 0 | *108* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *873.5* | 0 | *1000* | 0 | *87.4* | *70-130* | 0 |
| *Surr: Toluene-d8* | *927* | 0 | *1000* | 0 | *92.7* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 02:18 PM**
Client ID: Run ID: **VMS6_120807A** SeqNo: **2047557** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 899 | 30 | 1000 | 0 | 89.9 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1068 | 30 | 1000 | 0 | 107 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 948.5 | 30 | 1000 | 0 | 94.8 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 938 | 30 | 1000 | 0 | 93.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 995 | 30 | 1000 | 0 | 99.5 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1070 | 30 | 1000 | 0 | 107 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1018 | 30 | 1000 | 0 | 102 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 972 | 30 | 1000 | 0 | 97.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 941.5 | 30 | 1000 | 0 | 94.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1032 | 30 | 1000 | 0 | 103 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1081 | 30 | 1000 | 0 | 108 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 883.5 | 30 | 1000 | 0 | 88.4 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 987.5 | 30 | 1000 | 0 | 98.8 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 976.5 | 30 | 1000 | 0 | 97.6 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1049 | 30 | 1000 | 0 | 105 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1008 | 30 | 1000 | 0 | 101 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1110 | 30 | 1000 | 0 | 111 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 997 | 30 | 1000 | 0 | 99.7 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1019 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| 2-Butanone | 767.5 | 200 | 1000 | 0 | 76.8 | 30-160 | 0 | | | |
| 2-Hexanone | 962 | 30 | 1000 | 0 | 96.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1132 | 30 | 1000 | 0 | 113 | 45-145 | 0 | | | |
| Acetone | 839.5 | 100 | 1000 | 0 | 84 | 20-160 | 0 | | | B |
| Acrylonitrile | 995.5 | 100 | 1000 | 0 | 99.6 | 70-135 | 0 | | | |
| Benzene | 1008 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Bromobenzene | 1058 | 30 | 1000 | 0 | 106 | 65-120 | 0 | | | |
| Bromochloromethane | 1056 | 30 | 1000 | 0 | 106 | 70-125 | 0 | | | |
| Bromodichloromethane | 1060 | 30 | 1000 | 0 | 106 | 70-130 | 0 | | | |
| Bromoform | 962 | 30 | 1000 | 0 | 96.2 | 55-135 | 0 | | | |
| Bromomethane | 969.5 | 75 | 1000 | 0 | 97 | 30-160 | 0 | | | |
| Carbon disulfide | 1198 | 30 | 1000 | 0 | 120 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1094 | 30 | 1000 | 0 | 109 | 65-135 | 0 | | | |
| Chlorobenzene | 1008 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 915.5 | 100 | 1000 | 0 | 91.6 | 40-155 | 0 | | | |
| Chloroform | 970 | 30 | 1000 | 0 | 97 | 70-125 | 0 | | | |
| Chloromethane | 875 | 100 | 1000 | 0 | 87.5 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1036 | 30 | 1000 | 0 | 104 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 961 | 30 | 1000 | 0 | 96.1 | 70-125 | 0 | | | |
| Dibromochloromethane | 881 | 30 | 1000 | 0 | 88.1 | 65-135 | 0 | | | |
| Dibromomethane | 967.5 | 30 | 1000 | 0 | 96.8 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 886 | 30 | 1000 | 0 | 88.6 | 35-135 | 0 | | | |
| Ethylbenzene | 1061 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1009 | 30 | 1000 | 0 | 101 | 70-135 | 0 |
| Isopropylbenzene | 1078 | 30 | 1000 | 0 | 108 | 75-130 | 0 |
| m,p-Xylene | 2132 | 60 | 2000 | 0 | 107 | 80-125 | 0 |
| Methyl tert-butyl ether | 1020 | 30 | 1000 | 0 | 102 | 75-125 | 0 |
| Methylene chloride | 1058 | 30 | 1000 | 0 | 106 | 55-145 | 0 |
| Naphthalene | 1015 | 100 | 1000 | 0 | 102 | 40-140 | 0 |
| n-Butylbenzene | 1095 | 30 | 1000 | 0 | 110 | 65-140 | 0 |
| n-Propylbenzene | 1075 | 30 | 1000 | 0 | 108 | 65-135 | 0 |
| o-Xylene | 1062 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| p-Isopropyltoluene | 1108 | 30 | 1000 | 0 | 111 | 75-135 | 0 |
| sec-Butylbenzene | 1146 | 30 | 1000 | 0 | 115 | 65-130 | 0 |
| Styrene | 1056 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| tert-Butylbenzene | 1116 | 30 | 1000 | 0 | 112 | 65-130 | 0 |
| Tetrachloroethene | 1030 | 30 | 1000 | 0 | 103 | 64-140 | 0 |
| Tetrahydrofuran | 1038 | 200 | 1000 | 0 | 104 | 70-135 | 0 |
| Toluene | 1066 | 30 | 1000 | 0 | 107 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1051 | 30 | 1000 | 0 | 105 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 992 | 30 | 1000 | 0 | 99.2 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 778 | 30 | 1000 | 0 | 77.8 | 70-135 | 0 |
| Trichloroethene | 944.5 | 30 | 1000 | 0 | 94.4 | 75-125 | 0 |
| Trichlorofluoromethane | 987 | 30 | 1000 | 0 | 98.7 | 25-185 | 0 |
| Vinyl chloride | 903 | 30 | 1000 | 0 | 90.3 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1104* | 0 | *1000* | 0 | *110* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1051* | 0 | *1000* | 0 | *105* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1061* | 0 | *1000* | 0 | *106* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MS** Sample ID: **1208138-02B MS** Units: **µg/Kg** Analysis Date: **8/7/2012 10:02 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047262** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 5389 | 170 | 5667 | 0 | 95.1 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 5882 | 170 | 5667 | 0 | 104 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 5301 | 170 | 5667 | 0 | 93.6 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 5429 | 170 | 5667 | 0 | 95.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 5780 | 170 | 5667 | 0 | 102 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 5944 | 170 | 5667 | 0 | 105 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 4907 | 170 | 5667 | 0 | 86.6 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 5448 | 170 | 5667 | 0 | 96.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 4938 | 170 | 5667 | 0 | 87.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 5205 | 170 | 5667 | 0 | 91.8 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 5584 | 170 | 5667 | 0 | 98.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 4958 | 170 | 5667 | 0 | 87.5 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 5621 | 170 | 5667 | 0 | 99.2 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 5451 | 170 | 5667 | 0 | 96.2 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 5800 | 170 | 5667 | 0 | 102 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 5652 | 170 | 5667 | 0 | 99.8 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 5715 | 170 | 5667 | 0 | 101 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 5502 | 170 | 5667 | 0 | 97.1 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 5602 | 170 | 5667 | 0 | 98.8 | 70-125 | 0 | | | |
| 2-Butanone | 7310 | 570 | 5667 | 0 | 129 | 30-160 | 0 | | | |
| 2-Hexanone | 6993 | 170 | 5667 | 0 | 123 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 7446 | 170 | 5667 | 0 | 131 | 45-145 | 0 | | | |
| Acetone | 8290 | 570 | 5667 | 0 | 146 | 20-160 | 0 | | | B |
| Acrylonitrile | 6114 | 170 | 5667 | 0 | 108 | 70-135 | 0 | | | |
| Benzene | 6015 | 170 | 5667 | 0 | 106 | 75-125 | 0 | | | |
| Bromobenzene | 5686 | 170 | 5667 | 0 | 100 | 65-120 | 0 | | | |
| Bromochloromethane | 6015 | 170 | 5667 | 0 | 106 | 70-125 | 0 | | | |
| Bromodichloromethane | 5485 | 170 | 5667 | 0 | 96.8 | 70-130 | 0 | | | |
| Bromoform | 5618 | 170 | 5667 | 0 | 99.2 | 55-135 | 0 | | | |
| Bromomethane | 6896 | 170 | 5667 | 0 | 122 | 30-160 | 0 | | | |
| Carbon disulfide | 6613 | 170 | 5667 | 0 | 117 | 45-160 | 0 | | | |
| Carbon tetrachloride | 5865 | 170 | 5667 | 0 | 104 | 65-135 | 0 | | | |
| Chlorobenzene | 5678 | 170 | 5667 | 0 | 100 | 75-125 | 0 | | | |
| Chloroethane | 6797 | 570 | 5667 | 0 | 120 | 40-155 | 0 | | | |
| Chloroform | 5610 | 170 | 5667 | 0 | 99 | 70-125 | 0 | | | |
| Chloromethane | 6551 | 170 | 5667 | 0 | 116 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 5559 | 170 | 5667 | 0 | 98.1 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 5378 | 170 | 5667 | 0 | 94.9 | 70-125 | 0 | | | |
| Dibromochloromethane | 5222 | 170 | 5667 | 0 | 92.2 | 65-135 | 0 | | | |
| Dibromomethane | 5664 | 170 | 5667 | 0 | 100 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 5939 | 170 | 5667 | 0 | 105 | 35-135 | 0 | | | |
| Ethylbenzene | 5817 | 170 | 5667 | 0 | 103 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **42826** | Instrument ID **VMS7** | | Method: **SW8260** | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 4519 | 170 | 5667 | 0 | 79.8 | 70-135 | 0 |
| Isopropylbenzene | 5689 | 170 | 5667 | 0 | 100 | 75-130 | 0 |
| m,p-Xylene | 11850 | 340 | 11330 | 0 | 105 | 80-125 | 0 |
| Methyl tert-butyl ether | 5822 | 170 | 5667 | 0 | 103 | 75-125 | 0 |
| Methylene chloride | 6157 | 170 | 5667 | 0 | 109 | 55-145 | 0 |
| Naphthalene | 5148 | 570 | 5667 | 0 | 90.8 | 40-140 | 0 |
| n-Butylbenzene | 5378 | 170 | 5667 | 0 | 94.9 | 65-140 | 0 |
| n-Propylbenzene | 5587 | 170 | 5667 | 0 | 98.6 | 65-135 | 0 |
| o-Xylene | 5851 | 170 | 5667 | 0 | 103 | 75-125 | 0 |
| p-Isopropyltoluene | 5420 | 170 | 5667 | 0 | 95.6 | 75-135 | 0 |
| sec-Butylbenzene | 5624 | 170 | 5667 | 0 | 99.2 | 65-130 | 0 |
| Styrene | 5482 | 170 | 5667 | 0 | 96.8 | 75-125 | 0 |
| tert-Butylbenzene | 5505 | 170 | 5667 | 0 | 97.2 | 65-130 | 0 |
| Tetrachloroethene | 5822 | 170 | 5667 | 0 | 103 | 64-140 | 0 |
| Tetrahydrofuran | 5403 | 570 | 5667 | 0 | 95.4 | 70-135 | 0 |
| Toluene | 6012 | 170 | 5667 | 0 | 106 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 5976 | 170 | 5667 | 0 | 105 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 5307 | 170 | 5667 | 0 | 93.6 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 4771 | 170 | 5667 | 0 | 84.2 | 70-135 | 0 |
| Trichloroethene | 5726 | 170 | 5667 | 0 | 101 | 75-125 | 0 |
| Trichlorofluoromethane | 5038 | 170 | 5667 | 0 | 88.9 | 25-185 | 0 |
| Vinyl chloride | 6823 | 170 | 5667 | 0 | 120 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *4879* | 0 | *5667* | 0 | *86.1* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *6126* | 0 | *5667* | 0 | *108* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *4941* | 0 | *5667* | 0 | *87.2* | *70-130* | 0 |
| *Surr: Toluene-d8* | *5244* | 0 | *5667* | 0 | *92.6* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1208138-02B MSD** Units: **µg/Kg** Analysis Date: **8/7/2012 10:26 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047263** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 5103 | 170 | 5667 | 0 | 90 | 75-125 | 5389 | 5.46 | 30 | |
| 1,1,1-Trichloroethane | 5599 | 170 | 5667 | 0 | 98.8 | 70-135 | 5882 | 4.94 | 30 | |
| 1,1,2,2-Tetrachloroethane | 5162 | 170 | 5667 | 0 | 91.1 | 55-130 | 5301 | 2.65 | 30 | |
| 1,1,2-Trichloroethane | 5239 | 170 | 5667 | 0 | 92.4 | 60-125 | 5429 | 3.56 | 30 | |
| 1,1-Dichloroethane | 5284 | 170 | 5667 | 0 | 93.2 | 75-125 | 5780 | 8.96 | 30 | |
| 1,1-Dichloroethene | 5579 | 170 | 5667 | 0 | 98.4 | 65-135 | 5944 | 6.34 | 30 | |
| 1,2,3-Trichlorobenzene | 4916 | 170 | 5667 | 0 | 86.8 | 60-135 | 4907 | 0.173 | 30 | |
| 1,2,3-Trichloropropane | 5386 | 170 | 5667 | 0 | 95 | 65-130 | 5448 | 1.15 | 30 | |
| 1,2,3-Trimethylbenzene | 4732 | 170 | 5667 | 0 | 83.5 | 65-135 | 4938 | 4.28 | 30 | |
| 1,2,4-Trichlorobenzene | 5165 | 170 | 5667 | 0 | 91.2 | 65-130 | 5205 | 0.765 | 30 | |
| 1,2,4-Trimethylbenzene | 5460 | 170 | 5667 | 0 | 96.4 | 65-135 | 5584 | 2.26 | 30 | |
| 1,2-Dibromo-3-chloropropane | 4706 | 170 | 5667 | 0 | 83 | 40-135 | 4958 | 5.22 | 30 | |
| 1,2-Dibromoethane | 5412 | 170 | 5667 | 0 | 95.5 | 70-125 | 5621 | 3.8 | 30 | |
| 1,2-Dichlorobenzene | 5312 | 170 | 5667 | 0 | 93.8 | 75-120 | 5451 | 2.58 | 30 | |
| 1,2-Dichloroethane | 5664 | 170 | 5667 | 0 | 100 | 70-135 | 5800 | 2.37 | 30 | |
| 1,2-Dichloropropane | 5607 | 170 | 5667 | 0 | 99 | 70-120 | 5652 | 0.805 | 30 | |
| 1,3,5-Trimethylbenzene | 5562 | 170 | 5667 | 0 | 98.2 | 65-135 | 5715 | 2.71 | 30 | |
| 1,3-Dichlorobenzene | 5321 | 170 | 5667 | 0 | 93.9 | 70-125 | 5502 | 3.35 | 30 | |
| 1,4-Dichlorobenzene | 5369 | 170 | 5667 | 0 | 94.8 | 70-125 | 5602 | 4.24 | 30 | |
| 2-Butanone | 7571 | 570 | 5667 | 0 | 134 | 30-160 | 7310 | 3.5 | 30 | |
| 2-Hexanone | 7064 | 170 | 5667 | 0 | 125 | 45-145 | 6993 | 1.01 | 30 | |
| 4-Methyl-2-pentanone | 7010 | 170 | 5667 | 0 | 124 | 45-145 | 7446 | 6.04 | 30 | |
| Acetone | 7531 | 570 | 5667 | 0 | 133 | 20-160 | 8290 | 9.6 | 30 | B |
| Acrylonitrile | 6001 | 170 | 5667 | 0 | 106 | 70-135 | 6114 | 1.87 | 30 | |
| Benzene | 5743 | 170 | 5667 | 0 | 101 | 75-125 | 6015 | 4.63 | 30 | |
| Bromobenzene | 5502 | 170 | 5667 | 0 | 97.1 | 65-120 | 5686 | 3.29 | 30 | |
| Bromochloromethane | 5701 | 170 | 5667 | 0 | 101 | 70-125 | 6015 | 5.37 | 30 | |
| Bromodichloromethane | 5341 | 170 | 5667 | 0 | 94.2 | 70-130 | 5485 | 2.67 | 30 | |
| Bromoform | 5658 | 170 | 5667 | 0 | 99.8 | 55-135 | 5618 | 0.704 | 30 | |
| Bromomethane | 6214 | 170 | 5667 | 0 | 110 | 30-160 | 6896 | 10.4 | 30 | |
| Carbon disulfide | 6143 | 170 | 5667 | 0 | 108 | 45-160 | 6613 | 7.37 | 30 | |
| Carbon tetrachloride | 5684 | 170 | 5667 | 0 | 100 | 65-135 | 5865 | 3.14 | 30 | |
| Chlorobenzene | 5409 | 170 | 5667 | 0 | 95.4 | 75-125 | 5678 | 4.86 | 30 | |
| Chloroethane | 6338 | 570 | 5667 | 0 | 112 | 40-155 | 6797 | 6.99 | 30 | |
| Chloroform | 5242 | 170 | 5667 | 0 | 92.5 | 70-125 | 5610 | 6.79 | 30 | |
| Chloromethane | 6262 | 170 | 5667 | 0 | 110 | 50-130 | 6551 | 4.51 | 30 | |
| cis-1,2-Dichloroethene | 5318 | 170 | 5667 | 0 | 93.8 | 65-125 | 5559 | 4.43 | 30 | |
| cis-1,3-Dichloropropene | 5123 | 170 | 5667 | 0 | 90.4 | 70-125 | 5378 | 4.86 | 30 | |
| Dibromochloromethane | 4995 | 170 | 5667 | 0 | 88.2 | 65-135 | 5222 | 4.44 | 30 | |
| Dibromomethane | 5284 | 170 | 5667 | 0 | 93.2 | 75-130 | 5664 | 6.94 | 30 | |
| Dichlorodifluoromethane | 5457 | 170 | 5667 | 0 | 96.3 | 35-135 | 5939 | 8.45 | 30 | |
| Ethylbenzene | 5655 | 170 | 5667 | 0 | 99.8 | 75-125 | 5817 | 2.82 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 4273 | 170 | 5667 | 0 | 75.4 | 70-135 | 4519 | 5.61 | 30 |
| Isopropylbenzene | 5531 | 170 | 5667 | 0 | 97.6 | 75-130 | 5689 | 2.83 | 30 |
| m,p-Xylene | 11400 | 340 | 11330 | 0 | 101 | 80-125 | 11850 | 3.9 | 30 |
| Methyl tert-butyl ether | 5636 | 170 | 5667 | 0 | 99.4 | 75-125 | 5822 | 3.26 | 30 |
| Methylene chloride | 5704 | 170 | 5667 | 0 | 101 | 55-145 | 6157 | 7.64 | 30 |
| Naphthalene | 5176 | 570 | 5667 | 0 | 91.4 | 40-140 | 5148 | 0.549 | 30 |
| n-Butylbenzene | 5304 | 170 | 5667 | 0 | 93.6 | 65-140 | 5378 | 1.38 | 30 |
| n-Propylbenzene | 5460 | 170 | 5667 | 0 | 96.4 | 65-135 | 5587 | 2.31 | 30 |
| o-Xylene | 5573 | 170 | 5667 | 0 | 98.4 | 75-125 | 5851 | 4.86 | 30 |
| p-Isopropyltoluene | 5318 | 170 | 5667 | 0 | 93.8 | 75-135 | 5420 | 1.9 | 30 |
| sec-Butylbenzene | 5545 | 170 | 5667 | 0 | 97.8 | 65-130 | 5624 | 1.42 | 30 |
| Styrene | 5208 | 170 | 5667 | 0 | 91.9 | 75-125 | 5482 | 5.14 | 30 |
| tert-Butylbenzene | 5519 | 170 | 5667 | 0 | 97.4 | 65-130 | 5505 | 0.257 | 30 |
| Tetrachloroethene | 5675 | 170 | 5667 | 0 | 100 | 64-140 | 5822 | 2.56 | 30 |
| Tetrahydrofuran | 4564 | 570 | 5667 | 0 | 80.6 | 70-135 | 5403 | 16.8 | 30 |
| Toluene | 5667 | 170 | 5667 | 0 | 100 | 70-125 | 6012 | 5.92 | 30 |
| trans-1,2-Dichloroethene | 5641 | 170 | 5667 | 0 | 99.6 | 65-135 | 5976 | 5.76 | 30 |
| trans-1,3-Dichloropropene | 5134 | 170 | 5667 | 0 | 90.6 | 65-125 | 5307 | 3.31 | 30 |
| trans-1,4-Dichloro-2-butene | 4559 | 170 | 5667 | 0 | 80.4 | 70-135 | 4771 | 4.56 | 30 |
| Trichloroethene | 5514 | 170 | 5667 | 0 | 97.3 | 75-125 | 5726 | 3.78 | 30 |
| Trichlorofluoromethane | 4802 | 170 | 5667 | 0 | 84.8 | 25-185 | 5038 | 4.78 | 30 |
| Vinyl chloride | 6075 | 170 | 5667 | 0 | 107 | 60-125 | 6823 | 11.6 | 30 |
| *Surr: 1,2-Dichloroethane-d4* | *4848* | 0 | *5667* | 0 | *85.6* | *70-130* | 4879 | *0.641* | *30* |
| *Surr: 4-Bromofluorobenzene* | *6225* | 0 | *5667* | 0 | *110* | *70-130* | 6126 | *1.61* | *30* |
| *Surr: Dibromofluoromethane* | *4831* | 0 | *5667* | 0 | *85.2* | *70-130* | 4941 | *2.26* | *30* |
| *Surr: Toluene-d8* | *5174* | 0 | *5667* | 0 | *91.3* | *70-130* | 5244 | *1.36* | *30* |

**The following samples were analyzed in this batch:** 1208120-11B 1208120-12B 1208120-13A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **R108207** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R108207** Units: **% of sample** Analysis Date: **8/6/2012 04:13 PM**
Client ID: Run ID: **MOIST_120806B** SeqNo: **2046465** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | ND | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R108207** Units: **% of sample** Analysis Date: **8/6/2012 04:13 PM**
Client ID: Run ID: **MOIST_120806B** SeqNo: **2046461** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 100 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | |

**DUP** Sample ID: **1208120-05A DUP** Units: **% of sample** Analysis Date: **8/6/2012 04:13 PM**
Client ID: **SBSA0138S080112S095** Run ID: **MOIST_120806B** SeqNo: **2046443** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 87.39 | 0.050 | 0 | 0 | 0 | 0-0 | 87.42 | 0.0343 | 20 | |

**DUP** Sample ID: **1208156-01B DUP** Units: **% of sample** Analysis Date: **8/6/2012 04:13 PM**
Client ID: Run ID: **MOIST_120806B** SeqNo: **2046459** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 14.01 | 0.050 | 0 | 0 | 0 | 0-0 | 14.5 | 3.44 | 20 | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208120-01A | 1208120-02A | 1208120-03A |
| 1208120-04A | 1208120-05A | 1208120-06A |
| 1208120-07A | 1208120-08A | 1208120-09A |
| 1208120-10A | 1208120-11A | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208120
**Project:** Marshall KRRI Source Area 8/1/12

# QC BATCH REPORT

Batch ID: **R108283** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R108283** Units: **% of sample** Analysis Date: **8/7/2012 02:11 PM**
Client ID: Run ID: **MOIST_120807A** SeqNo: **2047768** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | ND | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R108283** Units: **% of sample** Analysis Date: **8/7/2012 02:11 PM**
Client ID: Run ID: **MOIST_120807A** SeqNo: **2047764** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 100 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | |

**DUP** Sample ID: **1208134-03B DUP** Units: **% of sample** Analysis Date: **8/7/2012 02:11 PM**
Client ID: Run ID: **MOIST_120807A** SeqNo: **2047739** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 23.18 | 0.050 | 0 | 0 | 0 | 0-0 | 23.21 | 0.129 | 20 | |

**DUP** Sample ID: **1208137-03A DUP** Units: **% of sample** Analysis Date: **8/7/2012 02:11 PM**
Client ID: Run ID: **MOIST_120807A** SeqNo: **2047749** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 88.97 | 0.050 | 0 | 0 | 0 | 0-0 | 89.01 | 0.0449 | 20 | |

**The following samples were analyzed in this batch:** 1208120-12A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

7208120

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_080112_GMK1 | Task: KRRI_SOURCE AREA |
|---|---|---|
| | Total # of Samples: 13 | Event Complete? |

| Turn Around Time | 5 Day | Rush | No | |
|---|---|---|---|---|

BILLING CODE: 6.00

**Lab Information:**

| | |
|---|---|
| Lab Name: | ALS Laboratory Group |
| Address: | 3352 128th Ave, Holland, MI 49424-9263 |
| Lab PM: | Ann Preston |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 |
| Lab PM email | ann.preston@alsglobal.com |
| Applicable Lab Quote #: | |

**Project Information:**

| | |
|---|---|
| Site ID #: | |
| Project # | 60162778 |
| Site Address | 5555 Glenwood Parkway SE Suite 200 |
| City | Grand Rapids |
| State, Zip | MI |
| Site PM Name | Bryan Stiemsma |
| Phone/Fax: | [redacted] |
| Site PM Email: | Bryan.Stiemsma@aecom.com |

**Other Information:**

| | |
|---|---|
| Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 1100 Louisiana Suite 1100 |
| City/State, | Houson, TX |
| Phone #: | 713-821-2000 |
| PO # | |
| Send EDD to | |
| CC Hardcopy report | |
| CC Hardcopy report | |

| ITEM # | SAMPLE ID<br>Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | None | None | None | None | MeOH | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | |
| 1 | SBSA0136S080112S006 | SBSA0136 | SO | G | 08/01/2012 08:15 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 2 | SBSA0136S080112S090 | SBSA0136 | SO | G | 08/01/2012 08:55 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 3 | SBSA0138S080112S003 | SBSA0138 | SO | G | 08/01/2012 11:40 | 3 | MDEQ SPLIT | | X | X | X | X | X | | | | | | | | | |
| 4 | SBSA0138S080112S010 | SBSA0138 | SO | G | 08/01/2012 11:55 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 5 | SBSA0138S080112S095 | SBSA0138 | SO | G | 08/01/2012 12:50 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 6 | SBSA0139S080112S006 | SBSA0139 | SO | G | 08/01/2012 14:44 | 3 | MDEQ SPLIT | | X | X | X | X | X | | | | | | | | | |
| 7 | SBSA0139S080112S017 | SBSA0139 | SO | G | 08/01/2012 14:47 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 8 | SBSA0139S080112S052 | SBSA0139 | SO | G | 08/01/2012 15:00 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 9 | SBSA0139D080112S052 | SBSA0139 | SO | G | 08/01/2012 15:00 | 3 | DUPLICATE | | X | X | X | X | X | | | | | | | | | |
| 10 | SBSA0139S080112S090 | SBSA0139 | SO | G | 08/01/2012 15:15 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 11 | SBSA0140S080112S004 | SBSA0140 | SO | G | 08/01/2012 15:56 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 12 | SBSA0140S080112S087 | SBSA0140 | SO | G | 08/01/2012 16:25 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 13 | SBSA0140T080112MX | SBSA0140 | SQ | G | 08/01/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | |

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 8-1-12 | 0750 | [signature] | 8-1-12 | 0750 |
| [signature] | 8-2-12 | 1735 | [signature] | 8-2-12 | 1735 |

**Sample Receipt Conditions**

| Temp in OC | Samples on Ice? | Sample intact? | Trip Blank? |
|---|---|---|---|
| 3.2°C | Y/N (Y) | Y/N (Y) | Y/N (Y) |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO.
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed
Time:

# ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **02-Aug-12 17:35**

Work Order: **1208120** Received by: **PD**

Checklist completed by *Keith Wierenga* 03-Aug-12 Reviewed by: *Alex Csaszar* 04-Aug-12
eSignature Date eSignature Date

Matrices: Soil
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 3.2 C | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 8/3/2012 3:43:28 PM | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | - | | |

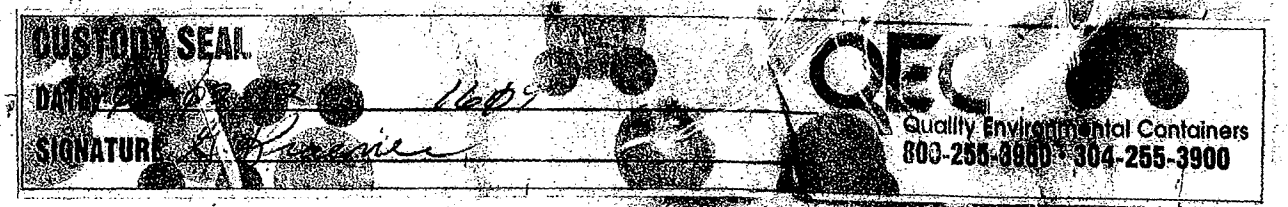
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:


CUSTODY SEAL
DATE
SIGNATURE
QEC
Quality Environmental Containers
800-255-3900 • 304-255-3900

09-Aug-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI Source Area 8/2/12** Work Order: **1208137**

Dear Bryan,

ALS Environmental received 4 samples on 02-Aug-2012 05:35 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 42.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

## ALS Group USA, Corp

Date: 09-Aug-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 8/2/12
**Work Order:** **1208137**

# Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1208137-01 | SESA0116S080212D004 | Sediment | | 8/2/2012 14:15 | 8/2/2012 17:35 | ☐ |
| 1208137-02 | SESA0116S080212D019 | Sediment | | 8/2/2012 14:17 | 8/2/2012 17:35 | ☐ |
| 1208137-03 | SESA0116S080212D022 | Sediment | | 8/2/2012 14:19 | 8/2/2012 17:35 | ☐ |
| 1208137-04 | SESA0116T080212MX | Soil | | 8/2/2012 | 8/2/2012 17:35 | ☐ |

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 8/2/12
**Work Order:** 1208137

## Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 42810 MS/MSD data for DRO/ORO is not related to this project's samples. No data requires qualification.

Batch 42829 data for Metals is not related to this project's samples. No data requires qualification.

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 8/2/12
**WorkOrder:** **1208137**

# QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| % of sample | Percent of Sample |
| µg/Kg | Micrograms per Kilogram |
| µg/Kg-dry | Micrograms per Kilogram Dry Weight |
| mg/Kg-dry | Milligrams per Kilogram Dry Weight |

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208137
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208137-01

**Client Sample ID:** SESA0116S080212D004
**Collection Date:** 8/2/2012 2:15:00 PM
**Matrix:** SEDIMENT

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **130** | **27** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **850** | **54** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *69.8* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.55 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **3.8** | **1.1** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **15** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **17** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *119* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *70.8* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *66.8* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *98.0* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *54.6* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *65.0* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SESA0116S080212D004
**Work Order:** 1208137
**Collection Date:** 8/2/2012 2:15:00 PM
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208137-01
**Matrix:** SEDIMENT

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 420 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 420 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 420 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 420 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 420 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 1,400 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 1,400 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 3,500 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 420 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 420 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 1,400 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 420 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 420 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 420 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 420 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 420 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 420 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SESA0116S080212D004 |
| **Work Order:** | 1208137 | **Collection Date:** | 8/2/2012 2:15:00 PM |
| **Project:** | Marshall KRRI Source Area 8/2/12 | | |
| **Lab ID:** | 1208137-01 | **Matrix:** | SEDIMENT |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 420 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 420 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 850 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 420 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 1,400 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 420 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,400 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| **Toluene** | **450** | **420** | **100** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 420 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 420 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 420 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.4* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *99.4* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *95.7* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *99.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **66** | **0.050** | **0** | | **% of sample** | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SESA0116S080212D019
**Work Order:** 1208137
**Collection Date:** 8/2/2012 2:17:00 PM
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208137-02
**Matrix:** SEDIMENT

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **320** | **39** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **1,800** | **77** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *58.5* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.64 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| Molybdenum | ND | 1.3 | 1.0 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Nickel** | **6.5** | **1.1** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **12** | **1.1** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *93.6* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *59.4* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *57.9* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *79.5* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *50.3* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *53.6* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SESA0116S080212D019
**Work Order:** 1208137 **Collection Date:** 8/2/2012 2:17:00 PM
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208137-02 **Matrix:** SEDIMENT

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 830 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 830 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 830 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 830 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 830 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 2,800 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 2,800 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 6,900 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| **Benzene** | **1,500** | **830** | **50** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| Bromobenzene | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 830 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 830 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 2,800 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 830 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 830 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 830 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 830 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 830 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 830 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 830 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SESA0116S080212D019
**Work Order:** 1208137
**Collection Date:** 8/2/2012 2:17:00 PM
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208137-02
**Matrix:** SEDIMENT

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 830 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 830 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 1,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 830 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 2,800 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,800 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 830 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 2,800 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 830 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 830 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 830 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *97.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *98.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *92.6* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *100* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **75** | **0.050** | **0** | | **% of sample** | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SESA0116S080212D022
**Work Order:** 1208137
**Collection Date:** 8/2/2012 2:19:00 PM
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208137-03
**Matrix:** SEDIMENT

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **200** | **86** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **1,800** | **170** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *60.0* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 1.5 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **5.8** | **3.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **6.0** | **2.5** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **5.3** | **2.5** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 430 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *98.0* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *59.0* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *55.6* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *87.1* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *46.9* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *52.0* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SESA0116S080212D022
**Work Order:** 1208137 **Collection Date:** 8/2/2012 2:19:00 PM
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208137-03 **Matrix:** SEDIMENT

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 4,700 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 4,700 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 4,700 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 4,700 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 4,700 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 16,000 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 4,700 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 16,000 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 4,700 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 39,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 4,700 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 4,700 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 16,000 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 4,700 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 4,700 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 4,700 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 4,700 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 4,700 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 4,700 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 4,700 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SESA0116S080212D022
**Work Order:** 1208137
**Collection Date:** 8/2/2012 2:19:00 PM
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208137-03
**Matrix:** SEDIMENT

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 4,700 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 4,700 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 9,400 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 4,700 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 16,000 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 16,000 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 4,700 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 16,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 4,700 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 4,700 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 4,700 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *97.8* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *102* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *95.4* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *103* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **89** | **0.050** | **0** | | **% of sample** | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SESA0116T080212MX |
| **Work Order:** | 1208137 | **Collection Date:** | 8/2/2012 |
| **Project:** | Marshall KRRI Source Area 8/2/12 | | |
| **Lab ID:** | 1208137-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 30 | 10 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 30 | 20 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SESA0116T080212MX
**Work Order:** 1208137 **Collection Date:** 8/2/2012
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208137-04 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Cyclohexane | ND | 500 | 500 | | µg/Kg | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Ethylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.4* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *98.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *94.4* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *99.4* | *70-130* | | | *%REC* | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 09-Aug-12

**Client:** AECOM Environment

# QC BATCH REPORT

**Work Order:** 1208137

**Project:** Marshall KRRI Source Area 8/2/12

Batch ID: **42810** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42810-42810** Units: **mg/Kg** Analysis Date: **8/7/2012 08:42 AM**

Client ID: Run ID: **GC8_120807A** SeqNo: **2046728** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *3.019* | 0 | *5* | 0 | *60.4* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42810-42810** Units: **mg/Kg** Analysis Date: **8/7/2012 08:42 AM**

Client ID: Run ID: **GC8_120807A** SeqNo: **2046716** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 315.1 | 10 | 500 | 0 | 63 | 60-130 | 0 | | | |
| ORO (C20-C34) | 378.3 | 20 | 500 | 0 | 75.7 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.125* | 0 | *5* | 0 | *62.5* | *39-115* | 0 | | | |

**MS** Sample ID: **1208138-02A MS** Units: **mg/Kg** Analysis Date: **8/7/2012 09:08 AM**

Client ID: Run ID: **GC8_120807A** SeqNo: **2046729** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 282.2 | 9.8 | 490.9 | 43.75 | 48.6 | 60-130 | 0 | | | S |
| ORO (C20-C34) | 516 | 20 | 490.9 | 299.7 | 44.1 | 60-130 | 0 | | | S |
| *Surr: 4-Terphenyl-d14* | *2.429* | 0 | *4.909* | 0 | *49.5* | *39-115* | 0 | | | |

**MSD** Sample ID: **1208138-02A MSD** Units: **mg/Kg** Analysis Date: **8/7/2012 09:35 AM**

Client ID: Run ID: **GC8_120807A** SeqNo: **2046730** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 278.3 | 9.4 | 470.8 | 43.75 | 49.8 | 60-130 | 282.2 | 1.37 | 30 | S |
| ORO (C20-C34) | 477 | 19 | 470.8 | 299.7 | 37.7 | 60-130 | 516 | 7.86 | 30 | S |
| *Surr: 4-Terphenyl-d14* | *2.304* | 0 | *4.708* | 0 | *48.9* | *39-115* | 2.429 | *5.28* | *30* | |

**The following samples were analyzed in this batch:** 1208137-01A 1208137-02A 1208137-03A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208137
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42829** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42829-42829** Units: **mg/Kg** Analysis Date: **8/7/2012 04:12 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047290** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | ND | 0.25 | | | | | | | | |
| Nickel | 0.01898 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**MBLK** Sample ID: **MBLK-42829-42829** Units: **mg/Kg** Analysis Date: **8/8/2012 01:45 PM**
Client ID: Run ID: **ICPMS1_120808A** SeqNo: **2048066** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |

**LCS** Sample ID: **LCS-42829-42829** Units: **mg/Kg** Analysis Date: **8/7/2012 04:18 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047291** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | 4.284 | 0.25 | 5 | 0 | 85.7 | 80-120 | 0 | | | |
| Nickel | 4.222 | 0.25 | 5 | 0 | 84.4 | 80-120 | 0 | | | |
| Vanadium | 4.414 | 0.25 | 5 | 0 | 88.3 | 80-120 | 0 | | | |

**LCS** Sample ID: **LCS-42829-42829** Units: **mg/Kg** Analysis Date: **8/8/2012 01:52 PM**
Client ID: Run ID: **ICPMS1_120808A** SeqNo: **2048069** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.558 | 0.10 | 5 | 0 | 91.2 | 80-120 | 0 | | | |

**MS** Sample ID: **1208138-02AMS** Units: **mg/Kg** Analysis Date: **8/7/2012 09:19 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047336** Prep Date: **8/6/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 7.535 | 0.65 | 8.13 | 0.08607 | 91.6 | 75-125 | 0 | | | |
| Molybdenum | 7.789 | 1.6 | 8.13 | 0.5575 | 88.9 | 75-125 | 0 | | | |
| Nickel | 10.91 | 1.6 | 8.13 | 3.879 | 86.5 | 75-125 | 0 | | | |
| Vanadium | 12.17 | 1.6 | 8.13 | 5.284 | 84.7 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208137
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42829** Instrument ID **ICPMS1** Method: **SW6020A**

**MSD** Sample ID: **1208138-02AMSD** Units: **mg/Kg** Analysis Date: **8/7/2012 09:25 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047337** Prep Date: **8/6/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.196 | 0.64 | 8.052 | 0.08607 | 75.9 | 75-125 | 7.535 | 19.5 | 25 | |
| Molybdenum | 6.551 | 1.6 | 8.052 | 0.5575 | 74.4 | 75-125 | 7.789 | 17.3 | 25 | S |
| Nickel | 8.815 | 1.6 | 8.052 | 3.879 | 61.3 | 75-125 | 10.91 | 21.3 | 25 | S |
| Vanadium | 9.855 | 1.6 | 8.052 | 5.284 | 56.8 | 75-125 | 12.17 | 21 | 25 | S |

**The following samples were analyzed in this batch:** 1208137-01A 1208137-02A 1208137-03A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42809** Instrument ID **SVMS7** Method: **SW8270**

**MBLK** Sample ID: **SBLKS1-42809-42809** Units: **µg/Kg** Analysis Date: **8/7/2012 03:10 PM**
Client ID: Run ID: **SVMS7_120807A** SeqNo: **2047548** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 50 | | | | | | | | |
| Acenaphthene | ND | 50 | | | | | | | | |
| Acenaphthylene | ND | 50 | | | | | | | | |
| Anthracene | ND | 50 | | | | | | | | |
| Benzo(a)anthracene | ND | 50 | | | | | | | | |
| Benzo(a)pyrene | ND | 50 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 50 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 50 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 50 | | | | | | | | |
| Chrysene | ND | 50 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 50 | | | | | | | | |
| Fluoranthene | ND | 50 | | | | | | | | |
| Fluorene | ND | 50 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | | | | | | | |
| Naphthalene | ND | 50 | | | | | | | | |
| Phenanthrene | ND | 50 | | | | | | | | |
| Pyrene | ND | 50 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *4088* | 0 | *5000* | 0 | *81.8* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3801* | 0 | *5000* | 0 | *76* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *4363* | 0 | *5000* | 0 | *87.3* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *5711* | 0 | *5000* | 0 | *114* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3727* | 0 | *5000* | 0 | *74.5* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *4161* | 0 | *5000* | 0 | *83.2* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42809** Instrument ID **SVMS7** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42809-42809** Units: **µg/Kg** Analysis Date: **8/7/2012 03:39 PM**
Client ID: Run ID: **SVMS7_120807A** SeqNo: **2047552** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1597 | 50 | 2000 | 0 | 79.8 | 45-105 | 0 | | | |
| Acenaphthene | 1657 | 50 | 2000 | 0 | 82.8 | 45-110 | 0 | | | |
| Acenaphthylene | 1670 | 50 | 2000 | 0 | 83.5 | 45-105 | 0 | | | |
| Anthracene | 1842 | 50 | 2000 | 0 | 92.1 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1849 | 50 | 2000 | 0 | 92.4 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1904 | 50 | 2000 | 0 | 95.2 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1909 | 50 | 2000 | 0 | 95.4 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2149 | 50 | 2000 | 0 | 107 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 1825 | 50 | 2000 | 0 | 91.2 | 45-115 | 0 | | | |
| Chrysene | 1929 | 50 | 2000 | 0 | 96.4 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2080 | 50 | 2000 | 0 | 104 | 40-125 | 0 | | | |
| Fluoranthene | 1839 | 50 | 2000 | 0 | 92 | 55-115 | 0 | | | |
| Fluorene | 1730 | 50 | 2000 | 0 | 86.5 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2084 | 50 | 2000 | 0 | 104 | 40-120 | 0 | | | |
| Naphthalene | 1580 | 50 | 2000 | 0 | 79 | 40-105 | 0 | | | |
| Phenanthrene | 1824 | 50 | 2000 | 0 | 91.2 | 50-110 | 0 | | | |
| Pyrene | 1976 | 50 | 2000 | 0 | 98.8 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *4500* | 0 | *5000* | 0 | *90* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3342* | 0 | *5000* | 0 | *66.8* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3675* | 0 | *5000* | 0 | *73.5* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4912* | 0 | *5000* | 0 | *98.2* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3234* | 0 | *5000* | 0 | *64.7* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3418* | 0 | *5000* | 0 | *68.4* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208137
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42809** Instrument ID **SVMS7** Method: **SW8270**

**MS** Sample ID: **1208138-02A MS** Units: **µg/Kg** Analysis Date: **8/7/2012 04:38 PM**
Client ID: Run ID: **SVMS7_120807A** SeqNo: **2047553** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1263 | 50 | 1998 | 0 | 63.2 | 45-105 | 0 | | | |
| Acenaphthene | 1432 | 50 | 1998 | 0 | 71.6 | 45-110 | 0 | | | |
| Acenaphthylene | 1445 | 50 | 1998 | 0 | 72.3 | 45-105 | 0 | | | |
| Anthracene | 1499 | 50 | 1998 | 0 | 75 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1455 | 50 | 1998 | 0 | 72.8 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1517 | 50 | 1998 | 0 | 75.9 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1537 | 50 | 1998 | 0 | 76.9 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1616 | 50 | 1998 | 0 | 80.8 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 1497 | 50 | 1998 | 0 | 74.9 | 45-115 | 0 | | | |
| Chrysene | 1480 | 50 | 1998 | 0 | 74 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1590 | 50 | 1998 | 0 | 79.6 | 40-125 | 0 | | | |
| Fluoranthene | 1451 | 50 | 1998 | 0 | 72.6 | 55-115 | 0 | | | |
| Fluorene | 1473 | 50 | 1998 | 0 | 73.7 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1588 | 50 | 1998 | 0 | 79.4 | 40-120 | 0 | | | |
| Naphthalene | 1111 | 50 | 1998 | 0 | 55.6 | 40-105 | 0 | | | |
| Phenanthrene | 1489 | 50 | 1998 | 0 | 74.5 | 50-110 | 0 | | | |
| Pyrene | 1492 | 50 | 1998 | 0 | 74.6 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *3912* | 0 | *4996* | 0 | *78.3* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *2789* | 0 | *4996* | 0 | *55.8* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *2442* | 0 | *4996* | 0 | *48.9* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3671* | 0 | *4996* | 0 | *73.5* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2115* | 0 | *4996* | 0 | *42.3* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *2667* | 0 | *4996* | 0 | *53.4* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208137
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42809** Instrument ID **SVMS7** Method: **SW8270**

**MSD** Sample ID: **1208138-02A MSD** Units: **µg/Kg** Analysis Date: **8/7/2012 05:07 PM**
Client ID: Run ID: **SVMS7_120807A** SeqNo: **2047555** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1181 | 49 | 1974 | 0 | 59.8 | 45-105 | 1263 | 6.74 | 30 | |
| Acenaphthene | 1366 | 49 | 1974 | 0 | 69.2 | 45-110 | 1432 | 4.69 | 30 | |
| Acenaphthylene | 1402 | 49 | 1974 | 0 | 71 | 45-105 | 1445 | 3.03 | 30 | |
| Anthracene | 1534 | 49 | 1974 | 0 | 77.7 | 55-105 | 1499 | 2.33 | 30 | |
| Benzo(a)anthracene | 1452 | 49 | 1974 | 0 | 73.6 | 50-110 | 1455 | 0.187 | 30 | |
| Benzo(a)pyrene | 1531 | 49 | 1974 | 0 | 77.6 | 50-110 | 1517 | 0.939 | 30 | |
| Benzo(b)fluoranthene | 1621 | 49 | 1974 | 0 | 82.1 | 45-115 | 1537 | 5.33 | 30 | |
| Benzo(g,h,i)perylene | 1569 | 49 | 1974 | 0 | 79.5 | 40-125 | 1616 | 2.9 | 30 | |
| Benzo(k)fluoranthene | 1502 | 49 | 1974 | 0 | 76.1 | 45-115 | 1497 | 0.378 | 30 | |
| Chrysene | 1502 | 49 | 1974 | 0 | 76.1 | 55-110 | 1480 | 1.52 | 30 | |
| Dibenzo(a,h)anthracene | 1579 | 49 | 1974 | 0 | 80 | 40-125 | 1590 | 0.647 | 30 | |
| Fluoranthene | 1543 | 49 | 1974 | 0 | 78.2 | 55-115 | 1451 | 6.15 | 30 | |
| Fluorene | 1447 | 49 | 1974 | 0 | 73.3 | 50-110 | 1473 | 1.76 | 30 | |
| Indeno(1,2,3-cd)pyrene | 1568 | 49 | 1974 | 0 | 79.4 | 40-120 | 1588 | 1.21 | 30 | |
| Naphthalene | 1082 | 49 | 1974 | 0 | 54.8 | 40-105 | 1111 | 2.66 | 30 | |
| Phenanthrene | 1501 | 49 | 1974 | 0 | 76 | 50-110 | 1489 | 0.848 | 30 | |
| Pyrene | 1445 | 49 | 1974 | 0 | 73.2 | 45-125 | 1492 | 3.17 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *4016* | 0 | *4935* | 0 | *81.4* | *34-140* | 3912 | *2.62* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *2723* | 0 | *4935* | 0 | *55.2* | *12-100* | 2789 | *2.4* | *40* | |
| *Surr: 2-Fluorophenol* | *2549* | 0 | *4935* | 0 | *51.6* | *33-117* | 2442 | *4.28* | *40* | |
| *Surr: 4-Terphenyl-d14* | *3730* | 0 | *4935* | 0 | *75.6* | *25-137* | 3671 | *1.61* | *40* | |
| *Surr: Nitrobenzene-d5* | *2176* | 0 | *4935* | 0 | *44.1* | *37-107* | 2115 | *2.82* | *40* | |
| *Surr: Phenol-d6* | *2588* | 0 | *4935* | 0 | *52.4* | *40-106* | 2667 | *2.99* | *40* | |

**The following samples were analyzed in this batch:** 1208137-01A 1208137-02A 1208137-03A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208137
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 12:45 PM**
Client ID: Run ID: **VMS7_120806A** SeqNo: **2046412** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | 113 | 200 | | | | | | | | J |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 161.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 20 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *983.5* | 0 | *1000* | 0 | *98.4* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1082* | 0 | *1000* | 0 | *108* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *965.5* | 0 | *1000* | 0 | *96.6* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1020* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 01:31 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047228** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 229 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *981.5* | 0 | *1000* | 0 | *98.2* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *991* | 0 | *1000* | 0 | *99.1* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *974* | 0 | *1000* | 0 | *97.4* | *70-130* | 0 |
| *Surr: Toluene-d8* | *990.5* | 0 | *1000* | 0 | *99* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208137
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 03:31 PM**
Client ID: Run ID: **VMS6_120807A** SeqNo: **2047558** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 185.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1107* | 0 | *1000* | 0 | *111* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1065* | 0 | *1000* | 0 | *106* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1002* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1086* | 0 | *1000* | 0 | *109* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208137
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 08:46 AM**
Client ID: Run ID: **VMS7_120806A** SeqNo: **2046411** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1107 | 30 | 1000 | 0 | 111 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1232 | 30 | 1000 | 0 | 123 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1040 | 30 | 1000 | 0 | 104 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1075 | 30 | 1000 | 0 | 108 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1058 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1200 | 30 | 1000 | 0 | 120 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1065 | 30 | 1000 | 0 | 106 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1062 | 30 | 1000 | 0 | 106 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 945.5 | 30 | 1000 | 0 | 94.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1158 | 30 | 1000 | 0 | 116 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1119 | 30 | 1000 | 0 | 112 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 993.5 | 30 | 1000 | 0 | 99.4 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1074 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1104 | 30 | 1000 | 0 | 110 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1034 | 30 | 1000 | 0 | 103 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1084 | 30 | 1000 | 0 | 108 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1167 | 30 | 1000 | 0 | 117 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1128 | 30 | 1000 | 0 | 113 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1160 | 30 | 1000 | 0 | 116 | 70-125 | 0 | | | |
| 2-Butanone | 1084 | 200 | 1000 | 0 | 108 | 30-160 | 0 | | | |
| 2-Hexanone | 1074 | 30 | 1000 | 0 | 107 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1370 | 30 | 1000 | 0 | 137 | 45-145 | 0 | | | |
| Acetone | 771.5 | 100 | 1000 | 0 | 77.2 | 20-160 | 0 | | | B |
| Acrylonitrile | 934.5 | 100 | 1000 | 0 | 93.4 | 70-135 | 0 | | | |
| Benzene | 1136 | 30 | 1000 | 0 | 114 | 75-125 | 0 | | | |
| Bromobenzene | 1100 | 30 | 1000 | 0 | 110 | 65-120 | 0 | | | |
| Bromochloromethane | 1116 | 30 | 1000 | 0 | 112 | 70-125 | 0 | | | |
| Bromodichloromethane | 988.5 | 30 | 1000 | 0 | 98.8 | 70-130 | 0 | | | |
| Bromoform | 1051 | 30 | 1000 | 0 | 105 | 55-135 | 0 | | | |
| Bromomethane | 1238 | 75 | 1000 | 0 | 124 | 30-160 | 0 | | | |
| Carbon disulfide | 1187 | 30 | 1000 | 0 | 119 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1251 | 30 | 1000 | 0 | 125 | 65-135 | 0 | | | |
| Chlorobenzene | 1148 | 30 | 1000 | 0 | 115 | 75-125 | 0 | | | |
| Chloroethane | 1066 | 100 | 1000 | 0 | 107 | 40-155 | 0 | | | |
| Chloroform | 1080 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| Chloromethane | 1048 | 100 | 1000 | 0 | 105 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1096 | 30 | 1000 | 0 | 110 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1044 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| Dibromochloromethane | 1026 | 30 | 1000 | 0 | 103 | 65-135 | 0 | | | |
| Dibromomethane | 1025 | 30 | 1000 | 0 | 102 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 895 | 30 | 1000 | 0 | 89.5 | 35-135 | 0 | | | |
| Ethylbenzene | 1190 | 30 | 1000 | 0 | 119 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **42826** | Instrument ID **VMS7** | | Method: **SW8260** | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 981.5 | 30 | 1000 | 0 | 98.2 | 70-135 | 0 |
| Isopropylbenzene | 1196 | 30 | 1000 | 0 | 120 | 75-130 | 0 |
| m,p-Xylene | 2370 | 60 | 2000 | 0 | 118 | 80-125 | 0 |
| Methyl tert-butyl ether | 953.5 | 30 | 1000 | 0 | 95.4 | 75-125 | 0 |
| Methylene chloride | 1024 | 30 | 1000 | 0 | 102 | 55-145 | 0 |
| Naphthalene | 1163 | 100 | 1000 | 0 | 116 | 40-140 | 0 |
| n-Butylbenzene | 1232 | 30 | 1000 | 0 | 123 | 65-140 | 0 |
| n-Propylbenzene | 1148 | 30 | 1000 | 0 | 115 | 65-135 | 0 |
| o-Xylene | 1146 | 30 | 1000 | 0 | 115 | 75-125 | 0 |
| p-Isopropyltoluene | 1160 | 30 | 1000 | 0 | 116 | 75-135 | 0 |
| sec-Butylbenzene | 1162 | 30 | 1000 | 0 | 116 | 65-130 | 0 |
| Styrene | 1137 | 30 | 1000 | 0 | 114 | 75-125 | 0 |
| tert-Butylbenzene | 1116 | 30 | 1000 | 0 | 112 | 65-130 | 0 |
| Tetrachloroethene | 1394 | 30 | 1000 | 0 | 139 | 64-140 | 0 |
| Tetrahydrofuran | 985 | 200 | 1000 | 0 | 98.5 | 70-135 | 0 |
| Toluene | 1208 | 30 | 1000 | 0 | 121 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1118 | 30 | 1000 | 0 | 112 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1088 | 30 | 1000 | 0 | 109 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 1056 | 30 | 1000 | 0 | 106 | 70-135 | 0 |
| Trichloroethene | 1234 | 30 | 1000 | 0 | 123 | 75-125 | 0 |
| Trichlorofluoromethane | 1012 | 30 | 1000 | 0 | 101 | 25-185 | 0 |
| Vinyl chloride | 1032 | 30 | 1000 | 0 | 103 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *966.5* | 0 | *1000* | 0 | *96.6* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1002* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1038* | 0 | *1000* | 0 | *104* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208137
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 09:37 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047229** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 962.5 | 30 | 1000 | 0 | 96.2 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1063 | 30 | 1000 | 0 | 106 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 971.5 | 30 | 1000 | 0 | 97.2 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 978 | 30 | 1000 | 0 | 97.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 992.5 | 30 | 1000 | 0 | 99.2 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1102 | 30 | 1000 | 0 | 110 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 909.5 | 30 | 1000 | 0 | 91 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1022 | 30 | 1000 | 0 | 102 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 867.5 | 30 | 1000 | 0 | 86.8 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 968 | 30 | 1000 | 0 | 96.8 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1032 | 30 | 1000 | 0 | 103 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 886 | 30 | 1000 | 0 | 88.6 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1021 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 968.5 | 30 | 1000 | 0 | 96.8 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1027 | 30 | 1000 | 0 | 103 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1046 | 30 | 1000 | 0 | 105 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1065 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 972 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 973.5 | 30 | 1000 | 0 | 97.4 | 70-125 | 0 | | | |
| 2-Butanone | 1214 | 200 | 1000 | 0 | 121 | 30-160 | 0 | | | |
| 2-Hexanone | 1294 | 30 | 1000 | 0 | 129 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1304 | 30 | 1000 | 0 | 130 | 45-145 | 0 | | | |
| Acetone | 1163 | 100 | 1000 | 0 | 116 | 20-160 | 0 | | | B |
| Acrylonitrile | 1072 | 100 | 1000 | 0 | 107 | 70-135 | 0 | | | |
| Benzene | 1064 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |
| Bromobenzene | 1020 | 30 | 1000 | 0 | 102 | 65-120 | 0 | | | |
| Bromochloromethane | 1074 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| Bromodichloromethane | 968.5 | 30 | 1000 | 0 | 96.8 | 70-130 | 0 | | | |
| Bromoform | 958.5 | 30 | 1000 | 0 | 95.8 | 55-135 | 0 | | | |
| Bromomethane | 1236 | 75 | 1000 | 0 | 124 | 30-160 | 0 | | | |
| Carbon disulfide | 1158 | 30 | 1000 | 0 | 116 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1062 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| Chlorobenzene | 1014 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 1208 | 100 | 1000 | 0 | 121 | 40-155 | 0 | | | |
| Chloroform | 971.5 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| Chloromethane | 1179 | 100 | 1000 | 0 | 118 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1018 | 30 | 1000 | 0 | 102 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1008 | 30 | 1000 | 0 | 101 | 70-125 | 0 | | | |
| Dibromochloromethane | 896 | 30 | 1000 | 0 | 89.6 | 65-135 | 0 | | | |
| Dibromomethane | 1006 | 30 | 1000 | 0 | 101 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 1089 | 30 | 1000 | 0 | 109 | 35-135 | 0 | | | |
| Ethylbenzene | 1063 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 804 | 30 | 1000 | 0 | 80.4 | 70-135 | 0 |
| Isopropylbenzene | 1044 | 30 | 1000 | 0 | 104 | 75-130 | 0 |
| m,p-Xylene | 2159 | 60 | 2000 | 0 | 108 | 80-125 | 0 |
| Methyl tert-butyl ether | 1013 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| Methylene chloride | 1024 | 30 | 1000 | 0 | 102 | 55-145 | 0 |
| Naphthalene | 929.5 | 100 | 1000 | 0 | 93 | 40-140 | 0 |
| n-Butylbenzene | 1026 | 30 | 1000 | 0 | 103 | 65-140 | 0 |
| n-Propylbenzene | 1039 | 30 | 1000 | 0 | 104 | 65-135 | 0 |
| o-Xylene | 1049 | 30 | 1000 | 0 | 105 | 75-125 | 0 |
| p-Isopropyltoluene | 999 | 30 | 1000 | 0 | 99.9 | 75-135 | 0 |
| sec-Butylbenzene | 1062 | 30 | 1000 | 0 | 106 | 65-130 | 0 |
| Styrene | 1018 | 30 | 1000 | 0 | 102 | 75-125 | 0 |
| tert-Butylbenzene | 1026 | 30 | 1000 | 0 | 103 | 65-130 | 0 |
| Tetrachloroethene | 1078 | 30 | 1000 | 0 | 108 | 64-140 | 0 |
| Tetrahydrofuran | 991.5 | 200 | 1000 | 0 | 99.2 | 70-135 | 0 |
| Toluene | 1076 | 30 | 1000 | 0 | 108 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1053 | 30 | 1000 | 0 | 105 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1009 | 30 | 1000 | 0 | 101 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 947 | 30 | 1000 | 0 | 94.7 | 70-135 | 0 |
| Trichloroethene | 1012 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| Trichlorofluoromethane | 933.5 | 30 | 1000 | 0 | 93.4 | 25-185 | 0 |
| Vinyl chloride | 1216 | 30 | 1000 | 0 | 122 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *887* | 0 | *1000* | 0 | *88.7* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1080* | 0 | *1000* | 0 | *108* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *873.5* | 0 | *1000* | 0 | *87.4* | *70-130* | 0 |
| *Surr: Toluene-d8* | *927* | 0 | *1000* | 0 | *92.7* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208137
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 02:18 PM**
Client ID: Run ID: **VMS6_120807A** SeqNo: **2047557** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 899 | 30 | 1000 | 0 | 89.9 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1068 | 30 | 1000 | 0 | 107 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 948.5 | 30 | 1000 | 0 | 94.8 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 938 | 30 | 1000 | 0 | 93.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 995 | 30 | 1000 | 0 | 99.5 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1070 | 30 | 1000 | 0 | 107 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1018 | 30 | 1000 | 0 | 102 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 972 | 30 | 1000 | 0 | 97.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 941.5 | 30 | 1000 | 0 | 94.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1032 | 30 | 1000 | 0 | 103 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1081 | 30 | 1000 | 0 | 108 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 883.5 | 30 | 1000 | 0 | 88.4 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 987.5 | 30 | 1000 | 0 | 98.8 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 976.5 | 30 | 1000 | 0 | 97.6 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1049 | 30 | 1000 | 0 | 105 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1008 | 30 | 1000 | 0 | 101 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1110 | 30 | 1000 | 0 | 111 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 997 | 30 | 1000 | 0 | 99.7 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1019 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| 2-Butanone | 767.5 | 200 | 1000 | 0 | 76.8 | 30-160 | 0 | | | |
| 2-Hexanone | 962 | 30 | 1000 | 0 | 96.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1132 | 30 | 1000 | 0 | 113 | 45-145 | 0 | | | |
| Acetone | 839.5 | 100 | 1000 | 0 | 84 | 20-160 | 0 | | | B |
| Acrylonitrile | 995.5 | 100 | 1000 | 0 | 99.6 | 70-135 | 0 | | | |
| Benzene | 1008 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Bromobenzene | 1058 | 30 | 1000 | 0 | 106 | 65-120 | 0 | | | |
| Bromochloromethane | 1056 | 30 | 1000 | 0 | 106 | 70-125 | 0 | | | |
| Bromodichloromethane | 1060 | 30 | 1000 | 0 | 106 | 70-130 | 0 | | | |
| Bromoform | 962 | 30 | 1000 | 0 | 96.2 | 55-135 | 0 | | | |
| Bromomethane | 969.5 | 75 | 1000 | 0 | 97 | 30-160 | 0 | | | |
| Carbon disulfide | 1198 | 30 | 1000 | 0 | 120 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1094 | 30 | 1000 | 0 | 109 | 65-135 | 0 | | | |
| Chlorobenzene | 1008 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 915.5 | 100 | 1000 | 0 | 91.6 | 40-155 | 0 | | | |
| Chloroform | 970 | 30 | 1000 | 0 | 97 | 70-125 | 0 | | | |
| Chloromethane | 875 | 100 | 1000 | 0 | 87.5 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1036 | 30 | 1000 | 0 | 104 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 961 | 30 | 1000 | 0 | 96.1 | 70-125 | 0 | | | |
| Dibromochloromethane | 881 | 30 | 1000 | 0 | 88.1 | 65-135 | 0 | | | |
| Dibromomethane | 967.5 | 30 | 1000 | 0 | 96.8 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 886 | 30 | 1000 | 0 | 88.6 | 35-135 | 0 | | | |
| Ethylbenzene | 1061 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **42826** | Instrument ID **VMS7** | | Method: **SW8260** | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1009 | 30 | 1000 | 0 | 101 | 70-135 | 0 |
| Isopropylbenzene | 1078 | 30 | 1000 | 0 | 108 | 75-130 | 0 |
| m,p-Xylene | 2132 | 60 | 2000 | 0 | 107 | 80-125 | 0 |
| Methyl tert-butyl ether | 1020 | 30 | 1000 | 0 | 102 | 75-125 | 0 |
| Methylene chloride | 1058 | 30 | 1000 | 0 | 106 | 55-145 | 0 |
| Naphthalene | 1015 | 100 | 1000 | 0 | 102 | 40-140 | 0 |
| n-Butylbenzene | 1095 | 30 | 1000 | 0 | 110 | 65-140 | 0 |
| n-Propylbenzene | 1075 | 30 | 1000 | 0 | 108 | 65-135 | 0 |
| o-Xylene | 1062 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| p-Isopropyltoluene | 1108 | 30 | 1000 | 0 | 111 | 75-135 | 0 |
| sec-Butylbenzene | 1146 | 30 | 1000 | 0 | 115 | 65-130 | 0 |
| Styrene | 1056 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| tert-Butylbenzene | 1116 | 30 | 1000 | 0 | 112 | 65-130 | 0 |
| Tetrachloroethene | 1030 | 30 | 1000 | 0 | 103 | 64-140 | 0 |
| Tetrahydrofuran | 1038 | 200 | 1000 | 0 | 104 | 70-135 | 0 |
| Toluene | 1066 | 30 | 1000 | 0 | 107 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1051 | 30 | 1000 | 0 | 105 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 992 | 30 | 1000 | 0 | 99.2 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 778 | 30 | 1000 | 0 | 77.8 | 70-135 | 0 |
| Trichloroethene | 944.5 | 30 | 1000 | 0 | 94.4 | 75-125 | 0 |
| Trichlorofluoromethane | 987 | 30 | 1000 | 0 | 98.7 | 25-185 | 0 |
| Vinyl chloride | 903 | 30 | 1000 | 0 | 90.3 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1104* | 0 | *1000* | 0 | *110* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1051* | 0 | *1000* | 0 | *105* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1061* | 0 | *1000* | 0 | *106* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208137
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MS** Sample ID: **1208138-02B MS** Units: **µg/Kg** Analysis Date: **8/7/2012 10:02 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047262** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 5389 | 170 | 5667 | 0 | 95.1 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 5882 | 170 | 5667 | 0 | 104 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 5301 | 170 | 5667 | 0 | 93.6 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 5429 | 170 | 5667 | 0 | 95.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 5780 | 170 | 5667 | 0 | 102 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 5944 | 170 | 5667 | 0 | 105 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 4907 | 170 | 5667 | 0 | 86.6 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 5448 | 170 | 5667 | 0 | 96.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 4938 | 170 | 5667 | 0 | 87.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 5205 | 170 | 5667 | 0 | 91.8 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 5584 | 170 | 5667 | 0 | 98.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 4958 | 170 | 5667 | 0 | 87.5 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 5621 | 170 | 5667 | 0 | 99.2 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 5451 | 170 | 5667 | 0 | 96.2 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 5800 | 170 | 5667 | 0 | 102 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 5652 | 170 | 5667 | 0 | 99.8 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 5715 | 170 | 5667 | 0 | 101 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 5502 | 170 | 5667 | 0 | 97.1 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 5602 | 170 | 5667 | 0 | 98.8 | 70-125 | 0 | | | |
| 2-Butanone | 7310 | 570 | 5667 | 0 | 129 | 30-160 | 0 | | | |
| 2-Hexanone | 6993 | 170 | 5667 | 0 | 123 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 7446 | 170 | 5667 | 0 | 131 | 45-145 | 0 | | | |
| Acetone | 8290 | 570 | 5667 | 0 | 146 | 20-160 | 0 | | | B |
| Acrylonitrile | 6114 | 170 | 5667 | 0 | 108 | 70-135 | 0 | | | |
| Benzene | 6015 | 170 | 5667 | 0 | 106 | 75-125 | 0 | | | |
| Bromobenzene | 5686 | 170 | 5667 | 0 | 100 | 65-120 | 0 | | | |
| Bromochloromethane | 6015 | 170 | 5667 | 0 | 106 | 70-125 | 0 | | | |
| Bromodichloromethane | 5485 | 170 | 5667 | 0 | 96.8 | 70-130 | 0 | | | |
| Bromoform | 5618 | 170 | 5667 | 0 | 99.2 | 55-135 | 0 | | | |
| Bromomethane | 6896 | 170 | 5667 | 0 | 122 | 30-160 | 0 | | | |
| Carbon disulfide | 6613 | 170 | 5667 | 0 | 117 | 45-160 | 0 | | | |
| Carbon tetrachloride | 5865 | 170 | 5667 | 0 | 104 | 65-135 | 0 | | | |
| Chlorobenzene | 5678 | 170 | 5667 | 0 | 100 | 75-125 | 0 | | | |
| Chloroethane | 6797 | 570 | 5667 | 0 | 120 | 40-155 | 0 | | | |
| Chloroform | 5610 | 170 | 5667 | 0 | 99 | 70-125 | 0 | | | |
| Chloromethane | 6551 | 170 | 5667 | 0 | 116 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 5559 | 170 | 5667 | 0 | 98.1 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 5378 | 170 | 5667 | 0 | 94.9 | 70-125 | 0 | | | |
| Dibromochloromethane | 5222 | 170 | 5667 | 0 | 92.2 | 65-135 | 0 | | | |
| Dibromomethane | 5664 | 170 | 5667 | 0 | 100 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 5939 | 170 | 5667 | 0 | 105 | 35-135 | 0 | | | |
| Ethylbenzene | 5817 | 170 | 5667 | 0 | 103 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **42826** | Instrument ID **VMS7** | | | Method: **SW8260** | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 4519 | 170 | 5667 | 0 | 79.8 | 70-135 | 0 |
| Isopropylbenzene | 5689 | 170 | 5667 | 0 | 100 | 75-130 | 0 |
| m,p-Xylene | 11850 | 340 | 11330 | 0 | 105 | 80-125 | 0 |
| Methyl tert-butyl ether | 5822 | 170 | 5667 | 0 | 103 | 75-125 | 0 |
| Methylene chloride | 6157 | 170 | 5667 | 0 | 109 | 55-145 | 0 |
| Naphthalene | 5148 | 570 | 5667 | 0 | 90.8 | 40-140 | 0 |
| n-Butylbenzene | 5378 | 170 | 5667 | 0 | 94.9 | 65-140 | 0 |
| n-Propylbenzene | 5587 | 170 | 5667 | 0 | 98.6 | 65-135 | 0 |
| o-Xylene | 5851 | 170 | 5667 | 0 | 103 | 75-125 | 0 |
| p-Isopropyltoluene | 5420 | 170 | 5667 | 0 | 95.6 | 75-135 | 0 |
| sec-Butylbenzene | 5624 | 170 | 5667 | 0 | 99.2 | 65-130 | 0 |
| Styrene | 5482 | 170 | 5667 | 0 | 96.8 | 75-125 | 0 |
| tert-Butylbenzene | 5505 | 170 | 5667 | 0 | 97.2 | 65-130 | 0 |
| Tetrachloroethene | 5822 | 170 | 5667 | 0 | 103 | 64-140 | 0 |
| Tetrahydrofuran | 5403 | 570 | 5667 | 0 | 95.4 | 70-135 | 0 |
| Toluene | 6012 | 170 | 5667 | 0 | 106 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 5976 | 170 | 5667 | 0 | 105 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 5307 | 170 | 5667 | 0 | 93.6 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 4771 | 170 | 5667 | 0 | 84.2 | 70-135 | 0 |
| Trichloroethene | 5726 | 170 | 5667 | 0 | 101 | 75-125 | 0 |
| Trichlorofluoromethane | 5038 | 170 | 5667 | 0 | 88.9 | 25-185 | 0 |
| Vinyl chloride | 6823 | 170 | 5667 | 0 | 120 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *4879* | 0 | *5667* | 0 | *86.1* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *6126* | 0 | *5667* | 0 | *108* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *4941* | 0 | *5667* | 0 | *87.2* | *70-130* | 0 |
| *Surr: Toluene-d8* | *5244* | 0 | *5667* | 0 | *92.6* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208137
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1208138-02B MSD** Units: **µg/Kg** Analysis Date: **8/7/2012 10:26 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047263** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 5103 | 170 | 5667 | 0 | 90 | 75-125 | 5389 | 5.46 | 30 | |
| 1,1,1-Trichloroethane | 5599 | 170 | 5667 | 0 | 98.8 | 70-135 | 5882 | 4.94 | 30 | |
| 1,1,2,2-Tetrachloroethane | 5162 | 170 | 5667 | 0 | 91.1 | 55-130 | 5301 | 2.65 | 30 | |
| 1,1,2-Trichloroethane | 5239 | 170 | 5667 | 0 | 92.4 | 60-125 | 5429 | 3.56 | 30 | |
| 1,1-Dichloroethane | 5284 | 170 | 5667 | 0 | 93.2 | 75-125 | 5780 | 8.96 | 30 | |
| 1,1-Dichloroethene | 5579 | 170 | 5667 | 0 | 98.4 | 65-135 | 5944 | 6.34 | 30 | |
| 1,2,3-Trichlorobenzene | 4916 | 170 | 5667 | 0 | 86.8 | 60-135 | 4907 | 0.173 | 30 | |
| 1,2,3-Trichloropropane | 5386 | 170 | 5667 | 0 | 95 | 65-130 | 5448 | 1.15 | 30 | |
| 1,2,3-Trimethylbenzene | 4732 | 170 | 5667 | 0 | 83.5 | 65-135 | 4938 | 4.28 | 30 | |
| 1,2,4-Trichlorobenzene | 5165 | 170 | 5667 | 0 | 91.2 | 65-130 | 5205 | 0.765 | 30 | |
| 1,2,4-Trimethylbenzene | 5460 | 170 | 5667 | 0 | 96.4 | 65-135 | 5584 | 2.26 | 30 | |
| 1,2-Dibromo-3-chloropropane | 4706 | 170 | 5667 | 0 | 83 | 40-135 | 4958 | 5.22 | 30 | |
| 1,2-Dibromoethane | 5412 | 170 | 5667 | 0 | 95.5 | 70-125 | 5621 | 3.8 | 30 | |
| 1,2-Dichlorobenzene | 5312 | 170 | 5667 | 0 | 93.8 | 75-120 | 5451 | 2.58 | 30 | |
| 1,2-Dichloroethane | 5664 | 170 | 5667 | 0 | 100 | 70-135 | 5800 | 2.37 | 30 | |
| 1,2-Dichloropropane | 5607 | 170 | 5667 | 0 | 99 | 70-120 | 5652 | 0.805 | 30 | |
| 1,3,5-Trimethylbenzene | 5562 | 170 | 5667 | 0 | 98.2 | 65-135 | 5715 | 2.71 | 30 | |
| 1,3-Dichlorobenzene | 5321 | 170 | 5667 | 0 | 93.9 | 70-125 | 5502 | 3.35 | 30 | |
| 1,4-Dichlorobenzene | 5369 | 170 | 5667 | 0 | 94.8 | 70-125 | 5602 | 4.24 | 30 | |
| 2-Butanone | 7571 | 570 | 5667 | 0 | 134 | 30-160 | 7310 | 3.5 | 30 | |
| 2-Hexanone | 7064 | 170 | 5667 | 0 | 125 | 45-145 | 6993 | 1.01 | 30 | |
| 4-Methyl-2-pentanone | 7010 | 170 | 5667 | 0 | 124 | 45-145 | 7446 | 6.04 | 30 | |
| Acetone | 7531 | 570 | 5667 | 0 | 133 | 20-160 | 8290 | 9.6 | 30 | B |
| Acrylonitrile | 6001 | 170 | 5667 | 0 | 106 | 70-135 | 6114 | 1.87 | 30 | |
| Benzene | 5743 | 170 | 5667 | 0 | 101 | 75-125 | 6015 | 4.63 | 30 | |
| Bromobenzene | 5502 | 170 | 5667 | 0 | 97.1 | 65-120 | 5686 | 3.29 | 30 | |
| Bromochloromethane | 5701 | 170 | 5667 | 0 | 101 | 70-125 | 6015 | 5.37 | 30 | |
| Bromodichloromethane | 5341 | 170 | 5667 | 0 | 94.2 | 70-130 | 5485 | 2.67 | 30 | |
| Bromoform | 5658 | 170 | 5667 | 0 | 99.8 | 55-135 | 5618 | 0.704 | 30 | |
| Bromomethane | 6214 | 170 | 5667 | 0 | 110 | 30-160 | 6896 | 10.4 | 30 | |
| Carbon disulfide | 6143 | 170 | 5667 | 0 | 108 | 45-160 | 6613 | 7.37 | 30 | |
| Carbon tetrachloride | 5684 | 170 | 5667 | 0 | 100 | 65-135 | 5865 | 3.14 | 30 | |
| Chlorobenzene | 5409 | 170 | 5667 | 0 | 95.4 | 75-125 | 5678 | 4.86 | 30 | |
| Chloroethane | 6338 | 570 | 5667 | 0 | 112 | 40-155 | 6797 | 6.99 | 30 | |
| Chloroform | 5242 | 170 | 5667 | 0 | 92.5 | 70-125 | 5610 | 6.79 | 30 | |
| Chloromethane | 6262 | 170 | 5667 | 0 | 110 | 50-130 | 6551 | 4.51 | 30 | |
| cis-1,2-Dichloroethene | 5318 | 170 | 5667 | 0 | 93.8 | 65-125 | 5559 | 4.43 | 30 | |
| cis-1,3-Dichloropropene | 5123 | 170 | 5667 | 0 | 90.4 | 70-125 | 5378 | 4.86 | 30 | |
| Dibromochloromethane | 4995 | 170 | 5667 | 0 | 88.2 | 65-135 | 5222 | 4.44 | 30 | |
| Dibromomethane | 5284 | 170 | 5667 | 0 | 93.2 | 75-130 | 5664 | 6.94 | 30 | |
| Dichlorodifluoromethane | 5457 | 170 | 5667 | 0 | 96.3 | 35-135 | 5939 | 8.45 | 30 | |
| Ethylbenzene | 5655 | 170 | 5667 | 0 | 99.8 | 75-125 | 5817 | 2.82 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

| Batch ID: **42826** | Instrument ID **VMS7** | | Method: **SW8260** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 4273 | 170 | 5667 | 0 | 75.4 | 70-135 | 4519 | 5.61 | 30 |
| Isopropylbenzene | 5531 | 170 | 5667 | 0 | 97.6 | 75-130 | 5689 | 2.83 | 30 |
| m,p-Xylene | 11400 | 340 | 11330 | 0 | 101 | 80-125 | 11850 | 3.9 | 30 |
| Methyl tert-butyl ether | 5636 | 170 | 5667 | 0 | 99.4 | 75-125 | 5822 | 3.26 | 30 |
| Methylene chloride | 5704 | 170 | 5667 | 0 | 101 | 55-145 | 6157 | 7.64 | 30 |
| Naphthalene | 5176 | 570 | 5667 | 0 | 91.4 | 40-140 | 5148 | 0.549 | 30 |
| n-Butylbenzene | 5304 | 170 | 5667 | 0 | 93.6 | 65-140 | 5378 | 1.38 | 30 |
| n-Propylbenzene | 5460 | 170 | 5667 | 0 | 96.4 | 65-135 | 5587 | 2.31 | 30 |
| o-Xylene | 5573 | 170 | 5667 | 0 | 98.4 | 75-125 | 5851 | 4.86 | 30 |
| p-Isopropyltoluene | 5318 | 170 | 5667 | 0 | 93.8 | 75-135 | 5420 | 1.9 | 30 |
| sec-Butylbenzene | 5545 | 170 | 5667 | 0 | 97.8 | 65-130 | 5624 | 1.42 | 30 |
| Styrene | 5208 | 170 | 5667 | 0 | 91.9 | 75-125 | 5482 | 5.14 | 30 |
| tert-Butylbenzene | 5519 | 170 | 5667 | 0 | 97.4 | 65-130 | 5505 | 0.257 | 30 |
| Tetrachloroethene | 5675 | 170 | 5667 | 0 | 100 | 64-140 | 5822 | 2.56 | 30 |
| Tetrahydrofuran | 4564 | 570 | 5667 | 0 | 80.6 | 70-135 | 5403 | 16.8 | 30 |
| Toluene | 5667 | 170 | 5667 | 0 | 100 | 70-125 | 6012 | 5.92 | 30 |
| trans-1,2-Dichloroethene | 5641 | 170 | 5667 | 0 | 99.6 | 65-135 | 5976 | 5.76 | 30 |
| trans-1,3-Dichloropropene | 5134 | 170 | 5667 | 0 | 90.6 | 65-125 | 5307 | 3.31 | 30 |
| trans-1,4-Dichloro-2-butene | 4559 | 170 | 5667 | 0 | 80.4 | 70-135 | 4771 | 4.56 | 30 |
| Trichloroethene | 5514 | 170 | 5667 | 0 | 97.3 | 75-125 | 5726 | 3.78 | 30 |
| Trichlorofluoromethane | 4802 | 170 | 5667 | 0 | 84.8 | 25-185 | 5038 | 4.78 | 30 |
| Vinyl chloride | 6075 | 170 | 5667 | 0 | 107 | 60-125 | 6823 | 11.6 | 30 |
| *Surr: 1,2-Dichloroethane-d4* | *4848* | 0 | *5667* | 0 | *85.6* | *70-130* | 4879 | *0.641* | *30* |
| *Surr: 4-Bromofluorobenzene* | *6225* | 0 | *5667* | 0 | *110* | *70-130* | 6126 | *1.61* | *30* |
| *Surr: Dibromofluoromethane* | *4831* | 0 | *5667* | 0 | *85.2* | *70-130* | 4941 | *2.26* | *30* |
| *Surr: Toluene-d8* | *5174* | 0 | *5667* | 0 | *91.3* | *70-130* | 5244 | *1.36* | *30* |

**The following samples were analyzed in this batch:** 1208137-01B 1208137-02B 1208137-03B 1208137-04A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208137
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **R108283** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R108283** Units: **% of sample** Analysis Date: **8/7/2012 02:11 PM**
Client ID: Run ID: **MOIST_120807A** SeqNo: **2047768** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | ND | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R108283** Units: **% of sample** Analysis Date: **8/7/2012 02:11 PM**
Client ID: Run ID: **MOIST_120807A** SeqNo: **2047764** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 100 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | |

**DUP** Sample ID: **1208134-03B DUP** Units: **% of sample** Analysis Date: **8/7/2012 02:11 PM**
Client ID: Run ID: **MOIST_120807A** SeqNo: **2047739** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 23.18 | 0.050 | 0 | 0 | 0 | 0-0 | 23.21 | 0.129 | 20 | |

**DUP** Sample ID: **1208137-03A DUP** Units: **% of sample** Analysis Date: **8/7/2012 02:11 PM**
Client ID: **SESA0116S080212D022** Run ID: **MOIST_120807A** SeqNo: **2047749** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 88.97 | 0.050 | 0 | 0 | 0 | 0-0 | 89.01 | 0.0449 | 20 | |

**The following samples were analyzed in this batch:** 1208137-01A 1208137-02A 1208137-03A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

~~1208120~~ KL

1208137

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_080212_GMK2 | Task: KRRI_SOURCE AREA |
|---|---|---|
| | Total # of Samples: 4 | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |
| BILLING CODE: 6.00 | | |

**Lab Information:**

| | |
|---|---|
| Lab Name: | ALS Laboratory Group |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 |
| Lab PM: | Ann Preston |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 |
| Lab PM email | ann.preston@alsglobal.com |
| Applicable Lab Quote #: | |

**Project Information:**

| | |
|---|---|
| Site ID #: | |
| Project # | 60162778 |
| Site Address | 5555 Glenwood Parkway SE Suite 200 |
| City | Grand Rapids |
| State, Zip | MI |
| Site PM Name | Bryan Stiemsma |
| Phone/Fax: | [redacted] |
| Site PM Email: | Bryan.Stiemsma@aecom.com |

**Other Information:**

| | |
|---|---|
| Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 1100 Louisiana Suite 1100 |
| City/State: | Houson, TX |
| Phone #: | 713-821-2000 |
| PO # | |
| Send EDD to | |
| CC Hardcopy report | |
| CC Hardcopy report | |

| ITEM # | SAMPLE ID (Samples IDs MUST BE UNIQUE) | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | Analysis: % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | None | None | None | None | MeOH |
| 1 | SESA0116S080212D004 | SESA0116 | SE | G | 08/02/2012 14:15 | 3 | | | X | X | X | X | X |
| 2 | SESA0116S080212D019 | SESA0116 | SE | G | 08/02/2012 14:17 | 3 | | | X | X | X | X | X |
| 3 | SESA0116S080212D022 | SESA0116 | SE | G | 08/02/2012 14:19 | 3 | | | X | X | X | X | X |
| 4 | SESA0116T080212MX | SESA0116 | SQ | G | 08/02/2012 00:00 | 1 | TRIP BLANK | | | | | | X |

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 8.2.12 | 1605 | [signature] | 8.2.12 | 1605 |
| [signature] | 8.3.12 | 1135 | [signature] | 8.3.12 | 1135 |

| SHIPPING INFO | SAMPLER NAME AND SIGNATURE | | |
|---|---|---|---|
| Company: | PRINT Name of SAMPLER: | GERRY KRAMER (GMK1) | |
| Tracking #: | SIGNATURE of SAMPLER: | DATE Signed | Time: |

**Sample Receipt Conditions**

| Temp in OC | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|
| 3.0° | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

# ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **02-Aug-12 17:35**

Work Order: **1208137** Received by: **PD**

Checklist completed by *Keith Wurenga* 03-Aug-12 Reviewed by: *Alex Csaszar* 04-Aug-12
eSignature Date eSignature Date

Matrices: Soil
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 3.0 C | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 8/3/2012 3:50:07 PM | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | | | |

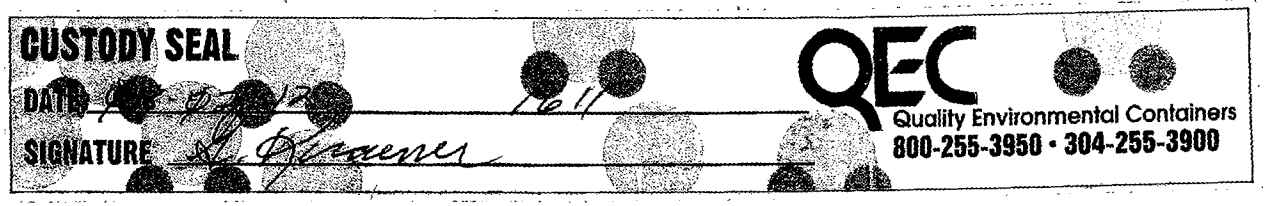
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:


CUSTODY SEAL
DATE
SIGNATURE
QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

ALS Environmental

10-Aug-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI Source Area 8/2/12** Work Order: **1208138**

Dear Bryan,

ALS Environmental received 4 samples on 02-Aug-2012 05:35 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 43.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

NELAP ACCREDITED TNI LABORATORY

Certificate No: MN331938

## ALS Group USA, Corp

Date: 10-Aug-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 8/2/12
**Work Order:** **1208138**

# Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1208138-01 | SBSA0141S080212S026 | Soil | | 8/2/2012 08:23 | 8/2/2012 17:35 | ☐ |
| 1208138-02 | SBSA0141S080212S034 | Soil | | 8/2/2012 08:29 | 8/2/2012 17:35 | ☐ |
| 1208138-03 | SBSA0141S080212S075 | Soil | | 8/2/2012 09:25 | 8/2/2012 17:35 | ☐ |
| 1208138-04 | SBSA0141T080212MX | Soil | | 8/2/2012 | 8/2/2012 17:35 | ☐ |

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 8/2/12
**Work Order:** 1208138

## Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 42810 sample SBSA0141S080212S034 MS/MSD recoveries for DRO/ORO were below control limits due to matrix interference. The corresponding results in the parent sample may be biased low for DRO and ORO.

Batch 42829sample SBSA0141S080212S034 MSD recoveries for Molybdenum, Nickel, and Vanadium were below control limits. Both the MS recoveries and RPDs met quality control criteria. No data requires qualification.

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 8/2/12
**WorkOrder:** **1208138**

# QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| % of sample | Percent of Sample |
| µg/Kg | Micrograms per Kilogram |
| µg/Kg-dry | Micrograms per Kilogram Dry Weight |
| mg/Kg-dry | Milligrams per Kilogram Dry Weight |

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0141S080212S026 |
| **Work Order:** | 1208138 | **Collection Date:** | 8/2/2012 8:23:00 AM |
| **Project:** | Marshall KRRI Source Area 8/2/12 | | |
| **Lab ID:** | 1208138-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **170** | **22** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **910** | **45** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *62.4* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Nickel** | **9.6** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **13** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *99.3* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *59.8* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *57.4* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *86.5* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *49.6* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *53.1* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208138-01

**Client Sample ID:** SBSA0141S080212S026
**Collection Date:** 8/2/2012 8:23:00 AM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| **1,2,3-Trimethylbenzene** | **470** | **250** | **250** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| **1,2,4-Trimethylbenzene** | **620** | **250** | **100** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 250 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 250 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| **1,3,5-Trimethylbenzene** | **520** | **250** | **100** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 840 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 840 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 2,100 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 250 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 840 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 250 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0141S080212S026 |
| **Work Order:** | 1208138 | **Collection Date:** | 8/2/2012 8:23:00 AM |
| **Project:** | Marshall KRRI Source Area 8/2/12 | | |
| **Lab ID:** | 1208138-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| **m,p-Xylene** | **650** | **510** | **100** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| Methyl iodide | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 840 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| **o-Xylene** | **380** | **250** | **50** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| **p-Isopropyltoluene** | **270** | **250** | **100** | | **µg/Kg-dry** | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 250 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 250 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 250 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *102* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *102* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *94.6* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *97.4* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **57** | **0.050** | **0** | | **% of sample** | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0141S080212S034 |
| **Work Order:** | 1208138 | **Collection Date:** | 8/2/2012 8:29:00 AM |
| **Project:** | Marshall KRRI Source Area 8/2/12 | | |
| **Lab ID:** | 1208138-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **150** | **31** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **1,000** | **63** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *45.9* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.64 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **1.9** | **1.3** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **13** | **1.1** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **18** | **1.1** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **HL** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *72.0* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *57.7* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *59.3* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *71.0* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *52.0* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *55.7* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0141S080212S034
**Work Order:** 1208138
**Collection Date:** 8/2/2012 8:29:00 AM
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208138-02
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 570 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 570 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 570 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 570 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 570 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 1,900 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 1,900 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 4,700 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 570 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 570 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 1,900 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 570 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 570 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 570 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 570 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 570 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 570 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 570 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0141S080212S034 |
| **Work Order:** | 1208138 | **Collection Date:** | 8/2/2012 8:29:00 AM |
| **Project:** | Marshall KRRI Source Area 8/2/12 | | |
| **Lab ID:** | 1208138-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 570 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 570 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 1,100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 570 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 1,900 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 570 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,900 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 570 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 570 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 570 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *99.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *93.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *97.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **70** | **0.050** | **0** | B | **% of sample** | 1 | 8/8/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0141S080212S075 |
| **Work Order:** | 1208138 | **Collection Date:** | 8/2/2012 9:25:00 AM |
| **Project:** | Marshall KRRI Source Area 8/2/12 | | |
| **Lab ID:** | 1208138-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/6/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **150** | **85** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **1,100** | **170** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *71.4* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| **Beryllium** | **3.2** | **1.4** | **0.50** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Molybdenum** | **3.9** | **2.9** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **120** | **2.4** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **190** | **2.4** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/6/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acenaphthylene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Anthracene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chrysene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluoranthene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Fluorene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Phenanthrene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| Pyrene | ND | 420 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *110* | *34-140* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *66.3* | *12-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *66.6* | *33-117* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *93.1* | *25-137* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *56.4* | *37-107* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *60.8* | *40-106* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208138-03

**Client Sample ID:** SBSA0141S080212S075
**Collection Date:** 8/2/2012 9:25:00 AM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 4,600 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 4,600 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 15,000 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 4,600 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 15,000 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 4,600 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 39,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 4,600 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 15,000 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 4,600 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 4,600 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0141S080212S075
**Work Order:** 1208138 **Collection Date:** 8/2/2012 9:25:00 AM
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208138-03 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 4,600 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 9,300 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 15,000 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 15,000 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 15,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 4,600 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *97.9* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *98.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *99.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **89** | **0.050** | **0** | | **% of sample** | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0141T080212MX
**Work Order:** 1208138
**Collection Date:** 8/2/2012
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208138-04
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 30 | 10 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 30 | 20 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0141T080212MX
**Work Order:** 1208138
**Collection Date:** 8/2/2012
**Project:** Marshall KRRI Source Area 8/2/12
**Lab ID:** 1208138-04
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Cyclohexane | ND | 500 | 500 | | µg/Kg | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Ethylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *95.6* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *96.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 10-Aug-12

**Client:** AECOM Environment

# QC BATCH REPORT

**Work Order:** 1208138

**Project:** Marshall KRRI Source Area 8/2/12

Batch ID: **42810** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42810-42810** Units: **mg/Kg** Analysis Date: **8/7/2012 08:42 AM**

Client ID: Run ID: **GC8_120807A** SeqNo: **2046728** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *3.019* | 0 | *5* | 0 | *60.4* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42810-42810** Units: **mg/Kg** Analysis Date: **8/7/2012 08:42 AM**

Client ID: Run ID: **GC8_120807A** SeqNo: **2046716** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 315.1 | 10 | 500 | 0 | 63 | 60-130 | 0 | | | |
| ORO (C20-C34) | 378.3 | 20 | 500 | 0 | 75.7 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.125* | 0 | *5* | 0 | *62.5* | *39-115* | 0 | | | |

**MS** Sample ID: **1208138-02A MS** Units: **mg/Kg** Analysis Date: **8/7/2012 09:08 AM**

Client ID: **SBSA0141S080212S034** Run ID: **GC8_120807A** SeqNo: **2046729** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 282.2 | 9.8 | 490.9 | 43.75 | 48.6 | 60-130 | 0 | | | S |
| ORO (C20-C34) | 516 | 20 | 490.9 | 299.7 | 44.1 | 60-130 | 0 | | | S |
| *Surr: 4-Terphenyl-d14* | *2.429* | 0 | *4.909* | 0 | *49.5* | *39-115* | 0 | | | |

**MSD** Sample ID: **1208138-02A MSD** Units: **mg/Kg** Analysis Date: **8/7/2012 09:35 AM**

Client ID: **SBSA0141S080212S034** Run ID: **GC8_120807A** SeqNo: **2046730** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 278.3 | 9.4 | 470.8 | 43.75 | 49.8 | 60-130 | 282.2 | 1.37 | 30 | S |
| ORO (C20-C34) | 477 | 19 | 470.8 | 299.7 | 37.7 | 60-130 | 516 | 7.86 | 30 | S |
| *Surr: 4-Terphenyl-d14* | *2.304* | 0 | *4.708* | 0 | *48.9* | *39-115* | 2.429 | *5.28* | *30* | |

**The following samples were analyzed in this batch:** 1208138-01A 1208138-02A 1208138-03A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42829** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42829-42829** Units: **mg/Kg** Analysis Date: **8/7/2012 04:12 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047290** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | ND | 0.25 | | | | | | | | |
| Nickel | 0.01898 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**MBLK** Sample ID: **MBLK-42829-42829** Units: **mg/Kg** Analysis Date: **8/8/2012 01:45 PM**
Client ID: Run ID: **ICPMS1_120808A** SeqNo: **2048066** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |

**LCS** Sample ID: **LCS-42829-42829** Units: **mg/Kg** Analysis Date: **8/7/2012 04:18 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047291** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | 4.284 | 0.25 | 5 | 0 | 85.7 | 80-120 | 0 | | | |
| Nickel | 4.222 | 0.25 | 5 | 0 | 84.4 | 80-120 | 0 | | | |
| Vanadium | 4.414 | 0.25 | 5 | 0 | 88.3 | 80-120 | 0 | | | |

**LCS** Sample ID: **LCS-42829-42829** Units: **mg/Kg** Analysis Date: **8/8/2012 01:52 PM**
Client ID: Run ID: **ICPMS1_120808A** SeqNo: **2048069** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.558 | 0.10 | 5 | 0 | 91.2 | 80-120 | 0 | | | |

**MS** Sample ID: **1208138-02AMS** Units: **mg/Kg** Analysis Date: **8/7/2012 09:19 PM**
Client ID: **SBSA0141S080212S034** Run ID: **ICPMS1_120807A** SeqNo: **2047336** Prep Date: **8/6/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 7.535 | 0.65 | 8.13 | 0.08607 | 91.6 | 75-125 | 0 | | | |
| Molybdenum | 7.789 | 1.6 | 8.13 | 0.5575 | 88.9 | 75-125 | 0 | | | |
| Nickel | 10.91 | 1.6 | 8.13 | 3.879 | 86.5 | 75-125 | 0 | | | |
| Vanadium | 12.17 | 1.6 | 8.13 | 5.284 | 84.7 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42829** Instrument ID **ICPMS1** Method: **SW6020A**

**MSD** Sample ID: **1208138-02AMSD** Units: **mg/Kg** Analysis Date: **8/7/2012 09:25 PM**
Client ID: **SBSA0141S080212S034** Run ID: **ICPMS1_120807A** SeqNo: **2047337** Prep Date: **8/6/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.196 | 0.64 | 8.052 | 0.08607 | 75.9 | 75-125 | 7.535 | 19.5 | 25 | |
| Molybdenum | 6.551 | 1.6 | 8.052 | 0.5575 | 74.4 | 75-125 | 7.789 | 17.3 | 25 | S |
| Nickel | 8.815 | 1.6 | 8.052 | 3.879 | 61.3 | 75-125 | 10.91 | 21.3 | 25 | S |
| Vanadium | 9.855 | 1.6 | 8.052 | 5.284 | 56.8 | 75-125 | 12.17 | 21 | 25 | S |

**The following samples were analyzed in this batch:** 1208138-01A 1208138-02A 1208138-03A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42809** Instrument ID **SVMS7** Method: **SW8270**

**MBLK** Sample ID: **SBLKS1-42809-42809** Units: **µg/Kg** Analysis Date: **8/7/2012 03:10 PM**
Client ID: Run ID: **SVMS7_120807A** SeqNo: **2047548** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 50 | | | | | | | | |
| Acenaphthene | ND | 50 | | | | | | | | |
| Acenaphthylene | ND | 50 | | | | | | | | |
| Anthracene | ND | 50 | | | | | | | | |
| Benzo(a)anthracene | ND | 50 | | | | | | | | |
| Benzo(a)pyrene | ND | 50 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 50 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 50 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 50 | | | | | | | | |
| Chrysene | ND | 50 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 50 | | | | | | | | |
| Fluoranthene | ND | 50 | | | | | | | | |
| Fluorene | ND | 50 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | | | | | | | |
| Naphthalene | ND | 50 | | | | | | | | |
| Phenanthrene | ND | 50 | | | | | | | | |
| Pyrene | ND | 50 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *4088* | 0 | *5000* | 0 | *81.8* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3801* | 0 | *5000* | 0 | *76* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *4363* | 0 | *5000* | 0 | *87.3* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *5711* | 0 | *5000* | 0 | *114* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3727* | 0 | *5000* | 0 | *74.5* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *4161* | 0 | *5000* | 0 | *83.2* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42809** Instrument ID **SVMS7** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42809-42809** Units: **µg/Kg** Analysis Date: **8/7/2012 03:39 PM**
Client ID: Run ID: **SVMS7_120807A** SeqNo: **2047552** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1597 | 50 | 2000 | 0 | 79.8 | 45-105 | 0 | | | |
| Acenaphthene | 1657 | 50 | 2000 | 0 | 82.8 | 45-110 | 0 | | | |
| Acenaphthylene | 1670 | 50 | 2000 | 0 | 83.5 | 45-105 | 0 | | | |
| Anthracene | 1842 | 50 | 2000 | 0 | 92.1 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1849 | 50 | 2000 | 0 | 92.4 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1904 | 50 | 2000 | 0 | 95.2 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1909 | 50 | 2000 | 0 | 95.4 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2149 | 50 | 2000 | 0 | 107 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 1825 | 50 | 2000 | 0 | 91.2 | 45-115 | 0 | | | |
| Chrysene | 1929 | 50 | 2000 | 0 | 96.4 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2080 | 50 | 2000 | 0 | 104 | 40-125 | 0 | | | |
| Fluoranthene | 1839 | 50 | 2000 | 0 | 92 | 55-115 | 0 | | | |
| Fluorene | 1730 | 50 | 2000 | 0 | 86.5 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2084 | 50 | 2000 | 0 | 104 | 40-120 | 0 | | | |
| Naphthalene | 1580 | 50 | 2000 | 0 | 79 | 40-105 | 0 | | | |
| Phenanthrene | 1824 | 50 | 2000 | 0 | 91.2 | 50-110 | 0 | | | |
| Pyrene | 1976 | 50 | 2000 | 0 | 98.8 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *4500* | 0 | *5000* | 0 | *90* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3342* | 0 | *5000* | 0 | *66.8* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3675* | 0 | *5000* | 0 | *73.5* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4912* | 0 | *5000* | 0 | *98.2* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3234* | 0 | *5000* | 0 | *64.7* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3418* | 0 | *5000* | 0 | *68.4* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42809** Instrument ID **SVMS7** Method: **SW8270**

**MS** Sample ID: **1208138-02A MS** Units: **µg/Kg** Analysis Date: **8/7/2012 04:38 PM**
Client ID: **SBSA0141S080212S034** Run ID: **SVMS7_120807A** SeqNo: **2047553** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1263 | 50 | 1998 | 0 | 63.2 | 45-105 | 0 | | | |
| Acenaphthene | 1432 | 50 | 1998 | 0 | 71.6 | 45-110 | 0 | | | |
| Acenaphthylene | 1445 | 50 | 1998 | 0 | 72.3 | 45-105 | 0 | | | |
| Anthracene | 1499 | 50 | 1998 | 0 | 75 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1455 | 50 | 1998 | 0 | 72.8 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1517 | 50 | 1998 | 0 | 75.9 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1537 | 50 | 1998 | 0 | 76.9 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1616 | 50 | 1998 | 0 | 80.8 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 1497 | 50 | 1998 | 0 | 74.9 | 45-115 | 0 | | | |
| Chrysene | 1480 | 50 | 1998 | 0 | 74 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1590 | 50 | 1998 | 0 | 79.6 | 40-125 | 0 | | | |
| Fluoranthene | 1451 | 50 | 1998 | 0 | 72.6 | 55-115 | 0 | | | |
| Fluorene | 1473 | 50 | 1998 | 0 | 73.7 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1588 | 50 | 1998 | 0 | 79.4 | 40-120 | 0 | | | |
| Naphthalene | 1111 | 50 | 1998 | 0 | 55.6 | 40-105 | 0 | | | |
| Phenanthrene | 1489 | 50 | 1998 | 0 | 74.5 | 50-110 | 0 | | | |
| Pyrene | 1492 | 50 | 1998 | 0 | 74.6 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *3912* | 0 | *4996* | 0 | *78.3* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *2789* | 0 | *4996* | 0 | *55.8* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *2442* | 0 | *4996* | 0 | *48.9* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3671* | 0 | *4996* | 0 | *73.5* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2115* | 0 | *4996* | 0 | *42.3* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *2667* | 0 | *4996* | 0 | *53.4* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42809** Instrument ID **SVMS7** Method: **SW8270**

**MSD** Sample ID: **1208138-02A MSD** Units: **µg/Kg** Analysis Date: **8/7/2012 05:07 PM**
Client ID: **SBSA0141S080212S034** Run ID: **SVMS7_120807A** SeqNo: **2047555** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1181 | 49 | 1974 | 0 | 59.8 | 45-105 | 1263 | 6.74 | 30 | |
| Acenaphthene | 1366 | 49 | 1974 | 0 | 69.2 | 45-110 | 1432 | 4.69 | 30 | |
| Acenaphthylene | 1402 | 49 | 1974 | 0 | 71 | 45-105 | 1445 | 3.03 | 30 | |
| Anthracene | 1534 | 49 | 1974 | 0 | 77.7 | 55-105 | 1499 | 2.33 | 30 | |
| Benzo(a)anthracene | 1452 | 49 | 1974 | 0 | 73.6 | 50-110 | 1455 | 0.187 | 30 | |
| Benzo(a)pyrene | 1531 | 49 | 1974 | 0 | 77.6 | 50-110 | 1517 | 0.939 | 30 | |
| Benzo(b)fluoranthene | 1621 | 49 | 1974 | 0 | 82.1 | 45-115 | 1537 | 5.33 | 30 | |
| Benzo(g,h,i)perylene | 1569 | 49 | 1974 | 0 | 79.5 | 40-125 | 1616 | 2.9 | 30 | |
| Benzo(k)fluoranthene | 1502 | 49 | 1974 | 0 | 76.1 | 45-115 | 1497 | 0.378 | 30 | |
| Chrysene | 1502 | 49 | 1974 | 0 | 76.1 | 55-110 | 1480 | 1.52 | 30 | |
| Dibenzo(a,h)anthracene | 1579 | 49 | 1974 | 0 | 80 | 40-125 | 1590 | 0.647 | 30 | |
| Fluoranthene | 1543 | 49 | 1974 | 0 | 78.2 | 55-115 | 1451 | 6.15 | 30 | |
| Fluorene | 1447 | 49 | 1974 | 0 | 73.3 | 50-110 | 1473 | 1.76 | 30 | |
| Indeno(1,2,3-cd)pyrene | 1568 | 49 | 1974 | 0 | 79.4 | 40-120 | 1588 | 1.21 | 30 | |
| Naphthalene | 1082 | 49 | 1974 | 0 | 54.8 | 40-105 | 1111 | 2.66 | 30 | |
| Phenanthrene | 1501 | 49 | 1974 | 0 | 76 | 50-110 | 1489 | 0.848 | 30 | |
| Pyrene | 1445 | 49 | 1974 | 0 | 73.2 | 45-125 | 1492 | 3.17 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *4016* | 0 | *4935* | 0 | *81.4* | *34-140* | 3912 | *2.62* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *2723* | 0 | *4935* | 0 | *55.2* | *12-100* | 2789 | *2.4* | *40* | |
| *Surr: 2-Fluorophenol* | *2549* | 0 | *4935* | 0 | *51.6* | *33-117* | 2442 | *4.28* | *40* | |
| *Surr: 4-Terphenyl-d14* | *3730* | 0 | *4935* | 0 | *75.6* | *25-137* | 3671 | *1.61* | *40* | |
| *Surr: Nitrobenzene-d5* | *2176* | 0 | *4935* | 0 | *44.1* | *37-107* | 2115 | *2.82* | *40* | |
| *Surr: Phenol-d6* | *2588* | 0 | *4935* | 0 | *52.4* | *40-106* | 2667 | *2.99* | *40* | |

**The following samples were analyzed in this batch:** 1208138-01A 1208138-02A 1208138-03A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 12:45 PM**
Client ID: Run ID: **VMS7_120806A** SeqNo: **2046412** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | 113 | 200 | | | | | | | | J |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 161.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 20 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *983.5* | 0 | *1000* | 0 | *98.4* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1082* | 0 | *1000* | 0 | *108* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *965.5* | 0 | *1000* | 0 | *96.6* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1020* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 01:31 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047228** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 229 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *981.5* | 0 | *1000* | 0 | *98.2* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *991* | 0 | *1000* | 0 | *99.1* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *974* | 0 | *1000* | 0 | *97.4* | *70-130* | 0 |
| *Surr: Toluene-d8* | *990.5* | 0 | *1000* | 0 | *99* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 03:31 PM**
Client ID: Run ID: **VMS6_120807A** SeqNo: **2047558** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 185.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1107* | 0 | *1000* | 0 | *111* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1065* | 0 | *1000* | 0 | *106* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1002* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1086* | 0 | *1000* | 0 | *109* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 08:46 AM**
Client ID: Run ID: **VMS7_120806A** SeqNo: **2046411** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1107 | 30 | 1000 | 0 | 111 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1232 | 30 | 1000 | 0 | 123 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1040 | 30 | 1000 | 0 | 104 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1075 | 30 | 1000 | 0 | 108 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1058 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1200 | 30 | 1000 | 0 | 120 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1065 | 30 | 1000 | 0 | 106 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1062 | 30 | 1000 | 0 | 106 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 945.5 | 30 | 1000 | 0 | 94.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1158 | 30 | 1000 | 0 | 116 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1119 | 30 | 1000 | 0 | 112 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 993.5 | 30 | 1000 | 0 | 99.4 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1074 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1104 | 30 | 1000 | 0 | 110 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1034 | 30 | 1000 | 0 | 103 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1084 | 30 | 1000 | 0 | 108 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1167 | 30 | 1000 | 0 | 117 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1128 | 30 | 1000 | 0 | 113 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1160 | 30 | 1000 | 0 | 116 | 70-125 | 0 | | | |
| 2-Butanone | 1084 | 200 | 1000 | 0 | 108 | 30-160 | 0 | | | |
| 2-Hexanone | 1074 | 30 | 1000 | 0 | 107 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1370 | 30 | 1000 | 0 | 137 | 45-145 | 0 | | | |
| Acetone | 771.5 | 100 | 1000 | 0 | 77.2 | 20-160 | 0 | | | B |
| Acrylonitrile | 934.5 | 100 | 1000 | 0 | 93.4 | 70-135 | 0 | | | |
| Benzene | 1136 | 30 | 1000 | 0 | 114 | 75-125 | 0 | | | |
| Bromobenzene | 1100 | 30 | 1000 | 0 | 110 | 65-120 | 0 | | | |
| Bromochloromethane | 1116 | 30 | 1000 | 0 | 112 | 70-125 | 0 | | | |
| Bromodichloromethane | 988.5 | 30 | 1000 | 0 | 98.8 | 70-130 | 0 | | | |
| Bromoform | 1051 | 30 | 1000 | 0 | 105 | 55-135 | 0 | | | |
| Bromomethane | 1238 | 75 | 1000 | 0 | 124 | 30-160 | 0 | | | |
| Carbon disulfide | 1187 | 30 | 1000 | 0 | 119 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1251 | 30 | 1000 | 0 | 125 | 65-135 | 0 | | | |
| Chlorobenzene | 1148 | 30 | 1000 | 0 | 115 | 75-125 | 0 | | | |
| Chloroethane | 1066 | 100 | 1000 | 0 | 107 | 40-155 | 0 | | | |
| Chloroform | 1080 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| Chloromethane | 1048 | 100 | 1000 | 0 | 105 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1096 | 30 | 1000 | 0 | 110 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1044 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| Dibromochloromethane | 1026 | 30 | 1000 | 0 | 103 | 65-135 | 0 | | | |
| Dibromomethane | 1025 | 30 | 1000 | 0 | 102 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 895 | 30 | 1000 | 0 | 89.5 | 35-135 | 0 | | | |
| Ethylbenzene | 1190 | 30 | 1000 | 0 | 119 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

| Batch ID: **42826** | Instrument ID **VMS7** | | Method: **SW8260** | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 981.5 | 30 | 1000 | 0 | 98.2 | 70-135 | 0 |
| Isopropylbenzene | 1196 | 30 | 1000 | 0 | 120 | 75-130 | 0 |
| m,p-Xylene | 2370 | 60 | 2000 | 0 | 118 | 80-125 | 0 |
| Methyl tert-butyl ether | 953.5 | 30 | 1000 | 0 | 95.4 | 75-125 | 0 |
| Methylene chloride | 1024 | 30 | 1000 | 0 | 102 | 55-145 | 0 |
| Naphthalene | 1163 | 100 | 1000 | 0 | 116 | 40-140 | 0 |
| n-Butylbenzene | 1232 | 30 | 1000 | 0 | 123 | 65-140 | 0 |
| n-Propylbenzene | 1148 | 30 | 1000 | 0 | 115 | 65-135 | 0 |
| o-Xylene | 1146 | 30 | 1000 | 0 | 115 | 75-125 | 0 |
| p-Isopropyltoluene | 1160 | 30 | 1000 | 0 | 116 | 75-135 | 0 |
| sec-Butylbenzene | 1162 | 30 | 1000 | 0 | 116 | 65-130 | 0 |
| Styrene | 1137 | 30 | 1000 | 0 | 114 | 75-125 | 0 |
| tert-Butylbenzene | 1116 | 30 | 1000 | 0 | 112 | 65-130 | 0 |
| Tetrachloroethene | 1394 | 30 | 1000 | 0 | 139 | 64-140 | 0 |
| Tetrahydrofuran | 985 | 200 | 1000 | 0 | 98.5 | 70-135 | 0 |
| Toluene | 1208 | 30 | 1000 | 0 | 121 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1118 | 30 | 1000 | 0 | 112 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1088 | 30 | 1000 | 0 | 109 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 1056 | 30 | 1000 | 0 | 106 | 70-135 | 0 |
| Trichloroethene | 1234 | 30 | 1000 | 0 | 123 | 75-125 | 0 |
| Trichlorofluoromethane | 1012 | 30 | 1000 | 0 | 101 | 25-185 | 0 |
| Vinyl chloride | 1032 | 30 | 1000 | 0 | 103 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *966.5* | 0 | *1000* | 0 | *96.6* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1002* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1038* | 0 | *1000* | 0 | *104* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 09:37 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047229** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 962.5 | 30 | 1000 | 0 | 96.2 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1063 | 30 | 1000 | 0 | 106 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 971.5 | 30 | 1000 | 0 | 97.2 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 978 | 30 | 1000 | 0 | 97.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 992.5 | 30 | 1000 | 0 | 99.2 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1102 | 30 | 1000 | 0 | 110 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 909.5 | 30 | 1000 | 0 | 91 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1022 | 30 | 1000 | 0 | 102 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 867.5 | 30 | 1000 | 0 | 86.8 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 968 | 30 | 1000 | 0 | 96.8 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1032 | 30 | 1000 | 0 | 103 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 886 | 30 | 1000 | 0 | 88.6 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1021 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 968.5 | 30 | 1000 | 0 | 96.8 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1027 | 30 | 1000 | 0 | 103 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1046 | 30 | 1000 | 0 | 105 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1065 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 972 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 973.5 | 30 | 1000 | 0 | 97.4 | 70-125 | 0 | | | |
| 2-Butanone | 1214 | 200 | 1000 | 0 | 121 | 30-160 | 0 | | | |
| 2-Hexanone | 1294 | 30 | 1000 | 0 | 129 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1304 | 30 | 1000 | 0 | 130 | 45-145 | 0 | | | |
| Acetone | 1163 | 100 | 1000 | 0 | 116 | 20-160 | 0 | | | B |
| Acrylonitrile | 1072 | 100 | 1000 | 0 | 107 | 70-135 | 0 | | | |
| Benzene | 1064 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |
| Bromobenzene | 1020 | 30 | 1000 | 0 | 102 | 65-120 | 0 | | | |
| Bromochloromethane | 1074 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| Bromodichloromethane | 968.5 | 30 | 1000 | 0 | 96.8 | 70-130 | 0 | | | |
| Bromoform | 958.5 | 30 | 1000 | 0 | 95.8 | 55-135 | 0 | | | |
| Bromomethane | 1236 | 75 | 1000 | 0 | 124 | 30-160 | 0 | | | |
| Carbon disulfide | 1158 | 30 | 1000 | 0 | 116 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1062 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| Chlorobenzene | 1014 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 1208 | 100 | 1000 | 0 | 121 | 40-155 | 0 | | | |
| Chloroform | 971.5 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| Chloromethane | 1179 | 100 | 1000 | 0 | 118 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1018 | 30 | 1000 | 0 | 102 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1008 | 30 | 1000 | 0 | 101 | 70-125 | 0 | | | |
| Dibromochloromethane | 896 | 30 | 1000 | 0 | 89.6 | 65-135 | 0 | | | |
| Dibromomethane | 1006 | 30 | 1000 | 0 | 101 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 1089 | 30 | 1000 | 0 | 109 | 35-135 | 0 | | | |
| Ethylbenzene | 1063 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 804 | 30 | 1000 | 0 | 80.4 | 70-135 | 0 |
| Isopropylbenzene | 1044 | 30 | 1000 | 0 | 104 | 75-130 | 0 |
| m,p-Xylene | 2159 | 60 | 2000 | 0 | 108 | 80-125 | 0 |
| Methyl tert-butyl ether | 1013 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| Methylene chloride | 1024 | 30 | 1000 | 0 | 102 | 55-145 | 0 |
| Naphthalene | 929.5 | 100 | 1000 | 0 | 93 | 40-140 | 0 |
| n-Butylbenzene | 1026 | 30 | 1000 | 0 | 103 | 65-140 | 0 |
| n-Propylbenzene | 1039 | 30 | 1000 | 0 | 104 | 65-135 | 0 |
| o-Xylene | 1049 | 30 | 1000 | 0 | 105 | 75-125 | 0 |
| p-Isopropyltoluene | 999 | 30 | 1000 | 0 | 99.9 | 75-135 | 0 |
| sec-Butylbenzene | 1062 | 30 | 1000 | 0 | 106 | 65-130 | 0 |
| Styrene | 1018 | 30 | 1000 | 0 | 102 | 75-125 | 0 |
| tert-Butylbenzene | 1026 | 30 | 1000 | 0 | 103 | 65-130 | 0 |
| Tetrachloroethene | 1078 | 30 | 1000 | 0 | 108 | 64-140 | 0 |
| Tetrahydrofuran | 991.5 | 200 | 1000 | 0 | 99.2 | 70-135 | 0 |
| Toluene | 1076 | 30 | 1000 | 0 | 108 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1053 | 30 | 1000 | 0 | 105 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1009 | 30 | 1000 | 0 | 101 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 947 | 30 | 1000 | 0 | 94.7 | 70-135 | 0 |
| Trichloroethene | 1012 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| Trichlorofluoromethane | 933.5 | 30 | 1000 | 0 | 93.4 | 25-185 | 0 |
| Vinyl chloride | 1216 | 30 | 1000 | 0 | 122 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *887* | 0 | *1000* | 0 | *88.7* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1080* | 0 | *1000* | 0 | *108* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *873.5* | 0 | *1000* | 0 | *87.4* | *70-130* | 0 |
| *Surr: Toluene-d8* | *927* | 0 | *1000* | 0 | *92.7* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42826-42826** Units: **µg/Kg** Analysis Date: **8/7/2012 02:18 PM**
Client ID: Run ID: **VMS6_120807A** SeqNo: **2047557** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 899 | 30 | 1000 | 0 | 89.9 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1068 | 30 | 1000 | 0 | 107 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 948.5 | 30 | 1000 | 0 | 94.8 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 938 | 30 | 1000 | 0 | 93.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 995 | 30 | 1000 | 0 | 99.5 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1070 | 30 | 1000 | 0 | 107 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1018 | 30 | 1000 | 0 | 102 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 972 | 30 | 1000 | 0 | 97.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 941.5 | 30 | 1000 | 0 | 94.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1032 | 30 | 1000 | 0 | 103 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1081 | 30 | 1000 | 0 | 108 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 883.5 | 30 | 1000 | 0 | 88.4 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 987.5 | 30 | 1000 | 0 | 98.8 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 976.5 | 30 | 1000 | 0 | 97.6 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1049 | 30 | 1000 | 0 | 105 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1008 | 30 | 1000 | 0 | 101 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1110 | 30 | 1000 | 0 | 111 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 997 | 30 | 1000 | 0 | 99.7 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1019 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| 2-Butanone | 767.5 | 200 | 1000 | 0 | 76.8 | 30-160 | 0 | | | |
| 2-Hexanone | 962 | 30 | 1000 | 0 | 96.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1132 | 30 | 1000 | 0 | 113 | 45-145 | 0 | | | |
| Acetone | 839.5 | 100 | 1000 | 0 | 84 | 20-160 | 0 | | | B |
| Acrylonitrile | 995.5 | 100 | 1000 | 0 | 99.6 | 70-135 | 0 | | | |
| Benzene | 1008 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Bromobenzene | 1058 | 30 | 1000 | 0 | 106 | 65-120 | 0 | | | |
| Bromochloromethane | 1056 | 30 | 1000 | 0 | 106 | 70-125 | 0 | | | |
| Bromodichloromethane | 1060 | 30 | 1000 | 0 | 106 | 70-130 | 0 | | | |
| Bromoform | 962 | 30 | 1000 | 0 | 96.2 | 55-135 | 0 | | | |
| Bromomethane | 969.5 | 75 | 1000 | 0 | 97 | 30-160 | 0 | | | |
| Carbon disulfide | 1198 | 30 | 1000 | 0 | 120 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1094 | 30 | 1000 | 0 | 109 | 65-135 | 0 | | | |
| Chlorobenzene | 1008 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 915.5 | 100 | 1000 | 0 | 91.6 | 40-155 | 0 | | | |
| Chloroform | 970 | 30 | 1000 | 0 | 97 | 70-125 | 0 | | | |
| Chloromethane | 875 | 100 | 1000 | 0 | 87.5 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1036 | 30 | 1000 | 0 | 104 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 961 | 30 | 1000 | 0 | 96.1 | 70-125 | 0 | | | |
| Dibromochloromethane | 881 | 30 | 1000 | 0 | 88.1 | 65-135 | 0 | | | |
| Dibromomethane | 967.5 | 30 | 1000 | 0 | 96.8 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 886 | 30 | 1000 | 0 | 88.6 | 35-135 | 0 | | | |
| Ethylbenzene | 1061 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

| Batch ID: **42826** | Instrument ID **VMS7** | | Method: **SW8260** | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1009 | 30 | 1000 | 0 | 101 | 70-135 | 0 |
| Isopropylbenzene | 1078 | 30 | 1000 | 0 | 108 | 75-130 | 0 |
| m,p-Xylene | 2132 | 60 | 2000 | 0 | 107 | 80-125 | 0 |
| Methyl tert-butyl ether | 1020 | 30 | 1000 | 0 | 102 | 75-125 | 0 |
| Methylene chloride | 1058 | 30 | 1000 | 0 | 106 | 55-145 | 0 |
| Naphthalene | 1015 | 100 | 1000 | 0 | 102 | 40-140 | 0 |
| n-Butylbenzene | 1095 | 30 | 1000 | 0 | 110 | 65-140 | 0 |
| n-Propylbenzene | 1075 | 30 | 1000 | 0 | 108 | 65-135 | 0 |
| o-Xylene | 1062 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| p-Isopropyltoluene | 1108 | 30 | 1000 | 0 | 111 | 75-135 | 0 |
| sec-Butylbenzene | 1146 | 30 | 1000 | 0 | 115 | 65-130 | 0 |
| Styrene | 1056 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| tert-Butylbenzene | 1116 | 30 | 1000 | 0 | 112 | 65-130 | 0 |
| Tetrachloroethene | 1030 | 30 | 1000 | 0 | 103 | 64-140 | 0 |
| Tetrahydrofuran | 1038 | 200 | 1000 | 0 | 104 | 70-135 | 0 |
| Toluene | 1066 | 30 | 1000 | 0 | 107 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1051 | 30 | 1000 | 0 | 105 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 992 | 30 | 1000 | 0 | 99.2 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 778 | 30 | 1000 | 0 | 77.8 | 70-135 | 0 |
| Trichloroethene | 944.5 | 30 | 1000 | 0 | 94.4 | 75-125 | 0 |
| Trichlorofluoromethane | 987 | 30 | 1000 | 0 | 98.7 | 25-185 | 0 |
| Vinyl chloride | 903 | 30 | 1000 | 0 | 90.3 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1104* | 0 | *1000* | 0 | *110* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1051* | 0 | *1000* | 0 | *105* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1061* | 0 | *1000* | 0 | *106* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MS** Sample ID: **1208138-02B MS** Units: **µg/Kg** Analysis Date: **8/7/2012 10:02 AM**
Client ID: **SBSA0141S080212S034** Run ID: **VMS5_120806A** SeqNo: **2047262** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 5389 | 170 | 5667 | 0 | 95.1 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 5882 | 170 | 5667 | 0 | 104 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 5301 | 170 | 5667 | 0 | 93.6 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 5429 | 170 | 5667 | 0 | 95.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 5780 | 170 | 5667 | 0 | 102 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 5944 | 170 | 5667 | 0 | 105 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 4907 | 170 | 5667 | 0 | 86.6 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 5448 | 170 | 5667 | 0 | 96.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 4938 | 170 | 5667 | 0 | 87.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 5205 | 170 | 5667 | 0 | 91.8 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 5584 | 170 | 5667 | 0 | 98.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 4958 | 170 | 5667 | 0 | 87.5 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 5621 | 170 | 5667 | 0 | 99.2 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 5451 | 170 | 5667 | 0 | 96.2 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 5800 | 170 | 5667 | 0 | 102 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 5652 | 170 | 5667 | 0 | 99.8 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 5715 | 170 | 5667 | 0 | 101 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 5502 | 170 | 5667 | 0 | 97.1 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 5602 | 170 | 5667 | 0 | 98.8 | 70-125 | 0 | | | |
| 2-Butanone | 7310 | 570 | 5667 | 0 | 129 | 30-160 | 0 | | | |
| 2-Hexanone | 6993 | 170 | 5667 | 0 | 123 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 7446 | 170 | 5667 | 0 | 131 | 45-145 | 0 | | | |
| Acetone | 8290 | 570 | 5667 | 0 | 146 | 20-160 | 0 | | | B |
| Acrylonitrile | 6114 | 170 | 5667 | 0 | 108 | 70-135 | 0 | | | |
| Benzene | 6015 | 170 | 5667 | 0 | 106 | 75-125 | 0 | | | |
| Bromobenzene | 5686 | 170 | 5667 | 0 | 100 | 65-120 | 0 | | | |
| Bromochloromethane | 6015 | 170 | 5667 | 0 | 106 | 70-125 | 0 | | | |
| Bromodichloromethane | 5485 | 170 | 5667 | 0 | 96.8 | 70-130 | 0 | | | |
| Bromoform | 5618 | 170 | 5667 | 0 | 99.2 | 55-135 | 0 | | | |
| Bromomethane | 6896 | 170 | 5667 | 0 | 122 | 30-160 | 0 | | | |
| Carbon disulfide | 6613 | 170 | 5667 | 0 | 117 | 45-160 | 0 | | | |
| Carbon tetrachloride | 5865 | 170 | 5667 | 0 | 104 | 65-135 | 0 | | | |
| Chlorobenzene | 5678 | 170 | 5667 | 0 | 100 | 75-125 | 0 | | | |
| Chloroethane | 6797 | 570 | 5667 | 0 | 120 | 40-155 | 0 | | | |
| Chloroform | 5610 | 170 | 5667 | 0 | 99 | 70-125 | 0 | | | |
| Chloromethane | 6551 | 170 | 5667 | 0 | 116 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 5559 | 170 | 5667 | 0 | 98.1 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 5378 | 170 | 5667 | 0 | 94.9 | 70-125 | 0 | | | |
| Dibromochloromethane | 5222 | 170 | 5667 | 0 | 92.2 | 65-135 | 0 | | | |
| Dibromomethane | 5664 | 170 | 5667 | 0 | 100 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 5939 | 170 | 5667 | 0 | 105 | 35-135 | 0 | | | |
| Ethylbenzene | 5817 | 170 | 5667 | 0 | 103 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 4519 | 170 | 5667 | 0 | 79.8 | 70-135 | 0 |
| Isopropylbenzene | 5689 | 170 | 5667 | 0 | 100 | 75-130 | 0 |
| m,p-Xylene | 11850 | 340 | 11330 | 0 | 105 | 80-125 | 0 |
| Methyl tert-butyl ether | 5822 | 170 | 5667 | 0 | 103 | 75-125 | 0 |
| Methylene chloride | 6157 | 170 | 5667 | 0 | 109 | 55-145 | 0 |
| Naphthalene | 5148 | 570 | 5667 | 0 | 90.8 | 40-140 | 0 |
| n-Butylbenzene | 5378 | 170 | 5667 | 0 | 94.9 | 65-140 | 0 |
| n-Propylbenzene | 5587 | 170 | 5667 | 0 | 98.6 | 65-135 | 0 |
| o-Xylene | 5851 | 170 | 5667 | 0 | 103 | 75-125 | 0 |
| p-Isopropyltoluene | 5420 | 170 | 5667 | 0 | 95.6 | 75-135 | 0 |
| sec-Butylbenzene | 5624 | 170 | 5667 | 0 | 99.2 | 65-130 | 0 |
| Styrene | 5482 | 170 | 5667 | 0 | 96.8 | 75-125 | 0 |
| tert-Butylbenzene | 5505 | 170 | 5667 | 0 | 97.2 | 65-130 | 0 |
| Tetrachloroethene | 5822 | 170 | 5667 | 0 | 103 | 64-140 | 0 |
| Tetrahydrofuran | 5403 | 570 | 5667 | 0 | 95.4 | 70-135 | 0 |
| Toluene | 6012 | 170 | 5667 | 0 | 106 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 5976 | 170 | 5667 | 0 | 105 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 5307 | 170 | 5667 | 0 | 93.6 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 4771 | 170 | 5667 | 0 | 84.2 | 70-135 | 0 |
| Trichloroethene | 5726 | 170 | 5667 | 0 | 101 | 75-125 | 0 |
| Trichlorofluoromethane | 5038 | 170 | 5667 | 0 | 88.9 | 25-185 | 0 |
| Vinyl chloride | 6823 | 170 | 5667 | 0 | 120 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *4879* | 0 | *5667* | 0 | *86.1* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *6126* | 0 | *5667* | 0 | *108* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *4941* | 0 | *5667* | 0 | *87.2* | *70-130* | 0 |
| *Surr: Toluene-d8* | *5244* | 0 | *5667* | 0 | *92.6* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1208138-02B MSD** Units: **µg/Kg** Analysis Date: **8/7/2012 10:26 AM**
Client ID: **SBSA0141S080212S034** Run ID: **VMS5_120806A** SeqNo: **2047263** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 5103 | 170 | 5667 | 0 | 90 | 75-125 | 5389 | 5.46 | 30 | |
| 1,1,1-Trichloroethane | 5599 | 170 | 5667 | 0 | 98.8 | 70-135 | 5882 | 4.94 | 30 | |
| 1,1,2,2-Tetrachloroethane | 5162 | 170 | 5667 | 0 | 91.1 | 55-130 | 5301 | 2.65 | 30 | |
| 1,1,2-Trichloroethane | 5239 | 170 | 5667 | 0 | 92.4 | 60-125 | 5429 | 3.56 | 30 | |
| 1,1-Dichloroethane | 5284 | 170 | 5667 | 0 | 93.2 | 75-125 | 5780 | 8.96 | 30 | |
| 1,1-Dichloroethene | 5579 | 170 | 5667 | 0 | 98.4 | 65-135 | 5944 | 6.34 | 30 | |
| 1,2,3-Trichlorobenzene | 4916 | 170 | 5667 | 0 | 86.8 | 60-135 | 4907 | 0.173 | 30 | |
| 1,2,3-Trichloropropane | 5386 | 170 | 5667 | 0 | 95 | 65-130 | 5448 | 1.15 | 30 | |
| 1,2,3-Trimethylbenzene | 4732 | 170 | 5667 | 0 | 83.5 | 65-135 | 4938 | 4.28 | 30 | |
| 1,2,4-Trichlorobenzene | 5165 | 170 | 5667 | 0 | 91.2 | 65-130 | 5205 | 0.765 | 30 | |
| 1,2,4-Trimethylbenzene | 5460 | 170 | 5667 | 0 | 96.4 | 65-135 | 5584 | 2.26 | 30 | |
| 1,2-Dibromo-3-chloropropane | 4706 | 170 | 5667 | 0 | 83 | 40-135 | 4958 | 5.22 | 30 | |
| 1,2-Dibromoethane | 5412 | 170 | 5667 | 0 | 95.5 | 70-125 | 5621 | 3.8 | 30 | |
| 1,2-Dichlorobenzene | 5312 | 170 | 5667 | 0 | 93.8 | 75-120 | 5451 | 2.58 | 30 | |
| 1,2-Dichloroethane | 5664 | 170 | 5667 | 0 | 100 | 70-135 | 5800 | 2.37 | 30 | |
| 1,2-Dichloropropane | 5607 | 170 | 5667 | 0 | 99 | 70-120 | 5652 | 0.805 | 30 | |
| 1,3,5-Trimethylbenzene | 5562 | 170 | 5667 | 0 | 98.2 | 65-135 | 5715 | 2.71 | 30 | |
| 1,3-Dichlorobenzene | 5321 | 170 | 5667 | 0 | 93.9 | 70-125 | 5502 | 3.35 | 30 | |
| 1,4-Dichlorobenzene | 5369 | 170 | 5667 | 0 | 94.8 | 70-125 | 5602 | 4.24 | 30 | |
| 2-Butanone | 7571 | 570 | 5667 | 0 | 134 | 30-160 | 7310 | 3.5 | 30 | |
| 2-Hexanone | 7064 | 170 | 5667 | 0 | 125 | 45-145 | 6993 | 1.01 | 30 | |
| 4-Methyl-2-pentanone | 7010 | 170 | 5667 | 0 | 124 | 45-145 | 7446 | 6.04 | 30 | |
| Acetone | 7531 | 570 | 5667 | 0 | 133 | 20-160 | 8290 | 9.6 | 30 | B |
| Acrylonitrile | 6001 | 170 | 5667 | 0 | 106 | 70-135 | 6114 | 1.87 | 30 | |
| Benzene | 5743 | 170 | 5667 | 0 | 101 | 75-125 | 6015 | 4.63 | 30 | |
| Bromobenzene | 5502 | 170 | 5667 | 0 | 97.1 | 65-120 | 5686 | 3.29 | 30 | |
| Bromochloromethane | 5701 | 170 | 5667 | 0 | 101 | 70-125 | 6015 | 5.37 | 30 | |
| Bromodichloromethane | 5341 | 170 | 5667 | 0 | 94.2 | 70-130 | 5485 | 2.67 | 30 | |
| Bromoform | 5658 | 170 | 5667 | 0 | 99.8 | 55-135 | 5618 | 0.704 | 30 | |
| Bromomethane | 6214 | 170 | 5667 | 0 | 110 | 30-160 | 6896 | 10.4 | 30 | |
| Carbon disulfide | 6143 | 170 | 5667 | 0 | 108 | 45-160 | 6613 | 7.37 | 30 | |
| Carbon tetrachloride | 5684 | 170 | 5667 | 0 | 100 | 65-135 | 5865 | 3.14 | 30 | |
| Chlorobenzene | 5409 | 170 | 5667 | 0 | 95.4 | 75-125 | 5678 | 4.86 | 30 | |
| Chloroethane | 6338 | 570 | 5667 | 0 | 112 | 40-155 | 6797 | 6.99 | 30 | |
| Chloroform | 5242 | 170 | 5667 | 0 | 92.5 | 70-125 | 5610 | 6.79 | 30 | |
| Chloromethane | 6262 | 170 | 5667 | 0 | 110 | 50-130 | 6551 | 4.51 | 30 | |
| cis-1,2-Dichloroethene | 5318 | 170 | 5667 | 0 | 93.8 | 65-125 | 5559 | 4.43 | 30 | |
| cis-1,3-Dichloropropene | 5123 | 170 | 5667 | 0 | 90.4 | 70-125 | 5378 | 4.86 | 30 | |
| Dibromochloromethane | 4995 | 170 | 5667 | 0 | 88.2 | 65-135 | 5222 | 4.44 | 30 | |
| Dibromomethane | 5284 | 170 | 5667 | 0 | 93.2 | 75-130 | 5664 | 6.94 | 30 | |
| Dichlorodifluoromethane | 5457 | 170 | 5667 | 0 | 96.3 | 35-135 | 5939 | 8.45 | 30 | |
| Ethylbenzene | 5655 | 170 | 5667 | 0 | 99.8 | 75-125 | 5817 | 2.82 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42826** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 4273 | 170 | 5667 | 0 | 75.4 | 70-135 | 4519 | 5.61 | 30 |
| Isopropylbenzene | 5531 | 170 | 5667 | 0 | 97.6 | 75-130 | 5689 | 2.83 | 30 |
| m,p-Xylene | 11400 | 340 | 11330 | 0 | 101 | 80-125 | 11850 | 3.9 | 30 |
| Methyl tert-butyl ether | 5636 | 170 | 5667 | 0 | 99.4 | 75-125 | 5822 | 3.26 | 30 |
| Methylene chloride | 5704 | 170 | 5667 | 0 | 101 | 55-145 | 6157 | 7.64 | 30 |
| Naphthalene | 5176 | 570 | 5667 | 0 | 91.4 | 40-140 | 5148 | 0.549 | 30 |
| n-Butylbenzene | 5304 | 170 | 5667 | 0 | 93.6 | 65-140 | 5378 | 1.38 | 30 |
| n-Propylbenzene | 5460 | 170 | 5667 | 0 | 96.4 | 65-135 | 5587 | 2.31 | 30 |
| o-Xylene | 5573 | 170 | 5667 | 0 | 98.4 | 75-125 | 5851 | 4.86 | 30 |
| p-Isopropyltoluene | 5318 | 170 | 5667 | 0 | 93.8 | 75-135 | 5420 | 1.9 | 30 |
| sec-Butylbenzene | 5545 | 170 | 5667 | 0 | 97.8 | 65-130 | 5624 | 1.42 | 30 |
| Styrene | 5208 | 170 | 5667 | 0 | 91.9 | 75-125 | 5482 | 5.14 | 30 |
| tert-Butylbenzene | 5519 | 170 | 5667 | 0 | 97.4 | 65-130 | 5505 | 0.257 | 30 |
| Tetrachloroethene | 5675 | 170 | 5667 | 0 | 100 | 64-140 | 5822 | 2.56 | 30 |
| Tetrahydrofuran | 4564 | 570 | 5667 | 0 | 80.6 | 70-135 | 5403 | 16.8 | 30 |
| Toluene | 5667 | 170 | 5667 | 0 | 100 | 70-125 | 6012 | 5.92 | 30 |
| trans-1,2-Dichloroethene | 5641 | 170 | 5667 | 0 | 99.6 | 65-135 | 5976 | 5.76 | 30 |
| trans-1,3-Dichloropropene | 5134 | 170 | 5667 | 0 | 90.6 | 65-125 | 5307 | 3.31 | 30 |
| trans-1,4-Dichloro-2-butene | 4559 | 170 | 5667 | 0 | 80.4 | 70-135 | 4771 | 4.56 | 30 |
| Trichloroethene | 5514 | 170 | 5667 | 0 | 97.3 | 75-125 | 5726 | 3.78 | 30 |
| Trichlorofluoromethane | 4802 | 170 | 5667 | 0 | 84.8 | 25-185 | 5038 | 4.78 | 30 |
| Vinyl chloride | 6075 | 170 | 5667 | 0 | 107 | 60-125 | 6823 | 11.6 | 30 |
| *Surr: 1,2-Dichloroethane-d4* | *4848* | 0 | *5667* | 0 | *85.6* | *70-130* | 4879 | *0.641* | *30* |
| *Surr: 4-Bromofluorobenzene* | *6225* | 0 | *5667* | 0 | *110* | *70-130* | 6126 | *1.61* | *30* |
| *Surr: Dibromofluoromethane* | *4831* | 0 | *5667* | 0 | *85.2* | *70-130* | 4941 | *2.26* | *30* |
| *Surr: Toluene-d8* | *5174* | 0 | *5667* | 0 | *91.3* | *70-130* | 5244 | *1.36* | *30* |

**The following samples were analyzed in this batch:** 1208138-01B 1208138-02B 1208138-03B 1208138-04A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **R108283** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R108283** Units: **% of sample** Analysis Date: **8/7/2012 02:11 PM**
Client ID: Run ID: **MOIST_120807A** SeqNo: **2047768** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | ND | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R108283** Units: **% of sample** Analysis Date: **8/7/2012 02:11 PM**
Client ID: Run ID: **MOIST_120807A** SeqNo: **2047764** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 100 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | |

**DUP** Sample ID: **1208134-03B DUP** Units: **% of sample** Analysis Date: **8/7/2012 02:11 PM**
Client ID: Run ID: **MOIST_120807A** SeqNo: **2047739** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 23.18 | 0.050 | 0 | 0 | 0 | 0-0 | 23.21 | 0.129 | 20 | |

**DUP** Sample ID: **1208137-03A DUP** Units: **% of sample** Analysis Date: **8/7/2012 02:11 PM**
Client ID: Run ID: **MOIST_120807A** SeqNo: **2047749** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 88.97 | 0.050 | 0 | 0 | 0 | 0-0 | 89.01 | 0.0449 | 20 | |

**The following samples were analyzed in this batch:** 1208138-01A 1208138-03A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208138
**Project:** Marshall KRRI Source Area 8/2/12

# QC BATCH REPORT

Batch ID: **R108291** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R108291** Units: **% of sample** Analysis Date: **8/8/2012 09:45 AM**
Client ID: Run ID: **MOIST_120808A** SeqNo: **2047944** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 0.07 | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R108291** Units: **% of sample** Analysis Date: **8/8/2012 09:45 AM**
Client ID: Run ID: **MOIST_120808A** SeqNo: **2047940** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 100 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | B |

**DUP** Sample ID: **1208138-02ADUP** Units: **% of sample** Analysis Date: **8/8/2012 09:45 AM**
Client ID: **SBSA0141S080212S034** Run ID: **MOIST_120808A** SeqNo: **2048238** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 71.12 | 0.050 | 0 | 0 | 0 | 0-0 | 70 | 1.59 | 20 | B |

**DUP** Sample ID: **1208138-02ADUP** Units: **% of sample** Analysis Date: **8/8/2012 09:45 AM**
Client ID: **SBSA0141S080212S034** Run ID: **MOIST_120808A** SeqNo: **2048239** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 70.34 | 0.050 | 0 | 0 | 0 | 0-0 | 70 | 0.485 | 20 | B |

**The following samples were analyzed in this batch:** 1208138-02A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

1208138

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_080212_GMK1 | Task: KRRI_SOURCE AREA |
|---|---|---|
| | Total # of Samples: 4 | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |
| BILLING CODE: 6.00 | | |

**Lab Information:**
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

**Project Information:**
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: Bryan Stiemsma
Phone/Fax: [redacted]
Site PM Email: Bryan.Stiemsma@aecom.com

**Other Information:**
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #
Send EDD to
CC Hardcopy report
CC Hardcopy report

| ITEM # | SAMPLE ID<br>Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Leb Sample I.D. | Preservative | None | None | None | None | MeOH | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | | | |
| 1 | SBSA0141S080212S026 | SBSA0141 | SO | G | 08/02/2012 08:23 | 3 | | | X | X | X | X | X | | | | | | | | | | | |
| 2 | SBSA0141S080212S034 | SBSA0141 | SO | G | 08/02/2012 08:29 | 6 | MS/MSD | | X | X | X | X | X | | | | | | | | | | | |
| 3 | SBSA0141S080212S075 | SBSA0141 | SO | G | 08/02/2012 09:25 | 3 | | | X | X | X | X | X | | | | | | | | | | | |
| 4 | SBSA0141T080212MX | SBSA0141 | SQ | G | 08/02/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | | | |

**Additional Comments/Special Instructions:**

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 8-2-12 | 1600 | [signature] | 8-2-12 | 1602 |
| [signature] | 8-2-12 | 1735 | [signature] | 8-2-12 | 1735 |

**Sample Receipt Conditions**

| Temp in OC | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|
| 2.4°C | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER: DATE Signed: Time:

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **02-Aug-12 17:35**

Work Order: **1208138** Received by: **PD**

Checklist completed by Keith Wurenga eSignature 03-Aug-12 Date Reviewed by: Alex Csaszar eSignature 04-Aug-12 Date

Matrices: Soil
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 2.4 C | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 8/3/2012 3:58:10 PM | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | - | | |

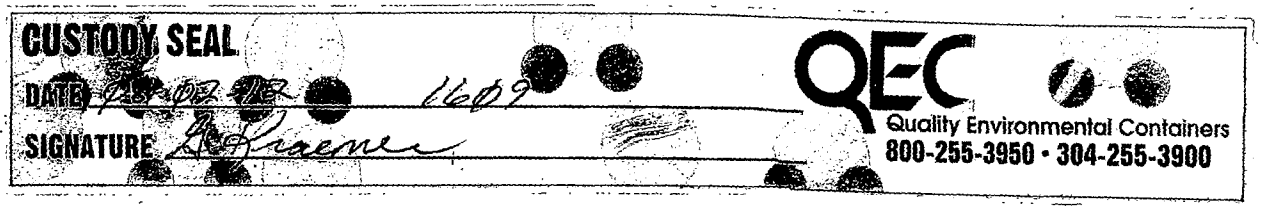
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:


CUSTODY SEAL
DATE
SIGNATURE
1609
QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

ALS Environmental

13-Aug-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI GW Source Area 8/3/12** Work Order: **1208174**

Dear Bryan,

ALS Environmental received 6 samples on 03-Aug-2012 05:10 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 40.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

NELAP ACCREDITED TNI LABORATORY

Certificate No: MN331938

## ALS Group USA, Corp

Date: 13-Aug-12

**Client:** AECOM Environment
**Project:** Marshall KRRI GW Source Area 8/3/12
**Work Order:** **1208174**

# Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1208174-01 | SBSA0139S080312G016 | Groundwater | | 8/3/2012 08:36 | 8/3/2012 17:10 | ☐ |
| 1208174-02 | SBSA0134S080312G088 | Groundwater | | 8/3/2012 10:20 | 8/3/2012 17:10 | ☐ |
| 1208174-03 | SBSA0141S080312G036 | Groundwater | | 8/3/2012 11:48 | 8/3/2012 17:10 | ☐ |
| 1208174-04 | SBSA0141D080312G036 | Groundwater | | 8/3/2012 11:48 | 8/3/2012 17:10 | ☐ |
| 1208174-05 | SBSA0138S080312G015 | Groundwater | | 8/3/2012 13:25 | 8/3/2012 17:10 | ☐ |
| 1208174-06 | SBSA0138T080312WX | Water | | 8/3/2012 14:00 | 8/3/2012 17:10 | ☐ |

**Client:** AECOM Environment
**Project:** Marshall KRRI GW Source Area 8/3/12
**Work Order:** 1208174

## Case Narrative

Batch 42836 sample SBSA0139S080312G016 MS recovery for 2-Methylnaphthalene was below the control limit. However, the MSD recovery and the RPD between the MS and MSD were in control. No qualification is required for 2-Methylnaphthalene.

Batch 42843 MS/MSD data for Nickel is not related to this project's samples. No data requires qualification.

Batch R108196, LCS recovery for Methyl Iodide was outside of the lower control limit but within the Sporadic Marginal Exceedence limit for an analyte that is not a project-specific analyte of concern. No qualification is necessary for Methyl Iodide. The Trip Blank had a reportable result for Chloroform. All samples associated with the Trip Blank were ND for Chloroform. No data requires qualification.

**Client:** AECOM Environment
**Project:** Marshall KRRI GW Source Area 8/3/12
**WorkOrder:** **1208174**

# QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| µg/L | Micrograms per Liter |
| mg/L | Milligrams per Liter |

# ALS Group USA, Corp

**Date:** *13-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0139S080312G016
**Work Order:** 1208174
**Collection Date:** 8/3/2012 8:36:00 AM
**Project:** Marshall KRRI GW Source Area 8/3/12
**Lab ID:** 1208174-01
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/7/2012** | | Analyst: **CW** |
| DRO (C10-C20) | ND | 0.10 | 0.10 | | mg/L | 1 | 8/7/2012 |
| ORO (C20-C34) | ND | 0.10 | 0.10 | | mg/L | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *38.7* | *21-90* | | | *%REC* | 1 | 8/7/2012 |
| **GASOLINE RANGE ORGANICS BY GC-FID** | | | **SW8015** | | | | Analyst: **JD** |
| GRO (C6-C10) | ND | 0.20 | 0.20 | | mg/L | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *109* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/7/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/8/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/8/2012 |
| Nickel | ND | 0.020 | 0.020 | | mg/L | 1 | 8/8/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/8/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/7/2012** | | Analyst: **HL** |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *60.8* | *32-115* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *38.7* | *32-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *26.8* | *22-59* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *70.3* | *23-112* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *38.4* | *31-93* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *15.6* | *13-36* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0139S080312G016
**Work Order:** 1208174
**Collection Date:** 8/3/2012 8:36:00 AM
**Project:** Marshall KRRI GW Source Area 8/3/12
**Lab ID:** 1208174-01
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| **1,2,4-Trimethylbenzene** | **1.1** | **1.0** | **1.0** | | **µg/L** | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 8/7/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| **Benzene** | **17** | **1.0** | **1.0** | | **µg/L** | 1 | 8/7/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Chloroform | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| **Cyclohexane** | **7.2** | **5.0** | **5.0** | | **µg/L** | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0139S080312G016
**Work Order:** 1208174
**Collection Date:** 8/3/2012 8:36:00 AM
**Project:** Marshall KRRI GW Source Area 8/3/12
**Lab ID:** 1208174-01
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Ethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| **m,p-Xylene** | **10** | **2.0** | **1.0** | | **µg/L** | 1 | 8/7/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| **o-Xylene** | **4.0** | **1.0** | **1.0** | | **µg/L** | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 8/7/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *107* | *70-120* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *103* | *75-120* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *103* | *85-115* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *106* | *85-120* | | | *%REC* | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0134S080312G088 |
| **Work Order:** | 1208174 | **Collection Date:** | 8/3/2012 10:20:00 AM |
| **Project:** | Marshall KRRI GW Source Area 8/3/12 | | |
| **Lab ID:** | 1208174-02 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/7/2012** | | Analyst: **CW** |
| DRO (C10-C20) | ND | 0.10 | 0.10 | | mg/L | 1 | 8/7/2012 |
| ORO (C20-C34) | ND | 0.10 | 0.10 | | mg/L | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *42.1* | *21-90* | | | *%REC* | 1 | 8/7/2012 |
| **GASOLINE RANGE ORGANICS BY GC-FID** | | | **SW8015** | | | | Analyst: **JD** |
| GRO (C6-C10) | ND | 0.20 | 0.20 | | mg/L | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *108* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/7/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/8/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/8/2012 |
| **Nickel** | **0.047** | **0.020** | **0.020** | | **mg/L** | 1 | 8/8/2012 |
| **Vanadium** | **0.027** | **0.0040** | **0.0040** | | **mg/L** | 1 | 8/8/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/7/2012** | | Analyst: **HL** |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *63.2* | *32-115* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *41.2* | *32-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *25.7* | *22-59* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *80.7* | *23-112* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *41.6* | *31-93* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *15.5* | *13-36* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208174
**Project:** Marshall KRRI GW Source Area 8/3/12
**Lab ID:** 1208174-02

**Client Sample ID:** SBSA0134S080312G088
**Collection Date:** 8/3/2012 10:20:00 AM
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 8/7/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Benzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Chloroform | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Cyclohexane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0134S080312G088
**Work Order:** 1208174
**Collection Date:** 8/3/2012 10:20:00 AM
**Project:** Marshall KRRI GW Source Area 8/3/12
**Lab ID:** 1208174-02
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Ethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| m,p-Xylene | ND | 2.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| o-Xylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 8/7/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *108* | *70-120* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *102* | *75-120* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *98.6* | *85-115* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *104* | *85-120* | | | *%REC* | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0141S080312G036 |
| **Work Order:** | 1208174 | **Collection Date:** | 8/3/2012 11:48:00 AM |
| **Project:** | Marshall KRRI GW Source Area 8/3/12 | | |
| **Lab ID:** | 1208174-03 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/7/2012** | | Analyst: **CW** |
| DRO (C10-C20) | ND | 0.10 | 0.10 | | mg/L | 1 | 8/7/2012 |
| ORO (C20-C34) | ND | 0.10 | 0.10 | | mg/L | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *39.7* | *21-90* | | | *%REC* | 1 | 8/7/2012 |
| **GASOLINE RANGE ORGANICS BY GC-FID** | | | **SW8015** | | | | Analyst: **JD** |
| GRO (C6-C10) | ND | 0.20 | 0.20 | | mg/L | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *108* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/7/2012** | | Analyst: **ML** |
| **Beryllium** | **0.0017** | **0.0010** | **0.0010** | | **mg/L** | 1 | 8/8/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/8/2012 |
| **Nickel** | **0.11** | **0.020** | **0.020** | | **mg/L** | 1 | 8/8/2012 |
| **Vanadium** | **0.15** | **0.0040** | **0.0040** | | **mg/L** | 1 | 8/8/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/7/2012** | | Analyst: **HL** |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *63.1* | *32-115* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *39.6* | *32-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *27.0* | *22-59* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *77.8* | *23-112* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *41.8* | *31-93* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *15.6* | *13-36* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0141S080312G036
**Work Order:** 1208174
**Collection Date:** 8/3/2012 11:48:00 AM
**Project:** Marshall KRRI GW Source Area 8/3/12
**Lab ID:** 1208174-03
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 8/7/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Benzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Chloroform | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Cyclohexane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0141S080312G036
**Work Order:** 1208174
**Collection Date:** 8/3/2012 11:48:00 AM
**Project:** Marshall KRRI GW Source Area 8/3/12
**Lab ID:** 1208174-03
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Ethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| m,p-Xylene | ND | 2.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| o-Xylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 8/7/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *106* | *70-120* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *103* | *75-120* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *99.2* | *85-115* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *102* | *85-120* | | | *%REC* | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0141D080312G036 |
| **Work Order:** | 1208174 | **Collection Date:** | 8/3/2012 11:48:00 AM |
| **Project:** | Marshall KRRI GW Source Area 8/3/12 | | |
| **Lab ID:** | 1208174-04 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/7/2012** | | Analyst: **CW** |
| DRO (C10-C20) | ND | 0.10 | 0.10 | | mg/L | 1 | 8/7/2012 |
| ORO (C20-C34) | ND | 0.10 | 0.10 | | mg/L | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *42.6* | *21-90* | | | *%REC* | 1 | 8/7/2012 |
| **GASOLINE RANGE ORGANICS BY GC-FID** | | | **SW8015** | | | | Analyst: **JD** |
| GRO (C6-C10) | ND | 0.20 | 0.20 | | mg/L | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *107* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/7/2012** | | Analyst: **ML** |
| **Beryllium** | **0.0016** | **0.0010** | **0.0010** | | **mg/L** | 1 | 8/8/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/8/2012 |
| **Nickel** | **0.10** | **0.020** | **0.020** | | **mg/L** | 1 | 8/8/2012 |
| **Vanadium** | **0.14** | **0.0040** | **0.0040** | | **mg/L** | 1 | 8/8/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/7/2012** | | Analyst: **HL** |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *58.5* | *32-115* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *39.8* | *32-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *28.0* | *22-59* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *78.8* | *23-112* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *40.6* | *31-93* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *16.1* | *13-36* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

**Client:** AECOM Environment
**Work Order:** 1208174
**Project:** Marshall KRRI GW Source Area 8/3/12
**Lab ID:** 1208174-04

**Client Sample ID:** SBSA0141D080312G036
**Collection Date:** 8/3/2012 11:48:00 AM
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 8/7/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Benzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Chloroform | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Cyclohexane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0141D080312G036
**Work Order:** 1208174
**Collection Date:** 8/3/2012 11:48:00 AM
**Project:** Marshall KRRI GW Source Area 8/3/12
**Lab ID:** 1208174-04
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Ethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| m,p-Xylene | ND | 2.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| o-Xylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 8/7/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *108* | *70-120* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *75-120* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *101* | *85-115* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *104* | *85-120* | | | *%REC* | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0138S080312G015 |
| **Work Order:** | 1208174 | **Collection Date:** | 8/3/2012 1:25:00 PM |
| **Project:** | Marshall KRRI GW Source Area 8/3/12 | | |
| **Lab ID:** | 1208174-05 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/7/2012** | | Analyst: **CW** |
| DRO (C10-C20) | ND | 0.10 | 0.10 | | mg/L | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **0.12** | **0.10** | **0.10** | | **mg/L** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *35.2* | *21-90* | | | *%REC* | 1 | 8/7/2012 |
| **GASOLINE RANGE ORGANICS BY GC-FID** | | | **SW8015** | | | | Analyst: **JD** |
| GRO (C6-C10) | ND | 0.20 | 0.20 | | mg/L | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *107* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/7/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 8/8/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 8/8/2012 |
| Nickel | ND | 0.020 | 0.020 | | mg/L | 1 | 8/8/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 8/8/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/7/2012** | | Analyst: **HL** |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| *Surr: 2,4,6-Tribromophenol* | *57.5* | *32-115* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorobiphenyl* | *35.4* | *32-100* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 2-Fluorophenol* | *23.5* | *22-59* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *60.6* | *23-112* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Nitrobenzene-d5* | *36.4* | *31-93* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Phenol-d6* | *13.7* | *13-36* | | | *%REC* | 1 | 8/7/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0138S080312G015
**Work Order:** 1208174
**Collection Date:** 8/3/2012 1:25:00 PM
**Project:** Marshall KRRI GW Source Area 8/3/12
**Lab ID:** 1208174-05
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 8/7/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Benzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Chloroform | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Cyclohexane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0138S080312G015
**Work Order:** 1208174
**Collection Date:** 8/3/2012 1:25:00 PM
**Project:** Marshall KRRI GW Source Area 8/3/12
**Lab ID:** 1208174-05
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Ethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| m,p-Xylene | ND | 2.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| o-Xylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 8/7/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *107* | *70-120* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *102* | *75-120* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *99.4* | *85-115* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *104* | *85-120* | | | *%REC* | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0138T080312WX |
| **Work Order:** | 1208174 | **Collection Date:** | 8/3/2012 2:00:00 PM |
| **Project:** | Marshall KRRI GW Source Area 8/3/12 | | |
| **Lab ID:** | 1208174-06 | **Matrix:** | WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 8/7/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 8/7/2012 |
| Benzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| **Chloroform** | **1.6** | **1.0** | **1.0** | | **µg/L** | 1 | 8/7/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Cyclohexane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *13-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0138T080312WX
**Work Order:** 1208174
**Collection Date:** 8/3/2012 2:00:00 PM
**Project:** Marshall KRRI GW Source Area 8/3/12
**Lab ID:** 1208174-06
**Matrix:** WATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Ethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| m,p-Xylene | ND | 2.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| o-Xylene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 8/7/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *106* | *70-120* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *100* | *75-120* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *101* | *85-115* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *104* | *85-120* | | | *%REC* | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 13-Aug-12

**Client:** AECOM Environment

# QC BATCH REPORT

**Work Order:** 1208174

**Project:** Marshall KRRI GW Source Area 8/3/12

Batch ID: **42837** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKW1-42837-42837** Units: **mg/L** Analysis Date: **8/7/2012 03:45 PM**

Client ID: Run ID: **GC8_120807B** SeqNo: **2047678** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 0.10 | | | | | | | | |
| ORO (C20-C34) | ND | 0.10 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *0.01955* | 0 | *0.05* | 0 | *39.1* | *21-90* | 0 | | | |

**LCS** Sample ID: **DLCSW1-42837-42837** Units: **mg/L** Analysis Date: **8/7/2012 04:12 PM**

Client ID: Run ID: **GC8_120807B** SeqNo: **2047679** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 2.703 | 0.10 | 5 | 0 | 54.1 | 44-116 | 0 | | | |
| ORO (C20-C34) | 3.632 | 0.10 | 5 | 0 | 72.6 | 44-116 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *0.01839* | 0 | *0.05* | 0 | *36.8* | *21-90* | 0 | | | |

**MS** Sample ID: **1208174-01B MS** Units: **mg/L** Analysis Date: **8/7/2012 04:38 PM**

Client ID: **SBSA0139S080312G016** Run ID: **GC8_120807B** SeqNo: **2047680** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 25.58 | 1.0 | 50 | 0 | 51.2 | 44-116 | 0 | | | |
| ORO (C20-C34) | 36.82 | 1.0 | 50 | 0 | 73.6 | 44-116 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *0.2183* | 0 | *0.5* | 0 | *43.7* | *21-90* | 0 | | | |

**MSD** Sample ID: **1208174-01B MSD** Units: **mg/L** Analysis Date: **8/7/2012 05:05 PM**

Client ID: **SBSA0139S080312G016** Run ID: **GC8_120807B** SeqNo: **2047681** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 24.87 | 1.0 | 50 | 0 | 49.7 | 44-116 | 25.58 | 2.81 | 30 | |
| ORO (C20-C34) | 35.25 | 1.0 | 50 | 0 | 70.5 | 44-116 | 36.82 | 4.35 | 30 | |
| *Surr: 4-Terphenyl-d14* | *0.2145* | 0 | *0.5* | 0 | *42.9* | *21-90* | 0.2183 | *1.76* | *30* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208174-01B | 1208174-02B | 1208174-03B |
| 1208174-04B | 1208174-05B | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208174
**Project:** Marshall KRRI GW Source Area 8/3/12

# QC BATCH REPORT

Batch ID: **R108223** Instrument ID **GC10** Method: **SW8015**

**MBLK** Sample ID: **MBLKW1-R108223-R108223** Units: **µg/L** Analysis Date: **8/7/2012 12:15 PM**
Client ID: Run ID: **GC10_120807A** SeqNo: **2046681** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | ND | 200 | | | | | | | | |
| *Surr: Toluene-d8* | *114.4* | 0 | *100* | 0 | *114* | *70-130* | 0 | | | |

**LCS** Sample ID: **LCSW1-R108223-R108223** Units: **µg/L** Analysis Date: **8/7/2012 11:51 AM**
Client ID: Run ID: **GC10_120807A** SeqNo: **2046680** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | 11950 | 200 | 10000 | 0 | 120 | 70-130 | 0 | | | |
| *Surr: Toluene-d8* | *107.8* | 0 | *100* | 0 | *108* | *70-130* | 0 | | | |

**MS** Sample ID: **1208142-01A MS** Units: **µg/Kg** Analysis Date: **8/7/2012 06:39 PM**
Client ID: Run ID: **GC10_120807A** SeqNo: **2047698** Prep Date: DF: **50**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | 448100 | 2,500 | 500000 | 0 | 89.6 | 70-130 | 0 | | | |
| *Surr: Toluene-d8* | *4749* | 0 | *5000* | 0 | *95* | *50-150* | 0 | | | |

**MSD** Sample ID: **1208142-01A MSD** Units: **µg/Kg** Analysis Date: **8/7/2012 07:03 PM**
Client ID: Run ID: **GC10_120807A** SeqNo: **2047699** Prep Date: DF: **50**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | 450100 | 2,500 | 500000 | 0 | 90 | 70-130 | 448100 | 0.43 | 30 | |
| *Surr: Toluene-d8* | *4759* | 0 | *5000* | 0 | *95.2* | *50-150* | 4749 | *0.21* | *30* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208174-01A | 1208174-02A | 1208174-03A |
| 1208174-04A | 1208174-05A | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208174
**Project:** Marshall KRRI GW Source Area 8/3/12

# QC BATCH REPORT

Batch ID: **42843** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42843-42843** Units: **mg/L** Analysis Date: **8/7/2012 03:03 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047079** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.0020 | | | | | | | | |
| Molybdenum | ND | 0.0050 | | | | | | | | |
| Nickel | ND | 0.0050 | | | | | | | | |
| Vanadium | ND | 0.0050 | | | | | | | | |

**LCS** Sample ID: **LCS-42843-42843** Units: **mg/L** Analysis Date: **8/7/2012 03:09 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047080** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.09424 | 0.0020 | 0.1 | 0 | 94.2 | 80-120 | 0 | | | |
| Molybdenum | 0.09131 | 0.0050 | 0.1 | 0 | 91.3 | 80-120 | 0 | | | |
| Nickel | 0.09006 | 0.0050 | 0.1 | 0 | 90.1 | 80-120 | 0 | | | |
| Vanadium | 0.09218 | 0.0050 | 0.1 | 0 | 92.2 | 80-120 | 0 | | | |

**MS** Sample ID: **1208106-01BMS** Units: **mg/L** Analysis Date: **8/7/2012 03:53 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047174** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | 0.08572 | 0.0050 | 0.1 | 0.0009891 | 84.7 | 75-125 | 0 | | | |
| Nickel | 0.0996 | 0.0050 | 0.1 | 0.02547 | 74.1 | 75-125 | 0 | | | S |
| Vanadium | 0.09671 | 0.0050 | 0.1 | 0.000427 | 96.3 | 75-125 | 0 | | | |

**MS** Sample ID: **1208106-01BMS** Units: **mg/L** Analysis Date: **8/7/2012 06:37 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047311** Prep Date: **8/7/2012** DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.08911 | 0.020 | 0.1 | 0.0002252 | 88.9 | 75-125 | 0 | | | |

**MSD** Sample ID: **1208106-01BMSD** Units: **mg/L** Analysis Date: **8/7/2012 03:59 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047175** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | 0.08095 | 0.0050 | 0.1 | 0.0009891 | 80 | 75-125 | 0.08572 | 5.72 | 20 | |
| Nickel | 0.09496 | 0.0050 | 0.1 | 0.02547 | 69.5 | 75-125 | 0.0996 | 4.77 | 20 | S |
| Vanadium | 0.09212 | 0.0050 | 0.1 | 0.000427 | 91.7 | 75-125 | 0.09671 | 4.86 | 20 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208174
**Project:** Marshall KRRI GW Source Area 8/3/12

# QC BATCH REPORT

Batch ID: **42843** Instrument ID **ICPMS1** Method: **SW6020A**

**MSD** Sample ID: **1208106-01BMSD** Units: **mg/L** Analysis Date: **8/7/2012 06:43 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047312** Prep Date: **8/7/2012** DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.0859 | 0.020 | 0.1 | 0.0002252 | 85.7 | 75-125 | 0.08911 | 3.67 | 20 | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208174-01C | 1208174-02C | 1208174-03C |
| 1208174-04C | 1208174-05C | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208174
**Project:** Marshall KRRI GW Source Area 8/3/12

# QC BATCH REPORT

Batch ID: **42836** Instrument ID **SVMS4** Method: **SW8270**

**MBLK** Sample ID: **SBLKW1-42836-42836** Units: **µg/L** Analysis Date: **8/7/2012 08:36 PM**
Client ID: Run ID: **SVMS4_120807A** SeqNo: **2047774** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 5.0 | | | | | | | | |
| Acenaphthene | ND | 5.0 | | | | | | | | |
| Acenaphthylene | ND | 5.0 | | | | | | | | |
| Anthracene | ND | 5.0 | | | | | | | | |
| Benzo(a)anthracene | ND | 5.0 | | | | | | | | |
| Benzo(a)pyrene | ND | 5.0 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 5.0 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 5.0 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 5.0 | | | | | | | | |
| Chrysene | ND | 5.0 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 5.0 | | | | | | | | |
| Fluoranthene | ND | 5.0 | | | | | | | | |
| Fluorene | ND | 5.0 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 5.0 | | | | | | | | |
| Naphthalene | ND | 5.0 | | | | | | | | |
| Phenanthrene | ND | 5.0 | | | | | | | | |
| Pyrene | ND | 5.0 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *32.86* | 0 | *50* | 0 | *65.7* | *38-115* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *25.23* | 0 | *50* | 0 | *50.5* | *32-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *17.99* | 0 | *50* | 0 | *36* | *22-59* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *38.91* | 0 | *50* | 0 | *77.8* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *25.46* | 0 | *50* | 0 | *50.9* | *31-93* | 0 | | | |
| *Surr: Phenol-d6* | *10.07* | 0 | *50* | 0 | *20.1* | *13-36* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208174
**Project:** Marshall KRRI GW Source Area 8/3/12

# QC BATCH REPORT

Batch ID: **42836** Instrument ID **SVMS4** Method: **SW8270**

**LCS** Sample ID: **SLCSW1-42836-42836** Units: **µg/L** Analysis Date: **8/7/2012 06:26 PM**
Client ID: Run ID: **SVMS4_120807A** SeqNo: **2047770** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 12.05 | 5.0 | 20 | 0 | 60.2 | 45-105 | 0 | | | |
| Acenaphthene | 12.35 | 5.0 | 20 | 0 | 61.8 | 45-110 | 0 | | | |
| Acenaphthylene | 13.3 | 5.0 | 20 | 0 | 66.5 | 50-105 | 0 | | | |
| Anthracene | 13.54 | 5.0 | 20 | 0 | 67.7 | 55-110 | 0 | | | |
| Benzo(a)anthracene | 13.19 | 5.0 | 20 | 0 | 66 | 55-110 | 0 | | | |
| Benzo(a)pyrene | 14.11 | 5.0 | 20 | 0 | 70.6 | 55-110 | 0 | | | |
| Benzo(b)fluoranthene | 12.81 | 5.0 | 20 | 0 | 64 | 45-120 | 0 | | | |
| Benzo(g,h,i)perylene | 15.52 | 5.0 | 20 | 0 | 77.6 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 14.58 | 5.0 | 20 | 0 | 72.9 | 45-125 | 0 | | | |
| Chrysene | 14.42 | 5.0 | 20 | 0 | 72.1 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 14.89 | 5.0 | 20 | 0 | 74.4 | 40-125 | 0 | | | |
| Fluoranthene | 13.83 | 5.0 | 20 | 0 | 69.2 | 55-115 | 0 | | | |
| Fluorene | 12.81 | 5.0 | 20 | 0 | 64 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 15.04 | 5.0 | 20 | 0 | 75.2 | 45-125 | 0 | | | |
| Naphthalene | 11.63 | 5.0 | 20 | 0 | 58.2 | 40-100 | 0 | | | |
| Phenanthrene | 13.14 | 5.0 | 20 | 0 | 65.7 | 50-115 | 0 | | | |
| Pyrene | 14.66 | 5.0 | 20 | 0 | 73.3 | 50-130 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *33.38* | 0 | *50* | 0 | *66.8* | *38-115* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *25.2* | 0 | *50* | 0 | *50.4* | *32-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *15.23* | 0 | *50* | 0 | *30.5* | *22-59* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *29.29* | 0 | *50* | 0 | *58.6* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *25.22* | 0 | *50* | 0 | *50.4* | *31-93* | 0 | | | |
| *Surr: Phenol-d6* | *9.16* | 0 | *50* | 0 | *18.3* | *13-36* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208174
**Project:** Marshall KRRI GW Source Area 8/3/12

# QC BATCH REPORT

Batch ID: **42836** Instrument ID **SVMS4** Method: **SW8270**

**MS** Sample ID: **1208174-01B MS** Units: **µg/L** Analysis Date: **8/7/2012 06:58 PM**
Client ID: **SBSA0139S080312G016** Run ID: **SVMS4_120807A** SeqNo: **2047771** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 88.2 | 50 | 200 | 0 | 44.1 | 45-105 | 0 | | | S |
| Acenaphthene | 94.6 | 50 | 200 | 0 | 47.3 | 45-110 | 0 | | | |
| Acenaphthylene | 100.2 | 50 | 200 | 0 | 50.1 | 50-105 | 0 | | | |
| Anthracene | 117.3 | 50 | 200 | 0 | 58.6 | 55-110 | 0 | | | |
| Benzo(a)anthracene | 115.6 | 50 | 200 | 0 | 57.8 | 55-110 | 0 | | | |
| Benzo(a)pyrene | 125 | 50 | 200 | 0 | 62.5 | 55-110 | 0 | | | |
| Benzo(b)fluoranthene | 116.4 | 50 | 200 | 0 | 58.2 | 45-120 | 0 | | | |
| Benzo(g,h,i)perylene | 138.2 | 50 | 200 | 0 | 69.1 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 126.2 | 50 | 200 | 0 | 63.1 | 45-125 | 0 | | | |
| Chrysene | 126.1 | 50 | 200 | 0 | 63 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 132.1 | 50 | 200 | 0 | 66 | 40-125 | 0 | | | |
| Fluoranthene | 121.6 | 50 | 200 | 0 | 60.8 | 55-115 | 0 | | | |
| Fluorene | 102.7 | 50 | 200 | 0 | 51.4 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 132.3 | 50 | 200 | 0 | 66.2 | 45-125 | 0 | | | |
| Naphthalene | 83.3 | 50 | 200 | 0 | 41.6 | 40-100 | 0 | | | |
| Phenanthrene | 114.6 | 50 | 200 | 0 | 57.3 | 50-115 | 0 | | | |
| Pyrene | 128.5 | 50 | 200 | 0 | 64.2 | 50-130 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *276.5* | 0 | *500* | 0 | *55.3* | *38-115* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *182.3* | 0 | *500* | 0 | *36.5* | *32-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *117.3* | 0 | *500* | 0 | *23.5* | *22-59* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *326.4* | 0 | *500* | 0 | *65.3* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *183.8* | 0 | *500* | 0 | *36.8* | *31-93* | 0 | | | |
| *Surr: Phenol-d6* | *68.8* | 0 | *500* | 0 | *13.8* | *13-36* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208174
**Project:** Marshall KRRI GW Source Area 8/3/12

# QC BATCH REPORT

Batch ID: **42836** Instrument ID **SVMS4** Method: **SW8270**

**MSD** Sample ID: **1208174-01B MSD** Units: **µg/L** Analysis Date: **8/7/2012 07:31 PM**
Client ID: **SBSA0139S080312G016** Run ID: **SVMS4_120807A** SeqNo: **2047772** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 99.4 | 50 | 200 | 0 | 49.7 | 45-105 | 88.2 | 11.9 | 30 | |
| Acenaphthene | 107.5 | 50 | 200 | 0 | 53.8 | 45-110 | 94.6 | 12.8 | 30 | |
| Acenaphthylene | 113.4 | 50 | 200 | 0 | 56.7 | 50-105 | 100.2 | 12.4 | 30 | |
| Anthracene | 128.4 | 50 | 200 | 0 | 64.2 | 55-110 | 117.3 | 9.04 | 30 | |
| Benzo(a)anthracene | 124 | 50 | 200 | 0 | 62 | 55-110 | 115.6 | 7.01 | 30 | |
| Benzo(a)pyrene | 134.8 | 50 | 200 | 0 | 67.4 | 55-110 | 125 | 7.54 | 30 | |
| Benzo(b)fluoranthene | 119.2 | 50 | 200 | 0 | 59.6 | 45-120 | 116.4 | 2.38 | 30 | |
| Benzo(g,h,i)perylene | 157.3 | 50 | 200 | 0 | 78.6 | 40-125 | 138.2 | 12.9 | 30 | |
| Benzo(k)fluoranthene | 140.5 | 50 | 200 | 0 | 70.2 | 45-125 | 126.2 | 10.7 | 30 | |
| Chrysene | 136.2 | 50 | 200 | 0 | 68.1 | 55-110 | 126.1 | 7.7 | 30 | |
| Dibenzo(a,h)anthracene | 146.7 | 50 | 200 | 0 | 73.4 | 40-125 | 132.1 | 10.5 | 30 | |
| Fluoranthene | 132.7 | 50 | 200 | 0 | 66.4 | 55-115 | 121.6 | 8.73 | 30 | |
| Fluorene | 114.6 | 50 | 200 | 0 | 57.3 | 50-110 | 102.7 | 11 | 30 | |
| Indeno(1,2,3-cd)pyrene | 147.9 | 50 | 200 | 0 | 74 | 45-125 | 132.3 | 11.1 | 30 | |
| Naphthalene | 94.8 | 50 | 200 | 0 | 47.4 | 40-100 | 83.3 | 12.9 | 30 | |
| Phenanthrene | 124.9 | 50 | 200 | 0 | 62.4 | 50-115 | 114.6 | 8.6 | 30 | |
| Pyrene | 137.9 | 50 | 200 | 0 | 69 | 50-130 | 128.5 | 7.06 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *326.1* | 0 | *500* | 0 | *65.2* | *38-115* | 276.5 | *16.5* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *209.6* | 0 | *500* | 0 | *41.9* | *32-100* | 182.3 | *13.9* | *40* | |
| *Surr: 2-Fluorophenol* | *141.6* | 0 | *500* | 0 | *28.3* | *22-59* | 117.3 | *18.8* | *40* | |
| *Surr: 4-Terphenyl-d14* | *348.1* | 0 | *500* | 0 | *69.6* | *23-112* | 326.4 | *6.43* | *40* | |
| *Surr: Nitrobenzene-d5* | *207.5* | 0 | *500* | 0 | *41.5* | *31-93* | 183.8 | *12.1* | *40* | |
| *Surr: Phenol-d6* | *83.5* | 0 | *500* | 0 | *16.7* | *13-36* | 68.8 | *19.3* | *40* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208174-01B | 1208174-02B | 1208174-03B |
| 1208174-04B | 1208174-05B | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208174
**Project:** Marshall KRRI GW Source Area 8/3/12

# QC BATCH REPORT

Batch ID: **R108196** Instrument ID **VMS6** Method: **SW8260**

**MBLK** Sample ID: **VBLKW2-120806-R108196** Units: **µg/L** Analysis Date: **8/7/2012 01:38 AM**
Client ID: Run ID: **VMS6_120806A** SeqNo: **2046953** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 3.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 2.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 2.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 2.0 | | | | | | | | |
| 2-Butanone | ND | 5.0 | | | | | | | | |
| 2-Hexanone | ND | 5.0 | | | | | | | | |
| 2-Methylnaphthalene | ND | 10 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 5.0 | | | | | | | | |
| Acetone | ND | 20 | | | | | | | | |
| Acrylonitrile | ND | 1.0 | | | | | | | | |
| Benzene | ND | 1.0 | | | | | | | | |
| Bromochloromethane | ND | 1.0 | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 1.0 | | | | | | | | |
| Carbon disulfide | ND | 2.5 | | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroethane | ND | 1.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 1.0 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| Cyclohexane | ND | 5.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| Diethyl ether | ND | 10 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R108196** Instrument ID **VMS6** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | |
| Hexachloroethane | ND | 1.0 | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | |
| m,p-Xylene | ND | 2.0 | | | | | |
| Methyl iodide | ND | 5.0 | | | | | |
| Methyl tert-butyl ether | ND | 5.0 | | | | | |
| Methylene chloride | ND | 5.0 | | | | | |
| Naphthalene | ND | 5.0 | | | | | |
| n-Butylbenzene | ND | 1.0 | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | |
| o-Xylene | ND | 1.0 | | | | | |
| p-Isopropyltoluene | ND | 2.0 | | | | | |
| sec-Butylbenzene | ND | 2.0 | | | | | |
| Styrene | ND | 1.0 | | | | | |
| t-Butyl ethyl ether | ND | 0 | | | | | |
| tert-Butyl alcohol | ND | 50 | | | | | |
| tert-Butylbenzene | ND | 2.0 | | | | | |
| Tertiaryamylmethylether | ND | 5.0 | | | | | |
| Tetrachloroethene | ND | 2.0 | | | | | |
| Tetrahydrofuran | ND | 10 | | | | | |
| Toluene | ND | 1.0 | | | | | |
| trans-1,2-Dichloroethene | ND | 1.0 | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 5.0 | | | | | |
| Trichloroethene | ND | 1.0 | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | |
| Vinyl chloride | ND | 1.0 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *21.24* | 0 | *20* | 0 | *106* | *70-120* | 0 |
| *Surr: 4-Bromofluorobenzene* | *20.4* | 0 | *20* | 0 | *102* | *75-120* | 0 |
| *Surr: Dibromofluoromethane* | *20.57* | 0 | *20* | 0 | *103* | *85-115* | 0 |
| *Surr: Toluene-d8* | *21* | 0 | *20* | 0 | *105* | *85-120* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208174
**Project:** Marshall KRRI GW Source Area 8/3/12

# QC BATCH REPORT

Batch ID: **R108196** Instrument ID **VMS6** Method: **SW8260**

**LCS** Sample ID: **VLCSW2-120806-R108196** Units: **µg/L** Analysis Date: **8/7/2012 09:43 AM**
Client ID: Run ID: **VMS6_120806A** SeqNo: **2046939** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 20.05 | 1.0 | 20 | 0 | 100 | 80-130 | 0 | | | |
| 1,1,1-Trichloroethane | 22.42 | 1.0 | 20 | 0 | 112 | 65-130 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 19.85 | 1.0 | 20 | 0 | 99.2 | 65-130 | 0 | | | |
| 1,1,2-Trichloroethane | 20.77 | 1.0 | 20 | 0 | 104 | 75-125 | 0 | | | |
| 1,1-Dichloroethane | 21.31 | 1.0 | 20 | 0 | 107 | 70-135 | 0 | | | |
| 1,1-Dichloroethene | 22.04 | 1.0 | 20 | 0 | 110 | 70-130 | 0 | | | |
| 1,2,3-Trichlorobenzene | 19.97 | 3.0 | 20 | 0 | 99.8 | 55-140 | 0 | | | |
| 1,2,3-Trichloropropane | 20.16 | 1.0 | 20 | 0 | 101 | 75-125 | 0 | | | |
| 1,2,4-Trichlorobenzene | 20.8 | 1.0 | 20 | 0 | 104 | 65-135 | 0 | | | |
| 1,2,4-Trimethylbenzene | 22.47 | 1.0 | 20 | 0 | 112 | 75-130 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 17.56 | 1.0 | 20 | 0 | 87.8 | 50-130 | 0 | | | |
| 1,2-Dibromoethane | 21.04 | 1.0 | 20 | 0 | 105 | 80-120 | 0 | | | |
| 1,2-Dichlorobenzene | 21.19 | 1.0 | 20 | 0 | 106 | 70-120 | 0 | | | |
| 1,2-Dichloroethane | 22.26 | 1.0 | 20 | 0 | 111 | 70-130 | 0 | | | |
| 1,2-Dichloropropane | 21.51 | 2.0 | 20 | 0 | 108 | 75-125 | 0 | | | |
| 1,3,5-Trimethylbenzene | 23.14 | 1.0 | 20 | 0 | 116 | 75-130 | 0 | | | |
| 1,3-Dichlorobenzene | 21.15 | 2.0 | 20 | 0 | 106 | 75-125 | 0 | | | |
| 1,4-Dichlorobenzene | 21.25 | 2.0 | 20 | 0 | 106 | 75-125 | 0 | | | |
| 2-Butanone | 17.4 | 5.0 | 20 | 0 | 87 | 30-150 | 0 | | | |
| 2-Hexanone | 19.5 | 5.0 | 20 | 0 | 97.5 | 55-130 | 0 | | | |
| 4-Methyl-2-pentanone | 24.12 | 5.0 | 20 | 0 | 121 | 60-135 | 0 | | | |
| Acetone | 17.42 | 20 | 20 | 0 | 87.1 | 40-140 | 0 | | | J |
| Acrylonitrile | 20.4 | 1.0 | 20 | 0 | 102 | 70-135 | 0 | | | |
| Benzene | 21.71 | 1.0 | 20 | 0 | 109 | 80-120 | 0 | | | |
| Bromochloromethane | 22.26 | 1.0 | 20 | 0 | 111 | 65-130 | 0 | | | |
| Bromodichloromethane | 21.78 | 1.0 | 20 | 0 | 109 | 75-120 | 0 | | | |
| Bromoform | 19.56 | 1.0 | 20 | 0 | 97.8 | 70-130 | 0 | | | |
| Bromomethane | 18.45 | 1.0 | 20 | 0 | 92.2 | 30-145 | 0 | | | |
| Carbon disulfide | 23.82 | 2.5 | 20 | 0 | 119 | 35-165 | 0 | | | |
| Carbon tetrachloride | 21.91 | 1.0 | 20 | 0 | 110 | 65-140 | 0 | | | |
| Chlorobenzene | 21.8 | 1.0 | 20 | 0 | 109 | 80-120 | 0 | | | |
| Chloroethane | 19.79 | 1.0 | 20 | 0 | 99 | 60-135 | 0 | | | |
| Chloroform | 20.91 | 1.0 | 20 | 0 | 105 | 65-135 | 0 | | | |
| Chloromethane | 18.55 | 1.0 | 20 | 0 | 92.8 | 70-125 | 0 | | | |
| cis-1,2-Dichloroethene | 22.13 | 1.0 | 20 | 0 | 111 | 70-125 | 0 | | | |
| cis-1,3-Dichloropropene | 19.79 | 1.0 | 20 | 0 | 99 | 70-130 | 0 | | | |
| Dibromochloromethane | 18.18 | 1.0 | 20 | 0 | 90.9 | 60-135 | 0 | | | |
| Dichlorodifluoromethane | 18.32 | 1.0 | 20 | 0 | 91.6 | 30-155 | 0 | | | |
| Ethylbenzene | 22.63 | 1.0 | 20 | 0 | 113 | 75-125 | 0 | | | |
| Hexachloroethane | 20.33 | 1.0 | 20 | 0 | 102 | 70-135 | 0 | | | |
| Isopropylbenzene | 22.53 | 1.0 | 20 | 0 | 113 | 75-125 | 0 | | | |
| m,p-Xylene | 46.08 | 2.0 | 40 | 0 | 115 | 75-130 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **R108196** Instrument ID **VMS6** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Methyl iodide | 13.08 | 5.0 | 20 | 0 | 65.4 | 70-135 | 0 | S |
| Methyl tert-butyl ether | 22.27 | 5.0 | 20 | 0 | 111 | 65-125 | 0 | |
| Methylene chloride | 22.63 | 5.0 | 20 | 0 | 113 | 55-140 | 0 | |
| Naphthalene | 20.08 | 5.0 | 20 | 0 | 100 | 55-140 | 0 | |
| n-Butylbenzene | 21.72 | 1.0 | 20 | 0 | 109 | 70-135 | 0 | |
| n-Propylbenzene | 22.5 | 1.0 | 20 | 0 | 112 | 70-130 | 0 | |
| o-Xylene | 22.8 | 1.0 | 20 | 0 | 114 | 80-120 | 0 | |
| p-Isopropyltoluene | 22.33 | 2.0 | 20 | 0 | 112 | 75-130 | 0 | |
| sec-Butylbenzene | 23.04 | 2.0 | 20 | 0 | 115 | 70-125 | 0 | |
| Styrene | 22.94 | 1.0 | 20 | 0 | 115 | 65-135 | 0 | |
| tert-Butylbenzene | 23.05 | 2.0 | 20 | 0 | 115 | 70-130 | 0 | |
| Tetrachloroethene | 21.68 | 2.0 | 20 | 0 | 108 | 45-150 | 0 | |
| Tetrahydrofuran | 21.32 | 10 | 20 | 0 | 107 | 70-135 | 0 | |
| Toluene | 23.23 | 1.0 | 20 | 0 | 116 | 75-120 | 0 | |
| trans-1,2-Dichloroethene | 22.02 | 1.0 | 20 | 0 | 110 | 60-140 | 0 | |
| trans-1,3-Dichloropropene | 21.2 | 1.0 | 20 | 0 | 106 | 55-140 | 0 | |
| trans-1,4-Dichloro-2-butene | 14.82 | 5.0 | 20 | 0 | 74.1 | 70-135 | 0 | |
| Trichloroethene | 19.76 | 1.0 | 20 | 0 | 98.8 | 70-125 | 0 | |
| Trichlorofluoromethane | 20.54 | 1.0 | 20 | 0 | 103 | 60-145 | 0 | |
| Vinyl chloride | 19.2 | 1.0 | 20 | 0 | 96 | 50-145 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *21.54* | 0 | *20* | 0 | *108* | *70-120* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *20.84* | 0 | *20* | 0 | *104* | *75-120* | 0 | |
| *Surr: Dibromofluoromethane* | *20.33* | 0 | *20* | 0 | *102* | *85-115* | 0 | |
| *Surr: Toluene-d8* | *21.15* | 0 | *20* | 0 | *106* | *85-120* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208174
**Project:** Marshall KRRI GW Source Area 8/3/12

# QC BATCH REPORT

Batch ID: **R108196** Instrument ID **VMS6** Method: **SW8260**

**MS** Sample ID: **1208174-01A MS** Units: **µg/L** Analysis Date: **8/7/2012 10:32 AM**
Client ID: **SBSA0139S080312G016** Run ID: **VMS6_120806A** SeqNo: **2046949** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 18.84 | 1.0 | 20 | 0 | 94.2 | 80-130 | 0 | | | |
| 1,1,1-Trichloroethane | 23.14 | 1.0 | 20 | 0 | 116 | 65-130 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 20.23 | 1.0 | 20 | 0 | 101 | 65-130 | 0 | | | |
| 1,1,2-Trichloroethane | 19.04 | 1.0 | 20 | 0 | 95.2 | 75-125 | 0 | | | |
| 1,1-Dichloroethane | 21.2 | 1.0 | 20 | 0 | 106 | 70-135 | 0 | | | |
| 1,1-Dichloroethene | 23.05 | 1.0 | 20 | 0 | 115 | 70-130 | 0 | | | |
| 1,2,3-Trichlorobenzene | 19.88 | 3.0 | 20 | 0 | 99.4 | 55-140 | 0 | | | |
| 1,2,3-Trichloropropane | 19.7 | 1.0 | 20 | 0 | 98.5 | 75-125 | 0 | | | |
| 1,2,4-Trichlorobenzene | 20.28 | 1.0 | 20 | 0 | 101 | 65-135 | 0 | | | |
| 1,2,4-Trimethylbenzene | 23.58 | 1.0 | 20 | 1.14 | 112 | 75-130 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 16.63 | 1.0 | 20 | 0 | 83.2 | 50-130 | 0 | | | |
| 1,2-Dibromoethane | 19.72 | 1.0 | 20 | 0 | 98.6 | 80-120 | 0 | | | |
| 1,2-Dichlorobenzene | 20.13 | 1.0 | 20 | 0 | 101 | 70-120 | 0 | | | |
| 1,2-Dichloroethane | 21.37 | 1.0 | 20 | 0 | 107 | 70-130 | 0 | | | |
| 1,2-Dichloropropane | 21.29 | 2.0 | 20 | 0 | 106 | 75-125 | 0 | | | |
| 1,3,5-Trimethylbenzene | 23.64 | 1.0 | 20 | 0.46 | 116 | 75-130 | 0 | | | |
| 1,3-Dichlorobenzene | 20.39 | 2.0 | 20 | 0 | 102 | 75-125 | 0 | | | |
| 1,4-Dichlorobenzene | 20.64 | 2.0 | 20 | 0 | 103 | 75-125 | 0 | | | |
| 2-Butanone | 16.58 | 5.0 | 20 | 0 | 82.9 | 30-150 | 0 | | | |
| 2-Hexanone | 24.93 | 5.0 | 20 | 0 | 125 | 55-130 | 0 | | | |
| 4-Methyl-2-pentanone | 23.26 | 5.0 | 20 | 0 | 116 | 60-135 | 0 | | | |
| Acetone | 24.95 | 20 | 20 | 1.93 | 115 | 40-140 | 0 | | | |
| Acrylonitrile | 19.45 | 1.0 | 20 | 0 | 97.2 | 70-135 | 0 | | | |
| Benzene | 37.78 | 1.0 | 20 | 17.14 | 103 | 80-120 | 0 | | | |
| Bromochloromethane | 20.89 | 1.0 | 20 | 0 | 104 | 65-130 | 0 | | | |
| Bromodichloromethane | 21.27 | 1.0 | 20 | 0 | 106 | 75-120 | 0 | | | |
| Bromoform | 18.53 | 1.0 | 20 | 0 | 92.6 | 70-130 | 0 | | | |
| Bromomethane | 14.9 | 1.0 | 20 | 0 | 74.5 | 30-145 | 0 | | | |
| Carbon disulfide | 24.64 | 2.5 | 20 | 0 | 123 | 35-165 | 0 | | | |
| Carbon tetrachloride | 23.41 | 1.0 | 20 | 0 | 117 | 65-140 | 0 | | | |
| Chlorobenzene | 21.14 | 1.0 | 20 | 0 | 106 | 80-120 | 0 | | | |
| Chloroethane | 19.84 | 1.0 | 20 | 0 | 99.2 | 60-135 | 0 | | | |
| Chloroform | 20.87 | 1.0 | 20 | 0 | 104 | 65-135 | 0 | | | |
| Chloromethane | 18.84 | 1.0 | 20 | 0 | 94.2 | 70-125 | 0 | | | |
| cis-1,2-Dichloroethene | 21.09 | 1.0 | 20 | 0 | 105 | 70-125 | 0 | | | |
| cis-1,3-Dichloropropene | 18.54 | 1.0 | 20 | 0 | 92.7 | 70-130 | 0 | | | |
| Dibromochloromethane | 16.94 | 1.0 | 20 | 0 | 84.7 | 60-135 | 0 | | | |
| Dichlorodifluoromethane | 18.6 | 1.0 | 20 | 0 | 93 | 30-155 | 0 | | | |
| Ethylbenzene | 23.11 | 1.0 | 20 | 0.31 | 114 | 75-125 | 0 | | | |
| Hexachloroethane | 19.66 | 1.0 | 20 | 0 | 98.3 | 70-135 | 0 | | | |
| Isopropylbenzene | 22.99 | 1.0 | 20 | 0 | 115 | 75-125 | 0 | | | |
| m,p-Xylene | 54.86 | 2.0 | 40 | 10.31 | 111 | 75-130 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **R108196** | Instrument ID **VMS6** | | Method: **SW8260** | | | | |
|---|---|---|---|---|---|---|---|
| Methyl iodide | 14.68 | 5.0 | 20 | 0 | 73.4 | 70-135 | 0 |
| Methyl tert-butyl ether | 21.35 | 5.0 | 20 | 0 | 107 | 65-125 | 0 |
| Methylene chloride | 22.34 | 5.0 | 20 | 0 | 112 | 55-140 | 0 |
| Naphthalene | 20.22 | 5.0 | 20 | 0 | 101 | 55-140 | 0 |
| n-Butylbenzene | 21.41 | 1.0 | 20 | 0 | 107 | 70-135 | 0 |
| n-Propylbenzene | 22.97 | 1.0 | 20 | 0 | 115 | 70-130 | 0 |
| o-Xylene | 26.35 | 1.0 | 20 | 4 | 112 | 80-120 | 0 |
| p-Isopropyltoluene | 22.38 | 2.0 | 20 | 0 | 112 | 75-130 | 0 |
| sec-Butylbenzene | 23.36 | 2.0 | 20 | 0 | 117 | 70-125 | 0 |
| Styrene | 21.86 | 1.0 | 20 | 0 | 109 | 65-135 | 0 |
| tert-Butylbenzene | 23.63 | 2.0 | 20 | 0 | 118 | 70-130 | 0 |
| Tetrachloroethene | 22.32 | 2.0 | 20 | 0 | 112 | 45-150 | 0 |
| Tetrahydrofuran | 19.81 | 10 | 20 | 0 | 99 | 70-135 | 0 |
| Toluene | 23.04 | 1.0 | 20 | 0.72 | 112 | 75-120 | 0 |
| trans-1,2-Dichloroethene | 23.07 | 1.0 | 20 | 0 | 115 | 60-140 | 0 |
| trans-1,3-Dichloropropene | 18.5 | 1.0 | 20 | 0 | 92.5 | 55-140 | 0 |
| trans-1,4-Dichloro-2-butene | 14.25 | 5.0 | 20 | 0 | 71.2 | 70-135 | 0 |
| Trichloroethene | 21.13 | 1.0 | 20 | 0 | 106 | 70-125 | 0 |
| Trichlorofluoromethane | 21.69 | 1.0 | 20 | 0 | 108 | 60-145 | 0 |
| Vinyl chloride | 19.86 | 1.0 | 20 | 0 | 99.3 | 50-145 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *21.95* | 0 | *20* | 0 | *110* | *70-120* | 0 |
| *Surr: 4-Bromofluorobenzene* | *20.84* | 0 | *20* | 0 | *104* | *75-120* | 0 |
| *Surr: Dibromofluoromethane* | *20.64* | 0 | *20* | 0 | *103* | *85-115* | 0 |
| *Surr: Toluene-d8* | *21.15* | 0 | *20* | 0 | *106* | *85-120* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208174
**Project:** Marshall KRRI GW Source Area 8/3/12

# QC BATCH REPORT

Batch ID: **R108196** Instrument ID **VMS6** Method: **SW8260**

**MSD** Sample ID: **1208174-01A MSD** Units: **µg/L** Analysis Date: **8/7/2012 10:57 AM**
Client ID: **SBSA0139S080312G016** Run ID: **VMS6_120806A** SeqNo: **2046951** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 18.53 | 1.0 | 20 | 0 | 92.6 | 80-130 | 18.84 | 1.66 | 30 | |
| 1,1,1-Trichloroethane | 21.64 | 1.0 | 20 | 0 | 108 | 65-130 | 23.14 | 6.7 | 30 | |
| 1,1,2,2-Tetrachloroethane | 19.69 | 1.0 | 20 | 0 | 98.4 | 65-130 | 20.23 | 2.71 | 30 | |
| 1,1,2-Trichloroethane | 18.84 | 1.0 | 20 | 0 | 94.2 | 75-125 | 19.04 | 1.06 | 30 | |
| 1,1-Dichloroethane | 20.19 | 1.0 | 20 | 0 | 101 | 70-135 | 21.2 | 4.88 | 30 | |
| 1,1-Dichloroethene | 21.58 | 1.0 | 20 | 0 | 108 | 70-130 | 23.05 | 6.59 | 30 | |
| 1,2,3-Trichlorobenzene | 19.63 | 3.0 | 20 | 0 | 98.2 | 55-140 | 19.88 | 1.27 | 30 | |
| 1,2,3-Trichloropropane | 19.88 | 1.0 | 20 | 0 | 99.4 | 75-125 | 19.7 | 0.91 | 30 | |
| 1,2,4-Trichlorobenzene | 20.64 | 1.0 | 20 | 0 | 103 | 65-135 | 20.28 | 1.76 | 30 | |
| 1,2,4-Trimethylbenzene | 22.55 | 1.0 | 20 | 1.14 | 107 | 75-130 | 23.58 | 4.47 | 30 | |
| 1,2-Dibromo-3-chloropropane | 17.93 | 1.0 | 20 | 0 | 89.6 | 50-130 | 16.63 | 7.52 | 30 | |
| 1,2-Dibromoethane | 18.91 | 1.0 | 20 | 0 | 94.6 | 80-120 | 19.72 | 4.19 | 30 | |
| 1,2-Dichlorobenzene | 19.16 | 1.0 | 20 | 0 | 95.8 | 70-120 | 20.13 | 4.94 | 30 | |
| 1,2-Dichloroethane | 20.43 | 1.0 | 20 | 0 | 102 | 70-130 | 21.37 | 4.5 | 30 | |
| 1,2-Dichloropropane | 19.99 | 2.0 | 20 | 0 | 100 | 75-125 | 21.29 | 6.3 | 30 | |
| 1,3,5-Trimethylbenzene | 22.91 | 1.0 | 20 | 0.46 | 112 | 75-130 | 23.64 | 3.14 | 30 | |
| 1,3-Dichlorobenzene | 19.43 | 2.0 | 20 | 0 | 97.2 | 75-125 | 20.39 | 4.82 | 30 | |
| 1,4-Dichlorobenzene | 19.33 | 2.0 | 20 | 0 | 96.6 | 75-125 | 20.64 | 6.55 | 30 | |
| 2-Butanone | 16.44 | 5.0 | 20 | 0 | 82.2 | 30-150 | 16.58 | 0.848 | 30 | |
| 2-Hexanone | 24.51 | 5.0 | 20 | 0 | 123 | 55-130 | 24.93 | 1.7 | 30 | |
| 4-Methyl-2-pentanone | 24.16 | 5.0 | 20 | 0 | 121 | 60-135 | 23.26 | 3.8 | 30 | |
| Acetone | 23.08 | 20 | 20 | 1.93 | 106 | 40-140 | 24.95 | 7.79 | 30 | |
| Acrylonitrile | 19.51 | 1.0 | 20 | 0 | 97.6 | 70-135 | 19.45 | 0.308 | 30 | |
| Benzene | 34.78 | 1.0 | 20 | 17.14 | 88.2 | 80-120 | 37.78 | 8.27 | 30 | |
| Bromochloromethane | 20.19 | 1.0 | 20 | 0 | 101 | 65-130 | 20.89 | 3.41 | 30 | |
| Bromodichloromethane | 20.13 | 1.0 | 20 | 0 | 101 | 75-120 | 21.27 | 5.51 | 30 | |
| Bromoform | 18.78 | 1.0 | 20 | 0 | 93.9 | 70-130 | 18.53 | 1.34 | 30 | |
| Bromomethane | 14.47 | 1.0 | 20 | 0 | 72.4 | 30-145 | 14.9 | 2.93 | 30 | |
| Carbon disulfide | 23.13 | 2.5 | 20 | 0 | 116 | 35-165 | 24.64 | 6.32 | 30 | |
| Carbon tetrachloride | 21.38 | 1.0 | 20 | 0 | 107 | 65-140 | 23.41 | 9.06 | 30 | |
| Chlorobenzene | 20.24 | 1.0 | 20 | 0 | 101 | 80-120 | 21.14 | 4.35 | 30 | |
| Chloroethane | 18.21 | 1.0 | 20 | 0 | 91 | 60-135 | 19.84 | 8.57 | 30 | |
| Chloroform | 19.91 | 1.0 | 20 | 0 | 99.6 | 65-135 | 20.87 | 4.71 | 30 | |
| Chloromethane | 17.52 | 1.0 | 20 | 0 | 87.6 | 70-125 | 18.84 | 7.26 | 30 | |
| cis-1,2-Dichloroethene | 20.26 | 1.0 | 20 | 0 | 101 | 70-125 | 21.09 | 4.01 | 30 | |
| cis-1,3-Dichloropropene | 17.63 | 1.0 | 20 | 0 | 88.2 | 70-130 | 18.54 | 5.03 | 30 | |
| Dibromochloromethane | 16.69 | 1.0 | 20 | 0 | 83.4 | 60-135 | 16.94 | 1.49 | 30 | |
| Dichlorodifluoromethane | 17.22 | 1.0 | 20 | 0 | 86.1 | 30-155 | 18.6 | 7.71 | 30 | |
| Ethylbenzene | 21.84 | 1.0 | 20 | 0.31 | 108 | 75-125 | 23.11 | 5.65 | 30 | |
| Hexachloroethane | 19.62 | 1.0 | 20 | 0 | 98.1 | 70-135 | 19.66 | 0.204 | 30 | |
| Isopropylbenzene | 21.76 | 1.0 | 20 | 0 | 109 | 75-125 | 22.99 | 5.5 | 30 | |
| m,p-Xylene | 52.32 | 2.0 | 40 | 10.31 | 105 | 75-130 | 54.86 | 4.74 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **R108196** Instrument ID **VMS6** Method: **SW8260**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Methyl iodide | 14.93 | 5.0 | 20 | 0 | 74.6 | 70-135 | 14.68 | 1.69 | 30 |
| Methyl tert-butyl ether | 21.17 | 5.0 | 20 | 0 | 106 | 65-125 | 21.35 | 0.847 | 30 |
| Methylene chloride | 21.74 | 5.0 | 20 | 0 | 109 | 55-140 | 22.34 | 2.72 | 30 |
| Naphthalene | 20.64 | 5.0 | 20 | 0 | 103 | 55-140 | 20.22 | 2.06 | 30 |
| n-Butylbenzene | 21.51 | 1.0 | 20 | 0 | 108 | 70-135 | 21.41 | 0.466 | 30 |
| n-Propylbenzene | 21.9 | 1.0 | 20 | 0 | 110 | 70-130 | 22.97 | 4.77 | 30 |
| o-Xylene | 24.99 | 1.0 | 20 | 4 | 105 | 80-120 | 26.35 | 5.3 | 30 |
| p-Isopropyltoluene | 21.93 | 2.0 | 20 | 0 | 110 | 75-130 | 22.38 | 2.03 | 30 |
| sec-Butylbenzene | 23.28 | 2.0 | 20 | 0 | 116 | 70-125 | 23.36 | 0.343 | 30 |
| Styrene | 21.24 | 1.0 | 20 | 0 | 106 | 65-135 | 21.86 | 2.88 | 30 |
| tert-Butylbenzene | 23.06 | 2.0 | 20 | 0 | 115 | 70-130 | 23.63 | 2.44 | 30 |
| Tetrachloroethene | 20.54 | 2.0 | 20 | 0 | 103 | 45-150 | 22.32 | 8.31 | 30 |
| Tetrahydrofuran | 17.41 | 10 | 20 | 0 | 87 | 70-135 | 19.81 | 12.9 | 30 |
| Toluene | 21.9 | 1.0 | 20 | 0.72 | 106 | 75-120 | 23.04 | 5.07 | 30 |
| trans-1,2-Dichloroethene | 21.11 | 1.0 | 20 | 0 | 106 | 60-140 | 23.07 | 8.87 | 30 |
| trans-1,3-Dichloropropene | 18.47 | 1.0 | 20 | 0 | 92.4 | 55-140 | 18.5 | 0.162 | 30 |
| trans-1,4-Dichloro-2-butene | 14.79 | 5.0 | 20 | 0 | 74 | 70-135 | 14.25 | 3.72 | 30 |
| Trichloroethene | 19.11 | 1.0 | 20 | 0 | 95.6 | 70-125 | 21.13 | 10 | 30 |
| Trichlorofluoromethane | 20.29 | 1.0 | 20 | 0 | 101 | 60-145 | 21.69 | 6.67 | 30 |
| Vinyl chloride | 18.2 | 1.0 | 20 | 0 | 91 | 50-145 | 19.86 | 8.72 | 30 |
| *Surr: 1,2-Dichloroethane-d4* | *21.96* | 0 | *20* | 0 | *110* | *70-120* | 21.95 | *0.0455* | *30* |
| *Surr: 4-Bromofluorobenzene* | *21.29* | 0 | *20* | 0 | *106* | *75-120* | 20.84 | *2.14* | *30* |
| *Surr: Dibromofluoromethane* | *20.24* | 0 | *20* | 0 | *101* | *85-115* | 20.64 | *1.96* | *30* |
| *Surr: Toluene-d8* | *20.91* | 0 | *20* | 0 | *105* | *85-120* | 21.15 | *1.14* | *30* |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208174-01A | 1208174-02A | 1208174-03A |
| 1208174-04A | 1208174-05A | 1208174-06A |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# Chain of Custody Form

ALS Environmental

Page 1 of 1

COC ID: 02137

☐ Cincinnati, OH +1 513 733 5336 ☐ Holland, MI +1 616 399 6070 ☐ Salt Lake City, UT +1 801 266 7700
☐ Everett, WA +1 425 356 2600 ☐ Houston, TX +1 281 530 5656 ☐ Spring City, PA +1 610 948 4903
☐ Fort Collins, CO +1 970 490 1511 ☐ Middletown, PA +1 717 944 5541 ☐ York, PA +1 717 505 5280

ALS Project Manager: | Work Order #: 1208174

| Customer Information | | Project Information | | Parameter/Method Request for Analysis | |
|---|---|---|---|---|---|
| Purchase Order | BILLING CODE | Project Name | Marshall Line 6B KRRI-GW | A | Be, Mo, V, Ni By 6020 |
| Work Order | 6:00 | Project Number | SOURCE AREA | B | DRO, ORO |
| Company Name | AECOM Environment | Bill To Company | Enbridge Energy | C | GRO |
| Send Report To | | Invoice Attn. | Accounts Payable | D | PNA |
| Address | 5555 Glenwood Parkway SE | Address | 1100 Louisiana Suite 1100 | E | VOC by 5035/8260 |
| | | | | F | |
| City/State/Zip | Grand Rapids, MI 49512 | City/State/Zip | Houston, TX 77002 | G | |
| Phone | (616) 942-9600 | Phone | | H | |
| Fax | | Fax | | I | |
| e-Mail Address | | e-Mail Address | | J | |

| No. | Sample Description | Date | Time | Matrix | Pres. | # Bottles | A | B | C | D | E | F | G | H | I | J | Hold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SBSA0139S0B0312G016 | 8-3-12 | 0836 | WG | 1,2,7 | 8 | X | X | X | X | X | | | | | | |
| 2 | SBSA0134S0B0312G0B8 | 8-3-12 | 1020 | WG | 1,2,7 | 8 | X | X | X | X | X | | | | | | |
| 3 | SBSA0141S0B0312G036 | 8-3-12 | 1148 | WG | 1,2,7 | 8 | X | X | X | X | X | | | | | | |
| 4 | SBSA0141D0B0312G036 | 8-3-12 | 1148 | WG | 1,2,7 | 8 | X | X | X | X | X | | | | | | |
| 5 | SBSA0138S0B0312G015 | 8-3-12 | 1325 | WG | 1,2,7 | 8 | X | X | X | X | X | | | | | | |
| 6 | SBSA0138T0B0312WX | 8-3-12 | 1400 | WQ | 1 | 3 | X | | | | X | | | | | | |
| 7 | | | | | | | aom | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |

Sampler(s): Please Print & Sign: Amber McDougle

Shipment Method: Courier

Required Turnaround Time: ☐ STD 10 Wk Days ☒ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

| | | | | |
|---|---|---|---|---|
| Relinquished by: Amber McDougle | Date: 8/3/12 | Time: 1710 | Received by: | Notes: SBSA0138S0B0312 GO15 aom – DEQ SPLIT |
| Relinquished by: | Date: | Time: | Received by (Laboratory): | Cooler Temp. |
| Logged by (Laboratory): DFS | Date: 8/6/12 | Time: 1330 | Checked by (Laboratory): | 2.0°C |

QC Package: (Check Box Below)
☐ Level II: Standard QC
☐ Level III: Std QC + Raw Data
☐ Level IV: SW846 CLP-Like
☐ Other: _____

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

Copyright 2011 by ALS Group

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **03-Aug-12 17:10**

Work Order: **1208174** Received by: **PD**

Checklist completed by Paul De Wese (eSignature) 06-Aug-12 (Date) Reviewed by: Alex Csaszar (eSignature) 06-Aug-12 (Date)

Matrices: Groundwater
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 2.0 c | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 8/6/2012 2:54:03 PM | | |
| Water - VOA vials have zero headspace? | Yes ☑ | No ☐ | No VOA vials submitted ☐ |
| Water - pH acceptable upon receipt? | Yes ☑ | No ☐ | N/A ☐ |
| pH adjusted? | Yes ☐ | No ☑ | N/A ☐ |
| pH adjusted by: | - | | |

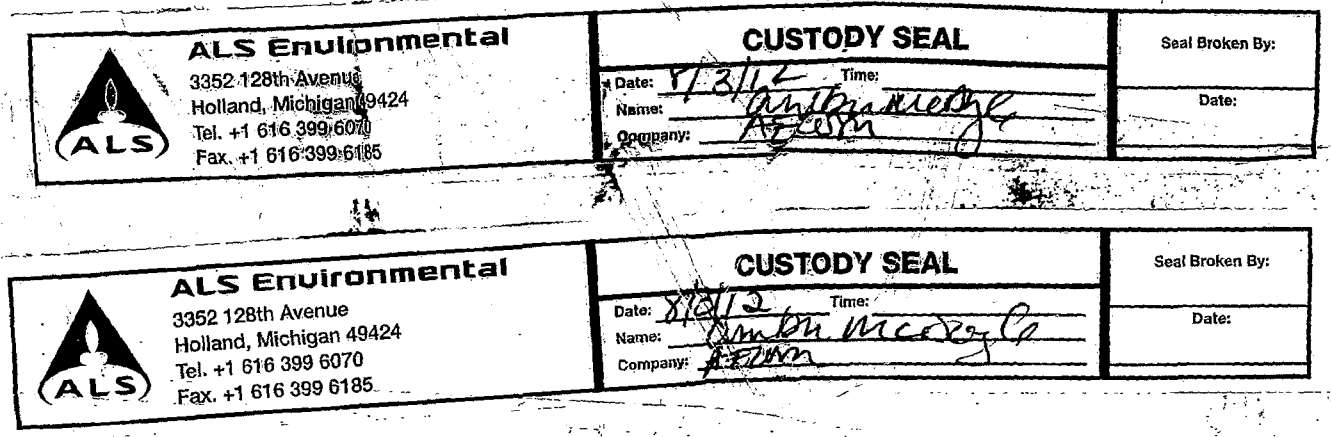
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:


ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185
CUSTODY SEAL
Date:
Time:
Name:
Company:
Seal Broken By:
Date:
ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185
CUSTODY SEAL
Date:
Time:
Name:
Company:
Seal Broken By:
Date:

ALS Environmental

21-Aug-2012

Mike Wolf
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI SPLP August 2012** Work Order: **1208361**

Dear Mike,

ALS Environmental received 39 samples on 10-Aug-2012 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 74.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

NELAP ACCREDITED TNI LABORATORY

Certificate No: MN331938

## ALS Group USA, Corp

Date: 21-Aug-12

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1208361-01 | SBKR0825L501S071712S007 | Splp Extract | | 7/17/2012 10:20 | 8/10/2012 | ☐ |
| 1208361-02 | SBKR0825L501D071712S007 | Splp Extract | | 7/17/2012 10:20 | 8/10/2012 | ☐ |
| 1208361-03 | SBSA0125S072012S086 | Splp Extract | | 7/20/2012 10:40 | 8/10/2012 | ☐ |
| 1208361-04 | SBSA0126S072012S008 | Splp Extract | | 7/20/2012 11:25 | 8/10/2012 | ☐ |
| 1208361-05 | SBSA0127S072012S005 | Splp Extract | | 7/20/2012 13:58 | 8/10/2012 | ☐ |
| 1208361-06 | SBSA0129S072012S004 | Splp Extract | | 7/20/2012 14:48 | 8/10/2012 | ☐ |
| 1208361-07 | SBSA0129S072012S098 | Splp Extract | | 7/20/2012 16:05 | 8/10/2012 | ☐ |
| 1208361-08 | SBSA0115S071812S009 | Splp Extract | | 7/18/2012 12:29 | 8/10/2012 | ☐ |
| 1208361-09 | SBSA0116S071812S007 | Splp Extract | | 7/18/2012 13:37 | 8/10/2012 | ☐ |
| 1208361-10 | SBSA0117S071812S006 | Splp Extract | | 7/18/2012 14:30 | 8/10/2012 | ☐ |
| 1208361-11 | SBSA0118S071812S006 | Splp Extract | | 7/18/2012 15:05 | 8/10/2012 | ☐ |
| 1208361-12 | SBSA0119S071812S004 | Splp Extract | | 7/18/2012 15:38 | 8/10/2012 | ☐ |
| 1208361-13 | SBSA0120S071812S007 | Splp Extract | | 7/18/2012 16:13 | 8/10/2012 | ☐ |
| 1208361-14 | SBSA0121S071912S007 | Splp Extract | | 7/19/2012 08:35 | 8/10/2012 | ☐ |
| 1208361-15 | SBSA0121D071912S007 | Splp Extract | | 7/19/2012 08:35 | 8/10/2012 | ☐ |
| 1208361-16 | SBSA0122S071912S009 | Splp Extract | | 7/19/2012 09:30 | 8/10/2012 | ☐ |
| 1208361-17 | SBSA0123S071912S008 | Splp Extract | | 7/19/2012 10:20 | 8/10/2012 | ☐ |
| 1208361-18 | SBSA0124S071912S014 | Splp Extract | | 7/19/2012 11:12 | 8/10/2012 | ☐ |
| 1208361-19 | SBSA0124S071912S020 | Splp Extract | | 7/19/2012 11:15 | 8/10/2012 | ☐ |
| 1208361-20 | SBSA0132S072012S008 | Splp Extract | | 7/20/2012 17:05 | 8/10/2012 | ☐ |
| 1208361-21 | SBSA0132S072012S012 | Splp Extract | | 7/20/2012 17:10 | 8/10/2012 | ☐ |
| 1208361-22 | SBSA0132S072012S094 | Splp Extract | | 7/20/2012 17:55 | 8/10/2012 | ☐ |
| 1208361-23 | SBSA0128S072112S008 | Splp Extract | | 7/21/2012 11:55 | 8/10/2012 | ☐ |
| 1208361-24 | SBSA0128S072112S093 | Splp Extract | | 7/21/2012 12:00 | 8/10/2012 | ☐ |
| 1208361-25 | SBSA0130S072112S005 | Splp Extract | | 7/21/2012 13:44 | 8/10/2012 | ☐ |
| 1208361-26 | SBSA0133S072112S040 | Splp Extract | | 7/21/2012 09:59 | 8/10/2012 | ☐ |
| 1208361-27 | SBSA0133S072112S057 | Splp Extract | | 7/21/2012 10:05 | 8/10/2012 | ☐ |
| 1208361-28 | SBSA0133S072112S072 | Splp Extract | | 7/21/2012 10:52 | 8/10/2012 | ☐ |
| 1208361-29 | SBSA0136S080112S006 | Splp Extract | | 8/1/2012 08:15 | 8/10/2012 | ☐ |
| 1208361-30 | SBSA0138S080112S095 | Splp Extract | | 8/1/2012 12:50 | 8/10/2012 | ☐ |
| 1208361-31 | SBSA0139S080112S006 | Splp Extract | | 8/1/2012 14:44 | 8/10/2012 | ☐ |
| 1208361-32 | SBSA0139S080112S017 | Splp Extract | | 8/1/2012 14:47 | 8/10/2012 | ☐ |
| 1208361-33 | SBSA0139S080112S052 | Splp Extract | | 8/1/2012 15:00 | 8/10/2012 | ☐ |
| 1208361-34 | SBSA0139D080112S052 | Splp Extract | | 8/1/2012 15:00 | 8/10/2012 | ☐ |
| 1208361-35 | SBSA0139S080112S090 | Splp Extract | | 8/1/2012 15:15 | 8/10/2012 | ☐ |
| 1208361-36 | SBSA0141S080212S034 | Splp Extract | | 8/2/2012 08:29 | 8/10/2012 | ☐ |
| 1208361-37 | SBSA0141S080212S075 | Splp Extract | | 8/2/2012 09:25 | 8/10/2012 | ☐ |
| 1208361-38 | SBSA0135S073112S005 | Splp Extract | | 7/31/2012 14:10 | 8/10/2012 | ☐ |
| 1208361-39 | SBSA0137S073112S006 | Splp Extract | | 7/31/2012 15:37 | 8/10/2012 | ☐ |

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361

## Case Narrative

Batch R108564 MS/MSD data for Volatiles is not related to this project's samples. No data requires qualification.

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**WorkOrder:** **1208361**

# QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| µg/L | Micrograms per Liter |
| mg/L | Milligrams per Liter |

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012 **Work Order:** 1208361
**Sample ID:** SBKR0825L501S071712S007 **Lab ID:** 1208361-01
**Collection Date:** 7/17/2012 10:20 AM **Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **RH** |
| Molybdenum | ND | | 0.0050 | mg/L | 1 | 8/19/2012 11:41 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012 **Work Order:** 1208361
**Sample ID:** SBKR0825L501D071712S007 **Lab ID:** 1208361-02
**Collection Date:** 7/17/2012 10:20 AM **Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **RH** |
| **Molybdenum** | **0.0067** | | **0.0050** | **mg/L** | 1 | 8/19/2012 11:47 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0125S072012S086
**Lab ID:** 1208361-03
**Collection Date:** 7/20/2012 10:40 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **RH** |
| **Molybdenum** | **0.013** | | **0.0050** | **mg/L** | 1 | 8/19/2012 11:53 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012 **Work Order:** 1208361
**Sample ID:** SBSA0126S072012S008 **Lab ID:** 1208361-04
**Collection Date:** 7/20/2012 11:25 AM **Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **RH** |
| **Molybdenum** | **0.018** | | **0.0050** | **mg/L** | 1 | 8/19/2012 12:00 PM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012 **Work Order:** 1208361
**Sample ID:** SBSA0127S072012S005 **Lab ID:** 1208361-05
**Collection Date:** 7/20/2012 01:58 PM **Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.012** | | **0.0050** | **mg/L** | 1 | 8/19/2012 11:18 PM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0129S072012S004
**Lab ID:** 1208361-06
**Collection Date:** 7/20/2012 02:48 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.016** | | **0.0050** | **mg/L** | 1 | 8/19/2012 11:24 PM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0129S072012S098
**Lab ID:** 1208361-07
**Collection Date:** 7/20/2012 04:05 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.010** | | **0.0050** | **mg/L** | 1 | 8/19/2012 11:31 PM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0115S071812S009
**Lab ID:** 1208361-08
**Collection Date:** 7/18/2012 12:29 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.011** | | **0.0050** | **mg/L** | 1 | 8/19/2012 11:37 PM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012 **Work Order:** 1208361
**Sample ID:** SBSA0116S071812S007 **Lab ID:** 1208361-09
**Collection Date:** 7/18/2012 01:37 PM **Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.015** | | **0.0050** | **mg/L** | 1 | 8/19/2012 11:43 PM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012 **Work Order:** 1208361
**Sample ID:** SBSA0117S071812S006 **Lab ID:** 1208361-10
**Collection Date:** 7/18/2012 02:30 PM **Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.012** | | **0.0050** | **mg/L** | 1 | 8/20/2012 12:08 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012 **Work Order:** 1208361
**Sample ID:** SBSA0118S071812S006 **Lab ID:** 1208361-11
**Collection Date:** 7/18/2012 03:05 PM **Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.0096** | | **0.0050** | **mg/L** | 1 | 8/20/2012 12:26 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012 **Work Order:** 1208361
**Sample ID:** SBSA0119S071812S004 **Lab ID:** 1208361-12
**Collection Date:** 7/18/2012 03:38 PM **Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.015** | | **0.0050** | **mg/L** | 1 | 8/20/2012 12:32 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0120S071812S007
**Lab ID:** 1208361-13
**Collection Date:** 7/18/2012 04:13 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.016** | | **0.0050** | **mg/L** | 1 | 8/20/2012 12:39 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0121S071912S007
**Lab ID:** 1208361-14
**Collection Date:** 7/19/2012 08:35 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.012** | | **0.0050** | **mg/L** | 1 | 8/20/2012 12:45 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0121D071912S007
**Lab ID:** 1208361-15
**Collection Date:** 7/19/2012 08:35 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.012** | | **0.0050** | **mg/L** | 1 | 8/20/2012 12:51 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0122S071912S009
**Lab ID:** 1208361-16
**Collection Date:** 7/19/2012 09:30 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.014** | | **0.0050** | **mg/L** | 1 | 8/20/2012 12:57 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0123S071912S008
**Lab ID:** 1208361-17
**Collection Date:** 7/19/2012 10:20 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.014** | | **0.0050** | **mg/L** | 1 | 8/20/2012 01:03 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0124S071912S014
**Lab ID:** 1208361-18
**Collection Date:** 7/19/2012 11:12 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.0061** | | **0.0050** | **mg/L** | 1 | 8/20/2012 01:28 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0124S071912S020
**Lab ID:** 1208361-19
**Collection Date:** 7/19/2012 11:15 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.0058** | | **0.0050** | **mg/L** | 1 | 8/20/2012 01:34 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0132S072012S008
**Lab ID:** 1208361-20
**Collection Date:** 7/20/2012 05:05 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.0053** | | **0.0050** | **mg/L** | 1 | 8/20/2012 01:40 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0132S072012S012
**Lab ID:** 1208361-21
**Collection Date:** 7/20/2012 05:10 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.0097** | | **0.0050** | **mg/L** | 1 | 8/20/2012 01:59 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0132S072012S094
**Lab ID:** 1208361-22
**Collection Date:** 7/20/2012 05:55 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.020** | | **0.0050** | **mg/L** | 1 | 8/20/2012 02:05 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0128S072112S008
**Lab ID:** 1208361-23
**Collection Date:** 7/21/2012 11:55 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| Molybdenum | ND | | 0.0050 | mg/L | 1 | 8/20/2012 02:11 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012 **Work Order:** 1208361
**Sample ID:** SBSA0128S072112S093 **Lab ID:** 1208361-24
**Collection Date:** 7/21/2012 12:00 PM **Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| Molybdenum | ND | | 0.0050 | mg/L | 1 | 8/20/2012 02:18 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0130S072112S005
**Lab ID:** 1208361-25
**Collection Date:** 7/21/2012 01:44 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.011** | | **0.0050** | **mg/L** | 1 | 8/20/2012 02:24 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0133S072112S040
**Lab ID:** 1208361-26
**Collection Date:** 7/21/2012 09:59 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.022** | | **0.0050** | **mg/L** | 1 | 8/20/2012 02:49 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0133S072112S057
**Lab ID:** 1208361-27
**Collection Date:** 7/21/2012 10:05 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.013** | | **0.0050** | **mg/L** | 1 | 8/20/2012 02:55 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0133S072112S072
**Lab ID:** 1208361-28
**Collection Date:** 7/21/2012 10:52 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.0067** | | **0.0050** | **mg/L** | 1 | 8/20/2012 03:01 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0136S080112S006
**Lab ID:** 1208361-29
**Collection Date:** 8/1/2012 08:15 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.011** | | **0.0050** | **mg/L** | 1 | 8/20/2012 03:08 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0138S080112S095
**Lab ID:** 1208361-30
**Collection Date:** 8/1/2012 12:50 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.011** | | **0.0050** | **mg/L** | 1 | 8/20/2012 03:14 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0139S080112S006
**Lab ID:** 1208361-31
**Collection Date:** 8/1/2012 02:44 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.014** | | **0.0050** | **mg/L** | 1 | 8/20/2012 03:45 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0139S080112S017
**Lab ID:** 1208361-32
**Collection Date:** 8/1/2012 02:47 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| Molybdenum | ND | | 0.0050 | mg/L | 1 | 8/20/2012 04:10 AM |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/14/2012** | Analyst: **RS** |
| 1,1,1,2-Tetrachloroethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,1,1-Trichloroethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,1,2,2-Tetrachloroethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,1,2-Trichloroethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,1,2-Trichlorotrifluoroethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,1-Dichloroethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,1-Dichloroethene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,2,3-Trichlorobenzene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,2,3-Trichloropropane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,2,4-Trichlorobenzene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| **1,2,4-Trimethylbenzene** | **1.7** | | **1.0** | **µg/L** | 1 | 8/15/2012 09:22 PM |
| 1,2-Dibromo-3-chloropropane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,2-Dibromoethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,2-Dichlorobenzene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,2-Dichloroethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,2-Dichloropropane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| **1,3,5-Trimethylbenzene** | **2.1** | | **1.0** | **µg/L** | 1 | 8/15/2012 09:22 PM |
| 1,3-Dichlorobenzene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 1,4-Dichlorobenzene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 2-Butanone | ND | | 5.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 2-Hexanone | ND | | 5.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 2-Methylnaphthalene | ND | | 5.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| 4-Methyl-2-pentanone | ND | | 5.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Acetone | ND | | 20 | µg/L | 1 | 8/15/2012 09:22 PM |
| Acrylonitrile | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Benzene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Bromochloromethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Bromodichloromethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Bromoform | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Bromomethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Carbon disulfide | ND | | 2.5 | µg/L | 1 | 8/15/2012 09:22 PM |
| Carbon tetrachloride | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Chlorobenzene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Chloroethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Chloroform | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Chloromethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0139S080112S017
**Lab ID:** 1208361-32
**Collection Date:** 8/1/2012 02:47 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| cis-1,3-Dichloropropene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Cyclohexane | ND | | 5.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Dibromochloromethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Dichlorodifluoromethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Diethyl ether | ND | | 10 | µg/L | 1 | 8/15/2012 09:22 PM |
| Diisopropyl ether | ND | | 5.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| **Ethylbenzene** | **1.1** | | **1.0** | **µg/L** | 1 | 8/15/2012 09:22 PM |
| Hexachloroethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Isopropylbenzene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| **m,p-Xylene** | **4.8** | | **2.0** | **µg/L** | 1 | 8/15/2012 09:22 PM |
| Methyl iodide | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Methyl tert-butyl ether | ND | | 5.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Methylene chloride | ND | | 5.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Naphthalene | ND | | 5.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| n-Butylbenzene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| n-Propylbenzene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| **o-Xylene** | **7.8** | | **1.0** | **µg/L** | 1 | 8/15/2012 09:22 PM |
| p-Isopropyltoluene | ND | | 2.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| sec-Butylbenzene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Styrene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| t-Butyl ethyl ether | ND | | 5.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| tert-Butyl alcohol | ND | | 50 | µg/L | 1 | 8/15/2012 09:22 PM |
| tert-Butylbenzene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Tertiaryamylmethylether | ND | | 5.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Tetrachloroethene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Tetrahydrofuran | ND | | 10 | µg/L | 1 | 8/15/2012 09:22 PM |
| **Toluene** | **2.2** | | **1.0** | **µg/L** | 1 | 8/15/2012 09:22 PM |
| trans-1,2-Dichloroethene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| trans-1,3-Dichloropropene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| trans-1,4-Dichloro-2-butene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Trichloroethene | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Trichlorofluoromethane | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| Vinyl chloride | ND | | 1.0 | µg/L | 1 | 8/15/2012 09:22 PM |
| *Surr: 1,2-Dichloroethane-d4* | *93.4* | | *70-120* | *%REC* | 1 | 8/15/2012 09:22 PM |
| *Surr: 4-Bromofluorobenzene* | *94.7* | | *75-120* | *%REC* | 1 | 8/15/2012 09:22 PM |
| *Surr: Dibromofluoromethane* | *89.4* | | *85-115* | *%REC* | 1 | 8/15/2012 09:22 PM |
| *Surr: Toluene-d8* | *88.0* | | *85-120* | *%REC* | 1 | 8/15/2012 09:22 PM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0139S080112S052
**Lab ID:** 1208361-33
**Collection Date:** 8/1/2012 03:00 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.014** | | **0.0050** | **mg/L** | 1 | 8/20/2012 04:16 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0139D080112S052
**Lab ID:** 1208361-34
**Collection Date:** 8/1/2012 03:00 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.013** | | **0.0050** | **mg/L** | 1 | 8/20/2012 04:22 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0139S080112S090
**Lab ID:** 1208361-35
**Collection Date:** 8/1/2012 03:15 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.0087** | | **0.0050** | **mg/L** | 1 | 8/20/2012 04:29 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0141S080212S034
**Lab ID:** 1208361-36
**Collection Date:** 8/2/2012 08:29 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.0058** | | **0.0050** | **mg/L** | 1 | 8/20/2012 04:35 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0141S080212S075
**Lab ID:** 1208361-37
**Collection Date:** 8/2/2012 09:25 AM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.0087** | | **0.0050** | **mg/L** | 1 | 8/20/2012 04:41 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012
**Work Order:** 1208361
**Sample ID:** SBSA0135S073112S005
**Lab ID:** 1208361-38
**Collection Date:** 7/31/2012 02:10 PM
**Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.0070** | | **0.0050** | **mg/L** | 1 | 8/20/2012 04:59 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

## ALS Group USA, Corp

**Date:** *21-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI SPLP August 2012 **Work Order:** 1208361
**Sample ID:** SBSA0137S073112S006 **Lab ID:** 1208361-39
**Collection Date:** 7/31/2012 03:37 PM **Matrix:** SPLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/17/2012** | Analyst: **ML** |
| **Molybdenum** | **0.014** | | **0.0050** | **mg/L** | 1 | 8/20/2012 05:05 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 21-Aug-12

**Client:** AECOM Environment

# QC BATCH REPORT

**Work Order:** 1208361

**Project:** Marshall KRRI SPLP August 2012

Batch ID: **43032** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-43032-43032** Units: **mg/L** Analysis Date: **8/19/2012 11:29 AM**

Client ID: Run ID: **ICPMS1_120818A** SeqNo: **2056365** Prep Date: **8/17/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | 0.0001629 | 0.0050 | | | | | | | | J |

**LCS** Sample ID: **LCS-43032-43032** Units: **mg/L** Analysis Date: **8/19/2012 11:35 AM**

Client ID: Run ID: **ICPMS1_120818A** SeqNo: **2056366** Prep Date: **8/17/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | 0.1004 | 0.0050 | 0.1 | 0 | 100 | 80-120 | 0 | | | |

**MS** Sample ID: **1208361-10AMS** Units: **mg/L** Analysis Date: **8/20/2012 12:14 AM**

Client ID: **SBSA0117S071812S006** Run ID: **ICPMS1_120819A** SeqNo: **2056627** Prep Date: **8/17/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | 0.1029 | 0.0050 | 0.1 | 0.01237 | 90.5 | 75-125 | 0 | | | |

**MSD** Sample ID: **1208361-10AMSD** Units: **mg/L** Analysis Date: **8/20/2012 12:20 AM**

Client ID: **SBSA0117S071812S006** Run ID: **ICPMS1_120819A** SeqNo: **2056628** Prep Date: **8/17/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | 0.1064 | 0.0050 | 0.1 | 0.01237 | 94 | 75-125 | 0.1029 | 3.34 | 20 | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208361-01A | 1208361-02A | 1208361-03A |
| 1208361-04A | 1208361-05A | 1208361-06A |
| 1208361-07A | 1208361-08A | 1208361-09A |
| 1208361-10A | 1208361-11A | 1208361-12A |
| 1208361-13A | 1208361-14A | 1208361-15A |
| 1208361-16A | 1208361-17A | 1208361-18A |
| 1208361-19A | 1208361-20A | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208361
**Project:** Marshall KRRI SPLP August 2012

# QC BATCH REPORT

Batch ID: **43033** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-43033-43033** Units: **mg/L** Analysis Date: **8/20/2012 01:47 AM**
Client ID: Run ID: **ICPMS1_120819A** SeqNo: **2056643** Prep Date: **8/17/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | ND | 0.0050 | | | | | | | | |

**LCS** Sample ID: **LCS-43033-43033** Units: **mg/L** Analysis Date: **8/20/2012 01:53 AM**
Client ID: Run ID: **ICPMS1_120819A** SeqNo: **2056644** Prep Date: **8/17/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | 0.09523 | 0.0050 | 0.1 | 0 | 95.2 | 80-120 | 0 | | | |

**MS** Sample ID: **1208361-37AMS** Units: **mg/L** Analysis Date: **8/20/2012 04:47 AM**
Client ID: **SBSA0141S080212S075** Run ID: **ICPMS1_120819A** SeqNo: **2056670** Prep Date: **8/17/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | 0.09019 | 0.0050 | 0.1 | 0.008663 | 81.5 | 75-125 | 0 | | | |

**MSD** Sample ID: **1208361-37AMSD** Units: **mg/L** Analysis Date: **8/20/2012 04:53 AM**
Client ID: **SBSA0141S080212S075** Run ID: **ICPMS1_120819A** SeqNo: **2056671** Prep Date: **8/17/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | 0.08556 | 0.0050 | 0.1 | 0.008663 | 76.9 | 75-125 | 0.09019 | 5.27 | 20 | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208361-21A | 1208361-22A | 1208361-23A |
| 1208361-24A | 1208361-25A | 1208361-26A |
| 1208361-27A | 1208361-28A | 1208361-29A |
| 1208361-30A | 1208361-31A | 1208361-32A |
| 1208361-33A | 1208361-34A | 1208361-35A |
| 1208361-36A | 1208361-37A | 1208361-38A |
| 1208361-39A | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **R108564** Instrument ID **VMS9** Method: **SW8260**

**MBLK** Sample ID: **VBLKW1-120815-R108564** Units: **µg/L** Analysis Date: **8/15/2012 03:29 PM**
Client ID: Run ID: **VMS9_120815A** SeqNo: **2053493** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 3.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 2.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 2.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 2.0 | | | | | | | | |
| 2-Butanone | ND | 5.0 | | | | | | | | |
| 2-Hexanone | ND | 5.0 | | | | | | | | |
| 2-Methylnaphthalene | ND | 10 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 5.0 | | | | | | | | |
| Acetone | ND | 20 | | | | | | | | |
| Acrylonitrile | ND | 1.0 | | | | | | | | |
| Benzene | ND | 1.0 | | | | | | | | |
| Bromochloromethane | ND | 1.0 | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 1.0 | | | | | | | | |
| Carbon disulfide | ND | 2.5 | | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroethane | ND | 1.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 1.0 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| Cyclohexane | ND | 5.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| Diethyl ether | ND | 10 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R108564** Instrument ID **VMS9** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | |
| Hexachloroethane | ND | 1.0 | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | |
| m,p-Xylene | ND | 2.0 | | | | | |
| Methyl iodide | ND | 5.0 | | | | | |
| Methyl tert-butyl ether | ND | 5.0 | | | | | |
| Methylene chloride | ND | 5.0 | | | | | |
| Naphthalene | ND | 5.0 | | | | | |
| n-Butylbenzene | ND | 1.0 | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | |
| o-Xylene | ND | 1.0 | | | | | |
| p-Isopropyltoluene | ND | 2.0 | | | | | |
| sec-Butylbenzene | ND | 2.0 | | | | | |
| Styrene | ND | 1.0 | | | | | |
| t-Butyl ethyl ether | ND | 0 | | | | | |
| tert-Butyl alcohol | ND | 50 | | | | | |
| tert-Butylbenzene | ND | 2.0 | | | | | |
| Tertiaryamylmethylether | ND | 5.0 | | | | | |
| Tetrachloroethene | ND | 2.0 | | | | | |
| Tetrahydrofuran | ND | 10 | | | | | |
| Toluene | ND | 1.0 | | | | | |
| trans-1,2-Dichloroethene | ND | 1.0 | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 5.0 | | | | | |
| Trichloroethene | ND | 1.0 | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | |
| Vinyl chloride | ND | 1.0 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *18.7* | 0 | *20* | 0 | *93.5* | *70-120* | 0 |
| *Surr: 4-Bromofluorobenzene* | *16.97* | 0 | *20* | 0 | *84.8* | *75-120* | 0 |
| *Surr: Dibromofluoromethane* | *17.9* | 0 | *20* | 0 | *89.5* | *85-115* | 0 |
| *Surr: Toluene-d8* | *17.22* | 0 | *20* | 0 | *86.1* | *85-120* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208361
**Project:** Marshall KRRI SPLP August 2012

# QC BATCH REPORT

Batch ID: **R108564** Instrument ID **VMS9** Method: **SW8260**

**LCS** Sample ID: **VLCSW1-120815-R108564** Units: **µg/L** Analysis Date: **8/15/2012 02:39 PM**
Client ID: Run ID: **VMS9_120815A** SeqNo: **2052933** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 20.97 | 1.0 | 20 | 0 | 105 | 80-130 | 0 | | | |
| 1,1,1-Trichloroethane | 23.32 | 1.0 | 20 | 0 | 117 | 65-130 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 19.36 | 1.0 | 20 | 0 | 96.8 | 65-130 | 0 | | | |
| 1,1,2-Trichloroethane | 19.02 | 1.0 | 20 | 0 | 95.1 | 75-125 | 0 | | | |
| 1,1-Dichloroethane | 20.98 | 1.0 | 20 | 0 | 105 | 70-135 | 0 | | | |
| 1,1-Dichloroethene | 24.78 | 1.0 | 20 | 0 | 124 | 70-130 | 0 | | | |
| 1,2,3-Trichlorobenzene | 22.82 | 3.0 | 20 | 0 | 114 | 55-140 | 0 | | | |
| 1,2,3-Trichloropropane | 19.26 | 1.0 | 20 | 0 | 96.3 | 75-125 | 0 | | | |
| 1,2,4-Trichlorobenzene | 23.43 | 1.0 | 20 | 0 | 117 | 65-135 | 0 | | | |
| 1,2,4-Trimethylbenzene | 20.81 | 1.0 | 20 | 0 | 104 | 75-130 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 17.47 | 1.0 | 20 | 0 | 87.4 | 50-130 | 0 | | | |
| 1,2-Dibromoethane | 21.08 | 1.0 | 20 | 0 | 105 | 80-120 | 0 | | | |
| 1,2-Dichlorobenzene | 20.79 | 1.0 | 20 | 0 | 104 | 70-120 | 0 | | | |
| 1,2-Dichloroethane | 19.89 | 1.0 | 20 | 0 | 99.4 | 70-130 | 0 | | | |
| 1,2-Dichloropropane | 20.85 | 2.0 | 20 | 0 | 104 | 75-125 | 0 | | | |
| 1,3,5-Trimethylbenzene | 21.36 | 1.0 | 20 | 0 | 107 | 75-130 | 0 | | | |
| 1,3-Dichlorobenzene | 21.59 | 2.0 | 20 | 0 | 108 | 75-125 | 0 | | | |
| 1,4-Dichlorobenzene | 21.48 | 2.0 | 20 | 0 | 107 | 75-125 | 0 | | | |
| 2-Butanone | 19.02 | 5.0 | 20 | 0 | 95.1 | 30-150 | 0 | | | |
| 2-Hexanone | 20.25 | 5.0 | 20 | 0 | 101 | 55-130 | 0 | | | |
| 4-Methyl-2-pentanone | 18.4 | 5.0 | 20 | 0 | 92 | 60-135 | 0 | | | |
| Acetone | 20.68 | 20 | 20 | 0 | 103 | 40-140 | 0 | | | |
| Acrylonitrile | 19.01 | 1.0 | 20 | 0 | 95 | 70-135 | 0 | | | |
| Benzene | 21.41 | 1.0 | 20 | 0 | 107 | 80-120 | 0 | | | |
| Bromochloromethane | 20.91 | 1.0 | 20 | 0 | 105 | 65-130 | 0 | | | |
| Bromodichloromethane | 19.96 | 1.0 | 20 | 0 | 99.8 | 75-120 | 0 | | | |
| Bromoform | 20.09 | 1.0 | 20 | 0 | 100 | 70-130 | 0 | | | |
| Bromomethane | 18.83 | 1.0 | 20 | 0 | 94.2 | 30-145 | 0 | | | |
| Carbon disulfide | 22.74 | 2.5 | 20 | 0 | 114 | 35-165 | 0 | | | |
| Carbon tetrachloride | 20.18 | 1.0 | 20 | 0 | 101 | 65-140 | 0 | | | |
| Chlorobenzene | 21.94 | 1.0 | 20 | 0 | 110 | 80-120 | 0 | | | |
| Chloroethane | 19.97 | 1.0 | 20 | 0 | 99.8 | 60-135 | 0 | | | |
| Chloroform | 20.76 | 1.0 | 20 | 0 | 104 | 65-135 | 0 | | | |
| Chloromethane | 15.97 | 1.0 | 20 | 0 | 79.8 | 70-125 | 0 | | | |
| cis-1,2-Dichloroethene | 21.78 | 1.0 | 20 | 0 | 109 | 70-125 | 0 | | | |
| cis-1,3-Dichloropropene | 17.57 | 1.0 | 20 | 0 | 87.8 | 70-130 | 0 | | | |
| Dibromochloromethane | 20.13 | 1.0 | 20 | 0 | 101 | 60-135 | 0 | | | |
| Dichlorodifluoromethane | 16.43 | 1.0 | 20 | 0 | 82.2 | 30-155 | 0 | | | |
| Ethylbenzene | 24.07 | 1.0 | 20 | 0 | 120 | 75-125 | 0 | | | |
| Hexachloroethane | 17.97 | 1.0 | 20 | 0 | 89.8 | 70-135 | 0 | | | |
| Isopropylbenzene | 21.32 | 1.0 | 20 | 0 | 107 | 75-125 | 0 | | | |
| m,p-Xylene | 50.41 | 2.0 | 40 | 0 | 126 | 75-130 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

| Batch ID: **R108564** | Instrument ID **VMS9** | | | Method: **SW8260** | | | |
|---|---|---|---|---|---|---|---|
| Methyl iodide | 17.49 | 5.0 | 20 | 0 | 87.4 | 70-135 | 0 |
| Methyl tert-butyl ether | 19.72 | 5.0 | 20 | 0 | 98.6 | 65-125 | 0 |
| Methylene chloride | 21.94 | 5.0 | 20 | 0 | 110 | 55-140 | 0 |
| Naphthalene | 17.94 | 5.0 | 20 | 0 | 89.7 | 55-140 | 0 |
| n-Butylbenzene | 22.05 | 1.0 | 20 | 0 | 110 | 70-135 | 0 |
| n-Propylbenzene | 20.87 | 1.0 | 20 | 0 | 104 | 70-130 | 0 |
| o-Xylene | 23.9 | 1.0 | 20 | 0 | 120 | 80-120 | 0 |
| p-Isopropyltoluene | 23.67 | 2.0 | 20 | 0 | 118 | 75-130 | 0 |
| sec-Butylbenzene | 21.5 | 2.0 | 20 | 0 | 108 | 70-125 | 0 |
| Styrene | 20.28 | 1.0 | 20 | 0 | 101 | 65-135 | 0 |
| tert-Butylbenzene | 20.85 | 2.0 | 20 | 0 | 104 | 70-130 | 0 |
| Tetrachloroethene | 23.76 | 2.0 | 20 | 0 | 119 | 45-150 | 0 |
| Tetrahydrofuran | 19.27 | 10 | 20 | 0 | 96.4 | 70-135 | 0 |
| Toluene | 22.78 | 1.0 | 20 | 0 | 114 | 75-120 | 0 |
| trans-1,2-Dichloroethene | 23.14 | 1.0 | 20 | 0 | 116 | 60-140 | 0 |
| trans-1,3-Dichloropropene | 17.71 | 1.0 | 20 | 0 | 88.6 | 55-140 | 0 |
| trans-1,4-Dichloro-2-butene | 19.24 | 5.0 | 20 | 0 | 96.2 | 70-135 | 0 |
| Trichloroethene | 21.91 | 1.0 | 20 | 0 | 110 | 70-125 | 0 |
| Trichlorofluoromethane | 18.81 | 1.0 | 20 | 0 | 94 | 60-145 | 0 |
| Vinyl chloride | 18.08 | 1.0 | 20 | 0 | 90.4 | 50-145 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *19.34* | 0 | *20* | 0 | *96.7* | *70-120* | 0 |
| *Surr: 4-Bromofluorobenzene* | *20.11* | 0 | *20* | 0 | *101* | *75-120* | 0 |
| *Surr: Dibromofluoromethane* | *18.89* | 0 | *20* | 0 | *94.4* | *85-115* | 0 |
| *Surr: Toluene-d8* | *19.89* | 0 | *20* | 0 | *99.4* | *85-120* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208361
**Project:** Marshall KRRI SPLP August 2012

# QC BATCH REPORT

Batch ID: **R108564** Instrument ID **VMS9** Method: **SW8260**

**MS** Sample ID: **1208445-11A MS** Units: **µg/L** Analysis Date: **8/16/2012 12:18 PM**
Client ID: Run ID: **VMS9_120815A** SeqNo: **2053500** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 19.81 | 1.0 | 20 | 0 | 99 | 80-130 | 0 | | | |
| 1,1,1-Trichloroethane | 23.07 | 1.0 | 20 | 0 | 115 | 65-130 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 18.54 | 1.0 | 20 | 0 | 92.7 | 65-130 | 0 | | | |
| 1,1,2-Trichloroethane | 17.96 | 1.0 | 20 | 0 | 89.8 | 75-125 | 0 | | | |
| 1,1-Dichloroethane | 20.71 | 1.0 | 20 | 0 | 104 | 70-135 | 0 | | | |
| 1,1-Dichloroethene | 24.71 | 1.0 | 20 | 0 | 124 | 70-130 | 0 | | | |
| 1,2,3-Trichlorobenzene | 21.93 | 3.0 | 20 | 0 | 110 | 55-140 | 0 | | | |
| 1,2,3-Trichloropropane | 18.35 | 1.0 | 20 | 0 | 91.8 | 75-125 | 0 | | | |
| 1,2,4-Trichlorobenzene | 22.87 | 1.0 | 20 | 0 | 114 | 65-135 | 0 | | | |
| 1,2,4-Trimethylbenzene | 20.25 | 1.0 | 20 | 0 | 101 | 75-130 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 16.41 | 1.0 | 20 | 0 | 82 | 50-130 | 0 | | | |
| 1,2-Dibromoethane | 19.83 | 1.0 | 20 | 0 | 99.2 | 80-120 | 0 | | | |
| 1,2-Dichlorobenzene | 20.04 | 1.0 | 20 | 0 | 100 | 70-120 | 0 | | | |
| 1,2-Dichloroethane | 19.27 | 1.0 | 20 | 0 | 96.4 | 70-130 | 0 | | | |
| 1,2-Dichloropropane | 20.7 | 2.0 | 20 | 0 | 104 | 75-125 | 0 | | | |
| 1,3,5-Trimethylbenzene | 21.07 | 1.0 | 20 | 0 | 105 | 75-130 | 0 | | | |
| 1,3-Dichlorobenzene | 20.79 | 2.0 | 20 | 0 | 104 | 75-125 | 0 | | | |
| 1,4-Dichlorobenzene | 20.57 | 2.0 | 20 | 0 | 103 | 75-125 | 0 | | | |
| 2-Butanone | 17.33 | 5.0 | 20 | 0 | 86.6 | 30-150 | 0 | | | |
| 2-Hexanone | 19.63 | 5.0 | 20 | 0 | 98.2 | 55-130 | 0 | | | |
| 4-Methyl-2-pentanone | 17.22 | 5.0 | 20 | 0 | 86.1 | 60-135 | 0 | | | |
| Acetone | 18.08 | 20 | 20 | 0 | 90.4 | 40-140 | 0 | | | J |
| Acrylonitrile | 17.94 | 1.0 | 20 | 0 | 89.7 | 70-135 | 0 | | | |
| Benzene | 21.04 | 1.0 | 20 | 0 | 105 | 80-120 | 0 | | | |
| Bromochloromethane | 19.82 | 1.0 | 20 | 0 | 99.1 | 65-130 | 0 | | | |
| Bromodichloromethane | 18.92 | 1.0 | 20 | 0 | 94.6 | 75-120 | 0 | | | |
| Bromoform | 19.07 | 1.0 | 20 | 0 | 95.4 | 70-130 | 0 | | | |
| Bromomethane | 18.07 | 1.0 | 20 | 0 | 90.4 | 30-145 | 0 | | | |
| Carbon disulfide | 21.12 | 2.5 | 20 | 0 | 106 | 35-165 | 0 | | | |
| Carbon tetrachloride | 19.2 | 1.0 | 20 | 0 | 96 | 65-140 | 0 | | | |
| Chlorobenzene | 21.14 | 1.0 | 20 | 0 | 106 | 80-120 | 0 | | | |
| Chloroethane | 19.92 | 1.0 | 20 | 0 | 99.6 | 60-135 | 0 | | | |
| Chloroform | 19.87 | 1.0 | 20 | 0 | 99.4 | 65-135 | 0 | | | |
| Chloromethane | 17.04 | 1.0 | 20 | 0 | 85.2 | 70-125 | 0 | | | |
| cis-1,2-Dichloroethene | 20.75 | 1.0 | 20 | 0 | 104 | 70-125 | 0 | | | |
| cis-1,3-Dichloropropene | 16.65 | 1.0 | 20 | 0 | 83.2 | 70-130 | 0 | | | |
| Dibromochloromethane | 18.67 | 1.0 | 20 | 0 | 93.4 | 60-135 | 0 | | | |
| Dichlorodifluoromethane | 15.42 | 1.0 | 20 | 0 | 77.1 | 30-155 | 0 | | | |
| Ethylbenzene | 23.6 | 1.0 | 20 | 0 | 118 | 75-125 | 0 | | | |
| Hexachloroethane | 16.48 | 1.0 | 20 | 0 | 82.4 | 70-135 | 0 | | | |
| Isopropylbenzene | 20.85 | 1.0 | 20 | 0 | 104 | 75-125 | 0 | | | |
| m,p-Xylene | 48.67 | 2.0 | 40 | 0 | 122 | 75-130 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **R108564** | Instrument ID **VMS9** | | | Method: **SW8260** | | | | |
|---|---|---|---|---|---|---|---|---|
| Methyl iodide | 17.73 | 5.0 | 20 | 0 | 88.6 | 70-135 | 0 | |
| Methyl tert-butyl ether | 19.03 | 5.0 | 20 | 0 | 95.2 | 65-125 | 0 | |
| Methylene chloride | 20.43 | 5.0 | 20 | 0 | 102 | 55-140 | 0 | |
| Naphthalene | 18.23 | 5.0 | 20 | 0 | 91.2 | 55-140 | 0 | |
| n-Butylbenzene | 20.84 | 1.0 | 20 | 0 | 104 | 70-135 | 0 | |
| n-Propylbenzene | 20.33 | 1.0 | 20 | 0 | 102 | 70-130 | 0 | |
| o-Xylene | 23.75 | 1.0 | 20 | 0 | 119 | 80-120 | 0 | |
| p-Isopropyltoluene | 23.25 | 2.0 | 20 | 0 | 116 | 75-130 | 0 | |
| sec-Butylbenzene | 20.95 | 2.0 | 20 | 0 | 105 | 70-125 | 0 | |
| Styrene | 19.77 | 1.0 | 20 | 0 | 98.8 | 65-135 | 0 | |
| tert-Butylbenzene | 20.4 | 2.0 | 20 | 0 | 102 | 70-130 | 0 | |
| Tetrachloroethene | 22.27 | 2.0 | 20 | 0 | 111 | 45-150 | 0 | |
| Tetrahydrofuran | 17.8 | 10 | 20 | 0 | 89 | 70-135 | 0 | |
| Toluene | 21.74 | 1.0 | 20 | 0 | 109 | 75-120 | 0 | |
| trans-1,2-Dichloroethene | 22.67 | 1.0 | 20 | 0 | 113 | 60-140 | 0 | |
| trans-1,3-Dichloropropene | 16.3 | 1.0 | 20 | 0 | 81.5 | 55-140 | 0 | |
| trans-1,4-Dichloro-2-butene | 17.58 | 5.0 | 20 | 0 | 87.9 | 70-135 | 0 | |
| Trichloroethene | 28.6 | 1.0 | 20 | 0 | 143 | 70-125 | 0 | S |
| Trichlorofluoromethane | 18.37 | 1.0 | 20 | 0 | 91.8 | 60-145 | 0 | |
| Vinyl chloride | 18.39 | 1.0 | 20 | 0 | 92 | 50-145 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *19.39* | 0 | *20* | 0 | *97* | *70-120* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *20.65* | 0 | *20* | 0 | *103* | *75-120* | 0 | |
| *Surr: Dibromofluoromethane* | *19.07* | 0 | *20* | 0 | *95.4* | *85-115* | 0 | |
| *Surr: Toluene-d8* | *19.45* | 0 | *20* | 0 | *97.2* | *85-120* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208361
**Project:** Marshall KRRI SPLP August 2012

# QC BATCH REPORT

Batch ID: **R108564** Instrument ID **VMS9** Method: **SW8260**

**MSD** Sample ID: **1208445-11A MSD** Units: **µg/L** Analysis Date: **8/16/2012 12:43 PM**
Client ID: Run ID: **VMS9_120815A** SeqNo: **2053501** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 19.33 | 1.0 | 20 | 0 | 96.6 | 80-130 | 19.81 | 2.45 | 30 | |
| 1,1,1-Trichloroethane | 22.06 | 1.0 | 20 | 0 | 110 | 65-130 | 23.07 | 4.48 | 30 | |
| 1,1,2,2-Tetrachloroethane | 18.67 | 1.0 | 20 | 0 | 93.4 | 65-130 | 18.54 | 0.699 | 30 | |
| 1,1,2-Trichloroethane | 17.57 | 1.0 | 20 | 0 | 87.8 | 75-125 | 17.96 | 2.2 | 30 | |
| 1,1-Dichloroethane | 20.33 | 1.0 | 20 | 0 | 102 | 70-135 | 20.71 | 1.85 | 30 | |
| 1,1-Dichloroethene | 24.51 | 1.0 | 20 | 0 | 123 | 70-130 | 24.71 | 0.813 | 30 | |
| 1,2,3-Trichlorobenzene | 21.04 | 3.0 | 20 | 0 | 105 | 55-140 | 21.93 | 4.14 | 30 | |
| 1,2,3-Trichloropropane | 18.22 | 1.0 | 20 | 0 | 91.1 | 75-125 | 18.35 | 0.711 | 30 | |
| 1,2,4-Trichlorobenzene | 21.84 | 1.0 | 20 | 0 | 109 | 65-135 | 22.87 | 4.61 | 30 | |
| 1,2,4-Trimethylbenzene | 20.19 | 1.0 | 20 | 0 | 101 | 75-130 | 20.25 | 0.297 | 30 | |
| 1,2-Dibromo-3-chloropropane | 16.29 | 1.0 | 20 | 0 | 81.4 | 50-130 | 16.41 | 0.734 | 30 | |
| 1,2-Dibromoethane | 19.81 | 1.0 | 20 | 0 | 99 | 80-120 | 19.83 | 0.101 | 30 | |
| 1,2-Dichlorobenzene | 19.02 | 1.0 | 20 | 0 | 95.1 | 70-120 | 20.04 | 5.22 | 30 | |
| 1,2-Dichloroethane | 18.77 | 1.0 | 20 | 0 | 93.8 | 70-130 | 19.27 | 2.63 | 30 | |
| 1,2-Dichloropropane | 20.17 | 2.0 | 20 | 0 | 101 | 75-125 | 20.7 | 2.59 | 30 | |
| 1,3,5-Trimethylbenzene | 20.67 | 1.0 | 20 | 0 | 103 | 75-130 | 21.07 | 1.92 | 30 | |
| 1,3-Dichlorobenzene | 19.63 | 2.0 | 20 | 0 | 98.2 | 75-125 | 20.79 | 5.74 | 30 | |
| 1,4-Dichlorobenzene | 19.65 | 2.0 | 20 | 0 | 98.2 | 75-125 | 20.57 | 4.57 | 30 | |
| 2-Butanone | 17.25 | 5.0 | 20 | 0 | 86.2 | 30-150 | 17.33 | 0.463 | 30 | |
| 2-Hexanone | 19.24 | 5.0 | 20 | 0 | 96.2 | 55-130 | 19.63 | 2.01 | 30 | |
| 4-Methyl-2-pentanone | 17.33 | 5.0 | 20 | 0 | 86.6 | 60-135 | 17.22 | 0.637 | 30 | |
| Acetone | 18.53 | 20 | 20 | 0 | 92.6 | 40-140 | 18.08 | 0 | 30 | J |
| Acrylonitrile | 17.68 | 1.0 | 20 | 0 | 88.4 | 70-135 | 17.94 | 1.46 | 30 | |
| Benzene | 20.23 | 1.0 | 20 | 0 | 101 | 80-120 | 21.04 | 3.93 | 30 | |
| Bromochloromethane | 19.72 | 1.0 | 20 | 0 | 98.6 | 65-130 | 19.82 | 0.506 | 30 | |
| Bromodichloromethane | 18.02 | 1.0 | 20 | 0 | 90.1 | 75-120 | 18.92 | 4.87 | 30 | |
| Bromoform | 18.68 | 1.0 | 20 | 0 | 93.4 | 70-130 | 19.07 | 2.07 | 30 | |
| Bromomethane | 18.34 | 1.0 | 20 | 0 | 91.7 | 30-145 | 18.07 | 1.48 | 30 | |
| Carbon disulfide | 21.29 | 2.5 | 20 | 0 | 106 | 35-165 | 21.12 | 0.802 | 30 | |
| Carbon tetrachloride | 18.87 | 1.0 | 20 | 0 | 94.4 | 65-140 | 19.2 | 1.73 | 30 | |
| Chlorobenzene | 20.32 | 1.0 | 20 | 0 | 102 | 80-120 | 21.14 | 3.96 | 30 | |
| Chloroethane | 20.49 | 1.0 | 20 | 0 | 102 | 60-135 | 19.92 | 2.82 | 30 | |
| Chloroform | 19.77 | 1.0 | 20 | 0 | 98.8 | 65-135 | 19.87 | 0.505 | 30 | |
| Chloromethane | 16.46 | 1.0 | 20 | 0 | 82.3 | 70-125 | 17.04 | 3.46 | 30 | |
| cis-1,2-Dichloroethene | 20.62 | 1.0 | 20 | 0 | 103 | 70-125 | 20.75 | 0.628 | 30 | |
| cis-1,3-Dichloropropene | 15.7 | 1.0 | 20 | 0 | 78.5 | 70-130 | 16.65 | 5.87 | 30 | |
| Dibromochloromethane | 17.91 | 1.0 | 20 | 0 | 89.6 | 60-135 | 18.67 | 4.16 | 30 | |
| Dichlorodifluoromethane | 15.05 | 1.0 | 20 | 0 | 75.2 | 30-155 | 15.42 | 2.43 | 30 | |
| Ethylbenzene | 22.62 | 1.0 | 20 | 0 | 113 | 75-125 | 23.6 | 4.24 | 30 | |
| Hexachloroethane | 15.47 | 1.0 | 20 | 0 | 77.4 | 70-135 | 16.48 | 6.32 | 30 | |
| Isopropylbenzene | 20.23 | 1.0 | 20 | 0 | 101 | 75-125 | 20.85 | 3.02 | 30 | |
| m,p-Xylene | 47.12 | 2.0 | 40 | 0 | 118 | 75-130 | 48.67 | 3.24 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208361
**Project:** Marshall KRRI SPLP August 2012

# QC BATCH REPORT

| Batch ID: **R108564** | Instrument ID **VMS9** | | Method: **SW8260** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Methyl iodide | 17.04 | 5.0 | 20 | 0 | 85.2 | 70-135 | 17.73 | 3.97 | 30 | |
| Methyl tert-butyl ether | 19.24 | 5.0 | 20 | 0 | 96.2 | 65-125 | 19.03 | 1.1 | 30 | |
| Methylene chloride | 20.2 | 5.0 | 20 | 0 | 101 | 55-140 | 20.43 | 1.13 | 30 | |
| Naphthalene | 17.6 | 5.0 | 20 | 0 | 88 | 55-140 | 18.23 | 3.52 | 30 | |
| n-Butylbenzene | 19.74 | 1.0 | 20 | 0 | 98.7 | 70-135 | 20.84 | 5.42 | 30 | |
| n-Propylbenzene | 19.75 | 1.0 | 20 | 0 | 98.8 | 70-130 | 20.33 | 2.89 | 30 | |
| o-Xylene | 22.85 | 1.0 | 20 | 0 | 114 | 80-120 | 23.75 | 3.86 | 30 | |
| p-Isopropyltoluene | 21.42 | 2.0 | 20 | 0 | 107 | 75-130 | 23.25 | 8.19 | 30 | |
| sec-Butylbenzene | 20.54 | 2.0 | 20 | 0 | 103 | 70-125 | 20.95 | 1.98 | 30 | |
| Styrene | 19.34 | 1.0 | 20 | 0 | 96.7 | 65-135 | 19.77 | 2.2 | 30 | |
| tert-Butylbenzene | 20.05 | 2.0 | 20 | 0 | 100 | 70-130 | 20.4 | 1.73 | 30 | |
| Tetrachloroethene | 21.14 | 2.0 | 20 | 0 | 106 | 45-150 | 22.27 | 5.21 | 30 | |
| Tetrahydrofuran | 17.89 | 10 | 20 | 0 | 89.4 | 70-135 | 17.8 | 0.504 | 30 | |
| Toluene | 20.91 | 1.0 | 20 | 0 | 105 | 75-120 | 21.74 | 3.89 | 30 | |
| trans-1,2-Dichloroethene | 22.13 | 1.0 | 20 | 0 | 111 | 60-140 | 22.67 | 2.41 | 30 | |
| trans-1,3-Dichloropropene | 15.72 | 1.0 | 20 | 0 | 78.6 | 55-140 | 16.3 | 3.62 | 30 | |
| trans-1,4-Dichloro-2-butene | 17.78 | 5.0 | 20 | 0 | 88.9 | 70-135 | 17.58 | 1.13 | 30 | |
| Trichloroethene | 25.33 | 1.0 | 20 | 0 | 127 | 70-125 | 28.6 | 12.1 | 30 | S |
| Trichlorofluoromethane | 18.01 | 1.0 | 20 | 0 | 90 | 60-145 | 18.37 | 1.98 | 30 | |
| Vinyl chloride | 17.93 | 1.0 | 20 | 0 | 89.6 | 50-145 | 18.39 | 2.53 | 30 | |
| *Surr: 1,2-Dichloroethane-d4* | *18.97* | 0 | *20* | 0 | *94.8* | *70-120* | 19.39 | *2.19* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *20.47* | 0 | *20* | 0 | *102* | *75-120* | 20.65 | *0.875* | *30* | |
| *Surr: Dibromofluoromethane* | *19* | 0 | *20* | 0 | *95* | *85-115* | 19.07 | *0.368* | *30* | |
| *Surr: Toluene-d8* | *19.04* | 0 | *20* | 0 | *95.2* | *85-120* | 19.45 | *2.13* | *30* | |

**The following samples were analyzed in this batch:** 1208361-32A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

1208361
1207521

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_071712_GMK1 | Task: KRRI_0800, 0825 |
|---|---|---|
| Total # of Samples: 12 | | Event Complete? |

| Turn Around Time | 5 Day | Rush | No |
|---|---|---|---|

BILLING CODE: 6.00

| Lab Information | | Project Information | | Other Information | |
|---|---|---|---|---|---|
| Lab Name: | ALS Laboratory Group | Site ID #: | | Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 | Project # | 60162778 | Address: | 1100 Louisiana Suite 1100 |
| | | Site Address | 5555 Glenwood Parkway SE Suite 200 | City/State: | Houson, TX Phone #: 713-821-2000 |
| Lab PM: | Ann Preston | City | Grand Rapids State, Zip MI | PO # | |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 | Site PM Name | Bryan Stiemsma | Send EDD to | |
| Lab PM email: | ann.preston@alsglobal.com | Phone/Fax: | [redacted] | CC Hardcopy report | |
| Applicable Lab Quote #: | | Site PM Email: | Bryan.Stiemsma@aecom.com | CC Hardcopy report | |

| ITEM # | SAMPLE ID Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | # OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | None | None | None | None | MeOH | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | | | | | | | |
| 1 | SBKR0800L510S071712S004 | SBKR0800L510 | SO | G | 07/17/2012 09:20 | 3 | | | X | X | X | X | X | | | | | | | | | | | | | | | |
| 2 | SBKR0825I501S071712S003 | SBKR0825I501 | SO | G | 07/17/2012 15:05 | 3 | | | X | X | X | X | X | | | | | | | | | | | | | | | |
| 3 | SBKR0825I501S071712S021 | SBKR0825I501 | SO | G | 07/17/2012 15:10 | 3 | | | X | X | X | X | X | | | | | | | | | | | | | | | |
| 4 | SBKR0825I501S071712S030 | SBKR0825I501 | SO | G | 07/17/2012 15:15 | 3 | | | X | X | X | X | X | | | | | | | | | | | | | | | |
| 5 | SBKR0825I502S071712S004 | SBKR0825I502 | SO | G | 07/17/2012 16:00 | 3 | | | X | X | X | X | X | | | | | | | | | | | | | | | |
| 6 | SBKR0825I502S071712S020 | SBKR0825I502 | SO | G | 07/17/2012 16:05 | 3 | | | X | X | X | X | X | | | | | | | | | | | | | | | |
| 7 | SBKR0825I503S071712S006 | SBKR0825I503 | SO | G | 07/17/2012 16:48 | 3 | | | X | X | X | X | X | | | | | | | | | | | | | | | |
| 8 | SBKR0825I503T071712MX | SBKR0825I503 | SQ | G | 07/17/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | | | | | | | |
| 9 | SBKR0825L501S071712S007 | SBKR0825L501 | SO | G | 07/17/2012 10:20 | 3 | | | X | X | X | X | X | | X | | | | | | | | | | | | | |
| 10 | SBKR0825L501D071712S007 | SBKR0825L501 | SO | G | 07/17/2012 10:20 | 3 | DUPLICATE | | X | X | X | X | X | | X | | | | | | | | | | | | | |
| 11 | SBKR0825L502S071712S004 | SBKR0825L502 | SO | G | 07/17/2012 11:30 | 3 | | | X | X | X | X | X | | | | | | | | | | | | | | | |
| 12 | SBKR0825L503S071712S006 | SBKR0825L503 | SO | G | 07/17/2012 14:10 | 3 | | | X | X | X | X | X | | | | | | | | | | | | | | | |

01
02

SPLIT MW

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7-17-12 | 1737 | [signature] | 7-17-12 | 1737 |
| [signature] | 7-18-12 | 1311 | [signature] | 7-18-12 | 1311 |

| Sample Receipt Conditions | | | | |
|---|---|---|---|---|
| | Y/N | Y/N | Y/N | |
| 4.0°C | (Y)N | (Y)N | (Y)N | |
| | Y/N | Y/N | Y/N | |
| | Y/N | Y/N | Y/N | |
| Temp in OC | Samples on Ice? | Sample Intact? | Trip Blank? | |

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

1208361
1207628

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_072012_GMK2 | Task: KRRI_SOURCE AREA |
|---|---|---|
| | Total # of Samples: 7 | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |
| BILLING CODE: 6.00 | | |

**Lab Information:**
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave, Holland, MI 49424-9283
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

**Project Information:**
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: Bryan Stiemsma
Phone/Fax: [redacted]
Site PM Email: Bryan.Stiemsma@aecom.com

**Other Information:**
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #:
Send EDD to:
CC Hardcopy report:
CC Hardcopy report:

| ITEM # | SAMPLE ID (Samples IDs MUST BE UNIQUE) | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | None | None | None | None | MeOH | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 6035/8260 | | | | | | | | | | | | |
| 1 | SBSA0125S072012S003 | SBSA0125 | SO | G | 07/20/2012 08:50 | 3 | | | X | X | X | X | X | | | | | | | | | | | | |
| 2 | SBSA0125S072012S086 | SBSA0125 | SO | G | 07/20/2012 10:40 | 3 | MDEQ SPLIT | | X | X | X | X | X | | X | | | | | | | | | | |
| 3 | SBSA0126S072012S008 | SBSA0126 | SO | G | 07/20/2012 11:25 | 3 | | | X | X | X | X | X | | X | | | | | | | | | | |
| 4 | SBSA0127S072012S005 | SBSA0127 | SO | G | 07/20/2012 13:58 | 3 | | | X | X | X | X | X | | X | | | | | | | | | | |
| 5 | SBSA0129S072012S004 | SBSA0129 | SO | G | 07/20/2012 14:48 | 3 | | | X | X | X | X | X | | X | | | | | | | | | | |
| 6 | SBSA0129S072012S098 | SBSA0129 | SO | G | 07/20/2012 16:05 | 3 | | | X | X | X | X | X | | X | | | | | | | | | | |
| 7 | SBSA0129T072012MX | SBSA0129 | SQ | G | 07/20/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | | | | |

03
04
05
06
07

SPLSMO 8/16/12

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7.20.12 | 1705 | [signature] | 7.20.12 | 1705 |
| | | | | | |
| | | | | | |

**Sample Receipt Conditions**

| Temp in OC | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|
| 4.4°c | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

1208361
1207631

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_071812_GMK1 | Task: KRRI_SOURCE AREA |
|---|---|---|
| Total # of Samples: 8 | | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |
| BILLING CODE: 8.00 | | |

**Lab Information:**
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

**Project Information:**
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: Bryan Stiemsma
Phone/Fax:
Site PM Email: Bryan.Stiemsma@aecom.com

**Other Information:**
Send invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #
Send EDD to
CC Hardcopy report
CC Hardcopy report

| ITEM # | SAMPLE ID Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Analysis Preservative | % Moisture None | Be,Mo,V,Ni by 6020 None | ORO,DRO None | PNAs by 8270 None | VOC by 6035/8260 MeOH | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 08 1 | SBSA0115S071812S009 | SBSA0115 | SO | G | 07/18/2012 12:49 | 3 | | | X | X | X | X | X | | X | | | | | | | | | | | | | | |
| 09 2 | SBSA0116S071812S007 | SBSA0116 | SO | G | 07/18/2012 13:37 | 3 | MDEQ SPLIT | | X | X | X | X | X | | X | | | | | | | | | | | | | | |
| 3 | SBSA0116S071812S014 | SBSA0116 | SO | G | 07/18/2012 13:42 | 3 | | | X | X | X | X | X | | | | | | | | | | | | | | | | |
| 10 4 | SBSA0117S071812S006 | SBSA0117 | SO | G | 07/18/2012 14:30 | 3 | | | X | X | X | X | X | | X | | | | | | | | | | | | | | |
| 11 5 | SBSA0118S071812S006 | SBSA0118 | SO | G | 07/18/2012 15:05 | 3 | | | X | X | X | X | X | | X | | | | | | | | | | | | | | |
| 12 6 | SBSA0119S071812S004 | SBSA0119 | SO | G | 07/18/2012 15:38 | 3 | | | X | X | X | X | X | | X | | | | | | | | | | | | | | |
| 13 7 | SBSA0120S071812S007 | SBSA0120 | SO | G | 07/18/2012 16:13 | 3 | | | X | X | X | X | X | | X | | | | | | | | | | | | | | |
| 8 | SBSA0120T071812MX | SBSA0120 | SQ | G | 07/18/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | | | | | | | | |

SPLIT MC 7/18/12

Additional Comments/Special instructions:

5.2.2

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| | 7-18-12 | 1715 | | 7-18-12 | 1715 |
| | 7/20/12 | 1708 | | 7/20/12 | 1708 |

**Sample Receipt Conditions**

| Temp in °C | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|
| 5.2.2 | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK2)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

1208361
1207633

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC # ENBRIDGE_071912_GMK1 | Task: KRRI_SOURCE AREA
Total # of Samples: 7 | Event Complete?
Turn Around Time: 5 Day | Rush: No

BILLING CODE: 8.00

| Lab Information | | Project Information | | Other Information | |
|---|---|---|---|---|---|
| Lab Name: | ALS Laboratory Group | Site ID #: | | Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 | Project # | 60162778 | Address: | 1100 Louisiana Suite 1100 |
| | | Site Address | 5555 Glenwood Parkway SE Suite 200 | City/State, | Houson, TX |
| Lab PM: | Ann Preston | City | Grand Rapids | State, Zip | MI |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 | Site PM Name | Bryan Stiemsma | Send EDD to | |
| Lab PM email: | ann.preston@alsglobal.com | Phone/Fax | [redacted] | CC Hardcopy report | |
| Applicable Lab Quote #: | | Site PM Email: | Bryan.Stiemsma@aecom.com | CC Hardcopy report | |

| ITEM # | SAMPLE ID (Samples IDs MUST BE UNIQUE) | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | SPLP Mo | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | None | None | None | None | MeOH | | | |
| 1 | SBSA0121S071912S007 | SBSA0121 | SO | G | 07/19/2012 08:35 | 3 | | X | X | X | X | X | | X | |
| 2 | SBSA0121D071912S007 | SBSA0121 | SO | G | 07/19/2012 08:35 | 3 | DUPLICATE | X | X | X | X | X | | X | |
| 3 | SBSA0122S071912S009 | SBSA0122 | SO | G | 07/19/2012 09:30 | 6 | MS/MSD | X | X | X | X | X | | X | |
| 4 | SBSA0123S071912S008 | SBSA0123 | SO | G | 07/19/2012 10:20 | 3 | | X | X | X | X | X | | X | |
| 5 | SBSA0124S071912S014 | SBSA0124 | SO | G | 07/19/2012 11:12 | 3 | MDEQ SPLIT | X | X | X | X | X | | X | |
| 6 | SBSA0124S071912S020 | SBSA0124 | SO | G | 07/19/2012 11:15 | 3 | | X | X | X | X | X | | X | |
| 7 | SBSA0124T071912MX | SBSA0124 | SQ | G | 07/19/2012 00:00 | 1 | TRIP BLANK | | | | | X | | | |

14
15
16
17
18
19

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7-19-12 | 1512 | [signature] | 7-19-12 | 1512 |
| [signature] | 7/20/12 | 1708 | [signature] | 7/20/12 | 1708 |

Sample Receipt Conditions: 5.0°C

| | Temp in OC | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|---|
| | | Y/N | Y/N | Y/N |
| | | Y/N | Y/N | Y/N |
| | | Y/N | Y/N | Y/N |

SHIPPING INFO.
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

1208361
1207647

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC # ENBRIDGE_072012_GMK3 | Task: KRRI_SOURCE AREA
Total # of Samples: 4 | Event Complete?
Turn Around Time: 5 Day | Rush | No
BILLING CODE: 6.00

| Lab Information | | Project Information | | Other Information | |
|---|---|---|---|---|---|
| Lab Name: | ALS Laboratory Group | Site ID #: | | Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 3352 128th Ave, Holland, MI 49424-9263 | Project # | 60162778 | Address: | 1100 Louisiana Suite 1100 |
| | | Site Address | 5555 Glenwood Parkway SE Suite 200 | City/State: | Houson, TX |
| Lab PM: | Ann Preston | City | Grand Rapids | State, Zip | MI |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 | Site PM Name | Bryan Stiemsma | Send EDD to | |
| Lab PM email: | ann.preston@alsglobal.com | Phone/Fax: | [redacted] | CC Hardcopy report | |
| Applicable Lab Quote #: | | Site PM Email: | Bryan.Stiemsma@aecom.com | CC Hardcopy report | |

| ITEM # | SAMPLE ID<br>Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservation | None | None | None | None | MeOH | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analytes | | | | | | | | | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | |
| 20 | SBSA0132S072012S008 | SBSA0132 | SO | G | 07/20/2012 17:05 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 21 | SBSA0132S072012S012 | SBSA0132 | SO | G | 07/20/2012 17:10 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 22 | SBSA0132S072012S094 | SBSA0132 | SO | G | 07/20/2012 17:55 | 3 | | | X | X | X | X | X | | | | | | | | | |
| | SBSA0132T072012MX | SBSA0132 | SQ | G | 07/20/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | |

Additional Comments/Special Instructions:

| RELINQUISHED BY/AFFILIATION | DATE | TIME | ACCEPTED BY/AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7-23-12 | 1326 | [signature] | 7-23-12 | 1326 |
| [signature] | 7-23-12 | 1404 | [signature] | 7/23/12 | 1404 |

Sample Receipt Conditions: 3.2°C

| SHIPPING INFO | SAMPLER NAME AND SIGNATURE | | | | |
|---|---|---|---|---|---|
| Company: | PRINT Name of SAMPLER: | GERRY KRAMER (GMK1) | | | |
| Tracking #: | SIGNATURE of SAMPLER: | | DATE Signed | Time: | |

| Temp in OC | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

1208361
1207648

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_072112_GMK1 | Task: KRRI_SOURCE AREA |
|---|---|---|
| Total # of Samples: 12 | | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |
| BILLING CODE: 6.00 | | |

**Lab Information:**

| | |
|---|---|
| Lab Name: | ALS Laboratory Group |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 |
| Lab PM: | Ann Preston |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 |
| Lab PM email: | ann.preston@alsglobal.com |
| Applicable Lab Quote #: | |

**Project Information:**

| | |
|---|---|
| Site ID #: | |
| Project # | 60162778 |
| Site Address | 5555 Glenwood Parkway SE Suite 200 |
| City | Grand Rapids |
| State, Zip | MI |
| Site PM Name | Bryan Stiemsma |
| Phone/Fax: | [redacted] |
| Site PM Email: | Bryan.Stiemsma@aecom.com |

**Other Information:**

| | |
|---|---|
| Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 1100 Louisiana Suite 1100 |
| City/State, | Houson, TX |
| Phone #: | 713-821-2000 |
| PO # | |
| Send EDD to | |
| CC Hardcopy report | |
| CC Hardcopy report | |

| ITEM # | SAMPLE ID<br>Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Analysis: % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservative: | | | | | | | None | None | None | None | MeOH | | | | | | | | | | | | | | |
| 1 | SBSA0128S072112S008 | SBSA0128 | SO | G | 07/21/2012 11:55 | 3 | | X | X | X | X | X | | SPLP MO | | | | | | | | | | | | |
| 2 | SBSA0128S072112S093 | SBSA0128 | SO | G | 07/21/2012 12:00 | 3 | | X | X | X | X | X | | Y | | | | | | | | | | | | |
| 3 | SBSA0130S072112S005 | SBSA0130 | SO | G | 07/21/2012 13:44 | 3 | | X | X | X | X | X | | Y | | | | | | | | | | | | |
| 4 | SBSA0130S072112S076 | SBSA0130 | SO | G | 07/21/2012 15:22 | 3 | | X | X | X | X | X | | Y | | | | | | | | | | | | |
| 5 | SBSA0131S072112S007 | SBSA0131 | SO | G | 07/21/2012 16:35 | 6 | MS/MSD | X | X | X | X | X | | | | | | | | | | | | | | |
| 6 | SBSA0131S072112S067 | SBSA0131 | SO | G | 07/21/2012 17:38 | 3 | | X | X | X | X | X | | | | | | | | | | | | | | |
| 7 | SBSA0131T072112MX | SBSA0131 | SQ | G | 07/21/2012 00:00 | 1 | TRIP BLANK | | | | | X | | | | | | | | | | | | | | |
| 8 | SBSA0133S072112S008 | SBSA0133 | SO | G | 07/21/2012 08:45 | 3 | | X | X | X | X | X | | | | | | | | | | | | | | |
| 9 | SBSA0133D072112S008 | SBSA0133 | SO | G | 07/21/2012 08:45 | 3 | DUPLICATE | X | X | X | X | X | | | | | | | | | | | | | | |
| 10 | SBSA0133S072112S040 | SBSA0133 | SO | G | 07/21/2012 09:59 | 3 | | X | X | X | X | X | | Y | | | | | | | | | | | | |
| 11 | SBSA0133S072112S057 | SBSA0133 | SO | G | 07/21/2012 10:05 | 3 | | X | X | X | X | X | | Y | | | | | | | | | | | | |
| 12 | SBSA0133S072112S072 | SBSA0133 | SO | G | 07/21/2012 10:52 | 3 | | X | X | X | X | X | | Y | | | | | | | | | | | | |

Additional Comments/Special Instructions:

| RELINQUISHED BY/AFFILIATION | DATE | TIME | ACCEPTED BY/AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| | 7-23-12 | 1344 | | 7-23-12 | 1344 |
| | 7-23-12 | 1404 | | 7/23/12 | 1404 |

**Sample Receipt Conditions**

| Temp in OC | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|
| 4.2°C | (Y)/N | (Y)/N | (Y)/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO

Company:

Tracking #:

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: GERRY KRAMER (GMK1)

SIGNATURE of SAMPLER: DATE Signed: Time:

1208361
1208120

# ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

## CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_080112_GMK1 | Task: KRRL_SOURCE AREA |
|---|---|---|
| Total # of Samples: 13 | | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |
| BILLING CODE: 6.00 | | |

**Lab Information:**
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

**Project Information:**
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: Bryan Sillemsma
Phone/Fax: [redacted]
Site PM Email: Bryan.Sillemsma@aecom.com

**Other Information:**
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #:
Send EDD to:
CC Hardcopy report:
CC Hardcopy report:

| ITEM # | SAMPLE ID (Samples IDs MUST BE UNIQUE) | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservation | None | None | None | None | MeOH | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | | |
| 29 | SBSA0136S080112S006 | SBSA0136 | SO | G | 08/01/2012 08:15 | 3 | | | X | X | X | X | X | | | X | SPLP Mo | | | | | | |
| | SBSA0136S080112S090 | SBSA0136 | SO | G | 08/01/2012 08:55 | 3 | | | X | X | X | X | X | | | | SPLP Hg | | | | | | |
| | SBSA0138S080112S003 | SBSA0138 | SO | G | 08/01/2012 11:40 | 3 | MDEQ SPLIT | | X | X | X | X | X | | | | | | | | | | |
| | SBSA0138S080112S010 | SBSA0138 | SO | G | 08/01/2012 11:55 | 3 | | | X | X | X | X | X | | | X | | | | | | | |
| 30 | SBSA0138S080112S095 | SBSA0138 | SO | G | 08/01/2012 12:50 | 3 | | | X | X | X | X | X | | | X | | | | | | | |
| 31 | SBSA0139S080112S006 | SBSA0139 | SO | G | 08/01/2012 14:44 | 3 | MDEQ SPLIT | | X | X | X | X | X | | | X | | | | | | | |
| 32 | SBSA0139S080112S017 | SBSA0139 | SO | G | 08/01/2012 14:47 | 3 | | | X | X | X | X | X | | | X | X | | | | | | |
| 33 | SBSA0139S080112S052 | SBSA0139 | SO | G | 08/01/2012 15:00 | 3 | | | X | X | X | X | X | | | X | | | | | | | |
| 34 | SBSA0139D080112S052 | SBSA0139 | SO | G | 08/01/2012 15:00 | 3 | DUPLICATE | | X | X | X | X | X | | | X | | | | | | | |
| 35 | SBSA0139S080112S090 | SBSA0139 | SO | G | 08/01/2012 15:15 | 3 | | | X | X | X | X | X | | | X | | | | | | | |
| | SBSA0140S080112S004 | SBSA0140 | SO | G | 08/01/2012 15:56 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| | SBSA0140S080112S087 | SBSA0140 | SO | G | 08/01/2012 16:25 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| | SBSA0140T080112MX | SBSA0140 | SQ | G | 08/01/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | | |

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| Gerry Kramer | 8-1-12 | 0736 | Jerry Kramer | 8-1-12 | 0736 |
| Jon Leach | 8-8-12 | 1735 | [signature] | 8-8-12 | 1735 |
| | | | | | |
| | | | | | |

Sample Receipt Conditions: Temp in C: 3.2°C; Samples on Ice? Y/N: Y; Sample Intact? Y/N: Y; Trip Blank? Y/N: N

SHIPPING INFO: Company: Tracking #:

SAMPLER NAME AND SIGNATURE: PRINT Name of SAMPLER: GERRY KRAMER (GMK1); SIGNATURE of SAMPLER: DATE Signed: Time:

1208361
1208138

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_080212_GMK1 | Task: KRRI_SOURCE AREA |
|---|---|---|
| Total # of Samples: 4 | | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |
| BILLING CODE: 6.00 | | |

**Lab Information:**
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

**Project Information:**
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: Bryan Stiemsma
Phone/Fax: [redacted]
Site PM Email: Bryan.Stiemsma@aecom.com

**Other Information:**
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #:
Send EDD to:
CC Hardcopy report:
CC Hardcopy report:

| ITEM # | SAMPLE ID (Samples IDs MUST BE UNIQUE) | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | None | None | None | None | MeOH | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | | | |
| 1 | SBSA0141S080212S026 | SBSA0141 | SO | G | 08/02/2012 08:23 | 3 | | | X | X | X | X | X | | | | | | | | | | | |
| 2 | SBSA0141S080212S034 | SBSA0141 | SO | G | 08/02/2012 08:29 | 6 | MS/MSD | | X | X | X | X | X | | | | | | | | | | | |
| 3 | SBSA0141S080212S075 | SBSA0141 | SO | G | 08/02/2012 09:25 | 3 | | | X | X | X | X | X | | | | | | | | | | | |
| 4 | SBSA0141T080212MX | SBSA0141 | SQ | G | 08/02/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | | | |

5PLPWG

36
37

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 8-2-12 | 1602 | [signature] | 8-2-12 | 1602 |
| [signature] | 8-2-12 | 1735 | [signature] | 8-2-12 | 1735 |
| | | | | | |

**Sample Receipt Conditions**

| Temp in °C | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|
| | Y/N | Y/N | Y/N |
| 2.4°C | (Y)N | (Y)N | (Y)N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMX1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

1208140
1208361

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_073112_GMK1 | Task: KRRI_SOURCE AREA |
|---|---|---|
| Total # of Samples: 8 | | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |
| BILLING CODE: 6.00 | | |

**Lab Information:**
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

**Project Information:**
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: Bryan Sitsema
Phone/Fax: [redacted]
Site PM Email: Bryan.Sitsema@aecom.com

**Other Information:**
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #:
Send EDD to:
CC Hardcopy report:
CC Hardcopy report:

| ITEM # | SAMPLE ID (Samples IDs MUST BE UNIQUE) | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preserved | None | None | None | None | MeOH | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | | |
| 1 | SBSA0134S073112S007 | SBSA0134 | SO | G | 07/31/2012 12:00 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 2 | SBSA0134D073112S007 | SBSA0134 | SO | G | 07/31/2012 12:00 | 3 | DUPLICATE | | X | X | X | X | X | | | | | | | | | | |
| 3 | SBSA0134S073112S088 | SBSA0134 | SO | G | 07/31/2012 12:35 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 4 | SBSA0135S073112S005 | SBSA0135 | SO | G | 07/31/2012 14:10 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 5 | SBSA0135S073112S089 | SBSA0135 | SO | G | 07/31/2012 14:43 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 6 | SBSA0137S073112S006 | SBSA0137 | SO | G | 07/31/2012 15:37 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 7 | SBSA0137S073112S083 | SBSA0137 | SO | G | 07/31/2012 16:06 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 8 | SBSA0137T073112MX | SBSA0137 | SQ | G | 07/31/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | | |

38
39

SPLP M6

Additional Comments/Special Instructions:

| RELINQUISHED BY/AFFILIATION | DATE | TIME | ACCEPTED BY/AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| Gerald Kramer | 8-1-12 | 0900 | [illegible] | 8/1/12 | 0900 |
| [illegible] | 8-2-12 | 1735 | [illegible] | 8-2-12 | 0735 |
| | | | | | |
| | | | | | |

**Sample Receipt Conditions**

| Temp in OC | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|
| 4.2°C | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO: Company: Tracking #:

SAMPLER LAST AND SIGNATURE: PRINT Name of SAMPLER: GERRY KRAMER (GMK1) SIGNATURE of SAMPLER: DATE Signed: Time:

1208361

**Ann Preston**

**From:** Wolf, Michael G. [Michael.Wolf@aecom.com]
**Sent:** Friday, August 10, 2012 12:28 PM
**To:** Ann Preston
**Subject:** SPLP

Here is the latest list of SPLP. All are for Mo except one sample highlighted that also needs VOCs.

1207648-01, 02, 03, 10, 11, 12 → 23, 24, 25, 26, 27, 28
1207647-01, 02, 03 → 20, 21, 22
1207633-01, 02, 03, 04, 05, 06 → 14, 15, 16, 17, 18, 19
1207631-01, 02, 04, 05, 06, 07 → 08, 09, 10, 11, 12, 13
1207628-02, 03, 04, 05, 06 → 03, 04, 05, 06, 07
1208120-01, 05, 06, 07, 08, 09, 10 → 29, 30, 31, 32, 33, 34, 35
1207521-09, 10 → 01, 02
1208138-02, 03 ✓ 36, 37
1208140-04, 06 ✓ 38, 39

Thanks

**Mike Wolf, CPG**
Sr. Hydrogeologist
AECOM Environment
Direct Dial (616)-940-4408
Cell [redacted]
michael.wolf@aecom.com

AECOM
5555 Glenwood Hills Pkwy SE, Ste 300
Grand Rapids, MI 49512
Telephone (616)-942-9600
Fax (616)-940-4396

***Please consider the environment before printing this page.***

***This communication is intended for the sole use of the person(s) to whom it is addressed and may contain information that is privileged, confidential or subject to copyright. Any unauthorized use, disclosure or copying of this communication is strictly prohibited. If you have received this communication in error, please contact the sender immediately. Any communication received in error should be deleted and all copies destroyed.***

ALS Group: Click here to report this email as spam.

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **10-Aug-12 00:00**

Work Order: **1208361** Received by: **AP**

Checklist completed by Ann Preston (eSignature) 10-Aug-12 (Date) Reviewed by: Ann Preston (eSignature) 12-Aug-12 (Date)

Matrices: soil
Carrier name:

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☐ |
| Chain of custody present? | Yes ☐ | No ☑ | |
| Chain of custody signed when relinquished and received? | Yes ☐ | No ☑ | |
| Chain of custody agrees with sample labels? | Yes ☐ | No ☑ | |
| Samples in proper container/bottle? | Yes ☐ | No ☑ | |
| Sample containers intact? | Yes ☐ | No ☑ | |
| Sufficient sample volume for indicated test? | Yes ☐ | No ☑ | |
| All samples received within holding time? | Yes ☐ | No ☑ | |
| Container/Temp Blank temperature in compliance? | Yes ☐ | No ☑ | |
| Temperature(s)/Thermometer(s): | 4.0°C | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | - | | |

Login Notes: Samples reactivead from refrigerated storage

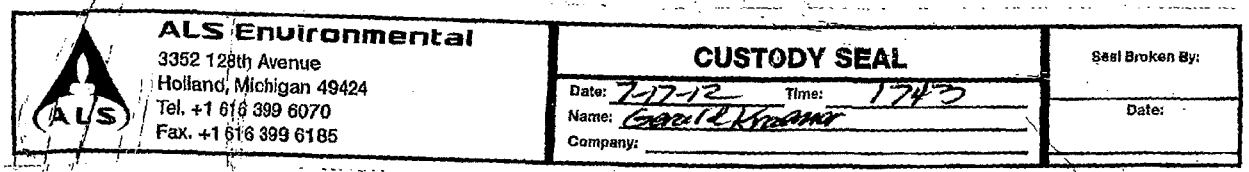
Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

4.0°C



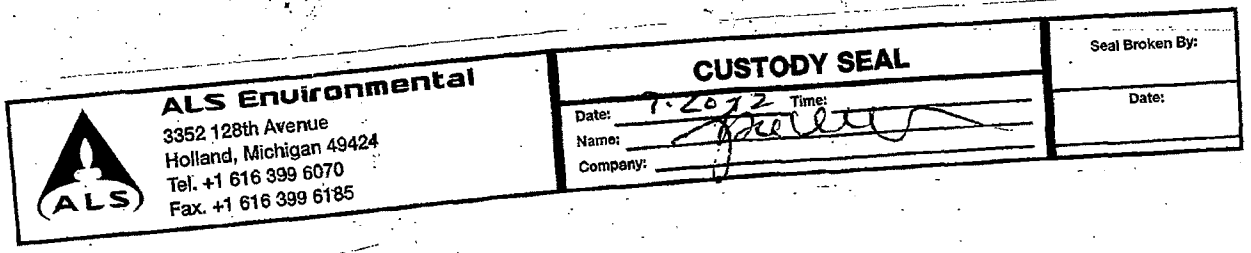
ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

**CUSTODY SEAL**

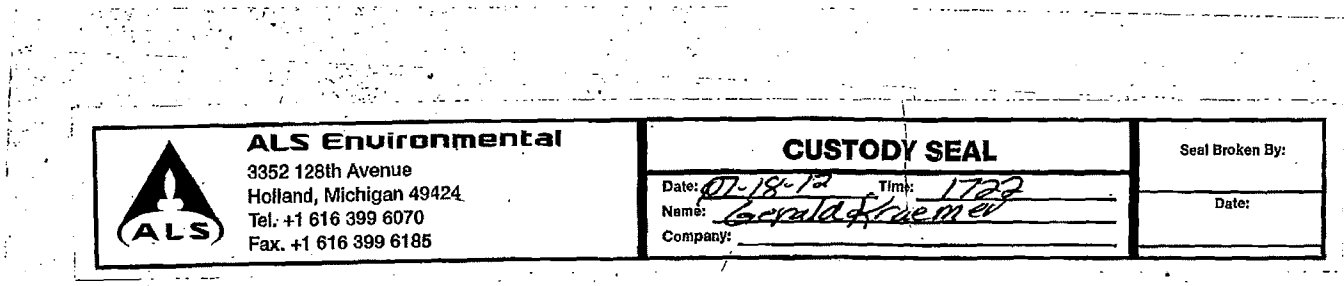
Date: 7-17-12 Time: 1743
Name: Gerald Kramer
Company:

Seal Broken By:

Date:


ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185
ALS
CUSTODY SEAL
Date: 7.2012 Time:
Name:
Company:
Seal Broken By:
Date:

4.4 c



ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

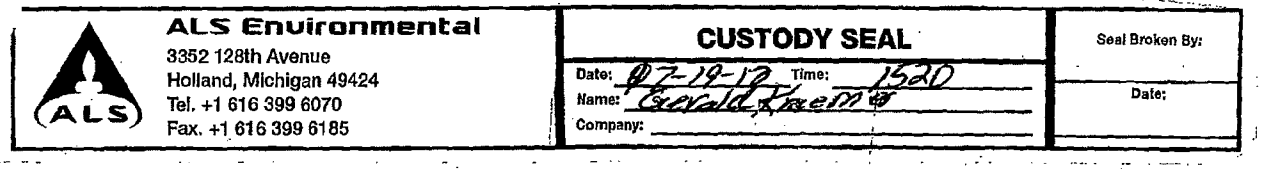
**CUSTODY SEAL**

Date: 01-18-12 Time: 1722
Name: Gerald Kraemer
Company:

Seal Broken By:

Date:

5.2.2



ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

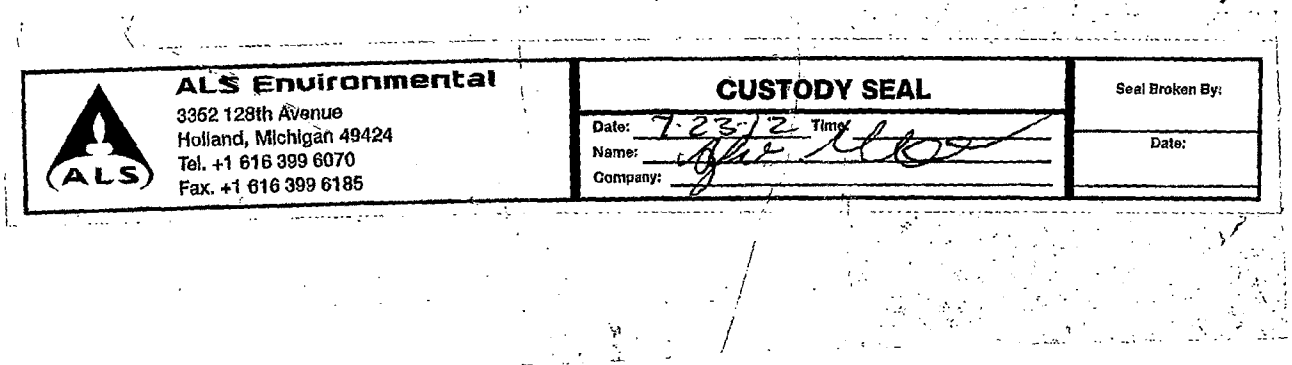
Date: 07-19-12 Time: 1520
Name: Gerald Knemeyer
Company:

Seal Broken By:

Date:

5.0 L

3.2c



ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

**CUSTODY SEAL**

Date: 7-23-12 Time:
Name:
Company:

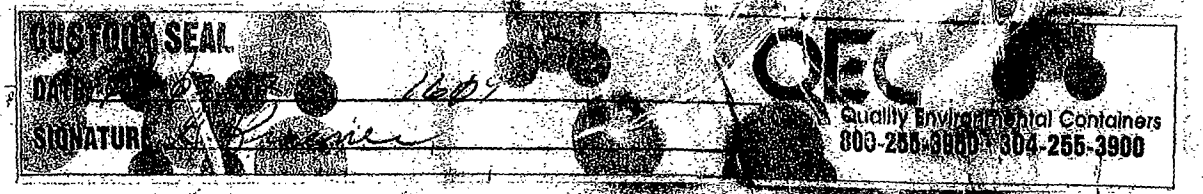
Seal Broken By:

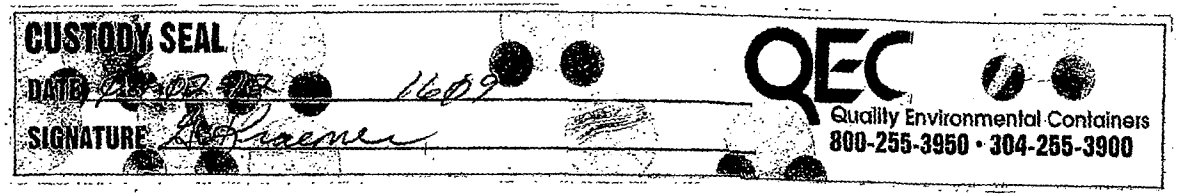
Date:

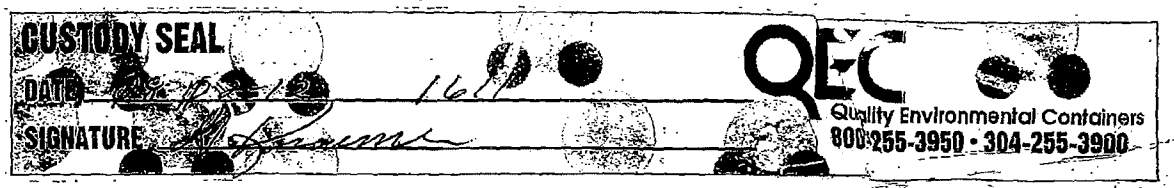
282

| ALS Environmental | CUSTODY SEAL | Seal Broken By: |
|---|---|---|
| 3352 128th Avenue<br>Holland, Michigan 49424<br>Tel. +1 616 399 6070<br>Fax. +1 616 399 6185 | Date: 7-23-12 Time:<br>Name:<br>Company: | Date: |

4.2c


CUSTODY SEAL
DATE
SIGNATURE
QEC
Quality Environmental Containers
800-255-3900 • 304-255-3900


CUSTODY SEAL
DATE
SIGNATURE
1609
QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900


CUSTODY SEAL
DATE
SIGNATURE
QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

# Appendix B

## Waste Management Activities

## Analytical Data Reports

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

17-Aug-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Roll-Off Box RT2650 8/10/12** Work Order: **1208350**

Dear Alison,

ALS Environmental received 1 sample on 10-Aug-2012 03:30 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 9.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

## ALS Group USA, Corp

Date: 17-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Roll-Off Box RT2650 8/10/12
**Work Order:** **1208350**

# Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1208350-01 | 081012RB2650 | Solid | | 8/10/2012 07:40 | 8/10/2012 15:30 | ☐ |

**Client:** AECOM Environment
**Project:** Marshall Roll-Off Box RT2650 8/10/12
**Work Order:** 1208350

## Case Narrative

Sample 081012RB2650 matrix is an oily debris.

Crude oil received from Intertek was used for the QC sample spikes.

Sample 1208350-01 is reported on a wet weight basis.

Batch R108633 sample 081012RB2650 MS recovery for O&G was below control limits. Both the MSD recovery and RPD met quality control criteria. No data requires qualification.

**Client:** AECOM Environment
**Project:** Marshall Roll-Off Box RT2650 8/10/12
**WorkOrder:** **1208350**

# QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| mg/Kg | Milligrams per Kilogram |

# ALS Group USA, Corp

**Date:** *17-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Roll-Off Box RT2650 8/10/12 **Work Order:** 1208350
**Sample ID:** 081012RB2650 **Lab ID:** 1208350-01
**Collection Date:** 8/10/2012 07:40 AM **Matrix:** SOLID

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **OIL AND GREASE** | | | **E1664MM** | | | Analyst: **EE** |
| **Oil and Grease** | **29,000** | | **50** | **mg/Kg** | 1 | 8/16/2012 12:00 PM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 17-Aug-12

**Client:** AECOM Environment

# QC BATCH REPORT

**Work Order:** 1208350

**Project:** Marshall Roll-Off Box RT2650 8/10/12

Batch ID: **R108633** Instrument ID **O&GMOD** Method: **E1664MM**

**MBLK** Sample ID: **WBLKS1-081612-R108633** Units: **mg/Kg** Analysis Date: **8/16/2012 12:00 PM**

Client ID: Run ID: **O&GMOD_120816A** SeqNo: **2054470** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Oil and Grease | ND | 50 | | | | | | | | |

**LCS** Sample ID: **WLCSS1-081612-R108633** Units: **mg/Kg** Analysis Date: **8/16/2012 12:00 PM**

Client ID: Run ID: **O&GMOD_120816A** SeqNo: **2054471** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Oil and Grease | 6813 | 50 | 7333 | 0 | 92.9 | 50-150 | 0 | | | |

**MS** Sample ID: **1208350-01A MS** Units: **mg/Kg** Analysis Date: **8/16/2012 12:00 PM**

Client ID: **081012RB2650** Run ID: **O&GMOD_120816A** SeqNo: **2054473** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Oil and Grease | 40740 | 50 | 24830 | 28710 | 48.4 | 50-150 | 0 | | | S |

**MSD** Sample ID: **1208350-01A MSD** Units: **mg/Kg** Analysis Date: **8/16/2012 12:00 PM**

Client ID: **081012RB2650** Run ID: **O&GMOD_120816A** SeqNo: **2054474** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Oil and Grease | 49010 | 50 | 23400 | 28710 | 86.7 | 50-150 | 40740 | 18.4 | 30 | |

**The following samples were analyzed in this batch:** 1208350-01A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# Chain of Custody Form

ALS Environmental

Page 1 of 1

COC ID: 02138

☐ Cincinnati, OH +1 513 733 5336 ☒ Holland, MI +1 616 399 6070 ☐ Salt Lake City, UT +1 801 266 7700
☐ Everett, WA +1 425 356 2600 ☐ Houston, TX +1 281 530 5656 ☐ Spring City, PA +1 610 948 4903
☐ Fort Collins, CO +1 970 490 1511 ☐ Middletown, PA +1 717 944 5541 ☐ York, PA +1 717 505 5280

ALS Project Manager: | Work Order #: 1208350

| Customer Information | | Project Information | | Parameter/Method Request for Analysis | |
|---|---|---|---|---|---|
| Purchase Order | TASK 9.05 | Project Name | Marshall Line 6B – | A | O & G |
| Work Order | | Project Number | ROLLOFF BOX RT2650 | B | % MOISTURE |
| Company Name | AECOM Environment | Bill To Company | Enbridge Energy | C | |
| Send Report To | | Invoice Attn: | Accounts Payable | D | |
| Address | 5555 Glenwood Parkway SE | Address | 1100 Louisiana Suite 1100 | E | |
| | | | | F | |
| City/State/Zip | Grand Rapids, MI 49512 | City/State/Zip | Houston, TX 77002 | G | |
| Phone | (616) 942-9600 | Phone | | H | |
| Fax | | Fax | | I | |
| e-Mail Address | | e-Mail Address | | J | |

| No. | Sample Description | Date | Time | Matrix | Pres. | # Bottles | A | B | C | D | E | F | G | H | I | J | Hold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 081012RB2650 | 8-10-12 | 0740 | SOLID DEBRIS | NONE | 2 | X | X | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |

MM 8-10-12

Sampler(s): Please Print & Sign: APRIL MODERT

Shipment Method:

Required Turnaround Time: ☐ STD 10 Wk Days ☒ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

| | Date: | Time: | | |
|---|---|---|---|---|
| Relinquished by: | 8-10-12 | 2:30 | Received by: | Notes: |
| Relinquished by: | 8/10/12 | 3:30 | Received by (Laboratory): | Cooler Temp. 4.0° |
| Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory): | |

QC Package: (Check Box Below)
☐ Level II: Standard QC
☐ Level III: Std QC + Raw Data
☐ Level IV: SW846 CLP-Like
☐ Other: _____

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

Copyright 2011 by ALS Group

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **10-Aug-12 15:30**

Work Order: **1208350** Received by: **WJC**

Checklist completed by Bill Carey (eSignature) 10-Aug-12 (Date) Reviewed by: Ann Preston (eSignature) 13-Aug-12 (Date)

Matrices: Oily Debris
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☑ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 4.0 C | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 8/10/2012 4:18:57 PM | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | | | |

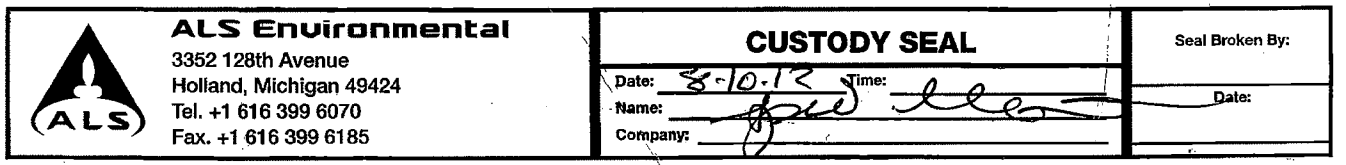
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:



**ALS Environmental**
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

**CUSTODY SEAL**

Date: 8-10-12 Time:
Name:
Company:

Seal Broken By:

Date:

ALS Environmental

29-Aug-2012

Alison Schoeff
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Roll-Off RB-2009 8/24/12** Work Order: **1208751**

Dear Alison,

ALS Environmental received 2 samples on 24-Aug-2012 12:30 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 17.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

NELAP ACCREDITED TNI LABORATORY

Certificate No: MN331938

## ALS Group USA, Corp

Date: 29-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Roll-Off RB-2009 8/24/12
**Work Order:** **1208751**

# Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1208751-01 | 082412_RB_2009 | Solid | | 8/24/2012 09:45 | 8/24/2012 12:30 | ☐ |
| 1208751-02 | 082412_RB_2009 | Tclp Extract | | 8/24/2012 09:45 | 8/24/2012 12:30 | ☐ |

**Client:** AECOM Environment
**Project:** Marshall Roll-Off RB-2009 8/24/12
**Work Order:** 1208751

## Case Narrative

Batch 43199 sample 082412_RB_2009 MS/MSD recoveries for Pentachlorophenol were above control limits. The parent sample was ND for this compound. No data requires qualification.

Batch R109059A MS/MSD data for Volatiles is not related to this project's samples. No data requires qualification.

**Client:** AECOM Environment
**Project:** Marshall Roll-Off RB-2009 8/24/12
**WorkOrder:** 1208751

# QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| % of sample | Percent of Sample |
| µg/L | Micrograms per Liter |
| mg/Kg-dry | Milligrams per Kilogram Dry Weight |

# ALS Group USA, Corp

**Date:** *29-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Roll-Off RB-2009 8/24/12 **Work Order:** 1208751
**Sample ID:** 082412_RB_2009 **Lab ID:** 1208751-01
**Collection Date:** 8/24/2012 09:45 AM **Matrix:** SOLID

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **MOISTURE** | | | **A2540 G** | | | Analyst: **NZ** |
| **Moisture** | **80** | | **0.050** | **% of sample** | 1 | 8/28/2012 06:00 PM |
| **OIL AND GREASE** | | | **E1664MM** | | | Analyst: **BD** |
| **Oil and Grease** | **1,400** | | **250** | **mg/Kg-dry** | 1 | 8/28/2012 10:30 AM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *29-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Roll-Off RB-2009 8/24/12 **Work Order:** 1208751
**Sample ID:** 082412_RB_2009 **Lab ID:** 1208751-02
**Collection Date:** 8/24/2012 09:45 AM **Matrix:** TCLP EXTRACT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **TCLP SEMI-VOLATILE ORGANICS** | | | **SW8270** | | Prep Date: **8/28/2012** | Analyst: **HL** |
| 1,4-Dichlorobenzene | ND | | 100 | µg/L | 1 | 8/29/2012 01:49 PM |
| 2,4,5-Trichlorophenol | ND | | 100 | µg/L | 1 | 8/29/2012 01:49 PM |
| 2,4,6-Trichlorophenol | ND | | 100 | µg/L | 1 | 8/29/2012 01:49 PM |
| 2,4-Dinitrotoluene | ND | | 100 | µg/L | 1 | 8/29/2012 01:49 PM |
| Hexachloro-1,3-butadiene | ND | | 100 | µg/L | 1 | 8/29/2012 01:49 PM |
| Hexachlorobenzene | ND | | 100 | µg/L | 1 | 8/29/2012 01:49 PM |
| Hexachloroethane | ND | | 100 | µg/L | 1 | 8/29/2012 01:49 PM |
| **m-Cresol** | **790** | | **100** | **µg/L** | 1 | 8/29/2012 01:49 PM |
| Nitrobenzene | ND | | 100 | µg/L | 1 | 8/29/2012 01:49 PM |
| o-Cresol | ND | | 100 | µg/L | 1 | 8/29/2012 01:49 PM |
| **p-Cresol** | **790** | | **100** | **µg/L** | 1 | 8/29/2012 01:49 PM |
| Pentachlorophenol | ND | | 400 | µg/L | 1 | 8/29/2012 01:49 PM |
| Pyridine | ND | | 400 | µg/L | 1 | 8/29/2012 01:49 PM |
| *Surr: 2,4,6-Tribromophenol* | *95.7* | | *21-125* | *%REC* | 1 | 8/29/2012 01:49 PM |
| *Surr: 2-Fluorobiphenyl* | *64.7* | | *39-94* | *%REC* | 1 | 8/29/2012 01:49 PM |
| *Surr: 2-Fluorophenol* | *38.7* | | *10-75* | *%REC* | 1 | 8/29/2012 01:49 PM |
| *Surr: 4-Terphenyl-d14* | *96.4* | | *26-119* | *%REC* | 1 | 8/29/2012 01:49 PM |
| *Surr: Nitrobenzene-d5* | *66.2* | | *41-104* | *%REC* | 1 | 8/29/2012 01:49 PM |
| *Surr: Phenol-d6* | *21.7* | | *11-50* | *%REC* | 1 | 8/29/2012 01:49 PM |
| **TCLP VOLATILE ORGANICS** | | | **SW8260** | | Prep Date: **8/28/2012** | Analyst: **RS** |
| 1,1-Dichloroethene | ND | | 20 | µg/L | 20 | 8/28/2012 07:01 PM |
| 1,2-Dichloroethane | ND | | 20 | µg/L | 20 | 8/28/2012 07:01 PM |
| 2-Butanone | ND | | 200 | µg/L | 20 | 8/28/2012 07:01 PM |
| Benzene | ND | | 20 | µg/L | 20 | 8/28/2012 07:01 PM |
| Carbon tetrachloride | ND | | 20 | µg/L | 20 | 8/28/2012 07:01 PM |
| Chlorobenzene | ND | | 20 | µg/L | 20 | 8/28/2012 07:01 PM |
| Chloroform | ND | | 20 | µg/L | 20 | 8/28/2012 07:01 PM |
| Tetrachloroethene | ND | | 20 | µg/L | 20 | 8/28/2012 07:01 PM |
| Trichloroethene | ND | | 20 | µg/L | 20 | 8/28/2012 07:01 PM |
| Vinyl chloride | ND | | 20 | µg/L | 20 | 8/28/2012 07:01 PM |
| *Surr: 1,2-Dichloroethane-d4* | *99.2* | | *70-130* | *%REC* | 20 | 8/28/2012 07:01 PM |
| *Surr: 4-Bromofluorobenzene* | *90.6* | | *70-130* | *%REC* | 20 | 8/28/2012 07:01 PM |
| *Surr: Dibromofluoromethane* | *97.5* | | *70-130* | *%REC* | 20 | 8/28/2012 07:01 PM |
| *Surr: Toluene-d8* | *91.4* | | *70-130* | *%REC* | 20 | 8/28/2012 07:01 PM |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

Batch ID: **43199** Instrument ID **SVMS7** Method: **SW8270**

**MBLK** Sample ID: **SBLKW1-43199-43199** Units: **µg/L** Analysis Date: **8/29/2012 01:21 PM**

Client ID: Run ID: **SVMS7_120829A** SeqNo: **2065228** Prep Date: **8/28/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dichlorobenzene | ND | 5.0 | | | | | | | | |
| 2,4,5-Trichlorophenol | ND | 5.0 | | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 5.0 | | | | | | | | |
| 2,4-Dinitrotoluene | ND | 5.0 | | | | | | | | |
| Hexachloro-1,3-butadiene | ND | 5.0 | | | | | | | | |
| Hexachlorobenzene | ND | 5.0 | | | | | | | | |
| Hexachloroethane | ND | 5.0 | | | | | | | | |
| m-Cresol | ND | 5.0 | | | | | | | | |
| Nitrobenzene | ND | 5.0 | | | | | | | | |
| o-Cresol | ND | 5.0 | | | | | | | | |
| p-Cresol | ND | 5.0 | | | | | | | | |
| Pentachlorophenol | ND | 20 | | | | | | | | |
| Pyridine | ND | 20 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *41.87* | 0 | *50* | 0 | *83.7* | *21-125* | | 0 | | |
| *Surr: 2-Fluorobiphenyl* | *34.56* | 0 | *50* | 0 | *69.1* | *36-94* | | 0 | | |
| *Surr: 2-Fluorophenol* | *20.06* | 0 | *50* | 0 | *40.1* | *10-75* | | 0 | | |
| *Surr: 4-Terphenyl-d14* | *49.89* | 0 | *50* | 0 | *99.8* | *26-119* | | 0 | | |
| *Surr: Nitrobenzene-d5* | *34.91* | 0 | *50* | 0 | *69.8* | *41-104* | | 0 | | |
| *Surr: Phenol-d6* | *10.87* | 0 | *50* | 0 | *21.7* | *11-50* | | 0 | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208751
**Project:** Marshall Roll-Off RB-2009 8/24/12

# QC BATCH REPORT

Batch ID: **43199** Instrument ID **SVMS7** Method: **SW8270**

**LCS** Sample ID: **SLCSW1-43199-43199** Units: **µg/L** Analysis Date: **8/29/2012 11:57 AM**
Client ID: Run ID: **SVMS7_120829A** SeqNo: **2065225** Prep Date: **8/28/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dichlorobenzene | 12.74 | 5.0 | 20 | 0 | 63.7 | 30-110 | 0 | | | |
| 2,4,5-Trichlorophenol | 14.14 | 5.0 | 20 | 0 | 70.7 | 50-110 | 0 | | | |
| 2,4,6-Trichlorophenol | 13.07 | 5.0 | 20 | 0 | 65.4 | 50-115 | 0 | | | |
| 2,4-Dinitrotoluene | 14.27 | 5.0 | 20 | 0 | 71.4 | 50-120 | 0 | | | |
| Hexachloro-1,3-butadiene | 13.72 | 5.0 | 20 | 0 | 68.6 | 25-105 | 0 | | | |
| Hexachlorobenzene | 16.77 | 5.0 | 20 | 0 | 83.8 | 50-110 | 0 | | | |
| Hexachloroethane | 11.89 | 5.0 | 20 | 0 | 59.4 | 30-95 | 0 | | | |
| m-Cresol | 8.97 | 5.0 | 20 | 0 | 44.8 | 30-110 | 0 | | | |
| Nitrobenzene | 12.85 | 5.0 | 20 | 0 | 64.2 | 45-110 | 0 | | | |
| o-Cresol | 9.74 | 5.0 | 20 | 0 | 48.7 | 40-110 | 0 | | | |
| p-Cresol | 8.97 | 5.0 | 20 | 0 | 44.8 | 30-110 | 0 | | | |
| Pentachlorophenol | 19.34 | 20 | 20 | 0 | 96.7 | 40-115 | 0 | | | J |
| Pyridine | 5.51 | 20 | 20 | 0 | 27.6 | 10-71 | 0 | | | J |
| *Surr: 2,4,6-Tribromophenol* | *43.79* | 0 | *50* | 0 | *87.6* | *21-125* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *33.73* | 0 | *50* | 0 | *67.5* | *36-94* | 0 | | | |
| *Surr: 2-Fluorophenol* | *17.68* | 0 | *50* | 0 | *35.4* | *10-75* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *47.03* | 0 | *50* | 0 | *94.1* | *26-119* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *32.74* | 0 | *50* | 0 | *65.5* | *41-104* | 0 | | | |
| *Surr: Phenol-d6* | *10.23* | 0 | *50* | 0 | *20.5* | *11-50* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **43199** Instrument ID **SVMS7** Method: **SW8270**

**MS** Sample ID: **1208751-02A MS** Units: **µg/L** Analysis Date: **8/29/2012 12:25 PM**
Client ID: **082412_RB_2009** Run ID: **SVMS7_120829A** SeqNo: **2065226** Prep Date: **8/28/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dichlorobenzene | 240.2 | 100 | 400 | 0 | 60 | 30-110 | 0 | | | |
| 2,4,5-Trichlorophenol | 301 | 100 | 400 | 0 | 75.2 | 50-110 | 0 | | | |
| 2,4,6-Trichlorophenol | 265.4 | 100 | 400 | 0 | 66.4 | 50-115 | 0 | | | |
| 2,4-Dinitrotoluene | 283.2 | 100 | 400 | 0 | 70.8 | 50-120 | 0 | | | |
| Hexachloro-1,3-butadiene | 258.4 | 100 | 400 | 0 | 64.6 | 25-105 | 0 | | | |
| Hexachlorobenzene | 320.6 | 100 | 400 | 0 | 80.2 | 50-110 | 0 | | | |
| Hexachloroethane | 224.8 | 100 | 400 | 0 | 56.2 | 30-95 | 0 | | | |
| m-Cresol | 916.2 | 100 | 400 | 790 | 31.6 | 30-110 | 0 | | | |
| Nitrobenzene | 246.2 | 100 | 400 | 0 | 61.6 | 45-110 | 0 | | | |
| o-Cresol | 225 | 100 | 400 | 0 | 56.2 | 40-110 | 0 | | | |
| p-Cresol | 916.2 | 100 | 400 | 790 | 31.6 | 30-110 | 0 | | | |
| Pentachlorophenol | 463.8 | 400 | 400 | 0 | 116 | 40-115 | 0 | | | S |
| Pyridine | 74.6 | 400 | 400 | 0 | 18.6 | 10-80 | 0 | | | J |
| *Surr: 2,4,6-Tribromophenol* | *899* | 0 | *1000* | 0 | *89.9* | *21-125* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *641.8* | 0 | *1000* | 0 | *64.2* | *36-94* | 0 | | | |
| *Surr: 2-Fluorophenol* | *345.6* | 0 | *1000* | 0 | *34.6* | *10-75* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *928.2* | 0 | *1000* | 0 | *92.8* | *26-119* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *628.2* | 0 | *1000* | 0 | *62.8* | *41-104* | 0 | | | |
| *Surr: Phenol-d6* | *190.8* | 0 | *1000* | 0 | *19.1* | *11-50* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208751
**Project:** Marshall Roll-Off RB-2009 8/24/12

# QC BATCH REPORT

Batch ID: **43199** Instrument ID **SVMS7** Method: **SW8270**

**MSD** Sample ID: **1208751-02A MSD** Units: **µg/L** Analysis Date: **8/29/2012 12:53 PM**
Client ID: **082412_RB_2009** Run ID: **SVMS7_120829A** SeqNo: **2065227** Prep Date: **8/28/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,4-Dichlorobenzene | 259.8 | 100 | 400 | 0 | 65 | 30-110 | 240.2 | 7.84 | 30 | |
| 2,4,5-Trichlorophenol | 326.2 | 100 | 400 | 0 | 81.6 | 50-110 | 301 | 8.04 | 30 | |
| 2,4,6-Trichlorophenol | 295.2 | 100 | 400 | 0 | 73.8 | 50-115 | 265.4 | 10.6 | 30 | |
| 2,4-Dinitrotoluene | 310.6 | 100 | 400 | 0 | 77.6 | 50-120 | 283.2 | 9.23 | 30 | |
| Hexachloro-1,3-butadiene | 281.2 | 100 | 400 | 0 | 70.3 | 25-105 | 258.4 | 8.45 | 30 | |
| Hexachlorobenzene | 354.8 | 100 | 400 | 0 | 88.7 | 50-110 | 320.6 | 10.1 | 30 | |
| Hexachloroethane | 241.4 | 100 | 400 | 0 | 60.4 | 30-95 | 224.8 | 7.12 | 30 | |
| m-Cresol | 1012 | 100 | 400 | 790 | 55.6 | 30-110 | 916.2 | 9.98 | 30 | |
| Nitrobenzene | 262.4 | 100 | 400 | 0 | 65.6 | 45-110 | 246.2 | 6.37 | 30 | |
| o-Cresol | 234 | 100 | 400 | 0 | 58.5 | 40-110 | 225 | 3.92 | 30 | |
| p-Cresol | 1012 | 100 | 400 | 790 | 55.6 | 30-110 | 916.2 | 9.98 | 30 | |
| Pentachlorophenol | 538.2 | 400 | 400 | 0 | 135 | 40-115 | 463.8 | 14.9 | 30 | S |
| Pyridine | 107.2 | 400 | 400 | 0 | 26.8 | 10-80 | 74.6 | 0 | 30 | J |
| *Surr: 2,4,6-Tribromophenol* | *987.8* | 0 | *1000* | 0 | *98.8* | *21-125* | 899 | *9.41* | *0* | |
| *Surr: 2-Fluorobiphenyl* | *671* | 0 | *1000* | 0 | *67.1* | *36-94* | 641.8 | *4.45* | *0* | |
| *Surr: 2-Fluorophenol* | *409.2* | 0 | *1000* | 0 | *40.9* | *10-75* | 345.6 | *16.9* | *0* | |
| *Surr: 4-Terphenyl-d14* | *1003* | 0 | *1000* | 0 | *100* | *26-119* | 928.2 | *7.79* | *0* | |
| *Surr: Nitrobenzene-d5* | *658.6* | 0 | *1000* | 0 | *65.9* | *41-104* | 628.2 | *4.72* | *0* | |
| *Surr: Phenol-d6* | *232.4* | 0 | *1000* | 0 | *23.2* | *11-50* | 190.8 | *19.7* | *0* | |

**The following samples were analyzed in this batch:** 1208751-02A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **R109059A** Instrument ID **VMS9** Method: **SW8260**

**MBLK** Sample ID: **VBLKW1-120828-R109059A** Units: **µg/L** Analysis Date: **8/28/2012 04:28 PM**
Client ID: Run ID: **VMS9_120828A** SeqNo: **2064686** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | | | | | | | | |
| 2-Butanone | ND | 5.0 | | | | | | | | |
| Benzene | ND | 1.0 | | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Tetrachloroethene | ND | 2.0 | | | | | | | | |
| Trichloroethene | ND | 1.0 | | | | | | | | |
| Vinyl chloride | ND | 1.0 | | | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *20.72* | 0 | *20* | 0 | *104* | *70-120* | 0 | | | |
| *Surr: 4-Bromofluorobenzene* | *17.67* | 0 | *20* | 0 | *88.4* | *75-120* | 0 | | | |
| *Surr: Dibromofluoromethane* | *20.85* | 0 | *20* | 0 | *104* | *85-115* | 0 | | | |
| *Surr: Toluene-d8* | *17.84* | 0 | *20* | 0 | *89.2* | *85-120* | 0 | | | |

**LCS** Sample ID: **VLCSW1-120828-R109059A** Units: **µg/L** Analysis Date: **8/28/2012 03:37 PM**
Client ID: Run ID: **VMS9_120828A** SeqNo: **2064313** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 22.37 | 1.0 | 20 | 0 | 112 | 70-130 | 0 | | | |
| 1,2-Dichloroethane | 19.15 | 1.0 | 20 | 0 | 95.8 | 70-130 | 0 | | | |
| 2-Butanone | 18.33 | 5.0 | 20 | 0 | 91.6 | 30-150 | 0 | | | |
| Benzene | 21.22 | 1.0 | 20 | 0 | 106 | 80-120 | 0 | | | |
| Carbon tetrachloride | 20.31 | 1.0 | 20 | 0 | 102 | 65-140 | 0 | | | |
| Chlorobenzene | 21.58 | 1.0 | 20 | 0 | 108 | 80-120 | 0 | | | |
| Chloroform | 19.98 | 1.0 | 20 | 0 | 99.9 | 65-135 | 0 | | | |
| Tetrachloroethene | 25.29 | 2.0 | 20 | 0 | 126 | 45-150 | 0 | | | |
| Trichloroethene | 20.84 | 1.0 | 20 | 0 | 104 | 70-125 | 0 | | | |
| Vinyl chloride | 20.96 | 1.0 | 20 | 0 | 105 | 50-145 | 0 | | | |
| *Surr: 1,2-Dichloroethane-d4* | *20.61* | 0 | *20* | 0 | *103* | *70-120* | 0 | | | |
| *Surr: 4-Bromofluorobenzene* | *21.9* | 0 | *20* | 0 | *110* | *75-120* | 0 | | | |
| *Surr: Dibromofluoromethane* | *20.64* | 0 | *20* | 0 | *103* | *85-115* | 0 | | | |
| *Surr: Toluene-d8* | *21.49* | 0 | *20* | 0 | *107* | *85-120* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208751
**Project:** Marshall Roll-Off RB-2009 8/24/12

# QC BATCH REPORT

Batch ID: **R109059A** Instrument ID **VMS9** Method: **SW8260**

**MS** Sample ID: **1208392-11A MS** Units: **µg/L** Analysis Date: **8/28/2012 05:45 PM**
Client ID: Run ID: **VMS9_120828A** SeqNo: **2064688** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 21.07 | 1.0 | 20 | 0 | 105 | 70-130 | 0 | | | |
| 1,2-Dichloroethane | 19.09 | 1.0 | 20 | 0 | 95.4 | 70-130 | 0 | | | |
| 2-Butanone | 16.98 | 5.0 | 20 | 0 | 84.9 | 30-150 | 0 | | | |
| Benzene | 68.69 | 1.0 | 20 | 52.38 | 81.6 | 80-120 | 0 | | | |
| Carbon tetrachloride | 20.35 | 1.0 | 20 | 0 | 102 | 65-140 | 0 | | | |
| Chlorobenzene | 68.34 | 1.0 | 20 | 52.19 | 80.8 | 80-120 | 0 | | | |
| Chloroform | 20.06 | 1.0 | 20 | 0 | 100 | 65-135 | 0 | | | |
| Tetrachloroethene | 8.52 | 2.0 | 20 | 0 | 42.6 | 45-150 | 0 | | | S |
| Trichloroethene | 21.18 | 1.0 | 20 | 0 | 106 | 70-125 | 0 | | | |
| Vinyl chloride | 25.33 | 1.0 | 20 | 24.35 | 4.9 | 50-145 | 0 | | | S |
| *Surr: 1,2-Dichloroethane-d4* | *19.91* | 0 | *20* | 0 | *99.6* | *70-120* | 0 | | | |
| *Surr: 4-Bromofluorobenzene* | *23.38* | 0 | *20* | 0 | *117* | *75-120* | 0 | | | |
| *Surr: Dibromofluoromethane* | *19.46* | 0 | *20* | 0 | *97.3* | *85-115* | 0 | | | |
| *Surr: Toluene-d8* | *21.34* | 0 | *20* | 0 | *107* | *85-120* | 0 | | | |

**MSD** Sample ID: **1208392-11A MSD** Units: **µg/L** Analysis Date: **8/28/2012 06:10 PM**
Client ID: Run ID: **VMS9_120828A** SeqNo: **2064689** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 21.83 | 1.0 | 20 | 0 | 109 | 70-130 | 21.07 | 3.54 | 30 | |
| 1,2-Dichloroethane | 20.56 | 1.0 | 20 | 0 | 103 | 70-130 | 19.09 | 7.41 | 30 | |
| 2-Butanone | 18.19 | 5.0 | 20 | 0 | 91 | 30-150 | 16.98 | 6.88 | 30 | |
| Benzene | 72.86 | 1.0 | 20 | 52.38 | 102 | 80-120 | 68.69 | 5.89 | 30 | |
| Carbon tetrachloride | 21.29 | 1.0 | 20 | 0 | 106 | 65-140 | 20.35 | 4.51 | 30 | |
| Chlorobenzene | 74.84 | 1.0 | 20 | 52.19 | 113 | 80-120 | 68.34 | 9.08 | 30 | |
| Chloroform | 21.66 | 1.0 | 20 | 0 | 108 | 65-135 | 20.06 | 7.67 | 30 | |
| Tetrachloroethene | 29.45 | 2.0 | 20 | 0 | 147 | 45-150 | 8.52 | 110 | 30 | R |
| Trichloroethene | 22.53 | 1.0 | 20 | 0 | 113 | 70-125 | 21.18 | 6.18 | 30 | |
| Vinyl chloride | 46.29 | 1.0 | 20 | 24.35 | 110 | 50-145 | 25.33 | 58.5 | 30 | R |
| *Surr: 1,2-Dichloroethane-d4* | *21.01* | 0 | *20* | 0 | *105* | *70-120* | 19.91 | *5.38* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *24.98* | 0 | *20* | 0 | *125* | *75-120* | 23.38 | *6.62* | *30* | S |
| *Surr: Dibromofluoromethane* | *20.31* | 0 | *20* | 0 | *102* | *85-115* | 19.46 | *4.27* | *30* | |
| *Surr: Toluene-d8* | *22.24* | 0 | *20* | 0 | *111* | *85-120* | 21.34 | *4.13* | *30* | |

**The following samples were analyzed in this batch:** 1208751-02A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208751
**Project:** Marshall Roll-Off RB-2009 8/24/12

# QC BATCH REPORT

Batch ID: **R109087** Instrument ID **O&GMOD** Method: **E1664MM**

**MBLK** Sample ID: **MB-R109087-R109087** Units: **mg/Kg** Analysis Date: **8/28/2012 10:30 AM**
Client ID: Run ID: **O&GMOD_120828A** SeqNo: **2064859** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Oil and Grease | ND | 50 | | | | | | | | |

**LCS** Sample ID: **LCS-R109087-R109087** Units: **mg/Kg** Analysis Date: **8/28/2012 10:30 AM**
Client ID: Run ID: **O&GMOD_120828A** SeqNo: **2064860** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Oil and Grease | 4047 | 50 | 4000 | 0 | 101 | 50-150 | 0 | | | |

**MS** Sample ID: **1208751-01A MS** Units: **mg/Kg** Analysis Date: **8/28/2012 10:30 AM**
Client ID: **082412_RB_2009** Run ID: **O&GMOD_120828A** SeqNo: **2064862** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Oil and Grease | 4339 | 50 | 3886 | 276.9 | 105 | 50-150 | 0 | | | |

**MSD** Sample ID: **1208751-01A MSD** Units: **mg/Kg** Analysis Date: **8/28/2012 10:30 AM**
Client ID: **082412_RB_2009** Run ID: **O&GMOD_120828A** SeqNo: **2064863** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Oil and Grease | 3803 | 50 | 3841 | 276.9 | 91.8 | 50-150 | 4339 | 13.2 | 30 | |

**The following samples were analyzed in this batch:** 1208751-01A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208751
**Project:** Marshall Roll-Off RB-2009 8/24/12

# QC BATCH REPORT

Batch ID: **R109092** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R109092** Units: **% of sample** Analysis Date: **8/28/2012 06:00 PM**
Client ID: Run ID: **MOIST_120828A** SeqNo: **2064933** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | ND | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R109092** Units: **% of sample** Analysis Date: **8/28/2012 06:00 PM**
Client ID: Run ID: **MOIST_120828A** SeqNo: **2064929** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 99.99 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | |

**DUP** Sample ID: **1208784-09A DUP** Units: **% of sample** Analysis Date: **8/28/2012 06:00 PM**
Client ID: Run ID: **MOIST_120828A** SeqNo: **2064913** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 16.21 | 0.050 | 0 | 0 | 0 | 0-0 | 15.83 | 2.37 | 20 | |

**DUP** Sample ID: **1208784-17A DUP** Units: **% of sample** Analysis Date: **8/28/2012 06:00 PM**
Client ID: Run ID: **MOIST_120828A** SeqNo: **2064927** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 17 | 0.050 | 0 | 0 | 0 | 0-0 | 17.73 | 4.2 | 20 | |

**The following samples were analyzed in this batch:** 1208751-01A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# Chain of Custody Form

ALS Environmental

Page 1 of 1

COC ID: 02176

☐ Cincinnati, OH +1 513 733 5336 ☒ Holland, MI +1 616 399 6070 ☐ Salt Lake City, UT +1 801 266 7700
☐ Everett, WA +1 425 356 2600 ☐ Houston, TX +1 281 530 5656 ☐ Spring City, PA +1 610 948 4903
☐ Fort Collins, CO +1 970 490 1511 ☐ Middletown, PA +1 717 944 5541 ☐ York, PA +1 717 505 5280

ALS Project Manager: | Work Order #: 1208751

| Customer Information | | Project Information | | Parameter/Method Request for Analysis | |
|---|---|---|---|---|---|
| Purchase Order | | Project Name | Marshall Line 6B | A | TCLP Volatiles |
| Work Order | | Project Number | | B | TCLP SVOC |
| Company Name | AECOM Environment | Bill To Company | Enbridge Energy | C | Oil + Grease |
| Send Report To | ~~Deran Lefeive~~ Alison Schoeff | Invoice Attn. | Accounts Payable | D | |
| Address | 5555 Glenwood Parkway SE | Address | 1100 Louisiana Suite 1100 | E | |
| | | | | F | |
| City/State/Zip | Grand Rapids, MI 49512 | City/State/Zip | Houston, TX 77002 | G | |
| Phone | ~~(616) 942-9600~~ (734) 564-8030 | Phone | | H | |
| Fax | | Fax | | I | |
| e-Mail Address | alison.schoeff@aecom.com | e-Mail Address | | J | |

| No. | Sample Description | Date | Time | Matrix | Pres. | # Bottles | A | B | C | D | E | F | G | H | I | J | Hold |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2412-RB-20090 | 08/24/12 | 0945 | S | | 2 | X | X -2 | X -1 | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |

Sampler(s): Please Print & Sign: Alison Schoeff

Shipment Method: Pick up

Required Turnaround Time: ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

| | Date: | Time: | | |
|---|---|---|---|---|
| Relinquished by: Alison Schoeff | 08/24/12 | 1935 | Received by: | Notes: Tash - Waste [9.050] |
| Relinquished by: | 8/24/12 | 1230 | Received by (Laboratory): | Cooler Temp. |
| Logged by (Laboratory): KEJ | 8/24/12 | 1330 | Checked by (Laboratory): | 4.4°C |

QC Package: (Check Box Below)
☐ Level II: Standard QC
☐ Level III: Std QC + Raw Data
☐ Level IV: SW846 CLP-Like
☐ Other: _____

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

Copyright 2011 by ALS Group

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **24-Aug-12 12:30**

Work Order: **1208751** Received by: **PD**

Checklist completed by Keith Wierenga eSignature 24-Aug-12 Date Reviewed by: Ann Preston eSignature 27-Aug-12 Date

Matrices: Solid
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 4.4 C | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 8/24/2012 1:57:57 PM | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | - | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185
CUSTODY SEAL
Date: 8/24/13
Time: 14:35
Name: Alison Schaaf
Company: Hocsm
Seal Broken By:
Date:

2.6'4

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

# Appendix C

## Analytical Data Reports for Samples Taken Prior to August 1, 2012

Analytical Data Reports

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

30-Jul-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI Source Area 7/20/12** Work Order: **1207628**

Dear Bryan,

ALS Environmental received 7 samples on 20-Jul-2012 05:05 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 55.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/20/12
**Work Order:** **1207628**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1207628-01 | SBSA0125S072012S003 | Soil | | 7/20/2012 08:50 | 7/20/2012 17:05 | ☐ |
| 1207628-02 | SBSA0125S072012S086 | Soil | | 7/20/2012 10:40 | 7/20/2012 17:05 | ☐ |
| 1207628-03 | SBSA0126S072012S008 | Soil | | 7/20/2012 11:25 | 7/20/2012 17:05 | ☐ |
| 1207628-04 | SBSA0127S072012S005 | Soil | | 7/20/2012 13:58 | 7/20/2012 17:05 | ☐ |
| 1207628-05 | SBSA0129S072012S004 | Soil | | 7/20/2012 14:48 | 7/20/2012 17:05 | ☐ |
| 1207628-06 | SBSA0129S072012S098 | Soil | | 7/20/2012 16:05 | 7/20/2012 17:05 | ☐ |
| 1207628-07 | SBSA0129T072012MX | Soil | | 7/20/2012 | 7/20/2012 17:05 | ☐ |

## ALS Group USA, Corp

*Date: 30-Jul-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/20/12
**Work Order:** 1207628

# Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 42564 MS/MSD data for Metals is not related to this project's samples. No data requires qualification.

Batch 42531 LCS recovery for Bromomethane was above control limits, but all samples in this quality control batch were ND for this compound. No data requires qualification. The LCS recovery for trans-1,4-Dichloro-2-butene was slightly below control limits, but within the Sporadic Marginal Exceedence allowed by the SOP. No data requires qualification. The MS/MSD data for Volatiles is not related to this project's samples.

# ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/20/12
**WorkOrder:** **1207628**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| % of sample | Percent of Sample |
| µg/Kg | Micrograms per Kilogram |
| µg/Kg-dry | Micrograms per Kilogram Dry Weight |
| mg/Kg-dry | Milligrams per Kilogram Dry Weight |

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0125S072012S003 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 8:50:00 AM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **20** | **11** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **150** | **22** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *55.7* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/25/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 7/25/2012 |
| **Nickel** | **6.3** | **3.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Vanadium** | **10** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *110* | *34-140* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *54.8* | *12-100* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *55.8* | *33-117* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *84.5* | *25-137* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *47.8* | *37-107* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Phenol-d6* | *51.5* | *40-106* | | | *%REC* | 1 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **RS** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0125S072012S003 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 8:50:00 AM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 45 | 10 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dibromoethane | ND | 45 | 20 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/24/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/24/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/24/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/24/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0125S072012S003
**Work Order:** 1207628 **Collection Date:** 7/20/2012 8:50:00 AM
**Project:** Marshall KRRI Source Area 7/20/12
**Lab ID:** 1207628-01 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/24/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/24/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/24/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Vinyl chloride | ND | 45 | 40 | | µg/Kg-dry | 1 | 7/24/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *84.4* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: 4-Bromofluorobenzene* | *108* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: Dibromofluoromethane* | *82.8* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: Toluene-d8* | *91.6* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **13** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0125S072012S086 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 10:40:00 AM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **80** | **11** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **270** | **22** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *55.2* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/25/2012 |
| **Molybdenum** | **2.5** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Nickel** | **8.3** | **3.4** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Vanadium** | **8.5** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Acenaphthene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Acenaphthylene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Anthracene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(a)anthracene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(a)pyrene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Chrysene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Fluoranthene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Fluorene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Naphthalene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Phenanthrene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Pyrene | ND | 540 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *95.6* | *34-140* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *64.4* | *12-100* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *54.4* | *33-117* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *87.2* | *25-137* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *50.0* | *37-107* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: Phenol-d6* | *52.2* | *40-106* | | | *%REC* | 10 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **RS** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0125S072012S086 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 10:40:00 AM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| **1,2,4-Trimethylbenzene** | **140** | **100** | **100** | | **µg/Kg-dry** | 1 | 7/24/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 46 | 10 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dibromoethane | ND | 46 | 20 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/24/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/24/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| **Benzene** | **50** | **50** | **50** | | **µg/Kg-dry** | 1 | 7/24/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/24/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/24/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0125S072012S086 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 10:40:00 AM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/24/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/24/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| **p-Isopropyltoluene** | **4,200** | **100** | **100** | | **µg/Kg-dry** | 1 | 7/24/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/24/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Vinyl chloride | ND | 46 | 40 | | µg/Kg-dry | 1 | 7/24/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *81.3* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: 4-Bromofluorobenzene* | *109* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: Dibromofluoromethane* | *83.5* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: Toluene-d8* | *90.6* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **14** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0126S072012S008 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 11:25:00 AM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/24/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **61** | **16** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| **ORO (C20-C34)** | **350** | **33** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| *Surr: 4-Terphenyl-d14* | *79.6* | *39-115* | | | *%REC* | 1 | 7/25/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/25/2012 |
| **Molybdenum** | **2.5** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Nickel** | **11** | **5.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Vanadium** | **13** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/24/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 2,4,6-Tribromophenol* | *75.5* | *34-140* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 2-Fluorobiphenyl* | *67.4* | *12-100* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 2-Fluorophenol* | *104* | *33-117* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Terphenyl-d14* | *112* | *25-137* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Nitrobenzene-d5* | *71.6* | *37-107* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Phenol-d6* | *93.6* | *40-106* | | | *%REC* | 1 | 7/25/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **RS** |
| 1,1,1,2-Tetrachloroethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,1-Trichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,2-Trichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1-Dichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0126S072012S008 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 11:25:00 AM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trichloropropane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,4-Trimethylbenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 130 | 10 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dibromoethane | ND | 130 | 20 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichlorobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichloropropane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,3,5-Trimethylbenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,3-Dichlorobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,4-Dichlorobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Methylnaphthalene | ND | 420 | 330 | | µg/Kg-dry | 1 | 7/24/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/24/2012 |
| Acrylonitrile | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Benzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromochloromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromodichloromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromoform | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/24/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Carbon tetrachloride | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chlorobenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloroethane | ND | 420 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloroform | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| cis-1,2-Dichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| cis-1,3-Dichloropropene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dibromochloromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/24/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0126S072012S008 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 11:25:00 AM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/24/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| m,p-Xylene | ND | 250 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methyl iodide | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methylene chloride | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Naphthalene | ND | 420 | 330 | | µg/Kg-dry | 1 | 7/24/2012 |
| n-Butylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| n-Propylbenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| o-Xylene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| **p-Isopropyltoluene** | **190** | **130** | **100** | | **µg/Kg-dry** | 1 | 7/24/2012 |
| sec-Butylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Styrene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| tert-Butylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tetrachloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/24/2012 |
| Toluene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,2-Dichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,3-Dichloropropene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,4-Dichloro-2-butene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Trichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Trichlorofluoromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Vinyl chloride | ND | 130 | 40 | | µg/Kg-dry | 1 | 7/24/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *80.4* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: 4-Bromofluorobenzene* | *109* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: Dibromofluoromethane* | *82.2* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: Toluene-d8* | *91.2* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **42** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0127S072012S005 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 1:58:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/24/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **76** | **19** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| **ORO (C20-C34)** | **480** | **39** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| *Surr: 4-Terphenyl-d14* | *78.5* | *39-115* | | | *%REC* | 1 | 7/25/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | J | mg/Kg-dry | 4 | 7/25/2012 |
| **Molybdenum** | **2.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Nickel** | **8.7** | **5.1** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Vanadium** | **12** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/24/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 2,4,6-Tribromophenol* | *71.2* | *34-140* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 2-Fluorobiphenyl* | *63.0* | *12-100* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 2-Fluorophenol* | *94.1* | *33-117* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Terphenyl-d14* | *106* | *25-137* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Nitrobenzene-d5* | *64.6* | *37-107* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Phenol-d6* | *85.1* | *40-106* | | | *%REC* | 1 | 7/25/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **RS** |
| 1,1,1,2-Tetrachloroethane | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0127S072012S005 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 1:58:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 170 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 170 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 570 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,400 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 570 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0127S072012S005
**Work Order:** 1207628 **Collection Date:** 7/20/2012 1:58:00 PM
**Project:** Marshall KRRI Source Area 7/20/12
**Lab ID:** 1207628-04 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 340 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 570 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 170 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *82.3* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *106* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *83.2* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *90.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **49** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0129S072012S004 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 2:48:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/24/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **59** | **16** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| **ORO (C20-C34)** | **470** | **33** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| *Surr: 4-Terphenyl-d14* | *68.2* | *39-115* | | | *%REC* | 1 | 7/25/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/25/2012 |
| **Molybdenum** | **2.0** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Nickel** | **9.5** | **4.5** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Vanadium** | **11** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/24/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 2,4,6-Tribromophenol* | *65.0* | *34-140* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 2-Fluorobiphenyl* | *54.6* | *12-100* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 2-Fluorophenol* | *79.5* | *33-117* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Terphenyl-d14* | *95.8* | *25-137* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Nitrobenzene-d5* | *54.9* | *37-107* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Phenol-d6* | *73.0* | *40-106* | | | *%REC* | 1 | 7/25/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,1-Trichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,2-Trichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1-Dichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0129S072012S004 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 2:48:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trichloropropane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,4-Trimethylbenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 130 | 10 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dibromoethane | ND | 130 | 20 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichlorobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichloropropane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,3,5-Trimethylbenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,3-Dichlorobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,4-Dichlorobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Methylnaphthalene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/24/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| Acetone | ND | 1,100 | 1,000 | | µg/Kg-dry | 1 | 7/24/2012 |
| Acrylonitrile | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Benzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromochloromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromodichloromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromoform | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/24/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Carbon tetrachloride | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chlorobenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloroethane | ND | 440 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloroform | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| cis-1,2-Dichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| cis-1,3-Dichloropropene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dibromochloromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/24/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0129S072012S004 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 2:48:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/24/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| m,p-Xylene | ND | 260 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methyl iodide | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methylene chloride | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Naphthalene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/24/2012 |
| n-Butylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| n-Propylbenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| o-Xylene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| p-Isopropyltoluene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| sec-Butylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Styrene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| tert-Butylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tetrachloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/24/2012 |
| Toluene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,2-Dichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,3-Dichloropropene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,4-Dichloro-2-butene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Trichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Trichlorofluoromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Vinyl chloride | ND | 130 | 40 | | µg/Kg-dry | 1 | 7/24/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *101* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: Dibromofluoromethane* | *96.6* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: Toluene-d8* | *98.9* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **43** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0129S072012S098 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 4:05:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/24/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **33** | **10** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| **ORO (C20-C34)** | **130** | **20** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| *Surr: 4-Terphenyl-d14* | *78.4* | *39-115* | | | *%REC* | 1 | 7/25/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/25/2012 |
| **Molybdenum** | **3.6** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Nickel** | **8.5** | **3.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Vanadium** | **7.3** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/24/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 2,4,6-Tribromophenol* | *73.8* | *34-140* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 2-Fluorobiphenyl* | *64.9* | *12-100* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 2-Fluorophenol* | *99.4* | *33-117* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Terphenyl-d14* | *116* | *25-137* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Nitrobenzene-d5* | *69.4* | *37-107* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Phenol-d6* | *86.6* | *40-106* | | | *%REC* | 1 | 7/25/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0129S072012S098 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 4:05:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 39 | 10 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dibromoethane | ND | 39 | 20 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/24/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/24/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/24/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/24/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0129S072012S098 |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 4:05:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/24/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/24/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/24/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/24/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/24/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/24/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg-dry | 1 | 7/24/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *99.2* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: 4-Bromofluorobenzene* | *102* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: Dibromofluoromethane* | *94.8* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: Toluene-d8* | *100* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **8.8** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0129T072012MX |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/24/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/24/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/24/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 30 | 10 | | µg/Kg | 1 | 7/24/2012 |
| 1,2-Dibromoethane | ND | 30 | 20 | | µg/Kg | 1 | 7/24/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg | 1 | 7/24/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/24/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg | 1 | 7/24/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/24/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg | 1 | 7/24/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg | 1 | 7/24/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg | 1 | 7/24/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg | 1 | 7/24/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg | 1 | 7/24/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0129T072012MX |
| **Work Order:** | 1207628 | **Collection Date:** | 7/20/2012 |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207628-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Cyclohexane | ND | 500 | 500 | | µg/Kg | 1 | 7/24/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg | 1 | 7/24/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg | 1 | 7/24/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg | 1 | 7/24/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/24/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/24/2012 |
| Ethylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg | 1 | 7/24/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/24/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/24/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg | 1 | 7/24/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/24/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg | 1 | 7/24/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg | 1 | 7/24/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/24/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/24/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg | 1 | 7/24/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *99.0* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: Dibromofluoromethane* | *94.0* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| *Surr: Toluene-d8* | *98.0* | *70-130* | | | *%REC* | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42524** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42524-42524** Units: **mg/Kg** Analysis Date: **7/24/2012 07:07 PM**
Client ID: Run ID: **GC8_120724A** SeqNo: **2035963** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *4.03* | 0 | *5* | 0 | *80.6* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42524-42524** Units: **mg/Kg** Analysis Date: **7/24/2012 07:36 PM**
Client ID: Run ID: **GC8_120724A** SeqNo: **2035964** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 379.2 | 10 | 500 | 0 | 75.8 | 60-130 | 0 | | | |
| ORO (C20-C34) | 342.5 | 20 | 500 | 0 | 68.5 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.914* | 0 | *5* | 0 | *78.3* | *39-115* | 0 | | | |

**MS** Sample ID: **1207629-01B MS** Units: **mg/Kg** Analysis Date: **7/24/2012 08:34 PM**
Client ID: Run ID: **GC8_120724A** SeqNo: **2035965** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 363.6 | 9.4 | 472.4 | 38.9 | 68.7 | 60-130 | 0 | | | |
| ORO (C20-C34) | 522.3 | 19 | 472.4 | 235.1 | 60.8 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.621* | 0 | *4.724* | 0 | *76.6* | *39-115* | 0 | | | |

**MSD** Sample ID: **1207629-01B MSD** Units: **mg/Kg** Analysis Date: **7/24/2012 09:02 PM**
Client ID: Run ID: **GC8_120724A** SeqNo: **2035967** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 421 | 9.4 | 470.3 | 38.9 | 81.2 | 60-130 | 363.6 | 14.6 | 30 | |
| ORO (C20-C34) | 563.2 | 19 | 470.3 | 235.1 | 69.8 | 60-130 | 522.3 | 7.52 | 30 | |
| *Surr: 4-Terphenyl-d14* | *3.515* | 0 | *4.703* | 0 | *74.7* | *39-115* | 3.621 | *2.95* | *30* | |

**The following samples were analyzed in this batch:** 1207628-03B 1207628-04B 1207628-05B 1207628-06B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42592** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42592-42592** Units: **mg/Kg** Analysis Date: **7/26/2012 05:43 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039113** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *2.81* | 0 | *5* | 0 | *56.2* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42592-42592** Units: **mg/Kg** Analysis Date: **7/26/2012 06:10 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039114** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 349 | 10 | 500 | 0 | 69.8 | 60-130 | 0 | | | |
| ORO (C20-C34) | 439.5 | 20 | 500 | 0 | 87.9 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *2.901* | 0 | *5* | 0 | *58* | *39-115* | 0 | | | |

**MS** Sample ID: **1207648-05B MS** Units: **mg/Kg** Analysis Date: **7/26/2012 06:37 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039115** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 332.9 | 9.5 | 473.4 | 17 | 66.7 | 60-130 | 0 | | | |
| ORO (C20-C34) | 446 | 19 | 473.4 | 43.71 | 85 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *2.698* | 0 | *4.734* | 0 | *57* | *39-115* | 0 | | | |

**MSD** Sample ID: **1207648-05B MSD** Units: **mg/Kg** Analysis Date: **7/26/2012 07:03 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039116** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 326.9 | 9.6 | 478.6 | 17 | 64.8 | 60-130 | 332.9 | 1.79 | 30 | |
| ORO (C20-C34) | 460.2 | 19 | 478.6 | 43.71 | 87 | 60-130 | 446 | 3.14 | 30 | |
| *Surr: 4-Terphenyl-d14* | *2.763* | 0 | *4.786* | 0 | *57.7* | *39-115* | 2.698 | *2.39* | *30* | |

**The following samples were analyzed in this batch:** 1207628-01B 1207628-02B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42564** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42564-42564** Units: **mg/Kg** Analysis Date: **7/25/2012 07:21 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037263** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |
| Molybdenum | ND | 0.25 | | | | | | | | |
| Nickel | 0.1754 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**LCS** Sample ID: **LCS-42564-42564** Units: **mg/Kg** Analysis Date: **7/25/2012 07:34 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037268** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.932 | 0.10 | 5 | 0 | 98.6 | 80-120 | 0 | | | |
| Molybdenum | 4.59 | 0.25 | 5 | 0 | 91.8 | 80-120 | 0 | | | |
| Nickel | 4.768 | 0.25 | 5 | 0 | 95.4 | 80-120 | 0 | | | |
| Vanadium | 4.789 | 0.25 | 5 | 0 | 95.8 | 80-120 | 0 | | | |

**MS** Sample ID: **1207629-01BMS** Units: **mg/Kg** Analysis Date: **7/25/2012 09:13 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037302** Prep Date: **7/25/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 7.778 | 0.65 | 8.17 | 0.1587 | 93.3 | 75-125 | 0 | | | |
| Molybdenum | 8.477 | 1.6 | 8.17 | 1.612 | 84 | 75-125 | 0 | | | |
| Nickel | 13.33 | 1.6 | 8.17 | 5.65 | 94 | 75-125 | 0 | | | |
| Vanadium | 15.32 | 1.6 | 8.17 | 6.947 | 103 | 75-125 | 0 | | | |

**MSD** Sample ID: **1207629-01BMSD** Units: **mg/Kg** Analysis Date: **7/25/2012 09:38 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037310** Prep Date: **7/25/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 5.827 | 0.63 | 7.862 | 0.1587 | 72.1 | 75-125 | 7.778 | 28.7 | 25 | SR |
| Molybdenum | 6.591 | 1.6 | 7.862 | 1.612 | 63.3 | 75-125 | 8.477 | 25 | 25 | SR |
| Nickel | 9.336 | 1.6 | 7.862 | 5.65 | 46.9 | 75-125 | 13.33 | 35.3 | 25 | SR |
| Vanadium | 10.07 | 1.6 | 7.862 | 6.947 | 39.7 | 75-125 | 15.32 | 41.4 | 25 | SR |

**LCSLL** Sample ID: **LLQC-42564-42564** Units: **mg/Kg** Analysis Date: **7/25/2012 07:28 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037266** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.0988 | 0.10 | 0.1 | 0 | 98.8 | 70-130 | 0 | | | J |
| Molybdenum | 0.2443 | 0.25 | 0.25 | 0 | 97.7 | 70-130 | 0 | | | J |
| Nickel | 0.389 | 0.25 | 0.25 | 0 | 156 | 70-130 | 0 | | | S |
| Vanadium | 0.2778 | 0.25 | 0.25 | 0 | 111 | 70-130 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42564** Instrument ID **ICPMS1** Method: **SW6020A**

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207628-01B | 1207628-02B | 1207628-03B |
| 1207628-04B | 1207628-05B | 1207628-06B |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42523** Instrument ID **SVMS4** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42523-42523** Units: **µg/Kg** Analysis Date: **7/25/2012 11:21 AM**
Client ID: Run ID: **SVMS4_120725A** SeqNo: **2039049** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1714 | 50 | 2000 | 0 | 85.7 | 45-105 | 0 | | | |
| Acenaphthene | 1922 | 50 | 2000 | 0 | 96.1 | 45-110 | 0 | | | |
| Acenaphthylene | 1884 | 50 | 2000 | 0 | 94.2 | 45-105 | 0 | | | |
| Anthracene | 2051 | 50 | 2000 | 0 | 103 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1664 | 50 | 2000 | 0 | 83.2 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1945 | 50 | 2000 | 0 | 97.2 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1768 | 50 | 2000 | 0 | 88.4 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1951 | 50 | 2000 | 0 | 97.6 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 1986 | 50 | 2000 | 0 | 99.3 | 45-115 | 0 | | | |
| Chrysene | 1984 | 50 | 2000 | 0 | 99.2 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1623 | 50 | 2000 | 0 | 81.2 | 40-125 | 0 | | | |
| Fluoranthene | 1944 | 50 | 2000 | 0 | 97.2 | 55-115 | 0 | | | |
| Fluorene | 1809 | 50 | 2000 | 0 | 90.4 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1656 | 50 | 2000 | 0 | 82.8 | 40-120 | 0 | | | |
| Naphthalene | 1738 | 50 | 2000 | 0 | 86.9 | 40-105 | 0 | | | |
| Phenanthrene | 1959 | 50 | 2000 | 0 | 98 | 50-110 | 0 | | | |
| Pyrene | 2175 | 50 | 2000 | 0 | 109 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *3237* | 0 | *5000* | 0 | *64.7* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3315* | 0 | *5000* | 0 | *66.3* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *4622* | 0 | *5000* | 0 | *92.4* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *5186* | 0 | *5000* | 0 | *104* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3725* | 0 | *5000* | 0 | *74.5* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *4297* | 0 | *5000* | 0 | *85.9* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42523** Instrument ID **SVMS4** Method: **SW8270**

**MS** Sample ID: **1207629-01B MS** Units: **µg/Kg** Analysis Date: **7/25/2012 11:55 AM**
Client ID: Run ID: **SVMS4_120725A** SeqNo: **2039050** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1539 | 47 | 1877 | 0 | 82 | 45-105 | 0 | | | |
| Acenaphthene | 1823 | 47 | 1877 | 0 | 97.1 | 45-110 | 0 | | | |
| Acenaphthylene | 1777 | 47 | 1877 | 0 | 94.6 | 45-105 | 0 | | | |
| Anthracene | 1934 | 47 | 1877 | 0 | 103 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1614 | 47 | 1877 | 44.83 | 83.6 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1769 | 47 | 1877 | 50.81 | 91.5 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1794 | 47 | 1877 | 77.71 | 91.4 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1288 | 47 | 1877 | 0 | 68.6 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2136 | 47 | 1877 | 64.76 | 110 | 45-115 | 0 | | | |
| Chrysene | 1917 | 47 | 1877 | 57.79 | 99 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1206 | 47 | 1877 | 0 | 64.2 | 40-125 | 0 | | | |
| Fluoranthene | 1823 | 47 | 1877 | 73.73 | 93.2 | 55-115 | 0 | | | |
| Fluorene | 1735 | 47 | 1877 | 0 | 92.4 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1218 | 47 | 1877 | 0 | 64.9 | 40-120 | 0 | | | |
| Naphthalene | 1539 | 47 | 1877 | 0 | 82 | 40-105 | 0 | | | |
| Phenanthrene | 1879 | 47 | 1877 | 0 | 100 | 50-110 | 0 | | | |
| Pyrene | 2042 | 47 | 1877 | 71.73 | 105 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *3590* | 0 | *4693* | 0 | *76.5* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3139* | 0 | *4693* | 0 | *66.9* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *4434* | 0 | *4693* | 0 | *94.5* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4681* | 0 | *4693* | 0 | *99.7* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3382* | 0 | *4693* | 0 | *72.1* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *4096* | 0 | *4693* | 0 | *87.3* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42523** Instrument ID **SVMS4** Method: **SW8270**

**MSD** Sample ID: **1207629-01B MSD** Units: **µg/Kg** Analysis Date: **7/25/2012 12:29 PM**
Client ID: Run ID: **SVMS4_120725A** SeqNo: **2039051** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1521 | 46 | 1844 | 0 | 82.4 | 45-105 | 1539 | 1.23 | 30 | |
| Acenaphthene | 1789 | 46 | 1844 | 0 | 97 | 45-110 | 1823 | 1.88 | 30 | |
| Acenaphthylene | 1781 | 46 | 1844 | 0 | 96.6 | 45-105 | 1777 | 0.262 | 30 | |
| Anthracene | 1905 | 46 | 1844 | 0 | 103 | 55-105 | 1934 | 1.53 | 30 | |
| Benzo(a)anthracene | 1561 | 46 | 1844 | 44.83 | 82.2 | 50-110 | 1614 | 3.36 | 30 | |
| Benzo(a)pyrene | 1706 | 46 | 1844 | 50.81 | 89.7 | 50-110 | 1769 | 3.65 | 30 | |
| Benzo(b)fluoranthene | 1730 | 46 | 1844 | 77.71 | 89.6 | 45-115 | 1794 | 3.62 | 30 | |
| Benzo(g,h,i)perylene | 1090 | 46 | 1844 | 0 | 59.1 | 40-125 | 1288 | 16.6 | 30 | |
| Benzo(k)fluoranthene | 2080 | 46 | 1844 | 64.76 | 109 | 45-115 | 2136 | 2.66 | 30 | |
| Chrysene | 1867 | 46 | 1844 | 57.79 | 98.1 | 55-110 | 1917 | 2.61 | 30 | |
| Dibenzo(a,h)anthracene | 1064 | 46 | 1844 | 0 | 57.7 | 40-125 | 1206 | 12.5 | 30 | |
| Fluoranthene | 1807 | 46 | 1844 | 73.73 | 94 | 55-115 | 1823 | 0.854 | 30 | |
| Fluorene | 1684 | 46 | 1844 | 0 | 91.3 | 50-110 | 1735 | 2.97 | 30 | |
| Indeno(1,2,3-cd)pyrene | 1075 | 46 | 1844 | 0 | 58.3 | 40-120 | 1218 | 12.5 | 30 | |
| Naphthalene | 1526 | 46 | 1844 | 0 | 82.8 | 40-105 | 1539 | 0.866 | 30 | |
| Phenanthrene | 1853 | 46 | 1844 | 0 | 100 | 50-110 | 1879 | 1.38 | 30 | |
| Pyrene | 1992 | 46 | 1844 | 71.73 | 104 | 45-125 | 2042 | 2.51 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *3514* | 0 | *4610* | 0 | *76.2* | *34-140* | 3590 | *2.14* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *3116* | 0 | *4610* | 0 | *67.6* | *12-100* | 3139 | *0.736* | *40* | |
| *Surr: 2-Fluorophenol* | *4385* | 0 | *4610* | 0 | *95.1* | *33-117* | 4434 | *1.12* | *40* | |
| *Surr: 4-Terphenyl-d14* | *4498* | 0 | *4610* | 0 | *97.6* | *25-137* | 4681 | *3.99* | *40* | |
| *Surr: Nitrobenzene-d5* | *3249* | 0 | *4610* | 0 | *70.5* | *37-107* | 3382 | *4.02* | *40* | |
| *Surr: Phenol-d6* | *4096* | 0 | *4610* | 0 | *88.8* | *40-106* | 4096 | *0.00531* | *40* | |

**The following samples were analyzed in this batch:** 1207628-03B 1207628-04B 1207628-05B 1207628-06B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**MBLK** Sample ID: **SBLKS1-42591-42591** Units: **µg/Kg** Analysis Date: **7/27/2012 12:22 PM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041108** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 50 | | | | | | | | |
| Acenaphthene | ND | 50 | | | | | | | | |
| Acenaphthylene | ND | 50 | | | | | | | | |
| Anthracene | ND | 50 | | | | | | | | |
| Benzo(a)anthracene | ND | 50 | | | | | | | | |
| Benzo(a)pyrene | ND | 50 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 50 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 50 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 50 | | | | | | | | |
| Chrysene | ND | 50 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 50 | | | | | | | | |
| Fluoranthene | ND | 50 | | | | | | | | |
| Fluorene | ND | 50 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | | | | | | | |
| Naphthalene | ND | 50 | | | | | | | | |
| Phenanthrene | ND | 50 | | | | | | | | |
| Pyrene | ND | 50 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *4971* | 0 | *5000* | 0 | *99.4* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3350* | 0 | *5000* | 0 | *67* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3706* | 0 | *5000* | 0 | *74.1* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4352* | 0 | *5000* | 0 | *87* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3396* | 0 | *5000* | 0 | *67.9* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3411* | 0 | *5000* | 0 | *68.2* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42591-42591** Units: **µg/Kg** Analysis Date: **7/27/2012 10:34 AM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041104** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1733 | 50 | 2000 | 0 | 86.6 | 45-105 | 0 | | | |
| Acenaphthene | 1786 | 50 | 2000 | 0 | 89.3 | 45-110 | 0 | | | |
| Acenaphthylene | 1773 | 50 | 2000 | 0 | 88.6 | 45-105 | 0 | | | |
| Anthracene | 1976 | 50 | 2000 | 0 | 98.8 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1957 | 50 | 2000 | 0 | 97.8 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 2023 | 50 | 2000 | 0 | 101 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 2113 | 50 | 2000 | 0 | 106 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2421 | 50 | 2000 | 0 | 121 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2108 | 50 | 2000 | 0 | 105 | 45-115 | 0 | | | |
| Chrysene | 2036 | 50 | 2000 | 0 | 102 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2271 | 50 | 2000 | 0 | 114 | 40-125 | 0 | | | |
| Fluoranthene | 2136 | 50 | 2000 | 0 | 107 | 55-115 | 0 | | | |
| Fluorene | 1981 | 50 | 2000 | 0 | 99 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2261 | 50 | 2000 | 0 | 113 | 40-120 | 0 | | | |
| Naphthalene | 1657 | 50 | 2000 | 0 | 82.8 | 40-105 | 0 | | | |
| Phenanthrene | 1957 | 50 | 2000 | 0 | 97.8 | 50-110 | 0 | | | |
| Pyrene | 1924 | 50 | 2000 | 0 | 96.2 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *5078* | 0 | *5000* | 0 | *102* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3123* | 0 | *5000* | 0 | *62.5* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3231* | 0 | *5000* | 0 | *64.6* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4217* | 0 | *5000* | 0 | *84.3* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3106* | 0 | *5000* | 0 | *62.1* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3101* | 0 | *5000* | 0 | *62* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**MS** Sample ID: **1207648-05B MS** Units: **µg/Kg** Analysis Date: **7/27/2012 11:01 AM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041105** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1602 | 49 | 1975 | 0 | 81.1 | 45-105 | 0 | | | |
| Acenaphthene | 1702 | 49 | 1975 | 0 | 86.2 | 45-110 | 0 | | | |
| Acenaphthylene | 1693 | 49 | 1975 | 0 | 85.7 | 45-105 | 0 | | | |
| Anthracene | 1928 | 49 | 1975 | 0 | 97.6 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1881 | 49 | 1975 | 0 | 95.2 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1929 | 49 | 1975 | 0 | 97.7 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1889 | 49 | 1975 | 0 | 95.6 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2261 | 49 | 1975 | 0 | 114 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2171 | 49 | 1975 | 0 | 110 | 45-115 | 0 | | | |
| Chrysene | 1925 | 49 | 1975 | 0 | 97.4 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2109 | 49 | 1975 | 0 | 107 | 40-125 | 0 | | | |
| Fluoranthene | 2061 | 49 | 1975 | 0 | 104 | 55-115 | 0 | | | |
| Fluorene | 1916 | 49 | 1975 | 0 | 97 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2096 | 49 | 1975 | 0 | 106 | 40-120 | 0 | | | |
| Naphthalene | 1535 | 49 | 1975 | 0 | 77.8 | 40-105 | 0 | | | |
| Phenanthrene | 1904 | 49 | 1975 | 0 | 96.4 | 50-110 | 0 | | | |
| Pyrene | 1850 | 49 | 1975 | 0 | 93.6 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *5140* | 0 | *4937* | 0 | *104* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *2913* | 0 | *4937* | 0 | *59* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3014* | 0 | *4937* | 0 | *61* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4168* | 0 | *4937* | 0 | *84.4* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2838* | 0 | *4937* | 0 | *57.5* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *2906* | 0 | *4937* | 0 | *58.9* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**MSD** Sample ID: **1207648-05B MSD** Units: **µg/Kg** Analysis Date: **7/27/2012 11:28 AM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041106** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1628 | 48 | 1913 | 0 | 85.1 | 45-105 | 1602 | 1.61 | 30 | |
| Acenaphthene | 1676 | 48 | 1913 | 0 | 87.6 | 45-110 | 1702 | 1.54 | 30 | |
| Acenaphthylene | 1683 | 48 | 1913 | 0 | 88 | 45-105 | 1693 | 0.558 | 30 | |
| Anthracene | 1884 | 48 | 1913 | 0 | 98.5 | 55-105 | 1928 | 2.29 | 30 | |
| Benzo(a)anthracene | 1764 | 48 | 1913 | 0 | 92.2 | 50-110 | 1881 | 6.4 | 30 | |
| Benzo(a)pyrene | 1847 | 48 | 1913 | 0 | 96.6 | 50-110 | 1929 | 4.39 | 30 | |
| Benzo(b)fluoranthene | 1740 | 48 | 1913 | 0 | 91 | 45-115 | 1889 | 8.19 | 30 | |
| Benzo(g,h,i)perylene | 2056 | 48 | 1913 | 0 | 108 | 40-125 | 2261 | 9.51 | 30 | |
| Benzo(k)fluoranthene | 2071 | 48 | 1913 | 0 | 108 | 45-115 | 2171 | 4.72 | 30 | |
| Chrysene | 1800 | 48 | 1913 | 0 | 94.1 | 55-110 | 1925 | 6.7 | 30 | |
| Dibenzo(a,h)anthracene | 1935 | 48 | 1913 | 0 | 101 | 40-125 | 2109 | 8.64 | 30 | |
| Fluoranthene | 1953 | 48 | 1913 | 0 | 102 | 55-115 | 2061 | 5.39 | 30 | |
| Fluorene | 1881 | 48 | 1913 | 0 | 98.4 | 50-110 | 1916 | 1.82 | 30 | |
| Indeno(1,2,3-cd)pyrene | 1933 | 48 | 1913 | 0 | 101 | 40-120 | 2096 | 8.13 | 30 | |
| Naphthalene | 1565 | 48 | 1913 | 0 | 81.8 | 40-105 | 1535 | 1.93 | 30 | |
| Phenanthrene | 1837 | 48 | 1913 | 0 | 96 | 50-110 | 1904 | 3.57 | 30 | |
| Pyrene | 1743 | 48 | 1913 | 0 | 91.2 | 45-125 | 1850 | 5.91 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *4928* | 0 | *4781* | 0 | *103* | *34-140* | 5140 | *4.21* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *2899* | 0 | *4781* | 0 | *60.6* | *12-100* | 2913 | *0.498* | *40* | |
| *Surr: 2-Fluorophenol* | *3094* | 0 | *4781* | 0 | *64.7* | *33-117* | 3014 | *2.62* | *40* | |
| *Surr: 4-Terphenyl-d14* | *3915* | 0 | *4781* | 0 | *81.9* | *25-137* | 4168 | *6.26* | *40* | |
| *Surr: Nitrobenzene-d5* | *2904* | 0 | *4781* | 0 | *60.7* | *37-107* | 2838 | *2.31* | *40* | |
| *Surr: Phenol-d6* | *2986* | 0 | *4781* | 0 | *62.4* | *40-106* | 2906 | *2.7* | *40* | |

**The following samples were analyzed in this batch:** 1207628-01B 1207628-02B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42531-42531** Units: **µg/Kg** Analysis Date: **7/24/2012 09:48 PM**
Client ID: Run ID: **VMS7_120724A** SeqNo: **2035948** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 344 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 24.5 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *991* | 0 | *1000* | 0 | *99.1* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1017* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *943.5* | 0 | *1000* | 0 | *94.4* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *997* | 0 | *1000* | 0 | *99.7* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42531-42531** Units: **µg/Kg** Analysis Date: **7/24/2012 01:31 PM**
Client ID: Run ID: **VMS9_120724A** SeqNo: **2036065** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | ND | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *953* | 0 | *1000* | 0 | *95.3* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *888* | 0 | *1000* | 0 | *88.8* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1023* | 0 | *1000* | 0 | *102* | *70-130* | 0 |
| *Surr: Toluene-d8* | *889* | 0 | *1000* | 0 | *88.9* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42531-42531** Units: **µg/Kg** Analysis Date: **7/24/2012 08:41 PM**
Client ID: Run ID: **VMS5_120724A** SeqNo: **2036172** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 164.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *826* | 0 | *1000* | 0 | *82.6* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1056* | 0 | *1000* | 0 | *106* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *851* | 0 | *1000* | 0 | *85.1* | *70-130* | 0 |
| *Surr: Toluene-d8* | *910.5* | 0 | *1000* | 0 | *91* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42531-42531** Units: **µg/Kg** Analysis Date: **7/24/2012 08:31 PM**
Client ID: Run ID: **VMS7_120724A** SeqNo: **2035947** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 930 | 30 | 1000 | 0 | 93 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 957 | 30 | 1000 | 0 | 95.7 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 914.5 | 30 | 1000 | 0 | 91.4 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 899 | 30 | 1000 | 0 | 89.9 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 910.5 | 30 | 1000 | 0 | 91 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 948.5 | 30 | 1000 | 0 | 94.8 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1020 | 30 | 1000 | 0 | 102 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 916 | 30 | 1000 | 0 | 91.6 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 883.5 | 30 | 1000 | 0 | 88.4 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1040 | 30 | 1000 | 0 | 104 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 986 | 30 | 1000 | 0 | 98.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 845.5 | 30 | 1000 | 0 | 84.6 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 966 | 30 | 1000 | 0 | 96.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 987 | 30 | 1000 | 0 | 98.7 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 950 | 30 | 1000 | 0 | 95 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 934 | 30 | 1000 | 0 | 93.4 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 987.5 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 971.5 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 940 | 30 | 1000 | 0 | 94 | 70-125 | 0 | | | |
| 2-Butanone | 910 | 200 | 1000 | 0 | 91 | 30-160 | 0 | | | |
| 2-Hexanone | 911.5 | 30 | 1000 | 0 | 91.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1231 | 30 | 1000 | 0 | 123 | 45-145 | 0 | | | |
| Acetone | 1159 | 100 | 1000 | 0 | 116 | 20-160 | 0 | | | B |
| Acrylonitrile | 838.5 | 100 | 1000 | 0 | 83.8 | 70-135 | 0 | | | |
| Benzene | 946 | 30 | 1000 | 0 | 94.6 | 75-125 | 0 | | | |
| Bromobenzene | 970.5 | 30 | 1000 | 0 | 97 | 65-120 | 0 | | | |
| Bromochloromethane | 1013 | 30 | 1000 | 0 | 101 | 70-125 | 0 | | | |
| Bromodichloromethane | 951.5 | 30 | 1000 | 0 | 95.2 | 70-130 | 0 | | | |
| Bromoform | 845 | 30 | 1000 | 0 | 84.5 | 55-135 | 0 | | | |
| Bromomethane | 1099 | 75 | 1000 | 0 | 110 | 30-160 | 0 | | | |
| Carbon disulfide | 1028 | 30 | 1000 | 0 | 103 | 45-160 | 0 | | | |
| Carbon tetrachloride | 993 | 30 | 1000 | 0 | 99.3 | 65-135 | 0 | | | |
| Chlorobenzene | 959.5 | 30 | 1000 | 0 | 96 | 75-125 | 0 | | | |
| Chloroethane | 924 | 100 | 1000 | 0 | 92.4 | 40-155 | 0 | | | |
| Chloroform | 924.5 | 30 | 1000 | 0 | 92.4 | 70-125 | 0 | | | |
| Chloromethane | 799 | 100 | 1000 | 0 | 79.9 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 924.5 | 30 | 1000 | 0 | 92.4 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 900.5 | 30 | 1000 | 0 | 90 | 70-125 | 0 | | | |
| Dibromochloromethane | 848 | 30 | 1000 | 0 | 84.8 | 65-135 | 0 | | | |
| Dibromomethane | 921 | 30 | 1000 | 0 | 92.1 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 565.5 | 30 | 1000 | 0 | 56.6 | 35-135 | 0 | | | |
| Ethylbenzene | 968 | 30 | 1000 | 0 | 96.8 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 795 | 30 | 1000 | 0 | 79.5 | 70-135 | 0 |
| Isopropylbenzene | 973 | 30 | 1000 | 0 | 97.3 | 75-130 | 0 |
| m,p-Xylene | 1956 | 60 | 2000 | 0 | 97.8 | 80-125 | 0 |
| Methyl tert-butyl ether | 897 | 30 | 1000 | 0 | 89.7 | 75-125 | 0 |
| Methylene chloride | 946.5 | 30 | 1000 | 0 | 94.6 | 55-145 | 0 |
| Naphthalene | 997 | 100 | 1000 | 0 | 99.7 | 40-140 | 0 |
| n-Butylbenzene | 988.5 | 30 | 1000 | 0 | 98.8 | 65-140 | 0 |
| n-Propylbenzene | 958.5 | 30 | 1000 | 0 | 95.8 | 65-135 | 0 |
| o-Xylene | 965.5 | 30 | 1000 | 0 | 96.6 | 75-125 | 0 |
| p-Isopropyltoluene | 973 | 30 | 1000 | 0 | 97.3 | 75-135 | 0 |
| sec-Butylbenzene | 987.5 | 30 | 1000 | 0 | 98.8 | 65-130 | 0 |
| Styrene | 994 | 30 | 1000 | 0 | 99.4 | 75-125 | 0 |
| tert-Butylbenzene | 957.5 | 30 | 1000 | 0 | 95.8 | 65-130 | 0 |
| Tetrachloroethene | 1008 | 30 | 1000 | 0 | 101 | 64-140 | 0 |
| Tetrahydrofuran | 851.5 | 200 | 1000 | 0 | 85.2 | 70-135 | 0 |
| Toluene | 964 | 30 | 1000 | 0 | 96.4 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 953.5 | 30 | 1000 | 0 | 95.4 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 943.5 | 30 | 1000 | 0 | 94.4 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 796 | 30 | 1000 | 0 | 79.6 | 70-135 | 0 |
| Trichloroethene | 911.5 | 30 | 1000 | 0 | 91.2 | 75-125 | 0 |
| Trichlorofluoromethane | 802 | 30 | 1000 | 0 | 80.2 | 25-185 | 0 |
| Vinyl chloride | 723 | 30 | 1000 | 0 | 72.3 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1000* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *994* | 0 | *1000* | 0 | *99.4* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1008* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1000* | 0 | *1000* | 0 | *100* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42531-42531** | | | | Units: **µg/Kg** | | | Analysis Date: **7/24/2012 12:16 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS9_120724A** | | | SeqNo: **2036064** | | | Prep Date: **7/24/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual | |
| 1,1,1,2-Tetrachloroethane | 1016 | 30 | 1000 | 0 | 102 | 75-125 | 0 | | | | |
| 1,1,1-Trichloroethane | 942 | 30 | 1000 | 0 | 94.2 | 70-135 | 0 | | | | |
| 1,1,2,2-Tetrachloroethane | 959 | 30 | 1000 | 0 | 95.9 | 55-130 | 0 | | | | |
| 1,1,2-Trichloroethane | 925 | 30 | 1000 | 0 | 92.5 | 60-125 | 0 | | | | |
| 1,1-Dichloroethane | 854.5 | 30 | 1000 | 0 | 85.4 | 75-125 | 0 | | | | |
| 1,1-Dichloroethene | 934.5 | 30 | 1000 | 0 | 93.4 | 65-135 | 0 | | | | |
| 1,2,3-Trichlorobenzene | 1041 | 30 | 1000 | 0 | 104 | 60-135 | 0 | | | | |
| 1,2,3-Trichloropropane | 857 | 30 | 1000 | 0 | 85.7 | 65-130 | 0 | | | | |
| 1,2,3-Trimethylbenzene | 932.5 | 30 | 1000 | 0 | 93.2 | 65-135 | 0 | | | | |
| 1,2,4-Trichlorobenzene | 1159 | 30 | 1000 | 0 | 116 | 65-130 | 0 | | | | |
| 1,2,4-Trimethylbenzene | 943 | 30 | 1000 | 0 | 94.3 | 65-135 | 0 | | | | |
| 1,2-Dibromo-3-chloropropane | 872.5 | 30 | 1000 | 0 | 87.2 | 40-135 | 0 | | | | |
| 1,2-Dibromoethane | 1016 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | | |
| 1,2-Dichlorobenzene | 1026 | 30 | 1000 | 0 | 103 | 75-120 | 0 | | | | |
| 1,2-Dichloroethane | 856 | 30 | 1000 | 0 | 85.6 | 70-135 | 0 | | | | |
| 1,2-Dichloropropane | 872 | 30 | 1000 | 0 | 87.2 | 70-120 | 0 | | | | |
| 1,3,5-Trimethylbenzene | 1068 | 30 | 1000 | 0 | 107 | 65-135 | 0 | | | | |
| 1,3-Dichlorobenzene | 1038 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | | |
| 1,4-Dichlorobenzene | 1026 | 30 | 1000 | 0 | 103 | 70-125 | 0 | | | | |
| 2-Butanone | 889.5 | 200 | 1000 | 0 | 89 | 30-160 | 0 | | | | |
| 2-Hexanone | 905 | 30 | 1000 | 0 | 90.5 | 45-145 | 0 | | | | |
| 4-Methyl-2-pentanone | 852.5 | 30 | 1000 | 0 | 85.2 | 45-145 | 0 | | | | |
| Acetone | 878 | 100 | 1000 | 0 | 87.8 | 20-160 | 0 | | | | |
| Acrylonitrile | 806.5 | 100 | 1000 | 0 | 80.6 | 70-135 | 0 | | | | |
| Benzene | 927 | 30 | 1000 | 0 | 92.7 | 75-125 | 0 | | | | |
| Bromobenzene | 926 | 30 | 1000 | 0 | 92.6 | 65-120 | 0 | | | | |
| Bromochloromethane | 946.5 | 30 | 1000 | 0 | 94.6 | 70-125 | 0 | | | | |
| Bromodichloromethane | 810.5 | 30 | 1000 | 0 | 81 | 70-130 | 0 | | | | |
| Bromoform | 882 | 30 | 1000 | 0 | 88.2 | 55-135 | 0 | | | | |
| Bromomethane | 1028 | 75 | 1000 | 0 | 103 | 30-160 | 0 | | | | |
| Carbon disulfide | 988 | 30 | 1000 | 0 | 98.8 | 45-160 | 0 | | | | |
| Carbon tetrachloride | 930 | 30 | 1000 | 0 | 93 | 65-135 | 0 | | | | |
| Chlorobenzene | 1018 | 30 | 1000 | 0 | 102 | 75-125 | 0 | | | | |
| Chloroethane | 810.5 | 100 | 1000 | 0 | 81 | 40-155 | 0 | | | | |
| Chloroform | 896.5 | 30 | 1000 | 0 | 89.6 | 70-125 | 0 | | | | |
| Chloromethane | 852 | 100 | 1000 | 0 | 85.2 | 50-130 | 0 | | | | |
| cis-1,2-Dichloroethene | 866.5 | 30 | 1000 | 0 | 86.6 | 65-125 | 0 | | | | |
| cis-1,3-Dichloropropene | 811.5 | 30 | 1000 | 0 | 81.2 | 70-125 | 0 | | | | |
| Dibromochloromethane | 866.5 | 30 | 1000 | 0 | 86.6 | 65-135 | 0 | | | | |
| Dibromomethane | 894 | 30 | 1000 | 0 | 89.4 | 75-130 | 0 | | | | |
| Dichlorodifluoromethane | 781.5 | 30 | 1000 | 0 | 78.2 | 35-135 | 0 | | | | |
| Ethylbenzene | 1076 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 927.5 | 30 | 1000 | 0 | 92.8 | 70-135 | 0 | |
| Isopropylbenzene | 1118 | 30 | 1000 | 0 | 112 | 75-130 | 0 | |
| m,p-Xylene | 2163 | 60 | 2000 | 0 | 108 | 80-125 | 0 | |
| Methyl tert-butyl ether | 824.5 | 30 | 1000 | 0 | 82.4 | 75-125 | 0 | |
| Methylene chloride | 981 | 30 | 1000 | 0 | 98.1 | 55-145 | 0 | |
| Naphthalene | 836.5 | 100 | 1000 | 0 | 83.6 | 40-140 | 0 | |
| n-Butylbenzene | 1157 | 30 | 1000 | 0 | 116 | 65-140 | 0 | |
| n-Propylbenzene | 1032 | 30 | 1000 | 0 | 103 | 65-135 | 0 | |
| o-Xylene | 1064 | 30 | 1000 | 0 | 106 | 75-125 | 0 | |
| p-Isopropyltoluene | 1118 | 30 | 1000 | 0 | 112 | 75-135 | 0 | |
| sec-Butylbenzene | 962.5 | 30 | 1000 | 0 | 96.2 | 65-130 | 0 | |
| Styrene | 945.5 | 30 | 1000 | 0 | 94.6 | 75-125 | 0 | |
| tert-Butylbenzene | 1029 | 30 | 1000 | 0 | 103 | 65-130 | 0 | |
| Tetrachloroethene | 992.5 | 30 | 1000 | 0 | 99.2 | 64-140 | 0 | |
| Tetrahydrofuran | 828 | 200 | 1000 | 0 | 82.8 | 70-135 | 0 | |
| Toluene | 1010 | 30 | 1000 | 0 | 101 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 916.5 | 30 | 1000 | 0 | 91.6 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 848.5 | 30 | 1000 | 0 | 84.8 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 691 | 30 | 1000 | 0 | 69.1 | 70-135 | 0 | S |
| Trichloroethene | 894 | 30 | 1000 | 0 | 89.4 | 75-125 | 0 | |
| Trichlorofluoromethane | 879.5 | 30 | 1000 | 0 | 88 | 25-185 | 0 | |
| Vinyl chloride | 876 | 30 | 1000 | 0 | 87.6 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *887.5* | 0 | *1000* | 0 | *88.8* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *942* | 0 | *1000* | 0 | *94.2* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *962.5* | 0 | *1000* | 0 | *96.2* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1004* | 0 | *1000* | 0 | *100* | *70-130* | 0 | |

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42531-42531** Units: **µg/Kg** Analysis Date: **7/24/2012 07:28 PM**
Client ID: Run ID: **VMS5_120724A** SeqNo: **2036171** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 985 | 30 | 1000 | 0 | 98.5 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1046 | 30 | 1000 | 0 | 105 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 817.5 | 30 | 1000 | 0 | 81.8 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 923 | 30 | 1000 | 0 | 92.3 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1084 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1160 | 30 | 1000 | 0 | 116 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 955.5 | 30 | 1000 | 0 | 95.6 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 841.5 | 30 | 1000 | 0 | 84.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 937 | 30 | 1000 | 0 | 93.7 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1037 | 30 | 1000 | 0 | 104 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1048 | 30 | 1000 | 0 | 105 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 759.5 | 30 | 1000 | 0 | 76 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 912.5 | 30 | 1000 | 0 | 91.2 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1022 | 30 | 1000 | 0 | 102 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1000 | 30 | 1000 | 0 | 100 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1026 | 30 | 1000 | 0 | 103 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1054 | 30 | 1000 | 0 | 105 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1041 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1048 | 30 | 1000 | 0 | 105 | 70-125 | 0 | | | |
| 2-Butanone | 816 | 200 | 1000 | 0 | 81.6 | 30-160 | 0 | | | |
| 2-Hexanone | 822 | 30 | 1000 | 0 | 82.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 879 | 30 | 1000 | 0 | 87.9 | 45-145 | 0 | | | |
| Acetone | 708 | 100 | 1000 | 0 | 70.8 | 20-160 | 0 | | | B |
| Acrylonitrile | 815.5 | 100 | 1000 | 0 | 81.6 | 70-135 | 0 | | | |
| Benzene | 1071 | 30 | 1000 | 0 | 107 | 75-125 | 0 | | | |
| Bromobenzene | 1035 | 30 | 1000 | 0 | 104 | 65-120 | 0 | | | |
| Bromochloromethane | 1099 | 30 | 1000 | 0 | 110 | 70-125 | 0 | | | |
| Bromodichloromethane | 993 | 30 | 1000 | 0 | 99.3 | 70-130 | 0 | | | |
| Bromoform | 892 | 30 | 1000 | 0 | 89.2 | 55-135 | 0 | | | |
| Bromomethane | 1947 | 75 | 1000 | 0 | 195 | 30-160 | 0 | | | S |
| Carbon disulfide | 1189 | 30 | 1000 | 0 | 119 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1082 | 30 | 1000 | 0 | 108 | 65-135 | 0 | | | |
| Chlorobenzene | 1030 | 30 | 1000 | 0 | 103 | 75-125 | 0 | | | |
| Chloroethane | 1104 | 100 | 1000 | 0 | 110 | 40-155 | 0 | | | |
| Chloroform | 1061 | 30 | 1000 | 0 | 106 | 70-125 | 0 | | | |
| Chloromethane | 1054 | 100 | 1000 | 0 | 105 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1102 | 30 | 1000 | 0 | 110 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 999 | 30 | 1000 | 0 | 99.9 | 70-125 | 0 | | | |
| Dibromochloromethane | 939 | 30 | 1000 | 0 | 93.9 | 65-135 | 0 | | | |
| Dibromomethane | 950.5 | 30 | 1000 | 0 | 95 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 983 | 30 | 1000 | 0 | 98.3 | 35-135 | 0 | | | |
| Ethylbenzene | 1061 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 869 | 30 | 1000 | 0 | 86.9 | 70-135 | 0 |
| Isopropylbenzene | 1048 | 30 | 1000 | 0 | 105 | 75-130 | 0 |
| m,p-Xylene | 2120 | 60 | 2000 | 0 | 106 | 80-125 | 0 |
| Methyl tert-butyl ether | 1012 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| Methylene chloride | 1090 | 30 | 1000 | 0 | 109 | 55-145 | 0 |
| Naphthalene | 883.5 | 100 | 1000 | 0 | 88.4 | 40-140 | 0 |
| n-Butylbenzene | 1093 | 30 | 1000 | 0 | 109 | 65-140 | 0 |
| n-Propylbenzene | 1051 | 30 | 1000 | 0 | 105 | 65-135 | 0 |
| o-Xylene | 1055 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| p-Isopropyltoluene | 1057 | 30 | 1000 | 0 | 106 | 75-135 | 0 |
| sec-Butylbenzene | 1068 | 30 | 1000 | 0 | 107 | 65-130 | 0 |
| Styrene | 1044 | 30 | 1000 | 0 | 104 | 75-125 | 0 |
| tert-Butylbenzene | 1028 | 30 | 1000 | 0 | 103 | 65-130 | 0 |
| Tetrachloroethene | 1071 | 30 | 1000 | 0 | 107 | 64-140 | 0 |
| Tetrahydrofuran | 733 | 200 | 1000 | 0 | 73.3 | 70-135 | 0 |
| Toluene | 1050 | 30 | 1000 | 0 | 105 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1170 | 30 | 1000 | 0 | 117 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 977.5 | 30 | 1000 | 0 | 97.8 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 885 | 30 | 1000 | 0 | 88.5 | 70-135 | 0 |
| Trichloroethene | 1058 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| Trichlorofluoromethane | 1074 | 30 | 1000 | 0 | 107 | 25-185 | 0 |
| Vinyl chloride | 1081 | 30 | 1000 | 0 | 108 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *819* | 0 | *1000* | 0 | *81.9* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1083* | 0 | *1000* | 0 | *108* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *850.5* | 0 | *1000* | 0 | *85* | *70-130* | 0 |
| *Surr: Toluene-d8* | *915* | 0 | *1000* | 0 | *91.5* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**MS** Sample ID: **1207629-01A MS** Units: **µg/Kg** Analysis Date: **7/25/2012 06:38 AM**
Client ID: Run ID: **VMS7_120724A** SeqNo: **2035943** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 2599 | 88 | 2922 | 0 | 89 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 2663 | 88 | 2922 | 0 | 91.2 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 2600 | 88 | 2922 | 0 | 89 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 2536 | 88 | 2922 | 0 | 86.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 2571 | 88 | 2922 | 0 | 88 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 2444 | 88 | 2922 | 0 | 83.6 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 2515 | 88 | 2922 | 0 | 86.1 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 2570 | 88 | 2922 | 0 | 88 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 2353 | 88 | 2922 | 0 | 80.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 2678 | 88 | 2922 | 0 | 91.6 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 2875 | 88 | 2922 | 0 | 98.4 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 2137 | 88 | 2922 | 0 | 73.2 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 2660 | 88 | 2922 | 0 | 91 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 2719 | 88 | 2922 | 0 | 93 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 2704 | 88 | 2922 | 0 | 92.6 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 2679 | 88 | 2922 | 0 | 91.7 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 2888 | 88 | 2922 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 2686 | 88 | 2922 | 0 | 92 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 2583 | 88 | 2922 | 0 | 88.4 | 70-125 | 0 | | | |
| 2-Butanone | 2835 | 290 | 2922 | 0 | 97 | 30-160 | 0 | | | |
| 2-Hexanone | 2887 | 88 | 2922 | 0 | 98.8 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 3830 | 88 | 2922 | 0 | 131 | 45-145 | 0 | | | |
| Acetone | 3645 | 290 | 2922 | 0 | 125 | 20-160 | 0 | | | B |
| Acrylonitrile | 2445 | 88 | 2922 | 0 | 83.7 | 70-135 | 0 | | | |
| Benzene | 2755 | 88 | 2922 | 0 | 94.3 | 75-125 | 0 | | | |
| Bromobenzene | 2824 | 88 | 2922 | 0 | 96.6 | 65-120 | 0 | | | |
| Bromochloromethane | 2549 | 88 | 2922 | 0 | 87.2 | 70-125 | 0 | | | |
| Bromodichloromethane | 2584 | 88 | 2922 | 0 | 88.4 | 70-130 | 0 | | | |
| Bromoform | 2244 | 88 | 2922 | 0 | 76.8 | 55-135 | 0 | | | |
| Bromomethane | 769.8 | 88 | 2922 | 0 | 26.4 | 30-160 | 0 | | | S |
| Carbon disulfide | 2713 | 88 | 2922 | 0 | 92.8 | 45-160 | 0 | | | |
| Carbon tetrachloride | 2721 | 88 | 2922 | 0 | 93.2 | 65-135 | 0 | | | |
| Chlorobenzene | 2746 | 88 | 2922 | 0 | 94 | 75-125 | 0 | | | |
| Chloroethane | 1500 | 290 | 2922 | 0 | 51.4 | 40-155 | 0 | | | |
| Chloroform | 2628 | 88 | 2922 | 0 | 90 | 70-125 | 0 | | | |
| Chloromethane | 2653 | 88 | 2922 | 0 | 90.8 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 2594 | 88 | 2922 | 0 | 88.8 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 2406 | 88 | 2922 | 0 | 82.4 | 70-125 | 0 | | | |
| Dibromochloromethane | 2264 | 88 | 2922 | 0 | 77.5 | 65-135 | 0 | | | |
| Dibromomethane | 2527 | 88 | 2922 | 0 | 86.5 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 2035 | 88 | 2922 | 0 | 69.6 | 35-135 | 0 | | | |
| Ethylbenzene | 2822 | 88 | 2922 | 0 | 96.6 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 2101 | 88 | 2922 | 0 | 71.9 | 70-135 | 0 |
| Isopropylbenzene | 2812 | 88 | 2922 | 0 | 96.2 | 75-130 | 0 |
| m,p-Xylene | 5970 | 180 | 5843 | 0 | 102 | 80-125 | 0 |
| Methyl tert-butyl ether | 2672 | 88 | 2922 | 0 | 91.4 | 75-125 | 0 |
| Methylene chloride | 2571 | 88 | 2922 | 0 | 88 | 55-145 | 0 |
| Naphthalene | 2480 | 290 | 2922 | 0 | 84.9 | 40-140 | 0 |
| n-Butylbenzene | 2568 | 88 | 2922 | 0 | 87.9 | 65-140 | 0 |
| n-Propylbenzene | 2799 | 88 | 2922 | 0 | 95.8 | 65-135 | 0 |
| o-Xylene | 2793 | 88 | 2922 | 0 | 95.6 | 75-125 | 0 |
| p-Isopropyltoluene | 2644 | 88 | 2922 | 0 | 90.5 | 75-135 | 0 |
| sec-Butylbenzene | 2862 | 88 | 2922 | 0 | 98 | 65-130 | 0 |
| Styrene | 2854 | 88 | 2922 | 0 | 97.7 | 75-125 | 0 |
| tert-Butylbenzene | 2797 | 88 | 2922 | 0 | 95.8 | 65-130 | 0 |
| Tetrachloroethene | 2868 | 88 | 2922 | 0 | 98.2 | 64-140 | 0 |
| Tetrahydrofuran | 2526 | 290 | 2922 | 0 | 86.4 | 70-135 | 0 |
| Toluene | 2793 | 88 | 2922 | 37.98 | 94.3 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 2644 | 88 | 2922 | 0 | 90.5 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 2488 | 88 | 2922 | 0 | 85.2 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 2191 | 88 | 2922 | 0 | 75 | 70-135 | 0 |
| Trichloroethene | 2621 | 88 | 2922 | 0 | 89.7 | 75-125 | 0 |
| Trichlorofluoromethane | 1689 | 88 | 2922 | 0 | 57.8 | 25-185 | 0 |
| Vinyl chloride | 2163 | 88 | 2922 | 0 | 74 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *2847* | 0 | *2922* | 0 | *97.4* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *2973* | 0 | *2922* | 0 | *102* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *2865* | 0 | *2922* | 0 | *98* | *70-130* | 0 |
| *Surr: Toluene-d8* | *2894* | 0 | *2922* | 0 | *99* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1207629-01A MSD** Units: **µg/Kg** Analysis Date: **7/25/2012 07:05 AM**
Client ID: Run ID: **VMS7_120724A** SeqNo: **2035944** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 2634 | 88 | 2922 | 0 | 90.2 | 75-125 | 2599 | 1.34 | 30 | |
| 1,1,1-Trichloroethane | 2685 | 88 | 2922 | 0 | 91.9 | 70-135 | 2663 | 0.819 | 30 | |
| 1,1,2,2-Tetrachloroethane | 2685 | 88 | 2922 | 0 | 91.9 | 55-130 | 2600 | 3.21 | 30 | |
| 1,1,2-Trichloroethane | 2615 | 88 | 2922 | 0 | 89.5 | 60-125 | 2536 | 3.06 | 30 | |
| 1,1-Dichloroethane | 2640 | 88 | 2922 | 0 | 90.4 | 75-125 | 2571 | 2.64 | 30 | |
| 1,1-Dichloroethene | 2485 | 88 | 2922 | 0 | 85 | 65-135 | 2444 | 1.66 | 30 | |
| 1,2,3-Trichlorobenzene | 2721 | 88 | 2922 | 0 | 93.2 | 60-135 | 2515 | 7.87 | 30 | |
| 1,2,3-Trichloropropane | 2704 | 88 | 2922 | 0 | 92.6 | 65-130 | 2570 | 5.1 | 30 | |
| 1,2,3-Trimethylbenzene | 2460 | 88 | 2922 | 0 | 84.2 | 65-135 | 2353 | 4.43 | 30 | |
| 1,2,4-Trichlorobenzene | 2913 | 88 | 2922 | 0 | 99.7 | 65-130 | 2678 | 8.41 | 30 | |
| 1,2,4-Trimethylbenzene | 2932 | 88 | 2922 | 0 | 100 | 65-135 | 2875 | 1.96 | 30 | |
| 1,2-Dibromo-3-chloropropane | 2250 | 88 | 2922 | 0 | 77 | 40-135 | 2137 | 5.13 | 30 | |
| 1,2-Dibromoethane | 2754 | 88 | 2922 | 0 | 94.2 | 70-125 | 2660 | 3.45 | 30 | |
| 1,2-Dichlorobenzene | 2802 | 88 | 2922 | 0 | 95.9 | 75-120 | 2719 | 3.02 | 30 | |
| 1,2-Dichloroethane | 2743 | 88 | 2922 | 0 | 93.9 | 70-135 | 2704 | 1.45 | 30 | |
| 1,2-Dichloropropane | 2732 | 88 | 2922 | 0 | 93.5 | 70-120 | 2679 | 1.94 | 30 | |
| 1,3,5-Trimethylbenzene | 2951 | 88 | 2922 | 0 | 101 | 65-135 | 2888 | 2.15 | 30 | |
| 1,3-Dichlorobenzene | 2809 | 88 | 2922 | 0 | 96.2 | 70-125 | 2686 | 4.47 | 30 | |
| 1,4-Dichlorobenzene | 2660 | 88 | 2922 | 0 | 91 | 70-125 | 2583 | 2.95 | 30 | |
| 2-Butanone | 2981 | 290 | 2922 | 0 | 102 | 30-160 | 2835 | 5.02 | 30 | |
| 2-Hexanone | 3005 | 88 | 2922 | 0 | 103 | 45-145 | 2887 | 4.02 | 30 | |
| 4-Methyl-2-pentanone | 3960 | 88 | 2922 | 0 | 136 | 45-145 | 3830 | 3.34 | 30 | |
| Acetone | 3835 | 290 | 2922 | 0 | 131 | 20-160 | 3645 | 5.08 | 30 | B |
| Acrylonitrile | 2580 | 88 | 2922 | 0 | 88.3 | 70-135 | 2445 | 5.35 | 30 | |
| Benzene | 2787 | 88 | 2922 | 0 | 95.4 | 75-125 | 2755 | 1.16 | 30 | |
| Bromobenzene | 2885 | 88 | 2922 | 0 | 98.8 | 65-120 | 2824 | 2.15 | 30 | |
| Bromochloromethane | 2634 | 88 | 2922 | 0 | 90.2 | 70-125 | 2549 | 3.27 | 30 | |
| Bromodichloromethane | 2635 | 88 | 2922 | 0 | 90.2 | 70-130 | 2584 | 1.96 | 30 | |
| Bromoform | 2349 | 88 | 2922 | 0 | 80.4 | 55-135 | 2244 | 4.58 | 30 | |
| Bromomethane | 1388 | 88 | 2922 | 0 | 47.5 | 30-160 | 769.8 | 57.3 | 30 | R |
| Carbon disulfide | 2761 | 88 | 2922 | 0 | 94.5 | 45-160 | 2713 | 1.76 | 30 | |
| Carbon tetrachloride | 2745 | 88 | 2922 | 0 | 94 | 65-135 | 2721 | 0.855 | 30 | |
| Chlorobenzene | 2806 | 88 | 2922 | 0 | 96 | 75-125 | 2746 | 2.16 | 30 | |
| Chloroethane | 1258 | 290 | 2922 | 0 | 43 | 40-155 | 1500 | 17.6 | 30 | |
| Chloroform | 2708 | 88 | 2922 | 0 | 92.7 | 70-125 | 2628 | 3.01 | 30 | |
| Chloromethane | 2854 | 88 | 2922 | 0 | 97.7 | 50-130 | 2653 | 7.32 | 30 | |
| cis-1,2-Dichloroethene | 2644 | 88 | 2922 | 0 | 90.5 | 65-125 | 2594 | 1.9 | 30 | |
| cis-1,3-Dichloropropene | 2479 | 88 | 2922 | 0 | 84.8 | 70-125 | 2406 | 2.99 | 30 | |
| Dibromochloromethane | 2301 | 88 | 2922 | 0 | 78.8 | 65-135 | 2264 | 1.6 | 30 | |
| Dibromomethane | 2616 | 88 | 2922 | 0 | 89.6 | 75-130 | 2527 | 3.46 | 30 | |
| Dichlorodifluoromethane | 2055 | 88 | 2922 | 0 | 70.4 | 35-135 | 2035 | 1 | 30 | |
| Ethylbenzene | 2840 | 88 | 2922 | 0 | 97.2 | 75-125 | 2822 | 0.619 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 2220 | 88 | 2922 | 0 | 76 | 70-135 | 2101 | 5.54 | 30 |
| Isopropylbenzene | 2888 | 88 | 2922 | 0 | 98.8 | 75-130 | 2812 | 2.67 | 30 |
| m,p-Xylene | 5827 | 180 | 5843 | 0 | 99.7 | 80-125 | 5970 | 2.43 | 30 |
| Methyl tert-butyl ether | 2784 | 88 | 2922 | 0 | 95.3 | 75-125 | 2672 | 4.12 | 30 |
| Methylene chloride | 2625 | 88 | 2922 | 0 | 89.8 | 55-145 | 2571 | 2.08 | 30 |
| Naphthalene | 2702 | 290 | 2922 | 0 | 92.5 | 40-140 | 2480 | 8.57 | 30 |
| n-Butylbenzene | 2710 | 88 | 2922 | 0 | 92.8 | 65-140 | 2568 | 5.37 | 30 |
| n-Propylbenzene | 2850 | 88 | 2922 | 0 | 97.6 | 65-135 | 2799 | 1.81 | 30 |
| o-Xylene | 2866 | 88 | 2922 | 0 | 98.1 | 75-125 | 2793 | 2.58 | 30 |
| p-Isopropyltoluene | 2717 | 88 | 2922 | 0 | 93 | 75-135 | 2644 | 2.72 | 30 |
| sec-Butylbenzene | 2923 | 88 | 2922 | 0 | 100 | 65-130 | 2862 | 2.12 | 30 |
| Styrene | 2920 | 88 | 2922 | 0 | 100 | 75-125 | 2854 | 2.28 | 30 |
| tert-Butylbenzene | 2835 | 88 | 2922 | 0 | 97 | 65-130 | 2797 | 1.35 | 30 |
| Tetrachloroethene | 2873 | 88 | 2922 | 0 | 98.4 | 64-140 | 2868 | 0.204 | 30 |
| Tetrahydrofuran | 2669 | 290 | 2922 | 0 | 91.4 | 70-135 | 2526 | 5.51 | 30 |
| Toluene | 2809 | 88 | 2922 | 37.98 | 94.8 | 70-125 | 2793 | 0.574 | 30 |
| trans-1,2-Dichloroethene | 2758 | 88 | 2922 | 0 | 94.4 | 65-135 | 2644 | 4.22 | 30 |
| trans-1,3-Dichloropropene | 2564 | 88 | 2922 | 0 | 87.8 | 65-125 | 2488 | 3.01 | 30 |
| trans-1,4-Dichloro-2-butene | 2258 | 88 | 2922 | 0 | 77.3 | 70-135 | 2191 | 3.02 | 30 |
| Trichloroethene | 2657 | 88 | 2922 | 0 | 91 | 75-125 | 2621 | 1.38 | 30 |
| Trichlorofluoromethane | 1751 | 88 | 2922 | 0 | 60 | 25-185 | 1689 | 3.65 | 30 |
| Vinyl chloride | 2200 | 88 | 2922 | 0 | 75.3 | 60-125 | 2163 | 1.67 | 30 |
| *Surr: 1,2-Dichloroethane-d4* | *2945* | 0 | *2922* | 0 | *101* | *70-130* | 2847 | *3.38* | *30* |
| *Surr: 4-Bromofluorobenzene* | *3025* | 0 | *2922* | 0 | *104* | *70-130* | 2973 | *1.75* | *30* |
| *Surr: Dibromofluoromethane* | *2968* | 0 | *2922* | 0 | *102* | *70-130* | 2865 | *3.56* | *30* |
| *Surr: Toluene-d8* | *2943* | 0 | *2922* | 0 | *101* | *70-130* | 2894 | *1.7* | *30* |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207628-01A | 1207628-02A | 1207628-03A |
| 1207628-04A | 1207628-05A | 1207628-06A |
| 1207628-07A | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207628
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **R107638** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R107638** Units: **% of sample** Analysis Date: **7/23/2012 02:04 PM**
Client ID: Run ID: **MOIST_120723A** SeqNo: **2034355** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | ND | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R107638** Units: **% of sample** Analysis Date: **7/23/2012 02:04 PM**
Client ID: Run ID: **MOIST_120723A** SeqNo: **2034354** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 100 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | |

**DUP** Sample ID: **1207622-01BDUP** Units: **% of sample** Analysis Date: **7/23/2012 02:04 PM**
Client ID: Run ID: **MOIST_120723A** SeqNo: **2034332** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 7.87 | 0.050 | 0 | 0 | 0 | 0-0 | 7.67 | 2.57 | 20 | |

**DUP** Sample ID: **1207629-01BDUP1** Units: **% of sample** Analysis Date: **7/23/2012 02:04 PM**
Client ID: Run ID: **MOIST_120723A** SeqNo: **2034345** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 49.37 | 0.050 | 0 | 0 | 0 | 0-0 | 49.34 | 0.0608 | 20 | |

**DUP** Sample ID: **1207629-01BDUP2** Units: **% of sample** Analysis Date: **7/23/2012 02:04 PM**
Client ID: Run ID: **MOIST_120723A** SeqNo: **2034346** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 50.47 | 0.050 | 0 | 0 | 0 | 0-0 | 49.34 | 2.26 | 20 | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207628-01B | 1207628-02B | 1207628-03B |
| 1207628-04B | 1207628-05B | 1207628-06B |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

1207628

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_072012_GMK2 | Task: KRRI_SOURCE AREA |
|---|---|---|
| Total # of Samples: 7 | | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |

BILLING CODE: 6.00

| Lab Information: | | Project Information: | | Other Information: | |
|---|---|---|---|---|---|
| Lab Name: | ALS Laboratory Group | Site ID #: | | Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 | Project # | 60162778 | Address: | 1100 Louisiana Suite 1100 |
| | | Site Address | 5555 Glenwood Parkway SE Suite 200 | City/State: | Houson, TX |
| Lab PM: | Ann Preston | City | Grand Rapids | State, Zip | MI |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 | Site PM Name | [redacted] | Send EDD to | |
| Lab PM email: | ann.preston@alsglobal.com | Phone/Fax: | [redacted] | CC Hardcopy report | |
| Applicable Lab Quote #: | | Site PM Email: | Bryan.Stiemsma@aecom.com | CC Hardcopy report | |

| ITEM # | SAMPLE ID Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | None | None | None | None | MeOH | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis: | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | |
| 1 | SBSA0125S072012S003 | SBSA0125 | SO | G | 07/20/2012 08:50 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 2 | SBSA0125S072012S086 | SBSA0125 | SO | G | 07/20/2012 10:40 | 3 | MDEQ SPLIT | | X | X | X | X | X | | | | | | | | | |
| 3 | SBSA0126S072012S008 | SBSA0126 | SO | G | 07/20/2012 11:25 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 4 | SBSA0127S072012S005 | SBSA0127 | SO | G | 07/20/2012 13:58 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 5 | SBSA0129S072012S004 | SBSA0129 | SO | G | 07/20/2012 14:48 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 6 | SBSA0129S072012S098 | SBSA0129 | SO | G | 07/20/2012 16:05 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 7 | SBSA0129T072012MX | SBSA0129 | SQ | G | 07/20/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | |

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7.20.12 | 1705 | [signature] | 7.20.12 | 1705 |
| | | | | | |
| | | | | | |

| SHIPPING INFO: | SAMPLER NAME AND SIGNATURE | | | |
|---|---|---|---|---|
| Company: | PRINT Name of SAMPLER: | GERRY KRAMER (GMK1) | | |
| Tracking #: | SIGNATURE of SAMPLER: | DATE Signed | Time: | |

| Sample Receipt Conditions | | | |
|---|---|---|---|
| Temp in °C | Samples on ice? | Sample intact? | Trip Blank? |
| 4.4 °C | O/N | O/N | O/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **20-Jul-12 17:05**

Work Order: **1207628** Received by: **MA**

Checklist completed by Diane Shaw (eSignature) 23-Jul-12 (Date) Reviewed by: Ann Preston (eSignature) 23-Jul-12 (Date)

Matrices: Soil
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 4.4 c | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 7/23/2012 10:52:59 AM | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | - | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

**CUSTODY SEAL**

Date: 7.2012 Time:

Name:

Company:

Seal Broken By:

Date:

4.4c

30-Jul-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI Source Area 7/18/12** Work Order: **1207631**

Dear Bryan,

ALS Environmental received 8 samples on 20-Jul-2012 05:08 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 71.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/18/12
**Work Order:** **1207631**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1207631-01 | SBSA0115S071812S009 | Soil | | 7/18/2012 12:49 | 7/20/2012 17:08 | ☐ |
| 1207631-02 | SBSA0116S071812S007 | Soil | | 7/18/2012 13:37 | 7/20/2012 17:08 | ☐ |
| 1207631-03 | SBSA0116S071812S014 | Soil | | 7/18/2012 13:42 | 7/20/2012 17:08 | ☐ |
| 1207631-04 | SBSA0117S071812S006 | Soil | | 7/18/2012 14:30 | 7/20/2012 17:08 | ☐ |
| 1207631-05 | SBSA0118S071812S006 | Soil | | 7/18/2012 15:05 | 7/20/2012 17:08 | ☐ |
| 1207631-06 | SBSA0119S071812S004 | Soil | | 7/18/2012 15:38 | 7/20/2012 17:08 | ☐ |
| 1207631-07 | SBSA0120S071812S007 | Soil | | 7/18/2012 16:13 | 7/20/2012 17:08 | ☐ |
| 1207631-08 | SBSA0120T071812MX | Soil | | 7/18/2012 | 7/20/2012 17:08 | ☐ |

## ALS Group USA, Corp

*Date: 30-Jul-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/18/12
**Work Order:** 1207631

# Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 42564 MS/MSD data for Metals is not related to this project's samples. No data requires qualification.

Batch 42531 LCS recovery for Bromomethane was above control limits, but all samples in this quality control batch were ND for this compound. No data requires qualification. The LCS recovery for trans-1,4-Dichloro-2-butene was slightly below control limits, but within the Sporadic Marginal Exceedence allowed by the SOP. No data requires qualification. The MS/MSD data for Volatiles is not related to this project's samples.

Batch 42539 MS/MSD data for Volatiles is not related to this project's samples. No data requires qualification.

# ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/18/12
**WorkOrder:** **1207631**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| % of sample | Percent of Sample |
| µg/Kg | Micrograms per Kilogram |
| µg/Kg-dry | Micrograms per Kilogram Dry Weight |
| mg/Kg-dry | Milligrams per Kilogram Dry Weight |

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0115S071812S009 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 12:49:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **57** | **14** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| **ORO (C20-C34)** | **370** | **29** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| *Surr: 4-Terphenyl-d14* | *66.5* | *39-115* | | | *%REC* | 1 | 7/25/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/25/2012 |
| **Molybdenum** | **2.6** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Nickel** | **12** | **4.6** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Vanadium** | **14** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *81.2* | *34-140* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *53.8* | *12-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *54.9* | *33-117* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *73.1* | *25-137* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *49.3* | *37-107* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *55.6* | *40-106* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0115S071812S009 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 12:49:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 92 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 92 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 310 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0115S071812S009 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 12:49:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 180 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 92 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.1* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *94.4* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *98.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **34** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0116S071812S007 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 1:37:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **78** | **14** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| **ORO (C20-C34)** | **540** | **27** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| *Surr: 4-Terphenyl-d14* | *71.0* | *39-115* | | | *%REC* | 1 | 7/25/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/25/2012 |
| **Molybdenum** | **1.7** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Nickel** | **11** | **4.1** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Vanadium** | **13** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *64.3* | *34-140* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *61.0* | *12-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *82.8* | *33-117* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *88.5* | *25-137* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *58.7* | *37-107* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *86.7* | *40-106* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0116S071812S007 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 1:37:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 85 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 85 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 280 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0116S071812S007 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 1:37:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 85 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 85 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.3* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *99.4* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *94.7* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *97.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **32** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0116S071812S014 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 1:42:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **45** | **14** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| **ORO (C20-C34)** | **280** | **28** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| *Surr: 4-Terphenyl-d14* | *73.4* | *39-115* | | | *%REC* | 1 | 7/25/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/25/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 7/25/2012 |
| **Nickel** | **6.7** | **4.8** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Vanadium** | **13** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Acenaphthene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Acenaphthylene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Anthracene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(a)anthracene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(a)pyrene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Chrysene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Fluoranthene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Fluorene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Naphthalene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Phenanthrene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Pyrene | ND | 710 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *94.6* | *34-140* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *63.6* | *12-100* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *60.0* | *33-117* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *83.8* | *25-137* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *54.6* | *37-107* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: Phenol-d6* | *54.6* | *40-106* | | | *%REC* | 10 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0116S071812S014 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 1:42:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 86 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 86 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 290 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0116S071812S014 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 1:42:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 86 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 86 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *99.8* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *96.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **32** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0117S071812S006 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 2:30:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **81** | **19** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| **ORO (C20-C34)** | **520** | **38** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| *Surr: 4-Terphenyl-d14* | *72.0* | *39-115* | | | *%REC* | 1 | 7/25/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/25/2012 |
| **Molybdenum** | **2.7** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Nickel** | **10** | **5.7** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Vanadium** | **15** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| *Surr: 2,4,6-Tribromophenol* | *91.0* | *34-140* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorobiphenyl* | *56.0* | *12-100* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorophenol* | *57.2* | *33-117* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *124* | *25-137* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Nitrobenzene-d5* | *48.4* | *37-107* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Phenol-d6* | *54.2* | *40-106* | | | *%REC* | 1 | 7/27/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0117S071812S006 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 2:30:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 170 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 170 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 580 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,400 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 580 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0117S071812S006
**Work Order:** 1207631 **Collection Date:** 7/18/2012 2:30:00 PM
**Project:** Marshall KRRI Source Area 7/18/12
**Lab ID:** 1207631-04 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 350 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 580 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 170 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 170 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *95.4* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.5* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **49** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0118S071812S006 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 3:05:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **53** | **14** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **380** | **28** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *69.3* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/25/2012 |
| **Molybdenum** | **2.4** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Nickel** | **9.7** | **4.9** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Vanadium** | **12** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *61.3* | *34-140* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *59.5* | *12-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *84.0* | *33-117* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *84.7* | *25-137* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *60.1* | *37-107* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *85.7* | *40-106* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0118S071812S006 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 3:05:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 92 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 92 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 310 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0118S071812S006 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 3:05:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 180 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 92 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 92 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *99.2* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *94.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *98.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **34** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0119S071812S004 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 3:38:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **60** | **16** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **390** | **32** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *72.1* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/25/2012 |
| **Molybdenum** | **2.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Nickel** | **9.8** | **4.7** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Vanadium** | **14** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *63.2* | *34-140* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *55.9* | *12-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *73.1* | *33-117* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *78.9* | *25-137* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *50.7* | *37-107* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *75.9* | *40-106* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0119S071812S004 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 3:38:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 110 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 110 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 370 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 370 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0119S071812S004 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 3:38:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 220 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 370 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 110 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *92.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *98.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **39** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0120S071812S007 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 4:13:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **84** | **16** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **600** | **32** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *86.5* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/25/2012 |
| **Molybdenum** | **2.0** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Nickel** | **8.4** | **4.7** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **Vanadium** | **12** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/25/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *73.1* | *34-140* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *70.3* | *12-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *92.7* | *33-117* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *92.8* | *25-137* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *67.3* | *37-107* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *98.6* | *40-106* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0120S071812S007 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 4:13:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 110 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 110 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 360 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 360 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0120S071812S007 |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 4:13:00 PM |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 210 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 360 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 110 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *99.5* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *94.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **38** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0120T071812MX |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-08 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 30 | 10 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 30 | 20 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0120T071812MX |
| **Work Order:** | 1207631 | **Collection Date:** | 7/18/2012 |
| **Project:** | Marshall KRRI Source Area 7/18/12 | | |
| **Lab ID:** | 1207631-08 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Cyclohexane | ND | 500 | 500 | | µg/Kg | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Ethylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *99.1* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *95.5* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *98.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment

# QC BATCH REPORT

**Work Order:** 1207631

**Project:** Marshall KRRI Source Area 7/18/12

Batch ID: **42553** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42553-42553** Units: **mg/Kg** Analysis Date: **7/25/2012 05:09 PM**

Client ID: Run ID: **GC8_120725A** SeqNo: **2036816** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *4.047* | 0 | *5* | 0 | *80.9* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42553-42553** Units: **mg/Kg** Analysis Date: **7/25/2012 05:38 PM**

Client ID: Run ID: **GC8_120725A** SeqNo: **2036817** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 353.2 | 10 | 500 | 0 | 70.6 | 60-130 | 0 | | | |
| ORO (C20-C34) | 342.9 | 20 | 500 | 0 | 68.6 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.793* | 0 | *5* | 0 | *75.9* | *39-115* | 0 | | | |

**MS** Sample ID: **1207633-03B MS** Units: **mg/Kg** Analysis Date: **7/25/2012 06:06 PM**

Client ID: Run ID: **GC8_120725A** SeqNo: **2036818** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 329.6 | 9.7 | 486.3 | 31.06 | 61.4 | 60-130 | 0 | | | |
| ORO (C20-C34) | 557.4 | 19 | 486.3 | 212.8 | 70.9 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.364* | 0 | *4.863* | 0 | *69.2* | *39-115* | 0 | | | |

**MSD** Sample ID: **1207633-03B MSD** Units: **mg/Kg** Analysis Date: **7/25/2012 06:35 PM**

Client ID: Run ID: **GC8_120725A** SeqNo: **2036819** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 354.9 | 9.9 | 495.9 | 31.06 | 65.3 | 60-130 | 329.6 | 7.41 | 30 | |
| ORO (C20-C34) | 533.7 | 20 | 495.9 | 212.8 | 64.7 | 60-130 | 557.4 | 4.33 | 30 | |
| *Surr: 4-Terphenyl-d14* | *3.578* | 0 | *4.959* | 0 | *72.2* | *39-115* | 3.364 | *6.16* | *30* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207631-01B | 1207631-02B | 1207631-03B |
| 1207631-04B | 1207631-05B | 1207631-06B |
| 1207631-07B | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42564** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42564-42564** Units: **mg/Kg** Analysis Date: **7/25/2012 07:21 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037263** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |
| Molybdenum | ND | 0.25 | | | | | | | | |
| Nickel | 0.1754 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**LCS** Sample ID: **LCS-42564-42564** Units: **mg/Kg** Analysis Date: **7/25/2012 07:34 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037268** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.932 | 0.10 | 5 | 0 | 98.6 | 80-120 | 0 | | | |
| Molybdenum | 4.59 | 0.25 | 5 | 0 | 91.8 | 80-120 | 0 | | | |
| Nickel | 4.768 | 0.25 | 5 | 0 | 95.4 | 80-120 | 0 | | | |
| Vanadium | 4.789 | 0.25 | 5 | 0 | 95.8 | 80-120 | 0 | | | |

**MS** Sample ID: **1207629-01BMS** Units: **mg/Kg** Analysis Date: **7/25/2012 09:13 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037302** Prep Date: **7/25/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 7.778 | 0.65 | 8.17 | 0.1587 | 93.3 | 75-125 | 0 | | | |
| Molybdenum | 8.477 | 1.6 | 8.17 | 1.612 | 84 | 75-125 | 0 | | | |
| Nickel | 13.33 | 1.6 | 8.17 | 5.65 | 94 | 75-125 | 0 | | | |
| Vanadium | 15.32 | 1.6 | 8.17 | 6.947 | 103 | 75-125 | 0 | | | |

**MSD** Sample ID: **1207629-01BMSD** Units: **mg/Kg** Analysis Date: **7/25/2012 09:38 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037310** Prep Date: **7/25/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 5.827 | 0.63 | 7.862 | 0.1587 | 72.1 | 75-125 | 7.778 | 28.7 | 25 | SR |
| Molybdenum | 6.591 | 1.6 | 7.862 | 1.612 | 63.3 | 75-125 | 8.477 | 25 | 25 | SR |
| Nickel | 9.336 | 1.6 | 7.862 | 5.65 | 46.9 | 75-125 | 13.33 | 35.3 | 25 | SR |
| Vanadium | 10.07 | 1.6 | 7.862 | 6.947 | 39.7 | 75-125 | 15.32 | 41.4 | 25 | SR |

**LCSLL** Sample ID: **LLQC-42564-42564** Units: **mg/Kg** Analysis Date: **7/25/2012 07:28 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037266** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.0988 | 0.10 | 0.1 | 0 | 98.8 | 70-130 | 0 | | | J |
| Molybdenum | 0.2443 | 0.25 | 0.25 | 0 | 97.7 | 70-130 | 0 | | | J |
| Nickel | 0.389 | 0.25 | 0.25 | 0 | 156 | 70-130 | 0 | | | S |
| Vanadium | 0.2778 | 0.25 | 0.25 | 0 | 111 | 70-130 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42564** Instrument ID **ICPMS1** Method: **SW6020A**

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207631-01B | 1207631-02B | 1207631-03B |
| 1207631-04B | 1207631-05B | 1207631-06B |
| 1207631-07B | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42552** Instrument ID **SVMS6** Method: **SW8270**

**MBLK** Sample ID: **SBLKS1-42552-42552** Units: **µg/Kg** Analysis Date: **7/26/2012 03:51 AM**
Client ID: Run ID: **SVMS6_120725A** SeqNo: **2037760** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 50 | | | | | | | | |
| Acenaphthene | ND | 50 | | | | | | | | |
| Acenaphthylene | ND | 50 | | | | | | | | |
| Anthracene | ND | 50 | | | | | | | | |
| Benzo(a)anthracene | ND | 50 | | | | | | | | |
| Benzo(a)pyrene | ND | 50 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 50 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 50 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 50 | | | | | | | | |
| Chrysene | ND | 50 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 50 | | | | | | | | |
| Fluoranthene | ND | 50 | | | | | | | | |
| Fluorene | ND | 50 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | | | | | | | |
| Naphthalene | ND | 50 | | | | | | | | |
| Phenanthrene | ND | 50 | | | | | | | | |
| Pyrene | ND | 50 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *3980* | 0 | *5000* | 0 | *79.6* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3561* | 0 | *5000* | 0 | *71.2* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3768* | 0 | *5000* | 0 | *75.4* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4214* | 0 | *5000* | 0 | *84.3* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3848* | 0 | *5000* | 0 | *77* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3794* | 0 | *5000* | 0 | *75.9* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42552** Instrument ID **SVMS6** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42552-42552** Units: **µg/Kg** Analysis Date: **7/26/2012 02:05 AM**
Client ID: Run ID: **SVMS6_120725A** SeqNo: **2037756** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1632 | 50 | 2000 | 0 | 81.6 | 45-105 | 0 | | | |
| Acenaphthene | 1716 | 50 | 2000 | 0 | 85.8 | 45-110 | 0 | | | |
| Acenaphthylene | 1728 | 50 | 2000 | 0 | 86.4 | 45-105 | 0 | | | |
| Anthracene | 1938 | 50 | 2000 | 0 | 96.9 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1916 | 50 | 2000 | 0 | 95.8 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 2047 | 50 | 2000 | 0 | 102 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1937 | 50 | 2000 | 0 | 96.8 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2176 | 50 | 2000 | 0 | 109 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2267 | 50 | 2000 | 0 | 113 | 45-115 | 0 | | | |
| Chrysene | 2027 | 50 | 2000 | 0 | 101 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2177 | 50 | 2000 | 0 | 109 | 40-125 | 0 | | | |
| Fluoranthene | 2067 | 50 | 2000 | 0 | 103 | 55-115 | 0 | | | |
| Fluorene | 1864 | 50 | 2000 | 0 | 93.2 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2161 | 50 | 2000 | 0 | 108 | 40-120 | 0 | | | |
| Naphthalene | 1616 | 50 | 2000 | 0 | 80.8 | 40-105 | 0 | | | |
| Phenanthrene | 1946 | 50 | 2000 | 0 | 97.3 | 50-110 | 0 | | | |
| Pyrene | 1940 | 50 | 2000 | 0 | 97 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *4609* | 0 | *5000* | 0 | *92.2* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3022* | 0 | *5000* | 0 | *60.4* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3296* | 0 | *5000* | 0 | *65.9* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4196* | 0 | *5000* | 0 | *83.9* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3233* | 0 | *5000* | 0 | *64.7* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3225* | 0 | *5000* | 0 | *64.5* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42552** Instrument ID **SVMS6** Method: **SW8270**

**MS** Sample ID: **1207633-03B MS** Units: **µg/Kg** Analysis Date: **7/26/2012 02:31 AM**
Client ID: Run ID: **SVMS6_120725A** SeqNo: **2037757** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1564 | 49 | 1976 | 0 | 79.2 | 45-105 | 0 | | | |
| Acenaphthene | 1688 | 49 | 1976 | 0 | 85.4 | 45-110 | 0 | | | |
| Acenaphthylene | 1692 | 49 | 1976 | 0 | 85.6 | 45-105 | 0 | | | |
| Anthracene | 1781 | 49 | 1976 | 0 | 90.2 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1672 | 49 | 1976 | 0 | 84.6 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1700 | 49 | 1976 | 0 | 86 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1746 | 49 | 1976 | 0 | 88.4 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1070 | 49 | 1976 | 0 | 54.2 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2149 | 49 | 1976 | 0 | 109 | 45-115 | 0 | | | |
| Chrysene | 1716 | 49 | 1976 | 0 | 86.8 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1140 | 49 | 1976 | 0 | 57.7 | 40-125 | 0 | | | |
| Fluoranthene | 1883 | 49 | 1976 | 0 | 95.3 | 55-115 | 0 | | | |
| Fluorene | 1779 | 49 | 1976 | 0 | 90 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1137 | 49 | 1976 | 0 | 57.6 | 40-120 | 0 | | | |
| Naphthalene | 1455 | 49 | 1976 | 0 | 73.6 | 40-105 | 0 | | | |
| Phenanthrene | 1771 | 49 | 1976 | 0 | 89.6 | 50-110 | 0 | | | |
| Pyrene | 1693 | 49 | 1976 | 0 | 85.7 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *4415* | 0 | *4939* | 0 | *89.4* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *2942* | 0 | *4939* | 0 | *59.6* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3048* | 0 | *4939* | 0 | *61.7* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3742* | 0 | *4939* | 0 | *75.8* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2850* | 0 | *4939* | 0 | *57.7* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3100* | 0 | *4939* | 0 | *62.8* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42552** Instrument ID **SVMS6** Method: **SW8270**

**MSD** Sample ID: **1207633-03B MSD** Units: **µg/Kg** Analysis Date: **7/26/2012 02:58 AM**
Client ID: Run ID: **SVMS6_120725A** SeqNo: **2037758** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1326 | 49 | 1952 | 0 | 68 | 45-105 | 1564 | 16.4 | 30 | |
| Acenaphthene | 1479 | 49 | 1952 | 0 | 75.8 | 45-110 | 1688 | 13.2 | 30 | |
| Acenaphthylene | 1451 | 49 | 1952 | 0 | 74.4 | 45-105 | 1692 | 15.3 | 30 | |
| Anthracene | 1581 | 49 | 1952 | 0 | 81 | 55-105 | 1781 | 11.9 | 30 | |
| Benzo(a)anthracene | 1465 | 49 | 1952 | 0 | 75 | 50-110 | 1672 | 13.2 | 30 | |
| Benzo(a)pyrene | 1473 | 49 | 1952 | 0 | 75.5 | 50-110 | 1700 | 14.3 | 30 | |
| Benzo(b)fluoranthene | 1739 | 49 | 1952 | 0 | 89.1 | 45-115 | 1746 | 0.429 | 30 | |
| Benzo(g,h,i)perylene | 856.8 | 49 | 1952 | 0 | 43.9 | 40-125 | 1070 | 22.1 | 30 | |
| Benzo(k)fluoranthene | 1684 | 49 | 1952 | 0 | 86.3 | 45-115 | 2149 | 24.3 | 30 | |
| Chrysene | 1529 | 49 | 1952 | 0 | 78.4 | 55-110 | 1716 | 11.5 | 30 | |
| Dibenzo(a,h)anthracene | 936.8 | 49 | 1952 | 0 | 48 | 40-125 | 1140 | 19.6 | 30 | |
| Fluoranthene | 1645 | 49 | 1952 | 0 | 84.3 | 55-115 | 1883 | 13.5 | 30 | |
| Fluorene | 1592 | 49 | 1952 | 0 | 81.6 | 50-110 | 1779 | 11.1 | 30 | |
| Indeno(1,2,3-cd)pyrene | 928 | 49 | 1952 | 0 | 47.6 | 40-120 | 1137 | 20.2 | 30 | |
| Naphthalene | 1252 | 49 | 1952 | 0 | 64.2 | 40-105 | 1455 | 15 | 30 | |
| Phenanthrene | 1549 | 49 | 1952 | 0 | 79.4 | 50-110 | 1771 | 13.4 | 30 | |
| Pyrene | 1515 | 49 | 1952 | 0 | 77.6 | 45-125 | 1693 | 11.1 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *3911* | 0 | *4879* | 0 | *80.2* | *34-140* | 4415 | *12.1* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *2468* | 0 | *4879* | 0 | *50.6* | *12-100* | 2942 | *17.5* | *40* | |
| *Surr: 2-Fluorophenol* | *2641* | 0 | *4879* | 0 | *54.1* | *33-117* | 3048 | *14.3* | *40* | |
| *Surr: 4-Terphenyl-d14* | *3427* | 0 | *4879* | 0 | *70.2* | *25-137* | 3742 | *8.78* | *40* | |
| *Surr: Nitrobenzene-d5* | *2444* | 0 | *4879* | 0 | *50.1* | *37-107* | 2850 | *15.3* | *40* | |
| *Surr: Phenol-d6* | *2707* | 0 | *4879* | 0 | *55.5* | *40-106* | 3100 | *13.5* | *40* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207631-01B | 1207631-02B | 1207631-03B |
| 1207631-04B | 1207631-05B | 1207631-06B |
| 1207631-07B | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42531-42531** Units: **µg/Kg** Analysis Date: **7/24/2012 09:48 PM**
Client ID: Run ID: **VMS7_120724A** SeqNo: **2035948** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 344 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 24.5 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *991* | 0 | *1000* | 0 | *99.1* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1017* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *943.5* | 0 | *1000* | 0 | *94.4* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *997* | 0 | *1000* | 0 | *99.7* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42531-42531** Units: **µg/Kg** Analysis Date: **7/24/2012 01:31 PM**
Client ID: Run ID: **VMS9_120724A** SeqNo: **2036065** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | ND | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *953* | 0 | *1000* | 0 | *95.3* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *888* | 0 | *1000* | 0 | *88.8* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1023* | 0 | *1000* | 0 | *102* | *70-130* | 0 |
| *Surr: Toluene-d8* | *889* | 0 | *1000* | 0 | *88.9* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42531-42531** Units: **µg/Kg** Analysis Date: **7/24/2012 08:41 PM**
Client ID: Run ID: **VMS5_120724A** SeqNo: **2036172** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 164.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *826* | 0 | *1000* | 0 | *82.6* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1056* | 0 | *1000* | 0 | *106* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *851* | 0 | *1000* | 0 | *85.1* | *70-130* | 0 |
| *Surr: Toluene-d8* | *910.5* | 0 | *1000* | 0 | *91* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42531-42531** Units: **µg/Kg** Analysis Date: **7/24/2012 08:31 PM**
Client ID: Run ID: **VMS7_120724A** SeqNo: **2035947** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 930 | 30 | 1000 | 0 | 93 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 957 | 30 | 1000 | 0 | 95.7 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 914.5 | 30 | 1000 | 0 | 91.4 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 899 | 30 | 1000 | 0 | 89.9 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 910.5 | 30 | 1000 | 0 | 91 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 948.5 | 30 | 1000 | 0 | 94.8 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1020 | 30 | 1000 | 0 | 102 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 916 | 30 | 1000 | 0 | 91.6 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 883.5 | 30 | 1000 | 0 | 88.4 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1040 | 30 | 1000 | 0 | 104 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 986 | 30 | 1000 | 0 | 98.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 845.5 | 30 | 1000 | 0 | 84.6 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 966 | 30 | 1000 | 0 | 96.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 987 | 30 | 1000 | 0 | 98.7 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 950 | 30 | 1000 | 0 | 95 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 934 | 30 | 1000 | 0 | 93.4 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 987.5 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 971.5 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 940 | 30 | 1000 | 0 | 94 | 70-125 | 0 | | | |
| 2-Butanone | 910 | 200 | 1000 | 0 | 91 | 30-160 | 0 | | | |
| 2-Hexanone | 911.5 | 30 | 1000 | 0 | 91.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1231 | 30 | 1000 | 0 | 123 | 45-145 | 0 | | | |
| Acetone | 1159 | 100 | 1000 | 0 | 116 | 20-160 | 0 | | | B |
| Acrylonitrile | 838.5 | 100 | 1000 | 0 | 83.8 | 70-135 | 0 | | | |
| Benzene | 946 | 30 | 1000 | 0 | 94.6 | 75-125 | 0 | | | |
| Bromobenzene | 970.5 | 30 | 1000 | 0 | 97 | 65-120 | 0 | | | |
| Bromochloromethane | 1013 | 30 | 1000 | 0 | 101 | 70-125 | 0 | | | |
| Bromodichloromethane | 951.5 | 30 | 1000 | 0 | 95.2 | 70-130 | 0 | | | |
| Bromoform | 845 | 30 | 1000 | 0 | 84.5 | 55-135 | 0 | | | |
| Bromomethane | 1099 | 75 | 1000 | 0 | 110 | 30-160 | 0 | | | |
| Carbon disulfide | 1028 | 30 | 1000 | 0 | 103 | 45-160 | 0 | | | |
| Carbon tetrachloride | 993 | 30 | 1000 | 0 | 99.3 | 65-135 | 0 | | | |
| Chlorobenzene | 959.5 | 30 | 1000 | 0 | 96 | 75-125 | 0 | | | |
| Chloroethane | 924 | 100 | 1000 | 0 | 92.4 | 40-155 | 0 | | | |
| Chloroform | 924.5 | 30 | 1000 | 0 | 92.4 | 70-125 | 0 | | | |
| Chloromethane | 799 | 100 | 1000 | 0 | 79.9 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 924.5 | 30 | 1000 | 0 | 92.4 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 900.5 | 30 | 1000 | 0 | 90 | 70-125 | 0 | | | |
| Dibromochloromethane | 848 | 30 | 1000 | 0 | 84.8 | 65-135 | 0 | | | |
| Dibromomethane | 921 | 30 | 1000 | 0 | 92.1 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 565.5 | 30 | 1000 | 0 | 56.6 | 35-135 | 0 | | | |
| Ethylbenzene | 968 | 30 | 1000 | 0 | 96.8 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 795 | 30 | 1000 | 0 | 79.5 | 70-135 | 0 |
| Isopropylbenzene | 973 | 30 | 1000 | 0 | 97.3 | 75-130 | 0 |
| m,p-Xylene | 1956 | 60 | 2000 | 0 | 97.8 | 80-125 | 0 |
| Methyl tert-butyl ether | 897 | 30 | 1000 | 0 | 89.7 | 75-125 | 0 |
| Methylene chloride | 946.5 | 30 | 1000 | 0 | 94.6 | 55-145 | 0 |
| Naphthalene | 997 | 100 | 1000 | 0 | 99.7 | 40-140 | 0 |
| n-Butylbenzene | 988.5 | 30 | 1000 | 0 | 98.8 | 65-140 | 0 |
| n-Propylbenzene | 958.5 | 30 | 1000 | 0 | 95.8 | 65-135 | 0 |
| o-Xylene | 965.5 | 30 | 1000 | 0 | 96.6 | 75-125 | 0 |
| p-Isopropyltoluene | 973 | 30 | 1000 | 0 | 97.3 | 75-135 | 0 |
| sec-Butylbenzene | 987.5 | 30 | 1000 | 0 | 98.8 | 65-130 | 0 |
| Styrene | 994 | 30 | 1000 | 0 | 99.4 | 75-125 | 0 |
| tert-Butylbenzene | 957.5 | 30 | 1000 | 0 | 95.8 | 65-130 | 0 |
| Tetrachloroethene | 1008 | 30 | 1000 | 0 | 101 | 64-140 | 0 |
| Tetrahydrofuran | 851.5 | 200 | 1000 | 0 | 85.2 | 70-135 | 0 |
| Toluene | 964 | 30 | 1000 | 0 | 96.4 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 953.5 | 30 | 1000 | 0 | 95.4 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 943.5 | 30 | 1000 | 0 | 94.4 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 796 | 30 | 1000 | 0 | 79.6 | 70-135 | 0 |
| Trichloroethene | 911.5 | 30 | 1000 | 0 | 91.2 | 75-125 | 0 |
| Trichlorofluoromethane | 802 | 30 | 1000 | 0 | 80.2 | 25-185 | 0 |
| Vinyl chloride | 723 | 30 | 1000 | 0 | 72.3 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1000* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *994* | 0 | *1000* | 0 | *99.4* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1008* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1000* | 0 | *1000* | 0 | *100* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42531-42531** Units: **µg/Kg** Analysis Date: **7/24/2012 12:16 PM**
Client ID: Run ID: **VMS9_120724A** SeqNo: **2036064** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1016 | 30 | 1000 | 0 | 102 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 942 | 30 | 1000 | 0 | 94.2 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 959 | 30 | 1000 | 0 | 95.9 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 925 | 30 | 1000 | 0 | 92.5 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 854.5 | 30 | 1000 | 0 | 85.4 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 934.5 | 30 | 1000 | 0 | 93.4 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1041 | 30 | 1000 | 0 | 104 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 857 | 30 | 1000 | 0 | 85.7 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 932.5 | 30 | 1000 | 0 | 93.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1159 | 30 | 1000 | 0 | 116 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 943 | 30 | 1000 | 0 | 94.3 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 872.5 | 30 | 1000 | 0 | 87.2 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1016 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1026 | 30 | 1000 | 0 | 103 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 856 | 30 | 1000 | 0 | 85.6 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 872 | 30 | 1000 | 0 | 87.2 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1068 | 30 | 1000 | 0 | 107 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1038 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1026 | 30 | 1000 | 0 | 103 | 70-125 | 0 | | | |
| 2-Butanone | 889.5 | 200 | 1000 | 0 | 89 | 30-160 | 0 | | | |
| 2-Hexanone | 905 | 30 | 1000 | 0 | 90.5 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 852.5 | 30 | 1000 | 0 | 85.2 | 45-145 | 0 | | | |
| Acetone | 878 | 100 | 1000 | 0 | 87.8 | 20-160 | 0 | | | |
| Acrylonitrile | 806.5 | 100 | 1000 | 0 | 80.6 | 70-135 | 0 | | | |
| Benzene | 927 | 30 | 1000 | 0 | 92.7 | 75-125 | 0 | | | |
| Bromobenzene | 926 | 30 | 1000 | 0 | 92.6 | 65-120 | 0 | | | |
| Bromochloromethane | 946.5 | 30 | 1000 | 0 | 94.6 | 70-125 | 0 | | | |
| Bromodichloromethane | 810.5 | 30 | 1000 | 0 | 81 | 70-130 | 0 | | | |
| Bromoform | 882 | 30 | 1000 | 0 | 88.2 | 55-135 | 0 | | | |
| Bromomethane | 1028 | 75 | 1000 | 0 | 103 | 30-160 | 0 | | | |
| Carbon disulfide | 988 | 30 | 1000 | 0 | 98.8 | 45-160 | 0 | | | |
| Carbon tetrachloride | 930 | 30 | 1000 | 0 | 93 | 65-135 | 0 | | | |
| Chlorobenzene | 1018 | 30 | 1000 | 0 | 102 | 75-125 | 0 | | | |
| Chloroethane | 810.5 | 100 | 1000 | 0 | 81 | 40-155 | 0 | | | |
| Chloroform | 896.5 | 30 | 1000 | 0 | 89.6 | 70-125 | 0 | | | |
| Chloromethane | 852 | 100 | 1000 | 0 | 85.2 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 866.5 | 30 | 1000 | 0 | 86.6 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 811.5 | 30 | 1000 | 0 | 81.2 | 70-125 | 0 | | | |
| Dibromochloromethane | 866.5 | 30 | 1000 | 0 | 86.6 | 65-135 | 0 | | | |
| Dibromomethane | 894 | 30 | 1000 | 0 | 89.4 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 781.5 | 30 | 1000 | 0 | 78.2 | 35-135 | 0 | | | |
| Ethylbenzene | 1076 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 927.5 | 30 | 1000 | 0 | 92.8 | 70-135 | 0 | |
| Isopropylbenzene | 1118 | 30 | 1000 | 0 | 112 | 75-130 | 0 | |
| m,p-Xylene | 2163 | 60 | 2000 | 0 | 108 | 80-125 | 0 | |
| Methyl tert-butyl ether | 824.5 | 30 | 1000 | 0 | 82.4 | 75-125 | 0 | |
| Methylene chloride | 981 | 30 | 1000 | 0 | 98.1 | 55-145 | 0 | |
| Naphthalene | 836.5 | 100 | 1000 | 0 | 83.6 | 40-140 | 0 | |
| n-Butylbenzene | 1157 | 30 | 1000 | 0 | 116 | 65-140 | 0 | |
| n-Propylbenzene | 1032 | 30 | 1000 | 0 | 103 | 65-135 | 0 | |
| o-Xylene | 1064 | 30 | 1000 | 0 | 106 | 75-125 | 0 | |
| p-Isopropyltoluene | 1118 | 30 | 1000 | 0 | 112 | 75-135 | 0 | |
| sec-Butylbenzene | 962.5 | 30 | 1000 | 0 | 96.2 | 65-130 | 0 | |
| Styrene | 945.5 | 30 | 1000 | 0 | 94.6 | 75-125 | 0 | |
| tert-Butylbenzene | 1029 | 30 | 1000 | 0 | 103 | 65-130 | 0 | |
| Tetrachloroethene | 992.5 | 30 | 1000 | 0 | 99.2 | 64-140 | 0 | |
| Tetrahydrofuran | 828 | 200 | 1000 | 0 | 82.8 | 70-135 | 0 | |
| Toluene | 1010 | 30 | 1000 | 0 | 101 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 916.5 | 30 | 1000 | 0 | 91.6 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 848.5 | 30 | 1000 | 0 | 84.8 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 691 | 30 | 1000 | 0 | 69.1 | 70-135 | 0 | S |
| Trichloroethene | 894 | 30 | 1000 | 0 | 89.4 | 75-125 | 0 | |
| Trichlorofluoromethane | 879.5 | 30 | 1000 | 0 | 88 | 25-185 | 0 | |
| Vinyl chloride | 876 | 30 | 1000 | 0 | 87.6 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *887.5* | 0 | *1000* | 0 | *88.8* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *942* | 0 | *1000* | 0 | *94.2* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *962.5* | 0 | *1000* | 0 | *96.2* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1004* | 0 | *1000* | 0 | *100* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42531-42531** Units: **µg/Kg** Analysis Date: **7/24/2012 07:28 PM**
Client ID: Run ID: **VMS5_120724A** SeqNo: **2036171** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 985 | 30 | 1000 | 0 | 98.5 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1046 | 30 | 1000 | 0 | 105 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 817.5 | 30 | 1000 | 0 | 81.8 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 923 | 30 | 1000 | 0 | 92.3 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1084 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1160 | 30 | 1000 | 0 | 116 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 955.5 | 30 | 1000 | 0 | 95.6 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 841.5 | 30 | 1000 | 0 | 84.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 937 | 30 | 1000 | 0 | 93.7 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1037 | 30 | 1000 | 0 | 104 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1048 | 30 | 1000 | 0 | 105 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 759.5 | 30 | 1000 | 0 | 76 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 912.5 | 30 | 1000 | 0 | 91.2 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1022 | 30 | 1000 | 0 | 102 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1000 | 30 | 1000 | 0 | 100 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1026 | 30 | 1000 | 0 | 103 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1054 | 30 | 1000 | 0 | 105 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1041 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1048 | 30 | 1000 | 0 | 105 | 70-125 | 0 | | | |
| 2-Butanone | 816 | 200 | 1000 | 0 | 81.6 | 30-160 | 0 | | | |
| 2-Hexanone | 822 | 30 | 1000 | 0 | 82.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 879 | 30 | 1000 | 0 | 87.9 | 45-145 | 0 | | | |
| Acetone | 708 | 100 | 1000 | 0 | 70.8 | 20-160 | 0 | | | B |
| Acrylonitrile | 815.5 | 100 | 1000 | 0 | 81.6 | 70-135 | 0 | | | |
| Benzene | 1071 | 30 | 1000 | 0 | 107 | 75-125 | 0 | | | |
| Bromobenzene | 1035 | 30 | 1000 | 0 | 104 | 65-120 | 0 | | | |
| Bromochloromethane | 1099 | 30 | 1000 | 0 | 110 | 70-125 | 0 | | | |
| Bromodichloromethane | 993 | 30 | 1000 | 0 | 99.3 | 70-130 | 0 | | | |
| Bromoform | 892 | 30 | 1000 | 0 | 89.2 | 55-135 | 0 | | | |
| Bromomethane | 1947 | 75 | 1000 | 0 | 195 | 30-160 | 0 | | | S |
| Carbon disulfide | 1189 | 30 | 1000 | 0 | 119 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1082 | 30 | 1000 | 0 | 108 | 65-135 | 0 | | | |
| Chlorobenzene | 1030 | 30 | 1000 | 0 | 103 | 75-125 | 0 | | | |
| Chloroethane | 1104 | 100 | 1000 | 0 | 110 | 40-155 | 0 | | | |
| Chloroform | 1061 | 30 | 1000 | 0 | 106 | 70-125 | 0 | | | |
| Chloromethane | 1054 | 100 | 1000 | 0 | 105 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1102 | 30 | 1000 | 0 | 110 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 999 | 30 | 1000 | 0 | 99.9 | 70-125 | 0 | | | |
| Dibromochloromethane | 939 | 30 | 1000 | 0 | 93.9 | 65-135 | 0 | | | |
| Dibromomethane | 950.5 | 30 | 1000 | 0 | 95 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 983 | 30 | 1000 | 0 | 98.3 | 35-135 | 0 | | | |
| Ethylbenzene | 1061 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 869 | 30 | 1000 | 0 | 86.9 | 70-135 | 0 |
| Isopropylbenzene | 1048 | 30 | 1000 | 0 | 105 | 75-130 | 0 |
| m,p-Xylene | 2120 | 60 | 2000 | 0 | 106 | 80-125 | 0 |
| Methyl tert-butyl ether | 1012 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| Methylene chloride | 1090 | 30 | 1000 | 0 | 109 | 55-145 | 0 |
| Naphthalene | 883.5 | 100 | 1000 | 0 | 88.4 | 40-140 | 0 |
| n-Butylbenzene | 1093 | 30 | 1000 | 0 | 109 | 65-140 | 0 |
| n-Propylbenzene | 1051 | 30 | 1000 | 0 | 105 | 65-135 | 0 |
| o-Xylene | 1055 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| p-Isopropyltoluene | 1057 | 30 | 1000 | 0 | 106 | 75-135 | 0 |
| sec-Butylbenzene | 1068 | 30 | 1000 | 0 | 107 | 65-130 | 0 |
| Styrene | 1044 | 30 | 1000 | 0 | 104 | 75-125 | 0 |
| tert-Butylbenzene | 1028 | 30 | 1000 | 0 | 103 | 65-130 | 0 |
| Tetrachloroethene | 1071 | 30 | 1000 | 0 | 107 | 64-140 | 0 |
| Tetrahydrofuran | 733 | 200 | 1000 | 0 | 73.3 | 70-135 | 0 |
| Toluene | 1050 | 30 | 1000 | 0 | 105 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1170 | 30 | 1000 | 0 | 117 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 977.5 | 30 | 1000 | 0 | 97.8 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 885 | 30 | 1000 | 0 | 88.5 | 70-135 | 0 |
| Trichloroethene | 1058 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| Trichlorofluoromethane | 1074 | 30 | 1000 | 0 | 107 | 25-185 | 0 |
| Vinyl chloride | 1081 | 30 | 1000 | 0 | 108 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *819* | 0 | *1000* | 0 | *81.9* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1083* | 0 | *1000* | 0 | *108* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *850.5* | 0 | *1000* | 0 | *85* | *70-130* | 0 |
| *Surr: Toluene-d8* | *915* | 0 | *1000* | 0 | *91.5* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**MS** Sample ID: **1207629-01A MS** Units: **µg/Kg** Analysis Date: **7/25/2012 06:38 AM**
Client ID: Run ID: **VMS7_120724A** SeqNo: **2035943** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 2599 | 88 | 2922 | 0 | 89 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 2663 | 88 | 2922 | 0 | 91.2 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 2600 | 88 | 2922 | 0 | 89 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 2536 | 88 | 2922 | 0 | 86.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 2571 | 88 | 2922 | 0 | 88 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 2444 | 88 | 2922 | 0 | 83.6 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 2515 | 88 | 2922 | 0 | 86.1 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 2570 | 88 | 2922 | 0 | 88 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 2353 | 88 | 2922 | 0 | 80.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 2678 | 88 | 2922 | 0 | 91.6 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 2875 | 88 | 2922 | 0 | 98.4 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 2137 | 88 | 2922 | 0 | 73.2 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 2660 | 88 | 2922 | 0 | 91 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 2719 | 88 | 2922 | 0 | 93 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 2704 | 88 | 2922 | 0 | 92.6 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 2679 | 88 | 2922 | 0 | 91.7 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 2888 | 88 | 2922 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 2686 | 88 | 2922 | 0 | 92 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 2583 | 88 | 2922 | 0 | 88.4 | 70-125 | 0 | | | |
| 2-Butanone | 2835 | 290 | 2922 | 0 | 97 | 30-160 | 0 | | | |
| 2-Hexanone | 2887 | 88 | 2922 | 0 | 98.8 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 3830 | 88 | 2922 | 0 | 131 | 45-145 | 0 | | | |
| Acetone | 3645 | 290 | 2922 | 0 | 125 | 20-160 | 0 | | | B |
| Acrylonitrile | 2445 | 88 | 2922 | 0 | 83.7 | 70-135 | 0 | | | |
| Benzene | 2755 | 88 | 2922 | 0 | 94.3 | 75-125 | 0 | | | |
| Bromobenzene | 2824 | 88 | 2922 | 0 | 96.6 | 65-120 | 0 | | | |
| Bromochloromethane | 2549 | 88 | 2922 | 0 | 87.2 | 70-125 | 0 | | | |
| Bromodichloromethane | 2584 | 88 | 2922 | 0 | 88.4 | 70-130 | 0 | | | |
| Bromoform | 2244 | 88 | 2922 | 0 | 76.8 | 55-135 | 0 | | | |
| Bromomethane | 769.8 | 88 | 2922 | 0 | 26.4 | 30-160 | 0 | | | S |
| Carbon disulfide | 2713 | 88 | 2922 | 0 | 92.8 | 45-160 | 0 | | | |
| Carbon tetrachloride | 2721 | 88 | 2922 | 0 | 93.2 | 65-135 | 0 | | | |
| Chlorobenzene | 2746 | 88 | 2922 | 0 | 94 | 75-125 | 0 | | | |
| Chloroethane | 1500 | 290 | 2922 | 0 | 51.4 | 40-155 | 0 | | | |
| Chloroform | 2628 | 88 | 2922 | 0 | 90 | 70-125 | 0 | | | |
| Chloromethane | 2653 | 88 | 2922 | 0 | 90.8 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 2594 | 88 | 2922 | 0 | 88.8 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 2406 | 88 | 2922 | 0 | 82.4 | 70-125 | 0 | | | |
| Dibromochloromethane | 2264 | 88 | 2922 | 0 | 77.5 | 65-135 | 0 | | | |
| Dibromomethane | 2527 | 88 | 2922 | 0 | 86.5 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 2035 | 88 | 2922 | 0 | 69.6 | 35-135 | 0 | | | |
| Ethylbenzene | 2822 | 88 | 2922 | 0 | 96.6 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 2101 | 88 | 2922 | 0 | 71.9 | 70-135 | 0 |
| Isopropylbenzene | 2812 | 88 | 2922 | 0 | 96.2 | 75-130 | 0 |
| m,p-Xylene | 5970 | 180 | 5843 | 0 | 102 | 80-125 | 0 |
| Methyl tert-butyl ether | 2672 | 88 | 2922 | 0 | 91.4 | 75-125 | 0 |
| Methylene chloride | 2571 | 88 | 2922 | 0 | 88 | 55-145 | 0 |
| Naphthalene | 2480 | 290 | 2922 | 0 | 84.9 | 40-140 | 0 |
| n-Butylbenzene | 2568 | 88 | 2922 | 0 | 87.9 | 65-140 | 0 |
| n-Propylbenzene | 2799 | 88 | 2922 | 0 | 95.8 | 65-135 | 0 |
| o-Xylene | 2793 | 88 | 2922 | 0 | 95.6 | 75-125 | 0 |
| p-Isopropyltoluene | 2644 | 88 | 2922 | 0 | 90.5 | 75-135 | 0 |
| sec-Butylbenzene | 2862 | 88 | 2922 | 0 | 98 | 65-130 | 0 |
| Styrene | 2854 | 88 | 2922 | 0 | 97.7 | 75-125 | 0 |
| tert-Butylbenzene | 2797 | 88 | 2922 | 0 | 95.8 | 65-130 | 0 |
| Tetrachloroethene | 2868 | 88 | 2922 | 0 | 98.2 | 64-140 | 0 |
| Tetrahydrofuran | 2526 | 290 | 2922 | 0 | 86.4 | 70-135 | 0 |
| Toluene | 2793 | 88 | 2922 | 37.98 | 94.3 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 2644 | 88 | 2922 | 0 | 90.5 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 2488 | 88 | 2922 | 0 | 85.2 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 2191 | 88 | 2922 | 0 | 75 | 70-135 | 0 |
| Trichloroethene | 2621 | 88 | 2922 | 0 | 89.7 | 75-125 | 0 |
| Trichlorofluoromethane | 1689 | 88 | 2922 | 0 | 57.8 | 25-185 | 0 |
| Vinyl chloride | 2163 | 88 | 2922 | 0 | 74 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *2847* | 0 | *2922* | 0 | *97.4* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *2973* | 0 | *2922* | 0 | *102* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *2865* | 0 | *2922* | 0 | *98* | *70-130* | 0 |
| *Surr: Toluene-d8* | *2894* | 0 | *2922* | 0 | *99* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1207629-01A MSD** Units: **µg/Kg** Analysis Date: **7/25/2012 07:05 AM**

Client ID: Run ID: **VMS7_120724A** SeqNo: **2035944** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 2634 | 88 | 2922 | 0 | 90.2 | 75-125 | 2599 | 1.34 | 30 | |
| 1,1,1-Trichloroethane | 2685 | 88 | 2922 | 0 | 91.9 | 70-135 | 2663 | 0.819 | 30 | |
| 1,1,2,2-Tetrachloroethane | 2685 | 88 | 2922 | 0 | 91.9 | 55-130 | 2600 | 3.21 | 30 | |
| 1,1,2-Trichloroethane | 2615 | 88 | 2922 | 0 | 89.5 | 60-125 | 2536 | 3.06 | 30 | |
| 1,1-Dichloroethane | 2640 | 88 | 2922 | 0 | 90.4 | 75-125 | 2571 | 2.64 | 30 | |
| 1,1-Dichloroethene | 2485 | 88 | 2922 | 0 | 85 | 65-135 | 2444 | 1.66 | 30 | |
| 1,2,3-Trichlorobenzene | 2721 | 88 | 2922 | 0 | 93.2 | 60-135 | 2515 | 7.87 | 30 | |
| 1,2,3-Trichloropropane | 2704 | 88 | 2922 | 0 | 92.6 | 65-130 | 2570 | 5.1 | 30 | |
| 1,2,3-Trimethylbenzene | 2460 | 88 | 2922 | 0 | 84.2 | 65-135 | 2353 | 4.43 | 30 | |
| 1,2,4-Trichlorobenzene | 2913 | 88 | 2922 | 0 | 99.7 | 65-130 | 2678 | 8.41 | 30 | |
| 1,2,4-Trimethylbenzene | 2932 | 88 | 2922 | 0 | 100 | 65-135 | 2875 | 1.96 | 30 | |
| 1,2-Dibromo-3-chloropropane | 2250 | 88 | 2922 | 0 | 77 | 40-135 | 2137 | 5.13 | 30 | |
| 1,2-Dibromoethane | 2754 | 88 | 2922 | 0 | 94.2 | 70-125 | 2660 | 3.45 | 30 | |
| 1,2-Dichlorobenzene | 2802 | 88 | 2922 | 0 | 95.9 | 75-120 | 2719 | 3.02 | 30 | |
| 1,2-Dichloroethane | 2743 | 88 | 2922 | 0 | 93.9 | 70-135 | 2704 | 1.45 | 30 | |
| 1,2-Dichloropropane | 2732 | 88 | 2922 | 0 | 93.5 | 70-120 | 2679 | 1.94 | 30 | |
| 1,3,5-Trimethylbenzene | 2951 | 88 | 2922 | 0 | 101 | 65-135 | 2888 | 2.15 | 30 | |
| 1,3-Dichlorobenzene | 2809 | 88 | 2922 | 0 | 96.2 | 70-125 | 2686 | 4.47 | 30 | |
| 1,4-Dichlorobenzene | 2660 | 88 | 2922 | 0 | 91 | 70-125 | 2583 | 2.95 | 30 | |
| 2-Butanone | 2981 | 290 | 2922 | 0 | 102 | 30-160 | 2835 | 5.02 | 30 | |
| 2-Hexanone | 3005 | 88 | 2922 | 0 | 103 | 45-145 | 2887 | 4.02 | 30 | |
| 4-Methyl-2-pentanone | 3960 | 88 | 2922 | 0 | 136 | 45-145 | 3830 | 3.34 | 30 | |
| Acetone | 3835 | 290 | 2922 | 0 | 131 | 20-160 | 3645 | 5.08 | 30 | B |
| Acrylonitrile | 2580 | 88 | 2922 | 0 | 88.3 | 70-135 | 2445 | 5.35 | 30 | |
| Benzene | 2787 | 88 | 2922 | 0 | 95.4 | 75-125 | 2755 | 1.16 | 30 | |
| Bromobenzene | 2885 | 88 | 2922 | 0 | 98.8 | 65-120 | 2824 | 2.15 | 30 | |
| Bromochloromethane | 2634 | 88 | 2922 | 0 | 90.2 | 70-125 | 2549 | 3.27 | 30 | |
| Bromodichloromethane | 2635 | 88 | 2922 | 0 | 90.2 | 70-130 | 2584 | 1.96 | 30 | |
| Bromoform | 2349 | 88 | 2922 | 0 | 80.4 | 55-135 | 2244 | 4.58 | 30 | |
| Bromomethane | 1388 | 88 | 2922 | 0 | 47.5 | 30-160 | 769.8 | 57.3 | 30 | R |
| Carbon disulfide | 2761 | 88 | 2922 | 0 | 94.5 | 45-160 | 2713 | 1.76 | 30 | |
| Carbon tetrachloride | 2745 | 88 | 2922 | 0 | 94 | 65-135 | 2721 | 0.855 | 30 | |
| Chlorobenzene | 2806 | 88 | 2922 | 0 | 96 | 75-125 | 2746 | 2.16 | 30 | |
| Chloroethane | 1258 | 290 | 2922 | 0 | 43 | 40-155 | 1500 | 17.6 | 30 | |
| Chloroform | 2708 | 88 | 2922 | 0 | 92.7 | 70-125 | 2628 | 3.01 | 30 | |
| Chloromethane | 2854 | 88 | 2922 | 0 | 97.7 | 50-130 | 2653 | 7.32 | 30 | |
| cis-1,2-Dichloroethene | 2644 | 88 | 2922 | 0 | 90.5 | 65-125 | 2594 | 1.9 | 30 | |
| cis-1,3-Dichloropropene | 2479 | 88 | 2922 | 0 | 84.8 | 70-125 | 2406 | 2.99 | 30 | |
| Dibromochloromethane | 2301 | 88 | 2922 | 0 | 78.8 | 65-135 | 2264 | 1.6 | 30 | |
| Dibromomethane | 2616 | 88 | 2922 | 0 | 89.6 | 75-130 | 2527 | 3.46 | 30 | |
| Dichlorodifluoromethane | 2055 | 88 | 2922 | 0 | 70.4 | 35-135 | 2035 | 1 | 30 | |
| Ethylbenzene | 2840 | 88 | 2922 | 0 | 97.2 | 75-125 | 2822 | 0.619 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42531** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 2220 | 88 | 2922 | 0 | 76 | 70-135 | 2101 | 5.54 | 30 |
| Isopropylbenzene | 2888 | 88 | 2922 | 0 | 98.8 | 75-130 | 2812 | 2.67 | 30 |
| m,p-Xylene | 5827 | 180 | 5843 | 0 | 99.7 | 80-125 | 5970 | 2.43 | 30 |
| Methyl tert-butyl ether | 2784 | 88 | 2922 | 0 | 95.3 | 75-125 | 2672 | 4.12 | 30 |
| Methylene chloride | 2625 | 88 | 2922 | 0 | 89.8 | 55-145 | 2571 | 2.08 | 30 |
| Naphthalene | 2702 | 290 | 2922 | 0 | 92.5 | 40-140 | 2480 | 8.57 | 30 |
| n-Butylbenzene | 2710 | 88 | 2922 | 0 | 92.8 | 65-140 | 2568 | 5.37 | 30 |
| n-Propylbenzene | 2850 | 88 | 2922 | 0 | 97.6 | 65-135 | 2799 | 1.81 | 30 |
| o-Xylene | 2866 | 88 | 2922 | 0 | 98.1 | 75-125 | 2793 | 2.58 | 30 |
| p-Isopropyltoluene | 2717 | 88 | 2922 | 0 | 93 | 75-135 | 2644 | 2.72 | 30 |
| sec-Butylbenzene | 2923 | 88 | 2922 | 0 | 100 | 65-130 | 2862 | 2.12 | 30 |
| Styrene | 2920 | 88 | 2922 | 0 | 100 | 75-125 | 2854 | 2.28 | 30 |
| tert-Butylbenzene | 2835 | 88 | 2922 | 0 | 97 | 65-130 | 2797 | 1.35 | 30 |
| Tetrachloroethene | 2873 | 88 | 2922 | 0 | 98.4 | 64-140 | 2868 | 0.204 | 30 |
| Tetrahydrofuran | 2669 | 290 | 2922 | 0 | 91.4 | 70-135 | 2526 | 5.51 | 30 |
| Toluene | 2809 | 88 | 2922 | 37.98 | 94.8 | 70-125 | 2793 | 0.574 | 30 |
| trans-1,2-Dichloroethene | 2758 | 88 | 2922 | 0 | 94.4 | 65-135 | 2644 | 4.22 | 30 |
| trans-1,3-Dichloropropene | 2564 | 88 | 2922 | 0 | 87.8 | 65-125 | 2488 | 3.01 | 30 |
| trans-1,4-Dichloro-2-butene | 2258 | 88 | 2922 | 0 | 77.3 | 70-135 | 2191 | 3.02 | 30 |
| Trichloroethene | 2657 | 88 | 2922 | 0 | 91 | 75-125 | 2621 | 1.38 | 30 |
| Trichlorofluoromethane | 1751 | 88 | 2922 | 0 | 60 | 25-185 | 1689 | 3.65 | 30 |
| Vinyl chloride | 2200 | 88 | 2922 | 0 | 75.3 | 60-125 | 2163 | 1.67 | 30 |
| *Surr: 1,2-Dichloroethane-d4* | *2945* | 0 | *2922* | 0 | *101* | *70-130* | 2847 | *3.38* | *30* |
| *Surr: 4-Bromofluorobenzene* | *3025* | 0 | *2922* | 0 | *104* | *70-130* | 2973 | *1.75* | *30* |
| *Surr: Dibromofluoromethane* | *2968* | 0 | *2922* | 0 | *102* | *70-130* | 2865 | *3.56* | *30* |
| *Surr: Toluene-d8* | *2943* | 0 | *2922* | 0 | *101* | *70-130* | 2894 | *1.7* | *30* |

**The following samples were analyzed in this batch:** 1207631-01A 1207631-02A 1207631-03A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42539-42539** Units: **µg/Kg** Analysis Date: **7/24/2012 09:48 PM**
Client ID: Run ID: **VMS7_120724A** SeqNo: **2035045** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 344 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 24.5 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *991* | 0 | *1000* | 0 | *99.1* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1017* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *943.5* | 0 | *1000* | 0 | *94.4* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *997* | 0 | *1000* | 0 | *99.7* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42539-42539** Units: **µg/Kg** Analysis Date: **7/25/2012 12:25 PM**
Client ID: Run ID: **VMS6_120724A** SeqNo: **2036360** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 132 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *998.5* | 0 | *1000* | 0 | *99.8* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1010* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *959.5* | 0 | *1000* | 0 | *96* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1018* | 0 | *1000* | 0 | *102* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42539-42539** Units: **µg/Kg** Analysis Date: **7/25/2012 04:58 PM**
Client ID: Run ID: **VMS8_120725A** SeqNo: **2036863** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 191 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | 85.5 | 100 | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1038* | 0 | *1000* | 0 | *104* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *986* | 0 | *1000* | 0 | *98.6* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *983* | 0 | *1000* | 0 | *98.3* | *70-130* | 0 |
| *Surr: Toluene-d8* | *969* | 0 | *1000* | 0 | *96.9* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42539-42539** Units: **µg/Kg** Analysis Date: **7/24/2012 08:31 PM**
Client ID: Run ID: **VMS7_120724A** SeqNo: **2035044** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 930 | 30 | 1000 | 0 | 93 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 957 | 30 | 1000 | 0 | 95.7 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 914.5 | 30 | 1000 | 0 | 91.4 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 899 | 30 | 1000 | 0 | 89.9 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 910.5 | 30 | 1000 | 0 | 91 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 948.5 | 30 | 1000 | 0 | 94.8 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1020 | 30 | 1000 | 0 | 102 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 916 | 30 | 1000 | 0 | 91.6 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 883.5 | 30 | 1000 | 0 | 88.4 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1040 | 30 | 1000 | 0 | 104 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 986 | 30 | 1000 | 0 | 98.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 845.5 | 30 | 1000 | 0 | 84.6 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 966 | 30 | 1000 | 0 | 96.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 987 | 30 | 1000 | 0 | 98.7 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 950 | 30 | 1000 | 0 | 95 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 934 | 30 | 1000 | 0 | 93.4 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 987.5 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 971.5 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 940 | 30 | 1000 | 0 | 94 | 70-125 | 0 | | | |
| 2-Butanone | 910 | 200 | 1000 | 0 | 91 | 30-160 | 0 | | | |
| 2-Hexanone | 911.5 | 30 | 1000 | 0 | 91.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1231 | 30 | 1000 | 0 | 123 | 45-145 | 0 | | | |
| Acetone | 1159 | 100 | 1000 | 0 | 116 | 20-160 | 0 | | | B |
| Acrylonitrile | 838.5 | 100 | 1000 | 0 | 83.8 | 70-135 | 0 | | | |
| Benzene | 946 | 30 | 1000 | 0 | 94.6 | 75-125 | 0 | | | |
| Bromobenzene | 970.5 | 30 | 1000 | 0 | 97 | 65-120 | 0 | | | |
| Bromochloromethane | 1013 | 30 | 1000 | 0 | 101 | 70-125 | 0 | | | |
| Bromodichloromethane | 951.5 | 30 | 1000 | 0 | 95.2 | 70-130 | 0 | | | |
| Bromoform | 845 | 30 | 1000 | 0 | 84.5 | 55-135 | 0 | | | |
| Bromomethane | 1099 | 75 | 1000 | 0 | 110 | 30-160 | 0 | | | |
| Carbon disulfide | 1028 | 30 | 1000 | 0 | 103 | 45-160 | 0 | | | |
| Carbon tetrachloride | 993 | 30 | 1000 | 0 | 99.3 | 65-135 | 0 | | | |
| Chlorobenzene | 959.5 | 30 | 1000 | 0 | 96 | 75-125 | 0 | | | |
| Chloroethane | 924 | 100 | 1000 | 0 | 92.4 | 40-155 | 0 | | | |
| Chloroform | 924.5 | 30 | 1000 | 0 | 92.4 | 70-125 | 0 | | | |
| Chloromethane | 799 | 100 | 1000 | 0 | 79.9 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 924.5 | 30 | 1000 | 0 | 92.4 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 900.5 | 30 | 1000 | 0 | 90 | 70-125 | 0 | | | |
| Dibromochloromethane | 848 | 30 | 1000 | 0 | 84.8 | 65-135 | 0 | | | |
| Dibromomethane | 921 | 30 | 1000 | 0 | 92.1 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 565.5 | 30 | 1000 | 0 | 56.6 | 35-135 | 0 | | | |
| Ethylbenzene | 968 | 30 | 1000 | 0 | 96.8 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 795 | 30 | 1000 | 0 | 79.5 | 70-135 | 0 |
| Isopropylbenzene | 973 | 30 | 1000 | 0 | 97.3 | 75-130 | 0 |
| m,p-Xylene | 1956 | 60 | 2000 | 0 | 97.8 | 80-125 | 0 |
| Methyl tert-butyl ether | 897 | 30 | 1000 | 0 | 89.7 | 75-125 | 0 |
| Methylene chloride | 946.5 | 30 | 1000 | 0 | 94.6 | 55-145 | 0 |
| Naphthalene | 997 | 100 | 1000 | 0 | 99.7 | 40-140 | 0 |
| n-Butylbenzene | 988.5 | 30 | 1000 | 0 | 98.8 | 65-140 | 0 |
| n-Propylbenzene | 958.5 | 30 | 1000 | 0 | 95.8 | 65-135 | 0 |
| o-Xylene | 965.5 | 30 | 1000 | 0 | 96.6 | 75-125 | 0 |
| p-Isopropyltoluene | 973 | 30 | 1000 | 0 | 97.3 | 75-135 | 0 |
| sec-Butylbenzene | 987.5 | 30 | 1000 | 0 | 98.8 | 65-130 | 0 |
| Styrene | 994 | 30 | 1000 | 0 | 99.4 | 75-125 | 0 |
| tert-Butylbenzene | 957.5 | 30 | 1000 | 0 | 95.8 | 65-130 | 0 |
| Tetrachloroethene | 1008 | 30 | 1000 | 0 | 101 | 64-140 | 0 |
| Tetrahydrofuran | 851.5 | 200 | 1000 | 0 | 85.2 | 70-135 | 0 |
| Toluene | 964 | 30 | 1000 | 0 | 96.4 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 953.5 | 30 | 1000 | 0 | 95.4 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 943.5 | 30 | 1000 | 0 | 94.4 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 796 | 30 | 1000 | 0 | 79.6 | 70-135 | 0 |
| Trichloroethene | 911.5 | 30 | 1000 | 0 | 91.2 | 75-125 | 0 |
| Trichlorofluoromethane | 802 | 30 | 1000 | 0 | 80.2 | 25-185 | 0 |
| Vinyl chloride | 723 | 30 | 1000 | 0 | 72.3 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1000* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *994* | 0 | *1000* | 0 | *99.4* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1008* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1000* | 0 | *1000* | 0 | *100* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42539-42539** | | | | Units: **µg/Kg** | | Analysis Date: **7/24/2012 11:12 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS6_120724A** | | | SeqNo: **2036359** | | Prep Date: **7/24/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 1094 | 30 | 1000 | 0 | 109 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1114 | 30 | 1000 | 0 | 111 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1053 | 30 | 1000 | 0 | 105 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 966 | 30 | 1000 | 0 | 96.6 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1028 | 30 | 1000 | 0 | 103 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1078 | 30 | 1000 | 0 | 108 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1065 | 30 | 1000 | 0 | 106 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1001 | 30 | 1000 | 0 | 100 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 997.5 | 30 | 1000 | 0 | 99.8 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1136 | 30 | 1000 | 0 | 114 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1089 | 30 | 1000 | 0 | 109 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 938 | 30 | 1000 | 0 | 93.8 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1038 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1108 | 30 | 1000 | 0 | 111 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1058 | 30 | 1000 | 0 | 106 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1091 | 30 | 1000 | 0 | 109 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1156 | 30 | 1000 | 0 | 116 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1067 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1071 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| 2-Butanone | 893.5 | 200 | 1000 | 0 | 89.4 | 30-160 | 0 | | | |
| 2-Hexanone | 897 | 30 | 1000 | 0 | 89.7 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1188 | 30 | 1000 | 0 | 119 | 45-145 | 0 | | | |
| Acetone | 942.5 | 100 | 1000 | 0 | 94.2 | 20-160 | 0 | | | B |
| Acrylonitrile | 987.5 | 100 | 1000 | 0 | 98.8 | 70-135 | 0 | | | |
| Benzene | 1084 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| Bromobenzene | 1125 | 30 | 1000 | 0 | 112 | 65-120 | 0 | | | |
| Bromochloromethane | 1064 | 30 | 1000 | 0 | 106 | 70-125 | 0 | | | |
| Bromodichloromethane | 1076 | 30 | 1000 | 0 | 108 | 70-130 | 0 | | | |
| Bromoform | 1077 | 30 | 1000 | 0 | 108 | 55-135 | 0 | | | |
| Bromomethane | 1482 | 75 | 1000 | 0 | 148 | 30-160 | 0 | | | |
| Carbon disulfide | 1135 | 30 | 1000 | 0 | 114 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1108 | 30 | 1000 | 0 | 111 | 65-135 | 0 | | | |
| Chlorobenzene | 1100 | 30 | 1000 | 0 | 110 | 75-125 | 0 | | | |
| Chloroethane | 942 | 100 | 1000 | 0 | 94.2 | 40-155 | 0 | | | |
| Chloroform | 1038 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| Chloromethane | 909 | 100 | 1000 | 0 | 90.9 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1051 | 30 | 1000 | 0 | 105 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1080 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| Dibromochloromethane | 1058 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| Dibromomethane | 1072 | 30 | 1000 | 0 | 107 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 602.5 | 30 | 1000 | 0 | 60.2 | 35-135 | 0 | | | |
| Ethylbenzene | 1124 | 30 | 1000 | 0 | 112 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 954.5 | 30 | 1000 | 0 | 95.4 | 70-135 | 0 |
| Isopropylbenzene | 1118 | 30 | 1000 | 0 | 112 | 75-130 | 0 |
| m,p-Xylene | 2257 | 60 | 2000 | 0 | 113 | 80-125 | 0 |
| Methyl tert-butyl ether | 924.5 | 30 | 1000 | 0 | 92.4 | 75-125 | 0 |
| Methylene chloride | 1088 | 30 | 1000 | 0 | 109 | 55-145 | 0 |
| Naphthalene | 1030 | 100 | 1000 | 0 | 103 | 40-140 | 0 |
| n-Butylbenzene | 1150 | 30 | 1000 | 0 | 115 | 65-140 | 0 |
| n-Propylbenzene | 1104 | 30 | 1000 | 0 | 110 | 65-135 | 0 |
| o-Xylene | 1110 | 30 | 1000 | 0 | 111 | 75-125 | 0 |
| p-Isopropyltoluene | 1118 | 30 | 1000 | 0 | 112 | 75-135 | 0 |
| sec-Butylbenzene | 1094 | 30 | 1000 | 0 | 109 | 65-130 | 0 |
| Styrene | 1071 | 30 | 1000 | 0 | 107 | 75-125 | 0 |
| tert-Butylbenzene | 1112 | 30 | 1000 | 0 | 111 | 65-130 | 0 |
| Tetrachloroethene | 1119 | 30 | 1000 | 0 | 112 | 64-140 | 0 |
| Tetrahydrofuran | 853.5 | 200 | 1000 | 0 | 85.4 | 70-135 | 0 |
| Toluene | 1103 | 30 | 1000 | 0 | 110 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1090 | 30 | 1000 | 0 | 109 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1089 | 30 | 1000 | 0 | 109 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 810 | 30 | 1000 | 0 | 81 | 70-135 | 0 |
| Trichloroethene | 1075 | 30 | 1000 | 0 | 108 | 75-125 | 0 |
| Trichlorofluoromethane | 836 | 30 | 1000 | 0 | 83.6 | 25-185 | 0 |
| Vinyl chloride | 877 | 30 | 1000 | 0 | 87.7 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *985* | 0 | *1000* | 0 | *98.5* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *977.5* | 0 | *1000* | 0 | *97.8* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *987* | 0 | *1000* | 0 | *98.7* | *70-130* | 0 |
| *Surr: Toluene-d8* | *976* | 0 | *1000* | 0 | *97.6* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42539-42539** Units: **µg/Kg** Analysis Date: **7/25/2012 03:38 PM**
Client ID: Run ID: **VMS8_120725A** SeqNo: **2036862** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1123 | 30 | 1000 | 0 | 112 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1170 | 30 | 1000 | 0 | 117 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1106 | 30 | 1000 | 0 | 111 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1028 | 30 | 1000 | 0 | 103 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1076 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1184 | 30 | 1000 | 0 | 118 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1196 | 30 | 1000 | 0 | 120 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1092 | 30 | 1000 | 0 | 109 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 971.5 | 30 | 1000 | 0 | 97.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1214 | 30 | 1000 | 0 | 121 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 988.5 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 991 | 30 | 1000 | 0 | 99.1 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1044 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1077 | 30 | 1000 | 0 | 108 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1112 | 30 | 1000 | 0 | 111 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1120 | 30 | 1000 | 0 | 112 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1138 | 30 | 1000 | 0 | 114 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1084 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1114 | 30 | 1000 | 0 | 111 | 70-125 | 0 | | | |
| 2-Butanone | 1120 | 200 | 1000 | 0 | 112 | 30-160 | 0 | | | |
| 2-Hexanone | 1057 | 30 | 1000 | 0 | 106 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1199 | 30 | 1000 | 0 | 120 | 45-145 | 0 | | | |
| Acetone | 875 | 100 | 1000 | 0 | 87.5 | 20-160 | 0 | | | B |
| Acrylonitrile | 982 | 100 | 1000 | 0 | 98.2 | 70-135 | 0 | | | |
| Benzene | 1082 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| Bromobenzene | 1110 | 30 | 1000 | 0 | 111 | 65-120 | 0 | | | |
| Bromochloromethane | 1160 | 30 | 1000 | 0 | 116 | 70-125 | 0 | | | |
| Bromodichloromethane | 1019 | 30 | 1000 | 0 | 102 | 70-130 | 0 | | | |
| Bromoform | 1004 | 30 | 1000 | 0 | 100 | 55-135 | 0 | | | |
| Bromomethane | 1108 | 75 | 1000 | 0 | 111 | 30-160 | 0 | | | |
| Carbon disulfide | 1249 | 30 | 1000 | 0 | 125 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1174 | 30 | 1000 | 0 | 117 | 65-135 | 0 | | | |
| Chlorobenzene | 1104 | 30 | 1000 | 0 | 110 | 75-125 | 0 | | | |
| Chloroethane | 1062 | 100 | 1000 | 0 | 106 | 40-155 | 0 | | | |
| Chloroform | 1024 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| Chloromethane | 952 | 100 | 1000 | 0 | 95.2 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1072 | 30 | 1000 | 0 | 107 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1018 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| Dibromochloromethane | 1005 | 30 | 1000 | 0 | 100 | 65-135 | 0 | | | |
| Dibromomethane | 1052 | 30 | 1000 | 0 | 105 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 986.5 | 30 | 1000 | 0 | 98.6 | 35-135 | 0 | | | |
| Ethylbenzene | 1128 | 30 | 1000 | 0 | 113 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 964.5 | 30 | 1000 | 0 | 96.4 | 70-135 | 0 |
| Isopropylbenzene | 1128 | 30 | 1000 | 0 | 113 | 75-130 | 0 |
| m,p-Xylene | 2284 | 60 | 2000 | 0 | 114 | 80-125 | 0 |
| Methyl tert-butyl ether | 960 | 30 | 1000 | 0 | 96 | 75-125 | 0 |
| Methylene chloride | 1073 | 30 | 1000 | 0 | 107 | 55-145 | 0 |
| Naphthalene | 1120 | 100 | 1000 | 0 | 112 | 40-140 | 0 |
| n-Butylbenzene | 1215 | 30 | 1000 | 0 | 122 | 65-140 | 0 |
| n-Propylbenzene | 1126 | 30 | 1000 | 0 | 113 | 65-135 | 0 |
| o-Xylene | 1108 | 30 | 1000 | 0 | 111 | 75-125 | 0 |
| p-Isopropyltoluene | 1157 | 30 | 1000 | 0 | 116 | 75-135 | 0 |
| sec-Butylbenzene | 1202 | 30 | 1000 | 0 | 120 | 65-130 | 0 |
| Styrene | 1102 | 30 | 1000 | 0 | 110 | 75-125 | 0 |
| tert-Butylbenzene | 1181 | 30 | 1000 | 0 | 118 | 65-130 | 0 |
| Tetrachloroethene | 1224 | 30 | 1000 | 0 | 122 | 64-140 | 0 |
| Tetrahydrofuran | 1032 | 200 | 1000 | 0 | 103 | 70-135 | 0 |
| Toluene | 1120 | 30 | 1000 | 0 | 112 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1140 | 30 | 1000 | 0 | 114 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1033 | 30 | 1000 | 0 | 103 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 983 | 30 | 1000 | 0 | 98.3 | 70-135 | 0 |
| Trichloroethene | 1135 | 30 | 1000 | 0 | 114 | 75-125 | 0 |
| Trichlorofluoromethane | 1023 | 30 | 1000 | 0 | 102 | 25-185 | 0 |
| Vinyl chloride | 1010 | 30 | 1000 | 0 | 101 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1006* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1019* | 0 | *1000* | 0 | *102* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1003* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *998.5* | 0 | *1000* | 0 | *99.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MS** Sample ID: **1207633-03A MS** Units: **µg/Kg** Analysis Date: **7/26/2012 01:20 AM**
Client ID: Run ID: **VMS8_120725A** SeqNo: **2036859** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 2368 | 65 | 2175 | 0 | 109 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 2541 | 65 | 2175 | 0 | 117 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 2169 | 65 | 2175 | 0 | 99.8 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 2154 | 65 | 2175 | 0 | 99 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 2376 | 65 | 2175 | 0 | 109 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 2588 | 65 | 2175 | 0 | 119 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1867 | 65 | 2175 | 0 | 85.8 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 2117 | 65 | 2175 | 0 | 97.4 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 2026 | 65 | 2175 | 0 | 93.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1970 | 65 | 2175 | 0 | 90.6 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 2056 | 65 | 2175 | 0 | 94.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 1778 | 65 | 2175 | 0 | 81.8 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 2166 | 65 | 2175 | 0 | 99.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 2153 | 65 | 2175 | 0 | 99 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 2425 | 65 | 2175 | 0 | 112 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 2493 | 65 | 2175 | 0 | 115 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 2396 | 65 | 2175 | 0 | 110 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 2277 | 65 | 2175 | 0 | 105 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 2251 | 65 | 2175 | 0 | 104 | 70-125 | 0 | | | |
| 2-Butanone | 2564 | 220 | 2175 | 0 | 118 | 30-160 | 0 | | | |
| 2-Hexanone | 2106 | 65 | 2175 | 0 | 96.8 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 2478 | 65 | 2175 | 0 | 114 | 45-145 | 0 | | | |
| Acetone | 2304 | 220 | 2175 | 103.3 | 101 | 20-160 | 0 | | | B |
| Acrylonitrile | 2100 | 65 | 2175 | 0 | 96.6 | 70-135 | 0 | | | |
| Benzene | 2414 | 65 | 2175 | 0 | 111 | 75-125 | 0 | | | |
| Bromobenzene | 2334 | 65 | 2175 | 0 | 107 | 65-120 | 0 | | | |
| Bromochloromethane | 2563 | 65 | 2175 | 0 | 118 | 70-125 | 0 | | | |
| Bromodichloromethane | 2101 | 65 | 2175 | 0 | 96.6 | 70-130 | 0 | | | |
| Bromoform | 1908 | 65 | 2175 | 0 | 87.8 | 55-135 | 0 | | | |
| Bromomethane | 2191 | 65 | 2175 | 0 | 101 | 30-160 | 0 | | | |
| Carbon disulfide | 2561 | 65 | 2175 | 0 | 118 | 45-160 | 0 | | | |
| Carbon tetrachloride | 2516 | 65 | 2175 | 0 | 116 | 65-135 | 0 | | | |
| Chlorobenzene | 2369 | 65 | 2175 | 0 | 109 | 75-125 | 0 | | | |
| Chloroethane | 2083 | 220 | 2175 | 0 | 95.8 | 40-155 | 0 | | | |
| Chloroform | 2366 | 65 | 2175 | 0 | 109 | 70-125 | 0 | | | |
| Chloromethane | 2016 | 65 | 2175 | 0 | 92.7 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 2398 | 65 | 2175 | 0 | 110 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 2145 | 65 | 2175 | 0 | 98.6 | 70-125 | 0 | | | |
| Dibromochloromethane | 1973 | 65 | 2175 | 0 | 90.8 | 65-135 | 0 | | | |
| Dibromomethane | 2268 | 65 | 2175 | 0 | 104 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 1701 | 65 | 2175 | 0 | 78.2 | 35-135 | 0 | | | |
| Ethylbenzene | 2427 | 65 | 2175 | 0 | 112 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1816 | 65 | 2175 | 0 | 83.5 | 70-135 | 0 |
| Isopropylbenzene | 2434 | 65 | 2175 | 0 | 112 | 75-130 | 0 |
| m,p-Xylene | 4906 | 130 | 4349 | 0 | 113 | 80-125 | 0 |
| Methyl tert-butyl ether | 2147 | 65 | 2175 | 0 | 98.8 | 75-125 | 0 |
| Methylene chloride | 2391 | 65 | 2175 | 0 | 110 | 55-145 | 0 |
| Naphthalene | 1819 | 220 | 2175 | 0 | 83.6 | 40-140 | 0 |
| n-Butylbenzene | 2322 | 65 | 2175 | 0 | 107 | 65-140 | 0 |
| n-Propylbenzene | 2390 | 65 | 2175 | 0 | 110 | 65-135 | 0 |
| o-Xylene | 2415 | 65 | 2175 | 0 | 111 | 75-125 | 0 |
| p-Isopropyltoluene | 2314 | 65 | 2175 | 0 | 106 | 75-135 | 0 |
| sec-Butylbenzene | 2466 | 65 | 2175 | 0 | 113 | 65-130 | 0 |
| Styrene | 2328 | 65 | 2175 | 0 | 107 | 75-125 | 0 |
| tert-Butylbenzene | 2446 | 65 | 2175 | 0 | 112 | 65-130 | 0 |
| Tetrachloroethene | 2665 | 65 | 2175 | 0 | 123 | 64-140 | 0 |
| Tetrahydrofuran | 2254 | 220 | 2175 | 0 | 104 | 70-135 | 0 |
| Toluene | 2408 | 65 | 2175 | 0 | 111 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 2487 | 65 | 2175 | 0 | 114 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 2092 | 65 | 2175 | 0 | 96.2 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 1852 | 65 | 2175 | 0 | 85.2 | 70-135 | 0 |
| Trichloroethene | 2515 | 65 | 2175 | 0 | 116 | 75-125 | 0 |
| Trichlorofluoromethane | 1918 | 65 | 2175 | 0 | 88.2 | 25-185 | 0 |
| Vinyl chloride | 2090 | 65 | 2175 | 0 | 96.1 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *2226* | 0 | *2175* | 0 | *102* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *2158* | 0 | *2175* | 0 | *99.2* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *2209* | 0 | *2175* | 0 | *102* | *70-130* | 0 |
| *Surr: Toluene-d8* | *2150* | 0 | *2175* | 0 | *98.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1207633-03A MSD** Units: **µg/Kg** Analysis Date: **7/26/2012 01:46 AM**

Client ID: Run ID: **VMS8_120725A** SeqNo: **2036860** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 2351 | 65 | 2175 | 0 | 108 | 75-125 | 2368 | 0.737 | 30 | |
| 1,1,1-Trichloroethane | 2494 | 65 | 2175 | 0 | 115 | 70-135 | 2541 | 1.86 | 30 | |
| 1,1,2,2-Tetrachloroethane | 1963 | 65 | 2175 | 0 | 90.2 | 55-130 | 2169 | 10 | 30 | |
| 1,1,2-Trichloroethane | 2053 | 65 | 2175 | 0 | 94.4 | 60-125 | 2154 | 4.81 | 30 | |
| 1,1-Dichloroethane | 2297 | 65 | 2175 | 0 | 106 | 75-125 | 2376 | 3.35 | 30 | |
| 1,1-Dichloroethene | 1906 | 65 | 2175 | 0 | 87.6 | 65-135 | 2588 | 30.3 | 30 | R |
| 1,2,3-Trichlorobenzene | 2117 | 65 | 2175 | 0 | 97.4 | 60-135 | 1867 | 12.6 | 30 | |
| 1,2,3-Trichloropropane | 1938 | 65 | 2175 | 0 | 89.1 | 65-130 | 2117 | 8.85 | 30 | |
| 1,2,3-Trimethylbenzene | 2053 | 65 | 2175 | 0 | 94.4 | 65-135 | 2026 | 1.33 | 30 | |
| 1,2,4-Trichlorobenzene | 2201 | 65 | 2175 | 0 | 101 | 65-130 | 1970 | 11.1 | 30 | |
| 1,2,4-Trimethylbenzene | 2006 | 65 | 2175 | 0 | 92.2 | 65-135 | 2056 | 2.46 | 30 | |
| 1,2-Dibromo-3-chloropropane | 1682 | 65 | 2175 | 0 | 77.4 | 40-135 | 1778 | 5.53 | 30 | |
| 1,2-Dibromoethane | 2025 | 65 | 2175 | 0 | 93.1 | 70-125 | 2166 | 6.75 | 30 | |
| 1,2-Dichlorobenzene | 2195 | 65 | 2175 | 0 | 101 | 75-120 | 2153 | 1.95 | 30 | |
| 1,2-Dichloroethane | 2318 | 65 | 2175 | 0 | 107 | 70-135 | 2425 | 4.49 | 30 | |
| 1,2-Dichloropropane | 2434 | 65 | 2175 | 0 | 112 | 70-120 | 2493 | 2.38 | 30 | |
| 1,3,5-Trimethylbenzene | 2321 | 65 | 2175 | 0 | 107 | 65-135 | 2396 | 3.18 | 30 | |
| 1,3-Dichlorobenzene | 2297 | 65 | 2175 | 0 | 106 | 70-125 | 2277 | 0.903 | 30 | |
| 1,4-Dichlorobenzene | 2289 | 65 | 2175 | 0 | 105 | 70-125 | 2251 | 1.68 | 30 | |
| 2-Butanone | 2664 | 220 | 2175 | 0 | 122 | 30-160 | 2564 | 3.83 | 30 | |
| 2-Hexanone | 1893 | 65 | 2175 | 0 | 87 | 45-145 | 2106 | 10.7 | 30 | |
| 4-Methyl-2-pentanone | 2217 | 65 | 2175 | 0 | 102 | 45-145 | 2478 | 11.1 | 30 | |
| Acetone | 1808 | 220 | 2175 | 103.3 | 78.4 | 20-160 | 2304 | 24.1 | 30 | B |
| Acrylonitrile | 1851 | 65 | 2175 | 0 | 85.1 | 70-135 | 2100 | 12.6 | 30 | |
| Benzene | 2345 | 65 | 2175 | 0 | 108 | 75-125 | 2414 | 2.88 | 30 | |
| Bromobenzene | 2303 | 65 | 2175 | 0 | 106 | 65-120 | 2334 | 1.36 | 30 | |
| Bromochloromethane | 2479 | 65 | 2175 | 0 | 114 | 70-125 | 2563 | 3.32 | 30 | |
| Bromodichloromethane | 2102 | 65 | 2175 | 0 | 96.6 | 70-130 | 2101 | 0.0517 | 30 | |
| Bromoform | 1707 | 65 | 2175 | 0 | 78.5 | 55-135 | 1908 | 11.1 | 30 | |
| Bromomethane | 1928 | 65 | 2175 | 0 | 88.6 | 30-160 | 2191 | 12.8 | 30 | |
| Carbon disulfide | 2461 | 65 | 2175 | 0 | 113 | 45-160 | 2561 | 3.98 | 30 | |
| Carbon tetrachloride | 2496 | 65 | 2175 | 0 | 115 | 65-135 | 2516 | 0.781 | 30 | |
| Chlorobenzene | 2327 | 65 | 2175 | 0 | 107 | 75-125 | 2369 | 1.81 | 30 | |
| Chloroethane | 2237 | 220 | 2175 | 0 | 103 | 40-155 | 2083 | 7.1 | 30 | |
| Chloroform | 2230 | 65 | 2175 | 0 | 103 | 70-125 | 2366 | 5.91 | 30 | |
| Chloromethane | 1950 | 65 | 2175 | 0 | 89.6 | 50-130 | 2016 | 3.35 | 30 | |
| cis-1,2-Dichloroethene | 2332 | 65 | 2175 | 0 | 107 | 65-125 | 2398 | 2.76 | 30 | |
| cis-1,3-Dichloropropene | 2072 | 65 | 2175 | 0 | 95.3 | 70-125 | 2145 | 3.45 | 30 | |
| Dibromochloromethane | 1947 | 65 | 2175 | 0 | 89.6 | 65-135 | 1973 | 1.33 | 30 | |
| Dibromomethane | 2143 | 65 | 2175 | 0 | 98.6 | 75-130 | 2268 | 5.67 | 30 | |
| Dichlorodifluoromethane | 1623 | 65 | 2175 | 0 | 74.6 | 35-135 | 1701 | 4.65 | 30 | |
| Ethylbenzene | 2380 | 65 | 2175 | 0 | 109 | 75-125 | 2427 | 1.95 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1818 | 65 | 2175 | 0 | 83.6 | 70-135 | 1816 | 0.12 | 30 | |
| Isopropylbenzene | 2382 | 65 | 2175 | 0 | 110 | 75-130 | 2434 | 2.17 | 30 | |
| m,p-Xylene | 4754 | 130 | 4349 | 0 | 109 | 80-125 | 4906 | 3.15 | 30 | |
| Methyl tert-butyl ether | 1956 | 65 | 2175 | 0 | 90 | 75-125 | 2147 | 9.33 | 30 | |
| Methylene chloride | 2384 | 65 | 2175 | 0 | 110 | 55-145 | 2391 | 0.273 | 30 | |
| Naphthalene | 2097 | 220 | 2175 | 0 | 96.4 | 40-140 | 1819 | 14.2 | 30 | |
| n-Butylbenzene | 2309 | 65 | 2175 | 0 | 106 | 65-140 | 2322 | 0.563 | 30 | |
| n-Propylbenzene | 2318 | 65 | 2175 | 0 | 107 | 65-135 | 2390 | 3.05 | 30 | |
| o-Xylene | 2356 | 65 | 2175 | 0 | 108 | 75-125 | 2415 | 2.46 | 30 | |
| p-Isopropyltoluene | 2333 | 65 | 2175 | 0 | 107 | 75-135 | 2314 | 0.842 | 30 | |
| sec-Butylbenzene | 2374 | 65 | 2175 | 0 | 109 | 65-130 | 2466 | 3.82 | 30 | |
| Styrene | 2277 | 65 | 2175 | 0 | 105 | 75-125 | 2328 | 2.22 | 30 | |
| tert-Butylbenzene | 2407 | 65 | 2175 | 0 | 111 | 65-130 | 2446 | 1.61 | 30 | |
| Tetrachloroethene | 2579 | 65 | 2175 | 0 | 119 | 64-140 | 2665 | 3.28 | 30 | |
| Tetrahydrofuran | 703.5 | 220 | 2175 | 0 | 32.4 | 70-135 | 2254 | 105 | 30 | SR |
| Toluene | 2345 | 65 | 2175 | 0 | 108 | 70-125 | 2408 | 2.65 | 30 | |
| trans-1,2-Dichloroethene | 2390 | 65 | 2175 | 0 | 110 | 65-135 | 2487 | 3.97 | 30 | |
| trans-1,3-Dichloropropene | 2031 | 65 | 2175 | 0 | 93.4 | 65-125 | 2092 | 2.95 | 30 | |
| trans-1,4-Dichloro-2-butene | 1528 | 65 | 2175 | 0 | 70.2 | 70-135 | 1852 | 19.2 | 30 | |
| Trichloroethene | 2420 | 65 | 2175 | 0 | 111 | 75-125 | 2515 | 3.83 | 30 | |
| Trichlorofluoromethane | 2085 | 65 | 2175 | 0 | 95.9 | 25-185 | 1918 | 8.37 | 30 | |
| Vinyl chloride | 2009 | 65 | 2175 | 0 | 92.4 | 60-125 | 2090 | 3.93 | 30 | |
| *Surr: 1,2-Dichloroethane-d4* | *2175* | 0 | *2175* | 0 | *100* | *70-130* | 2226 | *2.32* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *2168* | 0 | *2175* | 0 | *99.7* | *70-130* | 2158 | *0.452* | *30* | |
| *Surr: Dibromofluoromethane* | *2226* | 0 | *2175* | 0 | *102* | *70-130* | 2209 | *0.735* | *30* | |
| *Surr: Toluene-d8* | *2182* | 0 | *2175* | 0 | *100* | *70-130* | 2150 | *1.51* | *30* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207631-04A | 1207631-05A | 1207631-06A |
| 1207631-07A | 1207631-08A | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **R107638** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R107638** Units: **% of sample** Analysis Date: **7/23/2012 02:04 PM**
Client ID: Run ID: **MOIST_120723A** SeqNo: **2034355** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | ND | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R107638** Units: **% of sample** Analysis Date: **7/23/2012 02:04 PM**
Client ID: Run ID: **MOIST_120723A** SeqNo: **2034354** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 100 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | |

**DUP** Sample ID: **1207622-01BDUP** Units: **% of sample** Analysis Date: **7/23/2012 02:04 PM**
Client ID: Run ID: **MOIST_120723A** SeqNo: **2034332** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 7.87 | 0.050 | 0 | 0 | 0 | 0-0 | 7.67 | 2.57 | 20 | |

**DUP** Sample ID: **1207629-01BDUP1** Units: **% of sample** Analysis Date: **7/23/2012 02:04 PM**
Client ID: Run ID: **MOIST_120723A** SeqNo: **2034345** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 49.37 | 0.050 | 0 | 0 | 0 | 0-0 | 49.34 | 0.0608 | 20 | |

**DUP** Sample ID: **1207629-01BDUP2** Units: **% of sample** Analysis Date: **7/23/2012 02:04 PM**
Client ID: Run ID: **MOIST_120723A** SeqNo: **2034346** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 50.47 | 0.050 | 0 | 0 | 0 | 0-0 | 49.34 | 2.26 | 20 | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207631-01B | 1207631-02B | 1207631-03B |
| 1207631-04B | 1207631-05B | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207631
**Project:** Marshall KRRI Source Area 7/18/12

# QC BATCH REPORT

Batch ID: **R107639** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R107639** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034381** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | ND | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R107639** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034380** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 100 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | |

**DUP** Sample ID: **1207633-03BDUP1** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034366** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 37.14 | 0.050 | 0 | 0 | 0 | 0-0 | 36.91 | 0.621 | 20 | |

**DUP** Sample ID: **1207633-03BDUP2** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034367** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 36.07 | 0.050 | 0 | 0 | 0 | 0-0 | 36.91 | 2.3 | 20 | |

**DUP** Sample ID: **1207634-05BDUP1** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034376** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 30.4 | 0.050 | 0 | 0 | 0 | 0-0 | 31.03 | 2.05 | 20 | |

**DUP** Sample ID: **1207634-05BDUP2** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034377** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 30.96 | 0.050 | 0 | 0 | 0 | 0-0 | 31.03 | 0.226 | 20 | |

**The following samples were analyzed in this batch:** 1207631-06B 1207631-07B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

1207631

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_071812_GMK1 | Task: KRRI_SOURCE AREA |
|---|---|---|
| | Total # of Samples: 8 | Event Complete? |

| Turn Around Time | 5 Day | Rush | No |
|---|---|---|---|

BILLING CODE: 6.00

**Lab Information:**

| | |
|---|---|
| Lab Name: | ALS Laboratory Group |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 |
| Lab PM: | Ann Preston |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 |
| Lab PM email | ann.preston@alsglobal.com |
| Applicable Lab Quote #: | |

**Project Information:**

| | | | |
|---|---|---|---|
| Site ID #: | | | |
| Project # | 60162778 | | |
| Site Address | 5555 Glenwood Parkway SE Suite 200 | | |
| City | Grand Rapids | State, Zip | MI |
| Site PM Name | Bryan Stiemsma | | |
| Phone/Fax: | [redacted] | | |
| Site PM Email: | Bryan.Stiemsma@aecom.com | | |

**Other Information:**

| | | | |
|---|---|---|---|
| Send Invoice to: | Enbridge Energy - ATTN Accounts Payable | | |
| Address: | 1100 Louisiana Suite 1100 | | |
| City/State, | Houson, TX | Phone #: | 713-821-2000 |
| PO # | | | |
| Send EDD to | | | |
| CC Hardcopy report | | | |
| CC Hardcopy report | | | |

| ITEM # | SAMPLE ID Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | None | None | None | None | MeOH | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | | |
| 1 | SBSA0115S071812S009 | SBSA0115 | SO | G | 07/18/2012 12:49 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 2 | SBSA0116S071812S007 | SBSA0116 | SO | G | 07/18/2012 13:37 | 3 | MDEQ SPLIT | | X | X | X | X | X | | | | | | | | | | |
| 3 | SBSA0116S071812S014 | SBSA0116 | SO | G | 07/18/2012 13:42 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 4 | SBSA0117S071812S006 | SBSA0117 | SO | G | 07/18/2012 14:30 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 5 | SBSA0118S071812S006 | SBSA0118 | SO | G | 07/18/2012 15:05 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 6 | SBSA0119S071812S004 | SBSA0119 | SO | G | 07/18/2012 15:38 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 7 | SBSA0120S071812S007 | SBSA0120 | SO | G | 07/18/2012 16:13 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 8 | SBSA0120T071812MX | SBSA0120 | SQ | G | 07/18/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | | |

Additional Comments/Special Instructions:

5.2'c

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| | 7-18-12 | 1715 | | 7-18-12 | 1715 |
| | 7/18/12 | 1708 | | 7/20/12 | 1708 |
| | | | | | |
| | | | | | |

**Sample Receipt Conditions**

| Temp in OC | Samples on Ice? | Sample intact? | Trip Blank? |
|---|---|---|---|
| 5.2'c | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO: SAMPLER NAME AND SIGNATURE

Company:
Tracking #:
PRINT Name of SAMPLER: GERRY KRAMER (GMK2)
SIGNATURE of SAMPLER:
DATE Signed
Time:

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **20-Jul-12 17:08**

Work Order: **1207631** Received by: **MA**

Checklist completed by Diane Shaw (eSignature) 23-Jul-12 (Date) Reviewed by: Ann Preston (eSignature) 24-Jul-12 (Date)

Matrices: Soil
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 5.2 c | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 7/23/2012 12:12:47 PM | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | - | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

**ALS Environmental**
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

**CUSTODY SEAL**

Date: 01-18-12 Time: 1722
Name: Gerald Kraemer
Company:

Seal Broken By:

Date:

5.2 L

30-Jul-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI Source Area 7/19/12** Work Order: **1207633**

Dear Bryan,

ALS Environmental received 7 samples on 20-Jul-2012 05:08 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 61.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/19/12
**Work Order:** **1207633**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1207633-01 | SBSA0121S071912S007 | Soil | | 7/19/2012 08:35 | 7/20/2012 17:08 | ☐ |
| 1207633-02 | SBSA0121D071912S007 | Soil | | 7/19/2012 08:35 | 7/20/2012 17:08 | ☐ |
| 1207633-03 | SBSA0122S071912S009 | Soil | | 7/19/2012 09:30 | 7/20/2012 17:08 | ☐ |
| 1207633-04 | SBSA0123S071912S008 | Soil | | 7/19/2012 10:20 | 7/20/2012 17:08 | ☐ |
| 1207633-05 | SBSA0124S071912S014 | Soil | | 7/19/2012 11:12 | 7/20/2012 17:08 | ☐ |
| 1207633-06 | SBSA0124S071912S020 | Soil | | 7/19/2012 11:15 | 7/20/2012 17:08 | ☐ |
| 1207633-07 | SBSA0124T071912MX | Soil | | 7/19/2012 | 7/20/2012 17:08 | ☐ |

## ALS Group USA, Corp

*Date: 30-Jul-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/19/12
**Work Order:** 1207633

# Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 42569 MS/MSD data for DRO/ORO is not related to this project's samples. No data requires qualification.

Batch 42565 MS/MSD data for Metals is not related to this project's samples. No data requires qualification.

Batch 42568 MS/MSD data for PAHs is not related to this project's samples. No data requires qualification. Sample 1207633-06 had a low PAH surrogate. All PAH results were ND. The reporting limits may be biased low.

Batch 42539 sample SBSA0122S071912S009 MSD recovery and RPD for Tetrahydrofuran were outside control limits. The reporting limit for this compound in the parent sample may be biased low. The RPD between the MS/MSD for 1,1-DCEwas above control limits. The individual MS/MSD recoveries met quality control criteria. No data requires qualification.

# ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/19/12
**WorkOrder:** **1207633**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| % of sample | Percent of Sample |
| µg/Kg | Micrograms per Kilogram |
| µg/Kg-dry | Micrograms per Kilogram Dry Weight |
| mg/Kg-dry | Milligrams per Kilogram Dry Weight |

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0121S071912S007 |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 8:35:00 AM |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **63** | **13** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **480** | **26** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *67.3* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/26/2012 |
| **Molybdenum** | **2.4** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Nickel** | **11** | **4.2** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Vanadium** | **14** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *56.9* | *34-140* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *54.5* | *12-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *72.7* | *33-117* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *74.9* | *25-137* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *53.3* | *37-107* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *74.0* | *40-106* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0121S071912S007 |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 8:35:00 AM |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 71 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 71 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0121S071912S007
**Work Order:** 1207633 **Collection Date:** 7/19/2012 8:35:00 AM
**Project:** Marshall KRRI Source Area 7/19/12
**Lab ID:** 1207633-01 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 71 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 71 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.4* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *94.5* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **27** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0121D071912S007 |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 8:35:00 AM |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **61** | **13** | **4.0** | | **mg/Kg-dry** | 1 | 7/27/2012 |
| **ORO (C20-C34)** | **590** | **26** | **4.0** | | **mg/Kg-dry** | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *51.2* | *39-115* | | | *%REC* | 1 | 7/27/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/26/2012 |
| **Molybdenum** | **2.5** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Nickel** | **11** | **3.6** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Vanadium** | **15** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *98.3* | *34-140* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *59.4* | *12-100* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *60.0* | *33-117* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *80.4* | *25-137* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *54.1* | *37-107* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Phenol-d6* | *54.4* | *40-106* | | | *%REC* | 1 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0121D071912S007 |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 8:35:00 AM |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 69 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 69 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0121D071912S007
**Work Order:** 1207633 **Collection Date:** 7/19/2012 8:35:00 AM
**Project:** Marshall KRRI Source Area 7/19/12
**Lab ID:** 1207633-02 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 69 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 69 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.4* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *92.1* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *97.9* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **26** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0122S071912S009 |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 9:30:00 AM |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **49** | **16** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| **ORO (C20-C34)** | **340** | **32** | **4.0** | | **mg/Kg-dry** | 1 | 7/25/2012 |
| *Surr: 4-Terphenyl-d14* | *60.9* | *39-115* | | | *%REC* | 1 | 7/25/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/26/2012 |
| **Molybdenum** | **2.5** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Nickel** | **9.4** | **4.5** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Vanadium** | **13** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *77.9* | *34-140* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *52.8* | *12-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *57.1* | *33-117* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *67.3* | *25-137* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *51.1* | *37-107* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *58.3* | *40-106* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0122S071912S009 |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 9:30:00 AM |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 100 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 100 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 340 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 340 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0122S071912S009 |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 9:30:00 AM |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 210 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 340 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 100 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 100 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *96.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **37** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0123S071912S008 |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 10:20:00 AM |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **63** | **16** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **450** | **31** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *78.6* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/26/2012 |
| **Molybdenum** | **2.4** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Nickel** | **9.6** | **5.2** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Vanadium** | **13** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *69.8* | *34-140* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *63.4* | *12-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *87.3* | *33-117* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *86.3* | *25-137* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *62.6* | *37-107* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *91.7* | *40-106* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0123S071912S008 |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 10:20:00 AM |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 110 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 110 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 380 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 380 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0123S071912S008
**Work Order:** 1207633 **Collection Date:** 7/19/2012 10:20:00 AM
**Project:** Marshall KRRI Source Area 7/19/12
**Lab ID:** 1207633-04 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 230 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 380 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 110 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 110 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *93.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.5* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **37** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0124S071912S014 |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 11:12:00 AM |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **610** | **26** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **2,300** | **51** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *60.1* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/26/2012 |
| **Molybdenum** | **2.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Nickel** | **11** | **8.4** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Vanadium** | **16** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| *Surr: 2,4,6-Tribromophenol* | *98.8* | *34-140* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorobiphenyl* | *60.2* | *12-100* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorophenol* | *63.4* | *33-117* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *75.8* | *25-137* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Nitrobenzene-d5* | *57.4* | *37-107* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Phenol-d6* | *62.3* | *40-106* | | | *%REC* | 1 | 7/27/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0124S071912S014 |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 11:12:00 AM |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 320 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 320 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 320 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 320 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 320 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 1,100 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 1,100 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 2,700 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 320 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 320 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 1,100 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 320 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 320 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 320 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 320 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 320 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 320 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0124S071912S014
**Work Order:** 1207633 **Collection Date:** 7/19/2012 11:12:00 AM
**Project:** Marshall KRRI Source Area 7/19/12
**Lab ID:** 1207633-05 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 320 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 320 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 640 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 320 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 1,100 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 320 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,100 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 320 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 320 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 320 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *96.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.4* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **61** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0124S071912S020 |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 11:15:00 AM |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **140** | **52** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **1,600** | **100** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *45.8* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.94 | 0.50 | | mg/Kg-dry | 4 | 7/26/2012 |
| **Molybdenum** | **2.9** | **1.9** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Nickel** | **16** | **9.4** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Vanadium** | **16** | **1.6** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| *Surr: 2,4,6-Tribromophenol* | *69.2* | *34-140* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorobiphenyl* | *40.2* | *12-100* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorophenol* | *40.2* | *33-117* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *58.4* | *25-137* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Nitrobenzene-d5* | *35.5* | *37-107* | | S | *%REC* | 1 | 7/27/2012 |
| *Surr: Phenol-d6* | *40.7* | *40-106* | | | *%REC* | 1 | 7/27/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0124S071912S020 |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 11:15:00 AM |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1,500 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 1,500 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 4,900 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 4,900 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 12,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 1,500 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 4,900 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 1,500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 1,500 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0124S071912S020
**Work Order:** 1207633 **Collection Date:** 7/19/2012 11:15:00 AM
**Project:** Marshall KRRI Source Area 7/19/12
**Lab ID:** 1207633-06 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 1,500 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 2,900 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 4,900 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 4,900 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 4,900 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 1,500 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *103* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *97.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **81** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0124T071912MX |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 30 | 10 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 30 | 20 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0124T071912MX |
| **Work Order:** | 1207633 | **Collection Date:** | 7/19/2012 |
| **Project:** | Marshall KRRI Source Area 7/19/12 | | |
| **Lab ID:** | 1207633-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Cyclohexane | ND | 500 | 500 | | µg/Kg | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Ethylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *97.7* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *98.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *95.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment

# QC BATCH REPORT

**Work Order:** 1207633

**Project:** Marshall KRRI Source Area 7/19/12

Batch ID: **42553** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42553-42553** Units: **mg/Kg** Analysis Date: **7/25/2012 05:09 PM**

Client ID: Run ID: **GC8_120725A** SeqNo: **2036816** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *4.047* | 0 | *5* | 0 | *80.9* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42553-42553** Units: **mg/Kg** Analysis Date: **7/25/2012 05:38 PM**

Client ID: Run ID: **GC8_120725A** SeqNo: **2036817** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 353.2 | 10 | 500 | 0 | 70.6 | 60-130 | 0 | | | |
| ORO (C20-C34) | 342.9 | 20 | 500 | 0 | 68.6 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.793* | 0 | *5* | 0 | *75.9* | *39-115* | 0 | | | |

**MS** Sample ID: **1207633-03B MS** Units: **mg/Kg** Analysis Date: **7/25/2012 06:06 PM**

Client ID: **SBSA0122S071912S009** Run ID: **GC8_120725A** SeqNo: **2036818** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 329.6 | 9.7 | 486.3 | 31.06 | 61.4 | 60-130 | 0 | | | |
| ORO (C20-C34) | 557.4 | 19 | 486.3 | 212.8 | 70.9 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.364* | 0 | *4.863* | 0 | *69.2* | *39-115* | 0 | | | |

**MSD** Sample ID: **1207633-03B MSD** Units: **mg/Kg** Analysis Date: **7/25/2012 06:35 PM**

Client ID: **SBSA0122S071912S009** Run ID: **GC8_120725A** SeqNo: **2036819** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 354.9 | 9.9 | 495.9 | 31.06 | 65.3 | 60-130 | 329.6 | 7.41 | 30 | |
| ORO (C20-C34) | 533.7 | 20 | 495.9 | 212.8 | 64.7 | 60-130 | 557.4 | 4.33 | 30 | |
| *Surr: 4-Terphenyl-d14* | *3.578* | 0 | *4.959* | 0 | *72.2* | *39-115* | 3.364 | *6.16* | *30* | |

**The following samples were analyzed in this batch:** 1207633-01B 1207633-02B 1207633-03B 1207633-04B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42569** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42569-42569** Units: **mg/Kg** Analysis Date: **7/26/2012 05:43 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039223** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *3.51* | 0 | *5* | 0 | *70.2* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42569-42569** Units: **mg/Kg** Analysis Date: **7/26/2012 06:10 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039224** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 341.2 | 10 | 500 | 0 | 68.2 | 60-130 | 0 | | | |
| ORO (C20-C34) | 355.4 | 20 | 500 | 0 | 71.1 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.41* | 0 | *5* | 0 | *68.2* | *39-115* | 0 | | | |

**MS** Sample ID: **1207634-05B MS** Units: **mg/Kg** Analysis Date: **7/26/2012 06:37 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039225** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 371.5 | 9.2 | 462.4 | 100.9 | 58.5 | 60-130 | 0 | | | S |
| ORO (C20-C34) | 1058 | 18 | 462.4 | 862 | 42.3 | 60-130 | 0 | | | S |
| *Surr: 4-Terphenyl-d14* | *2.868* | 0 | *4.624* | 0 | *62* | *39-115* | 0 | | | |

**MSD** Sample ID: **1207634-05B MSD** Units: **mg/Kg** Analysis Date: **7/26/2012 07:03 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039226** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 428.2 | 9.9 | 496.4 | 100.9 | 65.9 | 60-130 | 371.5 | 14.2 | 30 | |
| ORO (C20-C34) | 1198 | 20 | 496.4 | 862 | 67.7 | 60-130 | 1058 | 12.4 | 30 | |
| *Surr: 4-Terphenyl-d14* | *3.263* | 0 | *4.964* | 0 | *65.7* | *39-115* | 2.868 | *12.9* | *30* | |

**The following samples were analyzed in this batch:** 1207633-05B 1207633-06B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42592** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42592-42592** Units: **mg/Kg** Analysis Date: **7/26/2012 05:43 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039113** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *2.81* | 0 | *5* | 0 | *56.2* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42592-42592** Units: **mg/Kg** Analysis Date: **7/26/2012 06:10 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039114** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 349 | 10 | 500 | 0 | 69.8 | 60-130 | 0 | | | |
| ORO (C20-C34) | 439.5 | 20 | 500 | 0 | 87.9 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *2.901* | 0 | *5* | 0 | *58* | *39-115* | 0 | | | |

**MS** Sample ID: **1207648-05B MS** Units: **mg/Kg** Analysis Date: **7/26/2012 06:37 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039115** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 332.9 | 9.5 | 473.4 | 17 | 66.7 | 60-130 | 0 | | | |
| ORO (C20-C34) | 446 | 19 | 473.4 | 43.71 | 85 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *2.698* | 0 | *4.734* | 0 | *57* | *39-115* | 0 | | | |

**MSD** Sample ID: **1207648-05B MSD** Units: **mg/Kg** Analysis Date: **7/26/2012 07:03 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039116** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 326.9 | 9.6 | 478.6 | 17 | 64.8 | 60-130 | 332.9 | 1.79 | 30 | |
| ORO (C20-C34) | 460.2 | 19 | 478.6 | 43.71 | 87 | 60-130 | 446 | 3.14 | 30 | |
| *Surr: 4-Terphenyl-d14* | *2.763* | 0 | *4.786* | 0 | *57.7* | *39-115* | 2.698 | *2.39* | *30* | |

**The following samples were analyzed in this batch:** 1207633-02B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42565** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42565-42565** Units: **mg/Kg** Analysis Date: **7/25/2012 11:30 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037354** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |
| Molybdenum | 0.03862 | 0.25 | | | | | | | | J |
| Nickel | 0.1537 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**LCS** Sample ID: **LCS-42565-42565** Units: **mg/Kg** Analysis Date: **7/25/2012 11:37 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037358** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.82 | 0.10 | 5 | 0 | 96.4 | 80-120 | 0 | | | |
| Molybdenum | 4.672 | 0.25 | 5 | 0 | 93.4 | 80-120 | 0 | | | |
| Nickel | 4.636 | 0.25 | 5 | 0 | 92.7 | 80-120 | 0 | | | |
| Vanadium | 4.73 | 0.25 | 5 | 0 | 94.6 | 80-120 | 0 | | | |

**MS** Sample ID: **1207633-03BMS** Units: **mg/Kg** Analysis Date: **7/26/2012 01:35 AM**
Client ID: **SBSA0122S071912S009** Run ID: **ICPMS1_120725A** SeqNo: **2037421** Prep Date: **7/25/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.75 | 0.56 | 6.944 | 0.1851 | 94.5 | 75-125 | 0 | | | |
| Molybdenum | 8.597 | 1.4 | 6.944 | 1.593 | 101 | 75-125 | 0 | | | |
| Nickel | 13.2 | 1.4 | 6.944 | 5.935 | 105 | 75-125 | 0 | | | |
| Vanadium | 15.24 | 1.4 | 6.944 | 7.966 | 105 | 75-125 | 0 | | | |

**MS** Sample ID: **1207634-05BMS** Units: **mg/Kg** Analysis Date: **7/26/2012 03:09 AM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037436** Prep Date: **7/25/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.937 | 0.60 | 7.463 | 0.2598 | 89.5 | 75-125 | 0 | | | |
| Molybdenum | 6.594 | 1.5 | 7.463 | 0.6247 | 80 | 75-125 | 0 | | | |
| Nickel | 15.91 | 1.5 | 7.463 | 10.35 | 74.5 | 75-125 | 0 | | | S |
| Vanadium | 17.33 | 1.5 | 7.463 | 11.92 | 72.5 | 75-125 | 0 | | | S |

**MSD** Sample ID: **1207633-03BMSD** Units: **mg/Kg** Analysis Date: **7/26/2012 01:41 AM**
Client ID: **SBSA0122S071912S009** Run ID: **ICPMS1_120725A** SeqNo: **2037422** Prep Date: **7/25/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.176 | 0.56 | 6.974 | 0.1851 | 85.9 | 75-125 | 6.75 | 8.89 | 25 | |
| Molybdenum | 7.007 | 1.4 | 6.974 | 1.593 | 77.6 | 75-125 | 8.597 | 20.4 | 25 | |
| Nickel | 11.88 | 1.4 | 6.974 | 5.935 | 85.3 | 75-125 | 13.2 | 10.5 | 25 | |
| Vanadium | 13.81 | 1.4 | 6.974 | 7.966 | 83.8 | 75-125 | 15.24 | 9.84 | 25 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42565** Instrument ID **ICPMS1** Method: **SW6020A**

**MSD** Sample ID: **1207634-05BMSD** Units: **mg/Kg** Analysis Date: **7/26/2012 03:15 AM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037437** Prep Date: **7/25/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 7.904 | 0.64 | 8.013 | 0.2598 | 95.4 | 75-125 | 6.937 | 13 | 25 | |
| Molybdenum | 7.881 | 1.6 | 8.013 | 0.6247 | 90.6 | 75-125 | 6.594 | 17.8 | 25 | |
| Nickel | 18.66 | 1.6 | 8.013 | 10.35 | 104 | 75-125 | 15.91 | 15.9 | 25 | |
| Vanadium | 20.13 | 1.6 | 8.013 | 11.92 | 103 | 75-125 | 17.33 | 15 | 25 | |

**LCSLL** Sample ID: **LLQC-42565-42565** Units: **mg/Kg** Analysis Date: **7/25/2012 11:43 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037363** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.09255 | 0.10 | 0.1 | 0 | 92.6 | 70-130 | 0 | | | J |
| Molybdenum | 0.2461 | 0.25 | 0.25 | 0 | 98.4 | 70-130 | 0 | | | J |
| Vanadium | 0.2355 | 0.25 | 0.25 | 0 | 94.2 | 70-130 | 0 | | | J |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207633-01B | 1207633-02B | 1207633-03B |
| 1207633-04B | 1207633-05B | 1207633-06B |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42552** Instrument ID **SVMS6** Method: **SW8270**

**MBLK** Sample ID: **SBLKS1-42552-42552** Units: **µg/Kg** Analysis Date: **7/26/2012 03:51 AM**
Client ID: Run ID: **SVMS6_120725A** SeqNo: **2037760** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 50 | | | | | | | | |
| Acenaphthene | ND | 50 | | | | | | | | |
| Acenaphthylene | ND | 50 | | | | | | | | |
| Anthracene | ND | 50 | | | | | | | | |
| Benzo(a)anthracene | ND | 50 | | | | | | | | |
| Benzo(a)pyrene | ND | 50 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 50 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 50 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 50 | | | | | | | | |
| Chrysene | ND | 50 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 50 | | | | | | | | |
| Fluoranthene | ND | 50 | | | | | | | | |
| Fluorene | ND | 50 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | | | | | | | |
| Naphthalene | ND | 50 | | | | | | | | |
| Phenanthrene | ND | 50 | | | | | | | | |
| Pyrene | ND | 50 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *3980* | 0 | *5000* | 0 | *79.6* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3561* | 0 | *5000* | 0 | *71.2* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3768* | 0 | *5000* | 0 | *75.4* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4214* | 0 | *5000* | 0 | *84.3* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3848* | 0 | *5000* | 0 | *77* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3794* | 0 | *5000* | 0 | *75.9* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42552** Instrument ID **SVMS6** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42552-42552** Units: **µg/Kg** Analysis Date: **7/26/2012 02:05 AM**
Client ID: Run ID: **SVMS6_120725A** SeqNo: **2037756** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1632 | 50 | 2000 | 0 | 81.6 | 45-105 | 0 | | | |
| Acenaphthene | 1716 | 50 | 2000 | 0 | 85.8 | 45-110 | 0 | | | |
| Acenaphthylene | 1728 | 50 | 2000 | 0 | 86.4 | 45-105 | 0 | | | |
| Anthracene | 1938 | 50 | 2000 | 0 | 96.9 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1916 | 50 | 2000 | 0 | 95.8 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 2047 | 50 | 2000 | 0 | 102 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1937 | 50 | 2000 | 0 | 96.8 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2176 | 50 | 2000 | 0 | 109 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2267 | 50 | 2000 | 0 | 113 | 45-115 | 0 | | | |
| Chrysene | 2027 | 50 | 2000 | 0 | 101 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2177 | 50 | 2000 | 0 | 109 | 40-125 | 0 | | | |
| Fluoranthene | 2067 | 50 | 2000 | 0 | 103 | 55-115 | 0 | | | |
| Fluorene | 1864 | 50 | 2000 | 0 | 93.2 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2161 | 50 | 2000 | 0 | 108 | 40-120 | 0 | | | |
| Naphthalene | 1616 | 50 | 2000 | 0 | 80.8 | 40-105 | 0 | | | |
| Phenanthrene | 1946 | 50 | 2000 | 0 | 97.3 | 50-110 | 0 | | | |
| Pyrene | 1940 | 50 | 2000 | 0 | 97 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *4609* | 0 | *5000* | 0 | *92.2* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3022* | 0 | *5000* | 0 | *60.4* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3296* | 0 | *5000* | 0 | *65.9* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4196* | 0 | *5000* | 0 | *83.9* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3233* | 0 | *5000* | 0 | *64.7* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3225* | 0 | *5000* | 0 | *64.5* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42552** Instrument ID **SVMS6** Method: **SW8270**

**MS** Sample ID: **1207633-03B MS** Units: **µg/Kg** Analysis Date: **7/26/2012 02:31 AM**
Client ID: **SBSA0122S071912S009** Run ID: **SVMS6_120725A** SeqNo: **2037757** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1564 | 49 | 1976 | 0 | 79.2 | 45-105 | 0 | | | |
| Acenaphthene | 1688 | 49 | 1976 | 0 | 85.4 | 45-110 | 0 | | | |
| Acenaphthylene | 1692 | 49 | 1976 | 0 | 85.6 | 45-105 | 0 | | | |
| Anthracene | 1781 | 49 | 1976 | 0 | 90.2 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1672 | 49 | 1976 | 0 | 84.6 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1700 | 49 | 1976 | 0 | 86 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1746 | 49 | 1976 | 0 | 88.4 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1070 | 49 | 1976 | 0 | 54.2 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2149 | 49 | 1976 | 0 | 109 | 45-115 | 0 | | | |
| Chrysene | 1716 | 49 | 1976 | 0 | 86.8 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1140 | 49 | 1976 | 0 | 57.7 | 40-125 | 0 | | | |
| Fluoranthene | 1883 | 49 | 1976 | 0 | 95.3 | 55-115 | 0 | | | |
| Fluorene | 1779 | 49 | 1976 | 0 | 90 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1137 | 49 | 1976 | 0 | 57.6 | 40-120 | 0 | | | |
| Naphthalene | 1455 | 49 | 1976 | 0 | 73.6 | 40-105 | 0 | | | |
| Phenanthrene | 1771 | 49 | 1976 | 0 | 89.6 | 50-110 | 0 | | | |
| Pyrene | 1693 | 49 | 1976 | 0 | 85.7 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *4415* | 0 | *4939* | 0 | *89.4* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *2942* | 0 | *4939* | 0 | *59.6* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3048* | 0 | *4939* | 0 | *61.7* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3742* | 0 | *4939* | 0 | *75.8* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2850* | 0 | *4939* | 0 | *57.7* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3100* | 0 | *4939* | 0 | *62.8* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42552** Instrument ID **SVMS6** Method: **SW8270**

**MSD** Sample ID: **1207633-03B MSD** Units: **µg/Kg** Analysis Date: **7/26/2012 02:58 AM**
Client ID: **SBSA0122S071912S009** Run ID: **SVMS6_120725A** SeqNo: **2037758** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1326 | 49 | 1952 | 0 | 68 | 45-105 | 1564 | 16.4 | 30 | |
| Acenaphthene | 1479 | 49 | 1952 | 0 | 75.8 | 45-110 | 1688 | 13.2 | 30 | |
| Acenaphthylene | 1451 | 49 | 1952 | 0 | 74.4 | 45-105 | 1692 | 15.3 | 30 | |
| Anthracene | 1581 | 49 | 1952 | 0 | 81 | 55-105 | 1781 | 11.9 | 30 | |
| Benzo(a)anthracene | 1465 | 49 | 1952 | 0 | 75 | 50-110 | 1672 | 13.2 | 30 | |
| Benzo(a)pyrene | 1473 | 49 | 1952 | 0 | 75.5 | 50-110 | 1700 | 14.3 | 30 | |
| Benzo(b)fluoranthene | 1739 | 49 | 1952 | 0 | 89.1 | 45-115 | 1746 | 0.429 | 30 | |
| Benzo(g,h,i)perylene | 856.8 | 49 | 1952 | 0 | 43.9 | 40-125 | 1070 | 22.1 | 30 | |
| Benzo(k)fluoranthene | 1684 | 49 | 1952 | 0 | 86.3 | 45-115 | 2149 | 24.3 | 30 | |
| Chrysene | 1529 | 49 | 1952 | 0 | 78.4 | 55-110 | 1716 | 11.5 | 30 | |
| Dibenzo(a,h)anthracene | 936.8 | 49 | 1952 | 0 | 48 | 40-125 | 1140 | 19.6 | 30 | |
| Fluoranthene | 1645 | 49 | 1952 | 0 | 84.3 | 55-115 | 1883 | 13.5 | 30 | |
| Fluorene | 1592 | 49 | 1952 | 0 | 81.6 | 50-110 | 1779 | 11.1 | 30 | |
| Indeno(1,2,3-cd)pyrene | 928 | 49 | 1952 | 0 | 47.6 | 40-120 | 1137 | 20.2 | 30 | |
| Naphthalene | 1252 | 49 | 1952 | 0 | 64.2 | 40-105 | 1455 | 15 | 30 | |
| Phenanthrene | 1549 | 49 | 1952 | 0 | 79.4 | 50-110 | 1771 | 13.4 | 30 | |
| Pyrene | 1515 | 49 | 1952 | 0 | 77.6 | 45-125 | 1693 | 11.1 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *3911* | 0 | *4879* | 0 | *80.2* | *34-140* | 4415 | *12.1* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *2468* | 0 | *4879* | 0 | *50.6* | *12-100* | 2942 | *17.5* | *40* | |
| *Surr: 2-Fluorophenol* | *2641* | 0 | *4879* | 0 | *54.1* | *33-117* | 3048 | *14.3* | *40* | |
| *Surr: 4-Terphenyl-d14* | *3427* | 0 | *4879* | 0 | *70.2* | *25-137* | 3742 | *8.78* | *40* | |
| *Surr: Nitrobenzene-d5* | *2444* | 0 | *4879* | 0 | *50.1* | *37-107* | 2850 | *15.3* | *40* | |
| *Surr: Phenol-d6* | *2707* | 0 | *4879* | 0 | *55.5* | *40-106* | 3100 | *13.5* | *40* | |

**The following samples were analyzed in this batch:** 1207633-01B 1207633-03B 1207633-04B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42568** Instrument ID **SVMS7** Method: **SW8270**

**MBLK** Sample ID: **SBLKS1-42568-42568** Units: **µg/Kg** Analysis Date: **7/26/2012 01:19 PM**
Client ID: Run ID: **SVMS7_120726A** SeqNo: **2041497** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 50 | | | | | | | | |
| Acenaphthene | ND | 50 | | | | | | | | |
| Acenaphthylene | ND | 50 | | | | | | | | |
| Anthracene | ND | 50 | | | | | | | | |
| Benzo(a)anthracene | ND | 50 | | | | | | | | |
| Benzo(a)pyrene | ND | 50 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 50 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 50 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 50 | | | | | | | | |
| Chrysene | ND | 50 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 50 | | | | | | | | |
| Fluoranthene | ND | 50 | | | | | | | | |
| Fluorene | ND | 50 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | | | | | | | |
| Naphthalene | ND | 50 | | | | | | | | |
| Phenanthrene | ND | 50 | | | | | | | | |
| Pyrene | ND | 50 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *4491* | 0 | *5000* | 0 | *89.8* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3503* | 0 | *5000* | 0 | *70.1* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3659* | 0 | *5000* | 0 | *73.2* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4699* | 0 | *5000* | 0 | *94* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3433* | 0 | *5000* | 0 | *68.7* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3680* | 0 | *5000* | 0 | *73.6* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42568** Instrument ID **SVMS7** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42568-42568** Units: **µg/Kg** Analysis Date: **7/26/2012 12:51 PM**
Client ID: Run ID: **SVMS7_120726A** SeqNo: **2041495** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1819 | 50 | 2000 | 0 | 91 | 45-105 | 0 | | | |
| Acenaphthene | 1805 | 50 | 2000 | 0 | 90.2 | 45-110 | 0 | | | |
| Acenaphthylene | 1821 | 50 | 2000 | 0 | 91 | 45-105 | 0 | | | |
| Anthracene | 1938 | 50 | 2000 | 0 | 96.9 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1873 | 50 | 2000 | 0 | 93.6 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1945 | 50 | 2000 | 0 | 97.2 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1948 | 50 | 2000 | 0 | 97.4 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1933 | 50 | 2000 | 0 | 96.6 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2114 | 50 | 2000 | 0 | 106 | 45-115 | 0 | | | |
| Chrysene | 1909 | 50 | 2000 | 0 | 95.4 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1879 | 50 | 2000 | 0 | 94 | 40-125 | 0 | | | |
| Fluoranthene | 2040 | 50 | 2000 | 0 | 102 | 55-115 | 0 | | | |
| Fluorene | 1910 | 50 | 2000 | 0 | 95.5 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1874 | 50 | 2000 | 0 | 93.7 | 40-120 | 0 | | | |
| Naphthalene | 1761 | 50 | 2000 | 0 | 88 | 40-105 | 0 | | | |
| Phenanthrene | 1906 | 50 | 2000 | 0 | 95.3 | 50-110 | 0 | | | |
| Pyrene | 1843 | 50 | 2000 | 0 | 92.2 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *5085* | 0 | *5000* | 0 | *102* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3445* | 0 | *5000* | 0 | *68.9* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3538* | 0 | *5000* | 0 | *70.8* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4600* | 0 | *5000* | 0 | *92* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3423* | 0 | *5000* | 0 | *68.5* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3434* | 0 | *5000* | 0 | *68.7* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42568** Instrument ID **SVMS7** Method: **SW8270**

**MS** Sample ID: **1207634-05B MS** Units: **µg/Kg** Analysis Date: **7/26/2012 02:45 PM**
Client ID: Run ID: **SVMS7_120726A** SeqNo: **2041499** Prep Date: **7/25/2012** DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1615 | 470 | 1878 | 0 | 86 | 45-105 | 0 | | | |
| Acenaphthene | 1718 | 470 | 1878 | 0 | 91.5 | 45-110 | 0 | | | |
| Acenaphthylene | 1878 | 470 | 1878 | 0 | 100 | 45-105 | 0 | | | |
| Anthracene | 2075 | 470 | 1878 | 0 | 110 | 55-105 | 0 | | | S |
| Benzo(a)anthracene | 2639 | 470 | 1878 | 1068 | 83.6 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 2864 | 470 | 1878 | 1183 | 89.5 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 2902 | 470 | 1878 | 1183 | 91.5 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1981 | 470 | 1878 | 667.6 | 70 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2658 | 470 | 1878 | 782 | 99.9 | 45-115 | 0 | | | |
| Chrysene | 2751 | 470 | 1878 | 1116 | 87.1 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1540 | 470 | 1878 | 0 | 82 | 40-125 | 0 | | | |
| Fluoranthene | 3540 | 470 | 1878 | 1764 | 94.6 | 55-115 | 0 | | | |
| Fluorene | 1878 | 470 | 1878 | 0 | 100 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1784 | 470 | 1878 | 553.1 | 65.5 | 40-120 | 0 | | | |
| Naphthalene | 1474 | 470 | 1878 | 0 | 78.5 | 40-105 | 0 | | | |
| Phenanthrene | 2338 | 470 | 1878 | 619.9 | 91.5 | 50-110 | 0 | | | |
| Pyrene | 3315 | 470 | 1878 | 1659 | 88.1 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *4263* | 0 | *4695* | 0 | *90.8* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3118* | 0 | *4695* | 0 | *66.4* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *2770* | 0 | *4695* | 0 | *59* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4047* | 0 | *4695* | 0 | *86.2* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2535* | 0 | *4695* | 0 | *54* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *2986* | 0 | *4695* | 0 | *63.6* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42568** Instrument ID **SVMS7** Method: **SW8270**

**MSD** Sample ID: **1207634-05B MSD** Units: **µg/Kg** Analysis Date: **7/26/2012 03:13 PM**
Client ID: Run ID: **SVMS7_120726A** SeqNo: **2041500** Prep Date: **7/25/2012** DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1874 | 480 | 1932 | 0 | 97 | 45-105 | 1615 | 14.8 | 30 | |
| Acenaphthene | 1903 | 480 | 1932 | 0 | 98.5 | 45-110 | 1718 | 10.2 | 30 | |
| Acenaphthylene | 2057 | 480 | 1932 | 0 | 106 | 45-105 | 1878 | 9.1 | 30 | S |
| Anthracene | 2192 | 480 | 1932 | 0 | 114 | 55-105 | 2075 | 5.49 | 30 | S |
| Benzo(a)anthracene | 2868 | 480 | 1932 | 1068 | 93.2 | 50-110 | 2639 | 8.34 | 30 | |
| Benzo(a)pyrene | 3042 | 480 | 1932 | 1183 | 96.3 | 50-110 | 2864 | 6.03 | 30 | |
| Benzo(b)fluoranthene | 3139 | 480 | 1932 | 1183 | 101 | 45-115 | 2902 | 7.85 | 30 | |
| Benzo(g,h,i)perylene | 2048 | 480 | 1932 | 667.6 | 71.4 | 40-125 | 1981 | 3.28 | 30 | |
| Benzo(k)fluoranthene | 2878 | 480 | 1932 | 782 | 109 | 45-115 | 2658 | 7.97 | 30 | |
| Chrysene | 2965 | 480 | 1932 | 1116 | 95.7 | 55-110 | 2751 | 7.47 | 30 | |
| Dibenzo(a,h)anthracene | 1449 | 480 | 1932 | 0 | 75 | 40-125 | 1540 | 6.11 | 30 | |
| Fluoranthene | 3863 | 480 | 1932 | 1764 | 109 | 55-115 | 3540 | 8.73 | 30 | |
| Fluorene | 2057 | 480 | 1932 | 0 | 106 | 50-110 | 1878 | 9.1 | 30 | |
| Indeno(1,2,3-cd)pyrene | 1874 | 480 | 1932 | 553.1 | 68.4 | 40-120 | 1784 | 4.89 | 30 | |
| Naphthalene | 1738 | 480 | 1932 | 0 | 90 | 40-105 | 1474 | 16.4 | 30 | |
| Phenanthrene | 2444 | 480 | 1932 | 619.9 | 94.4 | 50-110 | 2338 | 4.4 | 30 | |
| Pyrene | 3564 | 480 | 1932 | 1659 | 98.6 | 45-125 | 3315 | 7.24 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *4501* | 0 | *4829* | 0 | *93.2* | *34-140* | 4263 | *5.42* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *3506* | 0 | *4829* | 0 | *72.6* | *12-100* | 3118 | *11.7* | *40* | |
| *Surr: 2-Fluorophenol* | *3342* | 0 | *4829* | 0 | *69.2* | *33-117* | 2770 | *18.7* | *40* | |
| *Surr: 4-Terphenyl-d14* | *4394* | 0 | *4829* | 0 | *91* | *25-137* | 4047 | *8.22* | *40* | |
| *Surr: Nitrobenzene-d5* | *2984* | 0 | *4829* | 0 | *61.8* | *37-107* | 2535 | *16.3* | *40* | |
| *Surr: Phenol-d6* | *3467* | 0 | *4829* | 0 | *71.8* | *40-106* | 2986 | *14.9* | *40* | |

**The following samples were analyzed in this batch:** 1207633-05B 1207633-06B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**MBLK** Sample ID: **SBLKS1-42591-42591** Units: **µg/Kg** Analysis Date: **7/27/2012 12:22 PM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041108** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 50 | | | | | | | | |
| Acenaphthene | ND | 50 | | | | | | | | |
| Acenaphthylene | ND | 50 | | | | | | | | |
| Anthracene | ND | 50 | | | | | | | | |
| Benzo(a)anthracene | ND | 50 | | | | | | | | |
| Benzo(a)pyrene | ND | 50 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 50 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 50 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 50 | | | | | | | | |
| Chrysene | ND | 50 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 50 | | | | | | | | |
| Fluoranthene | ND | 50 | | | | | | | | |
| Fluorene | ND | 50 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | | | | | | | |
| Naphthalene | ND | 50 | | | | | | | | |
| Phenanthrene | ND | 50 | | | | | | | | |
| Pyrene | ND | 50 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *4971* | 0 | *5000* | 0 | *99.4* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3350* | 0 | *5000* | 0 | *67* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3706* | 0 | *5000* | 0 | *74.1* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4352* | 0 | *5000* | 0 | *87* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3396* | 0 | *5000* | 0 | *67.9* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3411* | 0 | *5000* | 0 | *68.2* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42591-42591** Units: **µg/Kg** Analysis Date: **7/27/2012 10:34 AM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041104** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1733 | 50 | 2000 | 0 | 86.6 | 45-105 | 0 | | | |
| Acenaphthene | 1786 | 50 | 2000 | 0 | 89.3 | 45-110 | 0 | | | |
| Acenaphthylene | 1773 | 50 | 2000 | 0 | 88.6 | 45-105 | 0 | | | |
| Anthracene | 1976 | 50 | 2000 | 0 | 98.8 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1957 | 50 | 2000 | 0 | 97.8 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 2023 | 50 | 2000 | 0 | 101 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 2113 | 50 | 2000 | 0 | 106 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2421 | 50 | 2000 | 0 | 121 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2108 | 50 | 2000 | 0 | 105 | 45-115 | 0 | | | |
| Chrysene | 2036 | 50 | 2000 | 0 | 102 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2271 | 50 | 2000 | 0 | 114 | 40-125 | 0 | | | |
| Fluoranthene | 2136 | 50 | 2000 | 0 | 107 | 55-115 | 0 | | | |
| Fluorene | 1981 | 50 | 2000 | 0 | 99 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2261 | 50 | 2000 | 0 | 113 | 40-120 | 0 | | | |
| Naphthalene | 1657 | 50 | 2000 | 0 | 82.8 | 40-105 | 0 | | | |
| Phenanthrene | 1957 | 50 | 2000 | 0 | 97.8 | 50-110 | 0 | | | |
| Pyrene | 1924 | 50 | 2000 | 0 | 96.2 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *5078* | 0 | *5000* | 0 | *102* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3123* | 0 | *5000* | 0 | *62.5* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3231* | 0 | *5000* | 0 | *64.6* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4217* | 0 | *5000* | 0 | *84.3* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3106* | 0 | *5000* | 0 | *62.1* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3101* | 0 | *5000* | 0 | *62* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**MS** Sample ID: **1207648-05B MS** Units: **µg/Kg** Analysis Date: **7/27/2012 11:01 AM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041105** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1602 | 49 | 1975 | 0 | 81.1 | 45-105 | 0 | | | |
| Acenaphthene | 1702 | 49 | 1975 | 0 | 86.2 | 45-110 | 0 | | | |
| Acenaphthylene | 1693 | 49 | 1975 | 0 | 85.7 | 45-105 | 0 | | | |
| Anthracene | 1928 | 49 | 1975 | 0 | 97.6 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1881 | 49 | 1975 | 0 | 95.2 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1929 | 49 | 1975 | 0 | 97.7 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1889 | 49 | 1975 | 0 | 95.6 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2261 | 49 | 1975 | 0 | 114 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2171 | 49 | 1975 | 0 | 110 | 45-115 | 0 | | | |
| Chrysene | 1925 | 49 | 1975 | 0 | 97.4 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2109 | 49 | 1975 | 0 | 107 | 40-125 | 0 | | | |
| Fluoranthene | 2061 | 49 | 1975 | 0 | 104 | 55-115 | 0 | | | |
| Fluorene | 1916 | 49 | 1975 | 0 | 97 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2096 | 49 | 1975 | 0 | 106 | 40-120 | 0 | | | |
| Naphthalene | 1535 | 49 | 1975 | 0 | 77.8 | 40-105 | 0 | | | |
| Phenanthrene | 1904 | 49 | 1975 | 0 | 96.4 | 50-110 | 0 | | | |
| Pyrene | 1850 | 49 | 1975 | 0 | 93.6 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *5140* | 0 | *4937* | 0 | *104* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *2913* | 0 | *4937* | 0 | *59* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3014* | 0 | *4937* | 0 | *61* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4168* | 0 | *4937* | 0 | *84.4* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2838* | 0 | *4937* | 0 | *57.5* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *2906* | 0 | *4937* | 0 | *58.9* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**MSD** Sample ID: **1207648-05B MSD** Units: **µg/Kg** Analysis Date: **7/27/2012 11:28 AM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041106** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1628 | 48 | 1913 | 0 | 85.1 | 45-105 | 1602 | 1.61 | 30 | |
| Acenaphthene | 1676 | 48 | 1913 | 0 | 87.6 | 45-110 | 1702 | 1.54 | 30 | |
| Acenaphthylene | 1683 | 48 | 1913 | 0 | 88 | 45-105 | 1693 | 0.558 | 30 | |
| Anthracene | 1884 | 48 | 1913 | 0 | 98.5 | 55-105 | 1928 | 2.29 | 30 | |
| Benzo(a)anthracene | 1764 | 48 | 1913 | 0 | 92.2 | 50-110 | 1881 | 6.4 | 30 | |
| Benzo(a)pyrene | 1847 | 48 | 1913 | 0 | 96.6 | 50-110 | 1929 | 4.39 | 30 | |
| Benzo(b)fluoranthene | 1740 | 48 | 1913 | 0 | 91 | 45-115 | 1889 | 8.19 | 30 | |
| Benzo(g,h,i)perylene | 2056 | 48 | 1913 | 0 | 108 | 40-125 | 2261 | 9.51 | 30 | |
| Benzo(k)fluoranthene | 2071 | 48 | 1913 | 0 | 108 | 45-115 | 2171 | 4.72 | 30 | |
| Chrysene | 1800 | 48 | 1913 | 0 | 94.1 | 55-110 | 1925 | 6.7 | 30 | |
| Dibenzo(a,h)anthracene | 1935 | 48 | 1913 | 0 | 101 | 40-125 | 2109 | 8.64 | 30 | |
| Fluoranthene | 1953 | 48 | 1913 | 0 | 102 | 55-115 | 2061 | 5.39 | 30 | |
| Fluorene | 1881 | 48 | 1913 | 0 | 98.4 | 50-110 | 1916 | 1.82 | 30 | |
| Indeno(1,2,3-cd)pyrene | 1933 | 48 | 1913 | 0 | 101 | 40-120 | 2096 | 8.13 | 30 | |
| Naphthalene | 1565 | 48 | 1913 | 0 | 81.8 | 40-105 | 1535 | 1.93 | 30 | |
| Phenanthrene | 1837 | 48 | 1913 | 0 | 96 | 50-110 | 1904 | 3.57 | 30 | |
| Pyrene | 1743 | 48 | 1913 | 0 | 91.2 | 45-125 | 1850 | 5.91 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *4928* | 0 | *4781* | 0 | *103* | *34-140* | 5140 | *4.21* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *2899* | 0 | *4781* | 0 | *60.6* | *12-100* | 2913 | *0.498* | *40* | |
| *Surr: 2-Fluorophenol* | *3094* | 0 | *4781* | 0 | *64.7* | *33-117* | 3014 | *2.62* | *40* | |
| *Surr: 4-Terphenyl-d14* | *3915* | 0 | *4781* | 0 | *81.9* | *25-137* | 4168 | *6.26* | *40* | |
| *Surr: Nitrobenzene-d5* | *2904* | 0 | *4781* | 0 | *60.7* | *37-107* | 2838 | *2.31* | *40* | |
| *Surr: Phenol-d6* | *2986* | 0 | *4781* | 0 | *62.4* | *40-106* | 2906 | *2.7* | *40* | |

**The following samples were analyzed in this batch:** 1207633-02B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42539-42539** Units: **µg/Kg** Analysis Date: **7/24/2012 09:48 PM**
Client ID: Run ID: **VMS7_120724A** SeqNo: **2035045** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 344 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 24.5 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *991* | 0 | *1000* | 0 | *99.1* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1017* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *943.5* | 0 | *1000* | 0 | *94.4* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *997* | 0 | *1000* | 0 | *99.7* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42539-42539** Units: **µg/Kg** Analysis Date: **7/25/2012 12:25 PM**
Client ID: Run ID: **VMS6_120724A** SeqNo: **2036360** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 132 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *998.5* | 0 | *1000* | 0 | *99.8* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1010* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *959.5* | 0 | *1000* | 0 | *96* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1018* | 0 | *1000* | 0 | *102* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42539-42539** Units: **µg/Kg** Analysis Date: **7/25/2012 04:58 PM**
Client ID: Run ID: **VMS8_120725A** SeqNo: **2036863** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 191 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 85.5 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1038* | 0 | *1000* | 0 | *104* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *986* | 0 | *1000* | 0 | *98.6* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *983* | 0 | *1000* | 0 | *98.3* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *969* | 0 | *1000* | 0 | *96.9* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42539-42539** Units: **µg/Kg** Analysis Date: **7/24/2012 08:31 PM**
Client ID: Run ID: **VMS7_120724A** SeqNo: **2035044** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 930 | 30 | 1000 | 0 | 93 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 957 | 30 | 1000 | 0 | 95.7 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 914.5 | 30 | 1000 | 0 | 91.4 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 899 | 30 | 1000 | 0 | 89.9 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 910.5 | 30 | 1000 | 0 | 91 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 948.5 | 30 | 1000 | 0 | 94.8 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1020 | 30 | 1000 | 0 | 102 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 916 | 30 | 1000 | 0 | 91.6 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 883.5 | 30 | 1000 | 0 | 88.4 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1040 | 30 | 1000 | 0 | 104 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 986 | 30 | 1000 | 0 | 98.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 845.5 | 30 | 1000 | 0 | 84.6 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 966 | 30 | 1000 | 0 | 96.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 987 | 30 | 1000 | 0 | 98.7 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 950 | 30 | 1000 | 0 | 95 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 934 | 30 | 1000 | 0 | 93.4 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 987.5 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 971.5 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 940 | 30 | 1000 | 0 | 94 | 70-125 | 0 | | | |
| 2-Butanone | 910 | 200 | 1000 | 0 | 91 | 30-160 | 0 | | | |
| 2-Hexanone | 911.5 | 30 | 1000 | 0 | 91.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1231 | 30 | 1000 | 0 | 123 | 45-145 | 0 | | | |
| Acetone | 1159 | 100 | 1000 | 0 | 116 | 20-160 | 0 | | | B |
| Acrylonitrile | 838.5 | 100 | 1000 | 0 | 83.8 | 70-135 | 0 | | | |
| Benzene | 946 | 30 | 1000 | 0 | 94.6 | 75-125 | 0 | | | |
| Bromobenzene | 970.5 | 30 | 1000 | 0 | 97 | 65-120 | 0 | | | |
| Bromochloromethane | 1013 | 30 | 1000 | 0 | 101 | 70-125 | 0 | | | |
| Bromodichloromethane | 951.5 | 30 | 1000 | 0 | 95.2 | 70-130 | 0 | | | |
| Bromoform | 845 | 30 | 1000 | 0 | 84.5 | 55-135 | 0 | | | |
| Bromomethane | 1099 | 75 | 1000 | 0 | 110 | 30-160 | 0 | | | |
| Carbon disulfide | 1028 | 30 | 1000 | 0 | 103 | 45-160 | 0 | | | |
| Carbon tetrachloride | 993 | 30 | 1000 | 0 | 99.3 | 65-135 | 0 | | | |
| Chlorobenzene | 959.5 | 30 | 1000 | 0 | 96 | 75-125 | 0 | | | |
| Chloroethane | 924 | 100 | 1000 | 0 | 92.4 | 40-155 | 0 | | | |
| Chloroform | 924.5 | 30 | 1000 | 0 | 92.4 | 70-125 | 0 | | | |
| Chloromethane | 799 | 100 | 1000 | 0 | 79.9 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 924.5 | 30 | 1000 | 0 | 92.4 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 900.5 | 30 | 1000 | 0 | 90 | 70-125 | 0 | | | |
| Dibromochloromethane | 848 | 30 | 1000 | 0 | 84.8 | 65-135 | 0 | | | |
| Dibromomethane | 921 | 30 | 1000 | 0 | 92.1 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 565.5 | 30 | 1000 | 0 | 56.6 | 35-135 | 0 | | | |
| Ethylbenzene | 968 | 30 | 1000 | 0 | 96.8 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 795 | 30 | 1000 | 0 | 79.5 | 70-135 | 0 |
| Isopropylbenzene | 973 | 30 | 1000 | 0 | 97.3 | 75-130 | 0 |
| m,p-Xylene | 1956 | 60 | 2000 | 0 | 97.8 | 80-125 | 0 |
| Methyl tert-butyl ether | 897 | 30 | 1000 | 0 | 89.7 | 75-125 | 0 |
| Methylene chloride | 946.5 | 30 | 1000 | 0 | 94.6 | 55-145 | 0 |
| Naphthalene | 997 | 100 | 1000 | 0 | 99.7 | 40-140 | 0 |
| n-Butylbenzene | 988.5 | 30 | 1000 | 0 | 98.8 | 65-140 | 0 |
| n-Propylbenzene | 958.5 | 30 | 1000 | 0 | 95.8 | 65-135 | 0 |
| o-Xylene | 965.5 | 30 | 1000 | 0 | 96.6 | 75-125 | 0 |
| p-Isopropyltoluene | 973 | 30 | 1000 | 0 | 97.3 | 75-135 | 0 |
| sec-Butylbenzene | 987.5 | 30 | 1000 | 0 | 98.8 | 65-130 | 0 |
| Styrene | 994 | 30 | 1000 | 0 | 99.4 | 75-125 | 0 |
| tert-Butylbenzene | 957.5 | 30 | 1000 | 0 | 95.8 | 65-130 | 0 |
| Tetrachloroethene | 1008 | 30 | 1000 | 0 | 101 | 64-140 | 0 |
| Tetrahydrofuran | 851.5 | 200 | 1000 | 0 | 85.2 | 70-135 | 0 |
| Toluene | 964 | 30 | 1000 | 0 | 96.4 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 953.5 | 30 | 1000 | 0 | 95.4 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 943.5 | 30 | 1000 | 0 | 94.4 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 796 | 30 | 1000 | 0 | 79.6 | 70-135 | 0 |
| Trichloroethene | 911.5 | 30 | 1000 | 0 | 91.2 | 75-125 | 0 |
| Trichlorofluoromethane | 802 | 30 | 1000 | 0 | 80.2 | 25-185 | 0 |
| Vinyl chloride | 723 | 30 | 1000 | 0 | 72.3 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1000* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *994* | 0 | *1000* | 0 | *99.4* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1008* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1000* | 0 | *1000* | 0 | *100* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42539-42539** Units: **µg/Kg** Analysis Date: **7/24/2012 11:12 PM**
Client ID: Run ID: **VMS6_120724A** SeqNo: **2036359** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1094 | 30 | 1000 | 0 | 109 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1114 | 30 | 1000 | 0 | 111 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1053 | 30 | 1000 | 0 | 105 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 966 | 30 | 1000 | 0 | 96.6 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1028 | 30 | 1000 | 0 | 103 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1078 | 30 | 1000 | 0 | 108 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1065 | 30 | 1000 | 0 | 106 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1001 | 30 | 1000 | 0 | 100 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 997.5 | 30 | 1000 | 0 | 99.8 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1136 | 30 | 1000 | 0 | 114 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1089 | 30 | 1000 | 0 | 109 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 938 | 30 | 1000 | 0 | 93.8 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1038 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1108 | 30 | 1000 | 0 | 111 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1058 | 30 | 1000 | 0 | 106 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1091 | 30 | 1000 | 0 | 109 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1156 | 30 | 1000 | 0 | 116 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1067 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1071 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| 2-Butanone | 893.5 | 200 | 1000 | 0 | 89.4 | 30-160 | 0 | | | |
| 2-Hexanone | 897 | 30 | 1000 | 0 | 89.7 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1188 | 30 | 1000 | 0 | 119 | 45-145 | 0 | | | |
| Acetone | 942.5 | 100 | 1000 | 0 | 94.2 | 20-160 | 0 | | | B |
| Acrylonitrile | 987.5 | 100 | 1000 | 0 | 98.8 | 70-135 | 0 | | | |
| Benzene | 1084 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| Bromobenzene | 1125 | 30 | 1000 | 0 | 112 | 65-120 | 0 | | | |
| Bromochloromethane | 1064 | 30 | 1000 | 0 | 106 | 70-125 | 0 | | | |
| Bromodichloromethane | 1076 | 30 | 1000 | 0 | 108 | 70-130 | 0 | | | |
| Bromoform | 1077 | 30 | 1000 | 0 | 108 | 55-135 | 0 | | | |
| Bromomethane | 1482 | 75 | 1000 | 0 | 148 | 30-160 | 0 | | | |
| Carbon disulfide | 1135 | 30 | 1000 | 0 | 114 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1108 | 30 | 1000 | 0 | 111 | 65-135 | 0 | | | |
| Chlorobenzene | 1100 | 30 | 1000 | 0 | 110 | 75-125 | 0 | | | |
| Chloroethane | 942 | 100 | 1000 | 0 | 94.2 | 40-155 | 0 | | | |
| Chloroform | 1038 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| Chloromethane | 909 | 100 | 1000 | 0 | 90.9 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1051 | 30 | 1000 | 0 | 105 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1080 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| Dibromochloromethane | 1058 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| Dibromomethane | 1072 | 30 | 1000 | 0 | 107 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 602.5 | 30 | 1000 | 0 | 60.2 | 35-135 | 0 | | | |
| Ethylbenzene | 1124 | 30 | 1000 | 0 | 112 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 954.5 | 30 | 1000 | 0 | 95.4 | 70-135 | 0 |
| Isopropylbenzene | 1118 | 30 | 1000 | 0 | 112 | 75-130 | 0 |
| m,p-Xylene | 2257 | 60 | 2000 | 0 | 113 | 80-125 | 0 |
| Methyl tert-butyl ether | 924.5 | 30 | 1000 | 0 | 92.4 | 75-125 | 0 |
| Methylene chloride | 1088 | 30 | 1000 | 0 | 109 | 55-145 | 0 |
| Naphthalene | 1030 | 100 | 1000 | 0 | 103 | 40-140 | 0 |
| n-Butylbenzene | 1150 | 30 | 1000 | 0 | 115 | 65-140 | 0 |
| n-Propylbenzene | 1104 | 30 | 1000 | 0 | 110 | 65-135 | 0 |
| o-Xylene | 1110 | 30 | 1000 | 0 | 111 | 75-125 | 0 |
| p-Isopropyltoluene | 1118 | 30 | 1000 | 0 | 112 | 75-135 | 0 |
| sec-Butylbenzene | 1094 | 30 | 1000 | 0 | 109 | 65-130 | 0 |
| Styrene | 1071 | 30 | 1000 | 0 | 107 | 75-125 | 0 |
| tert-Butylbenzene | 1112 | 30 | 1000 | 0 | 111 | 65-130 | 0 |
| Tetrachloroethene | 1119 | 30 | 1000 | 0 | 112 | 64-140 | 0 |
| Tetrahydrofuran | 853.5 | 200 | 1000 | 0 | 85.4 | 70-135 | 0 |
| Toluene | 1103 | 30 | 1000 | 0 | 110 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1090 | 30 | 1000 | 0 | 109 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1089 | 30 | 1000 | 0 | 109 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 810 | 30 | 1000 | 0 | 81 | 70-135 | 0 |
| Trichloroethene | 1075 | 30 | 1000 | 0 | 108 | 75-125 | 0 |
| Trichlorofluoromethane | 836 | 30 | 1000 | 0 | 83.6 | 25-185 | 0 |
| Vinyl chloride | 877 | 30 | 1000 | 0 | 87.7 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *985* | 0 | *1000* | 0 | *98.5* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *977.5* | 0 | *1000* | 0 | *97.8* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *987* | 0 | *1000* | 0 | *98.7* | *70-130* | 0 |
| *Surr: Toluene-d8* | *976* | 0 | *1000* | 0 | *97.6* | *70-130* | 0 |

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42539-42539** Units: **µg/Kg** Analysis Date: **7/25/2012 03:38 PM**
Client ID: Run ID: **VMS8_120725A** SeqNo: **2036862** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1123 | 30 | 1000 | 0 | 112 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1170 | 30 | 1000 | 0 | 117 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1106 | 30 | 1000 | 0 | 111 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1028 | 30 | 1000 | 0 | 103 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1076 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1184 | 30 | 1000 | 0 | 118 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1196 | 30 | 1000 | 0 | 120 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1092 | 30 | 1000 | 0 | 109 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 971.5 | 30 | 1000 | 0 | 97.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1214 | 30 | 1000 | 0 | 121 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 988.5 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 991 | 30 | 1000 | 0 | 99.1 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1044 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1077 | 30 | 1000 | 0 | 108 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1112 | 30 | 1000 | 0 | 111 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1120 | 30 | 1000 | 0 | 112 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1138 | 30 | 1000 | 0 | 114 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1084 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1114 | 30 | 1000 | 0 | 111 | 70-125 | 0 | | | |
| 2-Butanone | 1120 | 200 | 1000 | 0 | 112 | 30-160 | 0 | | | |
| 2-Hexanone | 1057 | 30 | 1000 | 0 | 106 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1199 | 30 | 1000 | 0 | 120 | 45-145 | 0 | | | |
| Acetone | 875 | 100 | 1000 | 0 | 87.5 | 20-160 | 0 | | | B |
| Acrylonitrile | 982 | 100 | 1000 | 0 | 98.2 | 70-135 | 0 | | | |
| Benzene | 1082 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| Bromobenzene | 1110 | 30 | 1000 | 0 | 111 | 65-120 | 0 | | | |
| Bromochloromethane | 1160 | 30 | 1000 | 0 | 116 | 70-125 | 0 | | | |
| Bromodichloromethane | 1019 | 30 | 1000 | 0 | 102 | 70-130 | 0 | | | |
| Bromoform | 1004 | 30 | 1000 | 0 | 100 | 55-135 | 0 | | | |
| Bromomethane | 1108 | 75 | 1000 | 0 | 111 | 30-160 | 0 | | | |
| Carbon disulfide | 1249 | 30 | 1000 | 0 | 125 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1174 | 30 | 1000 | 0 | 117 | 65-135 | 0 | | | |
| Chlorobenzene | 1104 | 30 | 1000 | 0 | 110 | 75-125 | 0 | | | |
| Chloroethane | 1062 | 100 | 1000 | 0 | 106 | 40-155 | 0 | | | |
| Chloroform | 1024 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| Chloromethane | 952 | 100 | 1000 | 0 | 95.2 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1072 | 30 | 1000 | 0 | 107 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1018 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| Dibromochloromethane | 1005 | 30 | 1000 | 0 | 100 | 65-135 | 0 | | | |
| Dibromomethane | 1052 | 30 | 1000 | 0 | 105 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 986.5 | 30 | 1000 | 0 | 98.6 | 35-135 | 0 | | | |
| Ethylbenzene | 1128 | 30 | 1000 | 0 | 113 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 964.5 | 30 | 1000 | 0 | 96.4 | 70-135 | 0 |
| Isopropylbenzene | 1128 | 30 | 1000 | 0 | 113 | 75-130 | 0 |
| m,p-Xylene | 2284 | 60 | 2000 | 0 | 114 | 80-125 | 0 |
| Methyl tert-butyl ether | 960 | 30 | 1000 | 0 | 96 | 75-125 | 0 |
| Methylene chloride | 1073 | 30 | 1000 | 0 | 107 | 55-145 | 0 |
| Naphthalene | 1120 | 100 | 1000 | 0 | 112 | 40-140 | 0 |
| n-Butylbenzene | 1215 | 30 | 1000 | 0 | 122 | 65-140 | 0 |
| n-Propylbenzene | 1126 | 30 | 1000 | 0 | 113 | 65-135 | 0 |
| o-Xylene | 1108 | 30 | 1000 | 0 | 111 | 75-125 | 0 |
| p-Isopropyltoluene | 1157 | 30 | 1000 | 0 | 116 | 75-135 | 0 |
| sec-Butylbenzene | 1202 | 30 | 1000 | 0 | 120 | 65-130 | 0 |
| Styrene | 1102 | 30 | 1000 | 0 | 110 | 75-125 | 0 |
| tert-Butylbenzene | 1181 | 30 | 1000 | 0 | 118 | 65-130 | 0 |
| Tetrachloroethene | 1224 | 30 | 1000 | 0 | 122 | 64-140 | 0 |
| Tetrahydrofuran | 1032 | 200 | 1000 | 0 | 103 | 70-135 | 0 |
| Toluene | 1120 | 30 | 1000 | 0 | 112 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1140 | 30 | 1000 | 0 | 114 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1033 | 30 | 1000 | 0 | 103 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 983 | 30 | 1000 | 0 | 98.3 | 70-135 | 0 |
| Trichloroethene | 1135 | 30 | 1000 | 0 | 114 | 75-125 | 0 |
| Trichlorofluoromethane | 1023 | 30 | 1000 | 0 | 102 | 25-185 | 0 |
| Vinyl chloride | 1010 | 30 | 1000 | 0 | 101 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1006* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1019* | 0 | *1000* | 0 | *102* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1003* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *998.5* | 0 | *1000* | 0 | *99.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MS** Sample ID: **1207633-03A MS** Units: **µg/Kg** Analysis Date: **7/26/2012 01:20 AM**
Client ID: **SBSA0122S071912S009** Run ID: **VMS8_120725A** SeqNo: **2036859** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 2368 | 65 | 2175 | 0 | 109 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 2541 | 65 | 2175 | 0 | 117 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 2169 | 65 | 2175 | 0 | 99.8 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 2154 | 65 | 2175 | 0 | 99 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 2376 | 65 | 2175 | 0 | 109 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 2588 | 65 | 2175 | 0 | 119 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1867 | 65 | 2175 | 0 | 85.8 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 2117 | 65 | 2175 | 0 | 97.4 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 2026 | 65 | 2175 | 0 | 93.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1970 | 65 | 2175 | 0 | 90.6 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 2056 | 65 | 2175 | 0 | 94.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 1778 | 65 | 2175 | 0 | 81.8 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 2166 | 65 | 2175 | 0 | 99.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 2153 | 65 | 2175 | 0 | 99 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 2425 | 65 | 2175 | 0 | 112 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 2493 | 65 | 2175 | 0 | 115 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 2396 | 65 | 2175 | 0 | 110 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 2277 | 65 | 2175 | 0 | 105 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 2251 | 65 | 2175 | 0 | 104 | 70-125 | 0 | | | |
| 2-Butanone | 2564 | 220 | 2175 | 0 | 118 | 30-160 | 0 | | | |
| 2-Hexanone | 2106 | 65 | 2175 | 0 | 96.8 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 2478 | 65 | 2175 | 0 | 114 | 45-145 | 0 | | | |
| Acetone | 2304 | 220 | 2175 | 103.3 | 101 | 20-160 | 0 | | | B |
| Acrylonitrile | 2100 | 65 | 2175 | 0 | 96.6 | 70-135 | 0 | | | |
| Benzene | 2414 | 65 | 2175 | 0 | 111 | 75-125 | 0 | | | |
| Bromobenzene | 2334 | 65 | 2175 | 0 | 107 | 65-120 | 0 | | | |
| Bromochloromethane | 2563 | 65 | 2175 | 0 | 118 | 70-125 | 0 | | | |
| Bromodichloromethane | 2101 | 65 | 2175 | 0 | 96.6 | 70-130 | 0 | | | |
| Bromoform | 1908 | 65 | 2175 | 0 | 87.8 | 55-135 | 0 | | | |
| Bromomethane | 2191 | 65 | 2175 | 0 | 101 | 30-160 | 0 | | | |
| Carbon disulfide | 2561 | 65 | 2175 | 0 | 118 | 45-160 | 0 | | | |
| Carbon tetrachloride | 2516 | 65 | 2175 | 0 | 116 | 65-135 | 0 | | | |
| Chlorobenzene | 2369 | 65 | 2175 | 0 | 109 | 75-125 | 0 | | | |
| Chloroethane | 2083 | 220 | 2175 | 0 | 95.8 | 40-155 | 0 | | | |
| Chloroform | 2366 | 65 | 2175 | 0 | 109 | 70-125 | 0 | | | |
| Chloromethane | 2016 | 65 | 2175 | 0 | 92.7 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 2398 | 65 | 2175 | 0 | 110 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 2145 | 65 | 2175 | 0 | 98.6 | 70-125 | 0 | | | |
| Dibromochloromethane | 1973 | 65 | 2175 | 0 | 90.8 | 65-135 | 0 | | | |
| Dibromomethane | 2268 | 65 | 2175 | 0 | 104 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 1701 | 65 | 2175 | 0 | 78.2 | 35-135 | 0 | | | |
| Ethylbenzene | 2427 | 65 | 2175 | 0 | 112 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1816 | 65 | 2175 | 0 | 83.5 | 70-135 | 0 |
| Isopropylbenzene | 2434 | 65 | 2175 | 0 | 112 | 75-130 | 0 |
| m,p-Xylene | 4906 | 130 | 4349 | 0 | 113 | 80-125 | 0 |
| Methyl tert-butyl ether | 2147 | 65 | 2175 | 0 | 98.8 | 75-125 | 0 |
| Methylene chloride | 2391 | 65 | 2175 | 0 | 110 | 55-145 | 0 |
| Naphthalene | 1819 | 220 | 2175 | 0 | 83.6 | 40-140 | 0 |
| n-Butylbenzene | 2322 | 65 | 2175 | 0 | 107 | 65-140 | 0 |
| n-Propylbenzene | 2390 | 65 | 2175 | 0 | 110 | 65-135 | 0 |
| o-Xylene | 2415 | 65 | 2175 | 0 | 111 | 75-125 | 0 |
| p-Isopropyltoluene | 2314 | 65 | 2175 | 0 | 106 | 75-135 | 0 |
| sec-Butylbenzene | 2466 | 65 | 2175 | 0 | 113 | 65-130 | 0 |
| Styrene | 2328 | 65 | 2175 | 0 | 107 | 75-125 | 0 |
| tert-Butylbenzene | 2446 | 65 | 2175 | 0 | 112 | 65-130 | 0 |
| Tetrachloroethene | 2665 | 65 | 2175 | 0 | 123 | 64-140 | 0 |
| Tetrahydrofuran | 2254 | 220 | 2175 | 0 | 104 | 70-135 | 0 |
| Toluene | 2408 | 65 | 2175 | 0 | 111 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 2487 | 65 | 2175 | 0 | 114 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 2092 | 65 | 2175 | 0 | 96.2 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 1852 | 65 | 2175 | 0 | 85.2 | 70-135 | 0 |
| Trichloroethene | 2515 | 65 | 2175 | 0 | 116 | 75-125 | 0 |
| Trichlorofluoromethane | 1918 | 65 | 2175 | 0 | 88.2 | 25-185 | 0 |
| Vinyl chloride | 2090 | 65 | 2175 | 0 | 96.1 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *2226* | 0 | *2175* | 0 | *102* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *2158* | 0 | *2175* | 0 | *99.2* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *2209* | 0 | *2175* | 0 | *102* | *70-130* | 0 |
| *Surr: Toluene-d8* | *2150* | 0 | *2175* | 0 | *98.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1207633-03A MSD** Units: **µg/Kg** Analysis Date: **7/26/2012 01:46 AM**
Client ID: **SBSA0122S071912S009** Run ID: **VMS8_120725A** SeqNo: **2036860** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 2351 | 65 | 2175 | 0 | 108 | 75-125 | 2368 | 0.737 | 30 | |
| 1,1,1-Trichloroethane | 2494 | 65 | 2175 | 0 | 115 | 70-135 | 2541 | 1.86 | 30 | |
| 1,1,2,2-Tetrachloroethane | 1963 | 65 | 2175 | 0 | 90.2 | 55-130 | 2169 | 10 | 30 | |
| 1,1,2-Trichloroethane | 2053 | 65 | 2175 | 0 | 94.4 | 60-125 | 2154 | 4.81 | 30 | |
| 1,1-Dichloroethane | 2297 | 65 | 2175 | 0 | 106 | 75-125 | 2376 | 3.35 | 30 | |
| 1,1-Dichloroethene | 1906 | 65 | 2175 | 0 | 87.6 | 65-135 | 2588 | 30.3 | 30 | R |
| 1,2,3-Trichlorobenzene | 2117 | 65 | 2175 | 0 | 97.4 | 60-135 | 1867 | 12.6 | 30 | |
| 1,2,3-Trichloropropane | 1938 | 65 | 2175 | 0 | 89.1 | 65-130 | 2117 | 8.85 | 30 | |
| 1,2,3-Trimethylbenzene | 2053 | 65 | 2175 | 0 | 94.4 | 65-135 | 2026 | 1.33 | 30 | |
| 1,2,4-Trichlorobenzene | 2201 | 65 | 2175 | 0 | 101 | 65-130 | 1970 | 11.1 | 30 | |
| 1,2,4-Trimethylbenzene | 2006 | 65 | 2175 | 0 | 92.2 | 65-135 | 2056 | 2.46 | 30 | |
| 1,2-Dibromo-3-chloropropane | 1682 | 65 | 2175 | 0 | 77.4 | 40-135 | 1778 | 5.53 | 30 | |
| 1,2-Dibromoethane | 2025 | 65 | 2175 | 0 | 93.1 | 70-125 | 2166 | 6.75 | 30 | |
| 1,2-Dichlorobenzene | 2195 | 65 | 2175 | 0 | 101 | 75-120 | 2153 | 1.95 | 30 | |
| 1,2-Dichloroethane | 2318 | 65 | 2175 | 0 | 107 | 70-135 | 2425 | 4.49 | 30 | |
| 1,2-Dichloropropane | 2434 | 65 | 2175 | 0 | 112 | 70-120 | 2493 | 2.38 | 30 | |
| 1,3,5-Trimethylbenzene | 2321 | 65 | 2175 | 0 | 107 | 65-135 | 2396 | 3.18 | 30 | |
| 1,3-Dichlorobenzene | 2297 | 65 | 2175 | 0 | 106 | 70-125 | 2277 | 0.903 | 30 | |
| 1,4-Dichlorobenzene | 2289 | 65 | 2175 | 0 | 105 | 70-125 | 2251 | 1.68 | 30 | |
| 2-Butanone | 2664 | 220 | 2175 | 0 | 122 | 30-160 | 2564 | 3.83 | 30 | |
| 2-Hexanone | 1893 | 65 | 2175 | 0 | 87 | 45-145 | 2106 | 10.7 | 30 | |
| 4-Methyl-2-pentanone | 2217 | 65 | 2175 | 0 | 102 | 45-145 | 2478 | 11.1 | 30 | |
| Acetone | 1808 | 220 | 2175 | 103.3 | 78.4 | 20-160 | 2304 | 24.1 | 30 | B |
| Acrylonitrile | 1851 | 65 | 2175 | 0 | 85.1 | 70-135 | 2100 | 12.6 | 30 | |
| Benzene | 2345 | 65 | 2175 | 0 | 108 | 75-125 | 2414 | 2.88 | 30 | |
| Bromobenzene | 2303 | 65 | 2175 | 0 | 106 | 65-120 | 2334 | 1.36 | 30 | |
| Bromochloromethane | 2479 | 65 | 2175 | 0 | 114 | 70-125 | 2563 | 3.32 | 30 | |
| Bromodichloromethane | 2102 | 65 | 2175 | 0 | 96.6 | 70-130 | 2101 | 0.0517 | 30 | |
| Bromoform | 1707 | 65 | 2175 | 0 | 78.5 | 55-135 | 1908 | 11.1 | 30 | |
| Bromomethane | 1928 | 65 | 2175 | 0 | 88.6 | 30-160 | 2191 | 12.8 | 30 | |
| Carbon disulfide | 2461 | 65 | 2175 | 0 | 113 | 45-160 | 2561 | 3.98 | 30 | |
| Carbon tetrachloride | 2496 | 65 | 2175 | 0 | 115 | 65-135 | 2516 | 0.781 | 30 | |
| Chlorobenzene | 2327 | 65 | 2175 | 0 | 107 | 75-125 | 2369 | 1.81 | 30 | |
| Chloroethane | 2237 | 220 | 2175 | 0 | 103 | 40-155 | 2083 | 7.1 | 30 | |
| Chloroform | 2230 | 65 | 2175 | 0 | 103 | 70-125 | 2366 | 5.91 | 30 | |
| Chloromethane | 1950 | 65 | 2175 | 0 | 89.6 | 50-130 | 2016 | 3.35 | 30 | |
| cis-1,2-Dichloroethene | 2332 | 65 | 2175 | 0 | 107 | 65-125 | 2398 | 2.76 | 30 | |
| cis-1,3-Dichloropropene | 2072 | 65 | 2175 | 0 | 95.3 | 70-125 | 2145 | 3.45 | 30 | |
| Dibromochloromethane | 1947 | 65 | 2175 | 0 | 89.6 | 65-135 | 1973 | 1.33 | 30 | |
| Dibromomethane | 2143 | 65 | 2175 | 0 | 98.6 | 75-130 | 2268 | 5.67 | 30 | |
| Dichlorodifluoromethane | 1623 | 65 | 2175 | 0 | 74.6 | 35-135 | 1701 | 4.65 | 30 | |
| Ethylbenzene | 2380 | 65 | 2175 | 0 | 109 | 75-125 | 2427 | 1.95 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1818 | 65 | 2175 | 0 | 83.6 | 70-135 | 1816 | 0.12 | 30 | |
| Isopropylbenzene | 2382 | 65 | 2175 | 0 | 110 | 75-130 | 2434 | 2.17 | 30 | |
| m,p-Xylene | 4754 | 130 | 4349 | 0 | 109 | 80-125 | 4906 | 3.15 | 30 | |
| Methyl tert-butyl ether | 1956 | 65 | 2175 | 0 | 90 | 75-125 | 2147 | 9.33 | 30 | |
| Methylene chloride | 2384 | 65 | 2175 | 0 | 110 | 55-145 | 2391 | 0.273 | 30 | |
| Naphthalene | 2097 | 220 | 2175 | 0 | 96.4 | 40-140 | 1819 | 14.2 | 30 | |
| n-Butylbenzene | 2309 | 65 | 2175 | 0 | 106 | 65-140 | 2322 | 0.563 | 30 | |
| n-Propylbenzene | 2318 | 65 | 2175 | 0 | 107 | 65-135 | 2390 | 3.05 | 30 | |
| o-Xylene | 2356 | 65 | 2175 | 0 | 108 | 75-125 | 2415 | 2.46 | 30 | |
| p-Isopropyltoluene | 2333 | 65 | 2175 | 0 | 107 | 75-135 | 2314 | 0.842 | 30 | |
| sec-Butylbenzene | 2374 | 65 | 2175 | 0 | 109 | 65-130 | 2466 | 3.82 | 30 | |
| Styrene | 2277 | 65 | 2175 | 0 | 105 | 75-125 | 2328 | 2.22 | 30 | |
| tert-Butylbenzene | 2407 | 65 | 2175 | 0 | 111 | 65-130 | 2446 | 1.61 | 30 | |
| Tetrachloroethene | 2579 | 65 | 2175 | 0 | 119 | 64-140 | 2665 | 3.28 | 30 | |
| Tetrahydrofuran | 703.5 | 220 | 2175 | 0 | 32.4 | 70-135 | 2254 | 105 | 30 | SR |
| Toluene | 2345 | 65 | 2175 | 0 | 108 | 70-125 | 2408 | 2.65 | 30 | |
| trans-1,2-Dichloroethene | 2390 | 65 | 2175 | 0 | 110 | 65-135 | 2487 | 3.97 | 30 | |
| trans-1,3-Dichloropropene | 2031 | 65 | 2175 | 0 | 93.4 | 65-125 | 2092 | 2.95 | 30 | |
| trans-1,4-Dichloro-2-butene | 1528 | 65 | 2175 | 0 | 70.2 | 70-135 | 1852 | 19.2 | 30 | |
| Trichloroethene | 2420 | 65 | 2175 | 0 | 111 | 75-125 | 2515 | 3.83 | 30 | |
| Trichlorofluoromethane | 2085 | 65 | 2175 | 0 | 95.9 | 25-185 | 1918 | 8.37 | 30 | |
| Vinyl chloride | 2009 | 65 | 2175 | 0 | 92.4 | 60-125 | 2090 | 3.93 | 30 | |
| *Surr: 1,2-Dichloroethane-d4* | *2175* | 0 | *2175* | 0 | *100* | *70-130* | 2226 | *2.32* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *2168* | 0 | *2175* | 0 | *99.7* | *70-130* | 2158 | *0.452* | *30* | |
| *Surr: Dibromofluoromethane* | *2226* | 0 | *2175* | 0 | *102* | *70-130* | 2209 | *0.735* | *30* | |
| *Surr: Toluene-d8* | *2182* | 0 | *2175* | 0 | *100* | *70-130* | 2150 | *1.51* | *30* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207633-01A | 1207633-02A | 1207633-03A |
| 1207633-04A | 1207633-05A | 1207633-06A |
| 1207633-07A | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207633
**Project:** Marshall KRRI Source Area 7/19/12

# QC BATCH REPORT

Batch ID: **R107639** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R107639** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034381** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | ND | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R107639** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034380** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 100 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | |

**DUP** Sample ID: **1207633-03BDUP1** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: **SBSA0122S071912S009** Run ID: **MOIST_120723B** SeqNo: **2034366** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 37.14 | 0.050 | 0 | 0 | 0 | 0-0 | 36.91 | 0.621 | 20 | |

**DUP** Sample ID: **1207633-03BDUP2** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: **SBSA0122S071912S009** Run ID: **MOIST_120723B** SeqNo: **2034367** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 36.07 | 0.050 | 0 | 0 | 0 | 0-0 | 36.91 | 2.3 | 20 | |

**DUP** Sample ID: **1207634-05BDUP1** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034376** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 30.4 | 0.050 | 0 | 0 | 0 | 0-0 | 31.03 | 2.05 | 20 | |

**DUP** Sample ID: **1207634-05BDUP2** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034377** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 30.96 | 0.050 | 0 | 0 | 0 | 0-0 | 31.03 | 0.226 | 20 | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207633-01B | 1207633-02B | 1207633-03B |
| 1207633-04B | 1207633-05B | 1207633-06B |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

1207633

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC # ENBRIDGE_071912_GMK1 | Task: KRRI_SOURCE AREA
Total # of Samples: 7 | Event Complete?

| Lab Information | | Project Information | | Other Information | |
|---|---|---|---|---|---|
| Lab Name: | ALS Laboratory Group | Site ID #: | | Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 | Project # | 60162778 | Address: | 1100 Louisiana Suite 1100 |
| | | Site Address | 5555 Glenwood Parkway SE Suite 200 | City/State: | Houson, TX — Phone #: 713-821-2000 |
| Lab PM: | Ann Preston | City: Grand Rapids | State, Zip: MI | PO # | |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 | Site PM Name | [redacted] | Send EDD to | |
| Lab PM email: | ann.preston@alsglobal.com | Phone/Fax: | [redacted] | CC Hardcopy report | |
| Applicable Lab Quote #: | | Site PM Email: | Bryan.Stiemsma@aecom.com | CC Hardcopy report | |

Turn Around Time: 5 Day | Rush: No

BILLING CODE: 6.00

| ITEM # | SAMPLE ID (Samples IDs MUST BE UNIQUE) | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | None | None | None | None | MeOH | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | | |
| 1 | SBSA0121S071912S007 | SBSA0121 | SO | G | 07/19/2012 08:35 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 2 | SBSA0121D071912S007 | SBSA0121 | SO | G | 07/19/2012 08:35 | 3 | DUPLICATE | | X | X | X | X | X | | | | | | | | | | |
| 3 | SBSA0122S071912S009 | SBSA0122 | SO | G | 07/19/2012 09:30 | 6 | MS/MSD | | X | X | X | X | X | | | | | | | | | | |
| 4 | SBSA0123S071912S008 | SBSA0123 | SO | G | 07/19/2012 10:20 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 5 | SBSA0124S071912S014 | SBSA0124 | SO | G | 07/19/2012 11:12 | 3 | MDEQ SPLIT | | X | X | X | X | X | | | | | | | | | | |
| 6 | SBSA0124S071912S020 | SBSA0124 | SO | G | 07/19/2012 11:15 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 7 | SBSA0124T071912MX | SBSA0124 | SQ | G | 07/19/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | | |

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7-19-12 | 1512 | [signature] | 7-19-12 | 1512 |
| [signature] | 7/20/12 | 1708 | | 7/20/12 | 1708 |

| SHIPPING INFO: | SAMPLER NAME AND SIGNATURE | | | |
|---|---|---|---|---|
| Company: | PRINT Name of SAMPLER: | GERRY KRAMER (GMK1) | | |
| Tracking #: | SIGNATURE of SAMPLER: | DATE Signed | Time: | |

| Sample Receipt Conditions | Temp in °C | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|---|
| | 5.0°C | (Y)/N | (Y)/N | (Y)/N |
| | | Y/N | Y/N | Y/N |
| | | Y/N | Y/N | Y/N |
| | | Y/N | Y/N | Y/N |

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **20-Jul-12 17:08**

Work Order: **1207633** Received by: **MA**

Checklist completed by Diane Shaw (eSignature) 23-Jul-12 (Date) Reviewed by: Ann Preston (eSignature) 24-Jul-12 (Date)

Matrices: Soil
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 5.0 c | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 7/23/2012 12:18:23 PM | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | - | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

**ALS Environmental**
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

| CUSTODY SEAL | Seal Broken By: |
| --- | --- |
| Date: 12-19-12 Time: 1520<br>Name: Gerald Kraemer<br>Company: | Date: |

5.0 L

30-Jul-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI 0825I, 0825L 7/18/12** Work Order: **1207634**

Dear Bryan,

ALS Environmental received 8 samples on 20-Jul-2012 05:08 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 92.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment
**Project:** Marshall KRRI 0825I, 0825L 7/18/12
**Work Order:** **1207634**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1207634-01 | SBKR0825I504S071812S007 | Soil | | 7/18/2012 08:47 | 7/20/2012 17:08 | ☐ |
| 1207634-02 | SBKR0825I505D071812S006 | Soil | | 7/18/2012 09:25 | 7/20/2012 17:08 | ☐ |
| 1207634-03 | SBKR0825I505S071812S006 | Soil | | 7/18/2012 09:25 | 7/20/2012 17:08 | ☐ |
| 1207634-04 | SBKR0825I505S071812S013 | Soil | | 7/18/2012 09:30 | 7/20/2012 17:08 | ☐ |
| 1207634-05 | SBKR0825I506S071812S004 | Soil | | 7/18/2012 10:10 | 7/20/2012 17:08 | ☐ |
| 1207634-06 | SBKR0825I506S071812S013 | Soil | | 7/18/2012 10:15 | 7/20/2012 17:08 | ☐ |
| 1207634-07 | SBKR0825L504S071812S006 | Soil | | 7/18/2012 11:00 | 7/20/2012 17:08 | ☐ |
| 1207634-08 | SBKR0825L504T071812MX | Soil | | 7/18/2012 | 7/20/2012 17:08 | ☐ |

## ALS Group USA, Corp

*Date: 30-Jul-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI 0825I, 0825L 7/18/12
**Work Order:** 1207634

# Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 42569 sample SBKR0825I506S071812S004 MS recoveries for DRO and ORO were below control limits. Both the MSD recoveries and RPDs met quality control criteria. No data requires qualification.

Batch 42565 sample SBKR0825I506S071812S004 MS recoveries for Nickel and Vanadium were below control limits. Both the MSD recoveries and RPDs met quality control criteria. No data requires qualification.

Batch 42568 sample SBKR0825I506S071812S004 MSD recovery for Acenaphthylene and MS/MSD recoveries for Anthracene were above below control limits. The parent sample was ND for both compounds. No data requires qualification.

Batch 42539 MS/MSD data for Volatiles is not related to this project's samples. No data requires qualification.

Batch 42495 LCS recovery for Bromomethane was above control limits, but all samples in this quality control batch were ND for this compound. No data requires qualification.

Batch 42473 LCS recovery for trans-1,4-Dichloro-2-butene was above control limits, but all samples in this quality control batch were ND for this compound. No data requires qualification. Sample SBKR0825I506S071812S004 MS/MSD recoveries for trans-1,4-Dichloro-2-butene, and MS recovery and RPD for Vinyl Chloride were outside control limits. The reporting limits for these compounds in the parent samples may be biased low.

Batch 42569 sample 1207634-02 DRO surrogate was diluted out. No qualification is necessary.

# ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment
**Project:** Marshall KRRI 0825I, 0825L 7/18/12
**WorkOrder:** **1207634**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| % of sample | Percent of Sample |
| µg/Kg | Micrograms per Kilogram |
| µg/Kg-dry | Micrograms per Kilogram Dry Weight |
| mg/Kg-dry | Milligrams per Kilogram Dry Weight |

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I504S071812S007 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 8:47:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **53** | **16** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **500** | **33** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *60.2* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/26/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 7/26/2012 |
| **Nickel** | **15** | **4.6** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Vanadium** | **22** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Benzo(a)anthracene** | **1,100** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Benzo(a)pyrene** | **1,200** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Benzo(b)fluoranthene** | **1,600** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Benzo(g,h,i)perylene** | **370** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Benzo(k)fluoranthene** | **880** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Chrysene** | **1,100** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Fluoranthene** | **1,700** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Indeno(1,2,3-cd)pyrene** | **330** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Phenanthrene** | **660** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Pyrene** | **1,800** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| *Surr: 2,4,6-Tribromophenol* | *98.4* | *34-140* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorobiphenyl* | *56.4* | *12-100* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorophenol* | *59.0* | *33-117* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *88.0* | *25-137* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Nitrobenzene-d5* | *50.7* | *37-107* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Phenol-d6* | *59.2* | *40-106* | | | *%REC* | 1 | 7/27/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I504S071812S007 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 8:47:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 130 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 130 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 420 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 420 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I504S071812S007 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 8:47:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 250 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 420 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 130 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *97.5* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *96.2* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **42** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I505D071812S006 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 9:25:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **4,100** | **2,300** | **4.0** | | **mg/Kg-dry** | 10 | 7/27/2012 |
| **ORO (C20-C34)** | **66,000** | **4,600** | **4.0** | | **mg/Kg-dry** | 10 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *0* | *39-115* | | S | *%REC* | 10 | 7/27/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/26/2012 |
| **Molybdenum** | **1.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Nickel** | **15** | **3.5** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Vanadium** | **27** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 1,100 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthene | ND | 1,100 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthylene | ND | 1,100 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Anthracene | ND | 1,100 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(a)anthracene | ND | 1,100 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Benzo(a)pyrene** | **1,700** | **1,100** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Benzo(b)fluoranthene** | **1,500** | **1,100** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| Benzo(g,h,i)perylene | ND | 1,100 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Benzo(k)fluoranthene** | **2,500** | **1,100** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Chrysene** | **2,300** | **1,100** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| Dibenzo(a,h)anthracene | ND | 1,100 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Fluoranthene** | **1,500** | **1,100** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| Fluorene | ND | 1,100 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 1,100 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Naphthalene | ND | 1,100 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Phenanthrene | ND | 1,100 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Pyrene** | **2,400** | **1,100** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| *Surr: 2,4,6-Tribromophenol* | *113* | *34-140* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorobiphenyl* | *81.2* | *12-100* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorophenol* | *83.6* | *33-117* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *114* | *25-137* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Nitrobenzene-d5* | *77.6* | *37-107* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Phenol-d6* | *81.6* | *40-106* | | | *%REC* | 1 | 7/27/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I505D071812S006 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 9:25:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 54 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 54 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I505D071812S006 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 9:25:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 54 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *99.5* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *99.4* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *93.8* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *98.8* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **19** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I505S071812S006 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 9:25:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **1,200** | **230** | **4.0** | | **mg/Kg-dry** | 20 | 7/27/2012 |
| **ORO (C20-C34)** | **12,000** | **470** | **4.0** | | **mg/Kg-dry** | 20 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *60.4* | *39-115* | | | *%REC* | 20 | 7/27/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/26/2012 |
| **Molybdenum** | **1.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Nickel** | **15** | **3.8** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Vanadium** | **26** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Benzo(a)anthracene** | **740** | **590** | **330** | | **µg/Kg-dry** | 10 | 7/28/2012 |
| **Benzo(a)pyrene** | **1,000** | **590** | **330** | | **µg/Kg-dry** | 10 | 7/28/2012 |
| **Benzo(b)fluoranthene** | **1,000** | **590** | **330** | | **µg/Kg-dry** | 10 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 590 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| **Benzo(k)fluoranthene** | **1,300** | **590** | **330** | | **µg/Kg-dry** | 10 | 7/28/2012 |
| **Chrysene** | **1,000** | **590** | **330** | | **µg/Kg-dry** | 10 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 590 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| **Fluoranthene** | **680** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 590 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Pyrene** | **1,000** | **590** | **330** | | **µg/Kg-dry** | 10 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *106* | *34-140* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorobiphenyl* | *65.1* | *12-100* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorophenol* | *71.4* | *33-117* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *92.8* | *25-137* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *61.0* | *37-107* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Phenol-d6* | *68.7* | *40-106* | | | *%REC* | 1 | 7/27/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I505S071812S006 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 9:25:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 50 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 50 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I505S071812S006 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 9:25:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 50 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *99.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *98.2* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *92.7* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *98.4* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **16** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I505S071812S013 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 9:30:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **78** | **14** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **590** | **28** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *68.9* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/26/2012 |
| **Molybdenum** | **1.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Nickel** | **7.9** | **4.4** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Vanadium** | **20** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Benzo(a)anthracene** | **480** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Benzo(a)pyrene** | **640** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Benzo(b)fluoranthene** | **740** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Benzo(k)fluoranthene** | **490** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Chrysene** | **540** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Fluoranthene** | **650** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Pyrene** | **890** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| *Surr: 2,4,6-Tribromophenol* | *104* | *34-140* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorobiphenyl* | *63.9* | *12-100* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorophenol* | *64.5* | *33-117* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *102* | *25-137* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Nitrobenzene-d5* | *57.7* | *37-107* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Phenol-d6* | *64.9* | *40-106* | | | *%REC* | 1 | 7/27/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I505S071812S013 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 9:30:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 83 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 83 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 280 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I505S071812S013 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 9:30:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 83 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *98.8* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *96.8* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **31** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I506S071812S004 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 10:10:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **150** | **14** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **1,200** | **28** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *61.1* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/26/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 7/26/2012 |
| **Nickel** | **15** | **4.5** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Vanadium** | **17** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 690 | 330 | | µg/Kg-dry | 10 | 7/26/2012 |
| Acenaphthene | ND | 690 | 330 | | µg/Kg-dry | 10 | 7/26/2012 |
| Acenaphthylene | ND | 690 | 330 | | µg/Kg-dry | 10 | 7/26/2012 |
| Anthracene | ND | 690 | 330 | | µg/Kg-dry | 10 | 7/26/2012 |
| **Benzo(a)anthracene** | **1,500** | **690** | **330** | | **µg/Kg-dry** | 10 | 7/26/2012 |
| **Benzo(a)pyrene** | **1,700** | **690** | **330** | | **µg/Kg-dry** | 10 | 7/26/2012 |
| **Benzo(b)fluoranthene** | **1,700** | **690** | **330** | | **µg/Kg-dry** | 10 | 7/26/2012 |
| **Benzo(g,h,i)perylene** | **970** | **690** | **330** | | **µg/Kg-dry** | 10 | 7/26/2012 |
| **Benzo(k)fluoranthene** | **1,100** | **690** | **330** | | **µg/Kg-dry** | 10 | 7/26/2012 |
| **Chrysene** | **1,600** | **690** | **330** | | **µg/Kg-dry** | 10 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 690 | 330 | | µg/Kg-dry | 10 | 7/26/2012 |
| **Fluoranthene** | **2,600** | **690** | **330** | | **µg/Kg-dry** | 10 | 7/26/2012 |
| Fluorene | ND | 690 | 330 | | µg/Kg-dry | 10 | 7/26/2012 |
| **Indeno(1,2,3-cd)pyrene** | **800** | **690** | **330** | | **µg/Kg-dry** | 10 | 7/26/2012 |
| Naphthalene | ND | 690 | 330 | | µg/Kg-dry | 10 | 7/26/2012 |
| **Phenanthrene** | **900** | **690** | **330** | | **µg/Kg-dry** | 10 | 7/26/2012 |
| **Pyrene** | **2,400** | **690** | **330** | | **µg/Kg-dry** | 10 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *82.2* | *34-140* | | | *%REC* | 10 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *62.2* | *12-100* | | | *%REC* | 10 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *55.4* | *33-117* | | | *%REC* | 10 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *82.0* | *25-137* | | | *%REC* | 10 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *49.4* | *37-107* | | | *%REC* | 10 | 7/26/2012 |
| *Surr: Phenol-d6* | *61.0* | *40-106* | | | *%REC* | 10 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I506S071812S004 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 10:10:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 83 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 83 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 280 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I506S071812S004 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 10:10:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 170 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 83 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 83 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *99.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *87.8* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *95.4* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *92.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **31** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I506S071812S013 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 10:15:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **50** | **14** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **330** | **29** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *67.2* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/25/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/26/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 7/26/2012 |
| **Nickel** | **8.5** | **4.5** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **Vanadium** | **16** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/26/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Benzo(a)anthracene** | **790** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Benzo(a)pyrene** | **1,200** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Benzo(b)fluoranthene** | **1,400** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Benzo(g,h,i)perylene** | **330** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Benzo(k)fluoranthene** | **850** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| **Chrysene** | **970** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Fluoranthene** | **1,000** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| **Pyrene** | **1,400** | **330** | **330** | | **µg/Kg-dry** | 1 | 7/27/2012 |
| *Surr: 2,4,6-Tribromophenol* | *106* | *34-140* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorobiphenyl* | *63.0* | *12-100* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorophenol* | *67.1* | *33-117* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *97.9* | *25-137* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Nitrobenzene-d5* | *59.4* | *37-107* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Phenol-d6* | *65.7* | *40-106* | | | *%REC* | 1 | 7/27/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I506S071812S013 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 10:15:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 93 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 93 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 310 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825I506S071812S013 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 10:15:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 190 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 93 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 93 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *92.2* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **34** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825L504S071812S006 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 11:00:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **23** | **11** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **180** | **21** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *64.3* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Nickel** | **6.7** | **2.1** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **20** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *95.8* | *34-140* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *59.2* | *12-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *62.7* | *33-117* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *88.0* | *25-137* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *55.2* | *37-107* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *63.0* | *40-106* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/24/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825L504S071812S006 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 11:00:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 39 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 39 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825L504S071812S006 |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 11:00:00 AM |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *97.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.4* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **8.5** | **0.050** | **0** | | **% of sample** | 1 | 7/23/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825L504T071812MX |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-08 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/23/2012** | | Analyst: **RS** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 30 | 10 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 30 | 20 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBKR0825L504T071812MX |
| **Work Order:** | 1207634 | **Collection Date:** | 7/18/2012 |
| **Project:** | Marshall KRRI 0825I, 0825L 7/18/12 | | |
| **Lab ID:** | 1207634-08 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Cyclohexane | ND | 500 | 500 | | µg/Kg | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Ethylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *81.9* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *108* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *82.8* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *90.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

Batch ID: **42569** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42569-42569** Units: **mg/Kg** Analysis Date: **7/26/2012 05:43 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039223** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *3.51* | 0 | *5* | 0 | *70.2* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42569-42569** Units: **mg/Kg** Analysis Date: **7/26/2012 06:10 PM**
Client ID: Run ID: **GC8_120726A** SeqNo: **2039224** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 341.2 | 10 | 500 | 0 | 68.2 | 60-130 | 0 | | | |
| ORO (C20-C34) | 355.4 | 20 | 500 | 0 | 71.1 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.41* | 0 | *5* | 0 | *68.2* | *39-115* | 0 | | | |

**MS** Sample ID: **1207634-05B MS** Units: **mg/Kg** Analysis Date: **7/26/2012 06:37 PM**
Client ID: **SBKR0825I506S071812S004** Run ID: **GC8_120726A** SeqNo: **2039225** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 371.5 | 9.2 | 462.4 | 100.9 | 58.5 | 60-130 | 0 | | | S |
| ORO (C20-C34) | 1058 | 18 | 462.4 | 862 | 42.3 | 60-130 | 0 | | | S |
| *Surr: 4-Terphenyl-d14* | *2.868* | 0 | *4.624* | 0 | *62* | *39-115* | 0 | | | |

**MSD** Sample ID: **1207634-05B MSD** Units: **mg/Kg** Analysis Date: **7/26/2012 07:03 PM**
Client ID: **SBKR0825I506S071812S004** Run ID: **GC8_120726A** SeqNo: **2039226** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 428.2 | 9.9 | 496.4 | 100.9 | 65.9 | 60-130 | 371.5 | 14.2 | 30 | |
| ORO (C20-C34) | 1198 | 20 | 496.4 | 862 | 67.7 | 60-130 | 1058 | 12.4 | 30 | |
| *Surr: 4-Terphenyl-d14* | *3.263* | 0 | *4.964* | 0 | *65.7* | *39-115* | 2.868 | *12.9* | *30* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207634-01B | 1207634-02B | 1207634-03B |
| 1207634-04B | 1207634-05B | 1207634-06B |
| 1207634-07B | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42565** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42565-42565** Units: **mg/Kg** Analysis Date: **7/25/2012 11:30 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037354** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |
| Molybdenum | 0.03862 | 0.25 | | | | | | | | J |
| Nickel | 0.1537 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**LCS** Sample ID: **LCS-42565-42565** Units: **mg/Kg** Analysis Date: **7/25/2012 11:37 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037358** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.82 | 0.10 | 5 | 0 | 96.4 | 80-120 | 0 | | | |
| Molybdenum | 4.672 | 0.25 | 5 | 0 | 93.4 | 80-120 | 0 | | | |
| Nickel | 4.636 | 0.25 | 5 | 0 | 92.7 | 80-120 | 0 | | | |
| Vanadium | 4.73 | 0.25 | 5 | 0 | 94.6 | 80-120 | 0 | | | |

**MS** Sample ID: **1207633-03BMS** Units: **mg/Kg** Analysis Date: **7/26/2012 01:35 AM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037421** Prep Date: **7/25/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.75 | 0.56 | 6.944 | 0.1851 | 94.5 | 75-125 | 0 | | | |
| Molybdenum | 8.597 | 1.4 | 6.944 | 1.593 | 101 | 75-125 | 0 | | | |
| Nickel | 13.2 | 1.4 | 6.944 | 5.935 | 105 | 75-125 | 0 | | | |
| Vanadium | 15.24 | 1.4 | 6.944 | 7.966 | 105 | 75-125 | 0 | | | |

**MS** Sample ID: **1207634-05BMS** Units: **mg/Kg** Analysis Date: **7/26/2012 03:09 AM**
Client ID: **SBKR0825I506S071812S004** Run ID: **ICPMS1_120725A** SeqNo: **2037436** Prep Date: **7/25/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.937 | 0.60 | 7.463 | 0.2598 | 89.5 | 75-125 | 0 | | | |
| Molybdenum | 6.594 | 1.5 | 7.463 | 0.6247 | 80 | 75-125 | 0 | | | |
| Nickel | 15.91 | 1.5 | 7.463 | 10.35 | 74.5 | 75-125 | 0 | | | S |
| Vanadium | 17.33 | 1.5 | 7.463 | 11.92 | 72.5 | 75-125 | 0 | | | S |

**MSD** Sample ID: **1207633-03BMSD** Units: **mg/Kg** Analysis Date: **7/26/2012 01:41 AM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037422** Prep Date: **7/25/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.176 | 0.56 | 6.974 | 0.1851 | 85.9 | 75-125 | 6.75 | 8.89 | 25 | |
| Molybdenum | 7.007 | 1.4 | 6.974 | 1.593 | 77.6 | 75-125 | 8.597 | 20.4 | 25 | |
| Nickel | 11.88 | 1.4 | 6.974 | 5.935 | 85.3 | 75-125 | 13.2 | 10.5 | 25 | |
| Vanadium | 13.81 | 1.4 | 6.974 | 7.966 | 83.8 | 75-125 | 15.24 | 9.84 | 25 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42565** Instrument ID **ICPMS1** Method: **SW6020A**

**MSD** Sample ID: **1207634-05BMSD** Units: **mg/Kg** Analysis Date: **7/26/2012 03:15 AM**
Client ID: **SBKR0825I506S071812S004** Run ID: **ICPMS1_120725A** SeqNo: **2037437** Prep Date: **7/25/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 7.904 | 0.64 | 8.013 | 0.2598 | 95.4 | 75-125 | 6.937 | 13 | 25 | |
| Molybdenum | 7.881 | 1.6 | 8.013 | 0.6247 | 90.6 | 75-125 | 6.594 | 17.8 | 25 | |
| Nickel | 18.66 | 1.6 | 8.013 | 10.35 | 104 | 75-125 | 15.91 | 15.9 | 25 | |
| Vanadium | 20.13 | 1.6 | 8.013 | 11.92 | 103 | 75-125 | 17.33 | 15 | 25 | |

**LCSLL** Sample ID: **LLQC-42565-42565** Units: **mg/Kg** Analysis Date: **7/25/2012 11:43 PM**
Client ID: Run ID: **ICPMS1_120725A** SeqNo: **2037363** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.09255 | 0.10 | 0.1 | 0 | 92.6 | 70-130 | 0 | | | J |
| Molybdenum | 0.2461 | 0.25 | 0.25 | 0 | 98.4 | 70-130 | 0 | | | J |
| Vanadium | 0.2355 | 0.25 | 0.25 | 0 | 94.2 | 70-130 | 0 | | | J |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207634-01B | 1207634-02B | 1207634-03B |
| 1207634-04B | 1207634-05B | 1207634-06B |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42598** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42598-42598** Units: **mg/Kg** Analysis Date: **7/26/2012 06:54 PM**
Client ID: Run ID: **ICPMS1_120726A** SeqNo: **2038672** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |
| Molybdenum | ND | 0.25 | | | | | | | | |
| Nickel | 0.1964 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**MBLK** Sample ID: **MBLK-42598-42598** Units: **mg/Kg** Analysis Date: **7/27/2012 01:44 PM**
Client ID: Run ID: **ICPMS1_120727A** SeqNo: **2039415** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |
| Molybdenum | 0.01021 | 0.25 | | | | | | | | J |
| Nickel | 0.196 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**LCS** Sample ID: **LCS-42598-42598** Units: **mg/Kg** Analysis Date: **7/26/2012 07:06 PM**
Client ID: Run ID: **ICPMS1_120726A** SeqNo: **2038677** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.539 | 0.10 | 5 | 0 | 90.8 | 80-120 | 0 | | | |
| Molybdenum | 4.644 | 0.25 | 5 | 0 | 92.9 | 80-120 | 0 | | | |
| Nickel | 4.652 | 0.25 | 5 | 0 | 93 | 80-120 | 0 | | | |
| Vanadium | 4.578 | 0.25 | 5 | 0 | 91.6 | 80-120 | 0 | | | |

**MS** Sample ID: **1207626-03BMS** Units: **mg/Kg** Analysis Date: **7/26/2012 07:55 PM**
Client ID: Run ID: **ICPMS1_120726A** SeqNo: **2038693** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.844 | 0.15 | 7.418 | 0.03381 | 91.8 | 75-125 | 0 | | | |
| Molybdenum | 7.641 | 0.37 | 7.418 | 0.4341 | 97.1 | 75-125 | 0 | | | |
| Nickel | 9.941 | 0.37 | 7.418 | 2.731 | 97.2 | 75-125 | 0 | | | |
| Vanadium | 9.978 | 0.37 | 7.418 | 2.358 | 103 | 75-125 | 0 | | | |

**MSD** Sample ID: **1207626-03BMSD** Units: **mg/Kg** Analysis Date: **7/26/2012 08:01 PM**
Client ID: Run ID: **ICPMS1_120726A** SeqNo: **2038694** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.389 | 0.15 | 7.576 | 0.03381 | 83.9 | 75-125 | 6.844 | 6.89 | 25 | |
| Molybdenum | 7.077 | 0.38 | 7.576 | 0.4341 | 87.7 | 75-125 | 7.641 | 7.67 | 25 | |
| Nickel | 9.144 | 0.38 | 7.576 | 2.731 | 84.7 | 75-125 | 9.941 | 8.35 | 25 | |
| Vanadium | 9.371 | 0.38 | 7.576 | 2.358 | 92.6 | 75-125 | 9.978 | 6.27 | 25 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42598** Instrument ID **ICPMS1** Method: **SW6020A**

**LCSLL** Sample ID: **LLQC-42598-42598** Units: **mg/Kg** Analysis Date: **7/26/2012 07:00 PM**
Client ID: Run ID: **ICPMS1_120726A** SeqNo: **2038673** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.0863 | 0.10 | 0.1 | 0 | 86.3 | 70-130 | 0 | | | J |
| Molybdenum | 0.2338 | 0.25 | 0.25 | 0 | 93.5 | 70-130 | 0 | | | J |
| Vanadium | 0.2276 | 0.25 | 0.25 | 0 | 91 | 70-130 | 0 | | | J |

**The following samples were analyzed in this batch:** 1207634-07B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42568** Instrument ID **SVMS7** Method: **SW8270**

**MBLK** Sample ID: **SBLKS1-42568-42568** Units: **µg/Kg** Analysis Date: **7/26/2012 01:19 PM**
Client ID: Run ID: **SVMS7_120726A** SeqNo: **2041497** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 50 | | | | | | | | |
| Acenaphthene | ND | 50 | | | | | | | | |
| Acenaphthylene | ND | 50 | | | | | | | | |
| Anthracene | ND | 50 | | | | | | | | |
| Benzo(a)anthracene | ND | 50 | | | | | | | | |
| Benzo(a)pyrene | ND | 50 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 50 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 50 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 50 | | | | | | | | |
| Chrysene | ND | 50 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 50 | | | | | | | | |
| Fluoranthene | ND | 50 | | | | | | | | |
| Fluorene | ND | 50 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | | | | | | | |
| Naphthalene | ND | 50 | | | | | | | | |
| Phenanthrene | ND | 50 | | | | | | | | |
| Pyrene | ND | 50 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *4491* | 0 | *5000* | 0 | *89.8* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3503* | 0 | *5000* | 0 | *70.1* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3659* | 0 | *5000* | 0 | *73.2* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4699* | 0 | *5000* | 0 | *94* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3433* | 0 | *5000* | 0 | *68.7* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3680* | 0 | *5000* | 0 | *73.6* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42568** Instrument ID **SVMS7** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42568-42568** Units: **µg/Kg** Analysis Date: **7/26/2012 12:51 PM**
Client ID: Run ID: **SVMS7_120726A** SeqNo: **2041495** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1819 | 50 | 2000 | 0 | 91 | 45-105 | 0 | | | |
| Acenaphthene | 1805 | 50 | 2000 | 0 | 90.2 | 45-110 | 0 | | | |
| Acenaphthylene | 1821 | 50 | 2000 | 0 | 91 | 45-105 | 0 | | | |
| Anthracene | 1938 | 50 | 2000 | 0 | 96.9 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1873 | 50 | 2000 | 0 | 93.6 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1945 | 50 | 2000 | 0 | 97.2 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1948 | 50 | 2000 | 0 | 97.4 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1933 | 50 | 2000 | 0 | 96.6 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2114 | 50 | 2000 | 0 | 106 | 45-115 | 0 | | | |
| Chrysene | 1909 | 50 | 2000 | 0 | 95.4 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1879 | 50 | 2000 | 0 | 94 | 40-125 | 0 | | | |
| Fluoranthene | 2040 | 50 | 2000 | 0 | 102 | 55-115 | 0 | | | |
| Fluorene | 1910 | 50 | 2000 | 0 | 95.5 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1874 | 50 | 2000 | 0 | 93.7 | 40-120 | 0 | | | |
| Naphthalene | 1761 | 50 | 2000 | 0 | 88 | 40-105 | 0 | | | |
| Phenanthrene | 1906 | 50 | 2000 | 0 | 95.3 | 50-110 | 0 | | | |
| Pyrene | 1843 | 50 | 2000 | 0 | 92.2 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *5085* | 0 | *5000* | 0 | *102* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3445* | 0 | *5000* | 0 | *68.9* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3538* | 0 | *5000* | 0 | *70.8* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4600* | 0 | *5000* | 0 | *92* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3423* | 0 | *5000* | 0 | *68.5* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3434* | 0 | *5000* | 0 | *68.7* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42568** Instrument ID **SVMS7** Method: **SW8270**

**MS** Sample ID: **1207634-05B MS** Units: **µg/Kg** Analysis Date: **7/26/2012 02:45 PM**
Client ID: **SBKR0825I506S071812S004** Run ID: **SVMS7_120726A** SeqNo: **2041499** Prep Date: **7/25/2012** DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1615 | 470 | 1878 | 0 | 86 | 45-105 | 0 | | | |
| Acenaphthene | 1718 | 470 | 1878 | 0 | 91.5 | 45-110 | 0 | | | |
| Acenaphthylene | 1878 | 470 | 1878 | 0 | 100 | 45-105 | 0 | | | |
| Anthracene | 2075 | 470 | 1878 | 0 | 110 | 55-105 | 0 | | | S |
| Benzo(a)anthracene | 2639 | 470 | 1878 | 1068 | 83.6 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 2864 | 470 | 1878 | 1183 | 89.5 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 2902 | 470 | 1878 | 1183 | 91.5 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1981 | 470 | 1878 | 667.6 | 70 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2658 | 470 | 1878 | 782 | 99.9 | 45-115 | 0 | | | |
| Chrysene | 2751 | 470 | 1878 | 1116 | 87.1 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1540 | 470 | 1878 | 0 | 82 | 40-125 | 0 | | | |
| Fluoranthene | 3540 | 470 | 1878 | 1764 | 94.6 | 55-115 | 0 | | | |
| Fluorene | 1878 | 470 | 1878 | 0 | 100 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1784 | 470 | 1878 | 553.1 | 65.5 | 40-120 | 0 | | | |
| Naphthalene | 1474 | 470 | 1878 | 0 | 78.5 | 40-105 | 0 | | | |
| Phenanthrene | 2338 | 470 | 1878 | 619.9 | 91.5 | 50-110 | 0 | | | |
| Pyrene | 3315 | 470 | 1878 | 1659 | 88.1 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *4263* | 0 | *4695* | 0 | *90.8* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3118* | 0 | *4695* | 0 | *66.4* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *2770* | 0 | *4695* | 0 | *59* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4047* | 0 | *4695* | 0 | *86.2* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2535* | 0 | *4695* | 0 | *54* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *2986* | 0 | *4695* | 0 | *63.6* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42568** Instrument ID **SVMS7** Method: **SW8270**

**MSD** Sample ID: **1207634-05B MSD** Units: **µg/Kg** Analysis Date: **7/26/2012 03:13 PM**
Client ID: **SBKR0825I506S071812S004** Run ID: **SVMS7_120726A** SeqNo: **2041500** Prep Date: **7/25/2012** DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1874 | 480 | 1932 | 0 | 97 | 45-105 | 1615 | 14.8 | 30 | |
| Acenaphthene | 1903 | 480 | 1932 | 0 | 98.5 | 45-110 | 1718 | 10.2 | 30 | |
| Acenaphthylene | 2057 | 480 | 1932 | 0 | 106 | 45-105 | 1878 | 9.1 | 30 | S |
| Anthracene | 2192 | 480 | 1932 | 0 | 114 | 55-105 | 2075 | 5.49 | 30 | S |
| Benzo(a)anthracene | 2868 | 480 | 1932 | 1068 | 93.2 | 50-110 | 2639 | 8.34 | 30 | |
| Benzo(a)pyrene | 3042 | 480 | 1932 | 1183 | 96.3 | 50-110 | 2864 | 6.03 | 30 | |
| Benzo(b)fluoranthene | 3139 | 480 | 1932 | 1183 | 101 | 45-115 | 2902 | 7.85 | 30 | |
| Benzo(g,h,i)perylene | 2048 | 480 | 1932 | 667.6 | 71.4 | 40-125 | 1981 | 3.28 | 30 | |
| Benzo(k)fluoranthene | 2878 | 480 | 1932 | 782 | 109 | 45-115 | 2658 | 7.97 | 30 | |
| Chrysene | 2965 | 480 | 1932 | 1116 | 95.7 | 55-110 | 2751 | 7.47 | 30 | |
| Dibenzo(a,h)anthracene | 1449 | 480 | 1932 | 0 | 75 | 40-125 | 1540 | 6.11 | 30 | |
| Fluoranthene | 3863 | 480 | 1932 | 1764 | 109 | 55-115 | 3540 | 8.73 | 30 | |
| Fluorene | 2057 | 480 | 1932 | 0 | 106 | 50-110 | 1878 | 9.1 | 30 | |
| Indeno(1,2,3-cd)pyrene | 1874 | 480 | 1932 | 553.1 | 68.4 | 40-120 | 1784 | 4.89 | 30 | |
| Naphthalene | 1738 | 480 | 1932 | 0 | 90 | 40-105 | 1474 | 16.4 | 30 | |
| Phenanthrene | 2444 | 480 | 1932 | 619.9 | 94.4 | 50-110 | 2338 | 4.4 | 30 | |
| Pyrene | 3564 | 480 | 1932 | 1659 | 98.6 | 45-125 | 3315 | 7.24 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *4501* | 0 | *4829* | 0 | *93.2* | *34-140* | 4263 | *5.42* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *3506* | 0 | *4829* | 0 | *72.6* | *12-100* | 3118 | *11.7* | *40* | |
| *Surr: 2-Fluorophenol* | *3342* | 0 | *4829* | 0 | *69.2* | *33-117* | 2770 | *18.7* | *40* | |
| *Surr: 4-Terphenyl-d14* | *4394* | 0 | *4829* | 0 | *91* | *25-137* | 4047 | *8.22* | *40* | |
| *Surr: Nitrobenzene-d5* | *2984* | 0 | *4829* | 0 | *61.8* | *37-107* | 2535 | *16.3* | *40* | |
| *Surr: Phenol-d6* | *3467* | 0 | *4829* | 0 | *71.8* | *40-106* | 2986 | *14.9* | *40* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207634-01B | 1207634-02B | 1207634-03B |
| 1207634-04B | 1207634-05B | 1207634-06B |
| 1207634-07B | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42495** Instrument ID **VMS5** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42495-42495** Units: **µg/Kg** Analysis Date: **7/24/2012 12:50 PM**
Client ID: Run ID: **VMS5_120723B** SeqNo: **2034625** Prep Date: **7/23/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | ND | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42495** Instrument ID **VMS5** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *824* | 0 | *1000* | 0 | *82.4* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1019* | 0 | *1000* | 0 | *102* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *844.5* | 0 | *1000* | 0 | *84.4* | *70-130* | 0 |
| *Surr: Toluene-d8* | *907* | 0 | *1000* | 0 | *90.7* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42495** Instrument ID **VMS5** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42495-42495** Units: **µg/Kg** Analysis Date: **7/24/2012 08:41 PM**
Client ID: Run ID: **VMS5_120724A** SeqNo: **2036133** Prep Date: **7/23/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 164.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42495** Instrument ID **VMS5** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *826* | 0 | *1000* | 0 | *82.6* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1056* | 0 | *1000* | 0 | *106* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *851* | 0 | *1000* | 0 | *85.1* | *70-130* | 0 |
| *Surr: Toluene-d8* | *910.5* | 0 | *1000* | 0 | *91* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42495** Instrument ID **VMS5** Method: **SW8260**

**LCS** Sample ID: **LCS-42495-42495** Units: **µg/Kg** Analysis Date: **7/23/2012 11:36 PM**
Client ID: Run ID: **VMS5_120723B** SeqNo: **2034598** Prep Date: **7/23/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 987.5 | 30 | 1000 | 0 | 98.8 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 978.5 | 30 | 1000 | 0 | 97.8 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 891.5 | 30 | 1000 | 0 | 89.2 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 962.5 | 30 | 1000 | 0 | 96.2 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 948.5 | 30 | 1000 | 0 | 94.8 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 978.5 | 30 | 1000 | 0 | 97.8 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 937 | 30 | 1000 | 0 | 93.7 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 935.5 | 30 | 1000 | 0 | 93.6 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 889.5 | 30 | 1000 | 0 | 89 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1052 | 30 | 1000 | 0 | 105 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1048 | 30 | 1000 | 0 | 105 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 799.5 | 30 | 1000 | 0 | 80 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 982.5 | 30 | 1000 | 0 | 98.2 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1018 | 30 | 1000 | 0 | 102 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 972.5 | 30 | 1000 | 0 | 97.2 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 976 | 30 | 1000 | 0 | 97.6 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1062 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1020 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1028 | 30 | 1000 | 0 | 103 | 70-125 | 0 | | | |
| 2-Butanone | 795.5 | 200 | 1000 | 0 | 79.6 | 30-160 | 0 | | | |
| 2-Hexanone | 873 | 30 | 1000 | 0 | 87.3 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 902 | 30 | 1000 | 0 | 90.2 | 45-145 | 0 | | | |
| Acetone | 679 | 100 | 1000 | 0 | 67.9 | 20-160 | 0 | | | |
| Acrylonitrile | 813 | 100 | 1000 | 0 | 81.3 | 70-135 | 0 | | | |
| Benzene | 986.5 | 30 | 1000 | 0 | 98.6 | 75-125 | 0 | | | |
| Bromobenzene | 1009 | 30 | 1000 | 0 | 101 | 65-120 | 0 | | | |
| Bromochloromethane | 964.5 | 30 | 1000 | 0 | 96.4 | 70-125 | 0 | | | |
| Bromodichloromethane | 885.5 | 30 | 1000 | 0 | 88.6 | 70-130 | 0 | | | |
| Bromoform | 903 | 30 | 1000 | 0 | 90.3 | 55-135 | 0 | | | |
| Bromomethane | 1556 | 75 | 1000 | 0 | 156 | 30-160 | 0 | | | |
| Carbon disulfide | 1040 | 30 | 1000 | 0 | 104 | 45-160 | 0 | | | |
| Carbon tetrachloride | 987 | 30 | 1000 | 0 | 98.7 | 65-135 | 0 | | | |
| Chlorobenzene | 1007 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 925 | 100 | 1000 | 0 | 92.5 | 40-155 | 0 | | | |
| Chloroform | 947.5 | 30 | 1000 | 0 | 94.8 | 70-125 | 0 | | | |
| Chloromethane | 873 | 100 | 1000 | 0 | 87.3 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 951 | 30 | 1000 | 0 | 95.1 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 923.5 | 30 | 1000 | 0 | 92.4 | 70-125 | 0 | | | |
| Dibromochloromethane | 933.5 | 30 | 1000 | 0 | 93.4 | 65-135 | 0 | | | |
| Dibromomethane | 981.5 | 30 | 1000 | 0 | 98.2 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 868 | 30 | 1000 | 0 | 86.8 | 35-135 | 0 | | | |
| Ethylbenzene | 1030 | 30 | 1000 | 0 | 103 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42495** Instrument ID **VMS5** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 833.5 | 30 | 1000 | 0 | 83.4 | 70-135 | 0 |
| Isopropylbenzene | 1023 | 30 | 1000 | 0 | 102 | 75-130 | 0 |
| m,p-Xylene | 2038 | 60 | 2000 | 0 | 102 | 80-125 | 0 |
| Methyl tert-butyl ether | 940 | 30 | 1000 | 0 | 94 | 75-125 | 0 |
| Methylene chloride | 922 | 30 | 1000 | 0 | 92.2 | 55-145 | 0 |
| Naphthalene | 917.5 | 100 | 1000 | 0 | 91.8 | 40-140 | 0 |
| n-Butylbenzene | 1026 | 30 | 1000 | 0 | 103 | 65-140 | 0 |
| n-Propylbenzene | 1027 | 30 | 1000 | 0 | 103 | 65-135 | 0 |
| o-Xylene | 1016 | 30 | 1000 | 0 | 102 | 75-125 | 0 |
| p-Isopropyltoluene | 1014 | 30 | 1000 | 0 | 101 | 75-135 | 0 |
| sec-Butylbenzene | 1038 | 30 | 1000 | 0 | 104 | 65-130 | 0 |
| Styrene | 1004 | 30 | 1000 | 0 | 100 | 75-125 | 0 |
| tert-Butylbenzene | 999 | 30 | 1000 | 0 | 99.9 | 65-130 | 0 |
| Tetrachloroethene | 1067 | 30 | 1000 | 0 | 107 | 64-140 | 0 |
| Tetrahydrofuran | 789.5 | 200 | 1000 | 0 | 79 | 70-135 | 0 |
| Toluene | 974.5 | 30 | 1000 | 0 | 97.4 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 969.5 | 30 | 1000 | 0 | 97 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 966 | 30 | 1000 | 0 | 96.6 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 1052 | 30 | 1000 | 0 | 105 | 70-135 | 0 |
| Trichloroethene | 1046 | 30 | 1000 | 0 | 105 | 75-125 | 0 |
| Trichlorofluoromethane | 913.5 | 30 | 1000 | 0 | 91.4 | 25-185 | 0 |
| Vinyl chloride | 902.5 | 30 | 1000 | 0 | 90.2 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *803* | 0 | *1000* | 0 | *80.3* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1022* | 0 | *1000* | 0 | *102* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *852* | 0 | *1000* | 0 | *85.2* | *70-130* | 0 |
| *Surr: Toluene-d8* | *898* | 0 | *1000* | 0 | *89.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42495** Instrument ID **VMS5** Method: **SW8260**

**LCS** Sample ID: **LCS-42495-42495** Units: **µg/Kg** Analysis Date: **7/24/2012 07:28 PM**
Client ID: Run ID: **VMS5_120724A** SeqNo: **2036132** Prep Date: **7/23/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 985 | 30 | 1000 | 0 | 98.5 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1046 | 30 | 1000 | 0 | 105 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 817.5 | 30 | 1000 | 0 | 81.8 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 923 | 30 | 1000 | 0 | 92.3 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1084 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1160 | 30 | 1000 | 0 | 116 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 955.5 | 30 | 1000 | 0 | 95.6 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 841.5 | 30 | 1000 | 0 | 84.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 937 | 30 | 1000 | 0 | 93.7 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1037 | 30 | 1000 | 0 | 104 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1048 | 30 | 1000 | 0 | 105 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 759.5 | 30 | 1000 | 0 | 76 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 912.5 | 30 | 1000 | 0 | 91.2 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1022 | 30 | 1000 | 0 | 102 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1000 | 30 | 1000 | 0 | 100 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1026 | 30 | 1000 | 0 | 103 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1054 | 30 | 1000 | 0 | 105 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1041 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1048 | 30 | 1000 | 0 | 105 | 70-125 | 0 | | | |
| 2-Butanone | 816 | 200 | 1000 | 0 | 81.6 | 30-160 | 0 | | | |
| 2-Hexanone | 822 | 30 | 1000 | 0 | 82.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 879 | 30 | 1000 | 0 | 87.9 | 45-145 | 0 | | | |
| Acetone | 708 | 100 | 1000 | 0 | 70.8 | 20-160 | 0 | | | B |
| Acrylonitrile | 815.5 | 100 | 1000 | 0 | 81.6 | 70-135 | 0 | | | |
| Benzene | 1071 | 30 | 1000 | 0 | 107 | 75-125 | 0 | | | |
| Bromobenzene | 1035 | 30 | 1000 | 0 | 104 | 65-120 | 0 | | | |
| Bromochloromethane | 1099 | 30 | 1000 | 0 | 110 | 70-125 | 0 | | | |
| Bromodichloromethane | 993 | 30 | 1000 | 0 | 99.3 | 70-130 | 0 | | | |
| Bromoform | 892 | 30 | 1000 | 0 | 89.2 | 55-135 | 0 | | | |
| Bromomethane | 1947 | 75 | 1000 | 0 | 195 | 30-160 | 0 | | | S |
| Carbon disulfide | 1189 | 30 | 1000 | 0 | 119 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1082 | 30 | 1000 | 0 | 108 | 65-135 | 0 | | | |
| Chlorobenzene | 1030 | 30 | 1000 | 0 | 103 | 75-125 | 0 | | | |
| Chloroethane | 1104 | 100 | 1000 | 0 | 110 | 40-155 | 0 | | | |
| Chloroform | 1061 | 30 | 1000 | 0 | 106 | 70-125 | 0 | | | |
| Chloromethane | 1054 | 100 | 1000 | 0 | 105 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1102 | 30 | 1000 | 0 | 110 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 999 | 30 | 1000 | 0 | 99.9 | 70-125 | 0 | | | |
| Dibromochloromethane | 939 | 30 | 1000 | 0 | 93.9 | 65-135 | 0 | | | |
| Dibromomethane | 950.5 | 30 | 1000 | 0 | 95 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 983 | 30 | 1000 | 0 | 98.3 | 35-135 | 0 | | | |
| Ethylbenzene | 1061 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42495** Instrument ID **VMS5** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 869 | 30 | 1000 | 0 | 86.9 | 70-135 | 0 |
| Isopropylbenzene | 1048 | 30 | 1000 | 0 | 105 | 75-130 | 0 |
| m,p-Xylene | 2120 | 60 | 2000 | 0 | 106 | 80-125 | 0 |
| Methyl tert-butyl ether | 1012 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| Methylene chloride | 1090 | 30 | 1000 | 0 | 109 | 55-145 | 0 |
| Naphthalene | 883.5 | 100 | 1000 | 0 | 88.4 | 40-140 | 0 |
| n-Butylbenzene | 1093 | 30 | 1000 | 0 | 109 | 65-140 | 0 |
| n-Propylbenzene | 1051 | 30 | 1000 | 0 | 105 | 65-135 | 0 |
| o-Xylene | 1055 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| p-Isopropyltoluene | 1057 | 30 | 1000 | 0 | 106 | 75-135 | 0 |
| sec-Butylbenzene | 1068 | 30 | 1000 | 0 | 107 | 65-130 | 0 |
| Styrene | 1044 | 30 | 1000 | 0 | 104 | 75-125 | 0 |
| tert-Butylbenzene | 1028 | 30 | 1000 | 0 | 103 | 65-130 | 0 |
| Tetrachloroethene | 1071 | 30 | 1000 | 0 | 107 | 64-140 | 0 |
| Tetrahydrofuran | 733 | 200 | 1000 | 0 | 73.3 | 70-135 | 0 |
| Toluene | 1050 | 30 | 1000 | 0 | 105 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1170 | 30 | 1000 | 0 | 117 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 977.5 | 30 | 1000 | 0 | 97.8 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 885 | 30 | 1000 | 0 | 88.5 | 70-135 | 0 |
| Trichloroethene | 1058 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| Trichlorofluoromethane | 1074 | 30 | 1000 | 0 | 107 | 25-185 | 0 |
| Vinyl chloride | 1081 | 30 | 1000 | 0 | 108 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *819* | 0 | *1000* | 0 | *81.9* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1083* | 0 | *1000* | 0 | *108* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *850.5* | 0 | *1000* | 0 | *85* | *70-130* | 0 |
| *Surr: Toluene-d8* | *915* | 0 | *1000* | 0 | *91.5* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42495** Instrument ID **VMS5** Method: **SW8260**

**MS** Sample ID: **1207626-09A MS** Units: **µg/Kg** Analysis Date: **7/25/2012 05:07 AM**
Client ID: Run ID: **VMS5_120724A** SeqNo: **2036147** Prep Date: **7/23/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1045 | 34 | 1125 | 0 | 92.9 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1125 | 34 | 1125 | 0 | 100 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 870.6 | 34 | 1125 | 0 | 77.4 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1014 | 34 | 1125 | 0 | 90.2 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1144 | 34 | 1125 | 0 | 102 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1255 | 34 | 1125 | 0 | 112 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 816.6 | 34 | 1125 | 0 | 72.6 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 906.6 | 34 | 1125 | 0 | 80.6 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 989.9 | 34 | 1125 | 0 | 88 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1004 | 34 | 1125 | 0 | 89.2 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1106 | 34 | 1125 | 0 | 98.4 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 744.7 | 34 | 1125 | 0 | 66.2 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1026 | 34 | 1125 | 0 | 91.2 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1076 | 34 | 1125 | 0 | 95.7 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1119 | 34 | 1125 | 0 | 99.5 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1125 | 34 | 1125 | 0 | 100 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1109 | 34 | 1125 | 0 | 98.6 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1092 | 34 | 1125 | 0 | 97 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1110 | 34 | 1125 | 0 | 98.6 | 70-125 | 0 | | | |
| 2-Butanone | 899.9 | 220 | 1125 | 0 | 80 | 30-160 | 0 | | | |
| 2-Hexanone | 887 | 34 | 1125 | 0 | 78.8 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 929.1 | 34 | 1125 | 0 | 82.6 | 45-145 | 0 | | | |
| Acetone | 1021 | 110 | 1125 | 0 | 90.8 | 20-160 | 0 | | | B |
| Acrylonitrile | 952.2 | 110 | 1125 | 0 | 84.6 | 70-135 | 0 | | | |
| Benzene | 1147 | 34 | 1125 | 0 | 102 | 75-125 | 0 | | | |
| Bromobenzene | 1110 | 34 | 1125 | 0 | 98.7 | 65-120 | 0 | | | |
| Bromochloromethane | 1228 | 34 | 1125 | 0 | 109 | 70-125 | 0 | | | |
| Bromodichloromethane | 1030 | 34 | 1125 | 0 | 91.6 | 70-130 | 0 | | | |
| Bromoform | 979.8 | 34 | 1125 | 0 | 87.1 | 55-135 | 0 | | | |
| Bromomethane | 1751 | 84 | 1125 | 0 | 156 | 30-160 | 0 | | | |
| Carbon disulfide | 1314 | 34 | 1125 | 0 | 117 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1089 | 34 | 1125 | 0 | 96.8 | 65-135 | 0 | | | |
| Chlorobenzene | 1113 | 34 | 1125 | 0 | 99 | 75-125 | 0 | | | |
| Chloroethane | 1160 | 110 | 1125 | 0 | 103 | 40-155 | 0 | | | |
| Chloroform | 1129 | 34 | 1125 | 0 | 100 | 70-125 | 0 | | | |
| Chloromethane | 1148 | 110 | 1125 | 0 | 102 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1220 | 34 | 1125 | 64.12 | 103 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1042 | 34 | 1125 | 0 | 92.6 | 70-125 | 0 | | | |
| Dibromochloromethane | 1012 | 34 | 1125 | 0 | 90 | 65-135 | 0 | | | |
| Dibromomethane | 1088 | 34 | 1125 | 0 | 96.8 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 1132 | 34 | 1125 | 0 | 101 | 35-135 | 0 | | | |
| Ethylbenzene | 1122 | 34 | 1125 | 0 | 99.8 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42495** Instrument ID **VMS5** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 826.8 | 34 | 1125 | 0 | 73.5 | 70-135 | 0 |
| Isopropylbenzene | 1098 | 34 | 1125 | 0 | 97.6 | 75-130 | 0 |
| m,p-Xylene | 2273 | 67 | 2250 | 0 | 101 | 80-125 | 0 |
| Methyl tert-butyl ether | 1124 | 34 | 1125 | 0 | 99.9 | 75-125 | 0 |
| Methylene chloride | 1192 | 34 | 1125 | 0 | 106 | 55-145 | 0 |
| Naphthalene | 784.6 | 110 | 1125 | 0 | 69.8 | 40-140 | 0 |
| n-Butylbenzene | 1133 | 34 | 1125 | 0 | 101 | 65-140 | 0 |
| n-Propylbenzene | 1103 | 34 | 1125 | 0 | 98 | 65-135 | 0 |
| o-Xylene | 1123 | 34 | 1125 | 0 | 99.8 | 75-125 | 0 |
| p-Isopropyltoluene | 1099 | 34 | 1125 | 0 | 97.7 | 75-135 | 0 |
| sec-Butylbenzene | 1098 | 34 | 1125 | 0 | 97.6 | 65-130 | 0 |
| Styrene | 1085 | 34 | 1125 | 0 | 96.5 | 75-125 | 0 |
| tert-Butylbenzene | 1086 | 34 | 1125 | 0 | 96.6 | 65-130 | 0 |
| Tetrachloroethene | 1159 | 34 | 1125 | 0 | 103 | 64-140 | 0 |
| Tetrahydrofuran | 827.9 | 220 | 1125 | 0 | 73.6 | 70-135 | 0 |
| Toluene | 1116 | 34 | 1125 | 0 | 99.2 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1258 | 34 | 1125 | 0 | 112 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1046 | 34 | 1125 | 0 | 93 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 984.3 | 34 | 1125 | 0 | 87.5 | 70-135 | 0 |
| Trichloroethene | 1160 | 34 | 1125 | 0 | 103 | 75-125 | 0 |
| Trichlorofluoromethane | 1141 | 34 | 1125 | 0 | 101 | 25-185 | 0 |
| Vinyl chloride | 1175 | 34 | 1125 | 0 | 104 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *913.4* | 0 | *1125* | 0 | *81.2* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1224* | 0 | *1125* | 0 | *109* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *921.3* | 0 | *1125* | 0 | *81.9* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1016* | 0 | *1125* | 0 | *90.4* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42495** Instrument ID **VMS5** Method: **SW8260**

**MSD** Sample ID: **1207626-09A MSD** Units: **µg/Kg** Analysis Date: **7/25/2012 05:31 AM**
Client ID: Run ID: **VMS5_120724A** SeqNo: **2036149** Prep Date: **7/23/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1012 | 34 | 1125 | 0 | 90 | 75-125 | 1045 | 3.17 | 30 | |
| 1,1,1-Trichloroethane | 1089 | 34 | 1125 | 0 | 96.8 | 70-135 | 1125 | 3.2 | 30 | |
| 1,1,2,2-Tetrachloroethane | 871.8 | 34 | 1125 | 0 | 77.5 | 55-130 | 870.6 | 0.129 | 30 | |
| 1,1,2-Trichloroethane | 1010 | 34 | 1125 | 0 | 89.8 | 60-125 | 1014 | 0.389 | 30 | |
| 1,1-Dichloroethane | 1128 | 34 | 1125 | 0 | 100 | 75-125 | 1144 | 1.39 | 30 | |
| 1,1-Dichloroethene | 1159 | 34 | 1125 | 0 | 103 | 65-135 | 1255 | 7.97 | 30 | |
| 1,2,3-Trichlorobenzene | 842 | 34 | 1125 | 0 | 74.8 | 60-135 | 816.6 | 3.05 | 30 | |
| 1,2,3-Trichloropropane | 903.8 | 34 | 1125 | 0 | 80.4 | 65-130 | 906.6 | 0.311 | 30 | |
| 1,2,3-Trimethylbenzene | 979.8 | 34 | 1125 | 0 | 87.1 | 65-135 | 989.9 | 1.03 | 30 | |
| 1,2,4-Trichlorobenzene | 1022 | 34 | 1125 | 0 | 90.8 | 65-130 | 1004 | 1.78 | 30 | |
| 1,2,4-Trimethylbenzene | 1090 | 34 | 1125 | 0 | 96.9 | 65-135 | 1106 | 1.49 | 30 | |
| 1,2-Dibromo-3-chloropropane | 726.7 | 34 | 1125 | 0 | 64.6 | 40-135 | 744.7 | 2.45 | 30 | |
| 1,2-Dibromoethane | 989.3 | 34 | 1125 | 0 | 88 | 70-125 | 1026 | 3.68 | 30 | |
| 1,2-Dichlorobenzene | 1076 | 34 | 1125 | 0 | 95.7 | 75-120 | 1076 | 0 | 30 | |
| 1,2-Dichloroethane | 1109 | 34 | 1125 | 0 | 98.6 | 70-135 | 1119 | 0.959 | 30 | |
| 1,2-Dichloropropane | 1089 | 34 | 1125 | 0 | 96.8 | 70-120 | 1125 | 3.25 | 30 | |
| 1,3,5-Trimethylbenzene | 1085 | 34 | 1125 | 0 | 96.5 | 65-135 | 1109 | 2.1 | 30 | |
| 1,3-Dichlorobenzene | 1073 | 34 | 1125 | 0 | 95.4 | 70-125 | 1092 | 1.77 | 30 | |
| 1,4-Dichlorobenzene | 1079 | 34 | 1125 | 0 | 96 | 70-125 | 1110 | 2.77 | 30 | |
| 2-Butanone | 891.5 | 220 | 1125 | 0 | 79.2 | 30-160 | 899.9 | 0.942 | 30 | |
| 2-Hexanone | 880.8 | 34 | 1125 | 0 | 78.3 | 45-145 | 887 | 0.7 | 30 | |
| 4-Methyl-2-pentanone | 922.4 | 34 | 1125 | 0 | 82 | 45-145 | 929.1 | 0.729 | 30 | |
| Acetone | 931.9 | 110 | 1125 | 0 | 82.8 | 20-160 | 1021 | 9.1 | 30 | B |
| Acrylonitrile | 955 | 110 | 1125 | 0 | 84.9 | 70-135 | 952.2 | 0.295 | 30 | |
| Benzene | 1075 | 34 | 1125 | 0 | 95.6 | 75-125 | 1147 | 6.53 | 30 | |
| Bromobenzene | 1083 | 34 | 1125 | 0 | 96.3 | 65-120 | 1110 | 2.46 | 30 | |
| Bromochloromethane | 1190 | 34 | 1125 | 0 | 106 | 70-125 | 1228 | 3.21 | 30 | |
| Bromodichloromethane | 1034 | 34 | 1125 | 0 | 91.9 | 70-130 | 1030 | 0.327 | 30 | |
| Bromoform | 978.1 | 34 | 1125 | 0 | 87 | 55-135 | 979.8 | 0.172 | 30 | |
| Bromomethane | 1795 | 84 | 1125 | 0 | 160 | 30-160 | 1751 | 2.44 | 30 | |
| Carbon disulfide | 1210 | 34 | 1125 | 0 | 108 | 45-160 | 1314 | 8.24 | 30 | |
| Carbon tetrachloride | 1081 | 34 | 1125 | 0 | 96.1 | 65-135 | 1089 | 0.777 | 30 | |
| Chlorobenzene | 1052 | 34 | 1125 | 0 | 93.6 | 75-125 | 1113 | 5.61 | 30 | |
| Chloroethane | 1110 | 110 | 1125 | 0 | 98.7 | 40-155 | 1160 | 4.41 | 30 | |
| Chloroform | 1121 | 34 | 1125 | 0 | 99.6 | 70-125 | 1129 | 0.7 | 30 | |
| Chloromethane | 1078 | 110 | 1125 | 0 | 95.8 | 50-130 | 1148 | 6.32 | 30 | |
| cis-1,2-Dichloroethene | 1172 | 34 | 1125 | 64.12 | 98.5 | 65-125 | 1220 | 4 | 30 | |
| cis-1,3-Dichloropropene | 1028 | 34 | 1125 | 0 | 91.4 | 70-125 | 1042 | 1.41 | 30 | |
| Dibromochloromethane | 994.9 | 34 | 1125 | 0 | 88.4 | 65-135 | 1012 | 1.74 | 30 | |
| Dibromomethane | 1055 | 34 | 1125 | 0 | 93.8 | 75-130 | 1088 | 3.15 | 30 | |
| Dichlorodifluoromethane | 1050 | 34 | 1125 | 0 | 93.4 | 35-135 | 1132 | 7.48 | 30 | |
| Ethylbenzene | 1080 | 34 | 1125 | 0 | 96 | 75-125 | 1122 | 3.78 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42495** Instrument ID **VMS5** Method: **SW8260**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 825.6 | 34 | 1125 | 0 | 73.4 | 70-135 | 826.8 | 0.136 | 30 |
| Isopropylbenzene | 1067 | 34 | 1125 | 0 | 94.9 | 75-130 | 1098 | 2.86 | 30 |
| m,p-Xylene | 2163 | 67 | 2250 | 0 | 96.1 | 80-125 | 2273 | 5 | 30 |
| Methyl tert-butyl ether | 1086 | 34 | 1125 | 0 | 96.6 | 75-125 | 1124 | 3.41 | 30 |
| Methylene chloride | 1157 | 34 | 1125 | 0 | 103 | 55-145 | 1192 | 2.97 | 30 |
| Naphthalene | 806.5 | 110 | 1125 | 0 | 71.7 | 40-140 | 784.6 | 2.76 | 30 |
| n-Butylbenzene | 1106 | 34 | 1125 | 0 | 98.3 | 65-140 | 1133 | 2.41 | 30 |
| n-Propylbenzene | 1078 | 34 | 1125 | 0 | 95.8 | 65-135 | 1103 | 2.32 | 30 |
| o-Xylene | 1080 | 34 | 1125 | 0 | 96 | 75-125 | 1123 | 3.83 | 30 |
| p-Isopropyltoluene | 1083 | 34 | 1125 | 0 | 96.2 | 75-135 | 1099 | 1.5 | 30 |
| sec-Butylbenzene | 1095 | 34 | 1125 | 0 | 97.4 | 65-130 | 1098 | 0.256 | 30 |
| Styrene | 1061 | 34 | 1125 | 0 | 94.4 | 75-125 | 1085 | 2.25 | 30 |
| tert-Butylbenzene | 1075 | 34 | 1125 | 0 | 95.6 | 65-130 | 1086 | 1.04 | 30 |
| Tetrachloroethene | 1111 | 34 | 1125 | 0 | 98.8 | 64-140 | 1159 | 4.26 | 30 |
| Tetrahydrofuran | 861.6 | 220 | 1125 | 0 | 76.6 | 70-135 | 827.9 | 3.99 | 30 |
| Toluene | 1056 | 34 | 1125 | 0 | 93.9 | 70-125 | 1116 | 5.49 | 30 |
| trans-1,2-Dichloroethene | 1199 | 34 | 1125 | 0 | 107 | 65-135 | 1258 | 4.85 | 30 |
| trans-1,3-Dichloropropene | 1020 | 34 | 1125 | 0 | 90.7 | 65-125 | 1046 | 2.5 | 30 |
| trans-1,4-Dichloro-2-butene | 960.1 | 34 | 1125 | 0 | 85.4 | 70-135 | 984.3 | 2.49 | 30 |
| Trichloroethene | 1073 | 34 | 1125 | 0 | 95.4 | 75-125 | 1160 | 7.76 | 30 |
| Trichlorofluoromethane | 1067 | 34 | 1125 | 0 | 94.9 | 25-185 | 1141 | 6.62 | 30 |
| Vinyl chloride | 1099 | 34 | 1125 | 0 | 97.7 | 60-125 | 1175 | 6.73 | 30 |
| *Surr: 1,2-Dichloroethane-d4* | *919* | 0 | *1125* | 0 | *81.7* | *70-130* | 913.4 | *0.614* | *30* |
| *Surr: 4-Bromofluorobenzene* | *1211* | 0 | *1125* | 0 | *108* | *70-130* | 1224 | *1.06* | *30* |
| *Surr: Dibromofluoromethane* | *958.4* | 0 | *1125* | 0 | *85.2* | *70-130* | 921.3 | *3.95* | *30* |
| *Surr: Toluene-d8* | *1001* | 0 | *1125* | 0 | *89* | *70-130* | 1016 | *1.51* | *30* |

**The following samples were analyzed in this batch:** 1207634-08A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42539-42539** Units: **µg/Kg** Analysis Date: **7/24/2012 09:48 PM**
Client ID: Run ID: **VMS7_120724A** SeqNo: **2035045** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 344 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 24.5 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *991* | 0 | *1000* | 0 | *99.1* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1017* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *943.5* | 0 | *1000* | 0 | *94.4* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *997* | 0 | *1000* | 0 | *99.7* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42539-42539** Units: **µg/Kg** Analysis Date: **7/25/2012 12:25 PM**
Client ID: Run ID: **VMS6_120724A** SeqNo: **2036360** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 132 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *998.5* | 0 | *1000* | 0 | *99.8* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1010* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *959.5* | 0 | *1000* | 0 | *96* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1018* | 0 | *1000* | 0 | *102* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42539-42539** Units: **µg/Kg** Analysis Date: **7/25/2012 04:58 PM**
Client ID: Run ID: **VMS8_120725A** SeqNo: **2036863** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 191 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | 85.5 | 100 | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1038* | 0 | *1000* | 0 | *104* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *986* | 0 | *1000* | 0 | *98.6* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *983* | 0 | *1000* | 0 | *98.3* | *70-130* | 0 |
| *Surr: Toluene-d8* | *969* | 0 | *1000* | 0 | *96.9* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42539-42539** Units: **µg/Kg** Analysis Date: **7/24/2012 08:31 PM**
Client ID: Run ID: **VMS7_120724A** SeqNo: **2035044** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 930 | 30 | 1000 | 0 | 93 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 957 | 30 | 1000 | 0 | 95.7 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 914.5 | 30 | 1000 | 0 | 91.4 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 899 | 30 | 1000 | 0 | 89.9 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 910.5 | 30 | 1000 | 0 | 91 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 948.5 | 30 | 1000 | 0 | 94.8 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1020 | 30 | 1000 | 0 | 102 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 916 | 30 | 1000 | 0 | 91.6 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 883.5 | 30 | 1000 | 0 | 88.4 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1040 | 30 | 1000 | 0 | 104 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 986 | 30 | 1000 | 0 | 98.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 845.5 | 30 | 1000 | 0 | 84.6 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 966 | 30 | 1000 | 0 | 96.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 987 | 30 | 1000 | 0 | 98.7 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 950 | 30 | 1000 | 0 | 95 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 934 | 30 | 1000 | 0 | 93.4 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 987.5 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 971.5 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 940 | 30 | 1000 | 0 | 94 | 70-125 | 0 | | | |
| 2-Butanone | 910 | 200 | 1000 | 0 | 91 | 30-160 | 0 | | | |
| 2-Hexanone | 911.5 | 30 | 1000 | 0 | 91.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1231 | 30 | 1000 | 0 | 123 | 45-145 | 0 | | | |
| Acetone | 1159 | 100 | 1000 | 0 | 116 | 20-160 | 0 | | | B |
| Acrylonitrile | 838.5 | 100 | 1000 | 0 | 83.8 | 70-135 | 0 | | | |
| Benzene | 946 | 30 | 1000 | 0 | 94.6 | 75-125 | 0 | | | |
| Bromobenzene | 970.5 | 30 | 1000 | 0 | 97 | 65-120 | 0 | | | |
| Bromochloromethane | 1013 | 30 | 1000 | 0 | 101 | 70-125 | 0 | | | |
| Bromodichloromethane | 951.5 | 30 | 1000 | 0 | 95.2 | 70-130 | 0 | | | |
| Bromoform | 845 | 30 | 1000 | 0 | 84.5 | 55-135 | 0 | | | |
| Bromomethane | 1099 | 75 | 1000 | 0 | 110 | 30-160 | 0 | | | |
| Carbon disulfide | 1028 | 30 | 1000 | 0 | 103 | 45-160 | 0 | | | |
| Carbon tetrachloride | 993 | 30 | 1000 | 0 | 99.3 | 65-135 | 0 | | | |
| Chlorobenzene | 959.5 | 30 | 1000 | 0 | 96 | 75-125 | 0 | | | |
| Chloroethane | 924 | 100 | 1000 | 0 | 92.4 | 40-155 | 0 | | | |
| Chloroform | 924.5 | 30 | 1000 | 0 | 92.4 | 70-125 | 0 | | | |
| Chloromethane | 799 | 100 | 1000 | 0 | 79.9 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 924.5 | 30 | 1000 | 0 | 92.4 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 900.5 | 30 | 1000 | 0 | 90 | 70-125 | 0 | | | |
| Dibromochloromethane | 848 | 30 | 1000 | 0 | 84.8 | 65-135 | 0 | | | |
| Dibromomethane | 921 | 30 | 1000 | 0 | 92.1 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 565.5 | 30 | 1000 | 0 | 56.6 | 35-135 | 0 | | | |
| Ethylbenzene | 968 | 30 | 1000 | 0 | 96.8 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 795 | 30 | 1000 | 0 | 79.5 | 70-135 | 0 |
| Isopropylbenzene | 973 | 30 | 1000 | 0 | 97.3 | 75-130 | 0 |
| m,p-Xylene | 1956 | 60 | 2000 | 0 | 97.8 | 80-125 | 0 |
| Methyl tert-butyl ether | 897 | 30 | 1000 | 0 | 89.7 | 75-125 | 0 |
| Methylene chloride | 946.5 | 30 | 1000 | 0 | 94.6 | 55-145 | 0 |
| Naphthalene | 997 | 100 | 1000 | 0 | 99.7 | 40-140 | 0 |
| n-Butylbenzene | 988.5 | 30 | 1000 | 0 | 98.8 | 65-140 | 0 |
| n-Propylbenzene | 958.5 | 30 | 1000 | 0 | 95.8 | 65-135 | 0 |
| o-Xylene | 965.5 | 30 | 1000 | 0 | 96.6 | 75-125 | 0 |
| p-Isopropyltoluene | 973 | 30 | 1000 | 0 | 97.3 | 75-135 | 0 |
| sec-Butylbenzene | 987.5 | 30 | 1000 | 0 | 98.8 | 65-130 | 0 |
| Styrene | 994 | 30 | 1000 | 0 | 99.4 | 75-125 | 0 |
| tert-Butylbenzene | 957.5 | 30 | 1000 | 0 | 95.8 | 65-130 | 0 |
| Tetrachloroethene | 1008 | 30 | 1000 | 0 | 101 | 64-140 | 0 |
| Tetrahydrofuran | 851.5 | 200 | 1000 | 0 | 85.2 | 70-135 | 0 |
| Toluene | 964 | 30 | 1000 | 0 | 96.4 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 953.5 | 30 | 1000 | 0 | 95.4 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 943.5 | 30 | 1000 | 0 | 94.4 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 796 | 30 | 1000 | 0 | 79.6 | 70-135 | 0 |
| Trichloroethene | 911.5 | 30 | 1000 | 0 | 91.2 | 75-125 | 0 |
| Trichlorofluoromethane | 802 | 30 | 1000 | 0 | 80.2 | 25-185 | 0 |
| Vinyl chloride | 723 | 30 | 1000 | 0 | 72.3 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1000* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *994* | 0 | *1000* | 0 | *99.4* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1008* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1000* | 0 | *1000* | 0 | *100* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42539-42539** | | | | Units: **µg/Kg** | | Analysis Date: **7/24/2012 11:12 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS6_120724A** | | | SeqNo: **2036359** | | Prep Date: **7/24/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 1094 | 30 | 1000 | 0 | 109 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1114 | 30 | 1000 | 0 | 111 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1053 | 30 | 1000 | 0 | 105 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 966 | 30 | 1000 | 0 | 96.6 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1028 | 30 | 1000 | 0 | 103 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1078 | 30 | 1000 | 0 | 108 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1065 | 30 | 1000 | 0 | 106 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1001 | 30 | 1000 | 0 | 100 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 997.5 | 30 | 1000 | 0 | 99.8 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1136 | 30 | 1000 | 0 | 114 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1089 | 30 | 1000 | 0 | 109 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 938 | 30 | 1000 | 0 | 93.8 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1038 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1108 | 30 | 1000 | 0 | 111 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1058 | 30 | 1000 | 0 | 106 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1091 | 30 | 1000 | 0 | 109 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1156 | 30 | 1000 | 0 | 116 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1067 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1071 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| 2-Butanone | 893.5 | 200 | 1000 | 0 | 89.4 | 30-160 | 0 | | | |
| 2-Hexanone | 897 | 30 | 1000 | 0 | 89.7 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1188 | 30 | 1000 | 0 | 119 | 45-145 | 0 | | | |
| Acetone | 942.5 | 100 | 1000 | 0 | 94.2 | 20-160 | 0 | | | B |
| Acrylonitrile | 987.5 | 100 | 1000 | 0 | 98.8 | 70-135 | 0 | | | |
| Benzene | 1084 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| Bromobenzene | 1125 | 30 | 1000 | 0 | 112 | 65-120 | 0 | | | |
| Bromochloromethane | 1064 | 30 | 1000 | 0 | 106 | 70-125 | 0 | | | |
| Bromodichloromethane | 1076 | 30 | 1000 | 0 | 108 | 70-130 | 0 | | | |
| Bromoform | 1077 | 30 | 1000 | 0 | 108 | 55-135 | 0 | | | |
| Bromomethane | 1482 | 75 | 1000 | 0 | 148 | 30-160 | 0 | | | |
| Carbon disulfide | 1135 | 30 | 1000 | 0 | 114 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1108 | 30 | 1000 | 0 | 111 | 65-135 | 0 | | | |
| Chlorobenzene | 1100 | 30 | 1000 | 0 | 110 | 75-125 | 0 | | | |
| Chloroethane | 942 | 100 | 1000 | 0 | 94.2 | 40-155 | 0 | | | |
| Chloroform | 1038 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| Chloromethane | 909 | 100 | 1000 | 0 | 90.9 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1051 | 30 | 1000 | 0 | 105 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1080 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| Dibromochloromethane | 1058 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| Dibromomethane | 1072 | 30 | 1000 | 0 | 107 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 602.5 | 30 | 1000 | 0 | 60.2 | 35-135 | 0 | | | |
| Ethylbenzene | 1124 | 30 | 1000 | 0 | 112 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 954.5 | 30 | 1000 | 0 | 95.4 | 70-135 | 0 |
| Isopropylbenzene | 1118 | 30 | 1000 | 0 | 112 | 75-130 | 0 |
| m,p-Xylene | 2257 | 60 | 2000 | 0 | 113 | 80-125 | 0 |
| Methyl tert-butyl ether | 924.5 | 30 | 1000 | 0 | 92.4 | 75-125 | 0 |
| Methylene chloride | 1088 | 30 | 1000 | 0 | 109 | 55-145 | 0 |
| Naphthalene | 1030 | 100 | 1000 | 0 | 103 | 40-140 | 0 |
| n-Butylbenzene | 1150 | 30 | 1000 | 0 | 115 | 65-140 | 0 |
| n-Propylbenzene | 1104 | 30 | 1000 | 0 | 110 | 65-135 | 0 |
| o-Xylene | 1110 | 30 | 1000 | 0 | 111 | 75-125 | 0 |
| p-Isopropyltoluene | 1118 | 30 | 1000 | 0 | 112 | 75-135 | 0 |
| sec-Butylbenzene | 1094 | 30 | 1000 | 0 | 109 | 65-130 | 0 |
| Styrene | 1071 | 30 | 1000 | 0 | 107 | 75-125 | 0 |
| tert-Butylbenzene | 1112 | 30 | 1000 | 0 | 111 | 65-130 | 0 |
| Tetrachloroethene | 1119 | 30 | 1000 | 0 | 112 | 64-140 | 0 |
| Tetrahydrofuran | 853.5 | 200 | 1000 | 0 | 85.4 | 70-135 | 0 |
| Toluene | 1103 | 30 | 1000 | 0 | 110 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1090 | 30 | 1000 | 0 | 109 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1089 | 30 | 1000 | 0 | 109 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 810 | 30 | 1000 | 0 | 81 | 70-135 | 0 |
| Trichloroethene | 1075 | 30 | 1000 | 0 | 108 | 75-125 | 0 |
| Trichlorofluoromethane | 836 | 30 | 1000 | 0 | 83.6 | 25-185 | 0 |
| Vinyl chloride | 877 | 30 | 1000 | 0 | 87.7 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *985* | 0 | *1000* | 0 | *98.5* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *977.5* | 0 | *1000* | 0 | *97.8* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *987* | 0 | *1000* | 0 | *98.7* | *70-130* | 0 |
| *Surr: Toluene-d8* | *976* | 0 | *1000* | 0 | *97.6* | *70-130* | 0 |

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42539-42539** Units: **µg/Kg** Analysis Date: **7/25/2012 03:38 PM**
Client ID: Run ID: **VMS8_120725A** SeqNo: **2036862** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1123 | 30 | 1000 | 0 | 112 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1170 | 30 | 1000 | 0 | 117 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1106 | 30 | 1000 | 0 | 111 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1028 | 30 | 1000 | 0 | 103 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1076 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1184 | 30 | 1000 | 0 | 118 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1196 | 30 | 1000 | 0 | 120 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1092 | 30 | 1000 | 0 | 109 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 971.5 | 30 | 1000 | 0 | 97.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1214 | 30 | 1000 | 0 | 121 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 988.5 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 991 | 30 | 1000 | 0 | 99.1 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1044 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1077 | 30 | 1000 | 0 | 108 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1112 | 30 | 1000 | 0 | 111 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1120 | 30 | 1000 | 0 | 112 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1138 | 30 | 1000 | 0 | 114 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1084 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1114 | 30 | 1000 | 0 | 111 | 70-125 | 0 | | | |
| 2-Butanone | 1120 | 200 | 1000 | 0 | 112 | 30-160 | 0 | | | |
| 2-Hexanone | 1057 | 30 | 1000 | 0 | 106 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1199 | 30 | 1000 | 0 | 120 | 45-145 | 0 | | | |
| Acetone | 875 | 100 | 1000 | 0 | 87.5 | 20-160 | 0 | | | B |
| Acrylonitrile | 982 | 100 | 1000 | 0 | 98.2 | 70-135 | 0 | | | |
| Benzene | 1082 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| Bromobenzene | 1110 | 30 | 1000 | 0 | 111 | 65-120 | 0 | | | |
| Bromochloromethane | 1160 | 30 | 1000 | 0 | 116 | 70-125 | 0 | | | |
| Bromodichloromethane | 1019 | 30 | 1000 | 0 | 102 | 70-130 | 0 | | | |
| Bromoform | 1004 | 30 | 1000 | 0 | 100 | 55-135 | 0 | | | |
| Bromomethane | 1108 | 75 | 1000 | 0 | 111 | 30-160 | 0 | | | |
| Carbon disulfide | 1249 | 30 | 1000 | 0 | 125 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1174 | 30 | 1000 | 0 | 117 | 65-135 | 0 | | | |
| Chlorobenzene | 1104 | 30 | 1000 | 0 | 110 | 75-125 | 0 | | | |
| Chloroethane | 1062 | 100 | 1000 | 0 | 106 | 40-155 | 0 | | | |
| Chloroform | 1024 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| Chloromethane | 952 | 100 | 1000 | 0 | 95.2 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1072 | 30 | 1000 | 0 | 107 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1018 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| Dibromochloromethane | 1005 | 30 | 1000 | 0 | 100 | 65-135 | 0 | | | |
| Dibromomethane | 1052 | 30 | 1000 | 0 | 105 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 986.5 | 30 | 1000 | 0 | 98.6 | 35-135 | 0 | | | |
| Ethylbenzene | 1128 | 30 | 1000 | 0 | 113 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 964.5 | 30 | 1000 | 0 | 96.4 | 70-135 | 0 |
| Isopropylbenzene | 1128 | 30 | 1000 | 0 | 113 | 75-130 | 0 |
| m,p-Xylene | 2284 | 60 | 2000 | 0 | 114 | 80-125 | 0 |
| Methyl tert-butyl ether | 960 | 30 | 1000 | 0 | 96 | 75-125 | 0 |
| Methylene chloride | 1073 | 30 | 1000 | 0 | 107 | 55-145 | 0 |
| Naphthalene | 1120 | 100 | 1000 | 0 | 112 | 40-140 | 0 |
| n-Butylbenzene | 1215 | 30 | 1000 | 0 | 122 | 65-140 | 0 |
| n-Propylbenzene | 1126 | 30 | 1000 | 0 | 113 | 65-135 | 0 |
| o-Xylene | 1108 | 30 | 1000 | 0 | 111 | 75-125 | 0 |
| p-Isopropyltoluene | 1157 | 30 | 1000 | 0 | 116 | 75-135 | 0 |
| sec-Butylbenzene | 1202 | 30 | 1000 | 0 | 120 | 65-130 | 0 |
| Styrene | 1102 | 30 | 1000 | 0 | 110 | 75-125 | 0 |
| tert-Butylbenzene | 1181 | 30 | 1000 | 0 | 118 | 65-130 | 0 |
| Tetrachloroethene | 1224 | 30 | 1000 | 0 | 122 | 64-140 | 0 |
| Tetrahydrofuran | 1032 | 200 | 1000 | 0 | 103 | 70-135 | 0 |
| Toluene | 1120 | 30 | 1000 | 0 | 112 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1140 | 30 | 1000 | 0 | 114 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1033 | 30 | 1000 | 0 | 103 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 983 | 30 | 1000 | 0 | 98.3 | 70-135 | 0 |
| Trichloroethene | 1135 | 30 | 1000 | 0 | 114 | 75-125 | 0 |
| Trichlorofluoromethane | 1023 | 30 | 1000 | 0 | 102 | 25-185 | 0 |
| Vinyl chloride | 1010 | 30 | 1000 | 0 | 101 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1006* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1019* | 0 | *1000* | 0 | *102* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1003* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *998.5* | 0 | *1000* | 0 | *99.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| **MS** | Sample ID: **1207633-03A MS** | | | | Units: **µg/Kg** | | | Analysis Date: **7/26/2012 01:20 AM** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS8_120725A** | | | SeqNo: **2036859** | | Prep Date: **7/24/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 2368 | 65 | 2175 | 0 | 109 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 2541 | 65 | 2175 | 0 | 117 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 2169 | 65 | 2175 | 0 | 99.8 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 2154 | 65 | 2175 | 0 | 99 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 2376 | 65 | 2175 | 0 | 109 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 2588 | 65 | 2175 | 0 | 119 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1867 | 65 | 2175 | 0 | 85.8 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 2117 | 65 | 2175 | 0 | 97.4 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 2026 | 65 | 2175 | 0 | 93.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1970 | 65 | 2175 | 0 | 90.6 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 2056 | 65 | 2175 | 0 | 94.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 1778 | 65 | 2175 | 0 | 81.8 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 2166 | 65 | 2175 | 0 | 99.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 2153 | 65 | 2175 | 0 | 99 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 2425 | 65 | 2175 | 0 | 112 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 2493 | 65 | 2175 | 0 | 115 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 2396 | 65 | 2175 | 0 | 110 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 2277 | 65 | 2175 | 0 | 105 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 2251 | 65 | 2175 | 0 | 104 | 70-125 | 0 | | | |
| 2-Butanone | 2564 | 220 | 2175 | 0 | 118 | 30-160 | 0 | | | |
| 2-Hexanone | 2106 | 65 | 2175 | 0 | 96.8 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 2478 | 65 | 2175 | 0 | 114 | 45-145 | 0 | | | |
| Acetone | 2304 | 220 | 2175 | 103.3 | 101 | 20-160 | 0 | | | B |
| Acrylonitrile | 2100 | 65 | 2175 | 0 | 96.6 | 70-135 | 0 | | | |
| Benzene | 2414 | 65 | 2175 | 0 | 111 | 75-125 | 0 | | | |
| Bromobenzene | 2334 | 65 | 2175 | 0 | 107 | 65-120 | 0 | | | |
| Bromochloromethane | 2563 | 65 | 2175 | 0 | 118 | 70-125 | 0 | | | |
| Bromodichloromethane | 2101 | 65 | 2175 | 0 | 96.6 | 70-130 | 0 | | | |
| Bromoform | 1908 | 65 | 2175 | 0 | 87.8 | 55-135 | 0 | | | |
| Bromomethane | 2191 | 65 | 2175 | 0 | 101 | 30-160 | 0 | | | |
| Carbon disulfide | 2561 | 65 | 2175 | 0 | 118 | 45-160 | 0 | | | |
| Carbon tetrachloride | 2516 | 65 | 2175 | 0 | 116 | 65-135 | 0 | | | |
| Chlorobenzene | 2369 | 65 | 2175 | 0 | 109 | 75-125 | 0 | | | |
| Chloroethane | 2083 | 220 | 2175 | 0 | 95.8 | 40-155 | 0 | | | |
| Chloroform | 2366 | 65 | 2175 | 0 | 109 | 70-125 | 0 | | | |
| Chloromethane | 2016 | 65 | 2175 | 0 | 92.7 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 2398 | 65 | 2175 | 0 | 110 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 2145 | 65 | 2175 | 0 | 98.6 | 70-125 | 0 | | | |
| Dibromochloromethane | 1973 | 65 | 2175 | 0 | 90.8 | 65-135 | 0 | | | |
| Dibromomethane | 2268 | 65 | 2175 | 0 | 104 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 1701 | 65 | 2175 | 0 | 78.2 | 35-135 | 0 | | | |
| Ethylbenzene | 2427 | 65 | 2175 | 0 | 112 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1816 | 65 | 2175 | 0 | 83.5 | 70-135 | 0 |
| Isopropylbenzene | 2434 | 65 | 2175 | 0 | 112 | 75-130 | 0 |
| m,p-Xylene | 4906 | 130 | 4349 | 0 | 113 | 80-125 | 0 |
| Methyl tert-butyl ether | 2147 | 65 | 2175 | 0 | 98.8 | 75-125 | 0 |
| Methylene chloride | 2391 | 65 | 2175 | 0 | 110 | 55-145 | 0 |
| Naphthalene | 1819 | 220 | 2175 | 0 | 83.6 | 40-140 | 0 |
| n-Butylbenzene | 2322 | 65 | 2175 | 0 | 107 | 65-140 | 0 |
| n-Propylbenzene | 2390 | 65 | 2175 | 0 | 110 | 65-135 | 0 |
| o-Xylene | 2415 | 65 | 2175 | 0 | 111 | 75-125 | 0 |
| p-Isopropyltoluene | 2314 | 65 | 2175 | 0 | 106 | 75-135 | 0 |
| sec-Butylbenzene | 2466 | 65 | 2175 | 0 | 113 | 65-130 | 0 |
| Styrene | 2328 | 65 | 2175 | 0 | 107 | 75-125 | 0 |
| tert-Butylbenzene | 2446 | 65 | 2175 | 0 | 112 | 65-130 | 0 |
| Tetrachloroethene | 2665 | 65 | 2175 | 0 | 123 | 64-140 | 0 |
| Tetrahydrofuran | 2254 | 220 | 2175 | 0 | 104 | 70-135 | 0 |
| Toluene | 2408 | 65 | 2175 | 0 | 111 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 2487 | 65 | 2175 | 0 | 114 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 2092 | 65 | 2175 | 0 | 96.2 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 1852 | 65 | 2175 | 0 | 85.2 | 70-135 | 0 |
| Trichloroethene | 2515 | 65 | 2175 | 0 | 116 | 75-125 | 0 |
| Trichlorofluoromethane | 1918 | 65 | 2175 | 0 | 88.2 | 25-185 | 0 |
| Vinyl chloride | 2090 | 65 | 2175 | 0 | 96.1 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *2226* | 0 | *2175* | 0 | *102* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *2158* | 0 | *2175* | 0 | *99.2* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *2209* | 0 | *2175* | 0 | *102* | *70-130* | 0 |
| *Surr: Toluene-d8* | *2150* | 0 | *2175* | 0 | *98.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1207633-03A MSD** Units: **µg/Kg** Analysis Date: **7/26/2012 01:46 AM**
Client ID: Run ID: **VMS8_120725A** SeqNo: **2036860** Prep Date: **7/24/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 2351 | 65 | 2175 | 0 | 108 | 75-125 | 2368 | 0.737 | 30 | |
| 1,1,1-Trichloroethane | 2494 | 65 | 2175 | 0 | 115 | 70-135 | 2541 | 1.86 | 30 | |
| 1,1,2,2-Tetrachloroethane | 1963 | 65 | 2175 | 0 | 90.2 | 55-130 | 2169 | 10 | 30 | |
| 1,1,2-Trichloroethane | 2053 | 65 | 2175 | 0 | 94.4 | 60-125 | 2154 | 4.81 | 30 | |
| 1,1-Dichloroethane | 2297 | 65 | 2175 | 0 | 106 | 75-125 | 2376 | 3.35 | 30 | |
| 1,1-Dichloroethene | 1906 | 65 | 2175 | 0 | 87.6 | 65-135 | 2588 | 30.3 | 30 | R |
| 1,2,3-Trichlorobenzene | 2117 | 65 | 2175 | 0 | 97.4 | 60-135 | 1867 | 12.6 | 30 | |
| 1,2,3-Trichloropropane | 1938 | 65 | 2175 | 0 | 89.1 | 65-130 | 2117 | 8.85 | 30 | |
| 1,2,3-Trimethylbenzene | 2053 | 65 | 2175 | 0 | 94.4 | 65-135 | 2026 | 1.33 | 30 | |
| 1,2,4-Trichlorobenzene | 2201 | 65 | 2175 | 0 | 101 | 65-130 | 1970 | 11.1 | 30 | |
| 1,2,4-Trimethylbenzene | 2006 | 65 | 2175 | 0 | 92.2 | 65-135 | 2056 | 2.46 | 30 | |
| 1,2-Dibromo-3-chloropropane | 1682 | 65 | 2175 | 0 | 77.4 | 40-135 | 1778 | 5.53 | 30 | |
| 1,2-Dibromoethane | 2025 | 65 | 2175 | 0 | 93.1 | 70-125 | 2166 | 6.75 | 30 | |
| 1,2-Dichlorobenzene | 2195 | 65 | 2175 | 0 | 101 | 75-120 | 2153 | 1.95 | 30 | |
| 1,2-Dichloroethane | 2318 | 65 | 2175 | 0 | 107 | 70-135 | 2425 | 4.49 | 30 | |
| 1,2-Dichloropropane | 2434 | 65 | 2175 | 0 | 112 | 70-120 | 2493 | 2.38 | 30 | |
| 1,3,5-Trimethylbenzene | 2321 | 65 | 2175 | 0 | 107 | 65-135 | 2396 | 3.18 | 30 | |
| 1,3-Dichlorobenzene | 2297 | 65 | 2175 | 0 | 106 | 70-125 | 2277 | 0.903 | 30 | |
| 1,4-Dichlorobenzene | 2289 | 65 | 2175 | 0 | 105 | 70-125 | 2251 | 1.68 | 30 | |
| 2-Butanone | 2664 | 220 | 2175 | 0 | 122 | 30-160 | 2564 | 3.83 | 30 | |
| 2-Hexanone | 1893 | 65 | 2175 | 0 | 87 | 45-145 | 2106 | 10.7 | 30 | |
| 4-Methyl-2-pentanone | 2217 | 65 | 2175 | 0 | 102 | 45-145 | 2478 | 11.1 | 30 | |
| Acetone | 1808 | 220 | 2175 | 103.3 | 78.4 | 20-160 | 2304 | 24.1 | 30 | B |
| Acrylonitrile | 1851 | 65 | 2175 | 0 | 85.1 | 70-135 | 2100 | 12.6 | 30 | |
| Benzene | 2345 | 65 | 2175 | 0 | 108 | 75-125 | 2414 | 2.88 | 30 | |
| Bromobenzene | 2303 | 65 | 2175 | 0 | 106 | 65-120 | 2334 | 1.36 | 30 | |
| Bromochloromethane | 2479 | 65 | 2175 | 0 | 114 | 70-125 | 2563 | 3.32 | 30 | |
| Bromodichloromethane | 2102 | 65 | 2175 | 0 | 96.6 | 70-130 | 2101 | 0.0517 | 30 | |
| Bromoform | 1707 | 65 | 2175 | 0 | 78.5 | 55-135 | 1908 | 11.1 | 30 | |
| Bromomethane | 1928 | 65 | 2175 | 0 | 88.6 | 30-160 | 2191 | 12.8 | 30 | |
| Carbon disulfide | 2461 | 65 | 2175 | 0 | 113 | 45-160 | 2561 | 3.98 | 30 | |
| Carbon tetrachloride | 2496 | 65 | 2175 | 0 | 115 | 65-135 | 2516 | 0.781 | 30 | |
| Chlorobenzene | 2327 | 65 | 2175 | 0 | 107 | 75-125 | 2369 | 1.81 | 30 | |
| Chloroethane | 2237 | 220 | 2175 | 0 | 103 | 40-155 | 2083 | 7.1 | 30 | |
| Chloroform | 2230 | 65 | 2175 | 0 | 103 | 70-125 | 2366 | 5.91 | 30 | |
| Chloromethane | 1950 | 65 | 2175 | 0 | 89.6 | 50-130 | 2016 | 3.35 | 30 | |
| cis-1,2-Dichloroethene | 2332 | 65 | 2175 | 0 | 107 | 65-125 | 2398 | 2.76 | 30 | |
| cis-1,3-Dichloropropene | 2072 | 65 | 2175 | 0 | 95.3 | 70-125 | 2145 | 3.45 | 30 | |
| Dibromochloromethane | 1947 | 65 | 2175 | 0 | 89.6 | 65-135 | 1973 | 1.33 | 30 | |
| Dibromomethane | 2143 | 65 | 2175 | 0 | 98.6 | 75-130 | 2268 | 5.67 | 30 | |
| Dichlorodifluoromethane | 1623 | 65 | 2175 | 0 | 74.6 | 35-135 | 1701 | 4.65 | 30 | |
| Ethylbenzene | 2380 | 65 | 2175 | 0 | 109 | 75-125 | 2427 | 1.95 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42539** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1818 | 65 | 2175 | 0 | 83.6 | 70-135 | 1816 | 0.12 | 30 | |
| Isopropylbenzene | 2382 | 65 | 2175 | 0 | 110 | 75-130 | 2434 | 2.17 | 30 | |
| m,p-Xylene | 4754 | 130 | 4349 | 0 | 109 | 80-125 | 4906 | 3.15 | 30 | |
| Methyl tert-butyl ether | 1956 | 65 | 2175 | 0 | 90 | 75-125 | 2147 | 9.33 | 30 | |
| Methylene chloride | 2384 | 65 | 2175 | 0 | 110 | 55-145 | 2391 | 0.273 | 30 | |
| Naphthalene | 2097 | 220 | 2175 | 0 | 96.4 | 40-140 | 1819 | 14.2 | 30 | |
| n-Butylbenzene | 2309 | 65 | 2175 | 0 | 106 | 65-140 | 2322 | 0.563 | 30 | |
| n-Propylbenzene | 2318 | 65 | 2175 | 0 | 107 | 65-135 | 2390 | 3.05 | 30 | |
| o-Xylene | 2356 | 65 | 2175 | 0 | 108 | 75-125 | 2415 | 2.46 | 30 | |
| p-Isopropyltoluene | 2333 | 65 | 2175 | 0 | 107 | 75-135 | 2314 | 0.842 | 30 | |
| sec-Butylbenzene | 2374 | 65 | 2175 | 0 | 109 | 65-130 | 2466 | 3.82 | 30 | |
| Styrene | 2277 | 65 | 2175 | 0 | 105 | 75-125 | 2328 | 2.22 | 30 | |
| tert-Butylbenzene | 2407 | 65 | 2175 | 0 | 111 | 65-130 | 2446 | 1.61 | 30 | |
| Tetrachloroethene | 2579 | 65 | 2175 | 0 | 119 | 64-140 | 2665 | 3.28 | 30 | |
| Tetrahydrofuran | 703.5 | 220 | 2175 | 0 | 32.4 | 70-135 | 2254 | 105 | 30 | SR |
| Toluene | 2345 | 65 | 2175 | 0 | 108 | 70-125 | 2408 | 2.65 | 30 | |
| trans-1,2-Dichloroethene | 2390 | 65 | 2175 | 0 | 110 | 65-135 | 2487 | 3.97 | 30 | |
| trans-1,3-Dichloropropene | 2031 | 65 | 2175 | 0 | 93.4 | 65-125 | 2092 | 2.95 | 30 | |
| trans-1,4-Dichloro-2-butene | 1528 | 65 | 2175 | 0 | 70.2 | 70-135 | 1852 | 19.2 | 30 | |
| Trichloroethene | 2420 | 65 | 2175 | 0 | 111 | 75-125 | 2515 | 3.83 | 30 | |
| Trichlorofluoromethane | 2085 | 65 | 2175 | 0 | 95.9 | 25-185 | 1918 | 8.37 | 30 | |
| Vinyl chloride | 2009 | 65 | 2175 | 0 | 92.4 | 60-125 | 2090 | 3.93 | 30 | |
| *Surr: 1,2-Dichloroethane-d4* | *2175* | 0 | *2175* | 0 | *100* | *70-130* | 2226 | *2.32* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *2168* | 0 | *2175* | 0 | *99.7* | *70-130* | 2158 | *0.452* | *30* | |
| *Surr: Dibromofluoromethane* | *2226* | 0 | *2175* | 0 | *102* | *70-130* | 2209 | *0.735* | *30* | |
| *Surr: Toluene-d8* | *2182* | 0 | *2175* | 0 | *100* | *70-130* | 2150 | *1.51* | *30* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207634-01A | 1207634-02A | 1207634-03A |
| 1207634-04A | 1207634-06A | 1207634-07A |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 11:56 AM**
Client ID: Run ID: **VMS7_120725A** SeqNo: **2036746** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 254 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 19 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1006* | 0 | *1000* | 0 | *101* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *956* | 0 | *1000* | 0 | *95.6* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *992.5* | 0 | *1000* | 0 | *99.2* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 04:58 PM**
Client ID: Run ID: **VMS8_120725A** SeqNo: **2036845** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 191 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | 85.5 | 100 | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1038* | 0 | *1000* | 0 | *104* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *986* | 0 | *1000* | 0 | *98.6* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *983* | 0 | *1000* | 0 | *98.3* | *70-130* | 0 |
| *Surr: Toluene-d8* | *969* | 0 | *1000* | 0 | *96.9* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 05:14 PM**
Client ID: Run ID: **VMS9_120725A** SeqNo: **2036902** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | 104.5 | 200 | | | | | | | | J |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 164.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1008* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *857* | 0 | *1000* | 0 | *85.7* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *951.5* | 0 | *1000* | 0 | *95.2* | *70-130* | 0 |
| *Surr: Toluene-d8* | *908* | 0 | *1000* | 0 | *90.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/26/2012 04:34 PM**
Client ID: Run ID: **VMS9_120726A** SeqNo: **2039269** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | 86 | 200 | | | | | | | | J |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 188.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *938* | 0 | *1000* | 0 | *93.8* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *879.5* | 0 | *1000* | 0 | *88* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *947.5* | 0 | *1000* | 0 | *94.8* | *70-130* | 0 |
| *Surr: Toluene-d8* | *936.5* | 0 | *1000* | 0 | *93.6* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/27/2012 03:26 PM**
Client ID: Run ID: **VMS6_120727A** SeqNo: **2041146** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | ND | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1032* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1009* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1004* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *987.5* | 0 | *1000* | 0 | *98.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 10:40 AM**
Client ID: Run ID: **VMS7_120725A** SeqNo: **2036745** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 915.5 | 30 | 1000 | 0 | 91.6 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 963 | 30 | 1000 | 0 | 96.3 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 885.5 | 30 | 1000 | 0 | 88.6 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 876 | 30 | 1000 | 0 | 87.6 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 900.5 | 30 | 1000 | 0 | 90 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 960 | 30 | 1000 | 0 | 96 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1004 | 30 | 1000 | 0 | 100 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 902 | 30 | 1000 | 0 | 90.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 870.5 | 30 | 1000 | 0 | 87 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1050 | 30 | 1000 | 0 | 105 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 988 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 835.5 | 30 | 1000 | 0 | 83.6 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 947 | 30 | 1000 | 0 | 94.7 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 977 | 30 | 1000 | 0 | 97.7 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 919 | 30 | 1000 | 0 | 91.9 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 928 | 30 | 1000 | 0 | 92.8 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1006 | 30 | 1000 | 0 | 101 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 973 | 30 | 1000 | 0 | 97.3 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 938.5 | 30 | 1000 | 0 | 93.8 | 70-125 | 0 | | | |
| 2-Butanone | 952 | 200 | 1000 | 0 | 95.2 | 30-160 | 0 | | | |
| 2-Hexanone | 918 | 30 | 1000 | 0 | 91.8 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1232 | 30 | 1000 | 0 | 123 | 45-145 | 0 | | | |
| Acetone | 1193 | 100 | 1000 | 0 | 119 | 20-160 | 0 | | | B |
| Acrylonitrile | 822.5 | 100 | 1000 | 0 | 82.2 | 70-135 | 0 | | | |
| Benzene | 953.5 | 30 | 1000 | 0 | 95.4 | 75-125 | 0 | | | |
| Bromobenzene | 956.5 | 30 | 1000 | 0 | 95.6 | 65-120 | 0 | | | |
| Bromochloromethane | 988 | 30 | 1000 | 0 | 98.8 | 70-125 | 0 | | | |
| Bromodichloromethane | 916.5 | 30 | 1000 | 0 | 91.6 | 70-130 | 0 | | | |
| Bromoform | 821 | 30 | 1000 | 0 | 82.1 | 55-135 | 0 | | | |
| Bromomethane | 1212 | 75 | 1000 | 0 | 121 | 30-160 | 0 | | | |
| Carbon disulfide | 1074 | 30 | 1000 | 0 | 107 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1004 | 30 | 1000 | 0 | 100 | 65-135 | 0 | | | |
| Chlorobenzene | 957.5 | 30 | 1000 | 0 | 95.8 | 75-125 | 0 | | | |
| Chloroethane | 914.5 | 100 | 1000 | 0 | 91.4 | 40-155 | 0 | | | |
| Chloroform | 916.5 | 30 | 1000 | 0 | 91.6 | 70-125 | 0 | | | |
| Chloromethane | 914.5 | 100 | 1000 | 0 | 91.4 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 927.5 | 30 | 1000 | 0 | 92.8 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 893 | 30 | 1000 | 0 | 89.3 | 70-125 | 0 | | | |
| Dibromochloromethane | 833 | 30 | 1000 | 0 | 83.3 | 65-135 | 0 | | | |
| Dibromomethane | 896 | 30 | 1000 | 0 | 89.6 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 807 | 30 | 1000 | 0 | 80.7 | 35-135 | 0 | | | |
| Ethylbenzene | 990.5 | 30 | 1000 | 0 | 99 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 816.5 | 30 | 1000 | 0 | 81.6 | 70-135 | 0 |
| Isopropylbenzene | 1006 | 30 | 1000 | 0 | 101 | 75-130 | 0 |
| m,p-Xylene | 1977 | 60 | 2000 | 0 | 98.8 | 80-125 | 0 |
| Methyl tert-butyl ether | 896.5 | 30 | 1000 | 0 | 89.6 | 75-125 | 0 |
| Methylene chloride | 915.5 | 30 | 1000 | 0 | 91.6 | 55-145 | 0 |
| Naphthalene | 952.5 | 100 | 1000 | 0 | 95.2 | 40-140 | 0 |
| n-Butylbenzene | 1032 | 30 | 1000 | 0 | 103 | 65-140 | 0 |
| n-Propylbenzene | 987 | 30 | 1000 | 0 | 98.7 | 65-135 | 0 |
| o-Xylene | 970 | 30 | 1000 | 0 | 97 | 75-125 | 0 |
| p-Isopropyltoluene | 1017 | 30 | 1000 | 0 | 102 | 75-135 | 0 |
| sec-Butylbenzene | 1036 | 30 | 1000 | 0 | 104 | 65-130 | 0 |
| Styrene | 1002 | 30 | 1000 | 0 | 100 | 75-125 | 0 |
| tert-Butylbenzene | 1002 | 30 | 1000 | 0 | 100 | 65-130 | 0 |
| Tetrachloroethene | 1032 | 30 | 1000 | 0 | 103 | 64-140 | 0 |
| Tetrahydrofuran | 850.5 | 200 | 1000 | 0 | 85 | 70-135 | 0 |
| Toluene | 968.5 | 30 | 1000 | 0 | 96.8 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 971 | 30 | 1000 | 0 | 97.1 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 938 | 30 | 1000 | 0 | 93.8 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 784 | 30 | 1000 | 0 | 78.4 | 70-135 | 0 |
| Trichloroethene | 941.5 | 30 | 1000 | 0 | 94.2 | 75-125 | 0 |
| Trichlorofluoromethane | 861.5 | 30 | 1000 | 0 | 86.2 | 25-185 | 0 |
| Vinyl chloride | 814 | 30 | 1000 | 0 | 81.4 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *980* | 0 | *1000* | 0 | *98* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *999* | 0 | *1000* | 0 | *99.9* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1004* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1003* | 0 | *1000* | 0 | *100* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 03:38 PM**
Client ID: Run ID: **VMS8_120725A** SeqNo: **2036844** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1123 | 30 | 1000 | 0 | 112 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1170 | 30 | 1000 | 0 | 117 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1106 | 30 | 1000 | 0 | 111 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1028 | 30 | 1000 | 0 | 103 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1076 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1184 | 30 | 1000 | 0 | 118 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1196 | 30 | 1000 | 0 | 120 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1092 | 30 | 1000 | 0 | 109 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 971.5 | 30 | 1000 | 0 | 97.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1214 | 30 | 1000 | 0 | 121 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 988.5 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 991 | 30 | 1000 | 0 | 99.1 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1044 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1077 | 30 | 1000 | 0 | 108 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1112 | 30 | 1000 | 0 | 111 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1120 | 30 | 1000 | 0 | 112 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1138 | 30 | 1000 | 0 | 114 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1084 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1114 | 30 | 1000 | 0 | 111 | 70-125 | 0 | | | |
| 2-Butanone | 1120 | 200 | 1000 | 0 | 112 | 30-160 | 0 | | | |
| 2-Hexanone | 1057 | 30 | 1000 | 0 | 106 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1199 | 30 | 1000 | 0 | 120 | 45-145 | 0 | | | |
| Acetone | 875 | 100 | 1000 | 0 | 87.5 | 20-160 | 0 | | | B |
| Acrylonitrile | 982 | 100 | 1000 | 0 | 98.2 | 70-135 | 0 | | | |
| Benzene | 1082 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| Bromobenzene | 1110 | 30 | 1000 | 0 | 111 | 65-120 | 0 | | | |
| Bromochloromethane | 1160 | 30 | 1000 | 0 | 116 | 70-125 | 0 | | | |
| Bromodichloromethane | 1019 | 30 | 1000 | 0 | 102 | 70-130 | 0 | | | |
| Bromoform | 1004 | 30 | 1000 | 0 | 100 | 55-135 | 0 | | | |
| Bromomethane | 1108 | 75 | 1000 | 0 | 111 | 30-160 | 0 | | | |
| Carbon disulfide | 1249 | 30 | 1000 | 0 | 125 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1174 | 30 | 1000 | 0 | 117 | 65-135 | 0 | | | |
| Chlorobenzene | 1104 | 30 | 1000 | 0 | 110 | 75-125 | 0 | | | |
| Chloroethane | 1062 | 100 | 1000 | 0 | 106 | 40-155 | 0 | | | |
| Chloroform | 1024 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| Chloromethane | 952 | 100 | 1000 | 0 | 95.2 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1072 | 30 | 1000 | 0 | 107 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1018 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| Dibromochloromethane | 1005 | 30 | 1000 | 0 | 100 | 65-135 | 0 | | | |
| Dibromomethane | 1052 | 30 | 1000 | 0 | 105 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 986.5 | 30 | 1000 | 0 | 98.6 | 35-135 | 0 | | | |
| Ethylbenzene | 1128 | 30 | 1000 | 0 | 113 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 964.5 | 30 | 1000 | 0 | 96.4 | 70-135 | 0 |
| Isopropylbenzene | 1128 | 30 | 1000 | 0 | 113 | 75-130 | 0 |
| m,p-Xylene | 2284 | 60 | 2000 | 0 | 114 | 80-125 | 0 |
| Methyl tert-butyl ether | 960 | 30 | 1000 | 0 | 96 | 75-125 | 0 |
| Methylene chloride | 1073 | 30 | 1000 | 0 | 107 | 55-145 | 0 |
| Naphthalene | 1120 | 100 | 1000 | 0 | 112 | 40-140 | 0 |
| n-Butylbenzene | 1215 | 30 | 1000 | 0 | 122 | 65-140 | 0 |
| n-Propylbenzene | 1126 | 30 | 1000 | 0 | 113 | 65-135 | 0 |
| o-Xylene | 1108 | 30 | 1000 | 0 | 111 | 75-125 | 0 |
| p-Isopropyltoluene | 1157 | 30 | 1000 | 0 | 116 | 75-135 | 0 |
| sec-Butylbenzene | 1202 | 30 | 1000 | 0 | 120 | 65-130 | 0 |
| Styrene | 1102 | 30 | 1000 | 0 | 110 | 75-125 | 0 |
| tert-Butylbenzene | 1181 | 30 | 1000 | 0 | 118 | 65-130 | 0 |
| Tetrachloroethene | 1224 | 30 | 1000 | 0 | 122 | 64-140 | 0 |
| Tetrahydrofuran | 1032 | 200 | 1000 | 0 | 103 | 70-135 | 0 |
| Toluene | 1120 | 30 | 1000 | 0 | 112 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1140 | 30 | 1000 | 0 | 114 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1033 | 30 | 1000 | 0 | 103 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 983 | 30 | 1000 | 0 | 98.3 | 70-135 | 0 |
| Trichloroethene | 1135 | 30 | 1000 | 0 | 114 | 75-125 | 0 |
| Trichlorofluoromethane | 1023 | 30 | 1000 | 0 | 102 | 25-185 | 0 |
| Vinyl chloride | 1010 | 30 | 1000 | 0 | 101 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1006* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1019* | 0 | *1000* | 0 | *102* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1003* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *998.5* | 0 | *1000* | 0 | *99.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 03:58 PM**
Client ID: Run ID: **VMS9_120725A** SeqNo: **2036901** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 925.5 | 30 | 1000 | 0 | 92.6 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 891.5 | 30 | 1000 | 0 | 89.2 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 885.5 | 30 | 1000 | 0 | 88.6 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 829.5 | 30 | 1000 | 0 | 83 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 811.5 | 30 | 1000 | 0 | 81.2 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 819 | 30 | 1000 | 0 | 81.9 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1030 | 30 | 1000 | 0 | 103 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 825 | 30 | 1000 | 0 | 82.5 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 847 | 30 | 1000 | 0 | 84.7 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1038 | 30 | 1000 | 0 | 104 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 890 | 30 | 1000 | 0 | 89 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 829 | 30 | 1000 | 0 | 82.9 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 916.5 | 30 | 1000 | 0 | 91.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 924.5 | 30 | 1000 | 0 | 92.4 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 843 | 30 | 1000 | 0 | 84.3 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 810 | 30 | 1000 | 0 | 81 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 985.5 | 30 | 1000 | 0 | 98.6 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 921.5 | 30 | 1000 | 0 | 92.2 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 919 | 30 | 1000 | 0 | 91.9 | 70-125 | 0 | | | |
| 2-Butanone | 766 | 200 | 1000 | 0 | 76.6 | 30-160 | 0 | | | |
| 2-Hexanone | 738 | 30 | 1000 | 0 | 73.8 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 716.5 | 30 | 1000 | 0 | 71.6 | 45-145 | 0 | | | |
| Acetone | 735 | 100 | 1000 | 0 | 73.5 | 20-160 | 0 | | | B |
| Acrylonitrile | 730.5 | 100 | 1000 | 0 | 73 | 70-135 | 0 | | | |
| Benzene | 875 | 30 | 1000 | 0 | 87.5 | 75-125 | 0 | | | |
| Bromobenzene | 866 | 30 | 1000 | 0 | 86.6 | 65-120 | 0 | | | |
| Bromochloromethane | 863.5 | 30 | 1000 | 0 | 86.4 | 70-125 | 0 | | | |
| Bromodichloromethane | 750 | 30 | 1000 | 0 | 75 | 70-130 | 0 | | | |
| Bromoform | 836 | 30 | 1000 | 0 | 83.6 | 55-135 | 0 | | | |
| Bromomethane | 943.5 | 75 | 1000 | 0 | 94.4 | 30-160 | 0 | | | |
| Carbon disulfide | 859.5 | 30 | 1000 | 0 | 86 | 45-160 | 0 | | | |
| Carbon tetrachloride | 814 | 30 | 1000 | 0 | 81.4 | 65-135 | 0 | | | |
| Chlorobenzene | 910 | 30 | 1000 | 0 | 91 | 75-125 | 0 | | | |
| Chloroethane | 770.5 | 100 | 1000 | 0 | 77 | 40-155 | 0 | | | |
| Chloroform | 841 | 30 | 1000 | 0 | 84.1 | 70-125 | 0 | | | |
| Chloromethane | 769.5 | 100 | 1000 | 0 | 77 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 837 | 30 | 1000 | 0 | 83.7 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 763 | 30 | 1000 | 0 | 76.3 | 70-125 | 0 | | | |
| Dibromochloromethane | 778 | 30 | 1000 | 0 | 77.8 | 65-135 | 0 | | | |
| Dibromomethane | 845.5 | 30 | 1000 | 0 | 84.6 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 714.5 | 30 | 1000 | 0 | 71.4 | 35-135 | 0 | | | |
| Ethylbenzene | 955.5 | 30 | 1000 | 0 | 95.6 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 839 | 30 | 1000 | 0 | 83.9 | 70-135 | 0 | |
| Isopropylbenzene | 1007 | 30 | 1000 | 0 | 101 | 75-130 | 0 | |
| m,p-Xylene | 1942 | 60 | 2000 | 0 | 97.1 | 80-125 | 0 | |
| Methyl tert-butyl ether | 770 | 30 | 1000 | 0 | 77 | 75-125 | 0 | |
| Methylene chloride | 810 | 30 | 1000 | 0 | 81 | 55-145 | 0 | |
| Naphthalene | 827 | 100 | 1000 | 0 | 82.7 | 40-140 | 0 | |
| n-Butylbenzene | 1006 | 30 | 1000 | 0 | 101 | 65-140 | 0 | |
| n-Propylbenzene | 940 | 30 | 1000 | 0 | 94 | 65-135 | 0 | |
| o-Xylene | 965 | 30 | 1000 | 0 | 96.5 | 75-125 | 0 | |
| p-Isopropyltoluene | 971 | 30 | 1000 | 0 | 97.1 | 75-135 | 0 | |
| sec-Butylbenzene | 884 | 30 | 1000 | 0 | 88.4 | 65-130 | 0 | |
| Styrene | 863 | 30 | 1000 | 0 | 86.3 | 75-125 | 0 | |
| tert-Butylbenzene | 942 | 30 | 1000 | 0 | 94.2 | 65-130 | 0 | |
| Tetrachloroethene | 833.5 | 30 | 1000 | 0 | 83.4 | 64-140 | 0 | |
| Tetrahydrofuran | 767 | 200 | 1000 | 0 | 76.7 | 70-135 | 0 | |
| Toluene | 877 | 30 | 1000 | 0 | 87.7 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 837.5 | 30 | 1000 | 0 | 83.8 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 762 | 30 | 1000 | 0 | 76.2 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 684 | 30 | 1000 | 0 | 68.4 | 70-135 | 0 | S |
| Trichloroethene | 856 | 30 | 1000 | 0 | 85.6 | 75-125 | 0 | |
| Trichlorofluoromethane | 733.5 | 30 | 1000 | 0 | 73.4 | 25-185 | 0 | |
| Vinyl chloride | 749.5 | 30 | 1000 | 0 | 75 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *943* | 0 | *1000* | 0 | *94.3* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *958* | 0 | *1000* | 0 | *95.8* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1046* | 0 | *1000* | 0 | *105* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *972* | 0 | *1000* | 0 | *97.2* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42573-42573** Units: **µg/Kg** Analysis Date: **7/26/2012 03:18 PM**
Client ID: Run ID: **VMS9_120726A** SeqNo: **2039268** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 920 | 30 | 1000 | 0 | 92 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 933 | 30 | 1000 | 0 | 93.3 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 871.5 | 30 | 1000 | 0 | 87.2 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 816 | 30 | 1000 | 0 | 81.6 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 799 | 30 | 1000 | 0 | 79.9 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 855 | 30 | 1000 | 0 | 85.5 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 974 | 30 | 1000 | 0 | 97.4 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 803.5 | 30 | 1000 | 0 | 80.4 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 806 | 30 | 1000 | 0 | 80.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1007 | 30 | 1000 | 0 | 101 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 846 | 30 | 1000 | 0 | 84.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 827 | 30 | 1000 | 0 | 82.7 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 886.5 | 30 | 1000 | 0 | 88.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 880.5 | 30 | 1000 | 0 | 88 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 839 | 30 | 1000 | 0 | 83.9 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 824.5 | 30 | 1000 | 0 | 82.4 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 961.5 | 30 | 1000 | 0 | 96.2 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 886 | 30 | 1000 | 0 | 88.6 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 879 | 30 | 1000 | 0 | 87.9 | 70-125 | 0 | | | |
| 2-Butanone | 767.5 | 200 | 1000 | 0 | 76.8 | 30-160 | 0 | | | |
| 2-Hexanone | 729.5 | 30 | 1000 | 0 | 73 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 719.5 | 30 | 1000 | 0 | 72 | 45-145 | 0 | | | |
| Acetone | 783.5 | 100 | 1000 | 0 | 78.4 | 20-160 | 0 | | | B |
| Acrylonitrile | 747.5 | 100 | 1000 | 0 | 74.8 | 70-135 | 0 | | | |
| Benzene | 878 | 30 | 1000 | 0 | 87.8 | 75-125 | 0 | | | |
| Bromobenzene | 831 | 30 | 1000 | 0 | 83.1 | 65-120 | 0 | | | |
| Bromochloromethane | 855 | 30 | 1000 | 0 | 85.5 | 70-125 | 0 | | | |
| Bromodichloromethane | 776 | 30 | 1000 | 0 | 77.6 | 70-130 | 0 | | | |
| Bromoform | 810 | 30 | 1000 | 0 | 81 | 55-135 | 0 | | | |
| Bromomethane | 922.5 | 75 | 1000 | 0 | 92.2 | 30-160 | 0 | | | |
| Carbon disulfide | 892.5 | 30 | 1000 | 0 | 89.2 | 45-160 | 0 | | | |
| Carbon tetrachloride | 834 | 30 | 1000 | 0 | 83.4 | 65-135 | 0 | | | |
| Chlorobenzene | 904.5 | 30 | 1000 | 0 | 90.4 | 75-125 | 0 | | | |
| Chloroethane | 717 | 100 | 1000 | 0 | 71.7 | 40-155 | 0 | | | |
| Chloroform | 882 | 30 | 1000 | 0 | 88.2 | 70-125 | 0 | | | |
| Chloromethane | 779.5 | 100 | 1000 | 0 | 78 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 828.5 | 30 | 1000 | 0 | 82.8 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 798.5 | 30 | 1000 | 0 | 79.8 | 70-125 | 0 | | | |
| Dibromochloromethane | 785.5 | 30 | 1000 | 0 | 78.6 | 65-135 | 0 | | | |
| Dibromomethane | 845.5 | 30 | 1000 | 0 | 84.6 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 693 | 30 | 1000 | 0 | 69.3 | 35-135 | 0 | | | |
| Ethylbenzene | 960 | 30 | 1000 | 0 | 96 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 826 | 30 | 1000 | 0 | 82.6 | 70-135 | 0 | |
| Isopropylbenzene | 999.5 | 30 | 1000 | 0 | 100 | 75-130 | 0 | |
| m,p-Xylene | 1918 | 60 | 2000 | 0 | 95.9 | 80-125 | 0 | |
| Methyl tert-butyl ether | 790.5 | 30 | 1000 | 0 | 79 | 75-125 | 0 | |
| Methylene chloride | 820.5 | 30 | 1000 | 0 | 82 | 55-145 | 0 | |
| Naphthalene | 786 | 100 | 1000 | 0 | 78.6 | 40-140 | 0 | |
| n-Butylbenzene | 978 | 30 | 1000 | 0 | 97.8 | 65-140 | 0 | |
| n-Propylbenzene | 917 | 30 | 1000 | 0 | 91.7 | 65-135 | 0 | |
| o-Xylene | 945.5 | 30 | 1000 | 0 | 94.6 | 75-125 | 0 | |
| p-Isopropyltoluene | 944 | 30 | 1000 | 0 | 94.4 | 75-135 | 0 | |
| sec-Butylbenzene | 865 | 30 | 1000 | 0 | 86.5 | 65-130 | 0 | |
| Styrene | 849 | 30 | 1000 | 0 | 84.9 | 75-125 | 0 | |
| tert-Butylbenzene | 928 | 30 | 1000 | 0 | 92.8 | 65-130 | 0 | |
| Tetrachloroethene | 833 | 30 | 1000 | 0 | 83.3 | 64-140 | 0 | |
| Tetrahydrofuran | 791 | 200 | 1000 | 0 | 79.1 | 70-135 | 0 | |
| Toluene | 892 | 30 | 1000 | 0 | 89.2 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 850 | 30 | 1000 | 0 | 85 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 783 | 30 | 1000 | 0 | 78.3 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 671 | 30 | 1000 | 0 | 67.1 | 70-135 | 0 | S |
| Trichloroethene | 861 | 30 | 1000 | 0 | 86.1 | 75-125 | 0 | |
| Trichlorofluoromethane | 762.5 | 30 | 1000 | 0 | 76.2 | 25-185 | 0 | |
| Vinyl chloride | 778 | 30 | 1000 | 0 | 77.8 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *844* | 0 | *1000* | 0 | *84.4* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *854.5* | 0 | *1000* | 0 | *85.4* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *941* | 0 | *1000* | 0 | *94.1* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *896.5* | 0 | *1000* | 0 | *89.6* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42573-42573** | | | | Units: **µg/Kg** | | Analysis Date: **7/27/2012 02:37 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS6_120727A** | | | SeqNo: **2041145** | | Prep Date: **7/25/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 969 | 30 | 1000 | 0 | 96.9 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1020 | 30 | 1000 | 0 | 102 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 939.5 | 30 | 1000 | 0 | 94 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 866.5 | 30 | 1000 | 0 | 86.6 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 996 | 30 | 1000 | 0 | 99.6 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1029 | 30 | 1000 | 0 | 103 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 915.5 | 30 | 1000 | 0 | 91.6 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 913 | 30 | 1000 | 0 | 91.3 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 916 | 30 | 1000 | 0 | 91.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 981 | 30 | 1000 | 0 | 98.1 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 992 | 30 | 1000 | 0 | 99.2 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 867.5 | 30 | 1000 | 0 | 86.8 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 932.5 | 30 | 1000 | 0 | 93.2 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 994.5 | 30 | 1000 | 0 | 99.4 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 988 | 30 | 1000 | 0 | 98.8 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 988.5 | 30 | 1000 | 0 | 98.8 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1044 | 30 | 1000 | 0 | 104 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 965.5 | 30 | 1000 | 0 | 96.6 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 979.5 | 30 | 1000 | 0 | 98 | 70-125 | 0 | | | |
| 2-Butanone | 925 | 200 | 1000 | 0 | 92.5 | 30-160 | 0 | | | |
| 2-Hexanone | 879 | 30 | 1000 | 0 | 87.9 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1166 | 30 | 1000 | 0 | 117 | 45-145 | 0 | | | |
| Acetone | 878 | 100 | 1000 | 0 | 87.8 | 20-160 | 0 | | | |
| Acrylonitrile | 967.5 | 100 | 1000 | 0 | 96.8 | 70-135 | 0 | | | |
| Benzene | 998 | 30 | 1000 | 0 | 99.8 | 75-125 | 0 | | | |
| Bromobenzene | 1000 | 30 | 1000 | 0 | 100 | 65-120 | 0 | | | |
| Bromochloromethane | 994.5 | 30 | 1000 | 0 | 99.4 | 70-125 | 0 | | | |
| Bromodichloromethane | 962.5 | 30 | 1000 | 0 | 96.2 | 70-130 | 0 | | | |
| Bromoform | 1004 | 30 | 1000 | 0 | 100 | 55-135 | 0 | | | |
| Bromomethane | 1346 | 75 | 1000 | 0 | 135 | 30-160 | 0 | | | |
| Carbon disulfide | 1110 | 30 | 1000 | 0 | 111 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1066 | 30 | 1000 | 0 | 107 | 65-135 | 0 | | | |
| Chlorobenzene | 991 | 30 | 1000 | 0 | 99.1 | 75-125 | 0 | | | |
| Chloroethane | 909 | 100 | 1000 | 0 | 90.9 | 40-155 | 0 | | | |
| Chloroform | 986.5 | 30 | 1000 | 0 | 98.6 | 70-125 | 0 | | | |
| Chloromethane | 952.5 | 100 | 1000 | 0 | 95.2 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 982.5 | 30 | 1000 | 0 | 98.2 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1001 | 30 | 1000 | 0 | 100 | 70-125 | 0 | | | |
| Dibromochloromethane | 940.5 | 30 | 1000 | 0 | 94 | 65-135 | 0 | | | |
| Dibromomethane | 957 | 30 | 1000 | 0 | 95.7 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 729 | 30 | 1000 | 0 | 72.9 | 35-135 | 0 | | | |
| Ethylbenzene | 1024 | 30 | 1000 | 0 | 102 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 937 | 30 | 1000 | 0 | 93.7 | 70-135 | 0 | |
| Isopropylbenzene | 1012 | 30 | 1000 | 0 | 101 | 75-130 | 0 | |
| m,p-Xylene | 2077 | 60 | 2000 | 0 | 104 | 80-125 | 0 | |
| Methyl tert-butyl ether | 888 | 30 | 1000 | 0 | 88.8 | 75-125 | 0 | |
| Methylene chloride | 990 | 30 | 1000 | 0 | 99 | 55-145 | 0 | |
| Naphthalene | 902.5 | 100 | 1000 | 0 | 90.2 | 40-140 | 0 | |
| n-Butylbenzene | 1060 | 30 | 1000 | 0 | 106 | 65-140 | 0 | |
| n-Propylbenzene | 1000 | 30 | 1000 | 0 | 100 | 65-135 | 0 | |
| o-Xylene | 1009 | 30 | 1000 | 0 | 101 | 75-125 | 0 | |
| p-Isopropyltoluene | 1038 | 30 | 1000 | 0 | 104 | 75-135 | 0 | |
| sec-Butylbenzene | 973 | 30 | 1000 | 0 | 97.3 | 65-130 | 0 | |
| Styrene | 969 | 30 | 1000 | 0 | 96.9 | 75-125 | 0 | |
| tert-Butylbenzene | 1010 | 30 | 1000 | 0 | 101 | 65-130 | 0 | |
| Tetrachloroethene | 999.5 | 30 | 1000 | 0 | 100 | 64-140 | 0 | |
| Tetrahydrofuran | 974.5 | 200 | 1000 | 0 | 97.4 | 70-135 | 0 | |
| Toluene | 1013 | 30 | 1000 | 0 | 101 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 1060 | 30 | 1000 | 0 | 106 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 1024 | 30 | 1000 | 0 | 102 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 1608 | 30 | 1000 | 0 | 161 | 70-135 | 0 | S |
| Trichloroethene | 945 | 30 | 1000 | 0 | 94.5 | 75-125 | 0 | |
| Trichlorofluoromethane | 822 | 30 | 1000 | 0 | 82.2 | 25-185 | 0 | |
| Vinyl chloride | 887 | 30 | 1000 | 0 | 88.7 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *1030* | 0 | *1000* | 0 | *103* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1022* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1001* | 0 | *1000* | 0 | *100* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *991.5* | 0 | *1000* | 0 | *99.2* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MS** Sample ID: **1207634-05A MS** Units: **µg/Kg** Analysis Date: **7/26/2012 01:14 AM**
Client ID: **SBKR0825I506S071812S004** Run ID: **VMS9_120725A** SeqNo: **2036909** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1855 | 57 | 1899 | 0 | 97.7 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1784 | 57 | 1899 | 0 | 94 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1778 | 57 | 1899 | 0 | 93.6 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1666 | 57 | 1899 | 0 | 87.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1664 | 57 | 1899 | 0 | 87.6 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1639 | 57 | 1899 | 0 | 86.4 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 2036 | 57 | 1899 | 0 | 107 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1647 | 57 | 1899 | 0 | 86.8 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 1764 | 57 | 1899 | 0 | 92.9 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 2117 | 57 | 1899 | 0 | 112 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1803 | 57 | 1899 | 0 | 95 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 1557 | 57 | 1899 | 0 | 82 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1835 | 57 | 1899 | 0 | 96.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1909 | 57 | 1899 | 0 | 101 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1756 | 57 | 1899 | 0 | 92.5 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1693 | 57 | 1899 | 0 | 89.2 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 2068 | 57 | 1899 | 0 | 109 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1918 | 57 | 1899 | 0 | 101 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1877 | 57 | 1899 | 0 | 98.8 | 70-125 | 0 | | | |
| 2-Butanone | 1568 | 190 | 1899 | 0 | 82.6 | 30-160 | 0 | | | B |
| 2-Hexanone | 1437 | 57 | 1899 | 0 | 75.7 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1348 | 57 | 1899 | 0 | 71 | 45-145 | 0 | | | |
| Acetone | 1883 | 190 | 1899 | 0 | 99.2 | 20-160 | 0 | | | B |
| Acrylonitrile | 1633 | 57 | 1899 | 0 | 86 | 70-135 | 0 | | | |
| Benzene | 1800 | 57 | 1899 | 0 | 94.8 | 75-125 | 0 | | | |
| Bromobenzene | 1793 | 57 | 1899 | 0 | 94.4 | 65-120 | 0 | | | |
| Bromochloromethane | 1936 | 57 | 1899 | 0 | 102 | 70-125 | 0 | | | |
| Bromodichloromethane | 1553 | 57 | 1899 | 0 | 81.8 | 70-130 | 0 | | | |
| Bromoform | 1578 | 57 | 1899 | 0 | 83.1 | 55-135 | 0 | | | |
| Bromomethane | 1791 | 57 | 1899 | 0 | 94.4 | 30-160 | 0 | | | |
| Carbon disulfide | 1347 | 57 | 1899 | 0 | 71 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1561 | 57 | 1899 | 0 | 82.2 | 65-135 | 0 | | | |
| Chlorobenzene | 1922 | 57 | 1899 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 1424 | 190 | 1899 | 0 | 75 | 40-155 | 0 | | | |
| Chloroform | 1895 | 57 | 1899 | 0 | 99.8 | 70-125 | 0 | | | |
| Chloromethane | 2087 | 57 | 1899 | 0 | 110 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1656 | 57 | 1899 | 0 | 87.2 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1549 | 57 | 1899 | 0 | 81.6 | 70-125 | 0 | | | |
| Dibromochloromethane | 1491 | 57 | 1899 | 0 | 78.6 | 65-135 | 0 | | | |
| Dibromomethane | 1836 | 57 | 1899 | 0 | 96.7 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 1631 | 57 | 1899 | 0 | 85.9 | 35-135 | 0 | | | |
| Ethylbenzene | 2003 | 57 | 1899 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1586 | 57 | 1899 | 0 | 83.6 | 70-135 | 0 | |
| Isopropylbenzene | 2160 | 57 | 1899 | 0 | 114 | 75-130 | 0 | |
| m,p-Xylene | 4112 | 110 | 3797 | 0 | 108 | 80-125 | 0 | |
| Methyl tert-butyl ether | 1525 | 57 | 1899 | 0 | 80.4 | 75-125 | 0 | |
| Methylene chloride | 1554 | 57 | 1899 | 0 | 81.8 | 55-145 | 0 | |
| Naphthalene | 1653 | 190 | 1899 | 0 | 87 | 40-140 | 0 | |
| n-Butylbenzene | 2013 | 57 | 1899 | 0 | 106 | 65-140 | 0 | |
| n-Propylbenzene | 1972 | 57 | 1899 | 0 | 104 | 65-135 | 0 | |
| o-Xylene | 2069 | 57 | 1899 | 0 | 109 | 75-125 | 0 | |
| p-Isopropyltoluene | 2010 | 57 | 1899 | 0 | 106 | 75-135 | 0 | |
| sec-Butylbenzene | 1790 | 57 | 1899 | 0 | 94.3 | 65-130 | 0 | |
| Styrene | 1719 | 57 | 1899 | 0 | 90.6 | 75-125 | 0 | |
| tert-Butylbenzene | 1954 | 57 | 1899 | 0 | 103 | 65-130 | 0 | |
| Tetrachloroethene | 1634 | 57 | 1899 | 0 | 86 | 64-140 | 0 | |
| Tetrahydrofuran | 1590 | 190 | 1899 | 0 | 83.8 | 70-135 | 0 | |
| Toluene | 1741 | 57 | 1899 | 0 | 91.7 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 1719 | 57 | 1899 | 0 | 90.6 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 1368 | 57 | 1899 | 0 | 72 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 1164 | 57 | 1899 | 0 | 61.3 | 70-135 | 0 | S |
| Trichloroethene | 1713 | 57 | 1899 | 0 | 90.2 | 75-125 | 0 | |
| Trichlorofluoromethane | 769.9 | 57 | 1899 | 0 | 40.6 | 25-185 | 0 | |
| Vinyl chloride | 1090 | 57 | 1899 | 0 | 57.4 | 60-125 | 0 | S |
| *Surr: 1,2-Dichloroethane-d4* | *1732* | 0 | *1899* | 0 | *91.2* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1782* | 0 | *1899* | 0 | *93.8* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1906* | 0 | *1899* | 0 | *100* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1664* | 0 | *1899* | 0 | *87.6* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1207634-05A MSD** Units: **µg/Kg** Analysis Date: **7/26/2012 01:39 AM**

Client ID: **SBKR0825I506S071812S004** Run ID: **VMS9_120725A** SeqNo: **2036910** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1837 | 57 | 1899 | 0 | 96.8 | 75-125 | 1855 | 0.977 | 30 | |
| 1,1,1-Trichloroethane | 1644 | 57 | 1899 | 0 | 86.6 | 70-135 | 1784 | 8.14 | 30 | |
| 1,1,2,2-Tetrachloroethane | 1686 | 57 | 1899 | 0 | 88.8 | 55-130 | 1778 | 5.32 | 30 | |
| 1,1,2-Trichloroethane | 1656 | 57 | 1899 | 0 | 87.2 | 60-125 | 1666 | 0.629 | 30 | |
| 1,1-Dichloroethane | 1683 | 57 | 1899 | 0 | 88.6 | 75-125 | 1664 | 1.13 | 30 | |
| 1,1-Dichloroethene | 1650 | 57 | 1899 | 0 | 86.9 | 65-135 | 1639 | 0.635 | 30 | |
| 1,2,3-Trichlorobenzene | 2214 | 57 | 1899 | 0 | 117 | 60-135 | 2036 | 8.35 | 30 | |
| 1,2,3-Trichloropropane | 1549 | 57 | 1899 | 0 | 81.6 | 65-130 | 1647 | 6.12 | 30 | |
| 1,2,3-Trimethylbenzene | 1809 | 57 | 1899 | 0 | 95.3 | 65-135 | 1764 | 2.55 | 30 | |
| 1,2,4-Trichlorobenzene | 2255 | 57 | 1899 | 0 | 119 | 65-130 | 2117 | 6.3 | 30 | |
| 1,2,4-Trimethylbenzene | 1733 | 57 | 1899 | 0 | 91.3 | 65-135 | 1803 | 3.92 | 30 | |
| 1,2-Dibromo-3-chloropropane | 1619 | 57 | 1899 | 0 | 85.2 | 40-135 | 1557 | 3.89 | 30 | |
| 1,2-Dibromoethane | 1829 | 57 | 1899 | 0 | 96.4 | 70-125 | 1835 | 0.311 | 30 | |
| 1,2-Dichlorobenzene | 1969 | 57 | 1899 | 0 | 104 | 75-120 | 1909 | 3.08 | 30 | |
| 1,2-Dichloroethane | 1685 | 57 | 1899 | 0 | 88.8 | 70-135 | 1756 | 4.14 | 30 | |
| 1,2-Dichloropropane | 1631 | 57 | 1899 | 0 | 85.9 | 70-120 | 1693 | 3.71 | 30 | |
| 1,3,5-Trimethylbenzene | 2008 | 57 | 1899 | 0 | 106 | 65-135 | 2068 | 2.94 | 30 | |
| 1,3-Dichlorobenzene | 1958 | 57 | 1899 | 0 | 103 | 70-125 | 1918 | 2.11 | 30 | |
| 1,4-Dichlorobenzene | 1915 | 57 | 1899 | 0 | 101 | 70-125 | 1877 | 2 | 30 | |
| 2-Butanone | 1696 | 190 | 1899 | 0 | 89.4 | 30-160 | 1568 | 7.85 | 30 | B |
| 2-Hexanone | 1367 | 57 | 1899 | 0 | 72 | 45-145 | 1437 | 5.01 | 30 | |
| 4-Methyl-2-pentanone | 1385 | 57 | 1899 | 0 | 73 | 45-145 | 1348 | 2.71 | 30 | |
| Acetone | 1978 | 190 | 1899 | 0 | 104 | 20-160 | 1883 | 4.92 | 30 | B |
| Acrylonitrile | 1600 | 57 | 1899 | 0 | 84.2 | 70-135 | 1633 | 2.06 | 30 | |
| Benzene | 1736 | 57 | 1899 | 0 | 91.4 | 75-125 | 1800 | 3.6 | 30 | |
| Bromobenzene | 1718 | 57 | 1899 | 0 | 90.5 | 65-120 | 1793 | 4.27 | 30 | |
| Bromochloromethane | 1838 | 57 | 1899 | 0 | 96.8 | 70-125 | 1936 | 5.18 | 30 | |
| Bromodichloromethane | 1514 | 57 | 1899 | 0 | 79.8 | 70-130 | 1553 | 2.54 | 30 | |
| Bromoform | 1492 | 57 | 1899 | 0 | 78.6 | 55-135 | 1578 | 5.57 | 30 | |
| Bromomethane | 1828 | 57 | 1899 | 0 | 96.3 | 30-160 | 1791 | 2.05 | 30 | |
| Carbon disulfide | 1379 | 57 | 1899 | 0 | 72.6 | 45-160 | 1347 | 2.37 | 30 | |
| Carbon tetrachloride | 1460 | 57 | 1899 | 0 | 76.9 | 65-135 | 1561 | 6.66 | 30 | |
| Chlorobenzene | 1919 | 57 | 1899 | 0 | 101 | 75-125 | 1922 | 0.148 | 30 | |
| Chloroethane | 1456 | 190 | 1899 | 0 | 76.7 | 40-155 | 1424 | 2.24 | 30 | |
| Chloroform | 1772 | 57 | 1899 | 0 | 93.4 | 70-125 | 1895 | 6.68 | 30 | |
| Chloromethane | 2024 | 57 | 1899 | 0 | 107 | 50-130 | 2087 | 3.05 | 30 | |
| cis-1,2-Dichloroethene | 1752 | 57 | 1899 | 0 | 92.3 | 65-125 | 1656 | 5.63 | 30 | |
| cis-1,3-Dichloropropene | 1507 | 57 | 1899 | 0 | 79.4 | 70-125 | 1549 | 2.73 | 30 | |
| Dibromochloromethane | 1492 | 57 | 1899 | 0 | 78.6 | 65-135 | 1491 | 0.0636 | 30 | |
| Dibromomethane | 1759 | 57 | 1899 | 0 | 92.6 | 75-130 | 1836 | 4.28 | 30 | |
| Dichlorodifluoromethane | 1534 | 57 | 1899 | 0 | 80.8 | 35-135 | 1631 | 6.12 | 30 | |
| Ethylbenzene | 2027 | 57 | 1899 | 0 | 107 | 75-125 | 2003 | 1.18 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1620 | 57 | 1899 | 0 | 85.4 | 70-135 | 1586 | 2.13 | 30 | |
| Isopropylbenzene | 2120 | 57 | 1899 | 0 | 112 | 75-130 | 2160 | 1.86 | 30 | |
| m,p-Xylene | 4157 | 110 | 3797 | 0 | 109 | 80-125 | 4112 | 1.08 | 30 | |
| Methyl tert-butyl ether | 1566 | 57 | 1899 | 0 | 82.5 | 75-125 | 1525 | 2.64 | 30 | |
| Methylene chloride | 1551 | 57 | 1899 | 0 | 81.7 | 55-145 | 1554 | 0.183 | 30 | |
| Naphthalene | 1747 | 190 | 1899 | 0 | 92 | 40-140 | 1653 | 5.53 | 30 | |
| n-Butylbenzene | 2076 | 57 | 1899 | 0 | 109 | 65-140 | 2013 | 3.06 | 30 | |
| n-Propylbenzene | 1900 | 57 | 1899 | 0 | 100 | 65-135 | 1972 | 3.73 | 30 | |
| o-Xylene | 2060 | 57 | 1899 | 0 | 108 | 75-125 | 2069 | 0.46 | 30 | |
| p-Isopropyltoluene | 2068 | 57 | 1899 | 0 | 109 | 75-135 | 2010 | 2.84 | 30 | |
| sec-Butylbenzene | 1714 | 57 | 1899 | 0 | 90.3 | 65-130 | 1790 | 4.33 | 30 | |
| Styrene | 1668 | 57 | 1899 | 0 | 87.8 | 75-125 | 1719 | 3.03 | 30 | |
| tert-Butylbenzene | 1862 | 57 | 1899 | 0 | 98.1 | 65-130 | 1954 | 4.78 | 30 | |
| Tetrachloroethene | 1634 | 57 | 1899 | 0 | 86 | 64-140 | 1634 | 0 | 30 | |
| Tetrahydrofuran | 1434 | 190 | 1899 | 0 | 75.6 | 70-135 | 1590 | 10.3 | 30 | |
| Toluene | 1783 | 57 | 1899 | 0 | 93.9 | 70-125 | 1741 | 2.37 | 30 | |
| trans-1,2-Dichloroethene | 1718 | 57 | 1899 | 0 | 90.5 | 65-135 | 1719 | 0.0552 | 30 | |
| trans-1,3-Dichloropropene | 1411 | 57 | 1899 | 0 | 74.3 | 65-125 | 1368 | 3.07 | 30 | |
| trans-1,4-Dichloro-2-butene | 1062 | 57 | 1899 | 0 | 56 | 70-135 | 1164 | 9.13 | 30 | S |
| Trichloroethene | 1621 | 57 | 1899 | 0 | 85.4 | 75-125 | 1713 | 5.52 | 30 | |
| Trichlorofluoromethane | 757.5 | 57 | 1899 | 0 | 39.9 | 25-185 | 769.9 | 1.62 | 30 | |
| Vinyl chloride | 1607 | 57 | 1899 | 0 | 84.6 | 60-125 | 1090 | 38.4 | 30 | R |
| *Surr: 1,2-Dichloroethane-d4* | *1676* | 0 | *1899* | 0 | *88.3* | *70-130* | 1732 | *3.29* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *1734* | 0 | *1899* | 0 | *91.4* | *70-130* | 1782 | *2.7* | *30* | |
| *Surr: Dibromofluoromethane* | *1806* | 0 | *1899* | 0 | *95.1* | *70-130* | 1906 | *5.42* | *30* | |
| *Surr: Toluene-d8* | *1711* | 0 | *1899* | 0 | *90.1* | *70-130* | 1664 | *2.76* | *30* | |

**The following samples were analyzed in this batch:** 1207634-05A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207634
**Project:** Marshall KRRI 0825I, 0825L 7/18/12

# QC BATCH REPORT

Batch ID: **R107639** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R107639** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034381** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | ND | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R107639** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034380** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 100 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | |

**DUP** Sample ID: **1207633-03BDUP1** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034366** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 37.14 | 0.050 | 0 | 0 | 0 | 0-0 | 36.91 | 0.621 | 20 | |

**DUP** Sample ID: **1207633-03BDUP2** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: Run ID: **MOIST_120723B** SeqNo: **2034367** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 36.07 | 0.050 | 0 | 0 | 0 | 0-0 | 36.91 | 2.3 | 20 | |

**DUP** Sample ID: **1207634-05BDUP1** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: **SBKR0825I506S071812S004** Run ID: **MOIST_120723B** SeqNo: **2034376** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 30.4 | 0.050 | 0 | 0 | 0 | 0-0 | 31.03 | 2.05 | 20 | |

**DUP** Sample ID: **1207634-05BDUP2** Units: **% of sample** Analysis Date: **7/23/2012 02:47 PM**
Client ID: **SBKR0825I506S071812S004** Run ID: **MOIST_120723B** SeqNo: **2034377** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 30.96 | 0.050 | 0 | 0 | 0 | 0-0 | 31.03 | 0.226 | 20 | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207634-01B | 1207634-02B | 1207634-03B |
| 1207634-04B | 1207634-05B | 1207634-06B |
| 1207634-07B | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

1207634

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_071812_GMK1 | Task: KRRI_0825 |
|---|---|---|
| | Total # of Samples: 8 | Event Complete? |

| Turn Around Time | 5 Day | Rush | No |
|---|---|---|---|

BILLING CODE: 6.00

| Lab Information: | | Project Information: | | Other Information: | |
|---|---|---|---|---|---|
| Lab Name: | ALS Laboratory Group | Site ID #: | | Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 | Project # | 60162778 | Address: | 1100 Louisiana Suite 1100 |
| | | Site Address | 5555 Glenwood Parkway SE Suite 200 | City/State: | Houson, TX |
| Lab PM: | Ann Preston | City | Grand Rapids | State, Zip | MI |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 | Site PM Name | [redacted] | Send EDD to | |
| Lab PM email: | ann.preston@alsglobal.com | Phone/Fax: | | CC Hardcopy report | |
| Applicable Lab Quote #: | | Site PM Email: | Bryan.Stiemsma@aecom.com | CC Hardcopy report | |

| ITEM # | SAMPLE ID<br>Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | None | None | None | None | MeOH | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | | |
| 1 | SBKR0825I504S071812S007 | SBKR0825I504 | SO | G | 07/18/2012 08:47 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 2 | SBKR0825I505D071812S006 | SBKR0825I505 | SO | G | 07/18/2012 09:25 | 3 | DUPLICATE | | X | X | X | X | X | | | | | | | | | | |
| 3 | SBKR0825I505S071812S006 | SBKR0825I505 | SO | G | 07/18/2012 09:25 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 4 | SBKR0825I505S071812S013 | SBKR0825I505 | SO | G | 07/18/2012 09:30 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 5 | SBKR0825I506S071812S004 | SBKR0825I506 | SO | G | 07/18/2012 10:10 | 6 | MS/MSD | | X | X | X | X | X | | | | | | | | | | |
| 6 | SBKR0825I506S071812S013 | SBKR0825I506 | SO | G | 07/18/2012 10:15 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 7 | SBKR0825L504S071812S006 | SBKR0825L504 | SO | G | 07/18/2012 11:00 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 8 | SBKR0825L504T071812MX | SBKR0825L504 | SQ | G | 07/18/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | | |

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7-18-12 | 1711 | [signature] | 7-18-12 | 1711 |
| [signature] | 7/20/12 | 1708 | [signature] | 7/20/12 | 1708 |
| | | | | | |
| | | | | | |

| Sample Receipt Conditions | | | |
|---|---|---|---|
| Temp in °C | Samples on Ice? | Sample Intact? | Trip Blank? |
| 4.0°C | (Y)N | (Y)N | (Y)N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO:
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **20-Jul-12 17:08**

Work Order: **1207634** Received by: **MA**

Checklist completed by Diane Shaw (eSignature) 23-Jul-12 (Date) Reviewed by: Ann Preston (eSignature) 24-Jul-12 (Date)

Matrices: Soil
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 4.0 c | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 7/23/2012 12:25:25 PM | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | - | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

**ALS Environmental**
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

| CUSTODY SEAL | Seal Broken By: |
| --- | --- |
| Date: 07-18-12 Time: 1723<br>Name: Gerald Kramer<br>Company: | Date: |

4.0°c

30-Jul-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI Source Area 7/20/12** Work Order: **1207647**

Dear Bryan,

ALS Environmental received 4 samples on 23-Jul-2012 02:04 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 52.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/20/12
**Work Order:** **1207647**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1207647-01 | SBSA0132S072012S008 | Soil | | 7/20/2012 17:05 | 7/23/2012 14:04 | ☐ |
| 1207647-02 | SBSA0132S072012S012 | Soil | | 7/20/2012 17:10 | 7/23/2012 14:04 | ☐ |
| 1207647-03 | SBSA0132S072012S094 | Soil | | 7/20/2012 17:55 | 7/23/2012 14:04 | ☐ |
| 1207647-04 | SBSA0132T072012MX | Soil | | 7/20/2012 | 7/23/2012 14:04 | ☐ |

## ALS Group USA, Corp

*Date: 30-Jul-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/20/12
**Work Order:** 1207647

# Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batches 42599 and 42609 MS/MSD data for Metals is not related to this project's samples. No data requires qualification.

Batch 42573 LCS recoveries for trans-1,4-Dichloro-2-butene were outside control limits, but within the Sporadic Marginal Exceedence limit for an analyte that is not a project-specific analyte of concern. No qualification is necessary for this analyte. The MS/MSD data for Volatiles is not related to this project's samples. No data requires qualification.

# ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/20/12
**WorkOrder:** **1207647**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| % of sample | Percent of Sample |
| µg/Kg | Micrograms per Kilogram |
| µg/Kg-dry | Micrograms per Kilogram Dry Weight |
| mg/Kg-dry | Milligrams per Kilogram Dry Weight |

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132S072012S008 |
| **Work Order:** | 1207647 | **Collection Date:** | 7/20/2012 5:05:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207647-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **240** | **52** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **1,600** | **100** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *43.6* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.97 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Molybdenum** | **2.8** | **1.9** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Nickel** | **14** | **9.7** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **20** | **1.6** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *87.3* | *34-140* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *51.8* | *12-100* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *49.3* | *33-117* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *65.9* | *25-137* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *44.6* | *37-107* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Phenol-d6* | *47.9* | *40-106* | | | *%REC* | 1 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132S072012S008 |
| **Work Order:** | 1207647 | **Collection Date:** | 7/20/2012 5:05:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207647-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1,500 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 1,500 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 5,000 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 5,000 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 13,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 1,500 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 5,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 1,500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 1,500 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0132S072012S008
**Work Order:** 1207647 **Collection Date:** 7/20/2012 5:05:00 PM
**Project:** Marshall KRRI Source Area 7/20/12
**Lab ID:** 1207647-01 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 1,500 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 3,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 5,000 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 5,000 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 1,500 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 5,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 1,500 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 1,500 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 1,500 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *104* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **81** | **0.050** | **0** | | **% of sample** | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132S072012S012 |
| **Work Order:** | 1207647 | **Collection Date:** | 7/20/2012 5:10:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207647-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **120** | **75** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **990** | **150** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *48.8* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **RH** |
| Beryllium | ND | 1.4 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Molybdenum** | **6.3** | **2.8** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Nickel** | **8.5** | **7.1** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **4.4** | **2.4** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Acenaphthene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Acenaphthylene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Anthracene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(a)anthracene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(a)pyrene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Chrysene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Fluoranthene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Fluorene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Naphthalene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Phenanthrene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Pyrene | ND | 3,800 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *85.4* | *34-140* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *61.8* | *12-100* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *61.2* | *33-117* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *79.0* | *25-137* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *56.2* | *37-107* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: Phenol-d6* | *54.8* | *40-106* | | | *%REC* | 10 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132S072012S012 |
| **Work Order:** | 1207647 | **Collection Date:** | 7/20/2012 5:10:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207647-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 3,400 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 3,400 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 11,000 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 3,400 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 11,000 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 3,400 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 28,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 3,400 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 11,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 3,400 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 3,400 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0132S072012S012
**Work Order:** 1207647 **Collection Date:** 7/20/2012 5:10:00 PM
**Project:** Marshall KRRI Source Area 7/20/12
**Lab ID:** 1207647-02 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 3,400 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 6,800 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 11,000 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 11,000 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 11,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 3,400 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 3,400 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 3,400 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *96.4* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.5* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **87** | **0.050** | **0** | | **% of sample** | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132S072012S094 |
| **Work Order:** | 1207647 | **Collection Date:** | 7/20/2012 5:55:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207647-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| DRO (C10-C20) | ND | 220 | 4.0 | | mg/Kg-dry | 5 | 7/27/2012 |
| **ORO (C20-C34)** | **1,000** | **430** | **4.0** | | **mg/Kg-dry** | 5 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *51.8* | *39-115* | | | *%REC* | 5 | 7/27/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.83 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Molybdenum** | **3.1** | **1.7** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Nickel** | **4.6** | **1.4** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **2.6** | **1.4** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *99.6* | *34-140* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *55.3* | *12-100* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *55.9* | *33-117* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *73.3* | *25-137* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *47.6* | *37-107* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Phenol-d6* | *55.0* | *40-106* | | | *%REC* | 1 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132S072012S094 |
| **Work Order:** | 1207647 | **Collection Date:** | 7/20/2012 5:55:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207647-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 1,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 1,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 1,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1,000 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 1,000 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 3,400 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 3,400 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 8,400 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 1,000 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 1,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 3,400 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 1,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 1,000 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 1,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 1,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 1,000 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 1,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 1,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132S072012S094 |
| **Work Order:** | 1207647 | **Collection Date:** | 7/20/2012 5:55:00 PM |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207647-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 1,000 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 1,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 2,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 1,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 3,400 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 3,400 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 1,000 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 3,400 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 1,000 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 1,000 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 1,000 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *103* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *97.4* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *98.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **77** | **0.050** | **0** | | **% of sample** | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132T072012MX |
| **Work Order:** | 1207647 | **Collection Date:** | 7/20/2012 |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207647-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 30 | 10 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 30 | 20 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132T072012MX |
| **Work Order:** | 1207647 | **Collection Date:** | 7/20/2012 |
| **Project:** | Marshall KRRI Source Area 7/20/12 | | |
| **Lab ID:** | 1207647-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Cyclohexane | ND | 500 | 500 | | µg/Kg | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Ethylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *103* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *97.8* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.8* | *70-130* | | | *%REC* | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment

# QC BATCH REPORT

**Work Order:** 1207647

**Project:** Marshall KRRI Source Area 7/20/12

Batch ID: **42592** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42592-42592** Units: **mg/Kg** Analysis Date: **7/26/2012 05:43 PM**

Client ID: Run ID: **GC8_120726A** SeqNo: **2039113** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *2.81* | 0 | *5* | 0 | *56.2* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42592-42592** Units: **mg/Kg** Analysis Date: **7/26/2012 06:10 PM**

Client ID: Run ID: **GC8_120726A** SeqNo: **2039114** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 349 | 10 | 500 | 0 | 69.8 | 60-130 | 0 | | | |
| ORO (C20-C34) | 439.5 | 20 | 500 | 0 | 87.9 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *2.901* | 0 | *5* | 0 | *58* | *39-115* | 0 | | | |

**MS** Sample ID: **1207648-05B MS** Units: **mg/Kg** Analysis Date: **7/26/2012 06:37 PM**

Client ID: Run ID: **GC8_120726A** SeqNo: **2039115** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 332.9 | 9.5 | 473.4 | 17 | 66.7 | 60-130 | 0 | | | |
| ORO (C20-C34) | 446 | 19 | 473.4 | 43.71 | 85 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *2.698* | 0 | *4.734* | 0 | *57* | *39-115* | 0 | | | |

**MSD** Sample ID: **1207648-05B MSD** Units: **mg/Kg** Analysis Date: **7/26/2012 07:03 PM**

Client ID: Run ID: **GC8_120726A** SeqNo: **2039116** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 326.9 | 9.6 | 478.6 | 17 | 64.8 | 60-130 | 332.9 | 1.79 | 30 | |
| ORO (C20-C34) | 460.2 | 19 | 478.6 | 43.71 | 87 | 60-130 | 446 | 3.14 | 30 | |
| *Surr: 4-Terphenyl-d14* | *2.763* | 0 | *4.786* | 0 | *57.7* | *39-115* | 2.698 | *2.39* | *30* | |

**The following samples were analyzed in this batch:** 1207647-01B 1207647-02B 1207647-03B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42599** Instrument ID **ICPMS2** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42599-42599** Units: **mg/Kg** Analysis Date: **7/26/2012 02:35 PM**
Client ID: Run ID: **ICPMS2_120726A** SeqNo: **2037954** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |
| Molybdenum | ND | 0.25 | | | | | | | | |
| Nickel | 0.1478 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**LCS** Sample ID: **LCS-42599-42599** Units: **mg/Kg** Analysis Date: **7/26/2012 02:46 PM**
Client ID: Run ID: **ICPMS2_120726A** SeqNo: **2037956** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.36 | 0.10 | 5 | 0 | 87.2 | 80-120 | 0 | | | |
| Molybdenum | 4.67 | 0.25 | 5 | 0 | 93.4 | 80-120 | 0 | | | |
| Nickel | 4.578 | 0.25 | 5 | 0 | 91.6 | 80-120 | 0 | | | |
| Vanadium | 4.375 | 0.25 | 5 | 0 | 87.5 | 80-120 | 0 | | | |

**MS** Sample ID: **1207640-05BMS** Units: **mg/Kg** Analysis Date: **7/26/2012 03:27 PM**
Client ID: Run ID: **ICPMS2_120726A** SeqNo: **2038129** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 3.801 | 0.13 | 6.527 | 0.07346 | 57.1 | 75-125 | 0 | | | S |
| Molybdenum | 5.465 | 0.33 | 6.527 | 0.2249 | 80.3 | 75-125 | 0 | | | |
| Nickel | 12.21 | 0.33 | 6.527 | 6.155 | 92.8 | 75-125 | 0 | | | |
| Vanadium | 12.79 | 0.33 | 6.527 | 6.494 | 96.4 | 75-125 | 0 | | | |

**MSD** Sample ID: **1207640-05BMSD** Units: **mg/Kg** Analysis Date: **7/26/2012 03:32 PM**
Client ID: Run ID: **ICPMS2_120726A** SeqNo: **2038130** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.085 | 0.13 | 6.329 | 0.07346 | 63.4 | 75-125 | 3.801 | 7.2 | 25 | S |
| Molybdenum | 5.957 | 0.32 | 6.329 | 0.2249 | 90.6 | 75-125 | 5.465 | 8.61 | 25 | |
| Nickel | 13.2 | 0.32 | 6.329 | 6.155 | 111 | 75-125 | 12.21 | 7.74 | 25 | |
| Vanadium | 13.87 | 0.32 | 6.329 | 6.494 | 117 | 75-125 | 12.79 | 8.15 | 25 | |

**LCSLL** Sample ID: **LLQC-42599-42599** Units: **mg/Kg** Analysis Date: **7/26/2012 02:40 PM**
Client ID: Run ID: **ICPMS2_120726A** SeqNo: **2037955** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.0865 | 0.10 | 0.1 | 0 | 86.5 | 70-130 | 0 | | | J |
| Molybdenum | 0.2355 | 0.25 | 0.25 | 0 | 94.2 | 70-130 | 0 | | | J |
| Vanadium | 0.212 | 0.25 | 0.25 | 0 | 84.8 | 70-130 | 0 | | | J |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42599** Instrument ID **ICPMS2** Method: **SW6020A**

**LCSLL** Sample ID: **LLQC-42599-42599** Units: **mg/Kg** Analysis Date: **7/27/2012 01:15 PM**
Client ID: Run ID: **ICPMS2_120727A** SeqNo: **2039370** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Nickel | 0.2615 | 0.25 | 0.25 | 0 | 105 | 70-130 | 0 | | | |

**The following samples were analyzed in this batch:** 1207647-01B 1207647-02B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42609** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42609-42609** Units: **mg/Kg** Analysis Date: **7/27/2012 01:16 AM**
Client ID: Run ID: **ICPMS1_120726A** SeqNo: **2038759** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |
| Molybdenum | ND | 0.25 | | | | | | | | |
| Nickel | 0.00659 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**LCS** Sample ID: **LCS-42609-42609** Units: **mg/Kg** Analysis Date: **7/27/2012 01:29 AM**
Client ID: Run ID: **ICPMS1_120726A** SeqNo: **2038761** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.74 | 0.10 | 5 | 0 | 94.8 | 80-120 | 0 | | | |
| Molybdenum | 4.765 | 0.25 | 5 | 0 | 95.3 | 80-120 | 0 | | | |
| Nickel | 4.714 | 0.25 | 5 | 0 | 94.3 | 80-120 | 0 | | | |
| Vanadium | 4.74 | 0.25 | 5 | 0 | 94.8 | 80-120 | 0 | | | |

**MS** Sample ID: **1207648-05BMS** Units: **mg/Kg** Analysis Date: **7/27/2012 03:08 AM**
Client ID: Run ID: **ICPMS1_120726A** SeqNo: **2038778** Prep Date: **7/26/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.119 | 0.52 | 6.443 | 0.1987 | 91.9 | 75-125 | 0 | | | |
| Molybdenum | 7.253 | 1.3 | 6.443 | 0.9538 | 97.8 | 75-125 | 0 | | | |
| Nickel | 13.14 | 1.3 | 6.443 | 5.419 | 120 | 75-125 | 0 | | | |
| Vanadium | 20.06 | 1.3 | 6.443 | 11.27 | 136 | 75-125 | 0 | | | S |

**MSD** Sample ID: **1207648-05BMSD** Units: **mg/Kg** Analysis Date: **7/27/2012 03:33 AM**
Client ID: Run ID: **ICPMS1_120726A** SeqNo: **2038782** Prep Date: **7/26/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.936 | 0.53 | 6.649 | 0.1987 | 101 | 75-125 | 6.119 | 12.5 | 25 | |
| Molybdenum | 8.013 | 1.3 | 6.649 | 0.9538 | 106 | 75-125 | 7.253 | 9.97 | 25 | |
| Nickel | 14.66 | 1.3 | 6.649 | 5.419 | 139 | 75-125 | 13.14 | 10.9 | 25 | S |
| Vanadium | 21.37 | 1.3 | 6.649 | 11.27 | 152 | 75-125 | 20.06 | 6.31 | 25 | S |

**LCSLL** Sample ID: **LLQC-42609-42609** Units: **mg/Kg** Analysis Date: **7/27/2012 01:23 AM**
Client ID: Run ID: **ICPMS1_120726A** SeqNo: **2038760** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.1006 | 0.10 | 0.1 | 0 | 101 | 70-130 | 0 | | | |
| Molybdenum | 0.2544 | 0.25 | 0.25 | 0 | 102 | 70-130 | 0 | | | |
| Nickel | 0.2666 | 0.25 | 0.25 | 0 | 107 | 70-130 | 0 | | | |
| Vanadium | 0.2436 | 0.25 | 0.25 | 0 | 97.5 | 70-130 | 0 | | | J |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42609** Instrument ID **ICPMS1** Method: **SW6020A**

**The following samples were analyzed in this batch:** 1207647-03B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**MBLK** Sample ID: **SBLKS1-42591-42591** Units: **µg/Kg** Analysis Date: **7/27/2012 12:22 PM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041108** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 50 | | | | | | | | |
| Acenaphthene | ND | 50 | | | | | | | | |
| Acenaphthylene | ND | 50 | | | | | | | | |
| Anthracene | ND | 50 | | | | | | | | |
| Benzo(a)anthracene | ND | 50 | | | | | | | | |
| Benzo(a)pyrene | ND | 50 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 50 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 50 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 50 | | | | | | | | |
| Chrysene | ND | 50 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 50 | | | | | | | | |
| Fluoranthene | ND | 50 | | | | | | | | |
| Fluorene | ND | 50 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | | | | | | | |
| Naphthalene | ND | 50 | | | | | | | | |
| Phenanthrene | ND | 50 | | | | | | | | |
| Pyrene | ND | 50 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *4971* | 0 | *5000* | 0 | *99.4* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3350* | 0 | *5000* | 0 | *67* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3706* | 0 | *5000* | 0 | *74.1* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4352* | 0 | *5000* | 0 | *87* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3396* | 0 | *5000* | 0 | *67.9* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3411* | 0 | *5000* | 0 | *68.2* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42591-42591** Units: **µg/Kg** Analysis Date: **7/27/2012 10:34 AM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041104** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1733 | 50 | 2000 | 0 | 86.6 | 45-105 | 0 | | | |
| Acenaphthene | 1786 | 50 | 2000 | 0 | 89.3 | 45-110 | 0 | | | |
| Acenaphthylene | 1773 | 50 | 2000 | 0 | 88.6 | 45-105 | 0 | | | |
| Anthracene | 1976 | 50 | 2000 | 0 | 98.8 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1957 | 50 | 2000 | 0 | 97.8 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 2023 | 50 | 2000 | 0 | 101 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 2113 | 50 | 2000 | 0 | 106 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2421 | 50 | 2000 | 0 | 121 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2108 | 50 | 2000 | 0 | 105 | 45-115 | 0 | | | |
| Chrysene | 2036 | 50 | 2000 | 0 | 102 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2271 | 50 | 2000 | 0 | 114 | 40-125 | 0 | | | |
| Fluoranthene | 2136 | 50 | 2000 | 0 | 107 | 55-115 | 0 | | | |
| Fluorene | 1981 | 50 | 2000 | 0 | 99 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2261 | 50 | 2000 | 0 | 113 | 40-120 | 0 | | | |
| Naphthalene | 1657 | 50 | 2000 | 0 | 82.8 | 40-105 | 0 | | | |
| Phenanthrene | 1957 | 50 | 2000 | 0 | 97.8 | 50-110 | 0 | | | |
| Pyrene | 1924 | 50 | 2000 | 0 | 96.2 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *5078* | 0 | *5000* | 0 | *102* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3123* | 0 | *5000* | 0 | *62.5* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3231* | 0 | *5000* | 0 | *64.6* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4217* | 0 | *5000* | 0 | *84.3* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3106* | 0 | *5000* | 0 | *62.1* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3101* | 0 | *5000* | 0 | *62* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**MS** Sample ID: **1207648-05B MS** Units: **µg/Kg** Analysis Date: **7/27/2012 11:01 AM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041105** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1602 | 49 | 1975 | 0 | 81.1 | 45-105 | 0 | | | |
| Acenaphthene | 1702 | 49 | 1975 | 0 | 86.2 | 45-110 | 0 | | | |
| Acenaphthylene | 1693 | 49 | 1975 | 0 | 85.7 | 45-105 | 0 | | | |
| Anthracene | 1928 | 49 | 1975 | 0 | 97.6 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1881 | 49 | 1975 | 0 | 95.2 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1929 | 49 | 1975 | 0 | 97.7 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1889 | 49 | 1975 | 0 | 95.6 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2261 | 49 | 1975 | 0 | 114 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2171 | 49 | 1975 | 0 | 110 | 45-115 | 0 | | | |
| Chrysene | 1925 | 49 | 1975 | 0 | 97.4 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2109 | 49 | 1975 | 0 | 107 | 40-125 | 0 | | | |
| Fluoranthene | 2061 | 49 | 1975 | 0 | 104 | 55-115 | 0 | | | |
| Fluorene | 1916 | 49 | 1975 | 0 | 97 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2096 | 49 | 1975 | 0 | 106 | 40-120 | 0 | | | |
| Naphthalene | 1535 | 49 | 1975 | 0 | 77.8 | 40-105 | 0 | | | |
| Phenanthrene | 1904 | 49 | 1975 | 0 | 96.4 | 50-110 | 0 | | | |
| Pyrene | 1850 | 49 | 1975 | 0 | 93.6 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *5140* | 0 | *4937* | 0 | *104* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *2913* | 0 | *4937* | 0 | *59* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3014* | 0 | *4937* | 0 | *61* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4168* | 0 | *4937* | 0 | *84.4* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2838* | 0 | *4937* | 0 | *57.5* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *2906* | 0 | *4937* | 0 | *58.9* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**MSD** Sample ID: **1207648-05B MSD** Units: **µg/Kg** Analysis Date: **7/27/2012 11:28 AM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041106** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1628 | 48 | 1913 | 0 | 85.1 | 45-105 | 1602 | 1.61 | 30 | |
| Acenaphthene | 1676 | 48 | 1913 | 0 | 87.6 | 45-110 | 1702 | 1.54 | 30 | |
| Acenaphthylene | 1683 | 48 | 1913 | 0 | 88 | 45-105 | 1693 | 0.558 | 30 | |
| Anthracene | 1884 | 48 | 1913 | 0 | 98.5 | 55-105 | 1928 | 2.29 | 30 | |
| Benzo(a)anthracene | 1764 | 48 | 1913 | 0 | 92.2 | 50-110 | 1881 | 6.4 | 30 | |
| Benzo(a)pyrene | 1847 | 48 | 1913 | 0 | 96.6 | 50-110 | 1929 | 4.39 | 30 | |
| Benzo(b)fluoranthene | 1740 | 48 | 1913 | 0 | 91 | 45-115 | 1889 | 8.19 | 30 | |
| Benzo(g,h,i)perylene | 2056 | 48 | 1913 | 0 | 108 | 40-125 | 2261 | 9.51 | 30 | |
| Benzo(k)fluoranthene | 2071 | 48 | 1913 | 0 | 108 | 45-115 | 2171 | 4.72 | 30 | |
| Chrysene | 1800 | 48 | 1913 | 0 | 94.1 | 55-110 | 1925 | 6.7 | 30 | |
| Dibenzo(a,h)anthracene | 1935 | 48 | 1913 | 0 | 101 | 40-125 | 2109 | 8.64 | 30 | |
| Fluoranthene | 1953 | 48 | 1913 | 0 | 102 | 55-115 | 2061 | 5.39 | 30 | |
| Fluorene | 1881 | 48 | 1913 | 0 | 98.4 | 50-110 | 1916 | 1.82 | 30 | |
| Indeno(1,2,3-cd)pyrene | 1933 | 48 | 1913 | 0 | 101 | 40-120 | 2096 | 8.13 | 30 | |
| Naphthalene | 1565 | 48 | 1913 | 0 | 81.8 | 40-105 | 1535 | 1.93 | 30 | |
| Phenanthrene | 1837 | 48 | 1913 | 0 | 96 | 50-110 | 1904 | 3.57 | 30 | |
| Pyrene | 1743 | 48 | 1913 | 0 | 91.2 | 45-125 | 1850 | 5.91 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *4928* | 0 | *4781* | 0 | *103* | *34-140* | 5140 | *4.21* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *2899* | 0 | *4781* | 0 | *60.6* | *12-100* | 2913 | *0.498* | *40* | |
| *Surr: 2-Fluorophenol* | *3094* | 0 | *4781* | 0 | *64.7* | *33-117* | 3014 | *2.62* | *40* | |
| *Surr: 4-Terphenyl-d14* | *3915* | 0 | *4781* | 0 | *81.9* | *25-137* | 4168 | *6.26* | *40* | |
| *Surr: Nitrobenzene-d5* | *2904* | 0 | *4781* | 0 | *60.7* | *37-107* | 2838 | *2.31* | *40* | |
| *Surr: Phenol-d6* | *2986* | 0 | *4781* | 0 | *62.4* | *40-106* | 2906 | *2.7* | *40* | |

**The following samples were analyzed in this batch:** 1207647-01B 1207647-02B 1207647-03B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 11:56 AM**
Client ID: Run ID: **VMS7_120725A** SeqNo: **2036746** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 254 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 19 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1006* | 0 | *1000* | 0 | *101* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *956* | 0 | *1000* | 0 | *95.6* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *992.5* | 0 | *1000* | 0 | *99.2* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 04:58 PM**
Client ID: Run ID: **VMS8_120725A** SeqNo: **2036845** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 191 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 85.5 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1038* | 0 | *1000* | 0 | *104* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *986* | 0 | *1000* | 0 | *98.6* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *983* | 0 | *1000* | 0 | *98.3* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *969* | 0 | *1000* | 0 | *96.9* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 05:14 PM**
Client ID: Run ID: **VMS9_120725A** SeqNo: **2036902** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | 104.5 | 200 | | | | | | | | J |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 164.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1008* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *857* | 0 | *1000* | 0 | *85.7* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *951.5* | 0 | *1000* | 0 | *95.2* | *70-130* | 0 |
| *Surr: Toluene-d8* | *908* | 0 | *1000* | 0 | *90.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/26/2012 04:34 PM**
Client ID: Run ID: **VMS9_120726A** SeqNo: **2039269** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | 86 | 200 | | | | | | | | J |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 188.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *938* | 0 | *1000* | 0 | *93.8* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *879.5* | 0 | *1000* | 0 | *88* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *947.5* | 0 | *1000* | 0 | *94.8* | *70-130* | 0 |
| *Surr: Toluene-d8* | *936.5* | 0 | *1000* | 0 | *93.6* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/27/2012 03:26 PM**
Client ID: Run ID: **VMS6_120727A** SeqNo: **2041146** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | ND | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1032* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1009* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1004* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *987.5* | 0 | *1000* | 0 | *98.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42573-42573** | | | | Units: **µg/Kg** | | Analysis Date: **7/25/2012 10:40 AM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS7_120725A** | | | SeqNo: **2036745** | | Prep Date: **7/25/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 915.5 | 30 | 1000 | 0 | 91.6 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 963 | 30 | 1000 | 0 | 96.3 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 885.5 | 30 | 1000 | 0 | 88.6 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 876 | 30 | 1000 | 0 | 87.6 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 900.5 | 30 | 1000 | 0 | 90 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 960 | 30 | 1000 | 0 | 96 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1004 | 30 | 1000 | 0 | 100 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 902 | 30 | 1000 | 0 | 90.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 870.5 | 30 | 1000 | 0 | 87 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1050 | 30 | 1000 | 0 | 105 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 988 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 835.5 | 30 | 1000 | 0 | 83.6 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 947 | 30 | 1000 | 0 | 94.7 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 977 | 30 | 1000 | 0 | 97.7 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 919 | 30 | 1000 | 0 | 91.9 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 928 | 30 | 1000 | 0 | 92.8 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1006 | 30 | 1000 | 0 | 101 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 973 | 30 | 1000 | 0 | 97.3 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 938.5 | 30 | 1000 | 0 | 93.8 | 70-125 | 0 | | | |
| 2-Butanone | 952 | 200 | 1000 | 0 | 95.2 | 30-160 | 0 | | | |
| 2-Hexanone | 918 | 30 | 1000 | 0 | 91.8 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1232 | 30 | 1000 | 0 | 123 | 45-145 | 0 | | | |
| Acetone | 1193 | 100 | 1000 | 0 | 119 | 20-160 | 0 | | | B |
| Acrylonitrile | 822.5 | 100 | 1000 | 0 | 82.2 | 70-135 | 0 | | | |
| Benzene | 953.5 | 30 | 1000 | 0 | 95.4 | 75-125 | 0 | | | |
| Bromobenzene | 956.5 | 30 | 1000 | 0 | 95.6 | 65-120 | 0 | | | |
| Bromochloromethane | 988 | 30 | 1000 | 0 | 98.8 | 70-125 | 0 | | | |
| Bromodichloromethane | 916.5 | 30 | 1000 | 0 | 91.6 | 70-130 | 0 | | | |
| Bromoform | 821 | 30 | 1000 | 0 | 82.1 | 55-135 | 0 | | | |
| Bromomethane | 1212 | 75 | 1000 | 0 | 121 | 30-160 | 0 | | | |
| Carbon disulfide | 1074 | 30 | 1000 | 0 | 107 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1004 | 30 | 1000 | 0 | 100 | 65-135 | 0 | | | |
| Chlorobenzene | 957.5 | 30 | 1000 | 0 | 95.8 | 75-125 | 0 | | | |
| Chloroethane | 914.5 | 100 | 1000 | 0 | 91.4 | 40-155 | 0 | | | |
| Chloroform | 916.5 | 30 | 1000 | 0 | 91.6 | 70-125 | 0 | | | |
| Chloromethane | 914.5 | 100 | 1000 | 0 | 91.4 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 927.5 | 30 | 1000 | 0 | 92.8 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 893 | 30 | 1000 | 0 | 89.3 | 70-125 | 0 | | | |
| Dibromochloromethane | 833 | 30 | 1000 | 0 | 83.3 | 65-135 | 0 | | | |
| Dibromomethane | 896 | 30 | 1000 | 0 | 89.6 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 807 | 30 | 1000 | 0 | 80.7 | 35-135 | 0 | | | |
| Ethylbenzene | 990.5 | 30 | 1000 | 0 | 99 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 816.5 | 30 | 1000 | 0 | 81.6 | 70-135 | 0 |
| Isopropylbenzene | 1006 | 30 | 1000 | 0 | 101 | 75-130 | 0 |
| m,p-Xylene | 1977 | 60 | 2000 | 0 | 98.8 | 80-125 | 0 |
| Methyl tert-butyl ether | 896.5 | 30 | 1000 | 0 | 89.6 | 75-125 | 0 |
| Methylene chloride | 915.5 | 30 | 1000 | 0 | 91.6 | 55-145 | 0 |
| Naphthalene | 952.5 | 100 | 1000 | 0 | 95.2 | 40-140 | 0 |
| n-Butylbenzene | 1032 | 30 | 1000 | 0 | 103 | 65-140 | 0 |
| n-Propylbenzene | 987 | 30 | 1000 | 0 | 98.7 | 65-135 | 0 |
| o-Xylene | 970 | 30 | 1000 | 0 | 97 | 75-125 | 0 |
| p-Isopropyltoluene | 1017 | 30 | 1000 | 0 | 102 | 75-135 | 0 |
| sec-Butylbenzene | 1036 | 30 | 1000 | 0 | 104 | 65-130 | 0 |
| Styrene | 1002 | 30 | 1000 | 0 | 100 | 75-125 | 0 |
| tert-Butylbenzene | 1002 | 30 | 1000 | 0 | 100 | 65-130 | 0 |
| Tetrachloroethene | 1032 | 30 | 1000 | 0 | 103 | 64-140 | 0 |
| Tetrahydrofuran | 850.5 | 200 | 1000 | 0 | 85 | 70-135 | 0 |
| Toluene | 968.5 | 30 | 1000 | 0 | 96.8 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 971 | 30 | 1000 | 0 | 97.1 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 938 | 30 | 1000 | 0 | 93.8 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 784 | 30 | 1000 | 0 | 78.4 | 70-135 | 0 |
| Trichloroethene | 941.5 | 30 | 1000 | 0 | 94.2 | 75-125 | 0 |
| Trichlorofluoromethane | 861.5 | 30 | 1000 | 0 | 86.2 | 25-185 | 0 |
| Vinyl chloride | 814 | 30 | 1000 | 0 | 81.4 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *980* | 0 | *1000* | 0 | *98* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *999* | 0 | *1000* | 0 | *99.9* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1004* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1003* | 0 | *1000* | 0 | *100* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 03:38 PM**
Client ID: Run ID: **VMS8_120725A** SeqNo: **2036844** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1123 | 30 | 1000 | 0 | 112 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1170 | 30 | 1000 | 0 | 117 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1106 | 30 | 1000 | 0 | 111 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1028 | 30 | 1000 | 0 | 103 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1076 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1184 | 30 | 1000 | 0 | 118 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1196 | 30 | 1000 | 0 | 120 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1092 | 30 | 1000 | 0 | 109 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 971.5 | 30 | 1000 | 0 | 97.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1214 | 30 | 1000 | 0 | 121 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 988.5 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 991 | 30 | 1000 | 0 | 99.1 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1044 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1077 | 30 | 1000 | 0 | 108 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1112 | 30 | 1000 | 0 | 111 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1120 | 30 | 1000 | 0 | 112 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1138 | 30 | 1000 | 0 | 114 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1084 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1114 | 30 | 1000 | 0 | 111 | 70-125 | 0 | | | |
| 2-Butanone | 1120 | 200 | 1000 | 0 | 112 | 30-160 | 0 | | | |
| 2-Hexanone | 1057 | 30 | 1000 | 0 | 106 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1199 | 30 | 1000 | 0 | 120 | 45-145 | 0 | | | |
| Acetone | 875 | 100 | 1000 | 0 | 87.5 | 20-160 | 0 | | | B |
| Acrylonitrile | 982 | 100 | 1000 | 0 | 98.2 | 70-135 | 0 | | | |
| Benzene | 1082 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| Bromobenzene | 1110 | 30 | 1000 | 0 | 111 | 65-120 | 0 | | | |
| Bromochloromethane | 1160 | 30 | 1000 | 0 | 116 | 70-125 | 0 | | | |
| Bromodichloromethane | 1019 | 30 | 1000 | 0 | 102 | 70-130 | 0 | | | |
| Bromoform | 1004 | 30 | 1000 | 0 | 100 | 55-135 | 0 | | | |
| Bromomethane | 1108 | 75 | 1000 | 0 | 111 | 30-160 | 0 | | | |
| Carbon disulfide | 1249 | 30 | 1000 | 0 | 125 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1174 | 30 | 1000 | 0 | 117 | 65-135 | 0 | | | |
| Chlorobenzene | 1104 | 30 | 1000 | 0 | 110 | 75-125 | 0 | | | |
| Chloroethane | 1062 | 100 | 1000 | 0 | 106 | 40-155 | 0 | | | |
| Chloroform | 1024 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| Chloromethane | 952 | 100 | 1000 | 0 | 95.2 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1072 | 30 | 1000 | 0 | 107 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1018 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| Dibromochloromethane | 1005 | 30 | 1000 | 0 | 100 | 65-135 | 0 | | | |
| Dibromomethane | 1052 | 30 | 1000 | 0 | 105 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 986.5 | 30 | 1000 | 0 | 98.6 | 35-135 | 0 | | | |
| Ethylbenzene | 1128 | 30 | 1000 | 0 | 113 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 964.5 | 30 | 1000 | 0 | 96.4 | 70-135 | 0 |
| Isopropylbenzene | 1128 | 30 | 1000 | 0 | 113 | 75-130 | 0 |
| m,p-Xylene | 2284 | 60 | 2000 | 0 | 114 | 80-125 | 0 |
| Methyl tert-butyl ether | 960 | 30 | 1000 | 0 | 96 | 75-125 | 0 |
| Methylene chloride | 1073 | 30 | 1000 | 0 | 107 | 55-145 | 0 |
| Naphthalene | 1120 | 100 | 1000 | 0 | 112 | 40-140 | 0 |
| n-Butylbenzene | 1215 | 30 | 1000 | 0 | 122 | 65-140 | 0 |
| n-Propylbenzene | 1126 | 30 | 1000 | 0 | 113 | 65-135 | 0 |
| o-Xylene | 1108 | 30 | 1000 | 0 | 111 | 75-125 | 0 |
| p-Isopropyltoluene | 1157 | 30 | 1000 | 0 | 116 | 75-135 | 0 |
| sec-Butylbenzene | 1202 | 30 | 1000 | 0 | 120 | 65-130 | 0 |
| Styrene | 1102 | 30 | 1000 | 0 | 110 | 75-125 | 0 |
| tert-Butylbenzene | 1181 | 30 | 1000 | 0 | 118 | 65-130 | 0 |
| Tetrachloroethene | 1224 | 30 | 1000 | 0 | 122 | 64-140 | 0 |
| Tetrahydrofuran | 1032 | 200 | 1000 | 0 | 103 | 70-135 | 0 |
| Toluene | 1120 | 30 | 1000 | 0 | 112 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1140 | 30 | 1000 | 0 | 114 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1033 | 30 | 1000 | 0 | 103 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 983 | 30 | 1000 | 0 | 98.3 | 70-135 | 0 |
| Trichloroethene | 1135 | 30 | 1000 | 0 | 114 | 75-125 | 0 |
| Trichlorofluoromethane | 1023 | 30 | 1000 | 0 | 102 | 25-185 | 0 |
| Vinyl chloride | 1010 | 30 | 1000 | 0 | 101 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1006* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1019* | 0 | *1000* | 0 | *102* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1003* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *998.5* | 0 | *1000* | 0 | *99.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 03:58 PM**
Client ID: Run ID: **VMS9_120725A** SeqNo: **2036901** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 925.5 | 30 | 1000 | 0 | 92.6 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 891.5 | 30 | 1000 | 0 | 89.2 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 885.5 | 30 | 1000 | 0 | 88.6 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 829.5 | 30 | 1000 | 0 | 83 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 811.5 | 30 | 1000 | 0 | 81.2 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 819 | 30 | 1000 | 0 | 81.9 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1030 | 30 | 1000 | 0 | 103 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 825 | 30 | 1000 | 0 | 82.5 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 847 | 30 | 1000 | 0 | 84.7 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1038 | 30 | 1000 | 0 | 104 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 890 | 30 | 1000 | 0 | 89 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 829 | 30 | 1000 | 0 | 82.9 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 916.5 | 30 | 1000 | 0 | 91.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 924.5 | 30 | 1000 | 0 | 92.4 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 843 | 30 | 1000 | 0 | 84.3 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 810 | 30 | 1000 | 0 | 81 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 985.5 | 30 | 1000 | 0 | 98.6 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 921.5 | 30 | 1000 | 0 | 92.2 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 919 | 30 | 1000 | 0 | 91.9 | 70-125 | 0 | | | |
| 2-Butanone | 766 | 200 | 1000 | 0 | 76.6 | 30-160 | 0 | | | |
| 2-Hexanone | 738 | 30 | 1000 | 0 | 73.8 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 716.5 | 30 | 1000 | 0 | 71.6 | 45-145 | 0 | | | |
| Acetone | 735 | 100 | 1000 | 0 | 73.5 | 20-160 | 0 | | | B |
| Acrylonitrile | 730.5 | 100 | 1000 | 0 | 73 | 70-135 | 0 | | | |
| Benzene | 875 | 30 | 1000 | 0 | 87.5 | 75-125 | 0 | | | |
| Bromobenzene | 866 | 30 | 1000 | 0 | 86.6 | 65-120 | 0 | | | |
| Bromochloromethane | 863.5 | 30 | 1000 | 0 | 86.4 | 70-125 | 0 | | | |
| Bromodichloromethane | 750 | 30 | 1000 | 0 | 75 | 70-130 | 0 | | | |
| Bromoform | 836 | 30 | 1000 | 0 | 83.6 | 55-135 | 0 | | | |
| Bromomethane | 943.5 | 75 | 1000 | 0 | 94.4 | 30-160 | 0 | | | |
| Carbon disulfide | 859.5 | 30 | 1000 | 0 | 86 | 45-160 | 0 | | | |
| Carbon tetrachloride | 814 | 30 | 1000 | 0 | 81.4 | 65-135 | 0 | | | |
| Chlorobenzene | 910 | 30 | 1000 | 0 | 91 | 75-125 | 0 | | | |
| Chloroethane | 770.5 | 100 | 1000 | 0 | 77 | 40-155 | 0 | | | |
| Chloroform | 841 | 30 | 1000 | 0 | 84.1 | 70-125 | 0 | | | |
| Chloromethane | 769.5 | 100 | 1000 | 0 | 77 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 837 | 30 | 1000 | 0 | 83.7 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 763 | 30 | 1000 | 0 | 76.3 | 70-125 | 0 | | | |
| Dibromochloromethane | 778 | 30 | 1000 | 0 | 77.8 | 65-135 | 0 | | | |
| Dibromomethane | 845.5 | 30 | 1000 | 0 | 84.6 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 714.5 | 30 | 1000 | 0 | 71.4 | 35-135 | 0 | | | |
| Ethylbenzene | 955.5 | 30 | 1000 | 0 | 95.6 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 839 | 30 | 1000 | 0 | 83.9 | 70-135 | 0 | |
| Isopropylbenzene | 1007 | 30 | 1000 | 0 | 101 | 75-130 | 0 | |
| m,p-Xylene | 1942 | 60 | 2000 | 0 | 97.1 | 80-125 | 0 | |
| Methyl tert-butyl ether | 770 | 30 | 1000 | 0 | 77 | 75-125 | 0 | |
| Methylene chloride | 810 | 30 | 1000 | 0 | 81 | 55-145 | 0 | |
| Naphthalene | 827 | 100 | 1000 | 0 | 82.7 | 40-140 | 0 | |
| n-Butylbenzene | 1006 | 30 | 1000 | 0 | 101 | 65-140 | 0 | |
| n-Propylbenzene | 940 | 30 | 1000 | 0 | 94 | 65-135 | 0 | |
| o-Xylene | 965 | 30 | 1000 | 0 | 96.5 | 75-125 | 0 | |
| p-Isopropyltoluene | 971 | 30 | 1000 | 0 | 97.1 | 75-135 | 0 | |
| sec-Butylbenzene | 884 | 30 | 1000 | 0 | 88.4 | 65-130 | 0 | |
| Styrene | 863 | 30 | 1000 | 0 | 86.3 | 75-125 | 0 | |
| tert-Butylbenzene | 942 | 30 | 1000 | 0 | 94.2 | 65-130 | 0 | |
| Tetrachloroethene | 833.5 | 30 | 1000 | 0 | 83.4 | 64-140 | 0 | |
| Tetrahydrofuran | 767 | 200 | 1000 | 0 | 76.7 | 70-135 | 0 | |
| Toluene | 877 | 30 | 1000 | 0 | 87.7 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 837.5 | 30 | 1000 | 0 | 83.8 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 762 | 30 | 1000 | 0 | 76.2 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 684 | 30 | 1000 | 0 | 68.4 | 70-135 | 0 | S |
| Trichloroethene | 856 | 30 | 1000 | 0 | 85.6 | 75-125 | 0 | |
| Trichlorofluoromethane | 733.5 | 30 | 1000 | 0 | 73.4 | 25-185 | 0 | |
| Vinyl chloride | 749.5 | 30 | 1000 | 0 | 75 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *943* | 0 | *1000* | 0 | *94.3* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *958* | 0 | *1000* | 0 | *95.8* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1046* | 0 | *1000* | 0 | *105* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *972* | 0 | *1000* | 0 | *97.2* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42573-42573** Units: **µg/Kg** Analysis Date: **7/26/2012 03:18 PM**
Client ID: Run ID: **VMS9_120726A** SeqNo: **2039268** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 920 | 30 | 1000 | 0 | 92 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 933 | 30 | 1000 | 0 | 93.3 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 871.5 | 30 | 1000 | 0 | 87.2 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 816 | 30 | 1000 | 0 | 81.6 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 799 | 30 | 1000 | 0 | 79.9 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 855 | 30 | 1000 | 0 | 85.5 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 974 | 30 | 1000 | 0 | 97.4 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 803.5 | 30 | 1000 | 0 | 80.4 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 806 | 30 | 1000 | 0 | 80.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1007 | 30 | 1000 | 0 | 101 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 846 | 30 | 1000 | 0 | 84.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 827 | 30 | 1000 | 0 | 82.7 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 886.5 | 30 | 1000 | 0 | 88.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 880.5 | 30 | 1000 | 0 | 88 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 839 | 30 | 1000 | 0 | 83.9 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 824.5 | 30 | 1000 | 0 | 82.4 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 961.5 | 30 | 1000 | 0 | 96.2 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 886 | 30 | 1000 | 0 | 88.6 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 879 | 30 | 1000 | 0 | 87.9 | 70-125 | 0 | | | |
| 2-Butanone | 767.5 | 200 | 1000 | 0 | 76.8 | 30-160 | 0 | | | |
| 2-Hexanone | 729.5 | 30 | 1000 | 0 | 73 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 719.5 | 30 | 1000 | 0 | 72 | 45-145 | 0 | | | |
| Acetone | 783.5 | 100 | 1000 | 0 | 78.4 | 20-160 | 0 | | | B |
| Acrylonitrile | 747.5 | 100 | 1000 | 0 | 74.8 | 70-135 | 0 | | | |
| Benzene | 878 | 30 | 1000 | 0 | 87.8 | 75-125 | 0 | | | |
| Bromobenzene | 831 | 30 | 1000 | 0 | 83.1 | 65-120 | 0 | | | |
| Bromochloromethane | 855 | 30 | 1000 | 0 | 85.5 | 70-125 | 0 | | | |
| Bromodichloromethane | 776 | 30 | 1000 | 0 | 77.6 | 70-130 | 0 | | | |
| Bromoform | 810 | 30 | 1000 | 0 | 81 | 55-135 | 0 | | | |
| Bromomethane | 922.5 | 75 | 1000 | 0 | 92.2 | 30-160 | 0 | | | |
| Carbon disulfide | 892.5 | 30 | 1000 | 0 | 89.2 | 45-160 | 0 | | | |
| Carbon tetrachloride | 834 | 30 | 1000 | 0 | 83.4 | 65-135 | 0 | | | |
| Chlorobenzene | 904.5 | 30 | 1000 | 0 | 90.4 | 75-125 | 0 | | | |
| Chloroethane | 717 | 100 | 1000 | 0 | 71.7 | 40-155 | 0 | | | |
| Chloroform | 882 | 30 | 1000 | 0 | 88.2 | 70-125 | 0 | | | |
| Chloromethane | 779.5 | 100 | 1000 | 0 | 78 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 828.5 | 30 | 1000 | 0 | 82.8 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 798.5 | 30 | 1000 | 0 | 79.8 | 70-125 | 0 | | | |
| Dibromochloromethane | 785.5 | 30 | 1000 | 0 | 78.6 | 65-135 | 0 | | | |
| Dibromomethane | 845.5 | 30 | 1000 | 0 | 84.6 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 693 | 30 | 1000 | 0 | 69.3 | 35-135 | 0 | | | |
| Ethylbenzene | 960 | 30 | 1000 | 0 | 96 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 826 | 30 | 1000 | 0 | 82.6 | 70-135 | 0 | |
| Isopropylbenzene | 999.5 | 30 | 1000 | 0 | 100 | 75-130 | 0 | |
| m,p-Xylene | 1918 | 60 | 2000 | 0 | 95.9 | 80-125 | 0 | |
| Methyl tert-butyl ether | 790.5 | 30 | 1000 | 0 | 79 | 75-125 | 0 | |
| Methylene chloride | 820.5 | 30 | 1000 | 0 | 82 | 55-145 | 0 | |
| Naphthalene | 786 | 100 | 1000 | 0 | 78.6 | 40-140 | 0 | |
| n-Butylbenzene | 978 | 30 | 1000 | 0 | 97.8 | 65-140 | 0 | |
| n-Propylbenzene | 917 | 30 | 1000 | 0 | 91.7 | 65-135 | 0 | |
| o-Xylene | 945.5 | 30 | 1000 | 0 | 94.6 | 75-125 | 0 | |
| p-Isopropyltoluene | 944 | 30 | 1000 | 0 | 94.4 | 75-135 | 0 | |
| sec-Butylbenzene | 865 | 30 | 1000 | 0 | 86.5 | 65-130 | 0 | |
| Styrene | 849 | 30 | 1000 | 0 | 84.9 | 75-125 | 0 | |
| tert-Butylbenzene | 928 | 30 | 1000 | 0 | 92.8 | 65-130 | 0 | |
| Tetrachloroethene | 833 | 30 | 1000 | 0 | 83.3 | 64-140 | 0 | |
| Tetrahydrofuran | 791 | 200 | 1000 | 0 | 79.1 | 70-135 | 0 | |
| Toluene | 892 | 30 | 1000 | 0 | 89.2 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 850 | 30 | 1000 | 0 | 85 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 783 | 30 | 1000 | 0 | 78.3 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 671 | 30 | 1000 | 0 | 67.1 | 70-135 | 0 | S |
| Trichloroethene | 861 | 30 | 1000 | 0 | 86.1 | 75-125 | 0 | |
| Trichlorofluoromethane | 762.5 | 30 | 1000 | 0 | 76.2 | 25-185 | 0 | |
| Vinyl chloride | 778 | 30 | 1000 | 0 | 77.8 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *844* | 0 | *1000* | 0 | *84.4* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *854.5* | 0 | *1000* | 0 | *85.4* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *941* | 0 | *1000* | 0 | *94.1* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *896.5* | 0 | *1000* | 0 | *89.6* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42573-42573** | | | | Units: **µg/Kg** | | Analysis Date: **7/27/2012 02:37 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS6_120727A** | | | SeqNo: **2041145** | | Prep Date: **7/25/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 969 | 30 | 1000 | 0 | 96.9 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1020 | 30 | 1000 | 0 | 102 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 939.5 | 30 | 1000 | 0 | 94 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 866.5 | 30 | 1000 | 0 | 86.6 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 996 | 30 | 1000 | 0 | 99.6 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1029 | 30 | 1000 | 0 | 103 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 915.5 | 30 | 1000 | 0 | 91.6 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 913 | 30 | 1000 | 0 | 91.3 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 916 | 30 | 1000 | 0 | 91.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 981 | 30 | 1000 | 0 | 98.1 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 992 | 30 | 1000 | 0 | 99.2 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 867.5 | 30 | 1000 | 0 | 86.8 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 932.5 | 30 | 1000 | 0 | 93.2 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 994.5 | 30 | 1000 | 0 | 99.4 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 988 | 30 | 1000 | 0 | 98.8 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 988.5 | 30 | 1000 | 0 | 98.8 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1044 | 30 | 1000 | 0 | 104 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 965.5 | 30 | 1000 | 0 | 96.6 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 979.5 | 30 | 1000 | 0 | 98 | 70-125 | 0 | | | |
| 2-Butanone | 925 | 200 | 1000 | 0 | 92.5 | 30-160 | 0 | | | |
| 2-Hexanone | 879 | 30 | 1000 | 0 | 87.9 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1166 | 30 | 1000 | 0 | 117 | 45-145 | 0 | | | |
| Acetone | 878 | 100 | 1000 | 0 | 87.8 | 20-160 | 0 | | | |
| Acrylonitrile | 967.5 | 100 | 1000 | 0 | 96.8 | 70-135 | 0 | | | |
| Benzene | 998 | 30 | 1000 | 0 | 99.8 | 75-125 | 0 | | | |
| Bromobenzene | 1000 | 30 | 1000 | 0 | 100 | 65-120 | 0 | | | |
| Bromochloromethane | 994.5 | 30 | 1000 | 0 | 99.4 | 70-125 | 0 | | | |
| Bromodichloromethane | 962.5 | 30 | 1000 | 0 | 96.2 | 70-130 | 0 | | | |
| Bromoform | 1004 | 30 | 1000 | 0 | 100 | 55-135 | 0 | | | |
| Bromomethane | 1346 | 75 | 1000 | 0 | 135 | 30-160 | 0 | | | |
| Carbon disulfide | 1110 | 30 | 1000 | 0 | 111 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1066 | 30 | 1000 | 0 | 107 | 65-135 | 0 | | | |
| Chlorobenzene | 991 | 30 | 1000 | 0 | 99.1 | 75-125 | 0 | | | |
| Chloroethane | 909 | 100 | 1000 | 0 | 90.9 | 40-155 | 0 | | | |
| Chloroform | 986.5 | 30 | 1000 | 0 | 98.6 | 70-125 | 0 | | | |
| Chloromethane | 952.5 | 100 | 1000 | 0 | 95.2 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 982.5 | 30 | 1000 | 0 | 98.2 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1001 | 30 | 1000 | 0 | 100 | 70-125 | 0 | | | |
| Dibromochloromethane | 940.5 | 30 | 1000 | 0 | 94 | 65-135 | 0 | | | |
| Dibromomethane | 957 | 30 | 1000 | 0 | 95.7 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 729 | 30 | 1000 | 0 | 72.9 | 35-135 | 0 | | | |
| Ethylbenzene | 1024 | 30 | 1000 | 0 | 102 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 937 | 30 | 1000 | 0 | 93.7 | 70-135 | 0 | |
| Isopropylbenzene | 1012 | 30 | 1000 | 0 | 101 | 75-130 | 0 | |
| m,p-Xylene | 2077 | 60 | 2000 | 0 | 104 | 80-125 | 0 | |
| Methyl tert-butyl ether | 888 | 30 | 1000 | 0 | 88.8 | 75-125 | 0 | |
| Methylene chloride | 990 | 30 | 1000 | 0 | 99 | 55-145 | 0 | |
| Naphthalene | 902.5 | 100 | 1000 | 0 | 90.2 | 40-140 | 0 | |
| n-Butylbenzene | 1060 | 30 | 1000 | 0 | 106 | 65-140 | 0 | |
| n-Propylbenzene | 1000 | 30 | 1000 | 0 | 100 | 65-135 | 0 | |
| o-Xylene | 1009 | 30 | 1000 | 0 | 101 | 75-125 | 0 | |
| p-Isopropyltoluene | 1038 | 30 | 1000 | 0 | 104 | 75-135 | 0 | |
| sec-Butylbenzene | 973 | 30 | 1000 | 0 | 97.3 | 65-130 | 0 | |
| Styrene | 969 | 30 | 1000 | 0 | 96.9 | 75-125 | 0 | |
| tert-Butylbenzene | 1010 | 30 | 1000 | 0 | 101 | 65-130 | 0 | |
| Tetrachloroethene | 999.5 | 30 | 1000 | 0 | 100 | 64-140 | 0 | |
| Tetrahydrofuran | 974.5 | 200 | 1000 | 0 | 97.4 | 70-135 | 0 | |
| Toluene | 1013 | 30 | 1000 | 0 | 101 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 1060 | 30 | 1000 | 0 | 106 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 1024 | 30 | 1000 | 0 | 102 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 1608 | 30 | 1000 | 0 | 161 | 70-135 | 0 | S |
| Trichloroethene | 945 | 30 | 1000 | 0 | 94.5 | 75-125 | 0 | |
| Trichlorofluoromethane | 822 | 30 | 1000 | 0 | 82.2 | 25-185 | 0 | |
| Vinyl chloride | 887 | 30 | 1000 | 0 | 88.7 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *1030* | 0 | *1000* | 0 | *103* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1022* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1001* | 0 | *1000* | 0 | *100* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *991.5* | 0 | *1000* | 0 | *99.2* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MS** Sample ID: **1207634-05A MS** Units: **µg/Kg** Analysis Date: **7/26/2012 01:14 AM**
Client ID: Run ID: **VMS9_120725A** SeqNo: **2036909** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1855 | 57 | 1899 | 0 | 97.7 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1784 | 57 | 1899 | 0 | 94 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1778 | 57 | 1899 | 0 | 93.6 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1666 | 57 | 1899 | 0 | 87.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1664 | 57 | 1899 | 0 | 87.6 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1639 | 57 | 1899 | 0 | 86.4 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 2036 | 57 | 1899 | 0 | 107 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1647 | 57 | 1899 | 0 | 86.8 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 1764 | 57 | 1899 | 0 | 92.9 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 2117 | 57 | 1899 | 0 | 112 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1803 | 57 | 1899 | 0 | 95 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 1557 | 57 | 1899 | 0 | 82 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1835 | 57 | 1899 | 0 | 96.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1909 | 57 | 1899 | 0 | 101 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1756 | 57 | 1899 | 0 | 92.5 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1693 | 57 | 1899 | 0 | 89.2 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 2068 | 57 | 1899 | 0 | 109 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1918 | 57 | 1899 | 0 | 101 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1877 | 57 | 1899 | 0 | 98.8 | 70-125 | 0 | | | |
| 2-Butanone | 1568 | 190 | 1899 | 0 | 82.6 | 30-160 | 0 | | | B |
| 2-Hexanone | 1437 | 57 | 1899 | 0 | 75.7 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1348 | 57 | 1899 | 0 | 71 | 45-145 | 0 | | | |
| Acetone | 1883 | 190 | 1899 | 0 | 99.2 | 20-160 | 0 | | | B |
| Acrylonitrile | 1633 | 57 | 1899 | 0 | 86 | 70-135 | 0 | | | |
| Benzene | 1800 | 57 | 1899 | 0 | 94.8 | 75-125 | 0 | | | |
| Bromobenzene | 1793 | 57 | 1899 | 0 | 94.4 | 65-120 | 0 | | | |
| Bromochloromethane | 1936 | 57 | 1899 | 0 | 102 | 70-125 | 0 | | | |
| Bromodichloromethane | 1553 | 57 | 1899 | 0 | 81.8 | 70-130 | 0 | | | |
| Bromoform | 1578 | 57 | 1899 | 0 | 83.1 | 55-135 | 0 | | | |
| Bromomethane | 1791 | 57 | 1899 | 0 | 94.4 | 30-160 | 0 | | | |
| Carbon disulfide | 1347 | 57 | 1899 | 0 | 71 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1561 | 57 | 1899 | 0 | 82.2 | 65-135 | 0 | | | |
| Chlorobenzene | 1922 | 57 | 1899 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 1424 | 190 | 1899 | 0 | 75 | 40-155 | 0 | | | |
| Chloroform | 1895 | 57 | 1899 | 0 | 99.8 | 70-125 | 0 | | | |
| Chloromethane | 2087 | 57 | 1899 | 0 | 110 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1656 | 57 | 1899 | 0 | 87.2 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1549 | 57 | 1899 | 0 | 81.6 | 70-125 | 0 | | | |
| Dibromochloromethane | 1491 | 57 | 1899 | 0 | 78.6 | 65-135 | 0 | | | |
| Dibromomethane | 1836 | 57 | 1899 | 0 | 96.7 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 1631 | 57 | 1899 | 0 | 85.9 | 35-135 | 0 | | | |
| Ethylbenzene | 2003 | 57 | 1899 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1586 | 57 | 1899 | 0 | 83.6 | 70-135 | 0 | |
| Isopropylbenzene | 2160 | 57 | 1899 | 0 | 114 | 75-130 | 0 | |
| m,p-Xylene | 4112 | 110 | 3797 | 0 | 108 | 80-125 | 0 | |
| Methyl tert-butyl ether | 1525 | 57 | 1899 | 0 | 80.4 | 75-125 | 0 | |
| Methylene chloride | 1554 | 57 | 1899 | 0 | 81.8 | 55-145 | 0 | |
| Naphthalene | 1653 | 190 | 1899 | 0 | 87 | 40-140 | 0 | |
| n-Butylbenzene | 2013 | 57 | 1899 | 0 | 106 | 65-140 | 0 | |
| n-Propylbenzene | 1972 | 57 | 1899 | 0 | 104 | 65-135 | 0 | |
| o-Xylene | 2069 | 57 | 1899 | 0 | 109 | 75-125 | 0 | |
| p-Isopropyltoluene | 2010 | 57 | 1899 | 0 | 106 | 75-135 | 0 | |
| sec-Butylbenzene | 1790 | 57 | 1899 | 0 | 94.3 | 65-130 | 0 | |
| Styrene | 1719 | 57 | 1899 | 0 | 90.6 | 75-125 | 0 | |
| tert-Butylbenzene | 1954 | 57 | 1899 | 0 | 103 | 65-130 | 0 | |
| Tetrachloroethene | 1634 | 57 | 1899 | 0 | 86 | 64-140 | 0 | |
| Tetrahydrofuran | 1590 | 190 | 1899 | 0 | 83.8 | 70-135 | 0 | |
| Toluene | 1741 | 57 | 1899 | 0 | 91.7 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 1719 | 57 | 1899 | 0 | 90.6 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 1368 | 57 | 1899 | 0 | 72 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 1164 | 57 | 1899 | 0 | 61.3 | 70-135 | 0 | S |
| Trichloroethene | 1713 | 57 | 1899 | 0 | 90.2 | 75-125 | 0 | |
| Trichlorofluoromethane | 769.9 | 57 | 1899 | 0 | 40.6 | 25-185 | 0 | |
| Vinyl chloride | 1090 | 57 | 1899 | 0 | 57.4 | 60-125 | 0 | S |
| *Surr: 1,2-Dichloroethane-d4* | *1732* | 0 | *1899* | 0 | *91.2* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1782* | 0 | *1899* | 0 | *93.8* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1906* | 0 | *1899* | 0 | *100* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1664* | 0 | *1899* | 0 | *87.6* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1207634-05A MSD** Units: **µg/Kg** Analysis Date: **7/26/2012 01:39 AM**
Client ID: Run ID: **VMS9_120725A** SeqNo: **2036910** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1837 | 57 | 1899 | 0 | 96.8 | 75-125 | 1855 | 0.977 | 30 | |
| 1,1,1-Trichloroethane | 1644 | 57 | 1899 | 0 | 86.6 | 70-135 | 1784 | 8.14 | 30 | |
| 1,1,2,2-Tetrachloroethane | 1686 | 57 | 1899 | 0 | 88.8 | 55-130 | 1778 | 5.32 | 30 | |
| 1,1,2-Trichloroethane | 1656 | 57 | 1899 | 0 | 87.2 | 60-125 | 1666 | 0.629 | 30 | |
| 1,1-Dichloroethane | 1683 | 57 | 1899 | 0 | 88.6 | 75-125 | 1664 | 1.13 | 30 | |
| 1,1-Dichloroethene | 1650 | 57 | 1899 | 0 | 86.9 | 65-135 | 1639 | 0.635 | 30 | |
| 1,2,3-Trichlorobenzene | 2214 | 57 | 1899 | 0 | 117 | 60-135 | 2036 | 8.35 | 30 | |
| 1,2,3-Trichloropropane | 1549 | 57 | 1899 | 0 | 81.6 | 65-130 | 1647 | 6.12 | 30 | |
| 1,2,3-Trimethylbenzene | 1809 | 57 | 1899 | 0 | 95.3 | 65-135 | 1764 | 2.55 | 30 | |
| 1,2,4-Trichlorobenzene | 2255 | 57 | 1899 | 0 | 119 | 65-130 | 2117 | 6.3 | 30 | |
| 1,2,4-Trimethylbenzene | 1733 | 57 | 1899 | 0 | 91.3 | 65-135 | 1803 | 3.92 | 30 | |
| 1,2-Dibromo-3-chloropropane | 1619 | 57 | 1899 | 0 | 85.2 | 40-135 | 1557 | 3.89 | 30 | |
| 1,2-Dibromoethane | 1829 | 57 | 1899 | 0 | 96.4 | 70-125 | 1835 | 0.311 | 30 | |
| 1,2-Dichlorobenzene | 1969 | 57 | 1899 | 0 | 104 | 75-120 | 1909 | 3.08 | 30 | |
| 1,2-Dichloroethane | 1685 | 57 | 1899 | 0 | 88.8 | 70-135 | 1756 | 4.14 | 30 | |
| 1,2-Dichloropropane | 1631 | 57 | 1899 | 0 | 85.9 | 70-120 | 1693 | 3.71 | 30 | |
| 1,3,5-Trimethylbenzene | 2008 | 57 | 1899 | 0 | 106 | 65-135 | 2068 | 2.94 | 30 | |
| 1,3-Dichlorobenzene | 1958 | 57 | 1899 | 0 | 103 | 70-125 | 1918 | 2.11 | 30 | |
| 1,4-Dichlorobenzene | 1915 | 57 | 1899 | 0 | 101 | 70-125 | 1877 | 2 | 30 | |
| 2-Butanone | 1696 | 190 | 1899 | 0 | 89.4 | 30-160 | 1568 | 7.85 | 30 | B |
| 2-Hexanone | 1367 | 57 | 1899 | 0 | 72 | 45-145 | 1437 | 5.01 | 30 | |
| 4-Methyl-2-pentanone | 1385 | 57 | 1899 | 0 | 73 | 45-145 | 1348 | 2.71 | 30 | |
| Acetone | 1978 | 190 | 1899 | 0 | 104 | 20-160 | 1883 | 4.92 | 30 | B |
| Acrylonitrile | 1600 | 57 | 1899 | 0 | 84.2 | 70-135 | 1633 | 2.06 | 30 | |
| Benzene | 1736 | 57 | 1899 | 0 | 91.4 | 75-125 | 1800 | 3.6 | 30 | |
| Bromobenzene | 1718 | 57 | 1899 | 0 | 90.5 | 65-120 | 1793 | 4.27 | 30 | |
| Bromochloromethane | 1838 | 57 | 1899 | 0 | 96.8 | 70-125 | 1936 | 5.18 | 30 | |
| Bromodichloromethane | 1514 | 57 | 1899 | 0 | 79.8 | 70-130 | 1553 | 2.54 | 30 | |
| Bromoform | 1492 | 57 | 1899 | 0 | 78.6 | 55-135 | 1578 | 5.57 | 30 | |
| Bromomethane | 1828 | 57 | 1899 | 0 | 96.3 | 30-160 | 1791 | 2.05 | 30 | |
| Carbon disulfide | 1379 | 57 | 1899 | 0 | 72.6 | 45-160 | 1347 | 2.37 | 30 | |
| Carbon tetrachloride | 1460 | 57 | 1899 | 0 | 76.9 | 65-135 | 1561 | 6.66 | 30 | |
| Chlorobenzene | 1919 | 57 | 1899 | 0 | 101 | 75-125 | 1922 | 0.148 | 30 | |
| Chloroethane | 1456 | 190 | 1899 | 0 | 76.7 | 40-155 | 1424 | 2.24 | 30 | |
| Chloroform | 1772 | 57 | 1899 | 0 | 93.4 | 70-125 | 1895 | 6.68 | 30 | |
| Chloromethane | 2024 | 57 | 1899 | 0 | 107 | 50-130 | 2087 | 3.05 | 30 | |
| cis-1,2-Dichloroethene | 1752 | 57 | 1899 | 0 | 92.3 | 65-125 | 1656 | 5.63 | 30 | |
| cis-1,3-Dichloropropene | 1507 | 57 | 1899 | 0 | 79.4 | 70-125 | 1549 | 2.73 | 30 | |
| Dibromochloromethane | 1492 | 57 | 1899 | 0 | 78.6 | 65-135 | 1491 | 0.0636 | 30 | |
| Dibromomethane | 1759 | 57 | 1899 | 0 | 92.6 | 75-130 | 1836 | 4.28 | 30 | |
| Dichlorodifluoromethane | 1534 | 57 | 1899 | 0 | 80.8 | 35-135 | 1631 | 6.12 | 30 | |
| Ethylbenzene | 2027 | 57 | 1899 | 0 | 107 | 75-125 | 2003 | 1.18 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1620 | 57 | 1899 | 0 | 85.4 | 70-135 | 1586 | 2.13 | 30 | |
| Isopropylbenzene | 2120 | 57 | 1899 | 0 | 112 | 75-130 | 2160 | 1.86 | 30 | |
| m,p-Xylene | 4157 | 110 | 3797 | 0 | 109 | 80-125 | 4112 | 1.08 | 30 | |
| Methyl tert-butyl ether | 1566 | 57 | 1899 | 0 | 82.5 | 75-125 | 1525 | 2.64 | 30 | |
| Methylene chloride | 1551 | 57 | 1899 | 0 | 81.7 | 55-145 | 1554 | 0.183 | 30 | |
| Naphthalene | 1747 | 190 | 1899 | 0 | 92 | 40-140 | 1653 | 5.53 | 30 | |
| n-Butylbenzene | 2076 | 57 | 1899 | 0 | 109 | 65-140 | 2013 | 3.06 | 30 | |
| n-Propylbenzene | 1900 | 57 | 1899 | 0 | 100 | 65-135 | 1972 | 3.73 | 30 | |
| o-Xylene | 2060 | 57 | 1899 | 0 | 108 | 75-125 | 2069 | 0.46 | 30 | |
| p-Isopropyltoluene | 2068 | 57 | 1899 | 0 | 109 | 75-135 | 2010 | 2.84 | 30 | |
| sec-Butylbenzene | 1714 | 57 | 1899 | 0 | 90.3 | 65-130 | 1790 | 4.33 | 30 | |
| Styrene | 1668 | 57 | 1899 | 0 | 87.8 | 75-125 | 1719 | 3.03 | 30 | |
| tert-Butylbenzene | 1862 | 57 | 1899 | 0 | 98.1 | 65-130 | 1954 | 4.78 | 30 | |
| Tetrachloroethene | 1634 | 57 | 1899 | 0 | 86 | 64-140 | 1634 | 0 | 30 | |
| Tetrahydrofuran | 1434 | 190 | 1899 | 0 | 75.6 | 70-135 | 1590 | 10.3 | 30 | |
| Toluene | 1783 | 57 | 1899 | 0 | 93.9 | 70-125 | 1741 | 2.37 | 30 | |
| trans-1,2-Dichloroethene | 1718 | 57 | 1899 | 0 | 90.5 | 65-135 | 1719 | 0.0552 | 30 | |
| trans-1,3-Dichloropropene | 1411 | 57 | 1899 | 0 | 74.3 | 65-125 | 1368 | 3.07 | 30 | |
| trans-1,4-Dichloro-2-butene | 1062 | 57 | 1899 | 0 | 56 | 70-135 | 1164 | 9.13 | 30 | S |
| Trichloroethene | 1621 | 57 | 1899 | 0 | 85.4 | 75-125 | 1713 | 5.52 | 30 | |
| Trichlorofluoromethane | 757.5 | 57 | 1899 | 0 | 39.9 | 25-185 | 769.9 | 1.62 | 30 | |
| Vinyl chloride | 1607 | 57 | 1899 | 0 | 84.6 | 60-125 | 1090 | 38.4 | 30 | R |
| *Surr: 1,2-Dichloroethane-d4* | *1676* | 0 | *1899* | 0 | *88.3* | *70-130* | 1732 | *3.29* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *1734* | 0 | *1899* | 0 | *91.4* | *70-130* | 1782 | *2.7* | *30* | |
| *Surr: Dibromofluoromethane* | *1806* | 0 | *1899* | 0 | *95.1* | *70-130* | 1906 | *5.42* | *30* | |
| *Surr: Toluene-d8* | *1711* | 0 | *1899* | 0 | *90.1* | *70-130* | 1664 | *2.76* | *30* | |

**The following samples were analyzed in this batch:** 1207647-01A 1207647-02A 1207647-03A 1207647-04A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207647
**Project:** Marshall KRRI Source Area 7/20/12

# QC BATCH REPORT

Batch ID: **R107703** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R107703** Units: **% of sample** Analysis Date: **7/24/2012 03:36 PM**
Client ID: Run ID: **MOIST_120724E** SeqNo: **2035794** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | ND | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R107703** Units: **% of sample** Analysis Date: **7/24/2012 03:36 PM**
Client ID: Run ID: **MOIST_120724E** SeqNo: **2035793** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 100 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | |

**DUP** Sample ID: **1207669-57ADUP** Units: **% of sample** Analysis Date: **7/24/2012 03:36 PM**
Client ID: Run ID: **MOIST_120724E** SeqNo: **2035780** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 17.42 | 0.050 | 0 | 0 | 0 | 0-0 | 17.4 | 0.115 | 20 | |

**DUP** Sample ID: **1207669-59ADUP** Units: **% of sample** Analysis Date: **7/24/2012 03:36 PM**
Client ID: Run ID: **MOIST_120724E** SeqNo: **2035782** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 14.03 | 0.050 | 0 | 0 | 0 | 0-0 | 13.92 | 0.787 | 20 | |

**The following samples were analyzed in this batch:** 1207647-01B 1207647-02B 1207647-03B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

1207647

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_072012_GMK3 | Task: KRRI_SOURCE AREA |
|---|---|---|
| Total # of Samples: 4 | | Event Complete? |

**Lab Information:**

| | |
|---|---|
| Lab Name: | ALS Laboratory Group |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 |
| Lab PM: | Ann Preston |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 |
| Lab PM email | ann.preston@alsglobal.com |
| Applicable Lab Quote #: | |

**Project Information:**

| | |
|---|---|
| Site ID #: | |
| Project # | 60162778 |
| Site Address | 5555 Glenwood Parkway SE Suite 200 |
| City | Grand Rapids |
| State, Zip | MI |
| Site PM Name | Bryan Stiemsma |
| Phone/Fax: | [redacted] |
| Site PM Email: | Bryan.Stiemsma@aecom.com |

**Other Information:**

| | |
|---|---|
| Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 1100 Louisiana Suite 1100 |
| City/State: | Houson, TX |
| Phone #: | 713-821-2000 |
| PO # | |
| Send EDD to | |
| CC Hardcopy report | |
| CC Hardcopy report | |

| Turn Around Time | 5 Day | Rush | No | |
|---|---|---|---|---|

BILLING CODE: 6.00

| ITEM # | SAMPLE ID Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | None | None | None | None | MeOH | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | |
| 1 | SBSA0132S072012S008 | SBSA0132 | SO | G | 07/20/2012 17:05 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 2 | SBSA0132S072012S012 | SBSA0132 | SO | G | 07/20/2012 17:10 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 3 | SBSA0132S072012S094 | SBSA0132 | SO | G | 07/20/2012 17:55 | 3 | | | X | X | X | X | X | | | | | | | | | |
| 4 | SBSA0132T072012MX | SBSA0132 | SQ | G | 07/20/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | |

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| | 7-23-12 | 1326 | | 7-23-12 | 1326 |
| | 7-23-12 | 1404 | | 7/23/12 | 1404 |
| | | | | | |
| | | | | | |

**Sample Receipt Conditions**

| Temp in 0C | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|
| 3.2°C | (Y) N | (Y) N | (Y) N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO:
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed
Time:

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **23-Jul-12 14:04**

Work Order: **1207647** Received by: **MA**

Checklist completed by Diane Shaw (eSignature) 23-Jul-12 (Date) Reviewed by: Ann Preston (eSignature) 24-Jul-12 (Date)

Matrices: Soil
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 3.2 c | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 7/23/2012 4:24:29 PM | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | - | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

3.2c

ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

**CUSTODY SEAL**

Date: 7-23-12 Time:
Name:
Company:

Seal Broken By:

Date:

09-Aug-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI Source Area 7/21/12** Work Order: **1207648**

Dear Bryan,

ALS Environmental received 12 samples on 23-Jul-2012 02:04 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 103.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 09-Aug-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/21/12
**Work Order:** **1207648**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1207648-01 | SBSA0128S072112S008 | Soil | | 7/21/2012 11:55 | 7/23/2012 14:04 | ☐ |
| 1207648-02 | SBSA0128S072112S093 | Soil | | 7/21/2012 12:00 | 7/23/2012 14:04 | ☐ |
| 1207648-03 | SBSA0130S072112S005 | Soil | | 7/21/2012 13:44 | 7/23/2012 14:04 | ☐ |
| 1207648-04 | SBSA0130S072112S078 | Soil | | 7/21/2012 15:22 | 7/23/2012 14:04 | ☐ |
| 1207648-05 | SBSA0131S072112S007 | Soil | | 7/21/2012 16:35 | 7/23/2012 14:04 | ☐ |
| 1207648-06 | SBSA0131S072112S067 | Soil | | 7/21/2012 17:38 | 7/23/2012 14:04 | ☐ |
| 1207648-07 | SBSA0131T072112MX | Soil | | 7/21/2012 | 7/23/2012 14:04 | ☐ |
| 1207648-08 | SBSA0133S072112S008 | Soil | | 7/21/2012 08:45 | 7/23/2012 14:04 | ☐ |
| 1207648-09 | SBSA0133D072112S008 | Soil | | 7/21/2012 08:45 | 7/23/2012 14:04 | ☐ |
| 1207648-10 | SBSA0133S072112S040 | Soil | | 7/21/2012 09:59 | 7/23/2012 14:04 | ☐ |
| 1207648-11 | SBSA0133S072112S057 | Soil | | 7/21/2012 10:05 | 7/23/2012 14:04 | ☐ |
| 1207648-12 | SBSA0133S072112S072 | Soil | | 7/21/2012 10:52 | 7/23/2012 14:04 | ☐ |

## ALS Group USA, Corp

*Date: 09-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/21/12
**Work Order:** 1207648

# Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batch 42626 sample SBSA0133S072112S072 MS recovery for DRO was below control limits. Both the MSD recovery and RPD met quality control criteria. No data requires qualification.

Batch 42609 sample SBSA0131S072112S007 MSD recovery for Nickel was above control limits. Both the MS recovery and RPD met quality control criteria. No data requires qualification for Nickel. The MS/MSD recoveries for Vanadium were above control limits. The Vanadium result in the parent sample may be biased high.

Batch 42573 LCS recoveries for trans-1,4-Dichloro-2-butene were outside control limits but within the Sporadic Marginal Exceedence allowed by the SOP. The MS/MSD data for Volatiles is not related to this project's samples.

Batch 42604 LCS recoveries for trans-1,4-Dichloro-2-butene were outside control limits but within the Sporadic Marginal Exceedence allowed by the SOP. Sample SBSA0131S072112S007 MS/MSD recoveries for trans-1,4-Dichloro-2-butene and Vinyl Chloride were below control limits. The corresponding reporting limits in the parent sample may be biased low.Batch 42604, Method VOC_8260_S, Sample LCS-42604: 1
Batch 42604, Method VOC_8260_S, Sample LCS-42604: 1

# ALS Group USA, Corp

Date: 09-Aug-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/21/12
**WorkOrder:** **1207648**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| % of sample | Percent of Sample |
| µg/Kg | Micrograms per Kilogram |
| µg/Kg-dry | Micrograms per Kilogram Dry Weight |
| mg/Kg-dry | Milligrams per Kilogram Dry Weight |

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0128S072112S008 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 11:55:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **160** | **42** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **1,800** | **84** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *54.1* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.82 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Molybdenum** | **3.3** | **1.6** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Nickel** | **8.2** | **1.4** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **13** | **1.4** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Acenaphthene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Acenaphthylene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Anthracene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(a)anthracene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(a)pyrene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Chrysene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Fluoranthene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Fluorene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Naphthalene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Phenanthrene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Pyrene | ND | 2,100 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *93.2* | *34-140* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *60.0* | *12-100* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *59.2* | *33-117* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *84.8* | *25-137* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *52.8* | *37-107* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: Phenol-d6* | *53.4* | *40-106* | | | *%REC* | 10 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0128S072112S008
**Work Order:** 1207648
**Collection Date:** 7/21/2012 11:55:00 AM
**Project:** Marshall KRRI Source Area 7/21/12
**Lab ID:** 1207648-01
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 130 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 130 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,100 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 440 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0128S072112S008 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 11:55:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 260 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 130 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 130 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *98.8* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *98.5* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **77** | **0.050** | **0** | | **% of sample** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0128S072112S093 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 12:00:00 PM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| DRO (C10-C20) | ND | 220 | 4.0 | | mg/Kg-dry | 5 | 7/27/2012 |
| **ORO (C20-C34)** | **1,000** | **440** | **4.0** | | **mg/Kg-dry** | 5 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *59.6* | *39-115* | | | *%REC* | 5 | 7/27/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.71 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Molybdenum** | **2.8** | **1.4** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Nickel** | **3.1** | **1.2** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **1.5** | **1.2** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Acenaphthene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Acenaphthylene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Anthracene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(a)anthracene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(a)pyrene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Chrysene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Fluoranthene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Fluorene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Naphthalene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Phenanthrene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Pyrene | ND | 2,200 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *95.8* | *34-140* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *58.4* | *12-100* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *57.4* | *33-117* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *88.2* | *25-137* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *51.2* | *37-107* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: Phenol-d6* | *54.0* | *40-106* | | | *%REC* | 10 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0128S072112S093
**Work Order:** 1207648
**Collection Date:** 7/21/2012 12:00:00 PM
**Project:** Marshall KRRI Source Area 7/21/12
**Lab ID:** 1207648-02
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 140 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 140 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 460 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,100 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 460 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0128S072112S093 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 12:00:00 PM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 280 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 460 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 140 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 140 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 140 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *103* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *98.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **78** | **0.050** | **0** | | **% of sample** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0130S072112S005 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 1:44:00 PM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **60** | **18** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **620** | **36** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *49.9* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Molybdenum** | **2.5** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Nickel** | **11** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **14** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Acenaphthene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Acenaphthylene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Anthracene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(a)anthracene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(a)pyrene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Chrysene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Fluoranthene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Fluorene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Naphthalene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Phenanthrene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| Pyrene | ND | 890 | 330 | | µg/Kg-dry | 10 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *80.0* | *34-140* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *54.0* | *12-100* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *52.0* | *33-117* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *74.0* | *25-137* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *46.2* | *37-107* | | | *%REC* | 10 | 7/28/2012 |
| *Surr: Phenol-d6* | *48.6* | *40-106* | | | *%REC* | 10 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0130S072112S005 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 1:44:00 PM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 54 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 54 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0130S072112S005
**Work Order:** 1207648 **Collection Date:** 7/21/2012 1:44:00 PM
**Project:** Marshall KRRI Source Area 7/21/12
**Lab ID:** 1207648-03 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 54 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 54 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *104* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *99.7* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *97.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *98.6* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **44** | **0.050** | **0** | | **% of sample** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0130S072112S078 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 3:22:00 PM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **40** | **11** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **300** | **22** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *69.8* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Nickel** | **8.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **6.8** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *108* | *34-140* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *67.4* | *12-100* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *72.9* | *33-117* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *85.3* | *25-137* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *65.5* | *37-107* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Phenol-d6* | *69.4* | *40-106* | | | *%REC* | 1 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0130S072112S078
**Work Order:** 1207648
**Collection Date:** 7/21/2012 3:22:00 PM
**Project:** Marshall KRRI Source Area 7/21/12
**Lab ID:** 1207648-04
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 34 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 34 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0130S072112S078 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 3:22:00 PM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *97.3* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.8* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **13** | **0.050** | **0** | | **% of sample** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0131S072112S007 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 4:35:00 PM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **20** | **11** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **52** | **23** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *56.4* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Molybdenum** | **1.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Nickel** | **6.4** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **13** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| *Surr: 2,4,6-Tribromophenol* | *104* | *34-140* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorobiphenyl* | *64.7* | *12-100* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorophenol* | *67.8* | *33-117* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *83.9* | *25-137* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Nitrobenzene-d5* | *60.8* | *37-107* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Phenol-d6* | *67.0* | *40-106* | | | *%REC* | 1 | 7/27/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/26/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0131S072112S007 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 4:35:00 PM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 49 | 10 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dibromoethane | ND | 49 | 20 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/26/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/26/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/26/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/26/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0131S072112S007
**Work Order:** 1207648 **Collection Date:** 7/21/2012 4:35:00 PM
**Project:** Marshall KRRI Source Area 7/21/12
**Lab ID:** 1207648-05 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/26/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/26/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/26/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Vinyl chloride | ND | 49 | 40 | | µg/Kg-dry | 1 | 7/26/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *93.5* | *70-130* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Bromofluorobenzene* | *87.0* | *70-130* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Dibromofluoromethane* | *93.8* | *70-130* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Toluene-d8* | *94.4* | *70-130* | | | *%REC* | 1 | 7/26/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **16** | **0.050** | **0** | | **% of sample** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0131S072112S067 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 5:38:00 PM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **26** | **10** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **76** | **21** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *56.4* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Nickel** | **21** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **11** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *108* | *34-140* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *57.3* | *12-100* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *61.0* | *33-117* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *81.9* | *25-137* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *54.0* | *37-107* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Phenol-d6* | *57.9* | *40-106* | | | *%REC* | 1 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0131S072112S067
**Work Order:** 1207648
**Collection Date:** 7/21/2012 5:38:00 PM
**Project:** Marshall KRRI Source Area 7/21/12
**Lab ID:** 1207648-06
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 35 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 35 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0131S072112S067 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 5:38:00 PM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *104* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *99.8* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **12** | **0.050** | **0** | | **% of sample** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0131T072112MX |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 30 | 10 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 30 | 20 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0131T072112MX |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Cyclohexane | ND | 500 | 500 | | µg/Kg | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Ethylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg | 1 | 7/25/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *98.3* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *95.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.5* | *70-130* | | | *%REC* | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072112S008 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 8:45:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-08 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **80** | **20** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **590** | **40** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *57.1* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Molybdenum** | **1.5** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Nickel** | **5.7** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **8.2** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *107* | *34-140* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *60.8* | *12-100* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *61.5* | *33-117* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *79.7* | *25-137* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *52.6* | *37-107* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Phenol-d6* | *61.6* | *40-106* | | | *%REC* | 1 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072112S008 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 8:45:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-08 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 63 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 63 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0133S072112S008
**Work Order:** 1207648 **Collection Date:** 7/21/2012 8:45:00 AM
**Project:** Marshall KRRI Source Area 7/21/12
**Lab ID:** 1207648-08 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 63 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *103* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *99.5* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *96.0* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **52** | **0.050** | **0** | | **% of sample** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133D072112S008 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 8:45:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-09 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **65** | **18** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| **ORO (C20-C34)** | **580** | **37** | **4.0** | | **mg/Kg-dry** | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *52.4* | *39-115* | | | *%REC* | 1 | 7/26/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Molybdenum** | **2.4** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Nickel** | **7.4** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **10** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *96.2* | *34-140* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *52.5* | *12-100* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *52.3* | *33-117* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *74.5* | *25-137* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *44.2* | *37-107* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Phenol-d6* | *52.5* | *40-106* | | | *%REC* | 1 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133D072112S008 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 8:45:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-09 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 57 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 57 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133D072112S008 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 8:45:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-09 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 110 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 57 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 57 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *100* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *98.4* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *101* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **47** | **0.050** | **0** | | **% of sample** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072112S040 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 9:59:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-10 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **54** | **19** | **4.0** | | **mg/Kg-dry** | 1 | 7/27/2012 |
| **ORO (C20-C34)** | **410** | **39** | **4.0** | | **mg/Kg-dry** | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *58.2* | *39-115* | | | *%REC* | 1 | 7/27/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Molybdenum** | **2.9** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Nickel** | **12** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **17** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *109* | *34-140* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *61.3* | *12-100* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *62.4* | *33-117* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *82.8* | *25-137* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *54.5* | *37-107* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Phenol-d6* | *60.8* | *40-106* | | | *%REC* | 1 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/25/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0133S072112S040
**Work Order:** 1207648
**Collection Date:** 7/21/2012 9:59:00 AM
**Project:** Marshall KRRI Source Area 7/21/12
**Lab ID:** 1207648-10
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 63 | 10 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 63 | 20 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Benzene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chlorobenzene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloroform | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072112S040 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 9:59:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-10 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| m,p-Xylene | ND | 130 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| o-Xylene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Styrene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 7/25/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichloroethene | ND | 63 | 50 | | µg/Kg-dry | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 7/25/2012 |
| Vinyl chloride | ND | 63 | 40 | | µg/Kg-dry | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *99.8* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *97.2* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *102* | *70-130* | | | *%REC* | 1 | 7/25/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **52** | **0.050** | **0** | | **% of sample** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072112S057 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 10:05:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-11 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/26/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **180** | **95** | **4.0** | | **mg/Kg-dry** | 1 | 7/27/2012 |
| **ORO (C20-C34)** | **1,600** | **190** | **4.0** | | **mg/Kg-dry** | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *57.4* | *39-115* | | | *%REC* | 1 | 7/27/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **ML** |
| Beryllium | ND | 1.8 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Molybdenum** | **14** | **3.5** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Nickel** | **6.2** | **2.9** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **3.5** | **2.9** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/26/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Acenaphthylene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Anthracene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)anthracene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(a)pyrene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(b)fluoranthene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(g,h,i)perylene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Benzo(k)fluoranthene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Chrysene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Dibenzo(a,h)anthracene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluoranthene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Fluorene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Naphthalene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Phenanthrene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| Pyrene | ND | 480 | 330 | | µg/Kg-dry | 1 | 7/28/2012 |
| *Surr: 2,4,6-Tribromophenol* | *111* | *34-140* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorobiphenyl* | *63.9* | *12-100* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 2-Fluorophenol* | *66.5* | *33-117* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: 4-Terphenyl-d14* | *87.0* | *25-137* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Nitrobenzene-d5* | *57.8* | *37-107* | | | *%REC* | 1 | 7/28/2012 |
| *Surr: Phenol-d6* | *63.7* | *40-106* | | | *%REC* | 1 | 7/28/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/26/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,1,1-Trichloroethane | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,1,2-Trichloroethane | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,1-Dichloroethane | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072112S057 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 10:05:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-11 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,3-Trichlorobenzene | ND | 5,500 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,3-Trichloropropane | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,3-Trimethylbenzene | ND | 5,500 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,4-Trichlorobenzene | ND | 5,500 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,4-Trimethylbenzene | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 5,500 | 10 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dibromoethane | ND | 5,500 | 20 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dichlorobenzene | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dichloroethane | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dichloropropane | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,3,5-Trimethylbenzene | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,3-Dichlorobenzene | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,4-Dichlorobenzene | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 2-Butanone | ND | 18,000 | 750 | | µg/Kg-dry | 1 | 7/26/2012 |
| 2-Hexanone | ND | 5,500 | 2,500 | | µg/Kg-dry | 1 | 7/26/2012 |
| 2-Methylnaphthalene | ND | 18,000 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| 4-Methyl-2-pentanone | ND | 5,500 | 2,500 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acetone | ND | 45,000 | 1,000 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acrylonitrile | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromobenzene | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromochloromethane | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromodichloromethane | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromoform | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromomethane | ND | 5,500 | 200 | | µg/Kg-dry | 1 | 7/26/2012 |
| Carbon disulfide | ND | 5,500 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Carbon tetrachloride | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chlorobenzene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chloroethane | ND | 18,000 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chloroform | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chloromethane | ND | 5,500 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| cis-1,2-Dichloroethene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| cis-1,3-Dichloropropene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Cyclohexane | ND | 5,500 | 500 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibromochloromethane | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibromomethane | ND | 5,500 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dichlorodifluoromethane | ND | 5,500 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Diethyl ether | ND | 5,500 | 200 | | µg/Kg-dry | 1 | 7/26/2012 |
| Diisopropyl ether | ND | 5,500 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Ethyl tert butyl ether | ND | 5,500 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072112S057 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 10:05:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-11 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Hexachloroethane | ND | 5,500 | 300 | | µg/Kg-dry | 1 | 7/26/2012 |
| Isopropylbenzene | ND | 5,500 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| m,p-Xylene | ND | 11,000 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Methyl iodide | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Methyl tert-butyl ether | ND | 5,500 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Methylene chloride | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Naphthalene | ND | 18,000 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| n-Butylbenzene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| n-Propylbenzene | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| o-Xylene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| p-Isopropyltoluene | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| sec-Butylbenzene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Styrene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| tert-Butyl alcohol | ND | 18,000 | 2,500 | | µg/Kg-dry | 1 | 7/26/2012 |
| tert-Butylbenzene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Tertiaryamylmethylether | ND | 5,500 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Tetrachloroethene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Tetrahydrofuran | ND | 18,000 | 1,000 | | µg/Kg-dry | 1 | 7/26/2012 |
| Toluene | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| trans-1,2-Dichloroethene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| trans-1,3-Dichloropropene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| trans-1,4-Dichloro-2-butene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Trichloroethene | ND | 5,500 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Trichlorofluoromethane | ND | 5,500 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Vinyl chloride | ND | 5,500 | 40 | | µg/Kg-dry | 1 | 7/26/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *94.4* | *70-130* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Bromofluorobenzene* | *85.7* | *70-130* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Dibromofluoromethane* | *97.2* | *70-130* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Toluene-d8* | *88.0* | *70-130* | | | *%REC* | 1 | 7/26/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **90** | **0.050** | **0** | | **% of sample** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072112S072 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 10:52:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-12 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/27/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **180** | **87** | **4.0** | | **mg/Kg-dry** | 1 | 7/27/2012 |
| **ORO (C20-C34)** | **1,400** | **170** | **4.0** | | **mg/Kg-dry** | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *69.3* | *39-115* | | | *%REC* | 1 | 7/27/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **ML** |
| Beryllium | ND | 1.6 | 0.50 | | mg/Kg-dry | 4 | 7/27/2012 |
| **Molybdenum** | **9.1** | **3.2** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Nickel** | **7.6** | **2.7** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **Vanadium** | **5.0** | **2.7** | **1.0** | | **mg/Kg-dry** | 4 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/27/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Acenaphthylene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Anthracene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(a)anthracene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(a)pyrene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(b)fluoranthene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(g,h,i)perylene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Benzo(k)fluoranthene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Chrysene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Dibenzo(a,h)anthracene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Fluoranthene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Fluorene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Naphthalene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Phenanthrene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| Pyrene | ND | 440 | 330 | | µg/Kg-dry | 1 | 7/27/2012 |
| *Surr: 2,4,6-Tribromophenol* | *113* | *34-140* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorobiphenyl* | *68.9* | *12-100* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 2-Fluorophenol* | *71.5* | *33-117* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: 4-Terphenyl-d14* | *99.4* | *25-137* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Nitrobenzene-d5* | *64.5* | *37-107* | | | *%REC* | 1 | 7/27/2012 |
| *Surr: Phenol-d6* | *70.9* | *40-106* | | | *%REC* | 1 | 7/27/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **7/26/2012** | | Analyst: **AK** |
| 1,1,1,2-Tetrachloroethane | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,1,1-Trichloroethane | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,1,2-Trichloroethane | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,1-Dichloroethane | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072112S072 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 10:52:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-12 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,3-Trichlorobenzene | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,3-Trichloropropane | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,3-Trimethylbenzene | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,4-Trichlorobenzene | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2,4-Trimethylbenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 4,600 | 10 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dibromoethane | ND | 4,600 | 20 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dichlorobenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dichloroethane | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,2-Dichloropropane | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,3,5-Trimethylbenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,3-Dichlorobenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 1,4-Dichlorobenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| 2-Butanone | ND | 15,000 | 750 | | µg/Kg-dry | 1 | 7/26/2012 |
| 2-Hexanone | ND | 4,600 | 2,500 | | µg/Kg-dry | 1 | 7/26/2012 |
| 2-Methylnaphthalene | ND | 15,000 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| 4-Methyl-2-pentanone | ND | 4,600 | 2,500 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acetone | ND | 38,000 | 1,000 | | µg/Kg-dry | 1 | 7/26/2012 |
| Acrylonitrile | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Benzene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromobenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromochloromethane | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromodichloromethane | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromoform | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Bromomethane | ND | 4,600 | 200 | | µg/Kg-dry | 1 | 7/26/2012 |
| Carbon disulfide | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Carbon tetrachloride | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chlorobenzene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chloroethane | ND | 15,000 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chloroform | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Chloromethane | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| cis-1,2-Dichloroethene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| cis-1,3-Dichloropropene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Cyclohexane | ND | 4,600 | 500 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibromochloromethane | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dibromomethane | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Dichlorodifluoromethane | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Diethyl ether | ND | 4,600 | 200 | | µg/Kg-dry | 1 | 7/26/2012 |
| Diisopropyl ether | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Ethyl tert butyl ether | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *09-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072112S072 |
| **Work Order:** | 1207648 | **Collection Date:** | 7/21/2012 10:52:00 AM |
| **Project:** | Marshall KRRI Source Area 7/21/12 | | |
| **Lab ID:** | 1207648-12 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Hexachloroethane | ND | 4,600 | 300 | | µg/Kg-dry | 1 | 7/26/2012 |
| Isopropylbenzene | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| m,p-Xylene | ND | 9,200 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Methyl iodide | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Methyl tert-butyl ether | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Methylene chloride | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Naphthalene | ND | 15,000 | 330 | | µg/Kg-dry | 1 | 7/26/2012 |
| n-Butylbenzene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| n-Propylbenzene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| o-Xylene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| p-Isopropyltoluene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| sec-Butylbenzene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Styrene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| tert-Butyl alcohol | ND | 15,000 | 2,500 | | µg/Kg-dry | 1 | 7/26/2012 |
| tert-Butylbenzene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Tertiaryamylmethylether | ND | 4,600 | 250 | | µg/Kg-dry | 1 | 7/26/2012 |
| Tetrachloroethene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Tetrahydrofuran | ND | 15,000 | 1,000 | | µg/Kg-dry | 1 | 7/26/2012 |
| Toluene | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| trans-1,2-Dichloroethene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| trans-1,3-Dichloropropene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| trans-1,4-Dichloro-2-butene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Trichloroethene | ND | 4,600 | 50 | | µg/Kg-dry | 1 | 7/26/2012 |
| Trichlorofluoromethane | ND | 4,600 | 100 | | µg/Kg-dry | 1 | 7/26/2012 |
| Vinyl chloride | ND | 4,600 | 40 | | µg/Kg-dry | 1 | 7/26/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *94.0* | *70-130* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Bromofluorobenzene* | *85.4* | *70-130* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Dibromofluoromethane* | *94.1* | *70-130* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Toluene-d8* | *87.4* | *70-130* | | | *%REC* | 1 | 7/26/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **CG** |
| **Moisture** | **89** | **0.050** | **0** | | **% of sample** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 09-Aug-12

**Client:** AECOM Environment

# QC BATCH REPORT

**Work Order:** 1207648

**Project:** Marshall KRRI Source Area 7/21/12

Batch ID: **42592** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42592-42592** Units: **mg/Kg** Analysis Date: **7/26/2012 05:43 PM**

Client ID: Run ID: **GC8_120726A** SeqNo: **2039113** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *2.81* | 0 | *5* | 0 | *56.2* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42592-42592** Units: **mg/Kg** Analysis Date: **7/26/2012 06:10 PM**

Client ID: Run ID: **GC8_120726A** SeqNo: **2039114** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 349 | 10 | 500 | 0 | 69.8 | 60-130 | 0 | | | |
| ORO (C20-C34) | 439.5 | 20 | 500 | 0 | 87.9 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *2.901* | 0 | *5* | 0 | *58* | *39-115* | 0 | | | |

**MS** Sample ID: **1207648-05B MS** Units: **mg/Kg** Analysis Date: **7/26/2012 06:37 PM**

Client ID: **SBSA0131S072112S007** Run ID: **GC8_120726A** SeqNo: **2039115** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 332.9 | 9.5 | 473.4 | 17 | 66.7 | 60-130 | 0 | | | |
| ORO (C20-C34) | 446 | 19 | 473.4 | 43.71 | 85 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *2.698* | 0 | *4.734* | 0 | *57* | *39-115* | 0 | | | |

**MSD** Sample ID: **1207648-05B MSD** Units: **mg/Kg** Analysis Date: **7/26/2012 07:03 PM**

Client ID: **SBSA0131S072112S007** Run ID: **GC8_120726A** SeqNo: **2039116** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 326.9 | 9.6 | 478.6 | 17 | 64.8 | 60-130 | 332.9 | 1.79 | 30 | |
| ORO (C20-C34) | 460.2 | 19 | 478.6 | 43.71 | 87 | 60-130 | 446 | 3.14 | 30 | |
| *Surr: 4-Terphenyl-d14* | *2.763* | 0 | *4.786* | 0 | *57.7* | *39-115* | 2.698 | *2.39* | *30* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207648-01B | 1207648-02B | 1207648-03B |
| 1207648-04B | 1207648-05B | 1207648-06B |
| 1207648-08B | 1207648-09B | 1207648-10B |
| 1207648-11B | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42626** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42626-42626** Units: **mg/Kg** Analysis Date: **7/27/2012 05:45 PM**
Client ID: Run ID: **GC8_120727A** SeqNo: **2041183** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *3.102* | 0 | *5* | 0 | *62* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42626-42626** Units: **mg/Kg** Analysis Date: **7/27/2012 05:45 PM**
Client ID: Run ID: **GC8_120727A** SeqNo: **2041179** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 347.7 | 10 | 500 | 0 | 69.5 | 60-130 | 0 | | | |
| ORO (C20-C34) | 421.6 | 20 | 500 | 0 | 84.3 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.584* | 0 | *5* | 0 | *71.7* | *39-115* | 0 | | | |

**MS** Sample ID: **1207648-12B MS** Units: **mg/Kg** Analysis Date: **7/27/2012 06:12 PM**
Client ID: **SBSA0133S072112S072** Run ID: **GC8_120727A** SeqNo: **2041180** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 302.7 | 9.6 | 482.4 | 19.7 | 58.7 | 60-130 | 0 | | | S |
| ORO (C20-C34) | 513.8 | 19 | 482.4 | 158.3 | 73.7 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.098* | 0 | *4.824* | 0 | *64.2* | *39-115* | 0 | | | |

**MSD** Sample ID: **1207648-12B MSD** Units: **mg/Kg** Analysis Date: **7/27/2012 06:38 PM**
Client ID: **SBSA0133S072112S072** Run ID: **GC8_120727A** SeqNo: **2041181** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 308.6 | 9.5 | 475.4 | 19.7 | 60.8 | 60-130 | 302.7 | 1.93 | 30 | |
| ORO (C20-C34) | 480.2 | 19 | 475.4 | 158.3 | 67.7 | 60-130 | 513.8 | 6.76 | 30 | |
| *Surr: 4-Terphenyl-d14* | *3.275* | 0 | *4.754* | 0 | *68.9* | *39-115* | 3.098 | *5.57* | *30* | |

**The following samples were analyzed in this batch:** 1207648-12B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42609** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42609-42609** Units: **mg/Kg** Analysis Date: **7/27/2012 01:16 AM**
Client ID: Run ID: **ICPMS1_120726A** SeqNo: **2038759** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |
| Molybdenum | ND | 0.25 | | | | | | | | |
| Nickel | 0.00659 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**LCS** Sample ID: **LCS-42609-42609** Units: **mg/Kg** Analysis Date: **7/27/2012 01:29 AM**
Client ID: Run ID: **ICPMS1_120726A** SeqNo: **2038761** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.74 | 0.10 | 5 | 0 | 94.8 | 80-120 | 0 | | | |
| Molybdenum | 4.765 | 0.25 | 5 | 0 | 95.3 | 80-120 | 0 | | | |
| Nickel | 4.714 | 0.25 | 5 | 0 | 94.3 | 80-120 | 0 | | | |
| Vanadium | 4.74 | 0.25 | 5 | 0 | 94.8 | 80-120 | 0 | | | |

**MS** Sample ID: **1207648-05BMS** Units: **mg/Kg** Analysis Date: **7/27/2012 03:08 AM**
Client ID: **SBSA0131S072112S007** Run ID: **ICPMS1_120726A** SeqNo: **2038778** Prep Date: **7/26/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.119 | 0.52 | 6.443 | 0.1987 | 91.9 | 75-125 | 0 | | | |
| Molybdenum | 7.253 | 1.3 | 6.443 | 0.9538 | 97.8 | 75-125 | 0 | | | |
| Nickel | 13.14 | 1.3 | 6.443 | 5.419 | 120 | 75-125 | 0 | | | |
| Vanadium | 20.06 | 1.3 | 6.443 | 11.27 | 136 | 75-125 | 0 | | | S |

**MSD** Sample ID: **1207648-05BMSD** Units: **mg/Kg** Analysis Date: **7/27/2012 03:33 AM**
Client ID: **SBSA0131S072112S007** Run ID: **ICPMS1_120726A** SeqNo: **2038782** Prep Date: **7/26/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.936 | 0.53 | 6.649 | 0.1987 | 101 | 75-125 | 6.119 | 12.5 | 25 | |
| Molybdenum | 8.013 | 1.3 | 6.649 | 0.9538 | 106 | 75-125 | 7.253 | 9.97 | 25 | |
| Nickel | 14.66 | 1.3 | 6.649 | 5.419 | 139 | 75-125 | 13.14 | 10.9 | 25 | S |
| Vanadium | 21.37 | 1.3 | 6.649 | 11.27 | 152 | 75-125 | 20.06 | 6.31 | 25 | S |

**LCSLL** Sample ID: **LLQC-42609-42609** Units: **mg/Kg** Analysis Date: **7/27/2012 01:23 AM**
Client ID: Run ID: **ICPMS1_120726A** SeqNo: **2038760** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.1006 | 0.10 | 0.1 | 0 | 101 | 70-130 | 0 | | | |
| Molybdenum | 0.2544 | 0.25 | 0.25 | 0 | 102 | 70-130 | 0 | | | |
| Nickel | 0.2666 | 0.25 | 0.25 | 0 | 107 | 70-130 | 0 | | | |
| Vanadium | 0.2436 | 0.25 | 0.25 | 0 | 97.5 | 70-130 | 0 | | | J |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42609** Instrument ID **ICPMS1** Method: **SW6020A**

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207648-01B | 1207648-02B | 1207648-03B |
| 1207648-04B | 1207648-05B | 1207648-06B |
| 1207648-08B | 1207648-09B | 1207648-10B |
| 1207648-11B | 1207648-12B | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**MBLK** Sample ID: **SBLKS1-42591-42591** Units: **µg/Kg** Analysis Date: **7/27/2012 12:22 PM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041108** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 50 | | | | | | | | |
| Acenaphthene | ND | 50 | | | | | | | | |
| Acenaphthylene | ND | 50 | | | | | | | | |
| Anthracene | ND | 50 | | | | | | | | |
| Benzo(a)anthracene | ND | 50 | | | | | | | | |
| Benzo(a)pyrene | ND | 50 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 50 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 50 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 50 | | | | | | | | |
| Chrysene | ND | 50 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 50 | | | | | | | | |
| Fluoranthene | ND | 50 | | | | | | | | |
| Fluorene | ND | 50 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | | | | | | | |
| Naphthalene | ND | 50 | | | | | | | | |
| Phenanthrene | ND | 50 | | | | | | | | |
| Pyrene | ND | 50 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *4971* | 0 | *5000* | 0 | *99.4* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3350* | 0 | *5000* | 0 | *67* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3706* | 0 | *5000* | 0 | *74.1* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4352* | 0 | *5000* | 0 | *87* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3396* | 0 | *5000* | 0 | *67.9* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3411* | 0 | *5000* | 0 | *68.2* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42591-42591** Units: **µg/Kg** Analysis Date: **7/27/2012 10:34 AM**
Client ID: Run ID: **SVMS6_120727A** SeqNo: **2041104** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1733 | 50 | 2000 | 0 | 86.6 | 45-105 | 0 | | | |
| Acenaphthene | 1786 | 50 | 2000 | 0 | 89.3 | 45-110 | 0 | | | |
| Acenaphthylene | 1773 | 50 | 2000 | 0 | 88.6 | 45-105 | 0 | | | |
| Anthracene | 1976 | 50 | 2000 | 0 | 98.8 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1957 | 50 | 2000 | 0 | 97.8 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 2023 | 50 | 2000 | 0 | 101 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 2113 | 50 | 2000 | 0 | 106 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2421 | 50 | 2000 | 0 | 121 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2108 | 50 | 2000 | 0 | 105 | 45-115 | 0 | | | |
| Chrysene | 2036 | 50 | 2000 | 0 | 102 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2271 | 50 | 2000 | 0 | 114 | 40-125 | 0 | | | |
| Fluoranthene | 2136 | 50 | 2000 | 0 | 107 | 55-115 | 0 | | | |
| Fluorene | 1981 | 50 | 2000 | 0 | 99 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2261 | 50 | 2000 | 0 | 113 | 40-120 | 0 | | | |
| Naphthalene | 1657 | 50 | 2000 | 0 | 82.8 | 40-105 | 0 | | | |
| Phenanthrene | 1957 | 50 | 2000 | 0 | 97.8 | 50-110 | 0 | | | |
| Pyrene | 1924 | 50 | 2000 | 0 | 96.2 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *5078* | 0 | *5000* | 0 | *102* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3123* | 0 | *5000* | 0 | *62.5* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3231* | 0 | *5000* | 0 | *64.6* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4217* | 0 | *5000* | 0 | *84.3* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3106* | 0 | *5000* | 0 | *62.1* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3101* | 0 | *5000* | 0 | *62* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**MS** Sample ID: **1207648-05B MS** Units: **µg/Kg** Analysis Date: **7/27/2012 11:01 AM**
Client ID: **SBSA0131S072112S007** Run ID: **SVMS6_120727A** SeqNo: **2041105** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1602 | 49 | 1975 | 0 | 81.1 | 45-105 | 0 | | | |
| Acenaphthene | 1702 | 49 | 1975 | 0 | 86.2 | 45-110 | 0 | | | |
| Acenaphthylene | 1693 | 49 | 1975 | 0 | 85.7 | 45-105 | 0 | | | |
| Anthracene | 1928 | 49 | 1975 | 0 | 97.6 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1881 | 49 | 1975 | 0 | 95.2 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1929 | 49 | 1975 | 0 | 97.7 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1889 | 49 | 1975 | 0 | 95.6 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2261 | 49 | 1975 | 0 | 114 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 2171 | 49 | 1975 | 0 | 110 | 45-115 | 0 | | | |
| Chrysene | 1925 | 49 | 1975 | 0 | 97.4 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2109 | 49 | 1975 | 0 | 107 | 40-125 | 0 | | | |
| Fluoranthene | 2061 | 49 | 1975 | 0 | 104 | 55-115 | 0 | | | |
| Fluorene | 1916 | 49 | 1975 | 0 | 97 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2096 | 49 | 1975 | 0 | 106 | 40-120 | 0 | | | |
| Naphthalene | 1535 | 49 | 1975 | 0 | 77.8 | 40-105 | 0 | | | |
| Phenanthrene | 1904 | 49 | 1975 | 0 | 96.4 | 50-110 | 0 | | | |
| Pyrene | 1850 | 49 | 1975 | 0 | 93.6 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *5140* | 0 | *4937* | 0 | *104* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *2913* | 0 | *4937* | 0 | *59* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3014* | 0 | *4937* | 0 | *61* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4168* | 0 | *4937* | 0 | *84.4* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2838* | 0 | *4937* | 0 | *57.5* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *2906* | 0 | *4937* | 0 | *58.9* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42591** Instrument ID **SVMS6** Method: **SW8270**

**MSD** Sample ID: **1207648-05B MSD** Units: **µg/Kg** Analysis Date: **7/27/2012 11:28 AM**
Client ID: **SBSA0131S072112S007** Run ID: **SVMS6_120727A** SeqNo: **2041106** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1628 | 48 | 1913 | 0 | 85.1 | 45-105 | 1602 | 1.61 | 30 | |
| Acenaphthene | 1676 | 48 | 1913 | 0 | 87.6 | 45-110 | 1702 | 1.54 | 30 | |
| Acenaphthylene | 1683 | 48 | 1913 | 0 | 88 | 45-105 | 1693 | 0.558 | 30 | |
| Anthracene | 1884 | 48 | 1913 | 0 | 98.5 | 55-105 | 1928 | 2.29 | 30 | |
| Benzo(a)anthracene | 1764 | 48 | 1913 | 0 | 92.2 | 50-110 | 1881 | 6.4 | 30 | |
| Benzo(a)pyrene | 1847 | 48 | 1913 | 0 | 96.6 | 50-110 | 1929 | 4.39 | 30 | |
| Benzo(b)fluoranthene | 1740 | 48 | 1913 | 0 | 91 | 45-115 | 1889 | 8.19 | 30 | |
| Benzo(g,h,i)perylene | 2056 | 48 | 1913 | 0 | 108 | 40-125 | 2261 | 9.51 | 30 | |
| Benzo(k)fluoranthene | 2071 | 48 | 1913 | 0 | 108 | 45-115 | 2171 | 4.72 | 30 | |
| Chrysene | 1800 | 48 | 1913 | 0 | 94.1 | 55-110 | 1925 | 6.7 | 30 | |
| Dibenzo(a,h)anthracene | 1935 | 48 | 1913 | 0 | 101 | 40-125 | 2109 | 8.64 | 30 | |
| Fluoranthene | 1953 | 48 | 1913 | 0 | 102 | 55-115 | 2061 | 5.39 | 30 | |
| Fluorene | 1881 | 48 | 1913 | 0 | 98.4 | 50-110 | 1916 | 1.82 | 30 | |
| Indeno(1,2,3-cd)pyrene | 1933 | 48 | 1913 | 0 | 101 | 40-120 | 2096 | 8.13 | 30 | |
| Naphthalene | 1565 | 48 | 1913 | 0 | 81.8 | 40-105 | 1535 | 1.93 | 30 | |
| Phenanthrene | 1837 | 48 | 1913 | 0 | 96 | 50-110 | 1904 | 3.57 | 30 | |
| Pyrene | 1743 | 48 | 1913 | 0 | 91.2 | 45-125 | 1850 | 5.91 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *4928* | 0 | *4781* | 0 | *103* | *34-140* | 5140 | *4.21* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *2899* | 0 | *4781* | 0 | *60.6* | *12-100* | 2913 | *0.498* | *40* | |
| *Surr: 2-Fluorophenol* | *3094* | 0 | *4781* | 0 | *64.7* | *33-117* | 3014 | *2.62* | *40* | |
| *Surr: 4-Terphenyl-d14* | *3915* | 0 | *4781* | 0 | *81.9* | *25-137* | 4168 | *6.26* | *40* | |
| *Surr: Nitrobenzene-d5* | *2904* | 0 | *4781* | 0 | *60.7* | *37-107* | 2838 | *2.31* | *40* | |
| *Surr: Phenol-d6* | *2986* | 0 | *4781* | 0 | *62.4* | *40-106* | 2906 | *2.7* | *40* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207648-01B | 1207648-02B | 1207648-03B |
| 1207648-04B | 1207648-05B | 1207648-06B |
| 1207648-08B | 1207648-09B | 1207648-10B |
| 1207648-11B | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42625** Instrument ID **SVMS7** Method: **SW8270**

**MBLK** Sample ID: **SBLKS1-42625-42625** Units: **µg/Kg** Analysis Date: **7/27/2012 06:31 PM**
Client ID: Run ID: **SVMS7_120727A** SeqNo: **2039973** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 50 | | | | | | | | |
| Acenaphthene | ND | 50 | | | | | | | | |
| Acenaphthylene | ND | 50 | | | | | | | | |
| Anthracene | ND | 50 | | | | | | | | |
| Benzo(a)anthracene | ND | 50 | | | | | | | | |
| Benzo(a)pyrene | ND | 50 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 50 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 50 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 50 | | | | | | | | |
| Chrysene | ND | 50 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 50 | | | | | | | | |
| Fluoranthene | ND | 50 | | | | | | | | |
| Fluorene | ND | 50 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | | | | | | | |
| Naphthalene | ND | 50 | | | | | | | | |
| Phenanthrene | ND | 50 | | | | | | | | |
| Pyrene | ND | 50 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *4881* | 0 | *5000* | 0 | *97.6* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3518* | 0 | *5000* | 0 | *70.4* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3773* | 0 | *5000* | 0 | *75.5* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4883* | 0 | *5000* | 0 | *97.7* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3531* | 0 | *5000* | 0 | *70.6* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3705* | 0 | *5000* | 0 | *74.1* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42625** Instrument ID **SVMS7** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42625-42625** Units: **µg/Kg** Analysis Date: **7/27/2012 06:02 PM**
Client ID: Run ID: **SVMS7_120727A** SeqNo: **2039972** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1931 | 50 | 2000 | 0 | 96.6 | 45-105 | 0 | | | |
| Acenaphthene | 1937 | 50 | 2000 | 0 | 96.8 | 45-110 | 0 | | | |
| Acenaphthylene | 1940 | 50 | 2000 | 0 | 97 | 45-105 | 0 | | | |
| Anthracene | 2098 | 50 | 2000 | 0 | 105 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 2031 | 50 | 2000 | 0 | 102 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 2088 | 50 | 2000 | 0 | 104 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 2054 | 50 | 2000 | 0 | 103 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 2285 | 50 | 2000 | 0 | 114 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 1984 | 50 | 2000 | 0 | 99.2 | 45-115 | 0 | | | |
| Chrysene | 2099 | 50 | 2000 | 0 | 105 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 2158 | 50 | 2000 | 0 | 108 | 40-125 | 0 | | | |
| Fluoranthene | 2245 | 50 | 2000 | 0 | 112 | 55-115 | 0 | | | |
| Fluorene | 2077 | 50 | 2000 | 0 | 104 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 2151 | 50 | 2000 | 0 | 108 | 40-120 | 0 | | | |
| Naphthalene | 1864 | 50 | 2000 | 0 | 93.2 | 40-105 | 0 | | | |
| Phenanthrene | 2034 | 50 | 2000 | 0 | 102 | 50-110 | 0 | | | |
| Pyrene | 2100 | 50 | 2000 | 0 | 105 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *5264* | 0 | *5000* | 0 | *105* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3417* | 0 | *5000* | 0 | *68.3* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3501* | 0 | *5000* | 0 | *70* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4704* | 0 | *5000* | 0 | *94.1* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *3360* | 0 | *5000* | 0 | *67.2* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3384* | 0 | *5000* | 0 | *67.7* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42625** Instrument ID **SVMS7** Method: **SW8270**

**MS** Sample ID: **1207648-12B MS** Units: **µg/Kg** Analysis Date: **7/27/2012 10:54 PM**
Client ID: **SBSA0133S072112S072** Run ID: **SVMS7_120727A** SeqNo: **2039977** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1320 | 48 | 1906 | 0 | 69.2 | 45-105 | 0 | | | |
| Acenaphthene | 1409 | 48 | 1906 | 0 | 73.9 | 45-110 | 0 | | | |
| Acenaphthylene | 1412 | 48 | 1906 | 0 | 74 | 45-105 | 0 | | | |
| Anthracene | 1575 | 48 | 1906 | 0 | 82.6 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1477 | 48 | 1906 | 0 | 77.5 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1473 | 48 | 1906 | 0 | 77.2 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1599 | 48 | 1906 | 0 | 83.9 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1191 | 48 | 1906 | 0 | 62.5 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 1683 | 48 | 1906 | 0 | 88.3 | 45-115 | 0 | | | |
| Chrysene | 1481 | 48 | 1906 | 0 | 77.7 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1276 | 48 | 1906 | 0 | 67 | 40-125 | 0 | | | |
| Fluoranthene | 1627 | 48 | 1906 | 0 | 85.4 | 55-115 | 0 | | | |
| Fluorene | 1549 | 48 | 1906 | 0 | 81.2 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1259 | 48 | 1906 | 0 | 66 | 40-120 | 0 | | | |
| Naphthalene | 1245 | 48 | 1906 | 0 | 65.3 | 40-105 | 0 | | | |
| Phenanthrene | 1559 | 48 | 1906 | 0 | 81.8 | 50-110 | 0 | | | |
| Pyrene | 1490 | 48 | 1906 | 0 | 78.2 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *4808* | 0 | *4766* | 0 | *101* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *2776* | 0 | *4766* | 0 | *58.3* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *2673* | 0 | *4766* | 0 | *56.1* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3920* | 0 | *4766* | 0 | *82.3* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2519* | 0 | *4766* | 0 | *52.9* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *2688* | 0 | *4766* | 0 | *56.4* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42625** Instrument ID **SVMS7** Method: **SW8270**

**MSD** Sample ID: **1207648-12B MSD** Units: **µg/Kg** Analysis Date: **7/27/2012 11:23 PM**
Client ID: **SBSA0133S072112S072** Run ID: **SVMS7_120727A** SeqNo: **2039978** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1274 | 46 | 1836 | 0 | 69.4 | 45-105 | 1320 | 3.52 | 30 | |
| Acenaphthene | 1359 | 46 | 1836 | 0 | 74 | 45-110 | 1409 | 3.61 | 30 | |
| Acenaphthylene | 1361 | 46 | 1836 | 0 | 74.1 | 45-105 | 1412 | 3.67 | 30 | |
| Anthracene | 1485 | 46 | 1836 | 0 | 80.9 | 55-105 | 1575 | 5.82 | 30 | |
| Benzo(a)anthracene | 1416 | 46 | 1836 | 0 | 77.1 | 50-110 | 1477 | 4.26 | 30 | |
| Benzo(a)pyrene | 1436 | 46 | 1836 | 0 | 78.2 | 50-110 | 1473 | 2.52 | 30 | |
| Benzo(b)fluoranthene | 1486 | 46 | 1836 | 0 | 81 | 45-115 | 1599 | 7.32 | 30 | |
| Benzo(g,h,i)perylene | 996.1 | 46 | 1836 | 0 | 54.2 | 40-125 | 1191 | 17.9 | 30 | |
| Benzo(k)fluoranthene | 1795 | 46 | 1836 | 0 | 97.8 | 45-115 | 1683 | 6.42 | 30 | |
| Chrysene | 1418 | 46 | 1836 | 0 | 77.2 | 55-110 | 1481 | 4.39 | 30 | |
| Dibenzo(a,h)anthracene | 1089 | 46 | 1836 | 0 | 59.3 | 40-125 | 1276 | 15.8 | 30 | |
| Fluoranthene | 1532 | 46 | 1836 | 0 | 83.4 | 55-115 | 1627 | 5.99 | 30 | |
| Fluorene | 1495 | 46 | 1836 | 0 | 81.4 | 50-110 | 1549 | 3.56 | 30 | |
| Indeno(1,2,3-cd)pyrene | 1069 | 46 | 1836 | 0 | 58.2 | 40-120 | 1259 | 16.4 | 30 | |
| Naphthalene | 1172 | 46 | 1836 | 0 | 63.8 | 40-105 | 1245 | 5.99 | 30 | |
| Phenanthrene | 1446 | 46 | 1836 | 0 | 78.8 | 50-110 | 1559 | 7.54 | 30 | |
| Pyrene | 1415 | 46 | 1836 | 0 | 77 | 45-125 | 1490 | 5.16 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *4582* | 0 | *4591* | 0 | *99.8* | *34-140* | 4808 | *4.82* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *2686* | 0 | *4591* | 0 | *58.5* | *12-100* | 2776 | *3.3* | *40* | |
| *Surr: 2-Fluorophenol* | *2584* | 0 | *4591* | 0 | *56.3* | *33-117* | 2673 | *3.39* | *40* | |
| *Surr: 4-Terphenyl-d14* | *3849* | 0 | *4591* | 0 | *83.8* | *25-137* | 3920 | *1.84* | *40* | |
| *Surr: Nitrobenzene-d5* | *2360* | 0 | *4591* | 0 | *51.4* | *37-107* | 2519 | *6.5* | *40* | |
| *Surr: Phenol-d6* | *2608* | 0 | *4591* | 0 | *56.8* | *40-106* | 2688 | *3* | *40* | |

**The following samples were analyzed in this batch:** 1207648-12B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 11:56 AM**
Client ID: Run ID: **VMS7_120725A** SeqNo: **2036746** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 254 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | 19 | 100 | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1006* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *956* | 0 | *1000* | 0 | *95.6* | *70-130* | 0 |
| *Surr: Toluene-d8* | *992.5* | 0 | *1000* | 0 | *99.2* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 04:58 PM**
Client ID: Run ID: **VMS8_120725A** SeqNo: **2036845** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 191 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | 85.5 | 100 | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1038* | 0 | *1000* | 0 | *104* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *986* | 0 | *1000* | 0 | *98.6* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *983* | 0 | *1000* | 0 | *98.3* | *70-130* | 0 |
| *Surr: Toluene-d8* | *969* | 0 | *1000* | 0 | *96.9* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/25/2012 05:14 PM**
Client ID: Run ID: **VMS9_120725A** SeqNo: **2036902** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | 104.5 | 200 | | | | | | | | J |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 164.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1008* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *857* | 0 | *1000* | 0 | *85.7* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *951.5* | 0 | *1000* | 0 | *95.2* | *70-130* | 0 |
| *Surr: Toluene-d8* | *908* | 0 | *1000* | 0 | *90.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/26/2012 04:34 PM**
Client ID: Run ID: **VMS9_120726A** SeqNo: **2039269** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | 86 | 200 | | | | | | | | J |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 188.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *938* | 0 | *1000* | 0 | *93.8* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *879.5* | 0 | *1000* | 0 | *88* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *947.5* | 0 | *1000* | 0 | *94.8* | *70-130* | 0 |
| *Surr: Toluene-d8* | *936.5* | 0 | *1000* | 0 | *93.6* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42573-42573** Units: **µg/Kg** Analysis Date: **7/27/2012 03:26 PM**
Client ID: Run ID: **VMS6_120727A** SeqNo: **2041146** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | ND | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1032* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1009* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1004* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *987.5* | 0 | *1000* | 0 | *98.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42573-42573** | | | | Units: **µg/Kg** | | Analysis Date: **7/25/2012 10:40 AM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS7_120725A** | | | SeqNo: **2036745** | | Prep Date: **7/25/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 915.5 | 30 | 1000 | 0 | 91.6 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 963 | 30 | 1000 | 0 | 96.3 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 885.5 | 30 | 1000 | 0 | 88.6 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 876 | 30 | 1000 | 0 | 87.6 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 900.5 | 30 | 1000 | 0 | 90 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 960 | 30 | 1000 | 0 | 96 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1004 | 30 | 1000 | 0 | 100 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 902 | 30 | 1000 | 0 | 90.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 870.5 | 30 | 1000 | 0 | 87 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1050 | 30 | 1000 | 0 | 105 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 988 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 835.5 | 30 | 1000 | 0 | 83.6 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 947 | 30 | 1000 | 0 | 94.7 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 977 | 30 | 1000 | 0 | 97.7 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 919 | 30 | 1000 | 0 | 91.9 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 928 | 30 | 1000 | 0 | 92.8 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1006 | 30 | 1000 | 0 | 101 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 973 | 30 | 1000 | 0 | 97.3 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 938.5 | 30 | 1000 | 0 | 93.8 | 70-125 | 0 | | | |
| 2-Butanone | 952 | 200 | 1000 | 0 | 95.2 | 30-160 | 0 | | | |
| 2-Hexanone | 918 | 30 | 1000 | 0 | 91.8 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1232 | 30 | 1000 | 0 | 123 | 45-145 | 0 | | | |
| Acetone | 1193 | 100 | 1000 | 0 | 119 | 20-160 | 0 | | | B |
| Acrylonitrile | 822.5 | 100 | 1000 | 0 | 82.2 | 70-135 | 0 | | | |
| Benzene | 953.5 | 30 | 1000 | 0 | 95.4 | 75-125 | 0 | | | |
| Bromobenzene | 956.5 | 30 | 1000 | 0 | 95.6 | 65-120 | 0 | | | |
| Bromochloromethane | 988 | 30 | 1000 | 0 | 98.8 | 70-125 | 0 | | | |
| Bromodichloromethane | 916.5 | 30 | 1000 | 0 | 91.6 | 70-130 | 0 | | | |
| Bromoform | 821 | 30 | 1000 | 0 | 82.1 | 55-135 | 0 | | | |
| Bromomethane | 1212 | 75 | 1000 | 0 | 121 | 30-160 | 0 | | | |
| Carbon disulfide | 1074 | 30 | 1000 | 0 | 107 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1004 | 30 | 1000 | 0 | 100 | 65-135 | 0 | | | |
| Chlorobenzene | 957.5 | 30 | 1000 | 0 | 95.8 | 75-125 | 0 | | | |
| Chloroethane | 914.5 | 100 | 1000 | 0 | 91.4 | 40-155 | 0 | | | |
| Chloroform | 916.5 | 30 | 1000 | 0 | 91.6 | 70-125 | 0 | | | |
| Chloromethane | 914.5 | 100 | 1000 | 0 | 91.4 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 927.5 | 30 | 1000 | 0 | 92.8 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 893 | 30 | 1000 | 0 | 89.3 | 70-125 | 0 | | | |
| Dibromochloromethane | 833 | 30 | 1000 | 0 | 83.3 | 65-135 | 0 | | | |
| Dibromomethane | 896 | 30 | 1000 | 0 | 89.6 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 807 | 30 | 1000 | 0 | 80.7 | 35-135 | 0 | | | |
| Ethylbenzene | 990.5 | 30 | 1000 | 0 | 99 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 816.5 | 30 | 1000 | 0 | 81.6 | 70-135 | 0 |
| Isopropylbenzene | 1006 | 30 | 1000 | 0 | 101 | 75-130 | 0 |
| m,p-Xylene | 1977 | 60 | 2000 | 0 | 98.8 | 80-125 | 0 |
| Methyl tert-butyl ether | 896.5 | 30 | 1000 | 0 | 89.6 | 75-125 | 0 |
| Methylene chloride | 915.5 | 30 | 1000 | 0 | 91.6 | 55-145 | 0 |
| Naphthalene | 952.5 | 100 | 1000 | 0 | 95.2 | 40-140 | 0 |
| n-Butylbenzene | 1032 | 30 | 1000 | 0 | 103 | 65-140 | 0 |
| n-Propylbenzene | 987 | 30 | 1000 | 0 | 98.7 | 65-135 | 0 |
| o-Xylene | 970 | 30 | 1000 | 0 | 97 | 75-125 | 0 |
| p-Isopropyltoluene | 1017 | 30 | 1000 | 0 | 102 | 75-135 | 0 |
| sec-Butylbenzene | 1036 | 30 | 1000 | 0 | 104 | 65-130 | 0 |
| Styrene | 1002 | 30 | 1000 | 0 | 100 | 75-125 | 0 |
| tert-Butylbenzene | 1002 | 30 | 1000 | 0 | 100 | 65-130 | 0 |
| Tetrachloroethene | 1032 | 30 | 1000 | 0 | 103 | 64-140 | 0 |
| Tetrahydrofuran | 850.5 | 200 | 1000 | 0 | 85 | 70-135 | 0 |
| Toluene | 968.5 | 30 | 1000 | 0 | 96.8 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 971 | 30 | 1000 | 0 | 97.1 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 938 | 30 | 1000 | 0 | 93.8 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 784 | 30 | 1000 | 0 | 78.4 | 70-135 | 0 |
| Trichloroethene | 941.5 | 30 | 1000 | 0 | 94.2 | 75-125 | 0 |
| Trichlorofluoromethane | 861.5 | 30 | 1000 | 0 | 86.2 | 25-185 | 0 |
| Vinyl chloride | 814 | 30 | 1000 | 0 | 81.4 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *980* | 0 | *1000* | 0 | *98* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *999* | 0 | *1000* | 0 | *99.9* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1004* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1003* | 0 | *1000* | 0 | *100* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42573-42573** | | | | Units: **µg/Kg** | | Analysis Date: **7/25/2012 03:38 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS8_120725A** | | | SeqNo: **2036844** | | Prep Date: **7/25/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 1123 | 30 | 1000 | 0 | 112 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1170 | 30 | 1000 | 0 | 117 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1106 | 30 | 1000 | 0 | 111 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1028 | 30 | 1000 | 0 | 103 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1076 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1184 | 30 | 1000 | 0 | 118 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1196 | 30 | 1000 | 0 | 120 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1092 | 30 | 1000 | 0 | 109 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 971.5 | 30 | 1000 | 0 | 97.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1214 | 30 | 1000 | 0 | 121 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 988.5 | 30 | 1000 | 0 | 98.8 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 991 | 30 | 1000 | 0 | 99.1 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1044 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1077 | 30 | 1000 | 0 | 108 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1112 | 30 | 1000 | 0 | 111 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1120 | 30 | 1000 | 0 | 112 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1138 | 30 | 1000 | 0 | 114 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1084 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1114 | 30 | 1000 | 0 | 111 | 70-125 | 0 | | | |
| 2-Butanone | 1120 | 200 | 1000 | 0 | 112 | 30-160 | 0 | | | |
| 2-Hexanone | 1057 | 30 | 1000 | 0 | 106 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1199 | 30 | 1000 | 0 | 120 | 45-145 | 0 | | | |
| Acetone | 875 | 100 | 1000 | 0 | 87.5 | 20-160 | 0 | | | B |
| Acrylonitrile | 982 | 100 | 1000 | 0 | 98.2 | 70-135 | 0 | | | |
| Benzene | 1082 | 30 | 1000 | 0 | 108 | 75-125 | 0 | | | |
| Bromobenzene | 1110 | 30 | 1000 | 0 | 111 | 65-120 | 0 | | | |
| Bromochloromethane | 1160 | 30 | 1000 | 0 | 116 | 70-125 | 0 | | | |
| Bromodichloromethane | 1019 | 30 | 1000 | 0 | 102 | 70-130 | 0 | | | |
| Bromoform | 1004 | 30 | 1000 | 0 | 100 | 55-135 | 0 | | | |
| Bromomethane | 1108 | 75 | 1000 | 0 | 111 | 30-160 | 0 | | | |
| Carbon disulfide | 1249 | 30 | 1000 | 0 | 125 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1174 | 30 | 1000 | 0 | 117 | 65-135 | 0 | | | |
| Chlorobenzene | 1104 | 30 | 1000 | 0 | 110 | 75-125 | 0 | | | |
| Chloroethane | 1062 | 100 | 1000 | 0 | 106 | 40-155 | 0 | | | |
| Chloroform | 1024 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| Chloromethane | 952 | 100 | 1000 | 0 | 95.2 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1072 | 30 | 1000 | 0 | 107 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1018 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| Dibromochloromethane | 1005 | 30 | 1000 | 0 | 100 | 65-135 | 0 | | | |
| Dibromomethane | 1052 | 30 | 1000 | 0 | 105 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 986.5 | 30 | 1000 | 0 | 98.6 | 35-135 | 0 | | | |
| Ethylbenzene | 1128 | 30 | 1000 | 0 | 113 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 964.5 | 30 | 1000 | 0 | 96.4 | 70-135 | 0 |
| Isopropylbenzene | 1128 | 30 | 1000 | 0 | 113 | 75-130 | 0 |
| m,p-Xylene | 2284 | 60 | 2000 | 0 | 114 | 80-125 | 0 |
| Methyl tert-butyl ether | 960 | 30 | 1000 | 0 | 96 | 75-125 | 0 |
| Methylene chloride | 1073 | 30 | 1000 | 0 | 107 | 55-145 | 0 |
| Naphthalene | 1120 | 100 | 1000 | 0 | 112 | 40-140 | 0 |
| n-Butylbenzene | 1215 | 30 | 1000 | 0 | 122 | 65-140 | 0 |
| n-Propylbenzene | 1126 | 30 | 1000 | 0 | 113 | 65-135 | 0 |
| o-Xylene | 1108 | 30 | 1000 | 0 | 111 | 75-125 | 0 |
| p-Isopropyltoluene | 1157 | 30 | 1000 | 0 | 116 | 75-135 | 0 |
| sec-Butylbenzene | 1202 | 30 | 1000 | 0 | 120 | 65-130 | 0 |
| Styrene | 1102 | 30 | 1000 | 0 | 110 | 75-125 | 0 |
| tert-Butylbenzene | 1181 | 30 | 1000 | 0 | 118 | 65-130 | 0 |
| Tetrachloroethene | 1224 | 30 | 1000 | 0 | 122 | 64-140 | 0 |
| Tetrahydrofuran | 1032 | 200 | 1000 | 0 | 103 | 70-135 | 0 |
| Toluene | 1120 | 30 | 1000 | 0 | 112 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1140 | 30 | 1000 | 0 | 114 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1033 | 30 | 1000 | 0 | 103 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 983 | 30 | 1000 | 0 | 98.3 | 70-135 | 0 |
| Trichloroethene | 1135 | 30 | 1000 | 0 | 114 | 75-125 | 0 |
| Trichlorofluoromethane | 1023 | 30 | 1000 | 0 | 102 | 25-185 | 0 |
| Vinyl chloride | 1010 | 30 | 1000 | 0 | 101 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1006* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1019* | 0 | *1000* | 0 | *102* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1003* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *998.5* | 0 | *1000* | 0 | *99.8* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42573-42573** | | | | Units: **µg/Kg** | | Analysis Date: **7/25/2012 03:58 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS9_120725A** | | | SeqNo: **2036901** | | Prep Date: **7/25/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 925.5 | 30 | 1000 | 0 | 92.6 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 891.5 | 30 | 1000 | 0 | 89.2 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 885.5 | 30 | 1000 | 0 | 88.6 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 829.5 | 30 | 1000 | 0 | 83 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 811.5 | 30 | 1000 | 0 | 81.2 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 819 | 30 | 1000 | 0 | 81.9 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1030 | 30 | 1000 | 0 | 103 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 825 | 30 | 1000 | 0 | 82.5 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 847 | 30 | 1000 | 0 | 84.7 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1038 | 30 | 1000 | 0 | 104 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 890 | 30 | 1000 | 0 | 89 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 829 | 30 | 1000 | 0 | 82.9 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 916.5 | 30 | 1000 | 0 | 91.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 924.5 | 30 | 1000 | 0 | 92.4 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 843 | 30 | 1000 | 0 | 84.3 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 810 | 30 | 1000 | 0 | 81 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 985.5 | 30 | 1000 | 0 | 98.6 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 921.5 | 30 | 1000 | 0 | 92.2 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 919 | 30 | 1000 | 0 | 91.9 | 70-125 | 0 | | | |
| 2-Butanone | 766 | 200 | 1000 | 0 | 76.6 | 30-160 | 0 | | | |
| 2-Hexanone | 738 | 30 | 1000 | 0 | 73.8 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 716.5 | 30 | 1000 | 0 | 71.6 | 45-145 | 0 | | | |
| Acetone | 735 | 100 | 1000 | 0 | 73.5 | 20-160 | 0 | | | B |
| Acrylonitrile | 730.5 | 100 | 1000 | 0 | 73 | 70-135 | 0 | | | |
| Benzene | 875 | 30 | 1000 | 0 | 87.5 | 75-125 | 0 | | | |
| Bromobenzene | 866 | 30 | 1000 | 0 | 86.6 | 65-120 | 0 | | | |
| Bromochloromethane | 863.5 | 30 | 1000 | 0 | 86.4 | 70-125 | 0 | | | |
| Bromodichloromethane | 750 | 30 | 1000 | 0 | 75 | 70-130 | 0 | | | |
| Bromoform | 836 | 30 | 1000 | 0 | 83.6 | 55-135 | 0 | | | |
| Bromomethane | 943.5 | 75 | 1000 | 0 | 94.4 | 30-160 | 0 | | | |
| Carbon disulfide | 859.5 | 30 | 1000 | 0 | 86 | 45-160 | 0 | | | |
| Carbon tetrachloride | 814 | 30 | 1000 | 0 | 81.4 | 65-135 | 0 | | | |
| Chlorobenzene | 910 | 30 | 1000 | 0 | 91 | 75-125 | 0 | | | |
| Chloroethane | 770.5 | 100 | 1000 | 0 | 77 | 40-155 | 0 | | | |
| Chloroform | 841 | 30 | 1000 | 0 | 84.1 | 70-125 | 0 | | | |
| Chloromethane | 769.5 | 100 | 1000 | 0 | 77 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 837 | 30 | 1000 | 0 | 83.7 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 763 | 30 | 1000 | 0 | 76.3 | 70-125 | 0 | | | |
| Dibromochloromethane | 778 | 30 | 1000 | 0 | 77.8 | 65-135 | 0 | | | |
| Dibromomethane | 845.5 | 30 | 1000 | 0 | 84.6 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 714.5 | 30 | 1000 | 0 | 71.4 | 35-135 | 0 | | | |
| Ethylbenzene | 955.5 | 30 | 1000 | 0 | 95.6 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 839 | 30 | 1000 | 0 | 83.9 | 70-135 | 0 | |
| Isopropylbenzene | 1007 | 30 | 1000 | 0 | 101 | 75-130 | 0 | |
| m,p-Xylene | 1942 | 60 | 2000 | 0 | 97.1 | 80-125 | 0 | |
| Methyl tert-butyl ether | 770 | 30 | 1000 | 0 | 77 | 75-125 | 0 | |
| Methylene chloride | 810 | 30 | 1000 | 0 | 81 | 55-145 | 0 | |
| Naphthalene | 827 | 100 | 1000 | 0 | 82.7 | 40-140 | 0 | |
| n-Butylbenzene | 1006 | 30 | 1000 | 0 | 101 | 65-140 | 0 | |
| n-Propylbenzene | 940 | 30 | 1000 | 0 | 94 | 65-135 | 0 | |
| o-Xylene | 965 | 30 | 1000 | 0 | 96.5 | 75-125 | 0 | |
| p-Isopropyltoluene | 971 | 30 | 1000 | 0 | 97.1 | 75-135 | 0 | |
| sec-Butylbenzene | 884 | 30 | 1000 | 0 | 88.4 | 65-130 | 0 | |
| Styrene | 863 | 30 | 1000 | 0 | 86.3 | 75-125 | 0 | |
| tert-Butylbenzene | 942 | 30 | 1000 | 0 | 94.2 | 65-130 | 0 | |
| Tetrachloroethene | 833.5 | 30 | 1000 | 0 | 83.4 | 64-140 | 0 | |
| Tetrahydrofuran | 767 | 200 | 1000 | 0 | 76.7 | 70-135 | 0 | |
| Toluene | 877 | 30 | 1000 | 0 | 87.7 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 837.5 | 30 | 1000 | 0 | 83.8 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 762 | 30 | 1000 | 0 | 76.2 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 684 | 30 | 1000 | 0 | 68.4 | 70-135 | 0 | S |
| Trichloroethene | 856 | 30 | 1000 | 0 | 85.6 | 75-125 | 0 | |
| Trichlorofluoromethane | 733.5 | 30 | 1000 | 0 | 73.4 | 25-185 | 0 | |
| Vinyl chloride | 749.5 | 30 | 1000 | 0 | 75 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *943* | 0 | *1000* | 0 | *94.3* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *958* | 0 | *1000* | 0 | *95.8* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1046* | 0 | *1000* | 0 | *105* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *972* | 0 | *1000* | 0 | *97.2* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42573-42573** Units: **µg/Kg** Analysis Date: **7/26/2012 03:18 PM**
Client ID: Run ID: **VMS9_120726A** SeqNo: **2039268** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 920 | 30 | 1000 | 0 | 92 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 933 | 30 | 1000 | 0 | 93.3 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 871.5 | 30 | 1000 | 0 | 87.2 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 816 | 30 | 1000 | 0 | 81.6 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 799 | 30 | 1000 | 0 | 79.9 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 855 | 30 | 1000 | 0 | 85.5 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 974 | 30 | 1000 | 0 | 97.4 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 803.5 | 30 | 1000 | 0 | 80.4 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 806 | 30 | 1000 | 0 | 80.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1007 | 30 | 1000 | 0 | 101 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 846 | 30 | 1000 | 0 | 84.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 827 | 30 | 1000 | 0 | 82.7 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 886.5 | 30 | 1000 | 0 | 88.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 880.5 | 30 | 1000 | 0 | 88 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 839 | 30 | 1000 | 0 | 83.9 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 824.5 | 30 | 1000 | 0 | 82.4 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 961.5 | 30 | 1000 | 0 | 96.2 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 886 | 30 | 1000 | 0 | 88.6 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 879 | 30 | 1000 | 0 | 87.9 | 70-125 | 0 | | | |
| 2-Butanone | 767.5 | 200 | 1000 | 0 | 76.8 | 30-160 | 0 | | | |
| 2-Hexanone | 729.5 | 30 | 1000 | 0 | 73 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 719.5 | 30 | 1000 | 0 | 72 | 45-145 | 0 | | | |
| Acetone | 783.5 | 100 | 1000 | 0 | 78.4 | 20-160 | 0 | | | B |
| Acrylonitrile | 747.5 | 100 | 1000 | 0 | 74.8 | 70-135 | 0 | | | |
| Benzene | 878 | 30 | 1000 | 0 | 87.8 | 75-125 | 0 | | | |
| Bromobenzene | 831 | 30 | 1000 | 0 | 83.1 | 65-120 | 0 | | | |
| Bromochloromethane | 855 | 30 | 1000 | 0 | 85.5 | 70-125 | 0 | | | |
| Bromodichloromethane | 776 | 30 | 1000 | 0 | 77.6 | 70-130 | 0 | | | |
| Bromoform | 810 | 30 | 1000 | 0 | 81 | 55-135 | 0 | | | |
| Bromomethane | 922.5 | 75 | 1000 | 0 | 92.2 | 30-160 | 0 | | | |
| Carbon disulfide | 892.5 | 30 | 1000 | 0 | 89.2 | 45-160 | 0 | | | |
| Carbon tetrachloride | 834 | 30 | 1000 | 0 | 83.4 | 65-135 | 0 | | | |
| Chlorobenzene | 904.5 | 30 | 1000 | 0 | 90.4 | 75-125 | 0 | | | |
| Chloroethane | 717 | 100 | 1000 | 0 | 71.7 | 40-155 | 0 | | | |
| Chloroform | 882 | 30 | 1000 | 0 | 88.2 | 70-125 | 0 | | | |
| Chloromethane | 779.5 | 100 | 1000 | 0 | 78 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 828.5 | 30 | 1000 | 0 | 82.8 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 798.5 | 30 | 1000 | 0 | 79.8 | 70-125 | 0 | | | |
| Dibromochloromethane | 785.5 | 30 | 1000 | 0 | 78.6 | 65-135 | 0 | | | |
| Dibromomethane | 845.5 | 30 | 1000 | 0 | 84.6 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 693 | 30 | 1000 | 0 | 69.3 | 35-135 | 0 | | | |
| Ethylbenzene | 960 | 30 | 1000 | 0 | 96 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 826 | 30 | 1000 | 0 | 82.6 | 70-135 | 0 | |
| Isopropylbenzene | 999.5 | 30 | 1000 | 0 | 100 | 75-130 | 0 | |
| m,p-Xylene | 1918 | 60 | 2000 | 0 | 95.9 | 80-125 | 0 | |
| Methyl tert-butyl ether | 790.5 | 30 | 1000 | 0 | 79 | 75-125 | 0 | |
| Methylene chloride | 820.5 | 30 | 1000 | 0 | 82 | 55-145 | 0 | |
| Naphthalene | 786 | 100 | 1000 | 0 | 78.6 | 40-140 | 0 | |
| n-Butylbenzene | 978 | 30 | 1000 | 0 | 97.8 | 65-140 | 0 | |
| n-Propylbenzene | 917 | 30 | 1000 | 0 | 91.7 | 65-135 | 0 | |
| o-Xylene | 945.5 | 30 | 1000 | 0 | 94.6 | 75-125 | 0 | |
| p-Isopropyltoluene | 944 | 30 | 1000 | 0 | 94.4 | 75-135 | 0 | |
| sec-Butylbenzene | 865 | 30 | 1000 | 0 | 86.5 | 65-130 | 0 | |
| Styrene | 849 | 30 | 1000 | 0 | 84.9 | 75-125 | 0 | |
| tert-Butylbenzene | 928 | 30 | 1000 | 0 | 92.8 | 65-130 | 0 | |
| Tetrachloroethene | 833 | 30 | 1000 | 0 | 83.3 | 64-140 | 0 | |
| Tetrahydrofuran | 791 | 200 | 1000 | 0 | 79.1 | 70-135 | 0 | |
| Toluene | 892 | 30 | 1000 | 0 | 89.2 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 850 | 30 | 1000 | 0 | 85 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 783 | 30 | 1000 | 0 | 78.3 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 671 | 30 | 1000 | 0 | 67.1 | 70-135 | 0 | S |
| Trichloroethene | 861 | 30 | 1000 | 0 | 86.1 | 75-125 | 0 | |
| Trichlorofluoromethane | 762.5 | 30 | 1000 | 0 | 76.2 | 25-185 | 0 | |
| Vinyl chloride | 778 | 30 | 1000 | 0 | 77.8 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *844* | 0 | *1000* | 0 | *84.4* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *854.5* | 0 | *1000* | 0 | *85.4* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *941* | 0 | *1000* | 0 | *94.1* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *896.5* | 0 | *1000* | 0 | *89.6* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42573-42573** | | | | Units: **µg/Kg** | | Analysis Date: **7/27/2012 02:37 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS6_120727A** | | | SeqNo: **2041145** | | Prep Date: **7/25/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 969 | 30 | 1000 | 0 | 96.9 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1020 | 30 | 1000 | 0 | 102 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 939.5 | 30 | 1000 | 0 | 94 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 866.5 | 30 | 1000 | 0 | 86.6 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 996 | 30 | 1000 | 0 | 99.6 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1029 | 30 | 1000 | 0 | 103 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 915.5 | 30 | 1000 | 0 | 91.6 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 913 | 30 | 1000 | 0 | 91.3 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 916 | 30 | 1000 | 0 | 91.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 981 | 30 | 1000 | 0 | 98.1 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 992 | 30 | 1000 | 0 | 99.2 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 867.5 | 30 | 1000 | 0 | 86.8 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 932.5 | 30 | 1000 | 0 | 93.2 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 994.5 | 30 | 1000 | 0 | 99.4 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 988 | 30 | 1000 | 0 | 98.8 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 988.5 | 30 | 1000 | 0 | 98.8 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1044 | 30 | 1000 | 0 | 104 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 965.5 | 30 | 1000 | 0 | 96.6 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 979.5 | 30 | 1000 | 0 | 98 | 70-125 | 0 | | | |
| 2-Butanone | 925 | 200 | 1000 | 0 | 92.5 | 30-160 | 0 | | | |
| 2-Hexanone | 879 | 30 | 1000 | 0 | 87.9 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1166 | 30 | 1000 | 0 | 117 | 45-145 | 0 | | | |
| Acetone | 878 | 100 | 1000 | 0 | 87.8 | 20-160 | 0 | | | |
| Acrylonitrile | 967.5 | 100 | 1000 | 0 | 96.8 | 70-135 | 0 | | | |
| Benzene | 998 | 30 | 1000 | 0 | 99.8 | 75-125 | 0 | | | |
| Bromobenzene | 1000 | 30 | 1000 | 0 | 100 | 65-120 | 0 | | | |
| Bromochloromethane | 994.5 | 30 | 1000 | 0 | 99.4 | 70-125 | 0 | | | |
| Bromodichloromethane | 962.5 | 30 | 1000 | 0 | 96.2 | 70-130 | 0 | | | |
| Bromoform | 1004 | 30 | 1000 | 0 | 100 | 55-135 | 0 | | | |
| Bromomethane | 1346 | 75 | 1000 | 0 | 135 | 30-160 | 0 | | | |
| Carbon disulfide | 1110 | 30 | 1000 | 0 | 111 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1066 | 30 | 1000 | 0 | 107 | 65-135 | 0 | | | |
| Chlorobenzene | 991 | 30 | 1000 | 0 | 99.1 | 75-125 | 0 | | | |
| Chloroethane | 909 | 100 | 1000 | 0 | 90.9 | 40-155 | 0 | | | |
| Chloroform | 986.5 | 30 | 1000 | 0 | 98.6 | 70-125 | 0 | | | |
| Chloromethane | 952.5 | 100 | 1000 | 0 | 95.2 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 982.5 | 30 | 1000 | 0 | 98.2 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1001 | 30 | 1000 | 0 | 100 | 70-125 | 0 | | | |
| Dibromochloromethane | 940.5 | 30 | 1000 | 0 | 94 | 65-135 | 0 | | | |
| Dibromomethane | 957 | 30 | 1000 | 0 | 95.7 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 729 | 30 | 1000 | 0 | 72.9 | 35-135 | 0 | | | |
| Ethylbenzene | 1024 | 30 | 1000 | 0 | 102 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 937 | 30 | 1000 | 0 | 93.7 | 70-135 | 0 | |
| Isopropylbenzene | 1012 | 30 | 1000 | 0 | 101 | 75-130 | 0 | |
| m,p-Xylene | 2077 | 60 | 2000 | 0 | 104 | 80-125 | 0 | |
| Methyl tert-butyl ether | 888 | 30 | 1000 | 0 | 88.8 | 75-125 | 0 | |
| Methylene chloride | 990 | 30 | 1000 | 0 | 99 | 55-145 | 0 | |
| Naphthalene | 902.5 | 100 | 1000 | 0 | 90.2 | 40-140 | 0 | |
| n-Butylbenzene | 1060 | 30 | 1000 | 0 | 106 | 65-140 | 0 | |
| n-Propylbenzene | 1000 | 30 | 1000 | 0 | 100 | 65-135 | 0 | |
| o-Xylene | 1009 | 30 | 1000 | 0 | 101 | 75-125 | 0 | |
| p-Isopropyltoluene | 1038 | 30 | 1000 | 0 | 104 | 75-135 | 0 | |
| sec-Butylbenzene | 973 | 30 | 1000 | 0 | 97.3 | 65-130 | 0 | |
| Styrene | 969 | 30 | 1000 | 0 | 96.9 | 75-125 | 0 | |
| tert-Butylbenzene | 1010 | 30 | 1000 | 0 | 101 | 65-130 | 0 | |
| Tetrachloroethene | 999.5 | 30 | 1000 | 0 | 100 | 64-140 | 0 | |
| Tetrahydrofuran | 974.5 | 200 | 1000 | 0 | 97.4 | 70-135 | 0 | |
| Toluene | 1013 | 30 | 1000 | 0 | 101 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 1060 | 30 | 1000 | 0 | 106 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 1024 | 30 | 1000 | 0 | 102 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 1608 | 30 | 1000 | 0 | 161 | 70-135 | 0 | S |
| Trichloroethene | 945 | 30 | 1000 | 0 | 94.5 | 75-125 | 0 | |
| Trichlorofluoromethane | 822 | 30 | 1000 | 0 | 82.2 | 25-185 | 0 | |
| Vinyl chloride | 887 | 30 | 1000 | 0 | 88.7 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *1030* | 0 | *1000* | 0 | *103* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1022* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1001* | 0 | *1000* | 0 | *100* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *991.5* | 0 | *1000* | 0 | *99.2* | *70-130* | 0 | |

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MS** Sample ID: **1207634-05A MS** Units: **µg/Kg** Analysis Date: **7/26/2012 01:14 AM**
Client ID: Run ID: **VMS9_120725A** SeqNo: **2036909** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1855 | 57 | 1899 | 0 | 97.7 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1784 | 57 | 1899 | 0 | 94 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1778 | 57 | 1899 | 0 | 93.6 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1666 | 57 | 1899 | 0 | 87.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1664 | 57 | 1899 | 0 | 87.6 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1639 | 57 | 1899 | 0 | 86.4 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 2036 | 57 | 1899 | 0 | 107 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1647 | 57 | 1899 | 0 | 86.8 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 1764 | 57 | 1899 | 0 | 92.9 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 2117 | 57 | 1899 | 0 | 112 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1803 | 57 | 1899 | 0 | 95 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 1557 | 57 | 1899 | 0 | 82 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1835 | 57 | 1899 | 0 | 96.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1909 | 57 | 1899 | 0 | 101 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1756 | 57 | 1899 | 0 | 92.5 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1693 | 57 | 1899 | 0 | 89.2 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 2068 | 57 | 1899 | 0 | 109 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1918 | 57 | 1899 | 0 | 101 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1877 | 57 | 1899 | 0 | 98.8 | 70-125 | 0 | | | |
| 2-Butanone | 1568 | 190 | 1899 | 0 | 82.6 | 30-160 | 0 | | | B |
| 2-Hexanone | 1437 | 57 | 1899 | 0 | 75.7 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1348 | 57 | 1899 | 0 | 71 | 45-145 | 0 | | | |
| Acetone | 1883 | 190 | 1899 | 0 | 99.2 | 20-160 | 0 | | | B |
| Acrylonitrile | 1633 | 57 | 1899 | 0 | 86 | 70-135 | 0 | | | |
| Benzene | 1800 | 57 | 1899 | 0 | 94.8 | 75-125 | 0 | | | |
| Bromobenzene | 1793 | 57 | 1899 | 0 | 94.4 | 65-120 | 0 | | | |
| Bromochloromethane | 1936 | 57 | 1899 | 0 | 102 | 70-125 | 0 | | | |
| Bromodichloromethane | 1553 | 57 | 1899 | 0 | 81.8 | 70-130 | 0 | | | |
| Bromoform | 1578 | 57 | 1899 | 0 | 83.1 | 55-135 | 0 | | | |
| Bromomethane | 1791 | 57 | 1899 | 0 | 94.4 | 30-160 | 0 | | | |
| Carbon disulfide | 1347 | 57 | 1899 | 0 | 71 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1561 | 57 | 1899 | 0 | 82.2 | 65-135 | 0 | | | |
| Chlorobenzene | 1922 | 57 | 1899 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 1424 | 190 | 1899 | 0 | 75 | 40-155 | 0 | | | |
| Chloroform | 1895 | 57 | 1899 | 0 | 99.8 | 70-125 | 0 | | | |
| Chloromethane | 2087 | 57 | 1899 | 0 | 110 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1656 | 57 | 1899 | 0 | 87.2 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1549 | 57 | 1899 | 0 | 81.6 | 70-125 | 0 | | | |
| Dibromochloromethane | 1491 | 57 | 1899 | 0 | 78.6 | 65-135 | 0 | | | |
| Dibromomethane | 1836 | 57 | 1899 | 0 | 96.7 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 1631 | 57 | 1899 | 0 | 85.9 | 35-135 | 0 | | | |
| Ethylbenzene | 2003 | 57 | 1899 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1586 | 57 | 1899 | 0 | 83.6 | 70-135 | 0 | |
| Isopropylbenzene | 2160 | 57 | 1899 | 0 | 114 | 75-130 | 0 | |
| m,p-Xylene | 4112 | 110 | 3797 | 0 | 108 | 80-125 | 0 | |
| Methyl tert-butyl ether | 1525 | 57 | 1899 | 0 | 80.4 | 75-125 | 0 | |
| Methylene chloride | 1554 | 57 | 1899 | 0 | 81.8 | 55-145 | 0 | |
| Naphthalene | 1653 | 190 | 1899 | 0 | 87 | 40-140 | 0 | |
| n-Butylbenzene | 2013 | 57 | 1899 | 0 | 106 | 65-140 | 0 | |
| n-Propylbenzene | 1972 | 57 | 1899 | 0 | 104 | 65-135 | 0 | |
| o-Xylene | 2069 | 57 | 1899 | 0 | 109 | 75-125 | 0 | |
| p-Isopropyltoluene | 2010 | 57 | 1899 | 0 | 106 | 75-135 | 0 | |
| sec-Butylbenzene | 1790 | 57 | 1899 | 0 | 94.3 | 65-130 | 0 | |
| Styrene | 1719 | 57 | 1899 | 0 | 90.6 | 75-125 | 0 | |
| tert-Butylbenzene | 1954 | 57 | 1899 | 0 | 103 | 65-130 | 0 | |
| Tetrachloroethene | 1634 | 57 | 1899 | 0 | 86 | 64-140 | 0 | |
| Tetrahydrofuran | 1590 | 190 | 1899 | 0 | 83.8 | 70-135 | 0 | |
| Toluene | 1741 | 57 | 1899 | 0 | 91.7 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 1719 | 57 | 1899 | 0 | 90.6 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 1368 | 57 | 1899 | 0 | 72 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 1164 | 57 | 1899 | 0 | 61.3 | 70-135 | 0 | S |
| Trichloroethene | 1713 | 57 | 1899 | 0 | 90.2 | 75-125 | 0 | |
| Trichlorofluoromethane | 769.9 | 57 | 1899 | 0 | 40.6 | 25-185 | 0 | |
| Vinyl chloride | 1090 | 57 | 1899 | 0 | 57.4 | 60-125 | 0 | S |
| *Surr: 1,2-Dichloroethane-d4* | *1732* | 0 | *1899* | 0 | *91.2* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1782* | 0 | *1899* | 0 | *93.8* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1906* | 0 | *1899* | 0 | *100* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1664* | 0 | *1899* | 0 | *87.6* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1207634-05A MSD** Units: **µg/Kg** Analysis Date: **7/26/2012 01:39 AM**
Client ID: Run ID: **VMS9_120725A** SeqNo: **2036910** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1837 | 57 | 1899 | 0 | 96.8 | 75-125 | 1855 | 0.977 | 30 | |
| 1,1,1-Trichloroethane | 1644 | 57 | 1899 | 0 | 86.6 | 70-135 | 1784 | 8.14 | 30 | |
| 1,1,2,2-Tetrachloroethane | 1686 | 57 | 1899 | 0 | 88.8 | 55-130 | 1778 | 5.32 | 30 | |
| 1,1,2-Trichloroethane | 1656 | 57 | 1899 | 0 | 87.2 | 60-125 | 1666 | 0.629 | 30 | |
| 1,1-Dichloroethane | 1683 | 57 | 1899 | 0 | 88.6 | 75-125 | 1664 | 1.13 | 30 | |
| 1,1-Dichloroethene | 1650 | 57 | 1899 | 0 | 86.9 | 65-135 | 1639 | 0.635 | 30 | |
| 1,2,3-Trichlorobenzene | 2214 | 57 | 1899 | 0 | 117 | 60-135 | 2036 | 8.35 | 30 | |
| 1,2,3-Trichloropropane | 1549 | 57 | 1899 | 0 | 81.6 | 65-130 | 1647 | 6.12 | 30 | |
| 1,2,3-Trimethylbenzene | 1809 | 57 | 1899 | 0 | 95.3 | 65-135 | 1764 | 2.55 | 30 | |
| 1,2,4-Trichlorobenzene | 2255 | 57 | 1899 | 0 | 119 | 65-130 | 2117 | 6.3 | 30 | |
| 1,2,4-Trimethylbenzene | 1733 | 57 | 1899 | 0 | 91.3 | 65-135 | 1803 | 3.92 | 30 | |
| 1,2-Dibromo-3-chloropropane | 1619 | 57 | 1899 | 0 | 85.2 | 40-135 | 1557 | 3.89 | 30 | |
| 1,2-Dibromoethane | 1829 | 57 | 1899 | 0 | 96.4 | 70-125 | 1835 | 0.311 | 30 | |
| 1,2-Dichlorobenzene | 1969 | 57 | 1899 | 0 | 104 | 75-120 | 1909 | 3.08 | 30 | |
| 1,2-Dichloroethane | 1685 | 57 | 1899 | 0 | 88.8 | 70-135 | 1756 | 4.14 | 30 | |
| 1,2-Dichloropropane | 1631 | 57 | 1899 | 0 | 85.9 | 70-120 | 1693 | 3.71 | 30 | |
| 1,3,5-Trimethylbenzene | 2008 | 57 | 1899 | 0 | 106 | 65-135 | 2068 | 2.94 | 30 | |
| 1,3-Dichlorobenzene | 1958 | 57 | 1899 | 0 | 103 | 70-125 | 1918 | 2.11 | 30 | |
| 1,4-Dichlorobenzene | 1915 | 57 | 1899 | 0 | 101 | 70-125 | 1877 | 2 | 30 | |
| 2-Butanone | 1696 | 190 | 1899 | 0 | 89.4 | 30-160 | 1568 | 7.85 | 30 | B |
| 2-Hexanone | 1367 | 57 | 1899 | 0 | 72 | 45-145 | 1437 | 5.01 | 30 | |
| 4-Methyl-2-pentanone | 1385 | 57 | 1899 | 0 | 73 | 45-145 | 1348 | 2.71 | 30 | |
| Acetone | 1978 | 190 | 1899 | 0 | 104 | 20-160 | 1883 | 4.92 | 30 | B |
| Acrylonitrile | 1600 | 57 | 1899 | 0 | 84.2 | 70-135 | 1633 | 2.06 | 30 | |
| Benzene | 1736 | 57 | 1899 | 0 | 91.4 | 75-125 | 1800 | 3.6 | 30 | |
| Bromobenzene | 1718 | 57 | 1899 | 0 | 90.5 | 65-120 | 1793 | 4.27 | 30 | |
| Bromochloromethane | 1838 | 57 | 1899 | 0 | 96.8 | 70-125 | 1936 | 5.18 | 30 | |
| Bromodichloromethane | 1514 | 57 | 1899 | 0 | 79.8 | 70-130 | 1553 | 2.54 | 30 | |
| Bromoform | 1492 | 57 | 1899 | 0 | 78.6 | 55-135 | 1578 | 5.57 | 30 | |
| Bromomethane | 1828 | 57 | 1899 | 0 | 96.3 | 30-160 | 1791 | 2.05 | 30 | |
| Carbon disulfide | 1379 | 57 | 1899 | 0 | 72.6 | 45-160 | 1347 | 2.37 | 30 | |
| Carbon tetrachloride | 1460 | 57 | 1899 | 0 | 76.9 | 65-135 | 1561 | 6.66 | 30 | |
| Chlorobenzene | 1919 | 57 | 1899 | 0 | 101 | 75-125 | 1922 | 0.148 | 30 | |
| Chloroethane | 1456 | 190 | 1899 | 0 | 76.7 | 40-155 | 1424 | 2.24 | 30 | |
| Chloroform | 1772 | 57 | 1899 | 0 | 93.4 | 70-125 | 1895 | 6.68 | 30 | |
| Chloromethane | 2024 | 57 | 1899 | 0 | 107 | 50-130 | 2087 | 3.05 | 30 | |
| cis-1,2-Dichloroethene | 1752 | 57 | 1899 | 0 | 92.3 | 65-125 | 1656 | 5.63 | 30 | |
| cis-1,3-Dichloropropene | 1507 | 57 | 1899 | 0 | 79.4 | 70-125 | 1549 | 2.73 | 30 | |
| Dibromochloromethane | 1492 | 57 | 1899 | 0 | 78.6 | 65-135 | 1491 | 0.0636 | 30 | |
| Dibromomethane | 1759 | 57 | 1899 | 0 | 92.6 | 75-130 | 1836 | 4.28 | 30 | |
| Dichlorodifluoromethane | 1534 | 57 | 1899 | 0 | 80.8 | 35-135 | 1631 | 6.12 | 30 | |
| Ethylbenzene | 2027 | 57 | 1899 | 0 | 107 | 75-125 | 2003 | 1.18 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42573** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1620 | 57 | 1899 | 0 | 85.4 | 70-135 | 1586 | 2.13 | 30 | |
| Isopropylbenzene | 2120 | 57 | 1899 | 0 | 112 | 75-130 | 2160 | 1.86 | 30 | |
| m,p-Xylene | 4157 | 110 | 3797 | 0 | 109 | 80-125 | 4112 | 1.08 | 30 | |
| Methyl tert-butyl ether | 1566 | 57 | 1899 | 0 | 82.5 | 75-125 | 1525 | 2.64 | 30 | |
| Methylene chloride | 1551 | 57 | 1899 | 0 | 81.7 | 55-145 | 1554 | 0.183 | 30 | |
| Naphthalene | 1747 | 190 | 1899 | 0 | 92 | 40-140 | 1653 | 5.53 | 30 | |
| n-Butylbenzene | 2076 | 57 | 1899 | 0 | 109 | 65-140 | 2013 | 3.06 | 30 | |
| n-Propylbenzene | 1900 | 57 | 1899 | 0 | 100 | 65-135 | 1972 | 3.73 | 30 | |
| o-Xylene | 2060 | 57 | 1899 | 0 | 108 | 75-125 | 2069 | 0.46 | 30 | |
| p-Isopropyltoluene | 2068 | 57 | 1899 | 0 | 109 | 75-135 | 2010 | 2.84 | 30 | |
| sec-Butylbenzene | 1714 | 57 | 1899 | 0 | 90.3 | 65-130 | 1790 | 4.33 | 30 | |
| Styrene | 1668 | 57 | 1899 | 0 | 87.8 | 75-125 | 1719 | 3.03 | 30 | |
| tert-Butylbenzene | 1862 | 57 | 1899 | 0 | 98.1 | 65-130 | 1954 | 4.78 | 30 | |
| Tetrachloroethene | 1634 | 57 | 1899 | 0 | 86 | 64-140 | 1634 | 0 | 30 | |
| Tetrahydrofuran | 1434 | 190 | 1899 | 0 | 75.6 | 70-135 | 1590 | 10.3 | 30 | |
| Toluene | 1783 | 57 | 1899 | 0 | 93.9 | 70-125 | 1741 | 2.37 | 30 | |
| trans-1,2-Dichloroethene | 1718 | 57 | 1899 | 0 | 90.5 | 65-135 | 1719 | 0.0552 | 30 | |
| trans-1,3-Dichloropropene | 1411 | 57 | 1899 | 0 | 74.3 | 65-125 | 1368 | 3.07 | 30 | |
| trans-1,4-Dichloro-2-butene | 1062 | 57 | 1899 | 0 | 56 | 70-135 | 1164 | 9.13 | 30 | S |
| Trichloroethene | 1621 | 57 | 1899 | 0 | 85.4 | 75-125 | 1713 | 5.52 | 30 | |
| Trichlorofluoromethane | 757.5 | 57 | 1899 | 0 | 39.9 | 25-185 | 769.9 | 1.62 | 30 | |
| Vinyl chloride | 1607 | 57 | 1899 | 0 | 84.6 | 60-125 | 1090 | 38.4 | 30 | R |
| *Surr: 1,2-Dichloroethane-d4* | *1676* | 0 | *1899* | 0 | *88.3* | *70-130* | 1732 | *3.29* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *1734* | 0 | *1899* | 0 | *91.4* | *70-130* | 1782 | *2.7* | *30* | |
| *Surr: Dibromofluoromethane* | *1806* | 0 | *1899* | 0 | *95.1* | *70-130* | 1906 | *5.42* | *30* | |
| *Surr: Toluene-d8* | *1711* | 0 | *1899* | 0 | *90.1* | *70-130* | 1664 | *2.76* | *30* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207648-01A | 1207648-02A | 1207648-03A |
| 1207648-04A | 1207648-06A | 1207648-07A |
| 1207648-08A | 1207648-09A | 1207648-10A |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42604-42604** Units: **µg/Kg** Analysis Date: **7/26/2012 12:32 PM**
Client ID: Run ID: **VMS7_120726A** SeqNo: **2038643** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 156 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 18 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *968* | 0 | *1000* | 0 | *96.8* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1012* | 0 | *1000* | 0 | *101* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *919.5* | 0 | *1000* | 0 | *92* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *971.5* | 0 | *1000* | 0 | *97.2* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42604-42604** Units: **µg/Kg** Analysis Date: **7/26/2012 04:34 PM**
Client ID: Run ID: **VMS9_120726A** SeqNo: **2039239** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | 86 | 200 | | | | | | | | J |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 188.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *938* | 0 | *1000* | 0 | *93.8* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *879.5* | 0 | *1000* | 0 | *88* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *947.5* | 0 | *1000* | 0 | *94.8* | *70-130* | 0 |
| *Surr: Toluene-d8* | *936.5* | 0 | *1000* | 0 | *93.6* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42604-42604** Units: **µg/Kg** Analysis Date: **7/27/2012 12:11 PM**
Client ID: Run ID: **VMS7_120727A** SeqNo: **2040765** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | ND | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *993* | 0 | *1000* | 0 | *99.3* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *927.5* | 0 | *1000* | 0 | *92.8* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *976.5* | 0 | *1000* | 0 | *97.6* | *70-130* | 0 |
| *Surr: Toluene-d8* | *974* | 0 | *1000* | 0 | *97.4* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42604-42604** Units: **µg/Kg** Analysis Date: **7/30/2012 04:22 PM**
Client ID: Run ID: **VMS9_120730A** SeqNo: **2042085** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 208 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *970.5* | 0 | *1000* | 0 | *97* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *932.5* | 0 | *1000* | 0 | *93.2* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1012* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: Toluene-d8* | *993.5* | 0 | *1000* | 0 | *99.4* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42604-42604** Units: **µg/Kg** Analysis Date: **7/31/2012 04:09 PM**
Client ID: Run ID: **VMS6_120731A** SeqNo: **2042803** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 190.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1054* | 0 | *1000* | 0 | *105* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *966.5* | 0 | *1000* | 0 | *96.6* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *975.5* | 0 | *1000* | 0 | *97.6* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1008* | 0 | *1000* | 0 | *101* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42604-42604** | | | | Units: **µg/Kg** | | | Analysis Date: **7/26/2012 11:16 AM** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS7_120726A** | | | SeqNo: **2038641** | | Prep Date: **7/26/2012** | | DF: **1** | |

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 995 | 30 | 1000 | 0 | 99.5 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1019 | 30 | 1000 | 0 | 102 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 958.5 | 30 | 1000 | 0 | 95.8 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 943.5 | 30 | 1000 | 0 | 94.4 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 944.5 | 30 | 1000 | 0 | 94.4 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 999 | 30 | 1000 | 0 | 99.9 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1094 | 30 | 1000 | 0 | 109 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 968.5 | 30 | 1000 | 0 | 96.8 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 932 | 30 | 1000 | 0 | 93.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1150 | 30 | 1000 | 0 | 115 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1062 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 910 | 30 | 1000 | 0 | 91 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1014 | 30 | 1000 | 0 | 101 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1040 | 30 | 1000 | 0 | 104 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 969 | 30 | 1000 | 0 | 96.9 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 985 | 30 | 1000 | 0 | 98.5 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1080 | 30 | 1000 | 0 | 108 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1039 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 992 | 30 | 1000 | 0 | 99.2 | 70-125 | 0 | | | |
| 2-Butanone | 980 | 200 | 1000 | 0 | 98 | 30-160 | 0 | | | |
| 2-Hexanone | 992 | 30 | 1000 | 0 | 99.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1345 | 30 | 1000 | 0 | 134 | 45-145 | 0 | | | |
| Acetone | 1195 | 100 | 1000 | 0 | 120 | 20-160 | 0 | | | B |
| Acrylonitrile | 859 | 100 | 1000 | 0 | 85.9 | 70-135 | 0 | | | |
| Benzene | 995 | 30 | 1000 | 0 | 99.5 | 75-125 | 0 | | | |
| Bromobenzene | 1018 | 30 | 1000 | 0 | 102 | 65-120 | 0 | | | |
| Bromochloromethane | 1026 | 30 | 1000 | 0 | 103 | 70-125 | 0 | | | |
| Bromodichloromethane | 1000 | 30 | 1000 | 0 | 100 | 70-130 | 0 | | | |
| Bromoform | 934.5 | 30 | 1000 | 0 | 93.4 | 55-135 | 0 | | | |
| Bromomethane | 1270 | 75 | 1000 | 0 | 127 | 30-160 | 0 | | | |
| Carbon disulfide | 1110 | 30 | 1000 | 0 | 111 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1070 | 30 | 1000 | 0 | 107 | 65-135 | 0 | | | |
| Chlorobenzene | 1012 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 971.5 | 100 | 1000 | 0 | 97.2 | 40-155 | 0 | | | |
| Chloroform | 961.5 | 30 | 1000 | 0 | 96.2 | 70-125 | 0 | | | |
| Chloromethane | 959 | 100 | 1000 | 0 | 95.9 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 977.5 | 30 | 1000 | 0 | 97.8 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 971.5 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| Dibromochloromethane | 921.5 | 30 | 1000 | 0 | 92.2 | 65-135 | 0 | | | |
| Dibromomethane | 952.5 | 30 | 1000 | 0 | 95.2 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 827.5 | 30 | 1000 | 0 | 82.8 | 35-135 | 0 | | | |
| Ethylbenzene | 1044 | 30 | 1000 | 0 | 104 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 933 | 30 | 1000 | 0 | 93.3 | 70-135 | 0 |
| Isopropylbenzene | 1056 | 30 | 1000 | 0 | 106 | 75-130 | 0 |
| m,p-Xylene | 2081 | 60 | 2000 | 0 | 104 | 80-125 | 0 |
| Methyl tert-butyl ether | 967 | 30 | 1000 | 0 | 96.7 | 75-125 | 0 |
| Methylene chloride | 927.5 | 30 | 1000 | 0 | 92.8 | 55-145 | 0 |
| Naphthalene | 1023 | 100 | 1000 | 0 | 102 | 40-140 | 0 |
| n-Butylbenzene | 1108 | 30 | 1000 | 0 | 111 | 65-140 | 0 |
| n-Propylbenzene | 1042 | 30 | 1000 | 0 | 104 | 65-135 | 0 |
| o-Xylene | 1022 | 30 | 1000 | 0 | 102 | 75-125 | 0 |
| p-Isopropyltoluene | 1072 | 30 | 1000 | 0 | 107 | 75-135 | 0 |
| sec-Butylbenzene | 1108 | 30 | 1000 | 0 | 111 | 65-130 | 0 |
| Styrene | 1060 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| tert-Butylbenzene | 1047 | 30 | 1000 | 0 | 105 | 65-130 | 0 |
| Tetrachloroethene | 1099 | 30 | 1000 | 0 | 110 | 64-140 | 0 |
| Tetrahydrofuran | 910.5 | 200 | 1000 | 0 | 91 | 70-135 | 0 |
| Toluene | 1028 | 30 | 1000 | 0 | 103 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1004 | 30 | 1000 | 0 | 100 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1012 | 30 | 1000 | 0 | 101 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 875.5 | 30 | 1000 | 0 | 87.6 | 70-135 | 0 |
| Trichloroethene | 981 | 30 | 1000 | 0 | 98.1 | 75-125 | 0 |
| Trichlorofluoromethane | 909.5 | 30 | 1000 | 0 | 91 | 25-185 | 0 |
| Vinyl chloride | 832 | 30 | 1000 | 0 | 83.2 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *946* | 0 | *1000* | 0 | *94.6* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *977.5* | 0 | *1000* | 0 | *97.8* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *966* | 0 | *1000* | 0 | *96.6* | *70-130* | 0 |
| *Surr: Toluene-d8* | *979.5* | 0 | *1000* | 0 | *98* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42604-42604** | | | | Units: **µg/Kg** | | | Analysis Date: **7/26/2012 03:18 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS9_120726A** | | | SeqNo: **2039238** | | Prep Date: **7/26/2012** | | DF: **1** | | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 920 | 30 | 1000 | 0 | 92 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 933 | 30 | 1000 | 0 | 93.3 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 871.5 | 30 | 1000 | 0 | 87.2 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 816 | 30 | 1000 | 0 | 81.6 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 799 | 30 | 1000 | 0 | 79.9 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 855 | 30 | 1000 | 0 | 85.5 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 974 | 30 | 1000 | 0 | 97.4 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 803.5 | 30 | 1000 | 0 | 80.4 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 806 | 30 | 1000 | 0 | 80.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1007 | 30 | 1000 | 0 | 101 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 846 | 30 | 1000 | 0 | 84.6 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 827 | 30 | 1000 | 0 | 82.7 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 886.5 | 30 | 1000 | 0 | 88.6 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 880.5 | 30 | 1000 | 0 | 88 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 839 | 30 | 1000 | 0 | 83.9 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 824.5 | 30 | 1000 | 0 | 82.4 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 961.5 | 30 | 1000 | 0 | 96.2 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 886 | 30 | 1000 | 0 | 88.6 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 879 | 30 | 1000 | 0 | 87.9 | 70-125 | 0 | | | |
| 2-Butanone | 767.5 | 200 | 1000 | 0 | 76.8 | 30-160 | 0 | | | |
| 2-Hexanone | 729.5 | 30 | 1000 | 0 | 73 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 719.5 | 30 | 1000 | 0 | 72 | 45-145 | 0 | | | |
| Acetone | 783.5 | 100 | 1000 | 0 | 78.4 | 20-160 | 0 | | | B |
| Acrylonitrile | 747.5 | 100 | 1000 | 0 | 74.8 | 70-135 | 0 | | | |
| Benzene | 878 | 30 | 1000 | 0 | 87.8 | 75-125 | 0 | | | |
| Bromobenzene | 831 | 30 | 1000 | 0 | 83.1 | 65-120 | 0 | | | |
| Bromochloromethane | 855 | 30 | 1000 | 0 | 85.5 | 70-125 | 0 | | | |
| Bromodichloromethane | 776 | 30 | 1000 | 0 | 77.6 | 70-130 | 0 | | | |
| Bromoform | 810 | 30 | 1000 | 0 | 81 | 55-135 | 0 | | | |
| Bromomethane | 922.5 | 75 | 1000 | 0 | 92.2 | 30-160 | 0 | | | |
| Carbon disulfide | 892.5 | 30 | 1000 | 0 | 89.2 | 45-160 | 0 | | | |
| Carbon tetrachloride | 834 | 30 | 1000 | 0 | 83.4 | 65-135 | 0 | | | |
| Chlorobenzene | 904.5 | 30 | 1000 | 0 | 90.4 | 75-125 | 0 | | | |
| Chloroethane | 717 | 100 | 1000 | 0 | 71.7 | 40-155 | 0 | | | |
| Chloroform | 882 | 30 | 1000 | 0 | 88.2 | 70-125 | 0 | | | |
| Chloromethane | 779.5 | 100 | 1000 | 0 | 78 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 828.5 | 30 | 1000 | 0 | 82.8 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 798.5 | 30 | 1000 | 0 | 79.8 | 70-125 | 0 | | | |
| Dibromochloromethane | 785.5 | 30 | 1000 | 0 | 78.6 | 65-135 | 0 | | | |
| Dibromomethane | 845.5 | 30 | 1000 | 0 | 84.6 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 693 | 30 | 1000 | 0 | 69.3 | 35-135 | 0 | | | |
| Ethylbenzene | 960 | 30 | 1000 | 0 | 96 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 826 | 30 | 1000 | 0 | 82.6 | 70-135 | 0 | |
| Isopropylbenzene | 999.5 | 30 | 1000 | 0 | 100 | 75-130 | 0 | |
| m,p-Xylene | 1918 | 60 | 2000 | 0 | 95.9 | 80-125 | 0 | |
| Methyl tert-butyl ether | 790.5 | 30 | 1000 | 0 | 79 | 75-125 | 0 | |
| Methylene chloride | 820.5 | 30 | 1000 | 0 | 82 | 55-145 | 0 | |
| Naphthalene | 786 | 100 | 1000 | 0 | 78.6 | 40-140 | 0 | |
| n-Butylbenzene | 978 | 30 | 1000 | 0 | 97.8 | 65-140 | 0 | |
| n-Propylbenzene | 917 | 30 | 1000 | 0 | 91.7 | 65-135 | 0 | |
| o-Xylene | 945.5 | 30 | 1000 | 0 | 94.6 | 75-125 | 0 | |
| p-Isopropyltoluene | 944 | 30 | 1000 | 0 | 94.4 | 75-135 | 0 | |
| sec-Butylbenzene | 865 | 30 | 1000 | 0 | 86.5 | 65-130 | 0 | |
| Styrene | 849 | 30 | 1000 | 0 | 84.9 | 75-125 | 0 | |
| tert-Butylbenzene | 928 | 30 | 1000 | 0 | 92.8 | 65-130 | 0 | |
| Tetrachloroethene | 833 | 30 | 1000 | 0 | 83.3 | 64-140 | 0 | |
| Tetrahydrofuran | 791 | 200 | 1000 | 0 | 79.1 | 70-135 | 0 | |
| Toluene | 892 | 30 | 1000 | 0 | 89.2 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 850 | 30 | 1000 | 0 | 85 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 783 | 30 | 1000 | 0 | 78.3 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 671 | 30 | 1000 | 0 | 67.1 | 70-135 | 0 | S |
| Trichloroethene | 861 | 30 | 1000 | 0 | 86.1 | 75-125 | 0 | |
| Trichlorofluoromethane | 762.5 | 30 | 1000 | 0 | 76.2 | 25-185 | 0 | |
| Vinyl chloride | 778 | 30 | 1000 | 0 | 77.8 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *844* | 0 | *1000* | 0 | *84.4* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *854.5* | 0 | *1000* | 0 | *85.4* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *941* | 0 | *1000* | 0 | *94.1* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *896.5* | 0 | *1000* | 0 | *89.6* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42604-42604** | | | | Units: **µg/Kg** | | Analysis Date: **7/27/2012 10:55 AM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS7_120727A** | | | SeqNo: **2040764** | | Prep Date: **7/26/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 984 | 30 | 1000 | 0 | 98.4 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1020 | 30 | 1000 | 0 | 102 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 911 | 30 | 1000 | 0 | 91.1 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 921.5 | 30 | 1000 | 0 | 92.2 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 941.5 | 30 | 1000 | 0 | 94.2 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1002 | 30 | 1000 | 0 | 100 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1048 | 30 | 1000 | 0 | 105 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 931 | 30 | 1000 | 0 | 93.1 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 917 | 30 | 1000 | 0 | 91.7 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1117 | 30 | 1000 | 0 | 112 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1052 | 30 | 1000 | 0 | 105 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 849.5 | 30 | 1000 | 0 | 85 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 974.5 | 30 | 1000 | 0 | 97.4 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1010 | 30 | 1000 | 0 | 101 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 947 | 30 | 1000 | 0 | 94.7 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 977 | 30 | 1000 | 0 | 97.7 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1065 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1029 | 30 | 1000 | 0 | 103 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 972 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| 2-Butanone | 895.5 | 200 | 1000 | 0 | 89.6 | 30-160 | 0 | | | |
| 2-Hexanone | 922 | 30 | 1000 | 0 | 92.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1246 | 30 | 1000 | 0 | 125 | 45-145 | 0 | | | |
| Acetone | 1082 | 100 | 1000 | 0 | 108 | 20-160 | 0 | | | |
| Acrylonitrile | 797.5 | 100 | 1000 | 0 | 79.8 | 70-135 | 0 | | | |
| Benzene | 991 | 30 | 1000 | 0 | 99.1 | 75-125 | 0 | | | |
| Bromobenzene | 1004 | 30 | 1000 | 0 | 100 | 65-120 | 0 | | | |
| Bromochloromethane | 1016 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| Bromodichloromethane | 983.5 | 30 | 1000 | 0 | 98.4 | 70-130 | 0 | | | |
| Bromoform | 897 | 30 | 1000 | 0 | 89.7 | 55-135 | 0 | | | |
| Bromomethane | 1446 | 75 | 1000 | 0 | 145 | 30-160 | 0 | | | |
| Carbon disulfide | 1134 | 30 | 1000 | 0 | 113 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1056 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| Chlorobenzene | 1001 | 30 | 1000 | 0 | 100 | 75-125 | 0 | | | |
| Chloroethane | 926 | 100 | 1000 | 0 | 92.6 | 40-155 | 0 | | | |
| Chloroform | 962 | 30 | 1000 | 0 | 96.2 | 70-125 | 0 | | | |
| Chloromethane | 1013 | 100 | 1000 | 0 | 101 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 973.5 | 30 | 1000 | 0 | 97.4 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 951 | 30 | 1000 | 0 | 95.1 | 70-125 | 0 | | | |
| Dibromochloromethane | 886 | 30 | 1000 | 0 | 88.6 | 65-135 | 0 | | | |
| Dibromomethane | 920.5 | 30 | 1000 | 0 | 92 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 749.5 | 30 | 1000 | 0 | 75 | 35-135 | 0 | | | |
| Ethylbenzene | 1019 | 30 | 1000 | 0 | 102 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 917.5 | 30 | 1000 | 0 | 91.8 | 70-135 | 0 |
| Isopropylbenzene | 1043 | 30 | 1000 | 0 | 104 | 75-130 | 0 |
| m,p-Xylene | 2074 | 60 | 2000 | 0 | 104 | 80-125 | 0 |
| Methyl tert-butyl ether | 919 | 30 | 1000 | 0 | 91.9 | 75-125 | 0 |
| Methylene chloride | 949.5 | 30 | 1000 | 0 | 95 | 55-145 | 0 |
| Naphthalene | 967 | 100 | 1000 | 0 | 96.7 | 40-140 | 0 |
| n-Butylbenzene | 1118 | 30 | 1000 | 0 | 112 | 65-140 | 0 |
| n-Propylbenzene | 1028 | 30 | 1000 | 0 | 103 | 65-135 | 0 |
| o-Xylene | 1012 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| p-Isopropyltoluene | 1082 | 30 | 1000 | 0 | 108 | 75-135 | 0 |
| sec-Butylbenzene | 1100 | 30 | 1000 | 0 | 110 | 65-130 | 0 |
| Styrene | 1048 | 30 | 1000 | 0 | 105 | 75-125 | 0 |
| tert-Butylbenzene | 1048 | 30 | 1000 | 0 | 105 | 65-130 | 0 |
| Tetrachloroethene | 1094 | 30 | 1000 | 0 | 109 | 64-140 | 0 |
| Tetrahydrofuran | 820.5 | 200 | 1000 | 0 | 82 | 70-135 | 0 |
| Toluene | 1016 | 30 | 1000 | 0 | 102 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 994.5 | 30 | 1000 | 0 | 99.4 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 998.5 | 30 | 1000 | 0 | 99.8 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 831 | 30 | 1000 | 0 | 83.1 | 70-135 | 0 |
| Trichloroethene | 961.5 | 30 | 1000 | 0 | 96.2 | 75-125 | 0 |
| Trichlorofluoromethane | 906 | 30 | 1000 | 0 | 90.6 | 25-185 | 0 |
| Vinyl chloride | 835.5 | 30 | 1000 | 0 | 83.6 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *983* | 0 | *1000* | 0 | *98.3* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *972* | 0 | *1000* | 0 | *97.2* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1013* | 0 | *1000* | 0 | *101* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1014* | 0 | *1000* | 0 | *101* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42604-42604** | | | | Units: **µg/Kg** | | Analysis Date: **7/30/2012 03:06 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS9_120730A** | | | SeqNo: **2042084** | | Prep Date: **7/26/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 1040 | 30 | 1000 | 0 | 104 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 996.5 | 30 | 1000 | 0 | 99.6 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 972.5 | 30 | 1000 | 0 | 97.2 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 877.5 | 30 | 1000 | 0 | 87.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 850.5 | 30 | 1000 | 0 | 85 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 917.5 | 30 | 1000 | 0 | 91.8 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1017 | 30 | 1000 | 0 | 102 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 834.5 | 30 | 1000 | 0 | 83.4 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 908.5 | 30 | 1000 | 0 | 90.8 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1062 | 30 | 1000 | 0 | 106 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 928.5 | 30 | 1000 | 0 | 92.8 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 871 | 30 | 1000 | 0 | 87.1 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 958 | 30 | 1000 | 0 | 95.8 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 995 | 30 | 1000 | 0 | 99.5 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 850.5 | 30 | 1000 | 0 | 85 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 878 | 30 | 1000 | 0 | 87.8 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1057 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1016 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1008 | 30 | 1000 | 0 | 101 | 70-125 | 0 | | | |
| 2-Butanone | 713 | 200 | 1000 | 0 | 71.3 | 30-160 | 0 | | | |
| 2-Hexanone | 697 | 30 | 1000 | 0 | 69.7 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 701 | 30 | 1000 | 0 | 70.1 | 45-145 | 0 | | | |
| Acetone | 760.5 | 100 | 1000 | 0 | 76 | 20-160 | 0 | | | B |
| Acrylonitrile | 754.5 | 100 | 1000 | 0 | 75.4 | 70-135 | 0 | | | |
| Benzene | 949 | 30 | 1000 | 0 | 94.9 | 75-125 | 0 | | | |
| Bromobenzene | 908.5 | 30 | 1000 | 0 | 90.8 | 65-120 | 0 | | | |
| Bromochloromethane | 885 | 30 | 1000 | 0 | 88.5 | 70-125 | 0 | | | |
| Bromodichloromethane | 850 | 30 | 1000 | 0 | 85 | 70-130 | 0 | | | |
| Bromoform | 888.5 | 30 | 1000 | 0 | 88.8 | 55-135 | 0 | | | |
| Bromomethane | 1045 | 75 | 1000 | 0 | 104 | 30-160 | 0 | | | |
| Carbon disulfide | 994.5 | 30 | 1000 | 0 | 99.4 | 45-160 | 0 | | | |
| Carbon tetrachloride | 936 | 30 | 1000 | 0 | 93.6 | 65-135 | 0 | | | |
| Chlorobenzene | 1002 | 30 | 1000 | 0 | 100 | 75-125 | 0 | | | |
| Chloroethane | 823 | 100 | 1000 | 0 | 82.3 | 40-155 | 0 | | | |
| Chloroform | 887.5 | 30 | 1000 | 0 | 88.8 | 70-125 | 0 | | | |
| Chloromethane | 832 | 100 | 1000 | 0 | 83.2 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 871 | 30 | 1000 | 0 | 87.1 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 856.5 | 30 | 1000 | 0 | 85.6 | 70-125 | 0 | | | |
| Dibromochloromethane | 854.5 | 30 | 1000 | 0 | 85.4 | 65-135 | 0 | | | |
| Dibromomethane | 923.5 | 30 | 1000 | 0 | 92.4 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 702 | 30 | 1000 | 0 | 70.2 | 35-135 | 0 | | | |
| Ethylbenzene | 1053 | 30 | 1000 | 0 | 105 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 965 | 30 | 1000 | 0 | 96.5 | 70-135 | 0 | |
| Isopropylbenzene | 1114 | 30 | 1000 | 0 | 111 | 75-130 | 0 | |
| m,p-Xylene | 2128 | 60 | 2000 | 0 | 106 | 80-125 | 0 | |
| Methyl tert-butyl ether | 829 | 30 | 1000 | 0 | 82.9 | 75-125 | 0 | |
| Methylene chloride | 861.5 | 30 | 1000 | 0 | 86.2 | 55-145 | 0 | |
| Naphthalene | 756 | 100 | 1000 | 0 | 75.6 | 40-140 | 0 | |
| n-Butylbenzene | 1064 | 30 | 1000 | 0 | 106 | 65-140 | 0 | |
| n-Propylbenzene | 1006 | 30 | 1000 | 0 | 101 | 65-135 | 0 | |
| o-Xylene | 1065 | 30 | 1000 | 0 | 106 | 75-125 | 0 | |
| p-Isopropyltoluene | 1074 | 30 | 1000 | 0 | 107 | 75-135 | 0 | |
| sec-Butylbenzene | 949 | 30 | 1000 | 0 | 94.9 | 65-130 | 0 | |
| Styrene | 933 | 30 | 1000 | 0 | 93.3 | 75-125 | 0 | |
| tert-Butylbenzene | 1018 | 30 | 1000 | 0 | 102 | 65-130 | 0 | |
| Tetrachloroethene | 807 | 30 | 1000 | 0 | 80.7 | 64-140 | 0 | |
| Tetrahydrofuran | 759.5 | 200 | 1000 | 0 | 76 | 70-135 | 0 | |
| Toluene | 935.5 | 30 | 1000 | 0 | 93.6 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 906 | 30 | 1000 | 0 | 90.6 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 817.5 | 30 | 1000 | 0 | 81.8 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 680.5 | 30 | 1000 | 0 | 68 | 70-135 | 0 | S |
| Trichloroethene | 905.5 | 30 | 1000 | 0 | 90.6 | 75-125 | 0 | |
| Trichlorofluoromethane | 825 | 30 | 1000 | 0 | 82.5 | 25-185 | 0 | |
| Vinyl chloride | 835.5 | 30 | 1000 | 0 | 83.6 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *905.5* | 0 | *1000* | 0 | *90.6* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *965* | 0 | *1000* | 0 | *96.5* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *960.5* | 0 | *1000* | 0 | *96* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| **LCS** | Sample ID: **LCS-42604-42604** | | | | Units: **µg/Kg** | | Analysis Date: **7/31/2012 02:54 PM** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS6_120731A** | | | SeqNo: **2042802** | | Prep Date: **7/26/2012** | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 999.5 | 30 | 1000 | 0 | 100 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1060 | 30 | 1000 | 0 | 106 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 932 | 30 | 1000 | 0 | 93.2 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 854.5 | 30 | 1000 | 0 | 85.4 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1058 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1138 | 30 | 1000 | 0 | 114 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 961 | 30 | 1000 | 0 | 96.1 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 897 | 30 | 1000 | 0 | 89.7 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 913.5 | 30 | 1000 | 0 | 91.4 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1008 | 30 | 1000 | 0 | 101 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 979 | 30 | 1000 | 0 | 97.9 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 867 | 30 | 1000 | 0 | 86.7 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 943 | 30 | 1000 | 0 | 94.3 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1012 | 30 | 1000 | 0 | 101 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1021 | 30 | 1000 | 0 | 102 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1026 | 30 | 1000 | 0 | 103 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1038 | 30 | 1000 | 0 | 104 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 986 | 30 | 1000 | 0 | 98.6 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1000 | 30 | 1000 | 0 | 100 | 70-125 | 0 | | | |
| 2-Butanone | 949.5 | 200 | 1000 | 0 | 95 | 30-160 | 0 | | | |
| 2-Hexanone | 857.5 | 30 | 1000 | 0 | 85.8 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1110 | 30 | 1000 | 0 | 111 | 45-145 | 0 | | | |
| Acetone | 866.5 | 100 | 1000 | 0 | 86.6 | 20-160 | 0 | | | B |
| Acrylonitrile | 936 | 100 | 1000 | 0 | 93.6 | 70-135 | 0 | | | |
| Benzene | 1053 | 30 | 1000 | 0 | 105 | 75-125 | 0 | | | |
| Bromobenzene | 1006 | 30 | 1000 | 0 | 101 | 65-120 | 0 | | | |
| Bromochloromethane | 1050 | 30 | 1000 | 0 | 105 | 70-125 | 0 | | | |
| Bromodichloromethane | 1008 | 30 | 1000 | 0 | 101 | 70-130 | 0 | | | |
| Bromoform | 967 | 30 | 1000 | 0 | 96.7 | 55-135 | 0 | | | |
| Bromomethane | 1769 | 75 | 1000 | 0 | 177 | 30-160 | 0 | | | S |
| Carbon disulfide | 1226 | 30 | 1000 | 0 | 123 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1105 | 30 | 1000 | 0 | 110 | 65-135 | 0 | | | |
| Chlorobenzene | 989 | 30 | 1000 | 0 | 98.9 | 75-125 | 0 | | | |
| Chloroethane | 1088 | 100 | 1000 | 0 | 109 | 40-155 | 0 | | | |
| Chloroform | 1038 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| Chloromethane | 1164 | 100 | 1000 | 0 | 116 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1070 | 30 | 1000 | 0 | 107 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1066 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| Dibromochloromethane | 950 | 30 | 1000 | 0 | 95 | 65-135 | 0 | | | |
| Dibromomethane | 1024 | 30 | 1000 | 0 | 102 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 896.5 | 30 | 1000 | 0 | 89.6 | 35-135 | 0 | | | |
| Ethylbenzene | 1036 | 30 | 1000 | 0 | 104 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 940 | 30 | 1000 | 0 | 94 | 70-135 | 0 | |
| Isopropylbenzene | 1001 | 30 | 1000 | 0 | 100 | 75-130 | 0 | |
| m,p-Xylene | 2078 | 60 | 2000 | 0 | 104 | 80-125 | 0 | |
| Methyl tert-butyl ether | 947 | 30 | 1000 | 0 | 94.7 | 75-125 | 0 | |
| Methylene chloride | 1074 | 30 | 1000 | 0 | 107 | 55-145 | 0 | |
| Naphthalene | 955.5 | 100 | 1000 | 0 | 95.6 | 40-140 | 0 | |
| n-Butylbenzene | 1022 | 30 | 1000 | 0 | 102 | 65-140 | 0 | |
| n-Propylbenzene | 996 | 30 | 1000 | 0 | 99.6 | 65-135 | 0 | |
| o-Xylene | 1018 | 30 | 1000 | 0 | 102 | 75-125 | 0 | |
| p-Isopropyltoluene | 1013 | 30 | 1000 | 0 | 101 | 75-135 | 0 | |
| sec-Butylbenzene | 959.5 | 30 | 1000 | 0 | 96 | 65-130 | 0 | |
| Styrene | 970 | 30 | 1000 | 0 | 97 | 75-125 | 0 | |
| tert-Butylbenzene | 1006 | 30 | 1000 | 0 | 101 | 65-130 | 0 | |
| Tetrachloroethene | 997.5 | 30 | 1000 | 0 | 99.8 | 64-140 | 0 | |
| Tetrahydrofuran | 933 | 200 | 1000 | 0 | 93.3 | 70-135 | 0 | |
| Toluene | 1016 | 30 | 1000 | 0 | 102 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 1126 | 30 | 1000 | 0 | 113 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 1067 | 30 | 1000 | 0 | 107 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 1527 | 30 | 1000 | 0 | 153 | 70-135 | 0 | S |
| Trichloroethene | 1006 | 30 | 1000 | 0 | 101 | 75-125 | 0 | |
| Trichlorofluoromethane | 931.5 | 30 | 1000 | 0 | 93.2 | 25-185 | 0 | |
| Vinyl chloride | 1064 | 30 | 1000 | 0 | 106 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *1068* | 0 | *1000* | 0 | *107* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *981.5* | 0 | *1000* | 0 | *98.2* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1086* | 0 | *1000* | 0 | *109* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1024* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

**MS** Sample ID: **1207648-05A MS** Units: **µg/Kg** Analysis Date: **7/27/2012 01:25 AM**
Client ID: **SBSA0131S072112S007** Run ID: **VMS9_120726A** SeqNo: **2039243** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1304 | 42 | 1386 | 0 | 94.1 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1204 | 42 | 1386 | 0 | 86.8 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1288 | 42 | 1386 | 0 | 93 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1212 | 42 | 1386 | 0 | 87.4 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1190 | 42 | 1386 | 0 | 85.9 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1150 | 42 | 1386 | 0 | 83 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1493 | 42 | 1386 | 0 | 108 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1213 | 42 | 1386 | 0 | 87.6 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 1284 | 42 | 1386 | 0 | 92.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1508 | 42 | 1386 | 0 | 109 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1285 | 42 | 1386 | 0 | 92.7 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 1170 | 42 | 1386 | 0 | 84.4 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1336 | 42 | 1386 | 0 | 96.4 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1385 | 42 | 1386 | 0 | 100 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1269 | 42 | 1386 | 0 | 91.6 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1274 | 42 | 1386 | 0 | 92 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1491 | 42 | 1386 | 0 | 108 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1389 | 42 | 1386 | 0 | 100 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1346 | 42 | 1386 | 0 | 97.1 | 70-125 | 0 | | | |
| 2-Butanone | 1333 | 140 | 1386 | 94.23 | 89.4 | 30-160 | 0 | | | |
| 2-Hexanone | 1100 | 42 | 1386 | 0 | 79.4 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1069 | 42 | 1386 | 0 | 77.2 | 45-145 | 0 | | | |
| Acetone | 1777 | 140 | 1386 | 253.6 | 110 | 20-160 | 0 | | | B |
| Acrylonitrile | 1229 | 42 | 1386 | 0 | 88.7 | 70-135 | 0 | | | |
| Benzene | 1303 | 42 | 1386 | 0 | 94 | 75-125 | 0 | | | |
| Bromobenzene | 1276 | 42 | 1386 | 0 | 92.1 | 65-120 | 0 | | | |
| Bromochloromethane | 1317 | 42 | 1386 | 0 | 95 | 70-125 | 0 | | | |
| Bromodichloromethane | 1095 | 42 | 1386 | 0 | 79 | 70-130 | 0 | | | |
| Bromoform | 1077 | 42 | 1386 | 0 | 77.8 | 55-135 | 0 | | | |
| Bromomethane | 1174 | 42 | 1386 | 0 | 84.7 | 30-160 | 0 | | | |
| Carbon disulfide | 887.6 | 42 | 1386 | 0 | 64 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1075 | 42 | 1386 | 0 | 77.6 | 65-135 | 0 | | | |
| Chlorobenzene | 1403 | 42 | 1386 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 678.3 | 140 | 1386 | 0 | 49 | 40-155 | 0 | | | |
| Chloroform | 1284 | 42 | 1386 | 0 | 92.6 | 70-125 | 0 | | | |
| Chloromethane | 1464 | 42 | 1386 | 0 | 106 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1174 | 42 | 1386 | 0 | 84.8 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1134 | 42 | 1386 | 0 | 81.8 | 70-125 | 0 | | | |
| Dibromochloromethane | 1059 | 42 | 1386 | 0 | 76.4 | 65-135 | 0 | | | |
| Dibromomethane | 1366 | 42 | 1386 | 0 | 98.6 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 791.3 | 42 | 1386 | 0 | 57.1 | 35-135 | 0 | | | |
| Ethylbenzene | 1445 | 42 | 1386 | 0 | 104 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

| Batch ID: **42604** | Instrument ID **VMS7** | | Method: **SW8260** | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1157 | 42 | 1386 | 0 | 83.5 | 70-135 | 0 | |
| Isopropylbenzene | 1551 | 42 | 1386 | 0 | 112 | 75-130 | 0 | |
| m,p-Xylene | 2985 | 83 | 2771 | 0 | 108 | 80-125 | 0 | |
| Methyl tert-butyl ether | 1145 | 42 | 1386 | 0 | 82.6 | 75-125 | 0 | |
| Methylene chloride | 1185 | 42 | 1386 | 0 | 85.6 | 55-145 | 0 | |
| Naphthalene | 1173 | 140 | 1386 | 0 | 84.6 | 40-140 | 0 | |
| n-Butylbenzene | 1451 | 42 | 1386 | 0 | 105 | 65-140 | 0 | |
| n-Propylbenzene | 1408 | 42 | 1386 | 0 | 102 | 65-135 | 0 | |
| o-Xylene | 1498 | 42 | 1386 | 0 | 108 | 75-125 | 0 | |
| p-Isopropyltoluene | 1473 | 42 | 1386 | 0 | 106 | 75-135 | 0 | |
| sec-Butylbenzene | 1286 | 42 | 1386 | 0 | 92.8 | 65-130 | 0 | |
| Styrene | 1311 | 42 | 1386 | 0 | 94.6 | 75-125 | 0 | |
| tert-Butylbenzene | 1413 | 42 | 1386 | 0 | 102 | 65-130 | 0 | |
| Tetrachloroethene | 1132 | 42 | 1386 | 0 | 81.7 | 64-140 | 0 | |
| Tetrahydrofuran | 1176 | 140 | 1386 | 0 | 84.8 | 70-135 | 0 | |
| Toluene | 1258 | 42 | 1386 | 0 | 90.8 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 1217 | 42 | 1386 | 0 | 87.8 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 991.5 | 42 | 1386 | 0 | 71.6 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 856.4 | 42 | 1386 | 0 | 61.8 | 70-135 | 0 | S |
| Trichloroethene | 1277 | 42 | 1386 | 0 | 92.2 | 75-125 | 0 | |
| Trichlorofluoromethane | 541.1 | 42 | 1386 | 0 | 39 | 25-185 | 0 | |
| Vinyl chloride | 755.2 | 42 | 1386 | 0 | 54.5 | 60-125 | 0 | S |
| *Surr: 1,2-Dichloroethane-d4* | *1289* | 0 | *1386* | 0 | *93* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1289* | 0 | *1386* | 0 | *93* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1346* | 0 | *1386* | 0 | *97.2* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1215* | 0 | *1386* | 0 | *87.7* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1207648-05A MSD** Units: **µg/Kg** Analysis Date: **7/27/2012 01:50 AM**
Client ID: **SBSA0131S072112S007** Run ID: **VMS9_120726A** SeqNo: **2039244** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1305 | 42 | 1386 | 0 | 94.2 | 75-125 | 1304 | 0.0531 | 30 | |
| 1,1,1-Trichloroethane | 1187 | 42 | 1386 | 0 | 85.6 | 70-135 | 1204 | 1.39 | 30 | |
| 1,1,2,2-Tetrachloroethane | 1330 | 42 | 1386 | 0 | 96 | 55-130 | 1288 | 3.23 | 30 | |
| 1,1,2-Trichloroethane | 1208 | 42 | 1386 | 0 | 87.2 | 60-125 | 1212 | 0.286 | 30 | |
| 1,1-Dichloroethane | 1158 | 42 | 1386 | 0 | 83.6 | 75-125 | 1190 | 2.77 | 30 | |
| 1,1-Dichloroethene | 1129 | 42 | 1386 | 0 | 81.4 | 65-135 | 1150 | 1.89 | 30 | |
| 1,2,3-Trichlorobenzene | 1497 | 42 | 1386 | 0 | 108 | 60-135 | 1493 | 0.232 | 30 | |
| 1,2,3-Trichloropropane | 1236 | 42 | 1386 | 0 | 89.2 | 65-130 | 1213 | 1.87 | 30 | |
| 1,2,3-Trimethylbenzene | 1273 | 42 | 1386 | 0 | 91.8 | 65-135 | 1284 | 0.867 | 30 | |
| 1,2,4-Trichlorobenzene | 1524 | 42 | 1386 | 0 | 110 | 65-130 | 1508 | 1.1 | 30 | |
| 1,2,4-Trimethylbenzene | 1292 | 42 | 1386 | 0 | 93.2 | 65-135 | 1285 | 0.538 | 30 | |
| 1,2-Dibromo-3-chloropropane | 1162 | 42 | 1386 | 0 | 83.8 | 40-135 | 1170 | 0.654 | 30 | |
| 1,2-Dibromoethane | 1332 | 42 | 1386 | 0 | 96.1 | 70-125 | 1336 | 0.312 | 30 | |
| 1,2-Dichlorobenzene | 1385 | 42 | 1386 | 0 | 100 | 75-120 | 1385 | 0 | 30 | |
| 1,2-Dichloroethane | 1260 | 42 | 1386 | 0 | 91 | 70-135 | 1269 | 0.712 | 30 | |
| 1,2-Dichloropropane | 1279 | 42 | 1386 | 0 | 92.3 | 70-120 | 1274 | 0.38 | 30 | |
| 1,3,5-Trimethylbenzene | 1463 | 42 | 1386 | 0 | 106 | 65-135 | 1491 | 1.88 | 30 | |
| 1,3-Dichlorobenzene | 1383 | 42 | 1386 | 0 | 99.8 | 70-125 | 1389 | 0.4 | 30 | |
| 1,4-Dichlorobenzene | 1352 | 42 | 1386 | 0 | 97.6 | 70-125 | 1346 | 0.462 | 30 | |
| 2-Butanone | 1272 | 140 | 1386 | 94.23 | 85 | 30-160 | 1333 | 4.68 | 30 | |
| 2-Hexanone | 1127 | 42 | 1386 | 0 | 81.3 | 45-145 | 1100 | 2.43 | 30 | |
| 4-Methyl-2-pentanone | 1066 | 42 | 1386 | 0 | 77 | 45-145 | 1069 | 0.26 | 30 | |
| Acetone | 1810 | 140 | 1386 | 253.6 | 112 | 20-160 | 1777 | 1.89 | 30 | B |
| Acrylonitrile | 1219 | 42 | 1386 | 0 | 88 | 70-135 | 1229 | 0.792 | 30 | |
| Benzene | 1259 | 42 | 1386 | 0 | 90.8 | 75-125 | 1303 | 3.41 | 30 | |
| Bromobenzene | 1283 | 42 | 1386 | 0 | 92.6 | 65-120 | 1276 | 0.541 | 30 | |
| Bromochloromethane | 1299 | 42 | 1386 | 0 | 93.8 | 70-125 | 1317 | 1.38 | 30 | |
| Bromodichloromethane | 1100 | 42 | 1386 | 0 | 79.4 | 70-130 | 1095 | 0.442 | 30 | |
| Bromoform | 1098 | 42 | 1386 | 0 | 79.2 | 55-135 | 1077 | 1.85 | 30 | |
| Bromomethane | 1266 | 42 | 1386 | 0 | 91.4 | 30-160 | 1174 | 7.55 | 30 | |
| Carbon disulfide | 886.9 | 42 | 1386 | 0 | 64 | 45-160 | 887.6 | 0.0781 | 30 | |
| Carbon tetrachloride | 1048 | 42 | 1386 | 0 | 75.6 | 65-135 | 1075 | 2.61 | 30 | |
| Chlorobenzene | 1377 | 42 | 1386 | 0 | 99.4 | 75-125 | 1403 | 1.84 | 30 | |
| Chloroethane | 708.8 | 140 | 1386 | 0 | 51.2 | 40-155 | 678.3 | 4.4 | 30 | |
| Chloroform | 1241 | 42 | 1386 | 0 | 89.6 | 70-125 | 1284 | 3.4 | 30 | |
| Chloromethane | 1429 | 42 | 1386 | 0 | 103 | 50-130 | 1464 | 2.44 | 30 | |
| cis-1,2-Dichloroethene | 1140 | 42 | 1386 | 0 | 82.2 | 65-125 | 1174 | 2.99 | 30 | |
| cis-1,3-Dichloropropene | 1125 | 42 | 1386 | 0 | 81.2 | 70-125 | 1134 | 0.859 | 30 | |
| Dibromochloromethane | 1025 | 42 | 1386 | 0 | 74 | 65-135 | 1059 | 3.19 | 30 | |
| Dibromomethane | 1364 | 42 | 1386 | 0 | 98.4 | 75-130 | 1366 | 0.203 | 30 | |
| Dichlorodifluoromethane | 1066 | 42 | 1386 | 0 | 76.9 | 35-135 | 791.3 | 29.6 | 30 | |
| Ethylbenzene | 1436 | 42 | 1386 | 0 | 104 | 75-125 | 1445 | 0.577 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42604** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1131 | 42 | 1386 | 0 | 81.6 | 70-135 | 1157 | 2.24 | 30 | |
| Isopropylbenzene | 1522 | 42 | 1386 | 0 | 110 | 75-130 | 1551 | 1.89 | 30 | |
| m,p-Xylene | 2943 | 83 | 2771 | 0 | 106 | 80-125 | 2985 | 1.43 | 30 | |
| Methyl tert-butyl ether | 1145 | 42 | 1386 | 0 | 82.6 | 75-125 | 1145 | 0 | 30 | |
| Methylene chloride | 1098 | 42 | 1386 | 0 | 79.2 | 55-145 | 1185 | 7.71 | 30 | |
| Naphthalene | 1215 | 140 | 1386 | 0 | 87.6 | 40-140 | 1173 | 3.48 | 30 | |
| n-Butylbenzene | 1451 | 42 | 1386 | 0 | 105 | 65-140 | 1451 | 0 | 30 | |
| n-Propylbenzene | 1396 | 42 | 1386 | 0 | 101 | 65-135 | 1408 | 0.84 | 30 | |
| o-Xylene | 1467 | 42 | 1386 | 0 | 106 | 75-125 | 1498 | 2.06 | 30 | |
| p-Isopropyltoluene | 1465 | 42 | 1386 | 0 | 106 | 75-135 | 1473 | 0.519 | 30 | |
| sec-Butylbenzene | 1288 | 42 | 1386 | 0 | 93 | 65-130 | 1286 | 0.162 | 30 | |
| Styrene | 1286 | 42 | 1386 | 0 | 92.8 | 75-125 | 1311 | 1.92 | 30 | |
| tert-Butylbenzene | 1391 | 42 | 1386 | 0 | 100 | 65-130 | 1413 | 1.58 | 30 | |
| Tetrachloroethene | 1136 | 42 | 1386 | 0 | 82 | 64-140 | 1132 | 0.367 | 30 | |
| Tetrahydrofuran | 1120 | 140 | 1386 | 0 | 80.8 | 70-135 | 1176 | 4.89 | 30 | |
| Toluene | 1282 | 42 | 1386 | 0 | 92.6 | 70-125 | 1258 | 1.91 | 30 | |
| trans-1,2-Dichloroethene | 1178 | 42 | 1386 | 0 | 85 | 65-135 | 1217 | 3.3 | 30 | |
| trans-1,3-Dichloropropene | 976.9 | 42 | 1386 | 0 | 70.5 | 65-125 | 991.5 | 1.48 | 30 | |
| trans-1,4-Dichloro-2-butene | 807.9 | 42 | 1386 | 0 | 58.3 | 70-135 | 856.4 | 5.83 | 30 | S |
| Trichloroethene | 1268 | 42 | 1386 | 0 | 91.5 | 75-125 | 1277 | 0.708 | 30 | |
| Trichlorofluoromethane | 524.5 | 42 | 1386 | 0 | 37.8 | 25-185 | 541.1 | 3.12 | 30 | |
| Vinyl chloride | 776.7 | 42 | 1386 | 0 | 56 | 60-125 | 755.2 | 2.8 | 30 | S |
| *Surr: 1,2-Dichloroethane-d4* | *1291* | 0 | *1386* | 0 | *93.2* | *70-130* | 1289 | *0.161* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *1291* | 0 | *1386* | 0 | *93.2* | *70-130* | 1289 | *0.161* | *30* | |
| *Surr: Dibromofluoromethane* | *1339* | 0 | *1386* | 0 | *96.6* | *70-130* | 1346 | *0.568* | *30* | |
| *Surr: Toluene-d8* | *1265* | 0 | *1386* | 0 | *91.3* | *70-130* | 1215 | *4.02* | *30* | |

**The following samples were analyzed in this batch:** 1207648-05A 1207648-11A 1207648-12A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207648
**Project:** Marshall KRRI Source Area 7/21/12

# QC BATCH REPORT

Batch ID: **R107759** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R107759** Units: **% of sample** Analysis Date: **7/25/2012 03:20 PM**
Client ID: Run ID: **MOIST_120725B** SeqNo: **2037518** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | ND | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R107759** Units: **% of sample** Analysis Date: **7/25/2012 03:20 PM**
Client ID: Run ID: **MOIST_120725B** SeqNo: **2037517** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 99.99 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | |

**DUP** Sample ID: **1207648-05BDUP1** Units: **% of sample** Analysis Date: **7/25/2012 03:20 PM**
Client ID: **SBSA0131S072112S007** Run ID: **MOIST_120725B** SeqNo: **2037499** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 17.08 | 0.050 | 0 | 0 | 0 | 0-0 | 15.74 | 8.17 | 20 | |

**DUP** Sample ID: **1207648-05BDUP2** Units: **% of sample** Analysis Date: **7/25/2012 03:20 PM**
Client ID: **SBSA0131S072112S007** Run ID: **MOIST_120725B** SeqNo: **2037500** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 16.54 | 0.050 | 0 | 0 | 0 | 0-0 | 15.74 | 4.96 | 20 | |

**DUP** Sample ID: **1207663-01BDUP** Units: **% of sample** Analysis Date: **7/25/2012 03:20 PM**
Client ID: Run ID: **MOIST_120725B** SeqNo: **2037508** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 7.16 | 0.050 | 0 | 0 | 0 | 0-0 | 7.01 | 2.12 | 20 | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1207648-01B | 1207648-02B | 1207648-03B |
| 1207648-04B | 1207648-05B | 1207648-06B |
| 1207648-08B | 1207648-09B | 1207648-10B |
| 1207648-11B | 1207648-12B | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

1207648

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_072112_GMK1 | Task: KRRI_SOURCE AREA |
|---|---|---|
| Total # of Samples: 12 | | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |
| BILLING CODE: 6.00 | | |

**Lab Information:**
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

**Project Information:**
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: Bryan Stiemsma
Phone/Fax: [redacted]
Site PM Email: Bryan.Stiemsma@aecom.com

**Other Information:**
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #
Send EDD to
CC Hardcopy report
CC Hardcopy report

| ITEM # | SAMPLE ID (Samples IDs MUST BE UNIQUE) | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | None | None | None | None | MeOH | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | | |
| 1 | SBSA0128S072112S008 | SBSA0128 | SO | G | 07/21/2012 11:55 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 2 | SBSA0128S072112S093 | SBSA0128 | SO | G | 07/21/2012 12:00 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 3 | SBSA0130S072112S005 | SBSA0130 | SO | G | 07/21/2012 13:44 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 4 | SBSA0130S072112S078 | SBSA0130 | SO | G | 07/21/2012 15:22 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 5 | SBSA0131S072112S007 | SBSA0131 | SO | G | 07/21/2012 16:35 | 6 | MS/MSD | | X | X | X | X | X | | | | | | | | | | |
| 6 | SBSA0131S072112S067 | SBSA0131 | SO | G | 07/21/2012 17:38 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 7 | SBSA0131T072112MX | SBSA0131 | SQ | G | 07/21/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | | |
| 8 | SBSA0133S072112S008 | SBSA0133 | SO | G | 07/21/2012 08:45 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 9 | SBSA0133D072112S008 | SBSA0133 | SO | G | 07/21/2012 08:45 | 3 | DUPLICATE | | X | X | X | X | X | | | | | | | | | | |
| 10 | SBSA0133S072112S040 | SBSA0133 | SO | G | 07/21/2012 09:59 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 11 | SBSA0133S072112S057 | SBSA0133 | SO | G | 07/21/2012 10:05 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 12 | SBSA0133S072112S072 | SBSA0133 | SO | G | 07/21/2012 10:52 | 3 | | | X | X | X | X | X | | | | | | | | | | |

**Additional Comments/Special Instructions:**

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7-23-12 | 1340 | [signature] | 7-23-12 | 1340 |
| [signature] | 7-23-12 | 1404 | [signature] | 7/23/12 | 1404 |

**Sample Receipt Conditions**

| Temp in OC | Samples on Ice? | Sample intact? | Trip Blank? |
|---|---|---|---|
| 4.2°C | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO:
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **23-Jul-12 14:04**

Work Order: **1207648** Received by: **MA**

Checklist completed by Diane Shaw eSignature 23-Jul-12 Date Reviewed by: Ann Preston eSignature 24-Jul-12 Date

Matrices: Soil
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 4.2 c | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 7/23/2012 4:31:32 PM | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | - | | |

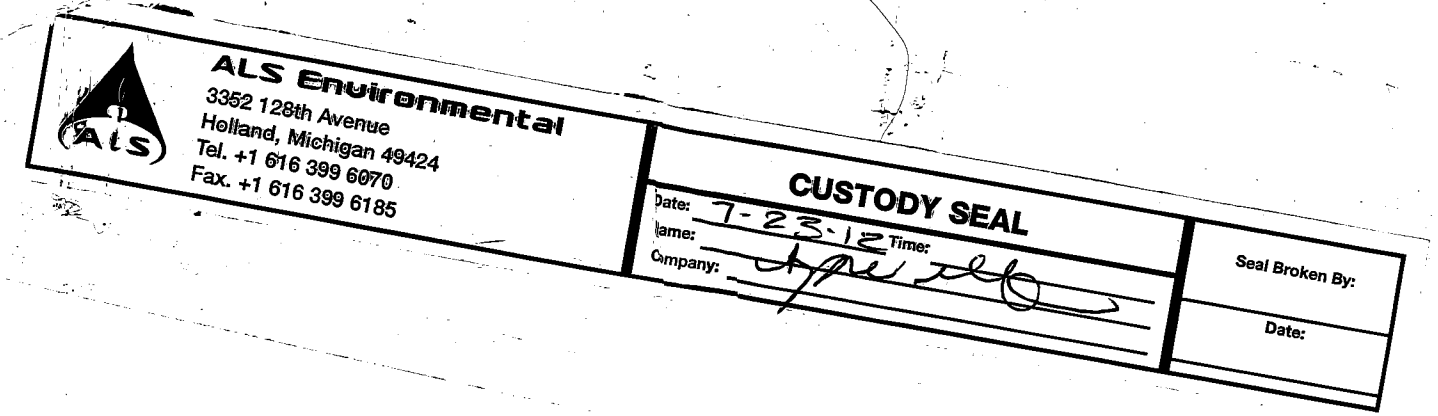
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:


ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185
CUSTODY SEAL
Date: 7-23-12 Time:
Name:
Company:
Seal Broken By:
Date:

4.2c

30-Jul-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI Source Area 2 GW 7/21/12** Work Order: **1207650**

Dear Bryan,

ALS Environmental received 3 samples on 23-Jul-2012 02:04 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 33.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 2 GW 7/21/12
**Work Order:** **1207650**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1207650-01 | SBSA0132S072112G020 | Groundwater | | 7/21/2012 11:20 | 7/23/2012 14:04 | ☐ |
| 1207650-02 | SBSA0133S072112G040 | Groundwater | | 7/21/2012 13:35 | 7/23/2012 14:04 | ☐ |
| 1207650-03 | SBSA0133T072112WX | Water | | 7/21/2012 | 7/23/2012 14:04 | ☐ |

## ALS Group USA, Corp

*Date: 30-Jul-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 2 GW 7/21/12
**Work Order:** 1207650

# Case Narrative

Batch R107682A sample SBSA0132S072112G020 RPDs between the MS/MSD recoveries for Methyl Iodide and Bromomethane were above control limits. The individual MS/MSD recoveries met quality control criteria. No data requires qualification. The LCS recovery for Bromomethane was above control limits, but all samples in this quality control batch were ND for this compound. No data requires qualification.

# ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 2 GW 7/21/12
**WorkOrder:** **1207650**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| µg/L | Micrograms per Liter |
| mg/L | Milligrams per Liter |

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132S072112G020 |
| **Work Order:** | 1207650 | **Collection Date:** | 7/21/2012 11:20:00 AM |
| **Project:** | Marshall KRRI Source Area 2 GW 7/21/12 | | |
| **Lab ID:** | 1207650-01 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| DRO (C10-C20) | ND | 0.10 | 0.10 | | mg/L | 1 | 7/26/2012 |
| ORO (C20-C34) | ND | 0.10 | 0.10 | | mg/L | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *63.7* | *21-90* | | | *%REC* | 1 | 7/26/2012 |
| **GASOLINE RANGE ORGANICS BY GC-FID** | | | **SW8015** | | | | Analyst: **CW** |
| GRO (C6-C10) | ND | 0.20 | 0.20 | | mg/L | 1 | 7/24/2012 |
| *Surr: Toluene-d8* | *94.0* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/26/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 7/26/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 7/26/2012 |
| Nickel | ND | 0.020 | 0.020 | | mg/L | 1 | 7/26/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 7/26/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *55.3* | *32-115* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *51.6* | *32-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *44.2* | *22-59* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *78.3* | *23-112* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *56.4* | *31-93* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *28.2* | *13-36* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132S072112G020 |
| **Work Order:** | 1207650 | **Collection Date:** | 7/21/2012 11:20:00 AM |
| **Project:** | Marshall KRRI Source Area 2 GW 7/21/12 | | |
| **Lab ID:** | 1207650-01 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 7/25/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 7/25/2012 |
| Benzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Chloroform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Cyclohexane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132S072112G020 |
| **Work Order:** | 1207650 | **Collection Date:** | 7/21/2012 11:20:00 AM |
| **Project:** | Marshall KRRI Source Area 2 GW 7/21/12 | | |
| **Lab ID:** | 1207650-01 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Ethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| m,p-Xylene | ND | 2.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| o-Xylene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 7/25/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *97.2* | *70-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *75-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *98.0* | *85-115* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.1* | *85-120* | | | *%REC* | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072112G040 |
| **Work Order:** | 1207650 | **Collection Date:** | 7/21/2012 1:35:00 PM |
| **Project:** | Marshall KRRI Source Area 2 GW 7/21/12 | | |
| **Lab ID:** | 1207650-02 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| DRO (C10-C20) | ND | 0.10 | 0.10 | | mg/L | 1 | 7/26/2012 |
| ORO (C20-C34) | ND | 0.10 | 0.10 | | mg/L | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *69.1* | *21-90* | | | *%REC* | 1 | 7/26/2012 |
| **GASOLINE RANGE ORGANICS BY GC-FID** | | | **SW8015** | | | | Analyst: **CW** |
| GRO (C6-C10) | ND | 0.20 | 0.20 | | mg/L | 1 | 7/24/2012 |
| *Surr: Toluene-d8* | *92.7* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/27/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 7/27/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 7/27/2012 |
| Nickel | ND | 0.020 | 0.020 | | mg/L | 1 | 7/27/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 7/27/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *61.5* | *32-115* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *55.2* | *32-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *45.3* | *22-59* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *79.9* | *23-112* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *62.0* | *31-93* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *28.1* | *13-36* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072112G040 |
| **Work Order:** | 1207650 | **Collection Date:** | 7/21/2012 1:35:00 PM |
| **Project:** | Marshall KRRI Source Area 2 GW 7/21/12 | | |
| **Lab ID:** | 1207650-02 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 7/25/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 7/25/2012 |
| Benzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Chloroform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Cyclohexane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072112G040 |
| **Work Order:** | 1207650 | **Collection Date:** | 7/21/2012 1:35:00 PM |
| **Project:** | Marshall KRRI Source Area 2 GW 7/21/12 | | |
| **Lab ID:** | 1207650-02 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Ethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| m,p-Xylene | ND | 2.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| o-Xylene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 7/25/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *101* | *70-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *97.8* | *75-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *99.2* | *85-115* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *98.6* | *85-120* | | | *%REC* | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133T072112WX |
| **Work Order:** | 1207650 | **Collection Date:** | 7/21/2012 |
| **Project:** | Marshall KRRI Source Area 2 GW 7/21/12 | | |
| **Lab ID:** | 1207650-03 | **Matrix:** | WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 7/25/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 7/25/2012 |
| Benzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Chloroform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Cyclohexane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *30-Jul-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133T072112WX |
| **Work Order:** | 1207650 | **Collection Date:** | 7/21/2012 |
| **Project:** | Marshall KRRI Source Area 2 GW 7/21/12 | | |
| **Lab ID:** | 1207650-03 | **Matrix:** | WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Ethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| m,p-Xylene | ND | 2.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| o-Xylene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 7/25/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *98.2* | *70-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *99.2* | *75-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *95.2* | *85-115* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *99.7* | *85-120* | | | *%REC* | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 30-Jul-12

**Client:** AECOM Environment

# QC BATCH REPORT

**Work Order:** 1207650

**Project:** Marshall KRRI Source Area 2 GW 7/21/12

Batch ID: **42547** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKW1-42547-42547** Units: **mg/L** Analysis Date: **7/26/2012 04:49 AM**

Client ID: Run ID: **GC8_120725A** SeqNo: **2036837** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 0.10 | | | | | | | | |
| ORO (C20-C34) | ND | 0.10 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *0.03834* | 0 | *0.05* | 0 | *76.7* | *21-90* | 0 | | | |

**LCS** Sample ID: **DLCSW1-42547-42547** Units: **mg/L** Analysis Date: **7/26/2012 05:17 AM**

Client ID: Run ID: **GC8_120725A** SeqNo: **2036838** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 3.118 | 0.10 | 5 | 0 | 62.4 | 44-116 | 0 | | | |
| ORO (C20-C34) | 3.446 | 0.10 | 5 | 0 | 68.9 | 44-116 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *0.03043* | 0 | *0.05* | 0 | *60.9* | *21-90* | 0 | | | |

**MS** Sample ID: **1207650-01B MS** Units: **mg/L** Analysis Date: **7/26/2012 05:45 AM**

Client ID: **SBSA0132S072112G020** Run ID: **GC8_120725A** SeqNo: **2036839** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 30.04 | 1.0 | 50 | 0 | 60.1 | 44-116 | 0 | | | |
| ORO (C20-C34) | 33.46 | 1.0 | 50 | 0 | 66.9 | 44-116 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *0.332* | 0 | *0.5* | 0 | *66.4* | *21-90* | 0 | | | |

**MSD** Sample ID: **1207650-01B MSD** Units: **mg/L** Analysis Date: **7/26/2012 06:13 AM**

Client ID: **SBSA0132S072112G020** Run ID: **GC8_120725A** SeqNo: **2036840** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 30.22 | 1.0 | 50 | 0 | 60.4 | 44-116 | 30.04 | 0.611 | 30 | |
| ORO (C20-C34) | 32.89 | 1.0 | 50 | 0 | 65.8 | 44-116 | 33.46 | 1.73 | 30 | |
| *Surr: 4-Terphenyl-d14* | *0.3572* | 0 | *0.5* | 0 | *71.4* | *21-90* | 0.332 | *7.31* | *30* | |

**The following samples were analyzed in this batch:** 1207650-01B 1207650-02B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207650
**Project:** Marshall KRRI Source Area 2 GW 7/21/12

# QC BATCH REPORT

Batch ID: **R107677** Instrument ID **GC9** Method: **SW8015**

**MBLK** Sample ID: **MBLK-R107677-R107677** Units: **µg/L** Analysis Date: **7/24/2012 09:48 AM**
Client ID: Run ID: **GC9_120724A** SeqNo: **2035024** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | ND | 200 | | | | | | | | |
| *Surr: Toluene-d8* | *84.94* | 0 | *100* | 0 | *84.9* | *70-130* | 0 | | | |

**LCS** Sample ID: **LCS-R107677-R107677** Units: **µg/L** Analysis Date: **7/24/2012 09:23 AM**
Client ID: Run ID: **GC9_120724A** SeqNo: **2035023** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | 8967 | 200 | 10000 | 0 | 89.7 | 70-130 | 0 | | | |
| *Surr: Toluene-d8* | *81.97* | 0 | *100* | 0 | *82* | *70-130* | 0 | | | |

**MS** Sample ID: **1207650-01A MS** Units: **µg/L** Analysis Date: **7/24/2012 03:23 PM**
Client ID: **SBSA0132S072112G020** Run ID: **GC9_120724A** SeqNo: **2035035** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | 8824 | 200 | 10000 | 0 | 88.2 | 70-130 | 0 | | | |
| *Surr: Toluene-d8* | *88.11* | 0 | *100* | 0 | *88.1* | *70-130* | 0 | | | |

**MSD** Sample ID: **1207650-01A MSD** Units: **µg/L** Analysis Date: **7/24/2012 03:48 PM**
Client ID: **SBSA0132S072112G020** Run ID: **GC9_120724A** SeqNo: **2035036** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | 8766 | 200 | 10000 | 0 | 87.7 | 70-130 | 8824 | 0.662 | 30 | |
| *Surr: Toluene-d8* | *87.76* | 0 | *100* | 0 | *87.8* | *70-130* | 88.11 | *0.398* | *30* | |

**The following samples were analyzed in this batch:** 1207650-01A 1207650-02A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207650
**Project:** Marshall KRRI Source Area 2 GW 7/21/12

# QC BATCH REPORT

Batch ID: **42597** Instrument ID **ICPMS2** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42597-42597** Units: **mg/L** Analysis Date: **7/26/2012 04:50 PM**
Client ID: Run ID: **ICPMS2_120726A** SeqNo: **2038388** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.0020 | | | | | | | | |
| Molybdenum | ND | 0.0050 | | | | | | | | |
| Nickel | 0.0005971 | 0.0050 | | | | | | | | J |
| Vanadium | ND | 0.0050 | | | | | | | | |

**LCS** Sample ID: **LCS-42597-42597** Units: **mg/L** Analysis Date: **7/26/2012 05:00 PM**
Client ID: Run ID: **ICPMS2_120726A** SeqNo: **2038390** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.09368 | 0.0020 | 0.1 | 0 | 93.7 | 80-120 | 0 | | | |
| Molybdenum | 0.09336 | 0.0050 | 0.1 | 0 | 93.4 | 80-120 | 0 | | | |
| Nickel | 0.09651 | 0.0050 | 0.1 | 0 | 96.5 | 80-120 | 0 | | | |
| Vanadium | 0.09867 | 0.0050 | 0.1 | 0 | 98.7 | 80-120 | 0 | | | |

**MS** Sample ID: **1207650-01CMS** Units: **mg/L** Analysis Date: **7/26/2012 05:36 PM**
Client ID: **SBSA0132S072112G020** Run ID: **ICPMS2_120726A** SeqNo: **2038397** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.08509 | 0.0020 | 0.1 | -0.00006113 | 85.2 | 75-125 | 0 | | | |
| Molybdenum | 0.09224 | 0.0050 | 0.1 | 0.001176 | 91.1 | 75-125 | 0 | | | |
| Nickel | 0.09406 | 0.0050 | 0.1 | 0.002068 | 92 | 75-125 | 0 | | | |
| Vanadium | 0.09603 | 0.0050 | 0.1 | 0.00002755 | 96 | 75-125 | 0 | | | |

**MSD** Sample ID: **1207650-01CMSD** Units: **mg/L** Analysis Date: **7/26/2012 05:56 PM**
Client ID: **SBSA0132S072112G020** Run ID: **ICPMS2_120726A** SeqNo: **2038401** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.08697 | 0.0020 | 0.1 | -0.00006113 | 87 | 75-125 | 0.08509 | 2.19 | 20 | |
| Molybdenum | 0.09351 | 0.0050 | 0.1 | 0.001176 | 92.3 | 75-125 | 0.09224 | 1.37 | 20 | |
| Nickel | 0.09581 | 0.0050 | 0.1 | 0.002068 | 93.7 | 75-125 | 0.09406 | 1.84 | 20 | |
| Vanadium | 0.09858 | 0.0050 | 0.1 | 0.00002755 | 98.6 | 75-125 | 0.09603 | 2.62 | 20 | |

**LCSLL** Sample ID: **LLQC-42597-42597** Units: **mg/L** Analysis Date: **7/26/2012 04:55 PM**
Client ID: Run ID: **ICPMS2_120726A** SeqNo: **2038389** Prep Date: **7/26/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.00181 | 0.0020 | 0.002 | 0 | 90.5 | 70-130 | 0 | | | J |
| Molybdenum | 0.004722 | 0.0050 | 0.005 | 0 | 94.4 | 70-130 | 0 | | | J |
| Nickel | 0.00538 | 0.0050 | 0.005 | 0 | 108 | 70-130 | 0 | | | |
| Vanadium | 0.004691 | 0.0050 | 0.005 | 0 | 93.8 | 70-130 | 0 | | | J |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207650
**Project:** Marshall KRRI Source Area 2 GW 7/21/12

# QC BATCH REPORT

Batch ID: **42597** Instrument ID **ICPMS2** Method: **SW6020A**

**The following samples were analyzed in this batch:** 1207650-01C

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207650
**Project:** Marshall KRRI Source Area 2 GW 7/21/12

# QC BATCH REPORT

Batch ID: **42617** Instrument ID **ICPMS2** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42617-42617** Units: **mg/L** Analysis Date: **7/27/2012 12:34 PM**
Client ID: Run ID: **ICPMS2_120727A** SeqNo: **2039362** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.0020 | | | | | | | | |
| Molybdenum | ND | 0.0050 | | | | | | | | |
| Nickel | 0.001506 | 0.0050 | | | | | | | | J |
| Vanadium | ND | 0.0050 | | | | | | | | |

**LCS** Sample ID: **LCS-42617-42617** Units: **mg/L** Analysis Date: **7/27/2012 12:44 PM**
Client ID: Run ID: **ICPMS2_120727A** SeqNo: **2039364** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.09518 | 0.0020 | 0.1 | 0 | 95.2 | 80-120 | 0 | | | |
| Molybdenum | 0.09666 | 0.0050 | 0.1 | 0 | 96.7 | 80-120 | 0 | | | |
| Nickel | 0.09632 | 0.0050 | 0.1 | 0 | 96.3 | 80-120 | 0 | | | |
| Vanadium | 0.09722 | 0.0050 | 0.1 | 0 | 97.2 | 80-120 | 0 | | | |

**MS** Sample ID: **1207719-02AMS** Units: **mg/L** Analysis Date: **7/27/2012 01:00 PM**
Client ID: Run ID: **ICPMS2_120727A** SeqNo: **2039367** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.9504 | 0.020 | 1 | 0.0006801 | 95 | 75-125 | 0 | | | |
| Molybdenum | 0.9473 | 0.050 | 1 | 0.0005274 | 94.7 | 75-125 | 0 | | | |
| Nickel | 0.9844 | 0.050 | 1 | 0.04521 | 93.9 | 75-125 | 0 | | | |
| Vanadium | 0.9711 | 0.050 | 1 | 0.002423 | 96.9 | 75-125 | 0 | | | |

**MSD** Sample ID: **1207719-02AMSD** Units: **mg/L** Analysis Date: **7/27/2012 01:05 PM**
Client ID: Run ID: **ICPMS2_120727A** SeqNo: **2039368** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.9193 | 0.020 | 1 | 0.0006801 | 91.9 | 75-125 | 0.9504 | 3.33 | 20 | |
| Molybdenum | 0.9271 | 0.050 | 1 | 0.0005274 | 92.7 | 75-125 | 0.9473 | 2.16 | 20 | |
| Nickel | 0.9633 | 0.050 | 1 | 0.04521 | 91.8 | 75-125 | 0.9844 | 2.17 | 20 | |
| Vanadium | 0.9587 | 0.050 | 1 | 0.002423 | 95.6 | 75-125 | 0.9711 | 1.29 | 20 | |

**LCSLL** Sample ID: **LLQC-42617-42617** Units: **mg/L** Analysis Date: **7/27/2012 12:39 PM**
Client ID: Run ID: **ICPMS2_120727A** SeqNo: **2039363** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.001754 | 0.0020 | 0.002 | 0 | 87.7 | 70-130 | 0 | | | J |
| Molybdenum | 0.004752 | 0.0050 | 0.005 | 0 | 95 | 70-130 | 0 | | | J |
| Nickel | 0.005077 | 0.0050 | 0.005 | 0 | 102 | 70-130 | 0 | | | |
| Vanadium | 0.004326 | 0.0050 | 0.005 | 0 | 86.5 | 70-130 | 0 | | | J |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207650
**Project:** Marshall KRRI Source Area 2 GW 7/21/12

# QC BATCH REPORT

Batch ID: **42617** Instrument ID **ICPMS2** Method: **SW6020A**

**The following samples were analyzed in this batch:** 1207650-02C

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207650
**Project:** Marshall KRRI Source Area 2 GW 7/21/12

# QC BATCH REPORT

Batch ID: **42546** Instrument ID **SVMS4** Method: **SW8270**

**MBLK** Sample ID: **SBLKW1-42546-42546** Units: **µg/L** Analysis Date: **7/25/2012 08:31 PM**
Client ID: Run ID: **SVMS4_120725A** SeqNo: **2039043** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 5.0 | | | | | | | | |
| Acenaphthene | ND | 5.0 | | | | | | | | |
| Acenaphthylene | ND | 5.0 | | | | | | | | |
| Anthracene | ND | 5.0 | | | | | | | | |
| Benzo(a)anthracene | ND | 5.0 | | | | | | | | |
| Benzo(a)pyrene | ND | 5.0 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 5.0 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 5.0 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 5.0 | | | | | | | | |
| Chrysene | ND | 5.0 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 5.0 | | | | | | | | |
| Fluoranthene | ND | 5.0 | | | | | | | | |
| Fluorene | ND | 5.0 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 5.0 | | | | | | | | |
| Naphthalene | ND | 5.0 | | | | | | | | |
| Phenanthrene | ND | 5.0 | | | | | | | | |
| Pyrene | ND | 5.0 | | | | | | | | |
| *Surr: 2-Fluorobiphenyl* | *30.08* | 0 | *50* | 0 | *60.2* | *32-100* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *53.02* | 0 | *50* | 0 | *106* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *31.94* | 0 | *50* | 0 | *63.9* | *31-93* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207650
**Project:** Marshall KRRI Source Area 2 GW 7/21/12

# QC BATCH REPORT

Batch ID: **42546** Instrument ID **SVMS4** Method: **SW8270**

**LCS** Sample ID: **SLCSW1-42546-42546** Units: **µg/L** Analysis Date: **7/26/2012 10:49 AM**
Client ID: Run ID: **SVMS4_120726A** SeqNo: **2039461** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 13 | 5.0 | 20 | 0 | 65 | 45-105 | 0 | | | |
| Acenaphthene | 14.79 | 5.0 | 20 | 0 | 74 | 45-110 | 0 | | | |
| Acenaphthylene | 14.83 | 5.0 | 20 | 0 | 74.2 | 50-105 | 0 | | | |
| Anthracene | 16.97 | 5.0 | 20 | 0 | 84.8 | 55-110 | 0 | | | |
| Benzo(a)anthracene | 15.34 | 5.0 | 20 | 0 | 76.7 | 55-110 | 0 | | | |
| Benzo(a)pyrene | 16.68 | 5.0 | 20 | 0 | 83.4 | 55-110 | 0 | | | |
| Benzo(b)fluoranthene | 16.52 | 5.0 | 20 | 0 | 82.6 | 45-120 | 0 | | | |
| Benzo(g,h,i)perylene | 16.54 | 5.0 | 20 | 0 | 82.7 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 16.87 | 5.0 | 20 | 0 | 84.4 | 45-125 | 0 | | | |
| Chrysene | 17.29 | 5.0 | 20 | 0 | 86.4 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 15.85 | 5.0 | 20 | 0 | 79.2 | 40-125 | 0 | | | |
| Fluoranthene | 16.48 | 5.0 | 20 | 0 | 82.4 | 55-115 | 0 | | | |
| Fluorene | 14.07 | 5.0 | 20 | 0 | 70.4 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 16.03 | 5.0 | 20 | 0 | 80.2 | 45-125 | 0 | | | |
| Naphthalene | 12.85 | 5.0 | 20 | 0 | 64.2 | 40-100 | 0 | | | |
| Phenanthrene | 16.23 | 5.0 | 20 | 0 | 81.2 | 50-115 | 0 | | | |
| Pyrene | 18.97 | 5.0 | 20 | 0 | 94.8 | 50-130 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *27.82* | 0 | *50* | 0 | *55.6* | *38-115* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *26.23* | 0 | *50* | 0 | *52.5* | *32-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *21.64* | 0 | *50* | 0 | *43.3* | *22-59* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *33.94* | 0 | *50* | 0 | *67.9* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *28.9* | 0 | *50* | 0 | *57.8* | *31-93* | 0 | | | |
| *Surr: Phenol-d6* | *14.12* | 0 | *50* | 0 | *28.2* | *13-36* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42546** Instrument ID **SVMS4** Method: **SW8270**

**MS** Sample ID: **1207650-01B MS** Units: **µg/L** Analysis Date: **7/26/2012 11:22 AM**
Client ID: **SBSA0132S072112G020** Run ID: **SVMS4_120726A** SeqNo: **2039462** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 155.3 | 50 | 200 | 0 | 77.6 | 45-105 | 0 | | | |
| Acenaphthene | 175.8 | 50 | 200 | 0 | 87.9 | 45-110 | 0 | | | |
| Acenaphthylene | 177.3 | 50 | 200 | 0 | 88.6 | 50-105 | 0 | | | |
| Anthracene | 193.1 | 50 | 200 | 0 | 96.6 | 55-110 | 0 | | | |
| Benzo(a)anthracene | 169.6 | 50 | 200 | 0 | 84.8 | 55-110 | 0 | | | |
| Benzo(a)pyrene | 181.2 | 50 | 200 | 0 | 90.6 | 55-110 | 0 | | | |
| Benzo(b)fluoranthene | 181.7 | 50 | 200 | 0 | 90.8 | 45-120 | 0 | | | |
| Benzo(g,h,i)perylene | 184.1 | 50 | 200 | 0 | 92 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 185.4 | 50 | 200 | 0 | 92.7 | 45-125 | 0 | | | |
| Chrysene | 189.1 | 50 | 200 | 0 | 94.6 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 178.1 | 50 | 200 | 0 | 89 | 40-125 | 0 | | | |
| Fluoranthene | 182 | 50 | 200 | 0 | 91 | 55-115 | 0 | | | |
| Fluorene | 167.5 | 50 | 200 | 0 | 83.8 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 179.8 | 50 | 200 | 0 | 89.9 | 45-125 | 0 | | | |
| Naphthalene | 154.8 | 50 | 200 | 0 | 77.4 | 40-100 | 0 | | | |
| Phenanthrene | 187.2 | 50 | 200 | 0 | 93.6 | 50-115 | 0 | | | |
| Pyrene | 207.8 | 50 | 200 | 0 | 104 | 50-130 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *319* | 0 | *500* | 0 | *63.8* | *38-115* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *309.2* | 0 | *500* | 0 | *61.8* | *32-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *253* | 0 | *500* | 0 | *50.6* | *22-59* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *446.8* | 0 | *500* | 0 | *89.4* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *339.3* | 0 | *500* | 0 | *67.9* | *31-93* | 0 | | | |
| *Surr: Phenol-d6* | *166.4* | 0 | *500* | 0 | *33.3* | *13-36* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207650
**Project:** Marshall KRRI Source Area 2 GW 7/21/12

# QC BATCH REPORT

Batch ID: **42546** Instrument ID **SVMS4** Method: **SW8270**

**MSD** Sample ID: **1207650-01B MSD** Units: **µg/L** Analysis Date: **7/26/2012 11:56 AM**
Client ID: **SBSA0132S072112G020** Run ID: **SVMS4_120726A** SeqNo: **2039463** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 122.3 | 50 | 200 | 0 | 61.2 | 45-105 | 155.3 | 23.8 | 30 | |
| Acenaphthene | 141.7 | 50 | 200 | 0 | 70.8 | 45-110 | 175.8 | 21.5 | 30 | |
| Acenaphthylene | 141.4 | 50 | 200 | 0 | 70.7 | 50-105 | 177.3 | 22.5 | 30 | |
| Anthracene | 159.9 | 50 | 200 | 0 | 80 | 55-110 | 193.1 | 18.8 | 30 | |
| Benzo(a)anthracene | 144.7 | 50 | 200 | 0 | 72.4 | 55-110 | 169.6 | 15.8 | 30 | |
| Benzo(a)pyrene | 156 | 50 | 200 | 0 | 78 | 55-110 | 181.2 | 14.9 | 30 | |
| Benzo(b)fluoranthene | 160.3 | 50 | 200 | 0 | 80.2 | 45-120 | 181.7 | 12.5 | 30 | |
| Benzo(g,h,i)perylene | 161.2 | 50 | 200 | 0 | 80.6 | 40-125 | 184.1 | 13.3 | 30 | |
| Benzo(k)fluoranthene | 153.2 | 50 | 200 | 0 | 76.6 | 45-125 | 185.4 | 19 | 30 | |
| Chrysene | 163.6 | 50 | 200 | 0 | 81.8 | 55-110 | 189.1 | 14.5 | 30 | |
| Dibenzo(a,h)anthracene | 152.2 | 50 | 200 | 0 | 76.1 | 40-125 | 178.1 | 15.7 | 30 | |
| Fluoranthene | 155.5 | 50 | 200 | 0 | 77.8 | 55-115 | 182 | 15.7 | 30 | |
| Fluorene | 135.1 | 50 | 200 | 0 | 67.6 | 50-110 | 167.5 | 21.4 | 30 | |
| Indeno(1,2,3-cd)pyrene | 153.2 | 50 | 200 | 0 | 76.6 | 45-125 | 179.8 | 16 | 30 | |
| Naphthalene | 121.1 | 50 | 200 | 0 | 60.6 | 40-100 | 154.8 | 24.4 | 30 | |
| Phenanthrene | 154.8 | 50 | 200 | 0 | 77.4 | 50-115 | 187.2 | 18.9 | 30 | |
| Pyrene | 177.9 | 50 | 200 | 0 | 89 | 50-130 | 207.8 | 15.5 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *271.7* | 0 | *500* | 0 | *54.3* | *38-115* | 319 | *16* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *251.7* | 0 | *500* | 0 | *50.3* | *32-100* | 309.2 | *20.5* | *40* | |
| *Surr: 2-Fluorophenol* | *212.1* | 0 | *500* | 0 | *42.4* | *22-59* | 253 | *17.6* | *40* | |
| *Surr: 4-Terphenyl-d14* | *395.2* | 0 | *500* | 0 | *79* | *23-112* | 446.8 | *12.3* | *40* | |
| *Surr: Nitrobenzene-d5* | *271.9* | 0 | *500* | 0 | *54.4* | *31-93* | 339.3 | *22.1* | *40* | |
| *Surr: Phenol-d6* | *135.4* | 0 | *500* | 0 | *27.1* | *13-36* | 166.4 | *20.5* | *40* | |

**The following samples were analyzed in this batch:** 1207650-01B 1207650-02B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207650
**Project:** Marshall KRRI Source Area 2 GW 7/21/12

# QC BATCH REPORT

Batch ID: **R107682A** Instrument ID **VMS6** Method: **SW8260**

**MBLK** Sample ID: **VBLKW2-120724-R107682A** Units: **µg/L** Analysis Date: **7/25/2012 12:01 PM**
Client ID: Run ID: **VMS6_120724A** SeqNo: **2036351** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 3.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 2.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 2.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 2.0 | | | | | | | | |
| 2-Butanone | ND | 5.0 | | | | | | | | |
| 2-Hexanone | ND | 5.0 | | | | | | | | |
| 2-Methylnaphthalene | ND | 10 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 5.0 | | | | | | | | |
| Acetone | ND | 20 | | | | | | | | |
| Acrylonitrile | ND | 1.0 | | | | | | | | |
| Benzene | ND | 1.0 | | | | | | | | |
| Bromochloromethane | ND | 1.0 | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 1.0 | | | | | | | | |
| Carbon disulfide | ND | 2.5 | | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroethane | ND | 1.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 1.0 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| Cyclohexane | ND | 5.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| Diethyl ether | ND | 10 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R107682A** Instrument ID **VMS6** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | |
| Hexachloroethane | ND | 1.0 | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | |
| m,p-Xylene | ND | 2.0 | | | | | |
| Methyl iodide | ND | 5.0 | | | | | |
| Methyl tert-butyl ether | ND | 5.0 | | | | | |
| Methylene chloride | ND | 5.0 | | | | | |
| Naphthalene | ND | 5.0 | | | | | |
| n-Butylbenzene | ND | 1.0 | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | |
| o-Xylene | ND | 1.0 | | | | | |
| p-Isopropyltoluene | ND | 2.0 | | | | | |
| sec-Butylbenzene | ND | 2.0 | | | | | |
| Styrene | ND | 1.0 | | | | | |
| t-Butyl ethyl ether | ND | 0 | | | | | |
| tert-Butyl alcohol | ND | 50 | | | | | |
| tert-Butylbenzene | ND | 2.0 | | | | | |
| Tertiaryamylmethylether | ND | 5.0 | | | | | |
| Tetrachloroethene | ND | 2.0 | | | | | |
| Tetrahydrofuran | ND | 10 | | | | | |
| Toluene | ND | 1.0 | | | | | |
| trans-1,2-Dichloroethene | ND | 1.0 | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 5.0 | | | | | |
| Trichloroethene | ND | 1.0 | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | |
| Vinyl chloride | ND | 1.0 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *19.52* | 0 | *20* | 0 | *97.6* | *70-120* | 0 |
| *Surr: 4-Bromofluorobenzene* | *19.58* | 0 | *20* | 0 | *97.9* | *75-120* | 0 |
| *Surr: Dibromofluoromethane* | *19.21* | 0 | *20* | 0 | *96* | *85-115* | 0 |
| *Surr: Toluene-d8* | *19.92* | 0 | *20* | 0 | *99.6* | *85-120* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207650
**Project:** Marshall KRRI Source Area 2 GW 7/21/12

# QC BATCH REPORT

Batch ID: **R107682A** Instrument ID **VMS6** Method: **SW8260**

**LCS** Sample ID: **VLCSW1-120724-R107682A** Units: **µg/L** Analysis Date: **7/24/2012 11:12 PM**
Client ID: Run ID: **VMS6_120724A** SeqNo: **2036339** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 21.88 | 1.0 | 20 | 0 | 109 | 80-130 | 0 | | | |
| 1,1,1-Trichloroethane | 22.29 | 1.0 | 20 | 0 | 111 | 65-130 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 21.06 | 1.0 | 20 | 0 | 105 | 65-130 | 0 | | | |
| 1,1,2-Trichloroethane | 19.32 | 1.0 | 20 | 0 | 96.6 | 75-125 | 0 | | | |
| 1,1-Dichloroethane | 20.57 | 1.0 | 20 | 0 | 103 | 70-135 | 0 | | | |
| 1,1-Dichloroethene | 21.55 | 1.0 | 20 | 0 | 108 | 70-130 | 0 | | | |
| 1,2,3-Trichlorobenzene | 21.3 | 3.0 | 20 | 0 | 106 | 55-140 | 0 | | | |
| 1,2,3-Trichloropropane | 20.02 | 1.0 | 20 | 0 | 100 | 75-125 | 0 | | | |
| 1,2,4-Trichlorobenzene | 22.72 | 1.0 | 20 | 0 | 114 | 65-135 | 0 | | | |
| 1,2,4-Trimethylbenzene | 21.78 | 1.0 | 20 | 0 | 109 | 75-130 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 18.76 | 1.0 | 20 | 0 | 93.8 | 50-130 | 0 | | | |
| 1,2-Dibromoethane | 20.76 | 1.0 | 20 | 0 | 104 | 80-120 | 0 | | | |
| 1,2-Dichlorobenzene | 22.17 | 1.0 | 20 | 0 | 111 | 70-120 | 0 | | | |
| 1,2-Dichloroethane | 21.15 | 1.0 | 20 | 0 | 106 | 70-130 | 0 | | | |
| 1,2-Dichloropropane | 21.82 | 2.0 | 20 | 0 | 109 | 75-125 | 0 | | | |
| 1,3,5-Trimethylbenzene | 23.12 | 1.0 | 20 | 0 | 116 | 75-130 | 0 | | | |
| 1,3-Dichlorobenzene | 21.34 | 2.0 | 20 | 0 | 107 | 75-125 | 0 | | | |
| 1,4-Dichlorobenzene | 21.42 | 2.0 | 20 | 0 | 107 | 75-125 | 0 | | | |
| 2-Butanone | 17.87 | 5.0 | 20 | 0 | 89.4 | 30-150 | 0 | | | |
| 2-Hexanone | 17.94 | 5.0 | 20 | 0 | 89.7 | 55-130 | 0 | | | |
| 4-Methyl-2-pentanone | 23.75 | 5.0 | 20 | 0 | 119 | 60-135 | 0 | | | |
| Acetone | 18.85 | 20 | 20 | 0 | 94.2 | 40-140 | 0 | | | J |
| Acrylonitrile | 19.75 | 1.0 | 20 | 0 | 98.8 | 70-135 | 0 | | | |
| Benzene | 21.69 | 1.0 | 20 | 0 | 108 | 80-120 | 0 | | | |
| Bromochloromethane | 21.27 | 1.0 | 20 | 0 | 106 | 65-130 | 0 | | | |
| Bromodichloromethane | 21.52 | 1.0 | 20 | 0 | 108 | 75-120 | 0 | | | |
| Bromoform | 21.54 | 1.0 | 20 | 0 | 108 | 70-130 | 0 | | | |
| Bromomethane | 29.64 | 1.0 | 20 | 0 | 148 | 30-145 | 0 | | | S |
| Carbon disulfide | 22.7 | 2.5 | 20 | 0 | 114 | 35-165 | 0 | | | |
| Carbon tetrachloride | 22.17 | 1.0 | 20 | 0 | 111 | 65-140 | 0 | | | |
| Chlorobenzene | 22 | 1.0 | 20 | 0 | 110 | 80-120 | 0 | | | |
| Chloroethane | 18.84 | 1.0 | 20 | 0 | 94.2 | 60-135 | 0 | | | |
| Chloroform | 20.76 | 1.0 | 20 | 0 | 104 | 65-135 | 0 | | | |
| Chloromethane | 18.18 | 1.0 | 20 | 0 | 90.9 | 70-125 | 0 | | | |
| cis-1,2-Dichloroethene | 21.02 | 1.0 | 20 | 0 | 105 | 70-125 | 0 | | | |
| cis-1,3-Dichloropropene | 21.61 | 1.0 | 20 | 0 | 108 | 70-130 | 0 | | | |
| Dibromochloromethane | 21.16 | 1.0 | 20 | 0 | 106 | 60-135 | 0 | | | |
| Dichlorodifluoromethane | 12.05 | 1.0 | 20 | 0 | 60.2 | 30-155 | 0 | | | |
| Ethylbenzene | 22.47 | 1.0 | 20 | 0 | 112 | 75-125 | 0 | | | |
| Hexachloroethane | 19.09 | 1.0 | 20 | 0 | 95.4 | 70-135 | 0 | | | |
| Isopropylbenzene | 22.35 | 1.0 | 20 | 0 | 112 | 75-125 | 0 | | | |
| m,p-Xylene | 45.14 | 2.0 | 40 | 0 | 113 | 75-130 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **R107682A** Instrument ID **VMS6** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Methyl iodide | 23.39 | 5.0 | 20 | 0 | 117 | 70-135 | 0 |
| Methyl tert-butyl ether | 18.49 | 5.0 | 20 | 0 | 92.4 | 65-125 | 0 |
| Methylene chloride | 21.77 | 5.0 | 20 | 0 | 109 | 55-140 | 0 |
| Naphthalene | 20.6 | 5.0 | 20 | 0 | 103 | 55-140 | 0 |
| n-Butylbenzene | 23.01 | 1.0 | 20 | 0 | 115 | 70-135 | 0 |
| n-Propylbenzene | 22.08 | 1.0 | 20 | 0 | 110 | 70-130 | 0 |
| o-Xylene | 22.21 | 1.0 | 20 | 0 | 111 | 80-120 | 0 |
| p-Isopropyltoluene | 22.37 | 2.0 | 20 | 0 | 112 | 75-130 | 0 |
| sec-Butylbenzene | 21.87 | 2.0 | 20 | 0 | 109 | 70-125 | 0 |
| Styrene | 21.42 | 1.0 | 20 | 0 | 107 | 65-135 | 0 |
| tert-Butylbenzene | 22.23 | 2.0 | 20 | 0 | 111 | 70-130 | 0 |
| Tetrachloroethene | 22.38 | 2.0 | 20 | 0 | 112 | 45-150 | 0 |
| Tetrahydrofuran | 17.07 | 10 | 20 | 0 | 85.4 | 70-135 | 0 |
| Toluene | 22.06 | 1.0 | 20 | 0 | 110 | 75-120 | 0 |
| trans-1,2-Dichloroethene | 21.8 | 1.0 | 20 | 0 | 109 | 60-140 | 0 |
| trans-1,3-Dichloropropene | 21.78 | 1.0 | 20 | 0 | 109 | 55-140 | 0 |
| trans-1,4-Dichloro-2-butene | 16.2 | 5.0 | 20 | 0 | 81 | 70-135 | 0 |
| Trichloroethene | 21.5 | 1.0 | 20 | 0 | 108 | 70-125 | 0 |
| Trichlorofluoromethane | 16.72 | 1.0 | 20 | 0 | 83.6 | 60-145 | 0 |
| Vinyl chloride | 17.54 | 1.0 | 20 | 0 | 87.7 | 50-145 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *19.7* | 0 | *20* | 0 | *98.5* | *70-120* | 0 |
| *Surr: 4-Bromofluorobenzene* | *19.55* | 0 | *20* | 0 | *97.8* | *75-120* | 0 |
| *Surr: Dibromofluoromethane* | *19.74* | 0 | *20* | 0 | *98.7* | *85-115* | 0 |
| *Surr: Toluene-d8* | *19.52* | 0 | *20* | 0 | *97.6* | *85-120* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207650
**Project:** Marshall KRRI Source Area 2 GW 7/21/12

# QC BATCH REPORT

Batch ID: **R107682A** Instrument ID **VMS6** Method: **SW8260**

**MS** Sample ID: **1207650-01A MS** Units: **µg/L** Analysis Date: **7/25/2012 08:54 AM**
Client ID: **SBSA0132S072112G020** Run ID: **VMS6_120724A** SeqNo: **2036349** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 18.98 | 1.0 | 20 | 0 | 94.9 | 80-130 | 0 | | | |
| 1,1,1-Trichloroethane | 20.59 | 1.0 | 20 | 0 | 103 | 65-130 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 18.33 | 1.0 | 20 | 0 | 91.6 | 65-130 | 0 | | | |
| 1,1,2-Trichloroethane | 17.09 | 1.0 | 20 | 0 | 85.4 | 75-125 | 0 | | | |
| 1,1-Dichloroethane | 19.39 | 1.0 | 20 | 0 | 97 | 70-135 | 0 | | | |
| 1,1-Dichloroethene | 20.6 | 1.0 | 20 | 0 | 103 | 70-130 | 0 | | | |
| 1,2,3-Trichlorobenzene | 15.45 | 3.0 | 20 | 0 | 77.2 | 55-140 | 0 | | | |
| 1,2,3-Trichloropropane | 17.59 | 1.0 | 20 | 0 | 88 | 75-125 | 0 | | | |
| 1,2,4-Trichlorobenzene | 18.3 | 1.0 | 20 | 0 | 91.5 | 65-135 | 0 | | | |
| 1,2,4-Trimethylbenzene | 19.68 | 1.0 | 20 | 0 | 98.4 | 75-130 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 14.03 | 1.0 | 20 | 0 | 70.2 | 50-130 | 0 | | | |
| 1,2-Dibromoethane | 17.74 | 1.0 | 20 | 0 | 88.7 | 80-120 | 0 | | | |
| 1,2-Dichlorobenzene | 19.39 | 1.0 | 20 | 0 | 97 | 70-120 | 0 | | | |
| 1,2-Dichloroethane | 18.97 | 1.0 | 20 | 0 | 94.8 | 70-130 | 0 | | | |
| 1,2-Dichloropropane | 19.63 | 2.0 | 20 | 0 | 98.2 | 75-125 | 0 | | | |
| 1,3,5-Trimethylbenzene | 20.85 | 1.0 | 20 | 0 | 104 | 75-130 | 0 | | | |
| 1,3-Dichlorobenzene | 19.01 | 2.0 | 20 | 0 | 95 | 75-125 | 0 | | | |
| 1,4-Dichlorobenzene | 19.35 | 2.0 | 20 | 0 | 96.8 | 75-125 | 0 | | | |
| 2-Butanone | 16.76 | 5.0 | 20 | 0 | 83.8 | 30-150 | 0 | | | |
| 2-Hexanone | 17.78 | 5.0 | 20 | 0 | 88.9 | 55-130 | 0 | | | |
| 4-Methyl-2-pentanone | 22.18 | 5.0 | 20 | 0 | 111 | 60-135 | 0 | | | |
| Acetone | 23.44 | 20 | 20 | 8.94 | 72.5 | 40-140 | 0 | | | |
| Acrylonitrile | 17.06 | 1.0 | 20 | 0 | 85.3 | 70-135 | 0 | | | |
| Benzene | 20.23 | 1.0 | 20 | 0 | 101 | 80-120 | 0 | | | |
| Bromochloromethane | 18.97 | 1.0 | 20 | 0 | 94.8 | 65-130 | 0 | | | |
| Bromodichloromethane | 18.21 | 1.0 | 20 | 0 | 91 | 75-120 | 0 | | | |
| Bromoform | 17.64 | 1.0 | 20 | 0 | 88.2 | 70-130 | 0 | | | |
| Bromomethane | 13.03 | 1.0 | 20 | 0 | 65.2 | 30-145 | 0 | | | |
| Carbon disulfide | 20.75 | 2.5 | 20 | 0 | 104 | 35-165 | 0 | | | |
| Carbon tetrachloride | 20.59 | 1.0 | 20 | 0 | 103 | 65-140 | 0 | | | |
| Chlorobenzene | 19.8 | 1.0 | 20 | 0 | 99 | 80-120 | 0 | | | |
| Chloroethane | 18.68 | 1.0 | 20 | 0 | 93.4 | 60-135 | 0 | | | |
| Chloroform | 19.12 | 1.0 | 20 | 0 | 95.6 | 65-135 | 0 | | | |
| Chloromethane | 17.46 | 1.0 | 20 | 0 | 87.3 | 70-125 | 0 | | | |
| cis-1,2-Dichloroethene | 19.03 | 1.0 | 20 | 0 | 95.2 | 70-125 | 0 | | | |
| cis-1,3-Dichloropropene | 17.49 | 1.0 | 20 | 0 | 87.4 | 70-130 | 0 | | | |
| Dibromochloromethane | 17.09 | 1.0 | 20 | 0 | 85.4 | 60-135 | 0 | | | |
| Dichlorodifluoromethane | 12.48 | 1.0 | 20 | 0 | 62.4 | 30-155 | 0 | | | |
| Ethylbenzene | 21.05 | 1.0 | 20 | 0 | 105 | 75-125 | 0 | | | |
| Hexachloroethane | 16.36 | 1.0 | 20 | 0 | 81.8 | 70-135 | 0 | | | |
| Isopropylbenzene | 20.8 | 1.0 | 20 | 0 | 104 | 75-125 | 0 | | | |
| m,p-Xylene | 41.9 | 2.0 | 40 | 0 | 105 | 75-130 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **R107682A** Instrument ID **VMS6** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Methyl iodide | 15.7 | 5.0 | 20 | 0 | 78.5 | 70-135 | 0 |
| Methyl tert-butyl ether | 17.37 | 5.0 | 20 | 0 | 86.8 | 65-125 | 0 |
| Methylene chloride | 19.08 | 5.0 | 20 | 0 | 95.4 | 55-140 | 0 |
| Naphthalene | 16.17 | 5.0 | 20 | 0 | 80.8 | 55-140 | 0 |
| n-Butylbenzene | 20.38 | 1.0 | 20 | 0 | 102 | 70-135 | 0 |
| n-Propylbenzene | 20.14 | 1.0 | 20 | 0 | 101 | 70-130 | 0 |
| o-Xylene | 20.69 | 1.0 | 20 | 0 | 103 | 80-120 | 0 |
| p-Isopropyltoluene | 20.28 | 2.0 | 20 | 0 | 101 | 75-130 | 0 |
| sec-Butylbenzene | 19.97 | 2.0 | 20 | 0 | 99.8 | 70-125 | 0 |
| Styrene | 19.22 | 1.0 | 20 | 0 | 96.1 | 65-135 | 0 |
| tert-Butylbenzene | 20.77 | 2.0 | 20 | 0 | 104 | 70-130 | 0 |
| Tetrachloroethene | 21.33 | 2.0 | 20 | 0 | 107 | 45-150 | 0 |
| Tetrahydrofuran | 16.31 | 10 | 20 | 0 | 81.6 | 70-135 | 0 |
| Toluene | 20.65 | 1.0 | 20 | 0 | 103 | 75-120 | 0 |
| trans-1,2-Dichloroethene | 21.11 | 1.0 | 20 | 0 | 106 | 60-140 | 0 |
| trans-1,3-Dichloropropene | 17.94 | 1.0 | 20 | 0 | 89.7 | 55-140 | 0 |
| trans-1,4-Dichloro-2-butene | 18.74 | 5.0 | 20 | 0 | 93.7 | 70-135 | 0 |
| Trichloroethene | 19.63 | 1.0 | 20 | 0 | 98.2 | 70-125 | 0 |
| Trichlorofluoromethane | 17.32 | 1.0 | 20 | 0 | 86.6 | 60-145 | 0 |
| Vinyl chloride | 18.37 | 1.0 | 20 | 0 | 91.8 | 50-145 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *20.08* | 0 | *20* | 0 | *100* | *70-120* | 0 |
| *Surr: 4-Bromofluorobenzene* | *20.99* | 0 | *20* | 0 | *105* | *75-120* | 0 |
| *Surr: Dibromofluoromethane* | *20.18* | 0 | *20* | 0 | *101* | *85-115* | 0 |
| *Surr: Toluene-d8* | *20.32* | 0 | *20* | 0 | *102* | *85-120* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207650
**Project:** Marshall KRRI Source Area 2 GW 7/21/12

# QC BATCH REPORT

Batch ID: **R107682A** Instrument ID **VMS6** Method: **SW8260**

**MSD** Sample ID: **1207650-01A MSD** Units: **µg/L** Analysis Date: **7/25/2012 09:18 AM**
Client ID: **SBSA0132S072112G020** Run ID: **VMS6_120724A** SeqNo: **2036350** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 18.85 | 1.0 | 20 | 0 | 94.2 | 80-130 | 18.98 | 0.687 | 30 | |
| 1,1,1-Trichloroethane | 20.17 | 1.0 | 20 | 0 | 101 | 65-130 | 20.59 | 2.06 | 30 | |
| 1,1,2,2-Tetrachloroethane | 17.71 | 1.0 | 20 | 0 | 88.6 | 65-130 | 18.33 | 3.44 | 30 | |
| 1,1,2-Trichloroethane | 16.28 | 1.0 | 20 | 0 | 81.4 | 75-125 | 17.09 | 4.85 | 30 | |
| 1,1-Dichloroethane | 18.58 | 1.0 | 20 | 0 | 92.9 | 70-135 | 19.39 | 4.27 | 30 | |
| 1,1-Dichloroethene | 19.85 | 1.0 | 20 | 0 | 99.2 | 70-130 | 20.6 | 3.71 | 30 | |
| 1,2,3-Trichlorobenzene | 16.32 | 3.0 | 20 | 0 | 81.6 | 55-140 | 15.45 | 5.48 | 30 | |
| 1,2,3-Trichloropropane | 17.45 | 1.0 | 20 | 0 | 87.2 | 75-125 | 17.59 | 0.799 | 30 | |
| 1,2,4-Trichlorobenzene | 18.49 | 1.0 | 20 | 0 | 92.4 | 65-135 | 18.3 | 1.03 | 30 | |
| 1,2,4-Trimethylbenzene | 19.11 | 1.0 | 20 | 0 | 95.6 | 75-130 | 19.68 | 2.94 | 30 | |
| 1,2-Dibromo-3-chloropropane | 13.83 | 1.0 | 20 | 0 | 69.2 | 50-130 | 14.03 | 1.44 | 30 | |
| 1,2-Dibromoethane | 17.47 | 1.0 | 20 | 0 | 87.4 | 80-120 | 17.74 | 1.53 | 30 | |
| 1,2-Dichlorobenzene | 19.03 | 1.0 | 20 | 0 | 95.2 | 70-120 | 19.39 | 1.87 | 30 | |
| 1,2-Dichloroethane | 18.84 | 1.0 | 20 | 0 | 94.2 | 70-130 | 18.97 | 0.688 | 30 | |
| 1,2-Dichloropropane | 19.46 | 2.0 | 20 | 0 | 97.3 | 75-125 | 19.63 | 0.87 | 30 | |
| 1,3,5-Trimethylbenzene | 20.55 | 1.0 | 20 | 0 | 103 | 75-130 | 20.85 | 1.45 | 30 | |
| 1,3-Dichlorobenzene | 18.66 | 2.0 | 20 | 0 | 93.3 | 75-125 | 19.01 | 1.86 | 30 | |
| 1,4-Dichlorobenzene | 18.27 | 2.0 | 20 | 0 | 91.4 | 75-125 | 19.35 | 5.74 | 30 | |
| 2-Butanone | 15.84 | 5.0 | 20 | 0 | 79.2 | 30-150 | 16.76 | 5.64 | 30 | |
| 2-Hexanone | 16.45 | 5.0 | 20 | 0 | 82.2 | 55-130 | 17.78 | 7.77 | 30 | |
| 4-Methyl-2-pentanone | 21.19 | 5.0 | 20 | 0 | 106 | 60-135 | 22.18 | 4.57 | 30 | |
| Acetone | 22.14 | 20 | 20 | 8.94 | 66 | 40-140 | 23.44 | 5.7 | 30 | |
| Acrylonitrile | 16.08 | 1.0 | 20 | 0 | 80.4 | 70-135 | 17.06 | 5.91 | 30 | |
| Benzene | 19.57 | 1.0 | 20 | 0 | 97.8 | 80-120 | 20.23 | 3.32 | 30 | |
| Bromochloromethane | 18.56 | 1.0 | 20 | 0 | 92.8 | 65-130 | 18.97 | 2.18 | 30 | |
| Bromodichloromethane | 18.16 | 1.0 | 20 | 0 | 90.8 | 75-120 | 18.21 | 0.275 | 30 | |
| Bromoform | 17.53 | 1.0 | 20 | 0 | 87.6 | 70-130 | 17.64 | 0.626 | 30 | |
| Bromomethane | 20.19 | 1.0 | 20 | 0 | 101 | 30-145 | 13.03 | 43.1 | 30 | R |
| Carbon disulfide | 20.23 | 2.5 | 20 | 0 | 101 | 35-165 | 20.75 | 2.54 | 30 | |
| Carbon tetrachloride | 19.55 | 1.0 | 20 | 0 | 97.8 | 65-140 | 20.59 | 5.18 | 30 | |
| Chlorobenzene | 19.2 | 1.0 | 20 | 0 | 96 | 80-120 | 19.8 | 3.08 | 30 | |
| Chloroethane | 17.55 | 1.0 | 20 | 0 | 87.8 | 60-135 | 18.68 | 6.24 | 30 | |
| Chloroform | 18.48 | 1.0 | 20 | 0 | 92.4 | 65-135 | 19.12 | 3.4 | 30 | |
| Chloromethane | 16.73 | 1.0 | 20 | 0 | 83.6 | 70-125 | 17.46 | 4.27 | 30 | |
| cis-1,2-Dichloroethene | 18.29 | 1.0 | 20 | 0 | 91.4 | 70-125 | 19.03 | 3.97 | 30 | |
| cis-1,3-Dichloropropene | 17.74 | 1.0 | 20 | 0 | 88.7 | 70-130 | 17.49 | 1.42 | 30 | |
| Dibromochloromethane | 17.68 | 1.0 | 20 | 0 | 88.4 | 60-135 | 17.09 | 3.39 | 30 | |
| Dichlorodifluoromethane | 11.54 | 1.0 | 20 | 0 | 57.7 | 30-155 | 12.48 | 7.83 | 30 | |
| Ethylbenzene | 20.28 | 1.0 | 20 | 0 | 101 | 75-125 | 21.05 | 3.73 | 30 | |
| Hexachloroethane | 16.59 | 1.0 | 20 | 0 | 83 | 70-135 | 16.36 | 1.4 | 30 | |
| Isopropylbenzene | 20.16 | 1.0 | 20 | 0 | 101 | 75-125 | 20.8 | 3.12 | 30 | |
| m,p-Xylene | 40.27 | 2.0 | 40 | 0 | 101 | 75-130 | 41.9 | 3.97 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **R107682A** Instrument ID **VMS6** Method: **SW8260**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Methyl iodide | 23.6 | 5.0 | 20 | 0 | 118 | 70-135 | 15.7 | 40.2 | 30 | R |
| Methyl tert-butyl ether | 16.68 | 5.0 | 20 | 0 | 83.4 | 65-125 | 17.37 | 4.05 | 30 | |
| Methylene chloride | 18.46 | 5.0 | 20 | 0 | 92.3 | 55-140 | 19.08 | 3.3 | 30 | |
| Naphthalene | 16.15 | 5.0 | 20 | 0 | 80.8 | 55-140 | 16.17 | 0.124 | 30 | |
| n-Butylbenzene | 20.68 | 1.0 | 20 | 0 | 103 | 70-135 | 20.38 | 1.46 | 30 | |
| n-Propylbenzene | 19.76 | 1.0 | 20 | 0 | 98.8 | 70-130 | 20.14 | 1.9 | 30 | |
| o-Xylene | 19.81 | 1.0 | 20 | 0 | 99 | 80-120 | 20.69 | 4.35 | 30 | |
| p-Isopropyltoluene | 20.44 | 2.0 | 20 | 0 | 102 | 75-130 | 20.28 | 0.786 | 30 | |
| sec-Butylbenzene | 19.61 | 2.0 | 20 | 0 | 98 | 70-125 | 19.97 | 1.82 | 30 | |
| Styrene | 18.69 | 1.0 | 20 | 0 | 93.4 | 65-135 | 19.22 | 2.8 | 30 | |
| tert-Butylbenzene | 20.21 | 2.0 | 20 | 0 | 101 | 70-130 | 20.77 | 2.73 | 30 | |
| Tetrachloroethene | 20.13 | 2.0 | 20 | 0 | 101 | 45-150 | 21.33 | 5.79 | 30 | |
| Tetrahydrofuran | 15.73 | 10 | 20 | 0 | 78.6 | 70-135 | 16.31 | 3.62 | 30 | |
| Toluene | 19.56 | 1.0 | 20 | 0 | 97.8 | 75-120 | 20.65 | 5.42 | 30 | |
| trans-1,2-Dichloroethene | 19.91 | 1.0 | 20 | 0 | 99.6 | 60-140 | 21.11 | 5.85 | 30 | |
| trans-1,3-Dichloropropene | 17.56 | 1.0 | 20 | 0 | 87.8 | 55-140 | 17.94 | 2.14 | 30 | |
| trans-1,4-Dichloro-2-butene | 17 | 5.0 | 20 | 0 | 85 | 70-135 | 18.74 | 9.74 | 30 | |
| Trichloroethene | 19.04 | 1.0 | 20 | 0 | 95.2 | 70-125 | 19.63 | 3.05 | 30 | |
| Trichlorofluoromethane | 15.97 | 1.0 | 20 | 0 | 79.8 | 60-145 | 17.32 | 8.11 | 30 | |
| Vinyl chloride | 16.64 | 1.0 | 20 | 0 | 83.2 | 50-145 | 18.37 | 9.88 | 30 | |
| *Surr: 1,2-Dichloroethane-d4* | *20.54* | 0 | *20* | 0 | *103* | *70-120* | 20.08 | *2.26* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *20.76* | 0 | *20* | 0 | *104* | *75-120* | 20.99 | *1.1* | *30* | |
| *Surr: Dibromofluoromethane* | *20.74* | 0 | *20* | 0 | *104* | *85-115* | 20.18 | *2.74* | *30* | |
| *Surr: Toluene-d8* | *20.36* | 0 | *20* | 0 | *102* | *85-120* | 20.32 | *0.197* | *30* | |

**The following samples were analyzed in this batch:** 1207650-01A 1207650-02A 1207650-03A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

1207650

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_072112_KAP1 | Task: KRRI_SOURCE AREA 2 |
|---|---|---|
| | Total # of Samples: 3 | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |
| BILLING CODE: 6.00 | | |

**Lab Information:**
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

**Project Information:**
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: [redacted]
Phone/Fax:
Site PM Email: Bryan.Stiemsma@aecom.com

**Other Information:**
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #:
Send EDD to:
CC Hardcopy report:
CC Hardcopy report:

| ITEM # | SAMPLE ID (Samples IDs MUST BE UNIQUE) | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | HNO3 | HCl | None | None | HCl |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | Be,Mo,V,Ni by 6020 | GRO | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 |
| 1 | SBSA0132S072112G020 | SBSA0132 | WG | G | 07/21/2012 11:20 | 24 | MS/MSD | | X | X | X | X | X |
| 2 | SBSA0133S072112G040 | SBSA0133 | WG | G | 07/21/2012 13:35 | 8 | | | X | X | X | X | X |
| 3 | SBSA0133T072112WX | SBSA0133 | WQ | G | 07/21/2012 00:00 | 3 | TRIP BLANK | | | | | | X |

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7-23-2012 | 1008 | [signature] | 7/23/12 | 1499 |

**Sample Receipt Conditions**

| Temp in OC | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|
| 4.0°c | (Y)N | (Y)N | (Y)N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO:
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: KEITH PAYNE (KAP1)
SIGNATURE of SAMPLER: DATE Signed: Time:

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **23-Jul-12 14:04**

Work Order: **1207650** Received by: **MA**

Checklist completed by Diane Shaw eSignature 23-Jul-12 Date Reviewed by: Ann Preston eSignature 24-Jul-12 Date

Matrices: Groundwater
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 4.0 c | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 7/23/2012 4:45:48 PM | | |
| Water - VOA vials have zero headspace? | Yes ☑ | No ☐ | No VOA vials submitted ☐ |
| Water - pH acceptable upon receipt? | Yes ☑ | No ☐ | N/A ☐ |
| pH adjusted? | Yes ☐ | No ☑ | N/A ☐ |
| pH adjusted by: | - | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

**ALS Environmental**
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

| CUSTODY SEAL | Seal Broken By: |
| --- | --- |
| Date: 7.21.12 Time: | Date: |
| Name: | |
| Company: | |

01-Aug-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI Source Area GW 7/23/12** Work Order: **1207687**

Dear Bryan,

ALS Environmental received 5 samples on 24-Jul-2012 09:20 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 46.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 01-Aug-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area GW 7/23/12
**Work Order:** **1207687**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1207687-01 | SBSA0125S072312G099 | Groundwater | | 7/23/2012 15:27 | 7/24/2012 09:20 | ☐ |
| 1207687-02 | SBSA0125T072312WX | Water | | 7/23/2012 | 7/24/2012 09:20 | ☐ |
| 1207687-03 | SBSA0128S072312G099 | Groundwater | | 7/23/2012 17:30 | 7/24/2012 09:20 | ☐ |
| 1207687-04 | SBSA0132S072312G100 | Groundwater | | 7/23/2012 14:45 | 7/24/2012 09:20 | ☐ |
| 1207687-05 | SBSA0133S072312G100 | Groundwater | | 7/23/2012 14:05 | 7/24/2012 09:20 | ☐ |

## ALS Group USA, Corp

*Date: 01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area GW 7/23/12
**Work Order:** 1207687

# Case Narrative

Batch R107678A MS/MSD data for Volatiles is not related to this project's samples. No data requires qualification.

Batch R107714 LCS recoveries for Bromomethane, Methyl Iodide, and trans-1,4-Dichloro-2-butene were above control limits, but all samples in this quality control batch were ND for these compounds. No data requires qualification. Sample SBSA0125S072312G099 MS/MSD recoveries for Acetone were above the upper control limit. The parent sample was non-detect for Acetone. No qualification is necessary.

# ALS Group USA, Corp

Date: 01-Aug-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area GW 7/23/12
**WorkOrder:** **1207687**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| µg/L | Micrograms per Liter |
| mg/L | Milligrams per Liter |

# ALS Group USA, Corp

**Date:** *01-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0125S072312G099 |
| **Work Order:** | 1207687 | **Collection Date:** | 7/23/2012 3:27:00 PM |
| **Project:** | Marshall KRRI Source Area GW 7/23/12 | | |
| **Lab ID:** | 1207687-01 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **0.28** | **0.10** | **0.10** | | **mg/L** | 1 | 7/26/2012 |
| ORO (C20-C34) | ND | 0.10 | 0.10 | | mg/L | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *73.0* | *21-90* | | | *%REC* | 1 | 7/26/2012 |
| **GASOLINE RANGE ORGANICS BY GC-FID** | | | **SW8015** | | | | Analyst: **CW** |
| **GRO (C6-C10)** | **0.35** | **0.20** | **0.20** | | **mg/L** | 1 | 7/24/2012 |
| *Surr: Toluene-d8* | *95.9* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/27/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 7/28/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 7/28/2012 |
| Nickel | ND | 0.020 | 0.020 | | mg/L | 1 | 7/28/2012 |
| **Vanadium** | **0.0089** | **0.0040** | **0.0040** | | **mg/L** | 1 | 7/28/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *60.9* | *32-115* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *56.2* | *32-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *46.5* | *22-59* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *86.8* | *23-112* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *62.4* | *31-93* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *30.9* | *13-36* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **RS** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0125S072312G099
**Work Order:** 1207687
**Collection Date:** 7/23/2012 3:27:00 PM
**Project:** Marshall KRRI Source Area GW 7/23/12
**Lab ID:** 1207687-01
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| **1,2,4-Trimethylbenzene** | **4.2** | **1.0** | **1.0** | | **µg/L** | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| **1,3,5-Trimethylbenzene** | **1.4** | **1.0** | **1.0** | | **µg/L** | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 7/25/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 7/25/2012 |
| **Benzene** | **14** | **1.0** | **1.0** | | **µg/L** | 1 | 7/25/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Chloroform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| **Cyclohexane** | **8.0** | **5.0** | **5.0** | | **µg/L** | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0125S072312G099
**Work Order:** 1207687
**Collection Date:** 7/23/2012 3:27:00 PM
**Project:** Marshall KRRI Source Area GW 7/23/12
**Lab ID:** 1207687-01
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| **Ethylbenzene** | **1.4** | **1.0** | **1.0** | | **µg/L** | 1 | 7/25/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| **m,p-Xylene** | **4.7** | **2.0** | **1.0** | | **µg/L** | 1 | 7/25/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| **o-Xylene** | **3.3** | **1.0** | **1.0** | | **µg/L** | 1 | 7/25/2012 |
| **p-Isopropyltoluene** | **6.1** | **5.0** | **5.0** | | **µg/L** | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 7/25/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *105* | *70-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *98.6* | *75-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *97.8* | *85-115* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *98.6* | *85-120* | | | *%REC* | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0125T072312WX |
| **Work Order:** | 1207687 | **Collection Date:** | 7/23/2012 |
| **Project:** | Marshall KRRI Source Area GW 7/23/12 | | |
| **Lab ID:** | 1207687-02 | **Matrix:** | WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 7/25/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 7/25/2012 |
| Benzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Chloroform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Cyclohexane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0125T072312WX |
| **Work Order:** | 1207687 | **Collection Date:** | 7/23/2012 |
| **Project:** | Marshall KRRI Source Area GW 7/23/12 | | |
| **Lab ID:** | 1207687-02 | **Matrix:** | WATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Ethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| m,p-Xylene | ND | 2.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| o-Xylene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 7/25/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *89.0* | *70-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *93.3* | *75-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *95.3* | *85-115* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *89.4* | *85-120* | | | *%REC* | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0128S072312G099 |
| **Work Order:** | 1207687 | **Collection Date:** | 7/23/2012 5:30:00 PM |
| **Project:** | Marshall KRRI Source Area GW 7/23/12 | | |
| **Lab ID:** | 1207687-03 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS BY GC-FID** | | | **SW8015** | | | | Analyst: **CW** |
| GRO (C6-C10) | ND | 0.20 | 0.20 | | mg/L | 1 | 7/24/2012 |
| *Surr: Toluene-d8* | *93.7* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **RS** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 7/25/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 7/25/2012 |
| Benzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Chloroform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0128S072312G099 |
| **Work Order:** | 1207687 | **Collection Date:** | 7/23/2012 5:30:00 PM |
| **Project:** | Marshall KRRI Source Area GW 7/23/12 | | |
| **Lab ID:** | 1207687-03 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Cyclohexane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 7/25/2012 |
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Ethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| m,p-Xylene | ND | 2.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| o-Xylene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 7/25/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *103* | *70-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *100* | *75-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *99.1* | *85-115* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *97.8* | *85-120* | | | *%REC* | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132S072312G100 |
| **Work Order:** | 1207687 | **Collection Date:** | 7/23/2012 2:45:00 PM |
| **Project:** | Marshall KRRI Source Area GW 7/23/12 | | |
| **Lab ID:** | 1207687-04 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| DRO (C10-C20) | ND | 0.40 | 0.10 | | mg/L | 1 | 7/26/2012 |
| ORO (C20-C34) | ND | 0.40 | 0.10 | | mg/L | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *68.2* | *21-90* | | | *%REC* | 1 | 7/26/2012 |
| **GASOLINE RANGE ORGANICS BY GC-FID** | | | **SW8015** | | | | Analyst: **CW** |
| GRO (C6-C10) | ND | 0.20 | 0.20 | | mg/L | 1 | 7/24/2012 |
| *Surr: Toluene-d8* | *97.5* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/27/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 7/28/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 7/28/2012 |
| Nickel | ND | 0.020 | 0.020 | | mg/L | 1 | 7/28/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 7/28/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 20 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Acenaphthene | ND | 20 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Acenaphthylene | ND | 20 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Anthracene | ND | 20 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 4.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 4.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 4.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 4.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 4.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Chrysene | ND | 4.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 8.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Fluoranthene | ND | 4.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Fluorene | ND | 20 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 8.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Naphthalene | ND | 20 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Phenanthrene | ND | 8.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Pyrene | ND | 20 | 5.0 | | µg/L | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *58.8* | *32-115* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *53.3* | *32-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *40.7* | *22-59* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *82.0* | *23-112* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *57.7* | *31-93* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *27.5* | *13-36* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0132S072312G100
**Work Order:** 1207687
**Collection Date:** 7/23/2012 2:45:00 PM
**Project:** Marshall KRRI Source Area GW 7/23/12
**Lab ID:** 1207687-04
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 7/25/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 7/25/2012 |
| Benzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Chloroform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Cyclohexane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0132S072312G100 |
| **Work Order:** | 1207687 | **Collection Date:** | 7/23/2012 2:45:00 PM |
| **Project:** | Marshall KRRI Source Area GW 7/23/12 | | |
| **Lab ID:** | 1207687-04 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Ethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| m,p-Xylene | ND | 2.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| o-Xylene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 7/25/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *92.0* | *70-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *88.9* | *75-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *96.2* | *85-115* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *88.4* | *85-120* | | | *%REC* | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072312G100 |
| **Work Order:** | 1207687 | **Collection Date:** | 7/23/2012 2:05:00 PM |
| **Project:** | Marshall KRRI Source Area GW 7/23/12 | | |
| **Lab ID:** | 1207687-05 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **7/25/2012** | | Analyst: **CW** |
| DRO (C10-C20) | ND | 0.10 | 0.10 | | mg/L | 1 | 7/26/2012 |
| ORO (C20-C34) | ND | 0.10 | 0.10 | | mg/L | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *71.9* | *21-90* | | | *%REC* | 1 | 7/26/2012 |
| **GASOLINE RANGE ORGANICS BY GC-FID** | | | **SW8015** | | | | Analyst: **CW** |
| GRO (C6-C10) | ND | 0.20 | 0.20 | | mg/L | 1 | 7/24/2012 |
| *Surr: Toluene-d8* | *96.1* | *70-130* | | | *%REC* | 1 | 7/24/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **7/27/2012** | | Analyst: **RH** |
| Beryllium | ND | 0.0010 | 0.0010 | | mg/L | 1 | 7/28/2012 |
| Molybdenum | ND | 0.050 | 0.050 | | mg/L | 1 | 7/28/2012 |
| Nickel | ND | 0.020 | 0.020 | | mg/L | 1 | 7/28/2012 |
| Vanadium | ND | 0.0040 | 0.0040 | | mg/L | 1 | 7/28/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **7/25/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Acenaphthene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Acenaphthylene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Anthracene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(a)anthracene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(a)pyrene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(b)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(g,h,i)perylene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Benzo(k)fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Chrysene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Dibenzo(a,h)anthracene | ND | 2.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Fluoranthene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/26/2012 |
| Fluorene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 2.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| Phenanthrene | ND | 2.0 | 2.0 | | µg/L | 1 | 7/26/2012 |
| Pyrene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/26/2012 |
| *Surr: 2,4,6-Tribromophenol* | *59.2* | *32-115* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorobiphenyl* | *51.8* | *32-100* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 2-Fluorophenol* | *44.3* | *22-59* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: 4-Terphenyl-d14* | *86.0* | *23-112* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Nitrobenzene-d5* | *56.6* | *31-93* | | | *%REC* | 1 | 7/26/2012 |
| *Surr: Phenol-d6* | *27.9* | *13-36* | | | *%REC* | 1 | 7/26/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | | | Analyst: **RS** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0133S072312G100
**Work Order:** 1207687
**Collection Date:** 7/23/2012 2:05:00 PM
**Project:** Marshall KRRI Source Area GW 7/23/12
**Lab ID:** 1207687-05
**Matrix:** GROUNDWATER

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,1-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,3-Trichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 1,2,4-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | 0.20 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dibromoethane | ND | 1.0 | 0.050 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloroethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,2-Dichloropropane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3,5-Trimethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,3-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 1,4-Dichlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| 2-Butanone | ND | 25 | 25 | | µg/L | 1 | 7/25/2012 |
| 2-Hexanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| 2-Methylnaphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| 4-Methyl-2-pentanone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acetone | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| Acrylonitrile | ND | 2.0 | 2.0 | | µg/L | 1 | 7/25/2012 |
| Benzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromochloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromodichloromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromoform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Bromomethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon disulfide | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Carbon tetrachloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chlorobenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Chloroform | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Chloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| cis-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Cyclohexane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Dibromochloromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Dichlorodifluoromethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Diethyl ether | ND | 10 | 10 | | µg/L | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0133S072312G100 |
| **Work Order:** | 1207687 | **Collection Date:** | 7/23/2012 2:05:00 PM |
| **Project:** | Marshall KRRI Source Area GW 7/23/12 | | |
| **Lab ID:** | 1207687-05 | **Matrix:** | GROUNDWATER |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Ethylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Hexachloroethane | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Isopropylbenzene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| m,p-Xylene | ND | 2.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl iodide | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Methyl tert-butyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Methylene chloride | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Naphthalene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| n-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| n-Propylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| o-Xylene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| p-Isopropyltoluene | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| sec-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Styrene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| t-Butyl ethyl ether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| tert-Butyl alcohol | ND | 50 | 50 | | µg/L | 1 | 7/25/2012 |
| tert-Butylbenzene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tertiaryamylmethylether | ND | 5.0 | 5.0 | | µg/L | 1 | 7/25/2012 |
| Tetrachloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Tetrahydrofuran | ND | 90 | 90 | | µg/L | 1 | 7/25/2012 |
| Toluene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,2-Dichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,3-Dichloropropene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| trans-1,4-Dichloro-2-butene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichloroethene | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Trichlorofluoromethane | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| Vinyl chloride | ND | 1.0 | 1.0 | | µg/L | 1 | 7/25/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *104* | *70-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: 4-Bromofluorobenzene* | *103* | *75-120* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Dibromofluoromethane* | *101* | *85-115* | | | *%REC* | 1 | 7/25/2012 |
| *Surr: Toluene-d8* | *100* | *85-120* | | | *%REC* | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# QC BATCH REPORT

Batch ID: **42547** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKW1-42547-42547** Units: **mg/L** Analysis Date: **7/26/2012 04:49 AM**

Client ID: Run ID: **GC8_120725A** SeqNo: **2036837** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 0.10 | | | | | | | | |
| ORO (C20-C34) | ND | 0.10 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *0.03834* | 0 | *0.05* | 0 | *76.7* | *21-90* | 0 | | | |

**LCS** Sample ID: **DLCSW1-42547-42547** Units: **mg/L** Analysis Date: **7/26/2012 05:17 AM**

Client ID: Run ID: **GC8_120725A** SeqNo: **2036838** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 3.118 | 0.10 | 5 | 0 | 62.4 | 44-116 | 0 | | | |
| ORO (C20-C34) | 3.446 | 0.10 | 5 | 0 | 68.9 | 44-116 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *0.03043* | 0 | *0.05* | 0 | *60.9* | *21-90* | 0 | | | |

**MS** Sample ID: **1207650-01B MS** Units: **mg/L** Analysis Date: **7/26/2012 05:45 AM**

Client ID: Run ID: **GC8_120725A** SeqNo: **2036839** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 30.04 | 1.0 | 50 | 0 | 60.1 | 44-116 | 0 | | | |
| ORO (C20-C34) | 33.46 | 1.0 | 50 | 0 | 66.9 | 44-116 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *0.332* | 0 | *0.5* | 0 | *66.4* | *21-90* | 0 | | | |

**MSD** Sample ID: **1207650-01B MSD** Units: **mg/L** Analysis Date: **7/26/2012 06:13 AM**

Client ID: Run ID: **GC8_120725A** SeqNo: **2036840** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 30.22 | 1.0 | 50 | 0 | 60.4 | 44-116 | 30.04 | 0.611 | 30 | |
| ORO (C20-C34) | 32.89 | 1.0 | 50 | 0 | 65.8 | 44-116 | 33.46 | 1.73 | 30 | |
| *Surr: 4-Terphenyl-d14* | *0.3572* | 0 | *0.5* | 0 | *71.4* | *21-90* | 0.332 | *7.31* | *30* | |

**The following samples were analyzed in this batch:** 1207687-01B 1207687-04B 1207687-05B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207687
**Project:** Marshall KRRI Source Area GW 7/23/12

# QC BATCH REPORT

Batch ID: **R107677** Instrument ID **GC9** Method: **SW8015**

**MBLK** Sample ID: **MBLK-R107677-R107677** Units: **µg/L** Analysis Date: **7/24/2012 09:48 AM**
Client ID: Run ID: **GC9_120724A** SeqNo: **2035024** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | ND | 200 | | | | | | | | |
| *Surr: Toluene-d8* | *84.94* | 0 | *100* | 0 | *84.9* | *70-130* | 0 | | | |

**LCS** Sample ID: **LCS-R107677-R107677** Units: **µg/L** Analysis Date: **7/24/2012 09:23 AM**
Client ID: Run ID: **GC9_120724A** SeqNo: **2035023** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | 8967 | 200 | 10000 | 0 | 89.7 | 70-130 | 0 | | | |
| *Surr: Toluene-d8* | *81.97* | 0 | *100* | 0 | *82* | *70-130* | 0 | | | |

**MS** Sample ID: **1207650-01A MS** Units: **µg/L** Analysis Date: **7/24/2012 03:23 PM**
Client ID: Run ID: **GC9_120724A** SeqNo: **2035035** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | 8824 | 200 | 10000 | 0 | 88.2 | 70-130 | 0 | | | |
| *Surr: Toluene-d8* | *88.11* | 0 | *100* | 0 | *88.1* | *70-130* | 0 | | | |

**MSD** Sample ID: **1207650-01A MSD** Units: **µg/L** Analysis Date: **7/24/2012 03:48 PM**
Client ID: Run ID: **GC9_120724A** SeqNo: **2035036** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| GRO (C6-C10) | 8766 | 200 | 10000 | 0 | 87.7 | 70-130 | 8824 | 0.662 | 30 | |
| *Surr: Toluene-d8* | *87.76* | 0 | *100* | 0 | *87.8* | *70-130* | 88.11 | *0.398* | *30* | |

**The following samples were analyzed in this batch:** 1207687-01A 1207687-03A 1207687-04A 1207687-05A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207687
**Project:** Marshall KRRI Source Area GW 7/23/12

# QC BATCH REPORT

Batch ID: **42618** Instrument ID **ICPMS2** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42618-42618** Units: **mg/L** Analysis Date: **7/27/2012 07:50 PM**
Client ID: Run ID: **ICPMS2_120727A** SeqNo: **2039776** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.0020 | | | | | | | | |
| Molybdenum | ND | 0.0050 | | | | | | | | |
| Nickel | ND | 0.0050 | | | | | | | | |
| Vanadium | ND | 0.0050 | | | | | | | | |

**LCS** Sample ID: **LCS-42618-42618** Units: **mg/L** Analysis Date: **7/27/2012 08:00 PM**
Client ID: Run ID: **ICPMS2_120727A** SeqNo: **2039778** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.09406 | 0.0020 | 0.1 | 0 | 94.1 | 80-120 | 0 | | | |
| Molybdenum | 0.09645 | 0.0050 | 0.1 | 0 | 96.4 | 80-120 | 0 | | | |
| Nickel | 0.0965 | 0.0050 | 0.1 | 0 | 96.5 | 80-120 | 0 | | | |
| Vanadium | 0.09694 | 0.0050 | 0.1 | 0 | 96.9 | 80-120 | 0 | | | |

**MS** Sample ID: **1207668-46AMS** Units: **mg/L** Analysis Date: **7/28/2012 02:31 AM**
Client ID: Run ID: **ICPMS2_120727B** SeqNo: **2040917** Prep Date: **7/27/2012** DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.9031 | 0.20 | 1 | -0.000442 | 90.4 | 75-125 | 0 | | | |
| Molybdenum | 0.9013 | 0.50 | 1 | -0.003836 | 90.5 | 75-125 | 0 | | | |
| Nickel | 0.9133 | 0.50 | 1 | 0.007447 | 90.6 | 75-125 | 0 | | | |
| Vanadium | 0.853 | 0.50 | 1 | 0.01923 | 83.4 | 75-125 | 0 | | | |

**MSD** Sample ID: **1207668-46AMSD** Units: **mg/L** Analysis Date: **7/28/2012 02:51 AM**
Client ID: Run ID: **ICPMS2_120727B** SeqNo: **2040921** Prep Date: **7/27/2012** DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.9019 | 0.20 | 1 | -0.000442 | 90.2 | 75-125 | 0.9031 | 0.133 | 20 | |
| Molybdenum | 0.9026 | 0.50 | 1 | -0.003836 | 90.6 | 75-125 | 0.9013 | 0.144 | 20 | |
| Nickel | 0.9008 | 0.50 | 1 | 0.007447 | 89.3 | 75-125 | 0.9133 | 1.38 | 20 | |
| Vanadium | 0.8522 | 0.50 | 1 | 0.01923 | 83.3 | 75-125 | 0.853 | 0.0938 | 20 | |

**LCSLL** Sample ID: **LLQC-42618-42618** Units: **mg/L** Analysis Date: **7/27/2012 07:55 PM**
Client ID: Run ID: **ICPMS2_120727A** SeqNo: **2039777** Prep Date: **7/27/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 0.001865 | 0.0020 | 0.002 | 0 | 93.2 | 70-130 | 0 | | | J |
| Molybdenum | 0.004796 | 0.0050 | 0.005 | 0 | 95.9 | 70-130 | 0 | | | J |
| Nickel | 0.005357 | 0.0050 | 0.005 | 0 | 107 | 70-130 | 0 | | | |
| Vanadium | 0.004583 | 0.0050 | 0.005 | 0 | 91.7 | 70-130 | 0 | | | J |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207687
**Project:** Marshall KRRI Source Area GW 7/23/12

# QC BATCH REPORT

Batch ID: **42618** Instrument ID **ICPMS2** Method: **SW6020A**

| **The following samples were analyzed in this batch:** | 1207687-01C | 1207687-04C | 1207687-05C |
|---|---|---|---|

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207687
**Project:** Marshall KRRI Source Area GW 7/23/12

# QC BATCH REPORT

Batch ID: **42546** Instrument ID **SVMS4** Method: **SW8270**

**MBLK** Sample ID: **SBLKW1-42546-42546** Units: **µg/L** Analysis Date: **7/25/2012 08:31 PM**
Client ID: Run ID: **SVMS4_120725A** SeqNo: **2039043** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 5.0 | | | | | | | | |
| Acenaphthene | ND | 5.0 | | | | | | | | |
| Acenaphthylene | ND | 5.0 | | | | | | | | |
| Anthracene | ND | 5.0 | | | | | | | | |
| Benzo(a)anthracene | ND | 5.0 | | | | | | | | |
| Benzo(a)pyrene | ND | 5.0 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 5.0 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 5.0 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 5.0 | | | | | | | | |
| Chrysene | ND | 5.0 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 5.0 | | | | | | | | |
| Fluoranthene | ND | 5.0 | | | | | | | | |
| Fluorene | ND | 5.0 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 5.0 | | | | | | | | |
| Naphthalene | ND | 5.0 | | | | | | | | |
| Phenanthrene | ND | 5.0 | | | | | | | | |
| Pyrene | ND | 5.0 | | | | | | | | |
| *Surr: 2-Fluorobiphenyl* | *30.08* | 0 | *50* | 0 | *60.2* | *32-100* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *53.02* | 0 | *50* | 0 | *106* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *31.94* | 0 | *50* | 0 | *63.9* | *31-93* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207687
**Project:** Marshall KRRI Source Area GW 7/23/12

# QC BATCH REPORT

Batch ID: **42546** Instrument ID **SVMS4** Method: **SW8270**

**LCS** Sample ID: **SLCSW1-42546-42546** Units: **µg/L** Analysis Date: **7/26/2012 10:49 AM**
Client ID: Run ID: **SVMS4_120726A** SeqNo: **2039461** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 13 | 5.0 | 20 | 0 | 65 | 45-105 | 0 | | | |
| Acenaphthene | 14.79 | 5.0 | 20 | 0 | 74 | 45-110 | 0 | | | |
| Acenaphthylene | 14.83 | 5.0 | 20 | 0 | 74.2 | 50-105 | 0 | | | |
| Anthracene | 16.97 | 5.0 | 20 | 0 | 84.8 | 55-110 | 0 | | | |
| Benzo(a)anthracene | 15.34 | 5.0 | 20 | 0 | 76.7 | 55-110 | 0 | | | |
| Benzo(a)pyrene | 16.68 | 5.0 | 20 | 0 | 83.4 | 55-110 | 0 | | | |
| Benzo(b)fluoranthene | 16.52 | 5.0 | 20 | 0 | 82.6 | 45-120 | 0 | | | |
| Benzo(g,h,i)perylene | 16.54 | 5.0 | 20 | 0 | 82.7 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 16.87 | 5.0 | 20 | 0 | 84.4 | 45-125 | 0 | | | |
| Chrysene | 17.29 | 5.0 | 20 | 0 | 86.4 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 15.85 | 5.0 | 20 | 0 | 79.2 | 40-125 | 0 | | | |
| Fluoranthene | 16.48 | 5.0 | 20 | 0 | 82.4 | 55-115 | 0 | | | |
| Fluorene | 14.07 | 5.0 | 20 | 0 | 70.4 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 16.03 | 5.0 | 20 | 0 | 80.2 | 45-125 | 0 | | | |
| Naphthalene | 12.85 | 5.0 | 20 | 0 | 64.2 | 40-100 | 0 | | | |
| Phenanthrene | 16.23 | 5.0 | 20 | 0 | 81.2 | 50-115 | 0 | | | |
| Pyrene | 18.97 | 5.0 | 20 | 0 | 94.8 | 50-130 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *27.82* | 0 | *50* | 0 | *55.6* | *38-115* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *26.23* | 0 | *50* | 0 | *52.5* | *32-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *21.64* | 0 | *50* | 0 | *43.3* | *22-59* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *33.94* | 0 | *50* | 0 | *67.9* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *28.9* | 0 | *50* | 0 | *57.8* | *31-93* | 0 | | | |
| *Surr: Phenol-d6* | *14.12* | 0 | *50* | 0 | *28.2* | *13-36* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42546** Instrument ID **SVMS4** Method: **SW8270**

**MS** Sample ID: **1207650-01B MS** Units: **µg/L** Analysis Date: **7/26/2012 11:22 AM**
Client ID: Run ID: **SVMS4_120726A** SeqNo: **2039462** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 155.3 | 50 | 200 | 0 | 77.6 | 45-105 | 0 | | | |
| Acenaphthene | 175.8 | 50 | 200 | 0 | 87.9 | 45-110 | 0 | | | |
| Acenaphthylene | 177.3 | 50 | 200 | 0 | 88.6 | 50-105 | 0 | | | |
| Anthracene | 193.1 | 50 | 200 | 0 | 96.6 | 55-110 | 0 | | | |
| Benzo(a)anthracene | 169.6 | 50 | 200 | 0 | 84.8 | 55-110 | 0 | | | |
| Benzo(a)pyrene | 181.2 | 50 | 200 | 0 | 90.6 | 55-110 | 0 | | | |
| Benzo(b)fluoranthene | 181.7 | 50 | 200 | 0 | 90.8 | 45-120 | 0 | | | |
| Benzo(g,h,i)perylene | 184.1 | 50 | 200 | 0 | 92 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 185.4 | 50 | 200 | 0 | 92.7 | 45-125 | 0 | | | |
| Chrysene | 189.1 | 50 | 200 | 0 | 94.6 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 178.1 | 50 | 200 | 0 | 89 | 40-125 | 0 | | | |
| Fluoranthene | 182 | 50 | 200 | 0 | 91 | 55-115 | 0 | | | |
| Fluorene | 167.5 | 50 | 200 | 0 | 83.8 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 179.8 | 50 | 200 | 0 | 89.9 | 45-125 | 0 | | | |
| Naphthalene | 154.8 | 50 | 200 | 0 | 77.4 | 40-100 | 0 | | | |
| Phenanthrene | 187.2 | 50 | 200 | 0 | 93.6 | 50-115 | 0 | | | |
| Pyrene | 207.8 | 50 | 200 | 0 | 104 | 50-130 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *319* | 0 | *500* | 0 | *63.8* | *38-115* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *309.2* | 0 | *500* | 0 | *61.8* | *32-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *253* | 0 | *500* | 0 | *50.6* | *22-59* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *446.8* | 0 | *500* | 0 | *89.4* | *23-112* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *339.3* | 0 | *500* | 0 | *67.9* | *31-93* | 0 | | | |
| *Surr: Phenol-d6* | *166.4* | 0 | *500* | 0 | *33.3* | *13-36* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207687
**Project:** Marshall KRRI Source Area GW 7/23/12

# QC BATCH REPORT

Batch ID: **42546** Instrument ID **SVMS4** Method: **SW8270**

**MSD** Sample ID: **1207650-01B MSD** Units: **µg/L** Analysis Date: **7/26/2012 11:56 AM**
Client ID: Run ID: **SVMS4_120726A** SeqNo: **2039463** Prep Date: **7/25/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 122.3 | 50 | 200 | 0 | 61.2 | 45-105 | 155.3 | 23.8 | 30 | |
| Acenaphthene | 141.7 | 50 | 200 | 0 | 70.8 | 45-110 | 175.8 | 21.5 | 30 | |
| Acenaphthylene | 141.4 | 50 | 200 | 0 | 70.7 | 50-105 | 177.3 | 22.5 | 30 | |
| Anthracene | 159.9 | 50 | 200 | 0 | 80 | 55-110 | 193.1 | 18.8 | 30 | |
| Benzo(a)anthracene | 144.7 | 50 | 200 | 0 | 72.4 | 55-110 | 169.6 | 15.8 | 30 | |
| Benzo(a)pyrene | 156 | 50 | 200 | 0 | 78 | 55-110 | 181.2 | 14.9 | 30 | |
| Benzo(b)fluoranthene | 160.3 | 50 | 200 | 0 | 80.2 | 45-120 | 181.7 | 12.5 | 30 | |
| Benzo(g,h,i)perylene | 161.2 | 50 | 200 | 0 | 80.6 | 40-125 | 184.1 | 13.3 | 30 | |
| Benzo(k)fluoranthene | 153.2 | 50 | 200 | 0 | 76.6 | 45-125 | 185.4 | 19 | 30 | |
| Chrysene | 163.6 | 50 | 200 | 0 | 81.8 | 55-110 | 189.1 | 14.5 | 30 | |
| Dibenzo(a,h)anthracene | 152.2 | 50 | 200 | 0 | 76.1 | 40-125 | 178.1 | 15.7 | 30 | |
| Fluoranthene | 155.5 | 50 | 200 | 0 | 77.8 | 55-115 | 182 | 15.7 | 30 | |
| Fluorene | 135.1 | 50 | 200 | 0 | 67.6 | 50-110 | 167.5 | 21.4 | 30 | |
| Indeno(1,2,3-cd)pyrene | 153.2 | 50 | 200 | 0 | 76.6 | 45-125 | 179.8 | 16 | 30 | |
| Naphthalene | 121.1 | 50 | 200 | 0 | 60.6 | 40-100 | 154.8 | 24.4 | 30 | |
| Phenanthrene | 154.8 | 50 | 200 | 0 | 77.4 | 50-115 | 187.2 | 18.9 | 30 | |
| Pyrene | 177.9 | 50 | 200 | 0 | 89 | 50-130 | 207.8 | 15.5 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *271.7* | 0 | *500* | 0 | *54.3* | *38-115* | 319 | *16* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *251.7* | 0 | *500* | 0 | *50.3* | *32-100* | 309.2 | *20.5* | *40* | |
| *Surr: 2-Fluorophenol* | *212.1* | 0 | *500* | 0 | *42.4* | *22-59* | 253 | *17.6* | *40* | |
| *Surr: 4-Terphenyl-d14* | *395.2* | 0 | *500* | 0 | *79* | *23-112* | 446.8 | *12.3* | *40* | |
| *Surr: Nitrobenzene-d5* | *271.9* | 0 | *500* | 0 | *54.4* | *31-93* | 339.3 | *22.1* | *40* | |
| *Surr: Phenol-d6* | *135.4* | 0 | *500* | 0 | *27.1* | *13-36* | 166.4 | *20.5* | *40* | |

**The following samples were analyzed in this batch:** 1207687-01B 1207687-04B 1207687-05B

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **R107678A** Instrument ID **VMS9** Method: **SW8260**

**MBLK** Sample ID: **VBLKW2-120724-R107678A** Units: **µg/L** Analysis Date: **7/25/2012 01:42 AM**
Client ID: Run ID: **VMS9_120724B** SeqNo: **2035042** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 3.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 2.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 2.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 2.0 | | | | | | | | |
| 2-Butanone | ND | 5.0 | | | | | | | | |
| 2-Hexanone | ND | 5.0 | | | | | | | | |
| 2-Methylnaphthalene | ND | 10 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 5.0 | | | | | | | | |
| Acetone | ND | 20 | | | | | | | | |
| Acrylonitrile | ND | 1.0 | | | | | | | | |
| Benzene | ND | 1.0 | | | | | | | | |
| Bromochloromethane | ND | 1.0 | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 1.0 | | | | | | | | |
| Carbon disulfide | ND | 2.5 | | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroethane | ND | 1.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 1.0 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| Cyclohexane | ND | 5.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| Diethyl ether | ND | 10 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R107678A** Instrument ID **VMS9** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | |
| Hexachloroethane | ND | 1.0 | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | |
| m,p-Xylene | ND | 2.0 | | | | | |
| Methyl iodide | ND | 5.0 | | | | | |
| Methyl tert-butyl ether | ND | 5.0 | | | | | |
| Methylene chloride | ND | 5.0 | | | | | |
| Naphthalene | ND | 5.0 | | | | | |
| n-Butylbenzene | ND | 1.0 | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | |
| o-Xylene | ND | 1.0 | | | | | |
| p-Isopropyltoluene | ND | 2.0 | | | | | |
| sec-Butylbenzene | ND | 2.0 | | | | | |
| Styrene | ND | 1.0 | | | | | |
| t-Butyl ethyl ether | ND | 0 | | | | | |
| tert-Butyl alcohol | ND | 50 | | | | | |
| tert-Butylbenzene | ND | 2.0 | | | | | |
| Tertiaryamylmethylether | ND | 5.0 | | | | | |
| Tetrachloroethene | ND | 2.0 | | | | | |
| Tetrahydrofuran | ND | 10 | | | | | |
| Toluene | ND | 1.0 | | | | | |
| trans-1,2-Dichloroethene | ND | 1.0 | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 5.0 | | | | | |
| Trichloroethene | ND | 1.0 | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | |
| Vinyl chloride | ND | 1.0 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *17.64* | 0 | *20* | 0 | *88.2* | *70-120* | 0 |
| *Surr: 4-Bromofluorobenzene* | *18.16* | 0 | *20* | 0 | *90.8* | *75-120* | 0 |
| *Surr: Dibromofluoromethane* | *19.13* | 0 | *20* | 0 | *95.6* | *85-115* | 0 |
| *Surr: Toluene-d8* | *17.75* | 0 | *20* | 0 | *88.8* | *85-120* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207687
**Project:** Marshall KRRI Source Area GW 7/23/12

# QC BATCH REPORT

Batch ID: **R107678A** Instrument ID **VMS9** Method: **SW8260**

**LCS** Sample ID: **VLCSW2-120724-R107678A** Units: **µg/L** Analysis Date: **7/25/2012 12:52 PM**
Client ID: Run ID: **VMS9_120724B** SeqNo: **2035043** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 20.65 | 1.0 | 20 | 0 | 103 | 80-130 | 0 | | | |
| 1,1,1-Trichloroethane | 19.22 | 1.0 | 20 | 0 | 96.1 | 65-130 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 17.98 | 1.0 | 20 | 0 | 89.9 | 65-130 | 0 | | | |
| 1,1,2-Trichloroethane | 18.82 | 1.0 | 20 | 0 | 94.1 | 75-125 | 0 | | | |
| 1,1-Dichloroethane | 18.16 | 1.0 | 20 | 0 | 90.8 | 70-135 | 0 | | | |
| 1,1-Dichloroethene | 19.25 | 1.0 | 20 | 0 | 96.2 | 70-130 | 0 | | | |
| 1,2,3-Trichlorobenzene | 21.78 | 3.0 | 20 | 0 | 109 | 55-140 | 0 | | | |
| 1,2,3-Trichloropropane | 18.26 | 1.0 | 20 | 0 | 91.3 | 75-125 | 0 | | | |
| 1,2,4-Trichlorobenzene | 23.61 | 1.0 | 20 | 0 | 118 | 65-135 | 0 | | | |
| 1,2,4-Trimethylbenzene | 19.6 | 1.0 | 20 | 0 | 98 | 75-130 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 17.33 | 1.0 | 20 | 0 | 86.6 | 50-130 | 0 | | | |
| 1,2-Dibromoethane | 20.47 | 1.0 | 20 | 0 | 102 | 80-120 | 0 | | | |
| 1,2-Dichlorobenzene | 21.06 | 1.0 | 20 | 0 | 105 | 70-120 | 0 | | | |
| 1,2-Dichloroethane | 17.3 | 1.0 | 20 | 0 | 86.5 | 70-130 | 0 | | | |
| 1,2-Dichloropropane | 17.55 | 2.0 | 20 | 0 | 87.8 | 75-125 | 0 | | | |
| 1,3,5-Trimethylbenzene | 21.79 | 1.0 | 20 | 0 | 109 | 75-130 | 0 | | | |
| 1,3-Dichlorobenzene | 20.99 | 2.0 | 20 | 0 | 105 | 75-125 | 0 | | | |
| 1,4-Dichlorobenzene | 20.7 | 2.0 | 20 | 0 | 104 | 75-125 | 0 | | | |
| 2-Butanone | 18.33 | 5.0 | 20 | 0 | 91.6 | 30-150 | 0 | | | |
| 2-Hexanone | 18.02 | 5.0 | 20 | 0 | 90.1 | 55-130 | 0 | | | |
| 4-Methyl-2-pentanone | 17.55 | 5.0 | 20 | 0 | 87.8 | 60-135 | 0 | | | |
| Acetone | 18.34 | 20 | 20 | 0 | 91.7 | 40-140 | 0 | | | J |
| Acrylonitrile | 16.3 | 1.0 | 20 | 0 | 81.5 | 70-135 | 0 | | | |
| Benzene | 18.97 | 1.0 | 20 | 0 | 94.8 | 80-120 | 0 | | | |
| Bromochloromethane | 19 | 1.0 | 20 | 0 | 95 | 65-130 | 0 | | | |
| Bromodichloromethane | 16.07 | 1.0 | 20 | 0 | 80.4 | 75-120 | 0 | | | |
| Bromoform | 18 | 1.0 | 20 | 0 | 90 | 70-130 | 0 | | | |
| Bromomethane | 20.69 | 1.0 | 20 | 0 | 103 | 30-145 | 0 | | | |
| Carbon disulfide | 20.65 | 2.5 | 20 | 0 | 103 | 35-165 | 0 | | | |
| Carbon tetrachloride | 17.37 | 1.0 | 20 | 0 | 86.8 | 65-140 | 0 | | | |
| Chlorobenzene | 20.7 | 1.0 | 20 | 0 | 104 | 80-120 | 0 | | | |
| Chloroethane | 17.59 | 1.0 | 20 | 0 | 88 | 60-135 | 0 | | | |
| Chloroform | 18.82 | 1.0 | 20 | 0 | 94.1 | 65-135 | 0 | | | |
| Chloromethane | 18.16 | 1.0 | 20 | 0 | 90.8 | 70-125 | 0 | | | |
| cis-1,2-Dichloroethene | 19.74 | 1.0 | 20 | 0 | 98.7 | 70-125 | 0 | | | |
| cis-1,3-Dichloropropene | 16.08 | 1.0 | 20 | 0 | 80.4 | 70-130 | 0 | | | |
| Dibromochloromethane | 17.29 | 1.0 | 20 | 0 | 86.4 | 60-135 | 0 | | | |
| Dichlorodifluoromethane | 15.59 | 1.0 | 20 | 0 | 78 | 30-155 | 0 | | | |
| Ethylbenzene | 21.77 | 1.0 | 20 | 0 | 109 | 75-125 | 0 | | | |
| Hexachloroethane | 18.43 | 1.0 | 20 | 0 | 92.2 | 70-135 | 0 | | | |
| Isopropylbenzene | 22.64 | 1.0 | 20 | 0 | 113 | 75-125 | 0 | | | |
| m,p-Xylene | 43.54 | 2.0 | 40 | 0 | 109 | 75-130 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R107678A** Instrument ID **VMS9** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Methyl iodide | 17.27 | 5.0 | 20 | 0 | 86.4 | 70-135 | 0 | |
| Methyl tert-butyl ether | 18.16 | 5.0 | 20 | 0 | 90.8 | 65-125 | 0 | |
| Methylene chloride | 18.72 | 5.0 | 20 | 0 | 93.6 | 55-140 | 0 | |
| Naphthalene | 17.23 | 5.0 | 20 | 0 | 86.2 | 55-140 | 0 | |
| n-Butylbenzene | 22.19 | 1.0 | 20 | 0 | 111 | 70-135 | 0 | |
| n-Propylbenzene | 20.99 | 1.0 | 20 | 0 | 105 | 70-130 | 0 | |
| o-Xylene | 21.81 | 1.0 | 20 | 0 | 109 | 80-120 | 0 | |
| p-Isopropyltoluene | 21.75 | 2.0 | 20 | 0 | 109 | 75-130 | 0 | |
| sec-Butylbenzene | 19.36 | 2.0 | 20 | 0 | 96.8 | 70-125 | 0 | |
| Styrene | 19.19 | 1.0 | 20 | 0 | 96 | 65-135 | 0 | |
| tert-Butylbenzene | 20.98 | 2.0 | 20 | 0 | 105 | 70-130 | 0 | |
| Tetrachloroethene | 20.62 | 2.0 | 20 | 0 | 103 | 45-150 | 0 | |
| Tetrahydrofuran | 17.03 | 10 | 20 | 0 | 85.2 | 70-135 | 0 | |
| Toluene | 20.5 | 1.0 | 20 | 0 | 102 | 75-120 | 0 | |
| trans-1,2-Dichloroethene | 19.07 | 1.0 | 20 | 0 | 95.4 | 60-140 | 0 | |
| trans-1,3-Dichloropropene | 16.96 | 1.0 | 20 | 0 | 84.8 | 55-140 | 0 | |
| trans-1,4-Dichloro-2-butene | 13.58 | 5.0 | 20 | 0 | 67.9 | 70-135 | 0 | S |
| Trichloroethene | 19.9 | 1.0 | 20 | 0 | 99.5 | 70-125 | 0 | |
| Trichlorofluoromethane | 17.37 | 1.0 | 20 | 0 | 86.8 | 60-145 | 0 | |
| Vinyl chloride | 17.56 | 1.0 | 20 | 0 | 87.8 | 50-145 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *17.57* | 0 | *20* | 0 | *87.8* | *70-120* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *19.29* | 0 | *20* | 0 | *96.4* | *75-120* | 0 | |
| *Surr: Dibromofluoromethane* | *19.08* | 0 | *20* | 0 | *95.4* | *85-115* | 0 | |
| *Surr: Toluene-d8* | *20.06* | 0 | *20* | 0 | *100* | *85-120* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207687
**Project:** Marshall KRRI Source Area GW 7/23/12

# QC BATCH REPORT

Batch ID: **R107678A** Instrument ID **VMS9** Method: **SW8260**

| **MS** | Sample ID: **1207604-05A MS** | | | | Units: **µg/L** | | | Analysis Date: **7/25/2012 08:50 AM** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | | Run ID: **VMS9_120724B** | | | SeqNo: **2036079** | | Prep Date: | | DF: **1** | |
| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
| 1,1,1,2-Tetrachloroethane | 19.13 | 1.0 | 20 | 0 | 95.6 | 80-130 | 0 | | | |
| 1,1,1-Trichloroethane | 19.51 | 1.0 | 20 | 0 | 97.6 | 65-130 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 19.81 | 1.0 | 20 | 0 | 99 | 65-130 | 0 | | | |
| 1,1,2-Trichloroethane | 17.84 | 1.0 | 20 | 0 | 89.2 | 75-125 | 0 | | | |
| 1,1-Dichloroethane | 17.82 | 1.0 | 20 | 0 | 89.1 | 70-135 | 0 | | | |
| 1,1-Dichloroethene | 19.47 | 1.0 | 20 | 0 | 97.4 | 70-130 | 0 | | | |
| 1,2,3-Trichlorobenzene | 18.08 | 3.0 | 20 | 0 | 90.4 | 55-140 | 0 | | | |
| 1,2,3-Trichloropropane | 16.95 | 1.0 | 20 | 0 | 84.8 | 75-125 | 0 | | | |
| 1,2,4-Trichlorobenzene | 19.31 | 1.0 | 20 | 0 | 96.6 | 65-135 | 0 | | | |
| 1,2,4-Trimethylbenzene | 18.95 | 1.0 | 20 | 0 | 94.8 | 75-130 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 14.94 | 1.0 | 20 | 0 | 74.7 | 50-130 | 0 | | | |
| 1,2-Dibromoethane | 19.21 | 1.0 | 20 | 0 | 96 | 80-120 | 0 | | | |
| 1,2-Dichlorobenzene | 18.9 | 1.0 | 20 | 0 | 94.5 | 70-120 | 0 | | | |
| 1,2-Dichloroethane | 16.44 | 1.0 | 20 | 0 | 82.2 | 70-130 | 0 | | | |
| 1,2-Dichloropropane | 16.64 | 2.0 | 20 | 0 | 83.2 | 75-125 | 0 | | | |
| 1,3,5-Trimethylbenzene | 21.15 | 1.0 | 20 | 0 | 106 | 75-130 | 0 | | | |
| 1,3-Dichlorobenzene | 19.3 | 2.0 | 20 | 0 | 96.5 | 75-125 | 0 | | | |
| 1,4-Dichlorobenzene | 18.85 | 2.0 | 20 | 0 | 94.2 | 75-125 | 0 | | | |
| 2-Butanone | 15.65 | 5.0 | 20 | 0 | 78.2 | 30-150 | 0 | | | |
| 2-Hexanone | 15.83 | 5.0 | 20 | 0 | 79.2 | 55-130 | 0 | | | |
| 4-Methyl-2-pentanone | 16.07 | 5.0 | 20 | 0 | 80.4 | 60-135 | 0 | | | |
| Acetone | 18.69 | 20 | 20 | 0 | 93.4 | 40-140 | 0 | | | J |
| Acrylonitrile | 15.53 | 1.0 | 20 | 0 | 77.6 | 70-135 | 0 | | | |
| Benzene | 18.59 | 1.0 | 20 | 0 | 93 | 80-120 | 0 | | | |
| Bromochloromethane | 18.61 | 1.0 | 20 | 0 | 93 | 65-130 | 0 | | | |
| Bromodichloromethane | 14.59 | 1.0 | 20 | 0 | 73 | 75-120 | 0 | | | S |
| Bromoform | 16.66 | 1.0 | 20 | 0 | 83.3 | 70-130 | 0 | | | |
| Bromomethane | 17.5 | 1.0 | 20 | 0 | 87.5 | 30-145 | 0 | | | |
| Carbon disulfide | 19.08 | 2.5 | 20 | 0 | 95.4 | 35-165 | 0 | | | |
| Carbon tetrachloride | 17.2 | 1.0 | 20 | 0 | 86 | 65-140 | 0 | | | |
| Chlorobenzene | 19.6 | 1.0 | 20 | 0 | 98 | 80-120 | 0 | | | |
| Chloroethane | 16.35 | 1.0 | 20 | 0 | 81.8 | 60-135 | 0 | | | |
| Chloroform | 19.34 | 1.0 | 20 | 0 | 96.7 | 65-135 | 0 | | | |
| Chloromethane | 17.3 | 1.0 | 20 | 0 | 86.5 | 70-125 | 0 | | | |
| cis-1,2-Dichloroethene | 16.55 | 1.0 | 20 | 0 | 82.8 | 70-125 | 0 | | | |
| cis-1,3-Dichloropropene | 13.03 | 1.0 | 20 | 0 | 65.2 | 70-130 | 0 | | | S |
| Dibromochloromethane | 15.69 | 1.0 | 20 | 0 | 78.4 | 60-135 | 0 | | | |
| Dichlorodifluoromethane | 16.24 | 1.0 | 20 | 0 | 81.2 | 30-155 | 0 | | | |
| Ethylbenzene | 21.06 | 1.0 | 20 | 0 | 105 | 75-125 | 0 | | | |
| Hexachloroethane | 17.07 | 1.0 | 20 | 0 | 85.4 | 70-135 | 0 | | | |
| Isopropylbenzene | 21.81 | 1.0 | 20 | 0 | 109 | 75-125 | 0 | | | |
| m,p-Xylene | 42.21 | 2.0 | 40 | 0 | 106 | 75-130 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R107678A** Instrument ID **VMS9** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Methyl iodide | 14.91 | 5.0 | 20 | 0 | 74.6 | 70-135 | 0 | |
| Methyl tert-butyl ether | 15.32 | 5.0 | 20 | 0 | 76.6 | 65-125 | 0 | |
| Methylene chloride | 18.3 | 5.0 | 20 | 0 | 91.5 | 55-140 | 0 | |
| Naphthalene | 14.17 | 5.0 | 20 | 0 | 70.8 | 55-140 | 0 | |
| n-Butylbenzene | 19.94 | 1.0 | 20 | 0 | 99.7 | 70-135 | 0 | |
| n-Propylbenzene | 20.14 | 1.0 | 20 | 0 | 101 | 70-130 | 0 | |
| o-Xylene | 20.58 | 1.0 | 20 | 0 | 103 | 80-120 | 0 | |
| p-Isopropyltoluene | 19.97 | 2.0 | 20 | 0 | 99.8 | 75-130 | 0 | |
| sec-Butylbenzene | 18.99 | 2.0 | 20 | 0 | 95 | 70-125 | 0 | |
| Styrene | 18.28 | 1.0 | 20 | 0 | 91.4 | 65-135 | 0 | |
| tert-Butylbenzene | 20.67 | 2.0 | 20 | 0 | 103 | 70-130 | 0 | |
| Tetrachloroethene | 17.48 | 2.0 | 20 | 0 | 87.4 | 45-150 | 0 | |
| Tetrahydrofuran | 15.84 | 10 | 20 | 0 | 79.2 | 70-135 | 0 | |
| Toluene | 20.55 | 1.0 | 20 | 0 | 103 | 75-120 | 0 | |
| trans-1,2-Dichloroethene | 18.96 | 1.0 | 20 | 0 | 94.8 | 60-140 | 0 | |
| trans-1,3-Dichloropropene | 13.88 | 1.0 | 20 | 0 | 69.4 | 55-140 | 0 | |
| trans-1,4-Dichloro-2-butene | 11.04 | 5.0 | 20 | 0 | 55.2 | 70-135 | 0 | S |
| Trichloroethene | 17.86 | 1.0 | 20 | 0 | 89.3 | 70-125 | 0 | |
| Trichlorofluoromethane | 17.68 | 1.0 | 20 | 0 | 88.4 | 60-145 | 0 | |
| Vinyl chloride | 17.54 | 1.0 | 20 | 0 | 87.7 | 50-145 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *17.35* | 0 | *20* | 0 | *86.8* | *70-120* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *18.86* | 0 | *20* | 0 | *94.3* | *75-120* | 0 | |
| *Surr: Dibromofluoromethane* | *18.85* | 0 | *20* | 0 | *94.2* | *85-115* | 0 | |
| *Surr: Toluene-d8* | *19.86* | 0 | *20* | 0 | *99.3* | *85-120* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207687
**Project:** Marshall KRRI Source Area GW 7/23/12

# QC BATCH REPORT

Batch ID: **R107678A** Instrument ID **VMS9** Method: **SW8260**

**MSD** Sample ID: **1207604-05A MSD** Units: **µg/L** Analysis Date: **7/25/2012 09:15 AM**
Client ID: Run ID: **VMS9_120724B** SeqNo: **2036080** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 19.72 | 1.0 | 20 | 0 | 98.6 | 80-130 | 19.13 | 3.04 | 30 | |
| 1,1,1-Trichloroethane | 19.83 | 1.0 | 20 | 0 | 99.2 | 65-130 | 19.51 | 1.63 | 30 | |
| 1,1,2,2-Tetrachloroethane | 19.55 | 1.0 | 20 | 0 | 97.8 | 65-130 | 19.81 | 1.32 | 30 | |
| 1,1,2-Trichloroethane | 17.89 | 1.0 | 20 | 0 | 89.4 | 75-125 | 17.84 | 0.28 | 30 | |
| 1,1-Dichloroethane | 17.91 | 1.0 | 20 | 0 | 89.6 | 70-135 | 17.82 | 0.504 | 30 | |
| 1,1-Dichloroethene | 19.77 | 1.0 | 20 | 0 | 98.8 | 70-130 | 19.47 | 1.53 | 30 | |
| 1,2,3-Trichlorobenzene | 18.9 | 3.0 | 20 | 0 | 94.5 | 55-140 | 18.08 | 4.43 | 30 | |
| 1,2,3-Trichloropropane | 16.94 | 1.0 | 20 | 0 | 84.7 | 75-125 | 16.95 | 0.059 | 30 | |
| 1,2,4-Trichlorobenzene | 20.65 | 1.0 | 20 | 0 | 103 | 65-135 | 19.31 | 6.71 | 30 | |
| 1,2,4-Trimethylbenzene | 18.37 | 1.0 | 20 | 0 | 91.8 | 75-130 | 18.95 | 3.11 | 30 | |
| 1,2-Dibromo-3-chloropropane | 15.8 | 1.0 | 20 | 0 | 79 | 50-130 | 14.94 | 5.6 | 30 | |
| 1,2-Dibromoethane | 19.29 | 1.0 | 20 | 0 | 96.4 | 80-120 | 19.21 | 0.416 | 30 | |
| 1,2-Dichlorobenzene | 19.66 | 1.0 | 20 | 0 | 98.3 | 70-120 | 18.9 | 3.94 | 30 | |
| 1,2-Dichloroethane | 17.7 | 1.0 | 20 | 0 | 88.5 | 70-130 | 16.44 | 7.38 | 30 | |
| 1,2-Dichloropropane | 17.51 | 2.0 | 20 | 0 | 87.6 | 75-125 | 16.64 | 5.1 | 30 | |
| 1,3,5-Trimethylbenzene | 21 | 1.0 | 20 | 0 | 105 | 75-130 | 21.15 | 0.712 | 30 | |
| 1,3-Dichlorobenzene | 19.94 | 2.0 | 20 | 0 | 99.7 | 75-125 | 19.3 | 3.26 | 30 | |
| 1,4-Dichlorobenzene | 19.6 | 2.0 | 20 | 0 | 98 | 75-125 | 18.85 | 3.9 | 30 | |
| 2-Butanone | 15.58 | 5.0 | 20 | 0 | 77.9 | 30-150 | 15.65 | 0.448 | 30 | |
| 2-Hexanone | 15.71 | 5.0 | 20 | 0 | 78.6 | 55-130 | 15.83 | 0.761 | 30 | |
| 4-Methyl-2-pentanone | 15.66 | 5.0 | 20 | 0 | 78.3 | 60-135 | 16.07 | 2.58 | 30 | |
| Acetone | 19.25 | 20 | 20 | 0 | 96.2 | 40-140 | 18.69 | 0 | 30 | J |
| Acrylonitrile | 15.59 | 1.0 | 20 | 0 | 78 | 70-135 | 15.53 | 0.386 | 30 | |
| Benzene | 19.91 | 1.0 | 20 | 0 | 99.6 | 80-120 | 18.59 | 6.86 | 30 | |
| Bromochloromethane | 18.58 | 1.0 | 20 | 0 | 92.9 | 65-130 | 18.61 | 0.161 | 30 | |
| Bromodichloromethane | 15.95 | 1.0 | 20 | 0 | 79.8 | 75-120 | 14.59 | 8.91 | 30 | |
| Bromoform | 16.43 | 1.0 | 20 | 0 | 82.2 | 70-130 | 16.66 | 1.39 | 30 | |
| Bromomethane | 18.28 | 1.0 | 20 | 0 | 91.4 | 30-145 | 17.5 | 4.36 | 30 | |
| Carbon disulfide | 19.82 | 2.5 | 20 | 0 | 99.1 | 35-165 | 19.08 | 3.8 | 30 | |
| Carbon tetrachloride | 18.39 | 1.0 | 20 | 0 | 92 | 65-140 | 17.2 | 6.69 | 30 | |
| Chlorobenzene | 20.04 | 1.0 | 20 | 0 | 100 | 80-120 | 19.6 | 2.22 | 30 | |
| Chloroethane | 17.08 | 1.0 | 20 | 0 | 85.4 | 60-135 | 16.35 | 4.37 | 30 | |
| Chloroform | 18.57 | 1.0 | 20 | 0 | 92.8 | 65-135 | 19.34 | 4.06 | 30 | |
| Chloromethane | 18.17 | 1.0 | 20 | 0 | 90.8 | 70-125 | 17.3 | 4.91 | 30 | |
| cis-1,2-Dichloroethene | 16.81 | 1.0 | 20 | 0 | 84 | 70-125 | 16.55 | 1.56 | 30 | |
| cis-1,3-Dichloropropene | 14.11 | 1.0 | 20 | 0 | 70.6 | 70-130 | 13.03 | 7.96 | 30 | |
| Dibromochloromethane | 16.11 | 1.0 | 20 | 0 | 80.6 | 60-135 | 15.69 | 2.64 | 30 | |
| Dichlorodifluoromethane | 16.67 | 1.0 | 20 | 0 | 83.4 | 30-155 | 16.24 | 2.61 | 30 | |
| Ethylbenzene | 21.42 | 1.0 | 20 | 0 | 107 | 75-125 | 21.06 | 1.69 | 30 | |
| Hexachloroethane | 17.59 | 1.0 | 20 | 0 | 88 | 70-135 | 17.07 | 3 | 30 | |
| Isopropylbenzene | 22.01 | 1.0 | 20 | 0 | 110 | 75-125 | 21.81 | 0.913 | 30 | |
| m,p-Xylene | 42.84 | 2.0 | 40 | 0 | 107 | 75-130 | 42.21 | 1.48 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **R107678A** Instrument ID **VMS9** Method: **SW8260**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Methyl iodide | 16.62 | 5.0 | 20 | 0 | 83.1 | 70-135 | 14.91 | 10.8 | 30 | |
| Methyl tert-butyl ether | 15.62 | 5.0 | 20 | 0 | 78.1 | 65-125 | 15.32 | 1.94 | 30 | |
| Methylene chloride | 18.18 | 5.0 | 20 | 0 | 90.9 | 55-140 | 18.3 | 0.658 | 30 | |
| Naphthalene | 14.83 | 5.0 | 20 | 0 | 74.2 | 55-140 | 14.17 | 4.55 | 30 | |
| n-Butylbenzene | 20.9 | 1.0 | 20 | 0 | 104 | 70-135 | 19.94 | 4.7 | 30 | |
| n-Propylbenzene | 19.98 | 1.0 | 20 | 0 | 99.9 | 70-130 | 20.14 | 0.798 | 30 | |
| o-Xylene | 21.11 | 1.0 | 20 | 0 | 106 | 80-120 | 20.58 | 2.54 | 30 | |
| p-Isopropyltoluene | 20.75 | 2.0 | 20 | 0 | 104 | 75-130 | 19.97 | 3.83 | 30 | |
| sec-Butylbenzene | 18.56 | 2.0 | 20 | 0 | 92.8 | 70-125 | 18.99 | 2.29 | 30 | |
| Styrene | 18.21 | 1.0 | 20 | 0 | 91 | 65-135 | 18.28 | 0.384 | 30 | |
| tert-Butylbenzene | 20.43 | 2.0 | 20 | 0 | 102 | 70-130 | 20.67 | 1.17 | 30 | |
| Tetrachloroethene | 16.52 | 2.0 | 20 | 0 | 82.6 | 45-150 | 17.48 | 5.65 | 30 | |
| Tetrahydrofuran | 15.59 | 10 | 20 | 0 | 78 | 70-135 | 15.84 | 1.59 | 30 | |
| Toluene | 19.9 | 1.0 | 20 | 0 | 99.5 | 75-120 | 20.55 | 3.21 | 30 | |
| trans-1,2-Dichloroethene | 19.42 | 1.0 | 20 | 0 | 97.1 | 60-140 | 18.96 | 2.4 | 30 | |
| trans-1,3-Dichloropropene | 13.92 | 1.0 | 20 | 0 | 69.6 | 55-140 | 13.88 | 0.288 | 30 | |
| trans-1,4-Dichloro-2-butene | 11.7 | 5.0 | 20 | 0 | 58.5 | 70-135 | 11.04 | 5.8 | 30 | S |
| Trichloroethene | 18.11 | 1.0 | 20 | 0 | 90.6 | 70-125 | 17.86 | 1.39 | 30 | |
| Trichlorofluoromethane | 17.85 | 1.0 | 20 | 0 | 89.2 | 60-145 | 17.68 | 0.957 | 30 | |
| Vinyl chloride | 18.32 | 1.0 | 20 | 0 | 91.6 | 50-145 | 17.54 | 4.35 | 30 | |
| *Surr: 1,2-Dichloroethane-d4* | *18.87* | 0 | *20* | 0 | *94.4* | *70-120* | 17.35 | *8.39* | *30* | |
| *Surr: 4-Bromofluorobenzene* | *18.36* | 0 | *20* | 0 | *91.8* | *75-120* | 18.86 | *2.69* | *30* | |
| *Surr: Dibromofluoromethane* | *19.92* | 0 | *20* | 0 | *99.6* | *85-115* | 18.85 | *5.52* | *30* | |
| *Surr: Toluene-d8* | *19.34* | 0 | *20* | 0 | *96.7* | *85-120* | 19.86 | *2.65* | *30* | |

**The following samples were analyzed in this batch:** 1207687-02A 1207687-04A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207687
**Project:** Marshall KRRI Source Area GW 7/23/12

# QC BATCH REPORT

Batch ID: **R107714** Instrument ID **VMS6** Method: **SW8260**

**MBLK** Sample ID: **VBLKW1-120725-R107714** Units: **µg/L** Analysis Date: **7/25/2012 03:01 PM**
Client ID: Run ID: **VMS6_120725A** SeqNo: **2036695** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | |
| 1,1,2-Trichlorotrifluoroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 3.0 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.0 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | | | | | | | | |
| 1,2-Dibromoethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 1.0 | | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | | | | | | | | |
| 1,2-Dichloropropane | ND | 2.0 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 1.0 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 2.0 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 2.0 | | | | | | | | |
| 2-Butanone | ND | 5.0 | | | | | | | | |
| 2-Hexanone | ND | 5.0 | | | | | | | | |
| 2-Methylnaphthalene | ND | 10 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 5.0 | | | | | | | | |
| Acetone | ND | 20 | | | | | | | | |
| Acrylonitrile | ND | 1.0 | | | | | | | | |
| Benzene | ND | 1.0 | | | | | | | | |
| Bromochloromethane | ND | 1.0 | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | |
| Bromoform | ND | 1.0 | | | | | | | | |
| Bromomethane | ND | 1.0 | | | | | | | | |
| Carbon disulfide | ND | 2.5 | | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | |
| Chloroethane | ND | 1.0 | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | |
| Chloromethane | ND | 1.0 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 1.0 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | | | | | | | | |
| Cyclohexane | ND | 5.0 | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | |
| Dichlorodifluoromethane | ND | 1.0 | | | | | | | | |
| Diethyl ether | ND | 10 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R107714** Instrument ID **VMS6** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Diisopropyl ether | ND | 5.0 | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | |
| Hexachloroethane | ND | 1.0 | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | |
| m,p-Xylene | ND | 2.0 | | | | | |
| Methyl iodide | ND | 5.0 | | | | | |
| Methyl tert-butyl ether | ND | 5.0 | | | | | |
| Methylene chloride | ND | 5.0 | | | | | |
| Naphthalene | ND | 5.0 | | | | | |
| n-Butylbenzene | ND | 1.0 | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | |
| o-Xylene | ND | 1.0 | | | | | |
| p-Isopropyltoluene | ND | 2.0 | | | | | |
| sec-Butylbenzene | ND | 2.0 | | | | | |
| Styrene | ND | 1.0 | | | | | |
| t-Butyl ethyl ether | ND | 0 | | | | | |
| tert-Butyl alcohol | ND | 50 | | | | | |
| tert-Butylbenzene | ND | 2.0 | | | | | |
| Tertiaryamylmethylether | ND | 5.0 | | | | | |
| Tetrachloroethene | ND | 2.0 | | | | | |
| Tetrahydrofuran | ND | 10 | | | | | |
| Toluene | ND | 1.0 | | | | | |
| trans-1,2-Dichloroethene | ND | 1.0 | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 5.0 | | | | | |
| Trichloroethene | ND | 1.0 | | | | | |
| Trichlorofluoromethane | ND | 1.0 | | | | | |
| Vinyl chloride | ND | 1.0 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *20.57* | 0 | *20* | 0 | *103* | *70-120* | 0 |
| *Surr: 4-Bromofluorobenzene* | *20.45* | 0 | *20* | 0 | *102* | *75-120* | 0 |
| *Surr: Dibromofluoromethane* | *19.81* | 0 | *20* | 0 | *99* | *85-115* | 0 |
| *Surr: Toluene-d8* | *20.35* | 0 | *20* | 0 | *102* | *85-120* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207687
**Project:** Marshall KRRI Source Area GW 7/23/12

# QC BATCH REPORT

Batch ID: **R107714** Instrument ID **VMS6** Method: **SW8260**

**LCS** Sample ID: **VLCSW1-120725-R107714** Units: **µg/L** Analysis Date: **7/25/2012 02:12 PM**
Client ID: Run ID: **VMS6_120725A** SeqNo: **2036007** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 19.6 | 1.0 | 20 | 0 | 98 | 80-130 | 0 | | | |
| 1,1,1-Trichloroethane | 20 | 1.0 | 20 | 0 | 100 | 65-130 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 18.58 | 1.0 | 20 | 0 | 92.9 | 65-130 | 0 | | | |
| 1,1,2-Trichloroethane | 17.25 | 1.0 | 20 | 0 | 86.2 | 75-125 | 0 | | | |
| 1,1-Dichloroethane | 19.32 | 1.0 | 20 | 0 | 96.6 | 70-135 | 0 | | | |
| 1,1-Dichloroethene | 20.63 | 1.0 | 20 | 0 | 103 | 70-130 | 0 | | | |
| 1,2,3-Trichlorobenzene | 19.24 | 3.0 | 20 | 0 | 96.2 | 55-140 | 0 | | | |
| 1,2,3-Trichloropropane | 18.05 | 1.0 | 20 | 0 | 90.2 | 75-125 | 0 | | | |
| 1,2,4-Trichlorobenzene | 20.2 | 1.0 | 20 | 0 | 101 | 65-135 | 0 | | | |
| 1,2,4-Trimethylbenzene | 20.1 | 1.0 | 20 | 0 | 100 | 75-130 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 17.01 | 1.0 | 20 | 0 | 85 | 50-130 | 0 | | | |
| 1,2-Dibromoethane | 18.57 | 1.0 | 20 | 0 | 92.8 | 80-120 | 0 | | | |
| 1,2-Dichlorobenzene | 19.78 | 1.0 | 20 | 0 | 98.9 | 70-120 | 0 | | | |
| 1,2-Dichloroethane | 18.97 | 1.0 | 20 | 0 | 94.8 | 70-130 | 0 | | | |
| 1,2-Dichloropropane | 19.35 | 2.0 | 20 | 0 | 96.8 | 75-125 | 0 | | | |
| 1,3,5-Trimethylbenzene | 21.16 | 1.0 | 20 | 0 | 106 | 75-130 | 0 | | | |
| 1,3-Dichlorobenzene | 19.61 | 2.0 | 20 | 0 | 98 | 75-125 | 0 | | | |
| 1,4-Dichlorobenzene | 19.61 | 2.0 | 20 | 0 | 98 | 75-125 | 0 | | | |
| 2-Butanone | 17.21 | 5.0 | 20 | 0 | 86 | 30-150 | 0 | | | |
| 2-Hexanone | 17.56 | 5.0 | 20 | 0 | 87.8 | 55-130 | 0 | | | |
| 4-Methyl-2-pentanone | 22.67 | 5.0 | 20 | 0 | 113 | 60-135 | 0 | | | |
| Acetone | 18.63 | 20 | 20 | 0 | 93.2 | 40-140 | 0 | | | J |
| Acrylonitrile | 17.9 | 1.0 | 20 | 0 | 89.5 | 70-135 | 0 | | | |
| Benzene | 19.75 | 1.0 | 20 | 0 | 98.8 | 80-120 | 0 | | | |
| Bromochloromethane | 19.6 | 1.0 | 20 | 0 | 98 | 65-130 | 0 | | | |
| Bromodichloromethane | 19.21 | 1.0 | 20 | 0 | 96 | 75-120 | 0 | | | |
| Bromoform | 19.55 | 1.0 | 20 | 0 | 97.8 | 70-130 | 0 | | | |
| Bromomethane | 29.02 | 1.0 | 20 | 0 | 145 | 30-145 | 0 | | | S |
| Carbon disulfide | 21.86 | 2.5 | 20 | 0 | 109 | 35-165 | 0 | | | |
| Carbon tetrachloride | 20.11 | 1.0 | 20 | 0 | 101 | 65-140 | 0 | | | |
| Chlorobenzene | 19.5 | 1.0 | 20 | 0 | 97.5 | 80-120 | 0 | | | |
| Chloroethane | 18.88 | 1.0 | 20 | 0 | 94.4 | 60-135 | 0 | | | |
| Chloroform | 18.87 | 1.0 | 20 | 0 | 94.4 | 65-135 | 0 | | | |
| Chloromethane | 20.02 | 1.0 | 20 | 0 | 100 | 70-125 | 0 | | | |
| cis-1,2-Dichloroethene | 19.7 | 1.0 | 20 | 0 | 98.5 | 70-125 | 0 | | | |
| cis-1,3-Dichloropropene | 20.04 | 1.0 | 20 | 0 | 100 | 70-130 | 0 | | | |
| Dibromochloromethane | 18.44 | 1.0 | 20 | 0 | 92.2 | 60-135 | 0 | | | |
| Dichlorodifluoromethane | 16.44 | 1.0 | 20 | 0 | 82.2 | 30-155 | 0 | | | |
| Ethylbenzene | 20.55 | 1.0 | 20 | 0 | 103 | 75-125 | 0 | | | |
| Hexachloroethane | 18.89 | 1.0 | 20 | 0 | 94.4 | 70-135 | 0 | | | |
| Isopropylbenzene | 20.47 | 1.0 | 20 | 0 | 102 | 75-125 | 0 | | | |
| m,p-Xylene | 41.18 | 2.0 | 40 | 0 | 103 | 75-130 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **R107714** Instrument ID **VMS6** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Methyl iodide | 27.47 | 5.0 | 20 | 0 | 137 | 70-135 | 0 | S |
| Methyl tert-butyl ether | 17.61 | 5.0 | 20 | 0 | 88 | 65-125 | 0 | |
| Methylene chloride | 19.43 | 5.0 | 20 | 0 | 97.2 | 55-140 | 0 | |
| Naphthalene | 18.9 | 5.0 | 20 | 0 | 94.5 | 55-140 | 0 | |
| n-Butylbenzene | 21.86 | 1.0 | 20 | 0 | 109 | 70-135 | 0 | |
| n-Propylbenzene | 20.35 | 1.0 | 20 | 0 | 102 | 70-130 | 0 | |
| o-Xylene | 20.2 | 1.0 | 20 | 0 | 101 | 80-120 | 0 | |
| p-Isopropyltoluene | 20.69 | 2.0 | 20 | 0 | 103 | 75-130 | 0 | |
| sec-Butylbenzene | 20.36 | 2.0 | 20 | 0 | 102 | 70-125 | 0 | |
| Styrene | 19.61 | 1.0 | 20 | 0 | 98 | 65-135 | 0 | |
| tert-Butylbenzene | 20.88 | 2.0 | 20 | 0 | 104 | 70-130 | 0 | |
| Tetrachloroethene | 20.33 | 2.0 | 20 | 0 | 102 | 45-150 | 0 | |
| Tetrahydrofuran | 18.62 | 10 | 20 | 0 | 93.1 | 70-135 | 0 | |
| Toluene | 19.87 | 1.0 | 20 | 0 | 99.4 | 75-120 | 0 | |
| trans-1,2-Dichloroethene | 21.13 | 1.0 | 20 | 0 | 106 | 60-140 | 0 | |
| trans-1,3-Dichloropropene | 20.5 | 1.0 | 20 | 0 | 102 | 55-140 | 0 | |
| trans-1,4-Dichloro-2-butene | 29.86 | 5.0 | 20 | 0 | 149 | 70-135 | 0 | S |
| Trichloroethene | 19.31 | 1.0 | 20 | 0 | 96.6 | 70-125 | 0 | |
| Trichlorofluoromethane | 17.23 | 1.0 | 20 | 0 | 86.2 | 60-145 | 0 | |
| Vinyl chloride | 18.78 | 1.0 | 20 | 0 | 93.9 | 50-145 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *20.92* | 0 | *20* | 0 | *105* | *70-120* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *20.39* | 0 | *20* | 0 | *102* | *75-120* | 0 | |
| *Surr: Dibromofluoromethane* | *20.78* | 0 | *20* | 0 | *104* | *85-115* | 0 | |
| *Surr: Toluene-d8* | *20.32* | 0 | *20* | 0 | *102* | *85-120* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207687
**Project:** Marshall KRRI Source Area GW 7/23/12

# QC BATCH REPORT

Batch ID: **R107714** Instrument ID **VMS6** Method: **SW8260**

**MS** Sample ID: **1207687-01A MS** Units: **µg/L** Analysis Date: **7/26/2012 12:02 PM**
Client ID: **SBSA0125S072312G099** Run ID: **VMS6_120725A** SeqNo: **2036801** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 20.38 | 1.0 | 20 | 0 | 102 | 80-130 | 0 | | | |
| 1,1,1-Trichloroethane | 22.03 | 1.0 | 20 | 0 | 110 | 65-130 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 19.61 | 1.0 | 20 | 0 | 98 | 65-130 | 0 | | | |
| 1,1,2-Trichloroethane | 17.68 | 1.0 | 20 | 0 | 88.4 | 75-125 | 0 | | | |
| 1,1-Dichloroethane | 20.34 | 1.0 | 20 | 0 | 102 | 70-135 | 0 | | | |
| 1,1-Dichloroethene | 22.86 | 1.0 | 20 | 0 | 114 | 70-130 | 0 | | | |
| 1,2,3-Trichlorobenzene | 19.12 | 3.0 | 20 | 0 | 95.6 | 55-140 | 0 | | | |
| 1,2,3-Trichloropropane | 18.97 | 1.0 | 20 | 0 | 94.8 | 75-125 | 0 | | | |
| 1,2,4-Trichlorobenzene | 20.41 | 1.0 | 20 | 0 | 102 | 65-135 | 0 | | | |
| 1,2,4-Trimethylbenzene | 24.74 | 1.0 | 20 | 4.2 | 103 | 75-130 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 16.6 | 1.0 | 20 | 0 | 83 | 50-130 | 0 | | | |
| 1,2-Dibromoethane | 19.22 | 1.0 | 20 | 0 | 96.1 | 80-120 | 0 | | | |
| 1,2-Dichlorobenzene | 19.68 | 1.0 | 20 | 0 | 98.4 | 70-120 | 0 | | | |
| 1,2-Dichloroethane | 19.82 | 1.0 | 20 | 0 | 99.1 | 70-130 | 0 | | | |
| 1,2-Dichloropropane | 20.44 | 2.0 | 20 | 0 | 102 | 75-125 | 0 | | | |
| 1,3,5-Trimethylbenzene | 23.65 | 1.0 | 20 | 1.36 | 111 | 75-130 | 0 | | | |
| 1,3-Dichlorobenzene | 19.61 | 2.0 | 20 | 0 | 98 | 75-125 | 0 | | | |
| 1,4-Dichlorobenzene | 19.79 | 2.0 | 20 | 0 | 99 | 75-125 | 0 | | | |
| 2-Butanone | 18.13 | 5.0 | 20 | 0 | 90.6 | 30-150 | 0 | | | |
| 2-Hexanone | 18.5 | 5.0 | 20 | 0 | 92.5 | 55-130 | 0 | | | |
| 4-Methyl-2-pentanone | 23.54 | 5.0 | 20 | 0 | 118 | 60-135 | 0 | | | |
| Acetone | 30.92 | 20 | 20 | 0 | 155 | 40-140 | 0 | | | S |
| Acrylonitrile | 18.77 | 1.0 | 20 | 0 | 93.8 | 70-135 | 0 | | | |
| Benzene | 34.98 | 1.0 | 20 | 13.8 | 106 | 80-120 | 0 | | | |
| Bromochloromethane | 20.06 | 1.0 | 20 | 0 | 100 | 65-130 | 0 | | | |
| Bromodichloromethane | 19.59 | 1.0 | 20 | 0 | 98 | 75-120 | 0 | | | |
| Bromoform | 20.04 | 1.0 | 20 | 0 | 100 | 70-130 | 0 | | | |
| Bromomethane | 19.88 | 1.0 | 20 | 0 | 99.4 | 30-145 | 0 | | | |
| Carbon disulfide | 23.88 | 2.5 | 20 | 0 | 119 | 35-165 | 0 | | | |
| Carbon tetrachloride | 22.93 | 1.0 | 20 | 0 | 115 | 65-140 | 0 | | | |
| Chlorobenzene | 20.77 | 1.0 | 20 | 0 | 104 | 80-120 | 0 | | | |
| Chloroethane | 20.12 | 1.0 | 20 | 0 | 101 | 60-135 | 0 | | | |
| Chloroform | 20.13 | 1.0 | 20 | 0 | 101 | 65-135 | 0 | | | |
| Chloromethane | 20.3 | 1.0 | 20 | 0 | 102 | 70-125 | 0 | | | |
| cis-1,2-Dichloroethene | 20.4 | 1.0 | 20 | 0 | 102 | 70-125 | 0 | | | |
| cis-1,3-Dichloropropene | 19.48 | 1.0 | 20 | 0 | 97.4 | 70-130 | 0 | | | |
| Dibromochloromethane | 19.18 | 1.0 | 20 | 0 | 95.9 | 60-135 | 0 | | | |
| Dichlorodifluoromethane | 18.31 | 1.0 | 20 | 0 | 91.6 | 30-155 | 0 | | | |
| Ethylbenzene | 23.35 | 1.0 | 20 | 1.35 | 110 | 75-125 | 0 | | | |
| Hexachloroethane | 18.69 | 1.0 | 20 | 0 | 93.4 | 70-135 | 0 | | | |
| Isopropylbenzene | 22.56 | 1.0 | 20 | 0.61 | 110 | 75-125 | 0 | | | |
| m,p-Xylene | 49.09 | 2.0 | 40 | 4.68 | 111 | 75-130 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **R107714** Instrument ID **VMS6** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Methyl iodide | 21.42 | 5.0 | 20 | 0 | 107 | 70-135 | 0 |
| Methyl tert-butyl ether | 18.09 | 5.0 | 20 | 0 | 90.4 | 65-125 | 0 |
| Methylene chloride | 20.13 | 5.0 | 20 | 0 | 101 | 55-140 | 0 |
| Naphthalene | 19.24 | 5.0 | 20 | 1.33 | 89.6 | 55-140 | 0 |
| n-Butylbenzene | 22.13 | 1.0 | 20 | 0 | 111 | 70-135 | 0 |
| n-Propylbenzene | 22.16 | 1.0 | 20 | 0.68 | 107 | 70-130 | 0 |
| o-Xylene | 24.96 | 1.0 | 20 | 3.33 | 108 | 80-120 | 0 |
| p-Isopropyltoluene | 27.41 | 2.0 | 20 | 6.11 | 106 | 75-130 | 0 |
| sec-Butylbenzene | 21.73 | 2.0 | 20 | 0 | 109 | 70-125 | 0 |
| Styrene | 20.1 | 1.0 | 20 | 0 | 100 | 65-135 | 0 |
| tert-Butylbenzene | 22.02 | 2.0 | 20 | 0 | 110 | 70-130 | 0 |
| Tetrachloroethene | 22.23 | 2.0 | 20 | 0 | 111 | 45-150 | 0 |
| Tetrahydrofuran | 17.91 | 10 | 20 | 0 | 89.6 | 70-135 | 0 |
| Toluene | 21.35 | 1.0 | 20 | 0 | 107 | 75-120 | 0 |
| trans-1,2-Dichloroethene | 21.88 | 1.0 | 20 | 0 | 109 | 60-140 | 0 |
| trans-1,3-Dichloropropene | 19.42 | 1.0 | 20 | 0 | 97.1 | 55-140 | 0 |
| trans-1,4-Dichloro-2-butene | 18.07 | 5.0 | 20 | 0 | 90.4 | 70-135 | 0 |
| Trichloroethene | 20.86 | 1.0 | 20 | 0 | 104 | 70-125 | 0 |
| Trichlorofluoromethane | 18.51 | 1.0 | 20 | 0 | 92.6 | 60-145 | 0 |
| Vinyl chloride | 20.52 | 1.0 | 20 | 0 | 103 | 50-145 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *19.9* | 0 | *20* | 0 | *99.5* | *70-120* | 0 |
| *Surr: 4-Bromofluorobenzene* | *20.13* | 0 | *20* | 0 | *101* | *75-120* | 0 |
| *Surr: Dibromofluoromethane* | *20.53* | 0 | *20* | 0 | *103* | *85-115* | 0 |
| *Surr: Toluene-d8* | *19.72* | 0 | *20* | 0 | *98.6* | *85-120* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1207687
**Project:** Marshall KRRI Source Area GW 7/23/12

# QC BATCH REPORT

Batch ID: **R107714** Instrument ID **VMS6** Method: **SW8260**

**MSD** Sample ID: **1207687-01A MSD** Units: **µg/L** Analysis Date: **7/26/2012 12:27 PM**
Client ID: **SBSA0125S072312G099** Run ID: **VMS6_120725A** SeqNo: **2036802** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 20.03 | 1.0 | 20 | 0 | 100 | 80-130 | 20.38 | 1.73 | 30 | |
| 1,1,1-Trichloroethane | 20.65 | 1.0 | 20 | 0 | 103 | 65-130 | 22.03 | 6.47 | 30 | |
| 1,1,2,2-Tetrachloroethane | 18.8 | 1.0 | 20 | 0 | 94 | 65-130 | 19.61 | 4.22 | 30 | |
| 1,1,2-Trichloroethane | 16.41 | 1.0 | 20 | 0 | 82 | 75-125 | 17.68 | 7.45 | 30 | |
| 1,1-Dichloroethane | 19.49 | 1.0 | 20 | 0 | 97.4 | 70-135 | 20.34 | 4.27 | 30 | |
| 1,1-Dichloroethene | 21.22 | 1.0 | 20 | 0 | 106 | 70-130 | 22.86 | 7.44 | 30 | |
| 1,2,3-Trichlorobenzene | 19.35 | 3.0 | 20 | 0 | 96.8 | 55-140 | 19.12 | 1.2 | 30 | |
| 1,2,3-Trichloropropane | 17.57 | 1.0 | 20 | 0 | 87.8 | 75-125 | 18.97 | 7.66 | 30 | |
| 1,2,4-Trichlorobenzene | 20.47 | 1.0 | 20 | 0 | 102 | 65-135 | 20.41 | 0.294 | 30 | |
| 1,2,4-Trimethylbenzene | 23.86 | 1.0 | 20 | 4.2 | 98.3 | 75-130 | 24.74 | 3.62 | 30 | |
| 1,2-Dibromo-3-chloropropane | 16.83 | 1.0 | 20 | 0 | 84.2 | 50-130 | 16.6 | 1.38 | 30 | |
| 1,2-Dibromoethane | 18.72 | 1.0 | 20 | 0 | 93.6 | 80-120 | 19.22 | 2.64 | 30 | |
| 1,2-Dichlorobenzene | 19.94 | 1.0 | 20 | 0 | 99.7 | 70-120 | 19.68 | 1.31 | 30 | |
| 1,2-Dichloroethane | 19.27 | 1.0 | 20 | 0 | 96.4 | 70-130 | 19.82 | 2.81 | 30 | |
| 1,2-Dichloropropane | 19.69 | 2.0 | 20 | 0 | 98.4 | 75-125 | 20.44 | 3.74 | 30 | |
| 1,3,5-Trimethylbenzene | 22.92 | 1.0 | 20 | 1.36 | 108 | 75-130 | 23.65 | 3.14 | 30 | |
| 1,3-Dichlorobenzene | 19.67 | 2.0 | 20 | 0 | 98.4 | 75-125 | 19.61 | 0.305 | 30 | |
| 1,4-Dichlorobenzene | 19.27 | 2.0 | 20 | 0 | 96.4 | 75-125 | 19.79 | 2.66 | 30 | |
| 2-Butanone | 17.29 | 5.0 | 20 | 0 | 86.4 | 30-150 | 18.13 | 4.74 | 30 | |
| 2-Hexanone | 18.23 | 5.0 | 20 | 0 | 91.2 | 55-130 | 18.5 | 1.47 | 30 | |
| 4-Methyl-2-pentanone | 22.78 | 5.0 | 20 | 0 | 114 | 60-135 | 23.54 | 3.28 | 30 | |
| Acetone | 29.6 | 20 | 20 | 0 | 148 | 40-140 | 30.92 | 4.36 | 30 | S |
| Acrylonitrile | 18.14 | 1.0 | 20 | 0 | 90.7 | 70-135 | 18.77 | 3.41 | 30 | |
| Benzene | 33.26 | 1.0 | 20 | 13.8 | 97.3 | 80-120 | 34.98 | 5.04 | 30 | |
| Bromochloromethane | 19.45 | 1.0 | 20 | 0 | 97.2 | 65-130 | 20.06 | 3.09 | 30 | |
| Bromodichloromethane | 19.31 | 1.0 | 20 | 0 | 96.6 | 75-120 | 19.59 | 1.44 | 30 | |
| Bromoform | 19.19 | 1.0 | 20 | 0 | 96 | 70-130 | 20.04 | 4.33 | 30 | |
| Bromomethane | 16.32 | 1.0 | 20 | 0 | 81.6 | 30-145 | 19.88 | 19.7 | 30 | |
| Carbon disulfide | 21.64 | 2.5 | 20 | 0 | 108 | 35-165 | 23.88 | 9.84 | 30 | |
| Carbon tetrachloride | 21.53 | 1.0 | 20 | 0 | 108 | 65-140 | 22.93 | 6.3 | 30 | |
| Chlorobenzene | 19.92 | 1.0 | 20 | 0 | 99.6 | 80-120 | 20.77 | 4.18 | 30 | |
| Chloroethane | 18.36 | 1.0 | 20 | 0 | 91.8 | 60-135 | 20.12 | 9.15 | 30 | |
| Chloroform | 18.84 | 1.0 | 20 | 0 | 94.2 | 65-135 | 20.13 | 6.62 | 30 | |
| Chloromethane | 17.53 | 1.0 | 20 | 0 | 87.6 | 70-125 | 20.3 | 14.6 | 30 | |
| cis-1,2-Dichloroethene | 19.06 | 1.0 | 20 | 0 | 95.3 | 70-125 | 20.4 | 6.79 | 30 | |
| cis-1,3-Dichloropropene | 18.92 | 1.0 | 20 | 0 | 94.6 | 70-130 | 19.48 | 2.92 | 30 | |
| Dibromochloromethane | 18.92 | 1.0 | 20 | 0 | 94.6 | 60-135 | 19.18 | 1.36 | 30 | |
| Dichlorodifluoromethane | 16.74 | 1.0 | 20 | 0 | 83.7 | 30-155 | 18.31 | 8.96 | 30 | |
| Ethylbenzene | 22.23 | 1.0 | 20 | 1.35 | 104 | 75-125 | 23.35 | 4.91 | 30 | |
| Hexachloroethane | 18.73 | 1.0 | 20 | 0 | 93.6 | 70-135 | 18.69 | 0.214 | 30 | |
| Isopropylbenzene | 21.43 | 1.0 | 20 | 0.61 | 104 | 75-125 | 22.56 | 5.14 | 30 | |
| m,p-Xylene | 46.71 | 2.0 | 40 | 4.68 | 105 | 75-130 | 49.09 | 4.97 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **R107714** Instrument ID **VMS6** Method: **SW8260**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Methyl iodide | 20.92 | 5.0 | 20 | 0 | 105 | 70-135 | 21.42 | 2.36 | 30 |
| Methyl tert-butyl ether | 17.32 | 5.0 | 20 | 0 | 86.6 | 65-125 | 18.09 | 4.35 | 30 |
| Methylene chloride | 19.53 | 5.0 | 20 | 0 | 97.6 | 55-140 | 20.13 | 3.03 | 30 |
| Naphthalene | 19.64 | 5.0 | 20 | 1.33 | 91.6 | 55-140 | 19.24 | 2.06 | 30 |
| n-Butylbenzene | 22.54 | 1.0 | 20 | 0 | 113 | 70-135 | 22.13 | 1.84 | 30 |
| n-Propylbenzene | 21.35 | 1.0 | 20 | 0.68 | 103 | 70-130 | 22.16 | 3.72 | 30 |
| o-Xylene | 23.72 | 1.0 | 20 | 3.33 | 102 | 80-120 | 24.96 | 5.09 | 30 |
| p-Isopropyltoluene | 27.59 | 2.0 | 20 | 6.11 | 107 | 75-130 | 27.41 | 0.655 | 30 |
| sec-Butylbenzene | 21.2 | 2.0 | 20 | 0 | 106 | 70-125 | 21.73 | 2.47 | 30 |
| Styrene | 19.48 | 1.0 | 20 | 0 | 97.4 | 65-135 | 20.1 | 3.13 | 30 |
| tert-Butylbenzene | 21.26 | 2.0 | 20 | 0 | 106 | 70-130 | 22.02 | 3.51 | 30 |
| Tetrachloroethene | 20.89 | 2.0 | 20 | 0 | 104 | 45-150 | 22.23 | 6.22 | 30 |
| Tetrahydrofuran | 17.12 | 10 | 20 | 0 | 85.6 | 70-135 | 17.91 | 4.51 | 30 |
| Toluene | 20.46 | 1.0 | 20 | 0 | 102 | 75-120 | 21.35 | 4.26 | 30 |
| trans-1,2-Dichloroethene | 20.57 | 1.0 | 20 | 0 | 103 | 60-140 | 21.88 | 6.17 | 30 |
| trans-1,3-Dichloropropene | 18.97 | 1.0 | 20 | 0 | 94.8 | 55-140 | 19.42 | 2.34 | 30 |
| trans-1,4-Dichloro-2-butene | 15.16 | 5.0 | 20 | 0 | 75.8 | 70-135 | 18.07 | 17.5 | 30 |
| Trichloroethene | 19.52 | 1.0 | 20 | 0 | 97.6 | 70-125 | 20.86 | 6.64 | 30 |
| Trichlorofluoromethane | 17.19 | 1.0 | 20 | 0 | 86 | 60-145 | 18.51 | 7.39 | 30 |
| Vinyl chloride | 18.17 | 1.0 | 20 | 0 | 90.8 | 50-145 | 20.52 | 12.1 | 30 |
| *Surr: 1,2-Dichloroethane-d4* | *21.14* | 0 | *20* | 0 | *106* | *70-120* | 19.9 | *6.04* | *30* |
| *Surr: 4-Bromofluorobenzene* | *20.68* | 0 | *20* | 0 | *103* | *75-120* | 20.13 | *2.7* | *30* |
| *Surr: Dibromofluoromethane* | *20.93* | 0 | *20* | 0 | *105* | *85-115* | 20.53 | *1.93* | *30* |
| *Surr: Toluene-d8* | *20.41* | 0 | *20* | 0 | *102* | *85-120* | 19.72 | *3.44* | *30* |

**The following samples were analyzed in this batch:** 1207687-01A 1207687-03A 1207687-05A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

1207687

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_072312_LJL1 | Task: KRRI_GW SOURCE AREA |
|---|---|---|
| | Total # of Samples: 5 | Event Complete? |

| Turn Around Time | 5 Day | Rush | No | |
|---|---|---|---|---|

BILLING CODE: 6.00

**Lab Information:**

| | |
|---|---|
| Lab Name: | ALS Laboratory Group |
| Address: | 3352 128th Ave. Holland, Mi 49424-9263 |
| Lab PM: | Ann Preston |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 |
| Lab PM email | ann.preston@alsglobal.com |
| Applicable Lab Quote #: | |

**Project Information:**

| | |
|---|---|
| Site ID #: | |
| Project # | 60162778 |
| Site Address | 5555 Glenwood Parkway SE Suite 200 |
| City | Grand Rapids |
| State, Zip | MI |
| Site PM Name | [redacted] |
| Phone/Fax: | 616-940-4424 |
| Site PM Email: | Bryan.Stiemsma@aecom.com |

**Other Information:**

| | |
|---|---|
| Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 1100 Louisiana Suite 1100 |
| City/State, | Houson, TX |
| Phone #: | 713-821-2000 |
| PO # | |
| Send EDD to | |
| CC Hardcopy report | |
| CC Hardcopy report | |

| ITEM # | SAMPLE ID<br>Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | HNO3 | None | None | HCl | HCl | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | GRO | VOC by 5035/8260 | | | | | | | | | |
| 1 | SBSA0125DEEPS072312G099 | SBSA0125DEEP | WG | G | 07/23/2012 15:27 | 8 | | | X | X | X | X | X | | | | | | | | | |
| 2 | SBSA0125DEEPT072312WX | SBSA0125DEEP | WQ | G | 07/23/2012 00:00 | 3 | TRIP BLANK | | | | | | X | | | | | | | | | |
| 3 | SBSA0128DEEPS072312G099 | SBSA0128DEEP | WG | G | 07/23/2012 17:30 | 2 | | | | | | X | X | | | | | | | | | |
| 4 | SBSA0132DEEPS072312G100 | SBSA0132DEEP | WG | G | 07/23/2012 14:45 | 7 | | | X | X | X | X | X | | | | | | | | | |
| 5 | SBSA0133DEEPS072312G100 | SBSA0133DEEP | WG | G | 07/23/2012 14:05 | 7 | | | X | X | X | X | X | | | | | | | | | |

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7.24.12 | 0822 | [signature] | 7.24.12 | 0822 |
| [signature] | 7.24.12 | 0920 | [signature] | 7/24/12 | 0920 |

**Sample Receipt Conditions**

| Temp in OC | Samples on Ice? | Sample intact? | Trip Blank? |
|---|---|---|---|
| 3.8°C | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO:
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: LORRI LEGO (LJL1) AND TED VESEY(RTV)
SIGNATURE of SAMPLER:
DATE Signed
Time:

1207687

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC # ENBRIDGE_072412_LJL1 | Task: KRRI SOURCE AREA
Total # of Samples: 5 | Event Complete?
Turn Around Time: 5 Day | Rush: No

| Lab Information | | Project Information | | Other Information | |
|---|---|---|---|---|---|
| Lab Name: | ALS Laboratory Group | Site ID #: | | Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 3352 128th Ave, Holland, MI 49424-8263 | Project # | 60102778 | Address: | 1100 Louisiana Suite 1100 |
| | | Site Address | 5555 Glenwood Parkway SE Suite 200 | City/State: | Houson, TX |
| Lab PM | Ann Preston | City | Grand Rapids | State, Zip | MI |
| Phone/Fax | 1-616-399-6070/1-616-399-6185 | Site PM Name | [redacted] | Send EDD to | |
| Lab PM email | ann.preston@alsglobal.com | Phone/Fax | [redacted] | CC Hardcopy report | |
| Applicable Lab Quote #: | | Site PM Email: | Bryan.Stiemsma@aecom.com | CC Hardcopy report | |

| ITEM # | SAMPLE ID Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | HNO3 | HCl | None | None | HCl |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | Be,Mo,V,Ni by 6020 | GRO | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 |
| 1 | SBSA0125S072312G099 | SBSA0125 | WG | G | 07/23/2012 15:27 | 8 | | | X | X | X | X | X |
| 2 | SBSA0125T072312WX | SBSA0125 | WQ | G | 07/23/2012 00:00 | 3 | TRIP BLANK | | | | | | X |
| 3 | SBSA0128S072312G099 | SBSA0128 | WG | G | 07/23/2012 17:30 | 2 | | | | | | X | X |
| 4 | SBSA0132S072312G100 | SBSA0132 | WG | G | 07/23/2012 14:45 | 7 | | | X | X | X | X | X |
| 5 | SBSA0133S072312G100 | SBSA0133 | WG | G | 07/23/2012 14:05 | 7 | | | X | X | X | X | X |

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

Sample Receipt Conditions

| | | | | | |
|---|---|---|---|---|---|
| | Y/N | | Y/N | | Y/N |
| | Y/N | | Y/N | | Y/N |
| | Y/N | | Y/N | | Y/N |
| | Y/N | | Y/N | | Y/N |

| SHIPPING INFO | SAMPLER NAME AND SIGNATURE | | | |
|---|---|---|---|---|
| Company: | PRINT Name of SAMPLER: | LORRI LEG (LJL1) AND TED VESEY (RTV) | | |
| Tracking #: | SIGNATURE of SAMPLER: | DATE Signed: | Time: | |

Temp in °C | Samples on ice? | Sample Intact? | Trip Blank?

## Ann Preston

**From:** April Modert [a.modert@superiorenvironmental.com]
**Sent:** Monday, July 30, 2012 10:53 AM
**To:** Ann Preston
**Cc:** Carveth, Jonathan
**Subject:** RE: Sample changes for Source Area
**Attachments:** 20120730105510158.pdf

Ann,
Please see the attached COC from 7/23/12 KRRI Source Area for the following corrections:
SBSA0125DEEPS072312G099 should be SBSA0125S072312G099
SBSA0125DEEPT072312WX should be SBSA0125T072312WX
SBSA0128DEEPS072312G099 should be SBSA0128S072312G099
SBSA0132DEEPS072312G100 should be SBSA0132S072312G100
SBSA0133DEEPS072312G100 should be SBSA0133S072312G100

If you should have any questions please contact me.

Thanks

April Modert
Staff Scientist

Superior Environmental Corp
Marshall Field Office
317 S. Grand Street
Marshall, MI 49068
Cell: [redacted]
a.modert@superiorenvironmental.com

**From:** Carveth, Jonathan [mailto:Jonathan.Carveth@aecom.com]
**Sent:** Tuesday, July 24, 2012 3:12 PM
**To:** Albig, Brian; April Modert
**Subject:** Sample changes for Source Area

April,
I have attached the COC from 7/23/2012. There are a couple of samples that need to be changed. They are:
SBSA0125DEEPS072312G099 should be SBSA0125S072312G099
SBSA0125DEEPT072312WX should be SBSA0125T072312WX
SBSA0128DEEPS072312G099 should be SBSA0128S072312G099
SBSA0132DEEPS072312G100 should be SBSA0132S072312G100
SBSA0133DEEPS072312G100 should be SBSA0133S072312G100

Brian,
Also, the sample SBSA0125S072112G090 to SBSA0125S072112G085 at Superior before being sent out to the lab and it was taken on 7/21/12. This was a MEDQ/SPLIT. Do we need to notify the MDEQ of the change to that sample?

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **24-Jul-12 09:20**

Work Order: **1207687** Received by: **MA**

Checklist completed by Diane Shaw (eSignature) 24-Jul-12 (Date) Reviewed by: Ann Preston (eSignature) 24-Jul-12 (Date)

Matrices: Groundwater
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 3.8 c | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 7/24/2012 2:26:19 PM | | |
| Water - VOA vials have zero headspace? | Yes ☑ | No ☐ | No VOA vials submitted ☐ |
| Water - pH acceptable upon receipt? | Yes ☑ | No ☐ | N/A ☐ |
| pH adjusted? | Yes ☐ | No ☑ | N/A ☐ |
| pH adjusted by: | - | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

**ALS Environmental**
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

**CUSTODY SEAL**

Date: 1-24-12 Time:
Name:
Company:

Seal Broken By:

Date:

01-Aug-2012

Robert Kennedy
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Quantification Study 7/24/12** Work Order: **1207813**

Dear Robert,

ALS Environmental received 4 samples on 24-Jul-2012 for the analyses presented in the following report.

The analytical data provided relates directly to the results received by ALS Environmental and for only the analyses requested. The report from the subcontract laboratory is included in its entirety.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 11.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 01-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/24/12
**Work Order:** **1207813**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1207813-01 | SEKR1850C701S072412D005 | Sediment | | 7/24/2012 11:26 | 7/24/2012 | ☐ |
| 1207813-02 | SEKR2000C701S072412D005 | Sediment | | 7/24/2012 10:59 | 7/24/2012 | ☐ |
| 1207813-03 | SEKR2025C702S072412D005 | Sediment | | 7/24/2012 10:36 | 7/24/2012 | ☐ |
| 1207813-04 | SEKR2800C701S072412D005 | Sediment | | 7/24/2012 14:45 | 7/24/2012 | ☐ |

## ALS Group USA, Corp

*Date: 01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/24/12
**Work Order:** 1207813

# Case Narrative

This data was subcontracted to Driesenga & Associates for analyses of the Bulk Density. The sub contracted report is included in its entirety, in this report.

# ALS Group USA, Corp

Date: 01-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/24/12
**WorkOrder:** **1207813**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| cc | |
| g | grams |
| lbs/ft³ | Pounds per Cubic Foot |

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/24/12 **Work Order:** 1207813
**Sample ID:** SEKR1850C701S072412D005 **Lab ID:** 1207813-01
**Collection Date:** 7/24/2012 11:26 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **106.7159** | | | **lbs/ft³** | 1 | 7/24/2012 |
| **Dry Weight** | **748.9000** | | | **g** | 1 | 7/24/2012 |
| **Volume** | **438.1010** | | | **cc** | 1 | 7/24/2012 |
| **Wet Bulk Density** | **116.6764** | | | **lbs/ft³** | 1 | 7/24/2012 |
| **Wet Weight** | **818.8000** | | | **g** | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/24/12 **Work Order:** 1207813
**Sample ID:** SEKR2000C701S072412D005 **Lab ID:** 1207813-02
**Collection Date:** 7/24/2012 10:59 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **28.17980** | | | **lbs/ft³** | 1 | 7/24/2012 |
| **Dry Weight** | **199.0000** | | | **g** | 1 | 7/24/2012 |
| **Volume** | **440.8531** | | | **cc** | 1 | 7/24/2012 |
| **Wet Bulk Density** | **75.59000** | | | **lbs/ft³** | 1 | 7/24/2012 |
| **Wet Weight** | **533.8000** | | | **g** | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/24/12 **Work Order:** 1207813
**Sample ID:** SEKR2025C702S072412D005 **Lab ID:** 1207813-03
**Collection Date:** 7/24/2012 10:36 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **45.58210** | | | **lbs/ft³** | 1 | 7/24/2012 |
| **Dry Weight** | **318.8000** | | | **g** | 1 | 7/24/2012 |
| **Volume** | **436.6197** | | | **cc** | 1 | 7/24/2012 |
| **Wet Bulk Density** | **86.60310** | | | **lbs/ft³** | 1 | 7/24/2012 |
| **Wet Weight** | **605.7000** | | | **g** | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/24/12 **Work Order:** 1207813
**Sample ID:** SEKR2800C701S072412D005 **Lab ID:** 1207813-04
**Collection Date:** 7/24/2012 02:45 PM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **42.92200** | | | **lbs/ft³** | 1 | 7/24/2012 |
| **Dry Weight** | **308.9000** | | | **g** | 1 | 7/24/2012 |
| **Volume** | **449.2799** | | | **cc** | 1 | 7/24/2012 |
| **Wet Bulk Density** | **115.6769** | | | **lbs/ft³** | 1 | 7/24/2012 |
| **Wet Weight** | **832.5000** | | | **g** | 1 | 7/24/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

# BULK DENSITY/POROSITY OF SOILS
## VOLUMETRIC METHOD - B
## (ASTM D7263)

Project: ALS - 1207813 Project No.: 1210359.4A

Technician: Ben VanAusdall Date: 07/24/12

| Sample No. | Sample Description | Sample Depth (ft) | Vol. (cc) | Wet Wt. (g) | Dry Wt. (g) | Wet Bulk Density ($lb/ft^3$) | Dry Bulk Density ($lb/ft^3$) | Water Content (%) |
|---|---|---|---|---|---|---|---|---|
| 01A | Dark Brown Coarse Sand | 0-0.5 | 438.1010 | 818.8 | 748.9 | 116.6764 | 106.7159 | 9.3337 |
| 02A | Fine Black Sand | 0-0.5 | 440.8531 | 533.8 | 199.0 | 75.5900 | 28.1798 | 168.2412 |
| 03A | Black Sandy Peat | 0-0.5 | 436.6197 | 605.7 | 318.8 | 86.6031 | 45.5821 | 89.9937 |
| 04A | Black Peat | 0-0.5 | 449.2799 | 832.5 | 308.9 | 115.6769 | 42.9220 | 169.5047 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

1207813

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_072412_RAR_BD | Task: QUANITIFICATION STUDY |
|---|---|---|
| Total # of Samples: 4 | | Event Complete? |

| Turn Around Time | 5 Day | Rush | No | |
|---|---|---|---|---|

BILLING CODE: 9.045

**Lab Information:**

| | |
|---|---|
| Lab Name: | ALS Laboratory Group |
| Address: | 3352 128th Ave, Holland, MI 49424-9263 |
| Lab PM: | Ann Preston |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 |
| Lab PM email | ann.preston@alsglobal.com |
| Applicable Lab Quote #: | |

**Project Information:**

| | | | |
|---|---|---|---|
| Site ID #: | | | |
| Project # | 60162778 | | |
| Site Address | 5555 Glenwood Parkway SE Suite 200 | | |
| City | Grand Rapids | State, Zip | MI |
| Site PM Name | Bryan Stiemsma | | |
| Phone/Fax: | [redacted] | | |
| Site PM Email: | Bryan.Stiemsma@aecom.com | | |

**Other Information:**

| | | | |
|---|---|---|---|
| Send Invoice to: | Enbridge Energy - ATTN Accounts Payable | | |
| Address: | 1100 Louisiana Suite 1100 | | |
| City/State | Houson, TX | Phone #: | 713-821-2000 |
| PO # | | | |
| Send EDD to | | | |
| CC Hardcopy report to | | | |
| CC Hardcopy report to | | | |

| ITEM # | SAMPLE ID Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative: None — Analysis: Bulk Density and Porosity |
|---|---|---|---|---|---|---|---|---|
| 1 | SEKR1850C701S072412D005 | SEKR1850C701 | SE | G | 07/24/2012 11:26 | 1 | NO IMPACT (0"-6") | X |
| 2 | SEKR2000C701S072412D005 | SEKR2000C701 | SE | G | 07/24/2012 10:59 | 1 | NO IMPACT (0"-6") | X |
| 3 | SEKR2025C702S072412D005 | SEKR2025C702 | SE | G | 07/24/2012 10:36 | 1 | NO IMPACT (0"-6") | X |
| 4 | SEKR2800C701S072412D005 | SEKR2800C701 | SE | G | 07/24/2012 14:45 | 1 | IMPACT (0"-6") | X |

**Additional Comments/Special Instructions:**

PROCEDURE FOR THIS QUANTIFICATION OF OIL WORK PLAN IS TO RUN SAMPLES FOR BULK DENSITY IN THE FOLLOWING PRIORITY: 1.) INTERVAL EXHIBITING IMPACT, 2) IF NO IMPACT OBSERVED, 0"-6". THE DESIREO INTERVAL FOR ANALYSIS AND OBSERVATION OF IMPACT OR LACK THEREOF WILL BE NOTED IN THE COMMENTS SECTION. CALL BRIAN ALBIG (412) 559 2310 IF YOU HAVE ANY QUESTIONS.

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**Sample Receipt Conditions**

| | | | | | |
|---|---|---|---|---|---|
| | Y/N | | Y/N | | Y/N |
| | Y/N | | Y/N | | Y/N |
| | Y/N | | Y/N | | Y/N |
| | Y/N | | Y/N | | Y/N |
| Temp in OC | | Samples on Ice? | | Sample intact? | | Trip Blank? |

SHIPPING INFO

Company:

Tracking #:

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: REED RECTOR, CHAD KHODL

SIGNATURE of SAMPLER:

DATE Signed:

Time:

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **24-Jul-12 00:00**

Work Order: **1207813** Received by:

Checklist completed by Ann Preston 28-Jul-12 Reviewed by: Ann Preston 28-Jul-12
eSignature Date eSignature Date

Matrices: Sediment
Carrier name:

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☐ |
| Chain of custody present? | Yes ☐ | No ☑ | |
| Chain of custody signed when relinquished and received? | Yes ☐ | No ☑ | |
| Chain of custody agrees with sample labels? | Yes ☐ | No ☑ | |
| Samples in proper container/bottle? | Yes ☐ | No ☑ | |
| Sample containers intact? | Yes ☐ | No ☑ | |
| Sufficient sample volume for indicated test? | Yes ☐ | No ☑ | |
| All samples received within holding time? | Yes ☐ | No ☑ | |
| Container/Temp Blank temperature in compliance? | Yes ☐ | No ☑ | |
| Temperature(s)/Thermometer(s): | | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☐ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☐ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☐ |
| pH adjusted by: | | | |

Login Notes: Samples wer shipped directly to Driesenga.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

# BULK DENSITY/POROSITY OF SOILS
## VOLUMETRIC METHOD - B
## (ASTM D7263)

Project: ALS - 1207813 Project No.: 1210359.4A

Technician: Ben VanAusdall Date: 07/24/12

| Sample No. | Sample Description | Sample Depth (ft) | Vol. (cc) | Wet Wt. (g) | Dry Wt. (g) | Wet Bulk Density ($lb/ft^3$) | Dry Bulk Density ($lb/ft^3$) | Water Content (%) |
|---|---|---|---|---|---|---|---|---|
| 01A | Dark Brown Coarse Sand | 0-0.5 | 438.1010 | 818.8 | 748.9 | 116.6764 | 106.7159 | 9.3337 |
| 02A | Fine Black Sand | 0-0.5 | 440.8531 | 533.8 | 199.0 | 75.5900 | 28.1798 | 168.2412 |
| 03A | Black Sandy Peat | 0-0.5 | 436.6197 | 605.7 | 318.8 | 86.6031 | 45.5821 | 89.9937 |
| 04A | Black Peat | 0-0.5 | 449.2799 | 832.5 | 308.9 | 115.6769 | 42.9220 | 169.5047 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

01-Aug-2012

Robert Kennedy
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Quantification Study 7/25/12** Work Order: **1207814**

Dear Robert,

ALS Environmental received 7 samples on 25-Jul-2012 for the analyses presented in the following report.

The analytical data provided relates directly to the results received by ALS Environmental and for only the analyses requested. The report from the subcontract laboratory is included in its entirety.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 14.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 01-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12
**Work Order:** **1207814**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1207814-01 | SEKR0400C701S072512D005 | Sediment | | 7/25/2012 15:12 | 7/25/2012 | ☐ |
| 1207814-02 | SEKR0425C701S072512D005 | Sediment | | 7/25/2012 11:27 | 7/25/2012 | ☐ |
| 1207814-03 | SEKR1900C701S072512D005 | Sediment | | 7/25/2012 07:59 | 7/25/2012 | ☐ |
| 1207814-04 | SEKR2275C701S072512D005 | Sediment | | 7/25/2012 09:09 | 7/25/2012 | ☐ |
| 1207814-05 | SEKR3650C701S072512D005 | Sediment | | 7/25/2012 09:18 | 7/25/2012 | ☐ |
| 1207814-06 | SEKR3725C701S072512D005 | Sediment | | 7/25/2012 10:36 | 7/25/2012 | ☐ |
| 1207814-07 | SEKR3750C701S072512D005 | Sediment | | 7/25/2012 09:59 | 7/25/2012 | ☐ |

## ALS Group USA, Corp

*Date: 01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12
**Work Order:** 1207814

# Case Narrative

This data was subcontracted to Driesenga & Associates for analyses of the Bulk Density. The sub contracted report is included in its entirety, in this report.

# ALS Group USA, Corp

Date: 01-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12
**WorkOrder:** **1207814**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| cc | |
| g | grams |
| lbs/ft³ | Pounds per Cubic Foot |

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12 **Work Order:** 1207814
**Sample ID:** SEKR0400C701S072512D005 **Lab ID:** 1207814-01
**Collection Date:** 7/25/2012 03:12 PM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **46.19040** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Dry Weight** | **322.6000** | | | **g** | 1 | 7/25/2012 |
| **Volume** | **436.0059** | | | **cc** | 1 | 7/25/2012 |
| **Wet Bulk Density** | **91.49300** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Wet Weight** | **639.0000** | | | **g** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12 **Work Order:** 1207814
**Sample ID:** SEKR0425C701S072512D005 **Lab ID:** 1207814-02
**Collection Date:** 7/25/2012 11:27 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **28.54730** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Dry Weight** | **201.8000** | | | **g** | 1 | 7/25/2012 |
| **Volume** | **441.3009** | | | **cc** | 1 | 7/25/2012 |
| **Wet Bulk Density** | **77.35230** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Wet Weight** | **546.8000** | | | **g** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12 **Work Order:** 1207814
**Sample ID:** SEKR1900C701S072512D005 **Lab ID:** 1207814-03
**Collection Date:** 7/25/2012 07:59 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **104.7747** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Dry Weight** | **757.1000** | | | **g** | 1 | 7/25/2012 |
| **Volume** | **451.1037** | | | **cc** | 1 | 7/25/2012 |
| **Wet Bulk Density** | **122.7930** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Wet Weight** | **887.3000** | | | **g** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12 **Work Order:** 1207814
**Sample ID:** SEKR2275C701S072512D005 **Lab ID:** 1207814-04
**Collection Date:** 7/25/2012 09:09 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **66.90400** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Dry Weight** | **482.5000** | | | **g** | 1 | 7/25/2012 |
| **Volume** | **450.2199** | | | **cc** | 1 | 7/25/2012 |
| **Wet Bulk Density** | **101.0146** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Wet Weight** | **728.5000** | | | **g** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12 **Work Order:** 1207814
**Sample ID:** SEKR3650C701S072512D005 **Lab ID:** 1207814-05
**Collection Date:** 7/25/2012 09:18 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **17.90160** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Dry Weight** | **124.8000** | | | **g** | 1 | 7/25/2012 |
| **Volume** | **435.2138** | | | **cc** | 1 | 7/25/2012 |
| **Wet Bulk Density** | **61.00590** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Wet Weight** | **425.3000** | | | **g** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12
**Work Order:** 1207814
**Sample ID:** SEKR3725C701S072512D005
**Lab ID:** 1207814-06
**Collection Date:** 7/25/2012 10:36 AM
**Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **18.18180** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Dry Weight** | **126.3000** | | | **g** | 1 | 7/25/2012 |
| **Volume** | **433.6570** | | | **cc** | 1 | 7/25/2012 |
| **Wet Bulk Density** | **70.76930** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Wet Weight** | **491.6000** | | | **g** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12 **Work Order:** 1207814
**Sample ID:** SEKR3750C701S072512D005 **Lab ID:** 1207814-07
**Collection Date:** 7/25/2012 09:59 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **23.68200** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Dry Weight** | **115.2000** | | | **g** | 1 | 7/25/2012 |
| **Volume** | **303.6779** | | | **cc** | 1 | 7/25/2012 |
| **Wet Bulk Density** | **54.72360** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Wet Weight** | **266.2000** | | | **g** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

# BULK DENSITY/POROSITY OF SOILS
## VOLUMETRIC METHOD - B
## (ASTM D7263)

Project: ALS - 1207814 Project No.: 1210359.4B

Technician: Ben VanAusdall Date: 07/25/12

| Sample No. | Sample Description | Sample Depth (ft) | Vol. (cc) | Wet Wt. (g) | Dry Wt. (g) | Wet Bulk Density ($lb/ft^3$) | Dry Bulk Density ($lb/ft^3$) | Water Content (%) |
|---|---|---|---|---|---|---|---|---|
| 01A | Black Peat, Gravel | 0-0.5 | 436.0059 | 639.0 | 322.6 | 91.4930 | 46.1904 | 98.0781 |
| 02A | Black Peat | 0-0.5 | 441.3009 | 546.8 | 201.8 | 77.3523 | 28.5473 | 170.9613 |
| 03A | Coarse Black Sand | 0-0.5 | 451.1037 | 887.3 | 757.1 | 122.7930 | 104.7747 | 17.1972 |
| 04A | Dk. Brown Sandy Peat | 0-0.5 | 450.2199 | 728.5 | 482.5 | 101.0146 | 66.9040 | 50.9845 |
| 05A | Black Peat | 0-0.5 | 435.2138 | 425.3 | 124.8 | 61.0059 | 17.9016 | 240.7853 |
| 06A | Black Peat | 0-0.5 | 433.6570 | 491.6 | 126.3 | 70.7693 | 18.1818 | 289.2320 |
| 07A | Black Peat | 0-0.5 | 303.6779 | 266.2 | 115.2 | 54.7236 | 23.6820 | 131.0764 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

1207814

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_072512_BD2 | Task: QUANTIFICATION STUDY |
|---|---|---|
| Total # of Samples: 7 | | Event Complete? |

| Turn Around Time | 5 Day | Rush | No | |
|---|---|---|---|---|

BILLING CODE: 9.045

**Lab Information:**

| | |
|---|---|
| Lab Name: | ALS Laboratory Group |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 |
| Lab PM: | Ann Preston |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 |
| Lab PM email | ann.preston@alsglobal.com |
| Applicable Lab Quote #: | |

**Project Information:**

| | | | |
|---|---|---|---|
| Site ID #: | | | |
| Project # | 60162778 | | |
| Site Address | 5555 Glenwood Parkway SE Suite 200 | | |
| City | Grand Rapids | State, Zip | MI |
| Site PM Name | Bryan Stiemsma | | |
| Phone/Fax: | [redacted] | | |
| Site PM Email: | Bryan.Stiemsma@aecom.com | | |

**Other Information:**

| | | | |
|---|---|---|---|
| Send Invoice to: | Enbridge Energy - ATTN Accounts Payable | | |
| Address: | 1100 Louisiana Suite 1100 | | |
| City/State. | Houson, TX | Phone #: | 713-821-2000 |
| PO # | | | |
| Send EDD to | | | |
| CC Hardcopy report | | | |
| CC Hardcopy report | | | |

| ITEM # | SAMPLE ID Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative: None | Analysis: Bulk Density and Porosity |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SEKR0400C701S072512D005 | SEKR0400C701 | SE | G | 07/25/2012 15:12 | 1 | NO IMPACT (0-0.5') | | X |
| 2 | SEKR0425C701S072512D005 | SEKR0425C701 | SE | G | 07/25/2012 11:27 | 1 | NO IMPACT (0-0.5') | | X |
| 3 | SEKR1900C701S072512D005 | SEKR1900C701 | SE | G | 07/25/2012 07:59 | 1 | NO IMPACT (0-0.5') | | X |
| 4 | SEKR2275C701S072512D005 | SEKR2275C701 | SE | G | 07/25/2012 09:09 | 1 | NO IMPACT (0-0.5') | | X |
| 5 | SEKR3650C701S072512D005 | SEKR3650C701 | SE | G | 07/25/2012 09:18 | 1 | NO IMPACT (0-0.5') | | X |
| 6 | SEKR3725C701S072512D005 | SEKR3725C701 | SE | G | 07/25/2012 10:36 | 1 | NO IMPACT (0-0.5') | | X |
| 7 | SEKR3750C701S072512D005 | SEKR3750C701 | SE | G | 07/25/2012 09:59 | 1 | IMPACT (0-0.5') | | X |

**Additional Comments/Special Instructions:**

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7.25.12 | 1610 | [signature] | 7-25 | 1610 |
| | | | | | |
| | | | | | |

**Sample Receipt Conditions**

| Temp in 0C | Samples on Ice? | Sample intact? | Trip Blank? |
|---|---|---|---|
| | Y / N | Y / N | Y / N |
| | Y / N | Y / N | Y / N |
| | Y / N | Y / N | Y / N |
| | Y / N | Y / N | Y / N |

SHIPPING INFO:
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: REED RECTOR/CHAD KHODL
SIGNATURE of SAMPLER: DATE Signed: Time:

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **25-Jul-12 00:00**

Work Order: **1207814** Received by:

Checklist completed by Ann Preston (eSignature) 28-Jul-12 (Date) Reviewed by: Ann Preston (eSignature) 01-Aug-12 (Date)

Matrices: Sediment
Carrier name:

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☐ |
| Chain of custody present? | Yes ☐ | No ☑ | |
| Chain of custody signed when relinquished and received? | Yes ☐ | No ☑ | |
| Chain of custody agrees with sample labels? | Yes ☐ | No ☑ | |
| Samples in proper container/bottle? | Yes ☐ | No ☑ | |
| Sample containers intact? | Yes ☐ | No ☑ | |
| Sufficient sample volume for indicated test? | Yes ☐ | No ☑ | |
| All samples received within holding time? | Yes ☐ | No ☑ | |
| Container/Temp Blank temperature in compliance? | Yes ☐ | No ☑ | |
| Temperature(s)/Thermometer(s): | | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☐ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☐ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☐ |
| pH adjusted by: | | | |

Login Notes: Samples shipped driectly to Driesenga

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

# BULK DENSITY/POROSITY OF SOILS
## VOLUMETRIC METHOD - B
## (ASTM D7263)

Project: ALS - 1207814 Project No.: 1210359.4B

Technician: Ben VanAusdall Date: 07/25/12

| Sample No. | Sample Description | Sample Depth (ft) | Vol. (cc) | Wet Wt. (g) | Dry Wt. (g) | Wet Bulk Density ($lb/ft^3$) | Dry Bulk Density ($lb/ft^3$) | Water Content (%) |
|---|---|---|---|---|---|---|---|---|
| 01A | Black Peat, Gravel | 0-0.5 | 436.0059 | 639.0 | 322.6 | 91.4930 | 46.1904 | 98.0781 |
| 02A | Black Peat | 0-0.5 | 441.3009 | 546.8 | 201.8 | 77.3523 | 28.5473 | 170.9613 |
| 03A | Coarse Black Sand | 0-0.5 | 451.1037 | 887.3 | 757.1 | 122.7930 | 104.7747 | 17.1972 |
| 04A | Dk. Brown Sandy Peat | 0-0.5 | 450.2199 | 728.5 | 482.5 | 101.0146 | 66.9040 | 50.9845 |
| 05A | Black Peat | 0-0.5 | 435.2138 | 425.3 | 124.8 | 61.0059 | 17.9016 | 240.7853 |
| 06A | Black Peat | 0-0.5 | 433.6570 | 491.6 | 126.3 | 70.7693 | 18.1818 | 289.2320 |
| 07A | Black Peat | 0-0.5 | 303.6779 | 266.2 | 115.2 | 54.7236 | 23.6820 | 131.0764 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

# BULK DENSITY/POROSITY OF SOILS

## VOLUMETRIC METHOD - B

## (ASTM D7263)

Project: ALS - 1207815 Project No.: 1210359.4C

Technician: Ben VanAusdall Date: 07/25/12

| Sample No. | Sample Description | Sample Depth (ft) | Vol. (cc) | Wet Wt. (g) | Dry Wt. (g) | Wet Bulk Density ($lb/ft^3$) | Dry Bulk Density ($lb/ft^3$) | Water Content (%) |
|---|---|---|---|---|---|---|---|---|
| 01A | Black Sandy Peat | 0-0.9 | 444.2261 | 564.6 | 199.9 | 79.3444 | 28.0924 | 182.4412 |
| 02A | Black Sandy Peat | 0-0.9 | 442.0045 | 548.4 | 221.8 | 77.4551 | 31.3267 | 147.2498 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

01-Aug-2012

Robert Kennedy
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Quantification Study 7/25/12** Work Order: **1207815**

Dear Robert,

ALS Environmental received 2 samples on 25-Jul-2012 for the analyses presented in the following report.

The analytical data provided relates directly to the results received by ALS Environmental and for only the analyses requested. The report from the subcontract laboratory is included in its entirety.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 9.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 01-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12
**Work Order:** **1207815**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1207815-01 | SEKR3750C604S072512D009 | Sediment | | 7/25/2012 09:00 | 7/25/2012 | ☐ |
| 1207815-02 | SEKR3750C610S072512D009 | Sediment | | 7/25/2012 09:15 | 7/25/2012 | ☐ |

## ALS Group USA, Corp

*Date: 01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12
**Work Order:** 1207815

# Case Narrative

This data was subcontracted to Driesenga & Associates for analyses of the Bulk Density. The sub contracted report is included in its entirety, in this report.

# ALS Group USA, Corp

Date: 01-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12
**WorkOrder:** **1207815**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| cc | |
| g | grams |
| lbs/ft³ | Pounds per Cubic Foot |

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12 **Work Order:** 1207815
**Sample ID:** SEKR3750C604S072512D009 **Lab ID:** 1207815-01
**Collection Date:** 7/25/2012 09:00 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **28.09240** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Dry Weight** | **199.9000** | | | **g** | 1 | 7/25/2012 |
| **Volume** | **444.2261** | | | **cc** | 1 | 7/25/2012 |
| **Wet Bulk Density** | **79.34440** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Wet Weight** | **564.6000** | | | **g** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *01-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/25/12
**Work Order:** 1207815
**Sample ID:** SEKR3750C610S072512D009
**Lab ID:** 1207815-02
**Collection Date:** 7/25/2012 09:15 AM
**Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **31.32670** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Dry Weight** | **221.8000** | | | **g** | 1 | 7/25/2012 |
| **Volume** | **442.0045** | | | **cc** | 1 | 7/25/2012 |
| **Wet Bulk Density** | **77.45510** | | | **lbs/ft³** | 1 | 7/25/2012 |
| **Wet Weight** | **548.4000** | | | **g** | 1 | 7/25/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

# BULK DENSITY/POROSITY OF SOILS

## VOLUMETRIC METHOD - B

## (ASTM D7263)

Project: ALS - 1207815 Project No.: 1210359.4C

Technician: Ben VanAusdall Date: 07/25/12

| Sample No. | Sample Description | Sample Depth (ft) | Vol. (cc) | Wet Wt. (g) | Dry Wt. (g) | Wet Bulk Density ($lb/ft^3$) | Dry Bulk Density ($lb/ft^3$) | Water Content (%) |
|---|---|---|---|---|---|---|---|---|
| 01A | Black Sandy Peat | 0-0.9 | 444.2261 | 564.6 | 199.9 | 79.3444 | 28.0924 | 182.4412 |
| 02A | Black Sandy Peat | 0-0.9 | 442.0045 | 548.4 | 221.8 | 77.4551 | 31.3267 | 147.2498 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

1207815

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_072512_BD1 | Task: AGITATION STUDY |
|---|---|---|
| Total # of Samples: 2 | | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |
| BILLING CODE: 9.045 | | |

**Lab Information:**

| | |
|---|---|
| Lab Name: | ALS Laboratory Group |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 |
| Lab PM: | Ann Preston |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 |
| Lab PM email | ann.preston@alsglobal.com |
| Applicable Lab Quote #: | |

**Project Information:**

| | |
|---|---|
| Site ID #: | |
| Project # | 60162778 |
| Site Address | 5555 Glenwood Parkway SE Suite 200 |
| City | Grand Rapids |
| State, Zip | MI |
| Site PM Name | [redacted] |
| Phone/Fax: | [redacted] |
| Site PM Email: | Bryan.Stiemsma@aecom.com |

**Other Information:**

| | |
|---|---|
| Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 1100 Louisiana Suite 1100 |
| City/State. | Houson, TX |
| Phone #: | 713-821-2000 |
| PO # | |
| Send EDD to | |
| CC Hardcopy report | |
| CC Hardcopy report | |

| ITEM # | SAMPLE ID Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative: None | Analysis: Bulk Density and Porosity |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SEKR3750C604S072512D0009 | SEKR3750C604 | SE | G | 07/25/2012 09:00 | 1 | IMPACT 0.0 - 0.9' | | X |
| 2 | SEKR3750C610S072512D0009 | SEKR3750C610 | SE | G | 07/25/2012 09:15 | 1 | IMPACT 0.0 - 0.9' | | X |

**Additional Comments/Special Instructions:**

THE DESIRED INTERVAL FOR ANALYSIS AND OBSERVATION OF IMPACT OR LACK THEREOF WILL BE NOTED IN THE COMMENTS SECTION. CALL MATT SUMNER (517) 515-9358 IF YOU HAVE ANY QUESTIONS.

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7.25.12 | 1610 | [signature] | 7-25 | 1610 |
| | | | | | |
| | | | | | |

SHIPPING INFO:
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: ELI EVERSOLE
SIGNATURE of SAMPLER:
DATE Signed
Time:

**Sample Receipt Conditions**

| Temp in 0C | Samples on Ice? | Sample intact? | Trip Blank? |
|---|---|---|---|
| | Y / N | Y / N | Y / N |
| | Y / N | Y / N | Y / N |
| | Y / N | Y / N | Y / N |
| | Y / N | Y / N | Y / N |

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **25-Jul-12 00:00**

Work Order: **1207815** Received by:

Checklist completed by Ann Preston (eSignature) 28-Jul-12 (Date) Reviewed by: Ann Preston (eSignature) 01-Aug-12 (Date)

Matrices: Sediment
Carrier name:

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☐ |
| Chain of custody present? | Yes ☐ | No ☑ | |
| Chain of custody signed when relinquished and received? | Yes ☐ | No ☑ | |
| Chain of custody agrees with sample labels? | Yes ☐ | No ☑ | |
| Samples in proper container/bottle? | Yes ☐ | No ☑ | |
| Sample containers intact? | Yes ☐ | No ☑ | |
| Sufficient sample volume for indicated test? | Yes ☐ | No ☑ | |
| All samples received within holding time? | Yes ☐ | No ☑ | |
| Container/Temp Blank temperature in compliance? | Yes ☐ | No ☑ | |
| Temperature(s)/Thermometer(s): | | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☐ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☐ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☐ |
| pH adjusted by: | | | |

Login Notes: Samples picked up by Driesenga.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

08-Aug-2012

Robert Kennedy
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Quantification Study 7/26/12** Work Order: **1207816**

Dear Robert,

ALS Environmental received 9 samples on 26-Jul-2012 for the analyses presented in the following report.

The analytical data provided relates directly to the results received by ALS Environmental and for only the analyses requested. The report from the subcontract laboratory is included in its entirety

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 16.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 08-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/26/12
**Work Order:** **1207816**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1207816-01 | SEKR0550C701S072612D005 | Sediment | | 7/26/2012 08:11 | 7/26/2012 | ☐ |
| 1207816-02 | SEKR1475C701S072612D005 | Sediment | | 7/26/2012 13:19 | 7/26/2012 | ☐ |
| 1207816-03 | SEKR1575C701S072612D005 | Sediment | | 7/26/2012 15:06 | 7/26/2012 | ☐ |
| 1207816-04 | SEKR3800C701S072612D005 | Sediment | | 7/26/2012 13:10 | 7/26/2012 | ☐ |
| 1207816-05 | SEKR3800C702S072612D005 | Sediment | | 7/26/2012 13:54 | 7/26/2012 | ☐ |
| 1207816-06 | SEKR3850C701S072612D005 | Sediment | | 7/26/2012 07:47 | 7/26/2012 | ☐ |
| 1207816-07 | SEKR3850C702S072612D005 | Sediment | | 7/26/2012 09:26 | 7/26/2012 | ☐ |
| 1207816-08 | SEKR3875C701S072612D005 | Sediment | | 7/26/2012 08:54 | 7/26/2012 | ☐ |
| 1207816-09 | SEKR3975C701S072612D005 | Sediment | | 7/26/2012 10:10 | 7/26/2012 | ☐ |

## ALS Group USA, Corp

*Date: 08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/26/12
**Work Order:** 1207816

# Case Narrative

This data was subcontracted to Driesenga & Associates for analyses of the Bulk Density. The sub contracted report is included in its entirety, in this report.

# ALS Group USA, Corp

Date: 08-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/26/12
**WorkOrder:** **1207816**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| cc | |
| g | grams |
| lbs/ft³ | Pounds per Cubic Foot |

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/26/12 **Work Order:** 1207816
**Sample ID:** SEKR0550C701S072612D005 **Lab ID:** 1207816-01
**Collection Date:** 7/26/2012 08:11 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **26.43838** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Dry Weight** | **213.0000** | | | **g** | 1 | 7/26/2012 |
| **Volume** | **502.9494** | | | **cc** | 1 | 7/26/2012 |
| **Wet Bulk Density** | **75.86449** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Wet Weight** | **611.2000** | | | **g** | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/26/12 **Work Order:** 1207816
**Sample ID:** SEKR1475C701S072612D005 **Lab ID:** 1207816-02
**Collection Date:** 7/26/2012 01:19 PM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **23.61452** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Dry Weight** | **191.6000** | | | **g** | 1 | 7/26/2012 |
| **Volume** | **506.5191** | | | **cc** | 1 | 7/26/2012 |
| **Wet Bulk Density** | **71.27493** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Wet Weight** | **578.3000** | | | **g** | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/26/12 **Work Order:** 1207816
**Sample ID:** SEKR1575C701S072612D005 **Lab ID:** 1207816-03
**Collection Date:** 7/26/2012 03:06 PM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **19.88895** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Dry Weight** | **142.1000** | | | **g** | 1 | 7/26/2012 |
| **Volume** | **446.0274** | | | **cc** | 1 | 7/26/2012 |
| **Wet Bulk Density** | **71.22794** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Wet Weight** | **508.9000** | | | **g** | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/26/12 **Work Order:** 1207816
**Sample ID:** SEKR3800C701S072612D005 **Lab ID:** 1207816-04
**Collection Date:** 7/26/2012 01:10 PM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **48.97422** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Dry Weight** | **365.6000** | | | **g** | 1 | 7/26/2012 |
| **Volume** | **466.0345** | | | **cc** | 1 | 7/26/2012 |
| **Wet Bulk Density** | **89.57621** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Wet Weight** | **668.7000** | | | **g** | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/26/12 **Work Order:** 1207816
**Sample ID:** SEKR3800C702S072612D005 **Lab ID:** 1207816-05
**Collection Date:** 7/26/2012 01:54 PM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **10.80293** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Dry Weight** | **82.40000** | | | **g** | 1 | 7/26/2012 |
| **Volume** | **476.1734** | | | **cc** | 1 | 7/26/2012 |
| **Wet Bulk Density** | **64.75201** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Wet Weight** | **493.9000** | | | **g** | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/26/12 **Work Order:** 1207816
**Sample ID:** SEKR3850C701S072612D005 **Lab ID:** 1207816-06
**Collection Date:** 7/26/2012 07:47 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **16.06407** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Dry Weight** | **125.5000** | | | **g** | 1 | 7/26/2012 |
| **Volume** | **487.7166** | | | **cc** | 1 | 7/26/2012 |
| **Wet Bulk Density** | **68.48029** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Wet Weight** | **535.0000** | | | **g** | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/26/12 **Work Order:** 1207816
**Sample ID:** SEKR3850C702S072612D005 **Lab ID:** 1207816-07
**Collection Date:** 7/26/2012 09:26 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **23.55863** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Dry Weight** | **191.2000** | | | **g** | 1 | 7/26/2012 |
| **Volume** | **506.6607** | | | **cc** | 1 | 7/26/2012 |
| **Wet Bulk Density** | **74.93913** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Wet Weight** | **608.2000** | | | **g** | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/26/12 **Work Order:** 1207816
**Sample ID:** SEKR3875C701S072612D005 **Lab ID:** 1207816-08
**Collection Date:** 7/26/2012 08:54 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **15.77040** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Dry Weight** | **120.7000** | | | **g** | 1 | 7/26/2012 |
| **Volume** | **477.7975** | | | **cc** | 1 | 7/26/2012 |
| **Wet Bulk Density** | **70.97335** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Wet Weight** | **543.2000** | | | **g** | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/26/12 **Work Order:** 1207816
**Sample ID:** SEKR3975C701S072612D005 **Lab ID:** 1207816-09
**Collection Date:** 7/26/2012 10:10 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **17.15461** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Dry Weight** | **130.4000** | | | **g** | 1 | 7/26/2012 |
| **Volume** | **474.5436** | | | **cc** | 1 | 7/26/2012 |
| **Wet Bulk Density** | **70.42074** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Wet Weight** | **535.3000** | | | **g** | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

# BULK DENSITY/POROSITY OF SOILS

## VOLUMETRIC METHOD - B

## (ASTM D7263)

Project: ALS - 1207816 Project No.: 1210359.4D

Technician: Ben VanAusdall Date: 07/26/12

| Sample No. | Sample Description | Sample Depth (ft) | Vol. (cc) | Wet Wt. (g) | Dry Wt. (g) | Wet Bulk Density ($lb/ft^3$) | Dry Bulk Density ($lb/ft^3$) | Water Content (%) |
|---|---|---|---|---|---|---|---|---|
| 01A | Black Peat | 0-0.5 | 502.9494 | 611.2 | 213.0 | 75.8645 | 26.4384 | 186.9484 |
| 02A | Black Peat | 0-0.5 | 506.5191 | 578.3 | 191.6 | 71.2749 | 23.6145 | 201.8267 |
| 03A | Black Peat | 0-0.5 | 446.0274 | 508.9 | 142.1 | 71.2279 | 19.8890 | 258.1281 |
| 04A | Dk. Brown Sandy Peat | 0-0.5 | 466.0345 | 668.7 | 365.6 | 89.5762 | 48.9742 | 82.9048 |
| 05A | Black Peat | 0-0.5 | 476.1734 | 493.9 | 82.4 | 64.7520 | 10.8029 | 499.3932 |
| 06A | Black Peat | 0-0.5 | 487.7167 | 535.0 | 125.5 | 68.4803 | 16.0641 | 326.2948 |
| 07A | Black Peat | 0-0.5 | 506.6607 | 608.2 | 191.2 | 74.9391 | 23.5586 | 218.0962 |
| 08A | Black Peat | 0-0.5 | 477.7975 | 543.2 | 120.7 | 70.9734 | 15.7704 | 350.0414 |
| 09A | Black Peat | 0-0.5 | 474.5436 | 535.3 | 130.4 | 70.4207 | 17.1546 | 310.5061 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

1207816

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_072612_BD2 | Task: QUANTIFICATION STUDY |
|---|---|---|
| | Total # of Samples: 9 | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |

BILLING CODE: 9.045

**Lab Information:**

| | |
|---|---|
| Lab Name: | ALS Laboratory Group |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 |
| Lab PM: | Ann Preston |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 |
| Lab PM email | ann.preston@alsglobal.com |
| Applicable Lab Quote #: | |

**Project Information:**

| | |
|---|---|
| Site ID #: | |
| Project # | 60162778 |
| Site Address | 5555 Glenwood Parkway SE Suite 200 |
| City | Grand Rapids |
| State, Zip | MI |
| Site PM Name | Bryan Stiemsma |
| Phone/Fax: | [redacted] |
| Site PM Email: | Bryan.Stiemsma@aecom.com |

**Other Information:**

| | |
|---|---|
| Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 1100 Louisiana Suite 1100 |
| City/State: | Houson, TX |
| Phone #: | 713-821-2000 |
| PO # | |
| Send EDD to | |
| CC Hardcopy report | |
| CC Hardcopy report | |

| ITEM # | SAMPLE ID Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | Analysis: WET AND DRY BULK DENSITY |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SEKR0550C701S072612D005 | SEKR0550C701 | SE | G | 07/26/2012 08:11 | 1 | NO IMPACT (0-0.5') | | X |
| 2 | SEKR1475C701S072612D005 | SEKR1475C701 | SE | G | 07/26/2012 13:19 | 1 | NO IMPACT (0-0.5') | | X |
| 3 | SEKR1575C701S072612D005 | SEKR1575C701 | SE | G | 07/26/2012 15:06 | 1 | IMPACT (0-0.5') | | X |
| 4 | SEKR3800C701S072612D005 | SEKR3800C701 | SE | G | 07/26/2012 13:10 | 1 | NO IMPACT (0-0.5') | | X |
| 5 | SEKR3800C702S072612D005 | SEKR3800C702 | SE | G | 07/26/2012 13:54 | 1 | NO IMPACT (0-0.5') | | X |
| 6 | SEKR3850C701S072612D005 | SEKR3850C701 | SE | G | 07/26/2012 07:47 | 1 | NO IMPACT (0-0.5') | | X |
| 7 | SEKR3850C702S072612D005 | SEKR3850C702 | SE | G | 07/26/2012 09:26 | 1 | NO IMPACT (0-0.5') | | X |
| 8 | SEKR3875C701S072612D005 | SEKR3875C701 | SE | G | 07/26/2012 08:54 | 1 | NO IMPACT (0-0.5') | | X |
| 9 | SEKR3975C701S072612D005 | SEKR3975C701 | SE | G | 07/26/2012 10:10 | 1 | NO IMPACT (0-0.5') | | X |

**Additional Comments/Special Instructions:**

PROCEDURE FOR THIS QUANTIFICATION OF OIL WORK PLAN IS TO RUN SAMPLES FOR BULK DENSITY IN THE FOLLOWING PRIORITY: 1.) INTERVAL EXHIBITING IMPACT, 2) IF NO IMPACT OBSERVED, 0"-6". THE DESIRED INTERVAL FOR ANALYSIS AND OBSERVATION OF IMPACT OR LACK THEREOF WILL BE NOTED IN THE COMMENTS SECTION. CALL BRIAN ALBIG (412) 559 2310 IF YOU HAVE ANY QUESTIONS.

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [illegible] | | | | 7-26-12 | 1540 |
| | | | | | |
| | | | | | |
| | | | | | |

**Sample Receipt Conditions**

| | | | | | |
|---|---|---|---|---|---|
| | Y / N | | Y / N | | Y / N |
| | Y / N | | Y / N | | Y / N |
| | Y / N | | Y / N | | Y / N |
| | Y / N | | Y / N | | Y / N |
| Temp in 0C | | Samples on Ice? | | Sample Intact? | Trip Blank? |

SHIPPING INFO:

Company:

Tracking #:

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: REED RECTOR/CHAD KHODL

SIGNATURE of SAMPLER:

DATE Signed:

Time:

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **26-Jul-12 00:00**

Work Order: **1207816** Received by:

Checklist completed by Ann Preston (eSignature) 28-Jul-12 (Date) Reviewed by: (eSignature) (Date)

Matrices: Sediment
Carrier name:

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☐ |
| Chain of custody present? | Yes ☐ | No ☑ | |
| Chain of custody signed when relinquished and received? | Yes ☐ | No ☑ | |
| Chain of custody agrees with sample labels? | Yes ☐ | No ☑ | |
| Samples in proper container/bottle? | Yes ☐ | No ☑ | |
| Sample containers intact? | Yes ☐ | No ☑ | |
| Sufficient sample volume for indicated test? | Yes ☐ | No ☑ | |
| All samples received within holding time? | Yes ☐ | No ☑ | |
| Container/Temp Blank temperature in compliance? | Yes ☐ | No ☑ | |
| Temperature(s)/Thermometer(s): | | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☐ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☐ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☐ |
| pH adjusted by: | | | |

Login Notes: Samples picked up by Driesenga.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

# BULK DENSITY/POROSITY OF SOILS

## VOLUMETRIC METHOD - B

## (ASTM D7263)

Project: ALS - 1207816 Project No.: 1210359.4D

Technician: Ben VanAusdall Date: 07/26/12

| Sample No. | Sample Description | Sample Depth (ft) | Vol. (cc) | Wet Wt. (g) | Dry Wt. (g) | Wet Bulk Density ($lb/ft^3$) | Dry Bulk Density ($lb/ft^3$) | Water Content (%) |
|---|---|---|---|---|---|---|---|---|
| 01A | Black Peat | 0-0.5 | 502.9494 | 611.2 | 213.0 | 75.8645 | 26.4384 | 186.9484 |
| 02A | Black Peat | 0-0.5 | 506.5191 | 578.3 | 191.6 | 71.2749 | 23.6145 | 201.8267 |
| 03A | Black Peat | 0-0.5 | 446.0274 | 508.9 | 142.1 | 71.2279 | 19.8890 | 258.1281 |
| 04A | Dk. Brown Sandy Peat | 0-0.5 | 466.0345 | 668.7 | 365.6 | 89.5762 | 48.9742 | 82.9048 |
| 05A | Black Peat | 0-0.5 | 476.1734 | 493.9 | 82.4 | 64.7520 | 10.8029 | 499.3932 |
| 06A | Black Peat | 0-0.5 | 487.7167 | 535.0 | 125.5 | 68.4803 | 16.0641 | 326.2948 |
| 07A | Black Peat | 0-0.5 | 506.6607 | 608.2 | 191.2 | 74.9391 | 23.5586 | 218.0962 |
| 08A | Black Peat | 0-0.5 | 477.7975 | 543.2 | 120.7 | 70.9734 | 15.7704 | 350.0414 |
| 09A | Black Peat | 0-0.5 | 474.5436 | 535.3 | 130.4 | 70.4207 | 17.1546 | 310.5061 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

08-Aug-2012

Robert Kennedy
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Agitation Study 7/26/12** Work Order: **1207866**

Dear Robert,

ALS Environmental received 2 samples on 26-Jul-2012 for the analyses presented in the following report.

The analytical data provided relates directly to the results received by ALS Environmental and for only the analyses requested. The report from the subcontract laboratory is included in its entirety.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 9.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 08-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Agitation Study 7/26/12
**Work Order:** **1207866**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1207866-01 | SEKR3740C604S072612D012 | Sediment | | 7/26/2012 09:20 | 7/26/2012 | ☐ |
| 1207866-02 | SEKR3740C612S072612D012 | Sediment | | 7/26/2012 09:35 | 7/26/2012 | ☐ |

## ALS Group USA, Corp

*Date: 08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Agitation Study 7/26/12
**Work Order:** 1207866

# Case Narrative

This data was subcontracted to Driesenga & Associates for analyses of the Bulk Density. The sub contracted report is included in its entirety, in this report.

# ALS Group USA, Corp

Date: 08-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Agitation Study 7/26/12
**WorkOrder:** **1207866**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| cc | |
| g | grams |
| lbs/ft³ | Pounds per Cubic Foot |

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Agitation Study 7/26/12 **Work Order:** 1207866
**Sample ID:** SEKR3740C604S072612D012 **Lab ID:** 1207866-01
**Collection Date:** 7/26/2012 09:20 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **35.22240** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Dry Weight** | **582.5000** | | | **g** | 1 | 7/26/2012 |
| **Volume** | **1,032.420** | | | **cc** | 1 | 7/26/2012 |
| **Wet Bulk Density** | **81.96390** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Wet Weight** | **1,355.500** | | | **g** | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Agitation Study 7/26/12 **Work Order:** 1207866
**Sample ID:** SEKR3740C612S072612D012 **Lab ID:** 1207866-02
**Collection Date:** 7/26/2012 09:35 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **27.40121** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Dry Weight** | **544.9000** | | | **g** | 1 | 7/26/2012 |
| **Volume** | **1,241.442** | | | **cc** | 1 | 7/26/2012 |
| **Wet Bulk Density** | **77.50686** | | | **lbs/ft³** | 1 | 7/26/2012 |
| **Wet Weight** | **1,541.300** | | | **g** | 1 | 7/26/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

# BULK DENSITY/POROSITY OF SOILS
## VOLUMETRIC METHOD - B
## (ASTM D7263)

Project: ALS - 1207866 Project No.: 1210359.4E

Technician: Ben VanAusdall Date: 07/26/12

| Sample No. | Sample Description | Sample Depth (ft) | Vol. (cc) | Wet Wt. (g) | Dry Wt. (g) | Wet Bulk Density ($lb/ft^3$) | Dry Bulk Density ($lb/ft^3$) | Water Content (%) |
|---|---|---|---|---|---|---|---|---|
| 01A | Black Peat | 0-1.2 | 1032.4199 | 1355.5 | 582.5 | 81.9639 | 35.2224 | 132.7039 |
| 02A | Black Peat | 0-1.2 | 1241.4421 | 1541.3 | 544.9 | 77.5069 | 27.4012 | 182.8592 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

1207866

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_072612_BD1 | Task: AGITATION STUDY |
|---|---|---|
| Total # of Samples: 2 | | Event Complete? |

| Turn Around Time | 5 Day | Rush | No |
|---|---|---|---|

BILLING CODE: 9.045

**Lab Information:**

| | |
|---|---|
| Lab Name: | ALS Laboratory Group |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 |
| Lab PM: | Ann Preston |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 |
| Lab PM email | ann.preston@alsglobal.com |
| Applicable Lab Quote #: | |

**Project Information:**

| | |
|---|---|
| Site ID #: | |
| Project # | 60162778 |
| Site Address | 5555 Glenwood Parkway SE Suite 200 |
| City | Grand Rapids |
| State, Zip | MI |
| Site PM Name | Bryan Stiemsma |
| Phone/Fax: | [redacted] |
| Site PM Email: | Bryan.Stiemsma@aecom.com |

**Other Information:**

| | |
|---|---|
| Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 1100 Louisiana Suite 1100 |
| City/State: | Houson, TX |
| Phone #: | 713-821-2000 |
| PO # | |
| Send EDD to | |
| CC Hardcopy report | |
| CC Hardcopy report | |

| ITEM # | SAMPLE ID Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Analysis: WET AND DRY BULK DENSITY | Preservative |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SEKR3740C604S072612D012 | SEKR3740C604 | SE | G | 07/26/2012 09:20 | 1 | IMPACT (0-1.2') | X | |
| 2 | SEKR3740C612S072612D012 | SEKR3740C612 | SE | G | 07/26/2012 09:35 | 1 | IMPACT (0-1.2') | X | |

**Additional Comments/Special Instructions:**

THE DESIRED INTERVAL FOR ANALYSIS AND OBSERVATION OF IMPACT OR LACK THEREOF WILL BE NOTED IN THE COMMENTS SECTION. CALL MATT SUMNER (517) 515-9358 IF YOU HAVE ANY QUESTIONS.

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7.26.12 | 1526 | [signature] | 7-26-12 | 1530 |
| | | | | | |
| | | | | | |

**Sample Receipt Conditions**

| | | | | | |
|---|---|---|---|---|---|
| | Y / N | | Y / N | | Y / N |
| | Y / N | | Y / N | | Y / N |
| | Y / N | | Y / N | | Y / N |
| | Y / N | | Y / N | | Y / N |
| Temp in °C | | Samples on Ice? | | Sample Intact? | Trip Blank? |

SHIPPING INFO: SAMPLER NAME AND SIGNATURE

Company:
Tracking #:
PRINT Name of SAMPLER:
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **26-Jul-12 00:00**

Work Order: **1207866** Received by:

Checklist completed by Ann Preston (eSignature) 28-Jul-12 (Date) Reviewed by: (eSignature) (Date)

Matrices: Sediment
Carrier name:

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☐ |
| Chain of custody present? | Yes ☐ | No ☑ | |
| Chain of custody signed when relinquished and received? | Yes ☐ | No ☑ | |
| Chain of custody agrees with sample labels? | Yes ☐ | No ☑ | |
| Samples in proper container/bottle? | Yes ☐ | No ☑ | |
| Sample containers intact? | Yes ☐ | No ☑ | |
| Sufficient sample volume for indicated test? | Yes ☐ | No ☑ | |
| All samples received within holding time? | Yes ☐ | No ☑ | |
| Container/Temp Blank temperature in compliance? | Yes ☐ | No ☑ | |
| Temperature(s)/Thermometer(s): | | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☐ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☐ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☐ |
| pH adjusted by: | | | |

Login Notes: Samples picked up from Marshall by Driesenga

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

# BULK DENSITY/POROSITY OF SOILS
## VOLUMETRIC METHOD - B
## (ASTM D7263)

Project: ALS - 1207866 Project No.: 1210359.4E

Technician: Ben VanAusdall Date: 07/26/12

| Sample No. | Sample Description | Sample Depth (ft) | Vol. (cc) | Wet Wt. (g) | Dry Wt. (g) | Wet Bulk Density ($lb/ft^3$) | Dry Bulk Density ($lb/ft^3$) | Water Content (%) |
|---|---|---|---|---|---|---|---|---|
| 01A | Black Peat | 0-1.2 | 1032.4199 | 1355.5 | 582.5 | 81.9639 | 35.2224 | 132.7039 |
| 02A | Black Peat | 0-1.2 | 1241.4421 | 1541.3 | 544.9 | 77.5069 | 27.4012 | 182.8592 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

08-Aug-2012

Robert Kennedy
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall Quantification Study 7/27/12** Work Order: **1208008**

Dear Robert,

ALS Environmental received 5 samples on 27-Jul-2012 for the analyses presented in the following report.

The analytical data provided relates directly to the results received by ALS Environmental and for only the analyses requested. The report from the subcontract laboratory is included in its entirety.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 12.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 08-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/27/12
**Work Order:** **1208008**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1208008-01 | SEKR2150C704S072712D005 | Sediment | | 7/27/2012 11:33 | 7/27/2012 | ☐ |
| 1208008-02 | SEKR2725C701S072712D005 | Sediment | | 7/27/2012 16:23 | 7/27/2012 | ☐ |
| 1208008-03 | SEKR3725C702S072712D004 | Sediment | | 7/27/2012 15:28 | 7/27/2012 | ☐ |
| 1208008-04 | SEKR3800C704S072712D005 | Sediment | | 7/27/2012 08:04 | 7/27/2012 | ☐ |
| 1208008-05 | SEKR3850C703S072712D003 | Sediment | | 7/27/2012 09:00 | 7/27/2012 | ☐ |

## ALS Group USA, Corp

*Date: 08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/27/12
**Work Order:** 1208008

# Case Narrative

This data was subcontracted to Driesenga & Associates for analyses of the Bulk Density. The sub contracted report is included in its entirety, in this report.

# ALS Group USA, Corp

Date: 08-Aug-12

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/27/12
**WorkOrder:** **1208008**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| cc | |
| g | grams |
| lbs/ft³ | Pounds per Cubic Foot |

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/27/12 **Work Order:** 1208008
**Sample ID:** SEKR2150C704S072712D005 **Lab ID:** 1208008-01
**Collection Date:** 7/27/2012 11:33 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **48.15440** | | | **lbs/ft³** | 1 | 7/27/2012 |
| **Dry Weight** | **80.70000** | | | **g** | 1 | 7/27/2012 |
| **Volume** | **104.6205** | | | **cc** | 1 | 7/27/2012 |
| **Wet Bulk Density** | **90.69974** | | | **lbs/ft³** | 1 | 7/27/2012 |
| **Wet Weight** | **152.0000** | | | **g** | 1 | 7/27/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/27/12 **Work Order:** 1208008
**Sample ID:** SEKR2725C701S072712D005 **Lab ID:** 1208008-02
**Collection Date:** 7/27/2012 04:23 PM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **89.95709** | | | **lbs/ft³** | 1 | 7/27/2012 |
| **Dry Weight** | **751.3000** | | | **g** | 1 | 7/27/2012 |
| **Volume** | **521.3836** | | | **cc** | 1 | 7/27/2012 |
| **Wet Bulk Density** | **117.6279** | | | **lbs/ft³** | 1 | 7/27/2012 |
| **Wet Weight** | **982.4000** | | | **g** | 1 | 7/27/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/27/12 **Work Order:** 1208008
**Sample ID:** SEKR3725C702S072712D004 **Lab ID:** 1208008-03
**Collection Date:** 7/27/2012 03:28 PM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **11.74745** | | | **lbs/ft³** | 1 | 7/27/2012 |
| **Dry Weight** | **21.20000** | | | **g** | 1 | 7/27/2012 |
| **Volume** | **112.6605** | | | **cc** | 1 | 7/27/2012 |
| **Wet Bulk Density** | **68.37901** | | | **lbs/ft³** | 1 | 7/27/2012 |
| **Wet Weight** | **123.4000** | | | **g** | 1 | 7/27/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/27/12 **Work Order:** 1208008
**Sample ID:** SEKR3800C704S072712D005 **Lab ID:** 1208008-04
**Collection Date:** 7/27/2012 08:04 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **47.07580** | | | **lbs/ft³** | 1 | 7/27/2012 |
| **Dry Weight** | **380.3000** | | | **g** | 1 | 7/27/2012 |
| **Volume** | **504.3221** | | | **cc** | 1 | 7/27/2012 |
| **Wet Bulk Density** | **90.21520** | | | **lbs/ft³** | 1 | 7/27/2012 |
| **Wet Weight** | **728.8000** | | | **g** | 1 | 7/27/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *08-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall Quantification Study 7/27/12 **Work Order:** 1208008
**Sample ID:** SEKR3850C703S072712D003 **Lab ID:** 1208008-05
**Collection Date:** 7/27/2012 09:00 AM **Matrix:** SEDIMENT

| Analyses | Result | Qual | Report Limit | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|
| **BULK DENSITY/POROSITY OF SOILS** | | | **D7263** | | | Analyst: **D&A** |
| **Dry Bulk Density** | **19.48869** | | | **lbs/ft³** | 1 | 7/27/2012 |
| **Dry Weight** | **34.40000** | | | **g** | 1 | 7/27/2012 |
| **Volume** | **110.1933** | | | **cc** | 1 | 7/27/2012 |
| **Wet Bulk Density** | **74.44226** | | | **lbs/ft³** | 1 | 7/27/2012 |
| **Wet Weight** | **131.4000** | | | **g** | 1 | 7/27/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

# BULK DENSITY/POROSITY OF SOILS

## VOLUMETRIC METHOD - B

## (ASTM D7263)

Project: ALS - 1208008 Project No.: 1210359.4F

Technician: Ben VanAusdall Date: 07/27/12

| Sample No. | Sample Description | Sample Depth (ft) | Vol. (cc) | Wet Wt. (g) | Dry Wt. (g) | Wet Bulk Density ($lb/ft^3$) | Dry Bulk Density ($lb/ft^3$) | Water Content (%) |
|---|---|---|---|---|---|---|---|---|
| 01A | Black Peat | 0.35-0.45 | 104.6205 | 152.0 | 80.7 | 90.6997 | 48.1544 | 88.3519 |
| 02A | Dk. Brown Sand, Gravel, & Organics | 0-0.5 | 521.3836 | 982.4 | 751.3 | 117.6279 | 89.9571 | 30.7600 |
| 03A | Black Peat | 0.3-0.4 | 112.6605 | 123.4 | 21.2 | 68.3790 | 11.7474 | 482.0755 |
| 04A | Black Silty Peat | 0-0.5 | 504.3222 | 728.8 | 380.3 | 90.2152 | 47.0758 | 91.6382 |
| 05A | Black Peat | 0.15-0.25 | 110.1933 | 131.4 | 34.4 | 74.4423 | 19.4887 | 281.9767 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_072712_BD1 | Task: QUANTIFICATION STUDY |
|---|---|---|
| | Total # of Samples: 5 | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |

BILLING CODE: 9.045

**Lab Information:**

| | |
|---|---|
| Lab Name: | ALS Laboratory Group |
| Address: | 3352 128th Ave. Holland, MI 49424-9263 |
| Lab PM: | Ann Preston |
| Phone/Fax: | 1-616-399-6070/1-616-399-6185 |
| Lab PM email: | ann.preston@alsglobal.com |
| Applicable Lab Quote #: | |

**Project Information:**

| | |
|---|---|
| Site ID #: | |
| Project # | 60162778 |
| Site Address | 5555 Glenwood Parkway SE Suite 200 |
| City | Grand Rapids |
| State, Zip | MI |
| Site PM Name | [redacted] |
| Phone/Fax: | [redacted] |
| Site PM Email: | Bryan.Stiemsma@aecom.com |

**Other Information:**

| | |
|---|---|
| Send Invoice to: | Enbridge Energy - ATTN Accounts Payable |
| Address: | 1100 Louisiana Suite 1100 |
| City/State: | Houson, TX |
| Phone #: | 713-821-2000 |
| PO # | |
| Send EDD to | |
| CC Hardcopy report | |
| CC Hardcopy report | |

| ITEM # | SAMPLE ID Samples IDs MUST BE UNIQUE | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Analysis: WET AND DRY BULK DENSITY |
|---|---|---|---|---|---|---|---|---|
| 1 | SEKR2150C704S072712D005 | SEKR2150C704 | SE | G | 07/27/2012 11:33 | 1 | IMPACT (0.35' - 0.45') | X |
| 2 | SEKR2725C701S072712D005 | SEKR2725C701 | SE | G | 7/27/2012 16:23 | 1 | NO IMPACT (0 - 0.5') | X |
| 3 | SEKR3725C702S072712D004 | SEKR3725C702 | SE | G | 07/27/2012 15:28 | 1 | IMPACT (0.3 - 0.4) | X |
| 4 | SEKR3800C704S072712D005 | SEKR3800C704 | SE | G | 07/27/2012 08:04 | 1 | NO IMPACT (0 - 0.5') | X |
| 5 | SEKR3850C703S072712D003 | SEKR3850C703 | SE | G | 07/27/2012 09:00 | 1 | IMPACT (0.15' - 0.25') | X |

Additional Comments/Special Instructions:

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 7/27/12 | 1629 | [signature] | 7-27-12 | 1630 |
| | | | | | |
| | | | | | |
| | | | | | |

Sample Receipt Conditions

| Temp in 0C | Samples on Ice? | Sample intact? | Trip Blank? |
|---|---|---|---|
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO:
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: CHAD KHOOL/ REED RECTOR
SIGNATURE of SAMPLER:
DATE Signed:
Time:

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **27-Jul-12 00:00**

Work Order: **1208008** Received by:

Checklist completed by Ann Preston 01-Aug-12 Reviewed by: Ann Preston 01-Aug-12
eSignature Date eSignature Date

Matrices:
Carrier name:

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☐ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☐ |
| Chain of custody present? | Yes ☐ | No ☑ | |
| Chain of custody signed when relinquished and received? | Yes ☐ | No ☑ | |
| Chain of custody agrees with sample labels? | Yes ☐ | No ☑ | |
| Samples in proper container/bottle? | Yes ☐ | No ☑ | |
| Sample containers intact? | Yes ☐ | No ☑ | |
| Sufficient sample volume for indicated test? | Yes ☐ | No ☑ | |
| All samples received within holding time? | Yes ☐ | No ☑ | |
| Container/Temp Blank temperature in compliance? | Yes ☐ | No ☑ | |
| Temperature(s)/Thermometer(s): | | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☐ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☐ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☐ |
| pH adjusted by: | | | |

Login Notes: Samples sent directly from Marshall to Driesenga.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

DRIESENGA & ASSOCIATES, INC.
Engineering · Surveying · Testing

455 East 8th Street, Suite 100
Holland, Michigan 49423
Ph. (616) 396-0255 • Fax (616) 396-0100
www.driesenga.com

# BULK DENSITY/POROSITY OF SOILS

## VOLUMETRIC METHOD - B

## (ASTM D7263)

Project: ALS - 1208008 Project No.: 1210359.4F

Technician: Ben VanAusdall Date: 07/27/12

| Sample No. | Sample Description | Sample Depth (ft) | Vol. (cc) | Wet Wt. (g) | Dry Wt. (g) | Wet Bulk Density ($lb/ft^3$) | Dry Bulk Density ($lb/ft^3$) | Water Content (%) |
|---|---|---|---|---|---|---|---|---|
| 01A | Black Peat | 0.35-0.45 | 104.6205 | 152.0 | 80.7 | 90.6997 | 48.1544 | 88.3519 |
| 02A | Dk. Brown Sand, Gravel, & Organics | 0-0.5 | 521.3836 | 982.4 | 751.3 | 117.6279 | 89.9571 | 30.7600 |
| 03A | Black Peat | 0.3-0.4 | 112.6605 | 123.4 | 21.2 | 68.3790 | 11.7474 | 482.0755 |
| 04A | Black Silty Peat | 0-0.5 | 504.3222 | 728.8 | 380.3 | 90.2152 | 47.0758 | 91.6382 |
| 05A | Black Peat | 0.15-0.25 | 110.1933 | 131.4 | 34.4 | 74.4423 | 19.4887 | 281.9767 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Remarks: Test was performed on undisturbed sample provided by client in a sample tube

10-Aug-2012

Bryan Stiemsma
AECOM Environment
5555 Glenwood Parkway SE
Grand Rapids, MI 49512

Re: **Marshall KRRI Source Area 7/31/12** Work Order: **1208140**

Dear Bryan,

ALS Environmental received 8 samples on 02-Aug-2012 05:35 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 55.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Ann Preston

Electronically approved by: Ann Preston

Ann Preston
Project Manager

Certificate No: MN331938

# ALS Group USA, Corp

Date: 10-Aug-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/31/12
**Work Order:** **1208140**

## Work Order Sample Summary

| Lab Samp ID | Client Sample ID | Matrix | Tag Number | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| 1208140-01 | SBSA0134S073112S007 | Soil | | 7/31/2012 12:00 | 8/2/2012 17:35 | ☐ |
| 1208140-02 | SBSA0134D073112S007 | Soil | | 7/31/2012 12:00 | 8/2/2012 17:35 | ☐ |
| 1208140-03 | SBSA0134S073112S088 | Soil | | 7/31/2012 12:35 | 8/2/2012 17:35 | ☐ |
| 1208140-04 | SBSA0135S073112S005 | Soil | | 7/31/2012 14:10 | 8/2/2012 17:35 | ☐ |
| 1208140-05 | SBSA0135S073112S089 | Soil | | 7/31/2012 14:43 | 8/2/2012 17:35 | ☐ |
| 1208140-06 | SBSA0137S073112S006 | Soil | | 7/31/2012 15:37 | 8/2/2012 17:35 | ☐ |
| 1208140-07 | SBSA0137S073112S083 | Soil | | 7/31/2012 16:06 | 8/2/2012 17:35 | ☐ |
| 1208140-08 | SBSA0137T073112MX | Soil | | 7/31/2012 | 8/2/2012 17:35 | ☐ |

## ALS Group USA, Corp

*Date: 10-Aug-12*

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/31/12
**Work Order:** 1208140

# Case Narrative

The extraction procedure used to prepare the soil samples for DRO and PAH analyses in this work order was a modification of the standard 3541 procedure. At the request of the client, a 10 gram sample aliquot dried with hydromatrix is used for extraction as outlined in ALS SOP HN-EXT-003(EN)-R01. All samples extracted starting on 10/1/2011 were prepared using this modified SOP.

Batches 42829 and 42854 MS/MSD data for Metals is not related to this project's samples. No data requires qualification.

Batch 42817 sample SBSA0134S073112S007 MS recovery for trans-1,4-Dichloro-2-butene was below the control limit Both the MSD recovery and RPD met quality control criteria. No data requires qualification.

# ALS Group USA, Corp

Date: 10-Aug-12

**Client:** AECOM Environment
**Project:** Marshall KRRI Source Area 7/31/12
**WorkOrder:** **1208140**

## QUALIFIERS, ACRONYMS, UNITS

| Qualifier | Description |
|---|---|
| * | Value exceeds Regulatory Limit |
| a | Not accredited |
| B | Analyte detected in the associated Method Blank above the Reporting Limit |
| E | Value above quantitation range |
| H | Analyzed outside of Holding Time |
| J | Analyte detected below quantitation limit |
| n | Not offered for accreditation |
| ND | Not Detected at the Reporting Limit |
| O | Sample amount is > 4 times amount spiked |
| P | Dual Column results percent difference > 40% |
| R | RPD above laboratory control limit |
| S | Spike Recovery outside laboratory control limits |
| U | Analyzed but not detected above the MDL |

| Acronym | Description |
|---|---|
| DUP | Method Duplicate |
| LCS | Laboratory Control Sample |
| LCSD | Laboratory Control Sample Duplicate |
| MBLK | Method Blank |
| MDL | Method Detection Limit |
| MQL | Method Quantitation Limit |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| PDS | Post Digestion Spike |
| PQL | Practical Quantitation Limit |
| RPD | Relative Percent Difference |
| SD | Serial Dilution |
| TDL | Target Detection Limit |

| Units Reported | Description |
|---|---|
| % of sample | Percent of Sample |
| µg/Kg | Micrograms per Kilogram |
| µg/Kg-dry | Micrograms per Kilogram Dry Weight |
| mg/Kg-dry | Milligrams per Kilogram Dry Weight |

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0134S073112S007 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 12:00:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/7/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **20** | **11** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **150** | **22** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *67.8* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Nickel** | **6.2** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **13** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/7/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| *Surr: 2,4,6-Tribromophenol* | *113* | *34-140* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorobiphenyl* | *69.8* | *12-100* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorophenol* | *68.0* | *33-117* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 4-Terphenyl-d14* | *90.0* | *25-137* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Nitrobenzene-d5* | *58.5* | *37-107* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Phenol-d6* | *62.8* | *40-106* | | | *%REC* | 1 | 8/8/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **RS** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0134S073112S007 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 12:00:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 43 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 43 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0134S073112S007 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 12:00:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-01 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 43 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *106* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *101* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *93.0* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *102* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **12** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0134D073112S007 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 12:00:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/7/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **20** | **11** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **140** | **22** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *67.4* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/6/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Nickel** | **6.2** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **11** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/7/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| *Surr: 2,4,6-Tribromophenol* | *108* | *34-140* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorobiphenyl* | *69.0* | *12-100* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorophenol* | *67.9* | *33-117* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 4-Terphenyl-d14* | *87.2* | *25-137* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Nitrobenzene-d5* | *59.0* | *37-107* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Phenol-d6* | *60.9* | *40-106* | | | *%REC* | 1 | 8/8/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0134D073112S007 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 12:00:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 47 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 47 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0134D073112S007 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 12:00:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-02 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 47 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *95.4* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *98.6* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *93.8* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *97.5* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **11** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0134S073112S088 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 12:35:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/7/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **21** | **10** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **96** | **21** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *68.0* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/7/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **1.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **12** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **7.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/7/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| *Surr: 2,4,6-Tribromophenol* | *105* | *34-140* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorobiphenyl* | *66.9* | *12-100* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorophenol* | *67.3* | *33-117* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 4-Terphenyl-d14* | *88.3* | *25-137* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Nitrobenzene-d5* | *58.0* | *37-107* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Phenol-d6* | *59.8* | *40-106* | | | *%REC* | 1 | 8/8/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0134S073112S088 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 12:35:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-03 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 41 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 41 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12
**Lab ID:** 1208140-03

**Client Sample ID:** SBSA0134S073112S088
**Collection Date:** 7/31/2012 12:35:00 PM
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 41 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *93.0* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *104* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *93.3* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *97.0* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **9.8** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0135S073112S005 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 2:10:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/7/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **39** | **12** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **230** | **24** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *62.9* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/7/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **1.9** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **8.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **14** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/7/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| *Surr: 2,4,6-Tribromophenol* | *96.0* | *34-140* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorobiphenyl* | *56.8* | *12-100* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorophenol* | *54.4* | *33-117* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 4-Terphenyl-d14* | *75.1* | *25-137* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Nitrobenzene-d5* | *46.7* | *37-107* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Phenol-d6* | *48.4* | *40-106* | | | *%REC* | 1 | 8/8/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0135S073112S005 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 2:10:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-04 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 58 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 58 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** AECOM Environment **Client Sample ID:** SBSA0135S073112S005
**Work Order:** 1208140 **Collection Date:** 7/31/2012 2:10:00 PM
**Project:** Marshall KRRI Source Area 7/31/12
**Lab ID:** 1208140-04 **Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 120 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 58 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 58 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *93.4* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *102* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *92.6* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *96.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **21** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0135S073112S089 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 2:43:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/7/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **44** | **11** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **150** | **21** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *74.1* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/7/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| Molybdenum | ND | 1.0 | 1.0 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Nickel** | **11** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **7.4** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/7/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| *Surr: 2,4,6-Tribromophenol* | *123* | *34-140* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorobiphenyl* | *69.1* | *12-100* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorophenol* | *69.5* | *33-117* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 4-Terphenyl-d14* | *96.0* | *25-137* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Nitrobenzene-d5* | *60.5* | *37-107* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Phenol-d6* | *62.0* | *40-106* | | | *%REC* | 1 | 8/8/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0135S073112S089
**Work Order:** 1208140
**Collection Date:** 7/31/2012 2:43:00 PM
**Project:** Marshall KRRI Source Area 7/31/12
**Lab ID:** 1208140-05
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 43 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 43 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0135S073112S089 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 2:43:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-05 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 43 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *94.5* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *103* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *91.0* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *97.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **12** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0137S073112S006 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 3:37:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/7/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **80** | **14** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **610** | **28** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *67.5* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/7/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **2.5** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **9.9** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **12** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/7/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| *Surr: 2,4,6-Tribromophenol* | *108* | *34-140* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorobiphenyl* | *61.1* | *12-100* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorophenol* | *58.2* | *33-117* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 4-Terphenyl-d14* | *80.8* | *25-137* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Nitrobenzene-d5* | *48.9* | *37-107* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Phenol-d6* | *53.0* | *40-106* | | | *%REC* | 1 | 8/8/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0137S073112S006 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 3:37:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 79 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 79 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 260 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0137S073112S006 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 3:37:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-06 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 160 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 79 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 79 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *94.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *104* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *91.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *96.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **30** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0137S073112S083 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 4:06:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS BY GC-FID** | | | **SW8015M** | | Prep Date: **8/7/2012** | | Analyst: **CW** |
| **DRO (C10-C20)** | **35** | **10** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| **ORO (C20-C34)** | **130** | **21** | **4.0** | | **mg/Kg-dry** | 1 | 8/7/2012 |
| *Surr: 4-Terphenyl-d14* | *70.5* | *39-115* | | | *%REC* | 1 | 8/7/2012 |
| **METALS BY ICP-MS** | | | **SW6020A** | | Prep Date: **8/7/2012** | | Analyst: **ML** |
| Beryllium | ND | 0.50 | 0.50 | | mg/Kg-dry | 4 | 8/7/2012 |
| **Molybdenum** | **1.3** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Nickel** | **5.8** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **Vanadium** | **6.1** | **1.0** | **1.0** | | **mg/Kg-dry** | 4 | 8/7/2012 |
| **SEMI-VOLATILE ORGANIC COMPOUNDS** | | | **SW8270** | | Prep Date: **8/7/2012** | | Analyst: **RM** |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Acenaphthylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(a)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(b)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(g,h,i)perylene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Benzo(k)fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Chrysene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Dibenzo(a,h)anthracene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluoranthene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Fluorene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Indeno(1,2,3-cd)pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Phenanthrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| Pyrene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/8/2012 |
| *Surr: 2,4,6-Tribromophenol* | *118* | *34-140* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorobiphenyl* | *71.4* | *12-100* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 2-Fluorophenol* | *72.5* | *33-117* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: 4-Terphenyl-d14* | *91.8* | *25-137* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Nitrobenzene-d5* | *61.3* | *37-107* | | | *%REC* | 1 | 8/8/2012 |
| *Surr: Phenol-d6* | *65.2* | *40-106* | | | *%REC* | 1 | 8/8/2012 |
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

**Client:** AECOM Environment
**Client Sample ID:** SBSA0137S073112S083
**Work Order:** 1208140
**Collection Date:** 7/31/2012 4:06:00 PM
**Project:** Marshall KRRI Source Area 7/31/12
**Lab ID:** 1208140-07
**Matrix:** SOIL

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 43 | 10 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 43 | 20 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Cyclohexane | ND | 500 | 500 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg-dry | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0137S073112S083 |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 4:06:00 PM |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-07 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg-dry | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg-dry | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg-dry | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg-dry | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg-dry | 1 | 8/7/2012 |
| Vinyl chloride | ND | 43 | 40 | | µg/Kg-dry | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *96.6* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *107* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *93.1* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *95.4* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| **MOISTURE** | | | **A2540 G** | | | | Analyst: **NZ** |
| **Moisture** | **12** | **0.050** | **0** | | **% of sample** | 1 | 8/6/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0137T073112MX |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-08 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | | **SW8260** | | Prep Date: **8/6/2012** | | Analyst: **BG** |
| 1,1,1,2-Tetrachloroethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,1,1-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1,2,2-Tetrachloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1,2-Trichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,1-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,3-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,3-Trichloropropane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,3-Trimethylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,4-Trichlorobenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| 1,2,4-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dibromo-3-chloropropane | ND | 30 | 10 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dibromoethane | ND | 30 | 20 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dichloroethane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,2-Dichloropropane | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| 1,3,5-Trimethylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,3-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 1,4-Dichlorobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| 2-Butanone | ND | 750 | 750 | | µg/Kg | 1 | 8/7/2012 |
| 2-Hexanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 8/7/2012 |
| 2-Methylnaphthalene | ND | 330 | 330 | | µg/Kg | 1 | 8/7/2012 |
| 4-Methyl-2-pentanone | ND | 2,500 | 2,500 | | µg/Kg | 1 | 8/7/2012 |
| Acetone | ND | 1,000 | 1,000 | | µg/Kg | 1 | 8/7/2012 |
| Acrylonitrile | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Benzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Bromobenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromodichloromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromoform | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Bromomethane | ND | 200 | 200 | | µg/Kg | 1 | 8/7/2012 |
| Carbon disulfide | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Carbon tetrachloride | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Chlorobenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Chloroethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Chloroform | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Chloromethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| cis-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| cis-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group USA, Corp

**Date:** *10-Aug-12*

| | | | |
|---|---|---|---|
| **Client:** | AECOM Environment | **Client Sample ID:** | SBSA0137T073112MX |
| **Work Order:** | 1208140 | **Collection Date:** | 7/31/2012 |
| **Project:** | Marshall KRRI Source Area 7/31/12 | | |
| **Lab ID:** | 1208140-08 | **Matrix:** | SOIL |

| Analyses | Result | Report Limit | MDEQ OP Memo 2 TDL | Qual | Units | Dilution Factor | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Cyclohexane | ND | 500 | 500 | | µg/Kg | 1 | 8/7/2012 |
| Dibromochloromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Dibromomethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Dichlorodifluoromethane | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Diethyl ether | ND | 200 | 200 | | µg/Kg | 1 | 8/7/2012 |
| Diisopropyl ether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Ethyl tert butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Ethylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Hexachloroethane | ND | 300 | 300 | | µg/Kg | 1 | 8/7/2012 |
| Isopropylbenzene | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| m,p-Xylene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Methyl iodide | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Methyl tert-butyl ether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Methylene chloride | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Naphthalene | ND | 330 | 330 | | µg/Kg | 1 | 8/7/2012 |
| n-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| n-Propylbenzene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| o-Xylene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| p-Isopropyltoluene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| sec-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Styrene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| tert-Butyl alcohol | ND | 2,500 | 2,500 | | µg/Kg | 1 | 8/7/2012 |
| tert-Butylbenzene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Tertiaryamylmethylether | ND | 250 | 250 | | µg/Kg | 1 | 8/7/2012 |
| Tetrachloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Tetrahydrofuran | ND | 1,000 | 1,000 | | µg/Kg | 1 | 8/7/2012 |
| Toluene | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| trans-1,2-Dichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| trans-1,3-Dichloropropene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| trans-1,4-Dichloro-2-butene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Trichloroethene | ND | 50 | 50 | | µg/Kg | 1 | 8/7/2012 |
| Trichlorofluoromethane | ND | 100 | 100 | | µg/Kg | 1 | 8/7/2012 |
| Vinyl chloride | ND | 40 | 40 | | µg/Kg | 1 | 8/7/2012 |
| *Surr: 1,2-Dichloroethane-d4* | *92.6* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: 4-Bromofluorobenzene* | *106* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Dibromofluoromethane* | *88.2* | *70-130* | | | *%REC* | 1 | 8/7/2012 |
| *Surr: Toluene-d8* | *95.0* | *70-130* | | | *%REC* | 1 | 8/7/2012 |

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 10-Aug-12

**Client:** AECOM Environment

# QC BATCH REPORT

**Work Order:** 1208140

**Project:** Marshall KRRI Source Area 7/31/12

Batch ID: **42839** Instrument ID **GC8** Method: **SW8015M**

**MBLK** Sample ID: **DBLKS1-42839-42839** Units: **mg/Kg** Analysis Date: **8/7/2012 03:45 PM**

Client ID: Run ID: **GC8_120807B** SeqNo: **2047666** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | ND | 10 | | | | | | | | |
| ORO (C20-C34) | ND | 20 | | | | | | | | |
| *Surr: 4-Terphenyl-d14* | *3.512* | 0 | *5* | 0 | *70.2* | *39-115* | 0 | | | |

**LCS** Sample ID: **DLCSS1-42839-42839** Units: **mg/Kg** Analysis Date: **8/7/2012 04:12 PM**

Client ID: Run ID: **GC8_120807B** SeqNo: **2047667** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 361.7 | 10 | 500 | 0 | 72.3 | 60-130 | 0 | | | |
| ORO (C20-C34) | 447.5 | 20 | 500 | 0 | 89.5 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.668* | 0 | *5* | 0 | *73.4* | *39-115* | 0 | | | |

**MS** Sample ID: **1208140-01A MS** Units: **mg/Kg** Analysis Date: **8/7/2012 04:38 PM**

Client ID: **SBSA0134S073112S007** Run ID: **GC8_120807B** SeqNo: **2047668** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 321.1 | 9.7 | 486.6 | 18.03 | 62.3 | 60-130 | 0 | | | |
| ORO (C20-C34) | 435.8 | 19 | 486.6 | 135.7 | 61.7 | 60-130 | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3.32* | 0 | *4.866* | 0 | *68.2* | *39-115* | 0 | | | |

**MSD** Sample ID: **1208140-01A MSD** Units: **mg/Kg** Analysis Date: **8/7/2012 05:05 PM**

Client ID: **SBSA0134S073112S007** Run ID: **GC8_120807B** SeqNo: **2047669** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| DRO (C10-C20) | 331.2 | 9.9 | 494.2 | 18.03 | 63.4 | 60-130 | 321.1 | 3.09 | 30 | |
| ORO (C20-C34) | 480.9 | 20 | 494.2 | 135.7 | 69.9 | 60-130 | 435.8 | 9.82 | 30 | |
| *Surr: 4-Terphenyl-d14* | *3.499* | 0 | *4.942* | 0 | *70.8* | *39-115* | 3.32 | *5.25* | *30* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208140-01A | 1208140-02A | 1208140-03A |
| 1208140-04A | 1208140-05A | 1208140-06A |
| 1208140-07A | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42829** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42829-42829** Units: **mg/Kg** Analysis Date: **8/7/2012 04:12 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047290** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | ND | 0.25 | | | | | | | | |
| Nickel | 0.01898 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**MBLK** Sample ID: **MBLK-42829-42829** Units: **mg/Kg** Analysis Date: **8/8/2012 01:45 PM**
Client ID: Run ID: **ICPMS1_120808A** SeqNo: **2048066** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |

**LCS** Sample ID: **LCS-42829-42829** Units: **mg/Kg** Analysis Date: **8/7/2012 04:18 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047291** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | 4.284 | 0.25 | 5 | 0 | 85.7 | 80-120 | 0 | | | |
| Nickel | 4.222 | 0.25 | 5 | 0 | 84.4 | 80-120 | 0 | | | |
| Vanadium | 4.414 | 0.25 | 5 | 0 | 88.3 | 80-120 | 0 | | | |

**LCS** Sample ID: **LCS-42829-42829** Units: **mg/Kg** Analysis Date: **8/8/2012 01:52 PM**
Client ID: Run ID: **ICPMS1_120808A** SeqNo: **2048069** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.558 | 0.10 | 5 | 0 | 91.2 | 80-120 | 0 | | | |

**MS** Sample ID: **1208138-02AMS** Units: **mg/Kg** Analysis Date: **8/7/2012 09:19 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047336** Prep Date: **8/6/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 7.535 | 0.65 | 8.13 | 0.08607 | 91.6 | 75-125 | 0 | | | |
| Molybdenum | 7.789 | 1.6 | 8.13 | 0.5575 | 88.9 | 75-125 | 0 | | | |
| Nickel | 10.91 | 1.6 | 8.13 | 3.879 | 86.5 | 75-125 | 0 | | | |
| Vanadium | 12.17 | 1.6 | 8.13 | 5.284 | 84.7 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42829** Instrument ID **ICPMS1** Method: **SW6020A**

**MSD** Sample ID: **1208138-02AMSD** Units: **mg/Kg** Analysis Date: **8/7/2012 09:25 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047337** Prep Date: **8/6/2012** DF: **4**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 6.196 | 0.64 | 8.052 | 0.08607 | 75.9 | 75-125 | 7.535 | 19.5 | 25 | |
| Molybdenum | 6.551 | 1.6 | 8.052 | 0.5575 | 74.4 | 75-125 | 7.789 | 17.3 | 25 | S |
| Nickel | 8.815 | 1.6 | 8.052 | 3.879 | 61.3 | 75-125 | 10.91 | 21.3 | 25 | S |
| Vanadium | 9.855 | 1.6 | 8.052 | 5.284 | 56.8 | 75-125 | 12.17 | 21 | 25 | S |

**The following samples were analyzed in this batch:** 1208140-01A 1208140-02A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42854** Instrument ID **ICPMS1** Method: **SW6020A**

**MBLK** Sample ID: **MBLK-42854-42854** Units: **mg/Kg** Analysis Date: **8/7/2012 09:56 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047342** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 0.10 | | | | | | | | |
| Molybdenum | ND | 0.25 | | | | | | | | |
| Nickel | 0.003116 | 0.25 | | | | | | | | J |
| Vanadium | ND | 0.25 | | | | | | | | |

**LCS** Sample ID: **LCS-42854-42854** Units: **mg/Kg** Analysis Date: **8/7/2012 10:02 PM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047343** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.68 | 0.10 | 5 | 0 | 93.6 | 80-120 | 0 | | | |
| Molybdenum | 4.664 | 0.25 | 5 | 0 | 93.3 | 80-120 | 0 | | | |
| Nickel | 4.711 | 0.25 | 5 | 0 | 94.2 | 80-120 | 0 | | | |
| Vanadium | 4.728 | 0.25 | 5 | 0 | 94.6 | 80-120 | 0 | | | |

**MS** Sample ID: **1208171-01BMS** Units: **mg/Kg** Analysis Date: **8/8/2012 02:48 AM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047385** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 4.931 | 0.13 | 6.649 | 0.1185 | 72.4 | 75-125 | 0 | | | S |
| Molybdenum | 6.057 | 0.33 | 6.649 | 0.2115 | 87.9 | 75-125 | 0 | | | |
| Nickel | 11.97 | 0.33 | 6.649 | 5.832 | 92.3 | 75-125 | 0 | | | |
| Vanadium | 14.34 | 0.33 | 6.649 | 8.929 | 81.3 | 75-125 | 0 | | | |

**MSD** Sample ID: **1208171-01BMSD** Units: **mg/Kg** Analysis Date: **8/8/2012 02:54 AM**
Client ID: Run ID: **ICPMS1_120807A** SeqNo: **2047386** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | 5.405 | 0.14 | 7.082 | 0.1185 | 74.6 | 75-125 | 4.931 | 9.18 | 25 | S |
| Molybdenum | 6.989 | 0.35 | 7.082 | 0.2115 | 95.7 | 75-125 | 6.057 | 14.3 | 25 | |
| Nickel | 12.67 | 0.35 | 7.082 | 5.832 | 96.6 | 75-125 | 11.97 | 5.7 | 25 | |
| Vanadium | 15.72 | 0.35 | 7.082 | 8.929 | 95.9 | 75-125 | 14.34 | 9.23 | 25 | |

**The following samples were analyzed in this batch:** 1208140-03A 1208140-04A 1208140-05A 1208140-06A 1208140-07A

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42838** Instrument ID **SVMS6** Method: **SW8270**

**MBLK** Sample ID: **SBLKS1-42838-42838** Units: **µg/Kg** Analysis Date: **8/8/2012 12:45 PM**
Client ID: Run ID: **SVMS6_120808A** SeqNo: **2048175** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | ND | 50 | | | | | | | | |
| Acenaphthene | ND | 50 | | | | | | | | |
| Acenaphthylene | ND | 50 | | | | | | | | |
| Anthracene | ND | 50 | | | | | | | | |
| Benzo(a)anthracene | ND | 50 | | | | | | | | |
| Benzo(a)pyrene | ND | 50 | | | | | | | | |
| Benzo(b)fluoranthene | ND | 50 | | | | | | | | |
| Benzo(g,h,i)perylene | ND | 50 | | | | | | | | |
| Benzo(k)fluoranthene | ND | 50 | | | | | | | | |
| Chrysene | ND | 50 | | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 50 | | | | | | | | |
| Fluoranthene | ND | 50 | | | | | | | | |
| Fluorene | ND | 50 | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | ND | 50 | | | | | | | | |
| Naphthalene | ND | 50 | | | | | | | | |
| Phenanthrene | ND | 50 | | | | | | | | |
| Pyrene | ND | 50 | | | | | | | | |
| *Surr: 2,4,6-Tribromophenol* | *4467* | 0 | *5000* | 0 | *89.3* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3459* | 0 | *5000* | 0 | *69.2* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3269* | 0 | *5000* | 0 | *65.4* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4856* | 0 | *5000* | 0 | *97.1* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2995* | 0 | *5000* | 0 | *59.9* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3048* | 0 | *5000* | 0 | *61* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42838** Instrument ID **SVMS6** Method: **SW8270**

**LCS** Sample ID: **SLCSS1-42838-42838** Units: **µg/Kg** Analysis Date: **8/8/2012 11:01 AM**
Client ID: Run ID: **SVMS6_120808A** SeqNo: **2048160** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1777 | 50 | 2000 | 0 | 88.8 | 45-105 | 0 | | | |
| Acenaphthene | 1652 | 50 | 2000 | 0 | 82.6 | 45-110 | 0 | | | |
| Acenaphthylene | 1626 | 50 | 2000 | 0 | 81.3 | 45-105 | 0 | | | |
| Anthracene | 1761 | 50 | 2000 | 0 | 88 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1642 | 50 | 2000 | 0 | 82.1 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1770 | 50 | 2000 | 0 | 88.5 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1837 | 50 | 2000 | 0 | 91.8 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1597 | 50 | 2000 | 0 | 79.8 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 1959 | 50 | 2000 | 0 | 98 | 45-115 | 0 | | | |
| Chrysene | 1714 | 50 | 2000 | 0 | 85.7 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1643 | 50 | 2000 | 0 | 82.2 | 40-125 | 0 | | | |
| Fluoranthene | 1923 | 50 | 2000 | 0 | 96.2 | 55-115 | 0 | | | |
| Fluorene | 1801 | 50 | 2000 | 0 | 90 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1596 | 50 | 2000 | 0 | 79.8 | 40-120 | 0 | | | |
| Naphthalene | 1599 | 50 | 2000 | 0 | 80 | 40-105 | 0 | | | |
| Phenanthrene | 1674 | 50 | 2000 | 0 | 83.7 | 50-110 | 0 | | | |
| Pyrene | 1608 | 50 | 2000 | 0 | 80.4 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *5091* | 0 | *5000* | 0 | *102* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3395* | 0 | *5000* | 0 | *67.9* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *3200* | 0 | *5000* | 0 | *64* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *4282* | 0 | *5000* | 0 | *85.6* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2969* | 0 | *5000* | 0 | *59.4* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *3033* | 0 | *5000* | 0 | *60.7* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42838** Instrument ID **SVMS6** Method: **SW8270**

**MS** Sample ID: **1208140-01A MS** Units: **µg/Kg** Analysis Date: **8/8/2012 11:27 AM**
Client ID: **SBSA0134S073112S007** Run ID: **SVMS6_120808A** SeqNo: **2048161** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1590 | 49 | 1946 | 0 | 81.8 | 45-105 | 0 | | | |
| Acenaphthene | 1543 | 49 | 1946 | 0 | 79.3 | 45-110 | 0 | | | |
| Acenaphthylene | 1490 | 49 | 1946 | 0 | 76.6 | 45-105 | 0 | | | |
| Anthracene | 1641 | 49 | 1946 | 0 | 84.4 | 55-105 | 0 | | | |
| Benzo(a)anthracene | 1533 | 49 | 1946 | 0 | 78.8 | 50-110 | 0 | | | |
| Benzo(a)pyrene | 1646 | 49 | 1946 | 0 | 84.6 | 50-110 | 0 | | | |
| Benzo(b)fluoranthene | 1763 | 49 | 1946 | 0 | 90.6 | 45-115 | 0 | | | |
| Benzo(g,h,i)perylene | 1366 | 49 | 1946 | 0 | 70.2 | 40-125 | 0 | | | |
| Benzo(k)fluoranthene | 1811 | 49 | 1946 | 0 | 93.1 | 45-115 | 0 | | | |
| Chrysene | 1611 | 49 | 1946 | 0 | 82.8 | 55-110 | 0 | | | |
| Dibenzo(a,h)anthracene | 1460 | 49 | 1946 | 0 | 75 | 40-125 | 0 | | | |
| Fluoranthene | 1811 | 49 | 1946 | 0 | 93.1 | 55-115 | 0 | | | |
| Fluorene | 1677 | 49 | 1946 | 0 | 86.2 | 50-110 | 0 | | | |
| Indeno(1,2,3-cd)pyrene | 1405 | 49 | 1946 | 0 | 72.2 | 40-120 | 0 | | | |
| Naphthalene | 1421 | 49 | 1946 | 0 | 73 | 40-105 | 0 | | | |
| Phenanthrene | 1603 | 49 | 1946 | 0 | 82.4 | 50-110 | 0 | | | |
| Pyrene | 1525 | 49 | 1946 | 0 | 78.4 | 45-125 | 0 | | | |
| *Surr: 2,4,6-Tribromophenol* | *5078* | 0 | *4864* | 0 | *104* | *34-140* | 0 | | | |
| *Surr: 2-Fluorobiphenyl* | *3005* | 0 | *4864* | 0 | *61.8* | *12-100* | 0 | | | |
| *Surr: 2-Fluorophenol* | *2814* | 0 | *4864* | 0 | *57.9* | *33-117* | 0 | | | |
| *Surr: 4-Terphenyl-d14* | *3917* | 0 | *4864* | 0 | *80.5* | *25-137* | 0 | | | |
| *Surr: Nitrobenzene-d5* | *2572* | 0 | *4864* | 0 | *52.9* | *37-107* | 0 | | | |
| *Surr: Phenol-d6* | *2708* | 0 | *4864* | 0 | *55.7* | *40-106* | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42838** Instrument ID **SVMS6** Method: **SW8270**

**MSD** Sample ID: **1208140-01A MSD** Units: **µg/Kg** Analysis Date: **8/8/2012 11:53 AM**
Client ID: **SBSA0134S073112S007** Run ID: **SVMS6_120808A** SeqNo: **2048162** Prep Date: **8/7/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 1535 | 47 | 1879 | 0 | 81.7 | 45-105 | 1590 | 3.53 | 30 | |
| Acenaphthene | 1478 | 47 | 1879 | 0 | 78.6 | 45-110 | 1543 | 4.29 | 30 | |
| Acenaphthylene | 1416 | 47 | 1879 | 0 | 75.4 | 45-105 | 1490 | 5.11 | 30 | |
| Anthracene | 1552 | 47 | 1879 | 0 | 82.6 | 55-105 | 1641 | 5.57 | 30 | |
| Benzo(a)anthracene | 1431 | 47 | 1879 | 0 | 76.2 | 50-110 | 1533 | 6.89 | 30 | |
| Benzo(a)pyrene | 1560 | 47 | 1879 | 0 | 83 | 50-110 | 1646 | 5.38 | 30 | |
| Benzo(b)fluoranthene | 1617 | 47 | 1879 | 0 | 86 | 45-115 | 1763 | 8.62 | 30 | |
| Benzo(g,h,i)perylene | 1299 | 47 | 1879 | 0 | 69.1 | 40-125 | 1366 | 5.05 | 30 | |
| Benzo(k)fluoranthene | 1759 | 47 | 1879 | 0 | 93.6 | 45-115 | 1811 | 2.93 | 30 | |
| Chrysene | 1505 | 47 | 1879 | 0 | 80.1 | 55-110 | 1611 | 6.78 | 30 | |
| Dibenzo(a,h)anthracene | 1403 | 47 | 1879 | 0 | 74.6 | 40-125 | 1460 | 4 | 30 | |
| Fluoranthene | 1708 | 47 | 1879 | 0 | 90.9 | 55-115 | 1811 | 5.86 | 30 | |
| Fluorene | 1588 | 47 | 1879 | 0 | 84.5 | 50-110 | 1677 | 5.46 | 30 | |
| Indeno(1,2,3-cd)pyrene | 1340 | 47 | 1879 | 0 | 71.3 | 40-120 | 1405 | 4.72 | 30 | |
| Naphthalene | 1402 | 47 | 1879 | 0 | 74.6 | 40-105 | 1421 | 1.37 | 30 | |
| Phenanthrene | 1505 | 47 | 1879 | 0 | 80.1 | 50-110 | 1603 | 6.3 | 30 | |
| Pyrene | 1412 | 47 | 1879 | 0 | 75.2 | 45-125 | 1525 | 7.7 | 30 | |
| *Surr: 2,4,6-Tribromophenol* | *4775* | 0 | *4698* | 0 | *102* | *34-140* | 5078 | *6.15* | *40* | |
| *Surr: 2-Fluorobiphenyl* | *2888* | 0 | *4698* | 0 | *61.5* | *12-100* | 3005 | *3.96* | *40* | |
| *Surr: 2-Fluorophenol* | *2789* | 0 | *4698* | 0 | *59.4* | *33-117* | 2814 | *0.911* | *40* | |
| *Surr: 4-Terphenyl-d14* | *3707* | 0 | *4698* | 0 | *78.9* | *25-137* | 3917 | *5.53* | *40* | |
| *Surr: Nitrobenzene-d5* | *2548* | 0 | *4698* | 0 | *54.2* | *37-107* | 2572 | *0.931* | *40* | |
| *Surr: Phenol-d6* | *2623* | 0 | *4698* | 0 | *55.8* | *40-106* | 2708 | *3.18* | *40* | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208140-01A | 1208140-02A | 1208140-03A |
| 1208140-04A | 1208140-05A | 1208140-06A |
| 1208140-07A | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42817-42817** Units: **µg/Kg** Analysis Date: **8/7/2012 12:45 PM**
Client ID: Run ID: **VMS7_120806A** SeqNo: **2046428** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | 113 | 200 | | | | | | | | J |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 161.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | | |
| Diethyl ether | ND | 30 | | | | | | |
| Diisopropyl ether | ND | 30 | | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | | |
| Ethylbenzene | ND | 30 | | | | | | |
| Hexachloroethane | ND | 30 | | | | | | |
| Isopropylbenzene | ND | 30 | | | | | | |
| m,p-Xylene | ND | 60 | | | | | | |
| Methyl iodide | ND | 75 | | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | | |
| Methylene chloride | ND | 30 | | | | | | |
| Naphthalene | 20 | 100 | | | | | | J |
| n-Butylbenzene | ND | 30 | | | | | | |
| n-Propylbenzene | ND | 30 | | | | | | |
| o-Xylene | ND | 30 | | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | | |
| Styrene | ND | 30 | | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | | |
| Tetrachloroethene | ND | 30 | | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | | |
| Toluene | ND | 30 | | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | | |
| Trichloroethene | ND | 30 | | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | | |
| Vinyl chloride | ND | 30 | | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *983.5* | 0 | *1000* | 0 | *98.4* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1082* | 0 | *1000* | 0 | *108* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *965.5* | 0 | *1000* | 0 | *96.6* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1020* | 0 | *1000* | 0 | *102* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42817-42817** Units: **µg/Kg** Analysis Date: **8/7/2012 03:31 PM**
Client ID: Run ID: **VMS6_120807A** SeqNo: **2047215** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,3-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 185.5 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 30 | | | | | |
| Diethyl ether | ND | 30 | | | | | |
| Diisopropyl ether | ND | 30 | | | | | |
| Ethyl tert butyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butyl alcohol | ND | 200 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tertiaryamylmethylether | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *1107* | 0 | *1000* | 0 | *111* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1065* | 0 | *1000* | 0 | *106* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1002* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1086* | 0 | *1000* | 0 | *109* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**MBLK** Sample ID: **MBLK-42817-42817** Units: **µg/Kg** Analysis Date: **8/7/2012 01:31 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047268** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 30 | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethane | ND | 30 | | | | | | | | |
| 1,1-Dichloroethene | ND | 30 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 30 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 30 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 30 | | | | | | | | |
| 1,2-Dibromoethane | ND | 30 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,2-Dichloroethane | ND | 30 | | | | | | | | |
| 1,2-Dichloropropane | ND | 30 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 30 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 30 | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 30 | | | | | | | | |
| 2-Butanone | ND | 200 | | | | | | | | |
| 2-Hexanone | ND | 30 | | | | | | | | |
| 2-Methylnaphthalene | ND | 100 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 30 | | | | | | | | |
| Acetone | 229 | 100 | | | | | | | | |
| Acrylonitrile | ND | 100 | | | | | | | | |
| Benzene | ND | 30 | | | | | | | | |
| Bromobenzene | ND | 30 | | | | | | | | |
| Bromochloromethane | ND | 30 | | | | | | | | |
| Bromodichloromethane | ND | 30 | | | | | | | | |
| Bromoform | ND | 30 | | | | | | | | |
| Bromomethane | ND | 75 | | | | | | | | |
| Carbon disulfide | ND | 30 | | | | | | | | |
| Carbon tetrachloride | ND | 30 | | | | | | | | |
| Chlorobenzene | ND | 30 | | | | | | | | |
| Chloroethane | ND | 100 | | | | | | | | |
| Chloroform | ND | 30 | | | | | | | | |
| Chloromethane | ND | 100 | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 30 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 30 | | | | | | | | |
| Cyclohexane | ND | 30 | | | | | | | | |
| Dibromochloromethane | ND | 30 | | | | | | | | |
| Dibromomethane | ND | 30 | | | | | | | | |
| Dichlorodifluoromethane | ND | 30 | | | | | | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Diethyl ether | ND | 30 | | | | | |
| Ethylbenzene | ND | 30 | | | | | |
| Hexachloroethane | ND | 30 | | | | | |
| Isopropylbenzene | ND | 30 | | | | | |
| m,p-Xylene | ND | 60 | | | | | |
| Methyl iodide | ND | 75 | | | | | |
| Methyl tert-butyl ether | ND | 30 | | | | | |
| Methylene chloride | ND | 30 | | | | | |
| Naphthalene | ND | 100 | | | | | |
| n-Butylbenzene | ND | 30 | | | | | |
| n-Propylbenzene | ND | 30 | | | | | |
| o-Xylene | ND | 30 | | | | | |
| p-Isopropyltoluene | ND | 30 | | | | | |
| sec-Butylbenzene | ND | 30 | | | | | |
| Styrene | ND | 30 | | | | | |
| tert-Butylbenzene | ND | 30 | | | | | |
| Tetrachloroethene | ND | 30 | | | | | |
| Tetrahydrofuran | ND | 200 | | | | | |
| Toluene | ND | 30 | | | | | |
| trans-1,2-Dichloroethene | ND | 30 | | | | | |
| trans-1,3-Dichloropropene | ND | 30 | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 30 | | | | | |
| Trichloroethene | ND | 30 | | | | | |
| Trichlorofluoromethane | ND | 30 | | | | | |
| Vinyl chloride | ND | 30 | | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *981.5* | 0 | *1000* | 0 | *98.2* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *991* | 0 | *1000* | 0 | *99.1* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *974* | 0 | *1000* | 0 | *97.4* | *70-130* | 0 |
| *Surr: Toluene-d8* | *990.5* | 0 | *1000* | 0 | *99* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42817-42817** Units: **µg/Kg** Analysis Date: **8/7/2012 08:46 AM**
Client ID: Run ID: **VMS7_120806A** SeqNo: **2046427** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 1107 | 30 | 1000 | 0 | 111 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1232 | 30 | 1000 | 0 | 123 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 1040 | 30 | 1000 | 0 | 104 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 1075 | 30 | 1000 | 0 | 108 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1058 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1200 | 30 | 1000 | 0 | 120 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1065 | 30 | 1000 | 0 | 106 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1062 | 30 | 1000 | 0 | 106 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 945.5 | 30 | 1000 | 0 | 94.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1158 | 30 | 1000 | 0 | 116 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1119 | 30 | 1000 | 0 | 112 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 993.5 | 30 | 1000 | 0 | 99.4 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1074 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 1104 | 30 | 1000 | 0 | 110 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1034 | 30 | 1000 | 0 | 103 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1084 | 30 | 1000 | 0 | 108 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1167 | 30 | 1000 | 0 | 117 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 1128 | 30 | 1000 | 0 | 113 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1160 | 30 | 1000 | 0 | 116 | 70-125 | 0 | | | |
| 2-Butanone | 1084 | 200 | 1000 | 0 | 108 | 30-160 | 0 | | | |
| 2-Hexanone | 1074 | 30 | 1000 | 0 | 107 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1370 | 30 | 1000 | 0 | 137 | 45-145 | 0 | | | |
| Acetone | 771.5 | 100 | 1000 | 0 | 77.2 | 20-160 | 0 | | | B |
| Acrylonitrile | 934.5 | 100 | 1000 | 0 | 93.4 | 70-135 | 0 | | | |
| Benzene | 1136 | 30 | 1000 | 0 | 114 | 75-125 | 0 | | | |
| Bromobenzene | 1100 | 30 | 1000 | 0 | 110 | 65-120 | 0 | | | |
| Bromochloromethane | 1116 | 30 | 1000 | 0 | 112 | 70-125 | 0 | | | |
| Bromodichloromethane | 988.5 | 30 | 1000 | 0 | 98.8 | 70-130 | 0 | | | |
| Bromoform | 1051 | 30 | 1000 | 0 | 105 | 55-135 | 0 | | | |
| Bromomethane | 1238 | 75 | 1000 | 0 | 124 | 30-160 | 0 | | | |
| Carbon disulfide | 1187 | 30 | 1000 | 0 | 119 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1251 | 30 | 1000 | 0 | 125 | 65-135 | 0 | | | |
| Chlorobenzene | 1148 | 30 | 1000 | 0 | 115 | 75-125 | 0 | | | |
| Chloroethane | 1066 | 100 | 1000 | 0 | 107 | 40-155 | 0 | | | |
| Chloroform | 1080 | 30 | 1000 | 0 | 108 | 70-125 | 0 | | | |
| Chloromethane | 1048 | 100 | 1000 | 0 | 105 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1096 | 30 | 1000 | 0 | 110 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1044 | 30 | 1000 | 0 | 104 | 70-125 | 0 | | | |
| Dibromochloromethane | 1026 | 30 | 1000 | 0 | 103 | 65-135 | 0 | | | |
| Dibromomethane | 1025 | 30 | 1000 | 0 | 102 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 895 | 30 | 1000 | 0 | 89.5 | 35-135 | 0 | | | |
| Ethylbenzene | 1190 | 30 | 1000 | 0 | 119 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 981.5 | 30 | 1000 | 0 | 98.2 | 70-135 | 0 |
| Isopropylbenzene | 1196 | 30 | 1000 | 0 | 120 | 75-130 | 0 |
| m,p-Xylene | 2370 | 60 | 2000 | 0 | 118 | 80-125 | 0 |
| Methyl tert-butyl ether | 953.5 | 30 | 1000 | 0 | 95.4 | 75-125 | 0 |
| Methylene chloride | 1024 | 30 | 1000 | 0 | 102 | 55-145 | 0 |
| Naphthalene | 1163 | 100 | 1000 | 0 | 116 | 40-140 | 0 |
| n-Butylbenzene | 1232 | 30 | 1000 | 0 | 123 | 65-140 | 0 |
| n-Propylbenzene | 1148 | 30 | 1000 | 0 | 115 | 65-135 | 0 |
| o-Xylene | 1146 | 30 | 1000 | 0 | 115 | 75-125 | 0 |
| p-Isopropyltoluene | 1160 | 30 | 1000 | 0 | 116 | 75-135 | 0 |
| sec-Butylbenzene | 1162 | 30 | 1000 | 0 | 116 | 65-130 | 0 |
| Styrene | 1137 | 30 | 1000 | 0 | 114 | 75-125 | 0 |
| tert-Butylbenzene | 1116 | 30 | 1000 | 0 | 112 | 65-130 | 0 |
| Tetrachloroethene | 1394 | 30 | 1000 | 0 | 139 | 64-140 | 0 |
| Tetrahydrofuran | 985 | 200 | 1000 | 0 | 98.5 | 70-135 | 0 |
| Toluene | 1208 | 30 | 1000 | 0 | 121 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1118 | 30 | 1000 | 0 | 112 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1088 | 30 | 1000 | 0 | 109 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 1056 | 30 | 1000 | 0 | 106 | 70-135 | 0 |
| Trichloroethene | 1234 | 30 | 1000 | 0 | 123 | 75-125 | 0 |
| Trichlorofluoromethane | 1012 | 30 | 1000 | 0 | 101 | 25-185 | 0 |
| Vinyl chloride | 1032 | 30 | 1000 | 0 | 103 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *966.5* | 0 | *1000* | 0 | *96.6* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1002* | 0 | *1000* | 0 | *100* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1038* | 0 | *1000* | 0 | *104* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42817-42817** Units: **µg/Kg** Analysis Date: **8/7/2012 02:18 PM**
Client ID: Run ID: **VMS6_120807A** SeqNo: **2047214** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 899 | 30 | 1000 | 0 | 89.9 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1068 | 30 | 1000 | 0 | 107 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 948.5 | 30 | 1000 | 0 | 94.8 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 938 | 30 | 1000 | 0 | 93.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 995 | 30 | 1000 | 0 | 99.5 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1070 | 30 | 1000 | 0 | 107 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 1018 | 30 | 1000 | 0 | 102 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 972 | 30 | 1000 | 0 | 97.2 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 941.5 | 30 | 1000 | 0 | 94.2 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 1032 | 30 | 1000 | 0 | 103 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1081 | 30 | 1000 | 0 | 108 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 883.5 | 30 | 1000 | 0 | 88.4 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 987.5 | 30 | 1000 | 0 | 98.8 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 976.5 | 30 | 1000 | 0 | 97.6 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1049 | 30 | 1000 | 0 | 105 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1008 | 30 | 1000 | 0 | 101 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1110 | 30 | 1000 | 0 | 111 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 997 | 30 | 1000 | 0 | 99.7 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 1019 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| 2-Butanone | 767.5 | 200 | 1000 | 0 | 76.8 | 30-160 | 0 | | | |
| 2-Hexanone | 962 | 30 | 1000 | 0 | 96.2 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1132 | 30 | 1000 | 0 | 113 | 45-145 | 0 | | | |
| Acetone | 839.5 | 100 | 1000 | 0 | 84 | 20-160 | 0 | | | B |
| Acrylonitrile | 995.5 | 100 | 1000 | 0 | 99.6 | 70-135 | 0 | | | |
| Benzene | 1008 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Bromobenzene | 1058 | 30 | 1000 | 0 | 106 | 65-120 | 0 | | | |
| Bromochloromethane | 1056 | 30 | 1000 | 0 | 106 | 70-125 | 0 | | | |
| Bromodichloromethane | 1060 | 30 | 1000 | 0 | 106 | 70-130 | 0 | | | |
| Bromoform | 962 | 30 | 1000 | 0 | 96.2 | 55-135 | 0 | | | |
| Bromomethane | 969.5 | 75 | 1000 | 0 | 97 | 30-160 | 0 | | | |
| Carbon disulfide | 1198 | 30 | 1000 | 0 | 120 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1094 | 30 | 1000 | 0 | 109 | 65-135 | 0 | | | |
| Chlorobenzene | 1008 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 915.5 | 100 | 1000 | 0 | 91.6 | 40-155 | 0 | | | |
| Chloroform | 970 | 30 | 1000 | 0 | 97 | 70-125 | 0 | | | |
| Chloromethane | 875 | 100 | 1000 | 0 | 87.5 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1036 | 30 | 1000 | 0 | 104 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 961 | 30 | 1000 | 0 | 96.1 | 70-125 | 0 | | | |
| Dibromochloromethane | 881 | 30 | 1000 | 0 | 88.1 | 65-135 | 0 | | | |
| Dibromomethane | 967.5 | 30 | 1000 | 0 | 96.8 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 886 | 30 | 1000 | 0 | 88.6 | 35-135 | 0 | | | |
| Ethylbenzene | 1061 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexachloroethane | 1009 | 30 | 1000 | 0 | 101 | 70-135 | 0 |
| Isopropylbenzene | 1078 | 30 | 1000 | 0 | 108 | 75-130 | 0 |
| m,p-Xylene | 2132 | 60 | 2000 | 0 | 107 | 80-125 | 0 |
| Methyl tert-butyl ether | 1020 | 30 | 1000 | 0 | 102 | 75-125 | 0 |
| Methylene chloride | 1058 | 30 | 1000 | 0 | 106 | 55-145 | 0 |
| Naphthalene | 1015 | 100 | 1000 | 0 | 102 | 40-140 | 0 |
| n-Butylbenzene | 1095 | 30 | 1000 | 0 | 110 | 65-140 | 0 |
| n-Propylbenzene | 1075 | 30 | 1000 | 0 | 108 | 65-135 | 0 |
| o-Xylene | 1062 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| p-Isopropyltoluene | 1108 | 30 | 1000 | 0 | 111 | 75-135 | 0 |
| sec-Butylbenzene | 1146 | 30 | 1000 | 0 | 115 | 65-130 | 0 |
| Styrene | 1056 | 30 | 1000 | 0 | 106 | 75-125 | 0 |
| tert-Butylbenzene | 1116 | 30 | 1000 | 0 | 112 | 65-130 | 0 |
| Tetrachloroethene | 1030 | 30 | 1000 | 0 | 103 | 64-140 | 0 |
| Tetrahydrofuran | 1038 | 200 | 1000 | 0 | 104 | 70-135 | 0 |
| Toluene | 1066 | 30 | 1000 | 0 | 107 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1051 | 30 | 1000 | 0 | 105 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 992 | 30 | 1000 | 0 | 99.2 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 778 | 30 | 1000 | 0 | 77.8 | 70-135 | 0 |
| Trichloroethene | 944.5 | 30 | 1000 | 0 | 94.4 | 75-125 | 0 |
| Trichlorofluoromethane | 987 | 30 | 1000 | 0 | 98.7 | 25-185 | 0 |
| Vinyl chloride | 903 | 30 | 1000 | 0 | 90.3 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *1104* | 0 | *1000* | 0 | *110* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1051* | 0 | *1000* | 0 | *105* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *1034* | 0 | *1000* | 0 | *103* | *70-130* | 0 |
| *Surr: Toluene-d8* | *1061* | 0 | *1000* | 0 | *106* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**LCS** Sample ID: **LCS-42817-42817** Units: **µg/Kg** Analysis Date: **8/7/2012 09:37 AM**
Client ID: Run ID: **VMS5_120806A** SeqNo: **2047269** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 962.5 | 30 | 1000 | 0 | 96.2 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1063 | 30 | 1000 | 0 | 106 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 971.5 | 30 | 1000 | 0 | 97.2 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 978 | 30 | 1000 | 0 | 97.8 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 992.5 | 30 | 1000 | 0 | 99.2 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1102 | 30 | 1000 | 0 | 110 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 909.5 | 30 | 1000 | 0 | 91 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 1022 | 30 | 1000 | 0 | 102 | 65-130 | 0 | | | |
| 1,2,4-Trichlorobenzene | 968 | 30 | 1000 | 0 | 96.8 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1032 | 30 | 1000 | 0 | 103 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 886 | 30 | 1000 | 0 | 88.6 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1021 | 30 | 1000 | 0 | 102 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 968.5 | 30 | 1000 | 0 | 96.8 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1027 | 30 | 1000 | 0 | 103 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1046 | 30 | 1000 | 0 | 105 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1065 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 972 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 973.5 | 30 | 1000 | 0 | 97.4 | 70-125 | 0 | | | |
| 2-Butanone | 1214 | 200 | 1000 | 0 | 121 | 30-160 | 0 | | | |
| 2-Hexanone | 1294 | 30 | 1000 | 0 | 129 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1304 | 30 | 1000 | 0 | 130 | 45-145 | 0 | | | |
| Acetone | 1163 | 100 | 1000 | 0 | 116 | 20-160 | 0 | | | B |
| Acrylonitrile | 1072 | 100 | 1000 | 0 | 107 | 70-135 | 0 | | | |
| Benzene | 1064 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |
| Bromobenzene | 1020 | 30 | 1000 | 0 | 102 | 65-120 | 0 | | | |
| Bromochloromethane | 1074 | 30 | 1000 | 0 | 107 | 70-125 | 0 | | | |
| Bromodichloromethane | 968.5 | 30 | 1000 | 0 | 96.8 | 70-130 | 0 | | | |
| Bromoform | 958.5 | 30 | 1000 | 0 | 95.8 | 55-135 | 0 | | | |
| Bromomethane | 1236 | 75 | 1000 | 0 | 124 | 30-160 | 0 | | | |
| Carbon disulfide | 1158 | 30 | 1000 | 0 | 116 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1062 | 30 | 1000 | 0 | 106 | 65-135 | 0 | | | |
| Chlorobenzene | 1014 | 30 | 1000 | 0 | 101 | 75-125 | 0 | | | |
| Chloroethane | 1208 | 100 | 1000 | 0 | 121 | 40-155 | 0 | | | |
| Chloroform | 971.5 | 30 | 1000 | 0 | 97.2 | 70-125 | 0 | | | |
| Chloromethane | 1179 | 100 | 1000 | 0 | 118 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1018 | 30 | 1000 | 0 | 102 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 1008 | 30 | 1000 | 0 | 101 | 70-125 | 0 | | | |
| Dibromochloromethane | 896 | 30 | 1000 | 0 | 89.6 | 65-135 | 0 | | | |
| Dibromomethane | 1006 | 30 | 1000 | 0 | 101 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 1089 | 30 | 1000 | 0 | 109 | 35-135 | 0 | | | |
| Ethylbenzene | 1063 | 30 | 1000 | 0 | 106 | 75-125 | 0 | | | |
| Hexachloroethane | 804 | 30 | 1000 | 0 | 80.4 | 70-135 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Isopropylbenzene | 1044 | 30 | 1000 | 0 | 104 | 75-130 | 0 |
| m,p-Xylene | 2159 | 60 | 2000 | 0 | 108 | 80-125 | 0 |
| Methyl tert-butyl ether | 1013 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| Methylene chloride | 1024 | 30 | 1000 | 0 | 102 | 55-145 | 0 |
| Naphthalene | 929.5 | 100 | 1000 | 0 | 93 | 40-140 | 0 |
| n-Butylbenzene | 1026 | 30 | 1000 | 0 | 103 | 65-140 | 0 |
| n-Propylbenzene | 1039 | 30 | 1000 | 0 | 104 | 65-135 | 0 |
| o-Xylene | 1049 | 30 | 1000 | 0 | 105 | 75-125 | 0 |
| p-Isopropyltoluene | 999 | 30 | 1000 | 0 | 99.9 | 75-135 | 0 |
| sec-Butylbenzene | 1062 | 30 | 1000 | 0 | 106 | 65-130 | 0 |
| Styrene | 1018 | 30 | 1000 | 0 | 102 | 75-125 | 0 |
| tert-Butylbenzene | 1026 | 30 | 1000 | 0 | 103 | 65-130 | 0 |
| Tetrachloroethene | 1078 | 30 | 1000 | 0 | 108 | 64-140 | 0 |
| Tetrahydrofuran | 991.5 | 200 | 1000 | 0 | 99.2 | 70-135 | 0 |
| Toluene | 1076 | 30 | 1000 | 0 | 108 | 70-125 | 0 |
| trans-1,2-Dichloroethene | 1053 | 30 | 1000 | 0 | 105 | 65-135 | 0 |
| trans-1,3-Dichloropropene | 1009 | 30 | 1000 | 0 | 101 | 65-125 | 0 |
| trans-1,4-Dichloro-2-butene | 947 | 30 | 1000 | 0 | 94.7 | 70-135 | 0 |
| Trichloroethene | 1012 | 30 | 1000 | 0 | 101 | 75-125 | 0 |
| Trichlorofluoromethane | 933.5 | 30 | 1000 | 0 | 93.4 | 25-185 | 0 |
| Vinyl chloride | 1216 | 30 | 1000 | 0 | 122 | 60-125 | 0 |
| *Surr: 1,2-Dichloroethane-d4* | *887* | 0 | *1000* | 0 | *88.7* | *70-130* | 0 |
| *Surr: 4-Bromofluorobenzene* | *1080* | 0 | *1000* | 0 | *108* | *70-130* | 0 |
| *Surr: Dibromofluoromethane* | *873.5* | 0 | *1000* | 0 | *87.4* | *70-130* | 0 |
| *Surr: Toluene-d8* | *927* | 0 | *1000* | 0 | *92.7* | *70-130* | 0 |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**MS** Sample ID: **1208140-01B MS** Units: **µg/Kg** Analysis Date: **8/7/2012 10:01 PM**
Client ID: **SBSA0134S073112S007** Run ID: **VMS6_120807A** SeqNo: **2047550** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 966 | 30 | 1000 | 0 | 96.6 | 75-125 | 0 | | | |
| 1,1,1-Trichloroethane | 1117 | 30 | 1000 | 0 | 112 | 70-135 | 0 | | | |
| 1,1,2,2-Tetrachloroethane | 969 | 30 | 1000 | 0 | 96.9 | 55-130 | 0 | | | |
| 1,1,2-Trichloroethane | 993.5 | 30 | 1000 | 0 | 99.4 | 60-125 | 0 | | | |
| 1,1-Dichloroethane | 1044 | 30 | 1000 | 0 | 104 | 75-125 | 0 | | | |
| 1,1-Dichloroethene | 1070 | 30 | 1000 | 0 | 107 | 65-135 | 0 | | | |
| 1,2,3-Trichlorobenzene | 919 | 30 | 1000 | 0 | 91.9 | 60-135 | 0 | | | |
| 1,2,3-Trichloropropane | 995.5 | 30 | 1000 | 0 | 99.6 | 65-130 | 0 | | | |
| 1,2,3-Trimethylbenzene | 926 | 30 | 1000 | 0 | 92.6 | 65-135 | 0 | | | |
| 1,2,4-Trichlorobenzene | 977.5 | 30 | 1000 | 0 | 97.8 | 65-130 | 0 | | | |
| 1,2,4-Trimethylbenzene | 1094 | 30 | 1000 | 0 | 109 | 65-135 | 0 | | | |
| 1,2-Dibromo-3-chloropropane | 815 | 30 | 1000 | 0 | 81.5 | 40-135 | 0 | | | |
| 1,2-Dibromoethane | 1033 | 30 | 1000 | 0 | 103 | 70-125 | 0 | | | |
| 1,2-Dichlorobenzene | 982 | 30 | 1000 | 0 | 98.2 | 75-120 | 0 | | | |
| 1,2-Dichloroethane | 1106 | 30 | 1000 | 0 | 111 | 70-135 | 0 | | | |
| 1,2-Dichloropropane | 1085 | 30 | 1000 | 0 | 108 | 70-120 | 0 | | | |
| 1,3,5-Trimethylbenzene | 1116 | 30 | 1000 | 0 | 112 | 65-135 | 0 | | | |
| 1,3-Dichlorobenzene | 997.5 | 30 | 1000 | 0 | 99.8 | 70-125 | 0 | | | |
| 1,4-Dichlorobenzene | 990 | 30 | 1000 | 0 | 99 | 70-125 | 0 | | | |
| 2-Butanone | 984.5 | 100 | 1000 | 82.73 | 90.2 | 30-160 | 0 | | | |
| 2-Hexanone | 1034 | 30 | 1000 | 0 | 103 | 45-145 | 0 | | | |
| 4-Methyl-2-pentanone | 1210 | 30 | 1000 | 0 | 121 | 45-145 | 0 | | | |
| Acetone | 995 | 100 | 1000 | 0 | 99.5 | 20-160 | 0 | | | B |
| Acrylonitrile | 1022 | 30 | 1000 | 0 | 102 | 70-135 | 0 | | | |
| Benzene | 1088 | 30 | 1000 | 0 | 109 | 75-125 | 0 | | | |
| Bromobenzene | 1104 | 30 | 1000 | 0 | 110 | 65-120 | 0 | | | |
| Bromochloromethane | 1104 | 30 | 1000 | 0 | 110 | 70-125 | 0 | | | |
| Bromodichloromethane | 1081 | 30 | 1000 | 0 | 108 | 70-130 | 0 | | | |
| Bromoform | 916.5 | 30 | 1000 | 0 | 91.6 | 55-135 | 0 | | | |
| Bromomethane | 747 | 30 | 1000 | 0 | 74.7 | 30-160 | 0 | | | |
| Carbon disulfide | 1160 | 30 | 1000 | 0 | 116 | 45-160 | 0 | | | |
| Carbon tetrachloride | 1096 | 30 | 1000 | 0 | 110 | 65-135 | 0 | | | |
| Chlorobenzene | 1066 | 30 | 1000 | 0 | 107 | 75-125 | 0 | | | |
| Chloroethane | 987 | 100 | 1000 | 0 | 98.7 | 40-155 | 0 | | | |
| Chloroform | 1046 | 30 | 1000 | 0 | 105 | 70-125 | 0 | | | |
| Chloromethane | 921.5 | 30 | 1000 | 0 | 92.2 | 50-130 | 0 | | | |
| cis-1,2-Dichloroethene | 1089 | 30 | 1000 | 0 | 109 | 65-125 | 0 | | | |
| cis-1,3-Dichloropropene | 970 | 30 | 1000 | 0 | 97 | 70-125 | 0 | | | |
| Dibromochloromethane | 871 | 30 | 1000 | 0 | 87.1 | 65-135 | 0 | | | |
| Dibromomethane | 1037 | 30 | 1000 | 0 | 104 | 75-130 | 0 | | | |
| Dichlorodifluoromethane | 812.5 | 30 | 1000 | 0 | 81.2 | 35-135 | 0 | | | |
| Ethylbenzene | 1112 | 30 | 1000 | 0 | 111 | 75-125 | 0 | | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 931.5 | 30 | 1000 | 0 | 93.2 | 70-135 | 0 | |
| Isopropylbenzene | 1100 | 30 | 1000 | 0 | 110 | 75-130 | 0 | |
| m,p-Xylene | 2266 | 60 | 2000 | 0 | 113 | 80-125 | 0 | |
| Methyl tert-butyl ether | 1108 | 30 | 1000 | 0 | 111 | 75-125 | 0 | |
| Methylene chloride | 1178 | 30 | 1000 | 73.82 | 110 | 55-145 | 0 | |
| Naphthalene | 939.5 | 100 | 1000 | 0 | 94 | 40-140 | 0 | |
| n-Butylbenzene | 1001 | 30 | 1000 | 0 | 100 | 65-140 | 0 | |
| n-Propylbenzene | 1079 | 30 | 1000 | 0 | 108 | 65-135 | 0 | |
| o-Xylene | 1126 | 30 | 1000 | 0 | 113 | 75-125 | 0 | |
| p-Isopropyltoluene | 1042 | 30 | 1000 | 0 | 104 | 75-135 | 0 | |
| sec-Butylbenzene | 1098 | 30 | 1000 | 0 | 110 | 65-130 | 0 | |
| Styrene | 1115 | 30 | 1000 | 0 | 112 | 75-125 | 0 | |
| tert-Butylbenzene | 1122 | 30 | 1000 | 0 | 112 | 65-130 | 0 | |
| Tetrachloroethene | 1042 | 30 | 1000 | 0 | 104 | 64-140 | 0 | |
| Tetrahydrofuran | 1078 | 100 | 1000 | 0 | 108 | 70-135 | 0 | |
| Toluene | 1139 | 30 | 1000 | 0 | 114 | 70-125 | 0 | |
| trans-1,2-Dichloroethene | 1103 | 30 | 1000 | 0 | 110 | 65-135 | 0 | |
| trans-1,3-Dichloropropene | 1000 | 30 | 1000 | 0 | 100 | 65-125 | 0 | |
| trans-1,4-Dichloro-2-butene | 691 | 30 | 1000 | 0 | 69.1 | 70-135 | 0 | S |
| Trichloroethene | 1012 | 30 | 1000 | 0 | 101 | 75-125 | 0 | |
| Trichlorofluoromethane | 989.5 | 30 | 1000 | 0 | 99 | 25-185 | 0 | |
| Vinyl chloride | 913 | 30 | 1000 | 0 | 91.3 | 60-125 | 0 | |
| *Surr: 1,2-Dichloroethane-d4* | *1102* | 0 | *1000* | 0 | *110* | *70-130* | 0 | |
| *Surr: 4-Bromofluorobenzene* | *1046* | 0 | *1000* | 0 | *105* | *70-130* | 0 | |
| *Surr: Dibromofluoromethane* | *1026* | 0 | *1000* | 0 | *103* | *70-130* | 0 | |
| *Surr: Toluene-d8* | *1036* | 0 | *1000* | 0 | *104* | *70-130* | 0 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

**MSD** Sample ID: **1208140-01B MSD** Units: **µg/Kg** Analysis Date: **8/7/2012 10:25 PM**

Client ID: **SBSA0134S073112S007** Run ID: **VMS6_120807A** SeqNo: **2047551** Prep Date: **8/6/2012** DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 896.5 | 30 | 1000 | 0 | 89.6 | 75-125 | 966 | 7.46 | 30 | |
| 1,1,1-Trichloroethane | 1031 | 30 | 1000 | 0 | 103 | 70-135 | 1117 | 8.01 | 30 | |
| 1,1,2,2-Tetrachloroethane | 951 | 30 | 1000 | 0 | 95.1 | 55-130 | 969 | 1.88 | 30 | |
| 1,1,2-Trichloroethane | 943.5 | 30 | 1000 | 0 | 94.4 | 60-125 | 993.5 | 5.16 | 30 | |
| 1,1-Dichloroethane | 1020 | 30 | 1000 | 0 | 102 | 75-125 | 1044 | 2.23 | 30 | |
| 1,1-Dichloroethene | 1022 | 30 | 1000 | 0 | 102 | 65-135 | 1070 | 4.59 | 30 | |
| 1,2,3-Trichlorobenzene | 905 | 30 | 1000 | 0 | 90.5 | 60-135 | 919 | 1.54 | 30 | |
| 1,2,3-Trichloropropane | 982 | 30 | 1000 | 0 | 98.2 | 65-130 | 995.5 | 1.37 | 30 | |
| 1,2,3-Trimethylbenzene | 913.5 | 30 | 1000 | 0 | 91.4 | 65-135 | 926 | 1.36 | 30 | |
| 1,2,4-Trichlorobenzene | 970 | 30 | 1000 | 0 | 97 | 65-130 | 977.5 | 0.77 | 30 | |
| 1,2,4-Trimethylbenzene | 1066 | 30 | 1000 | 0 | 107 | 65-135 | 1094 | 2.64 | 30 | |
| 1,2-Dibromo-3-chloropropane | 869.5 | 30 | 1000 | 0 | 87 | 40-135 | 815 | 6.47 | 30 | |
| 1,2-Dibromoethane | 969 | 30 | 1000 | 0 | 96.9 | 70-125 | 1033 | 6.39 | 30 | |
| 1,2-Dichlorobenzene | 973 | 30 | 1000 | 0 | 97.3 | 75-120 | 982 | 0.921 | 30 | |
| 1,2-Dichloroethane | 1046 | 30 | 1000 | 0 | 105 | 70-135 | 1106 | 5.62 | 30 | |
| 1,2-Dichloropropane | 1014 | 30 | 1000 | 0 | 101 | 70-120 | 1085 | 6.77 | 30 | |
| 1,3,5-Trimethylbenzene | 1063 | 30 | 1000 | 0 | 106 | 65-135 | 1116 | 4.82 | 30 | |
| 1,3-Dichlorobenzene | 961 | 30 | 1000 | 0 | 96.1 | 70-125 | 997.5 | 3.73 | 30 | |
| 1,4-Dichlorobenzene | 963.5 | 30 | 1000 | 0 | 96.4 | 70-125 | 990 | 2.71 | 30 | |
| 2-Butanone | 1015 | 100 | 1000 | 82.73 | 93.2 | 30-160 | 984.5 | 3.05 | 30 | |
| 2-Hexanone | 992.5 | 30 | 1000 | 0 | 99.2 | 45-145 | 1034 | 4.05 | 30 | |
| 4-Methyl-2-pentanone | 1216 | 30 | 1000 | 0 | 122 | 45-145 | 1210 | 0.495 | 30 | |
| Acetone | 1100 | 100 | 1000 | 0 | 110 | 20-160 | 995 | 10 | 30 | B |
| Acrylonitrile | 1037 | 30 | 1000 | 0 | 104 | 70-135 | 1022 | 1.46 | 30 | |
| Benzene | 1018 | 30 | 1000 | 0 | 102 | 75-125 | 1088 | 6.6 | 30 | |
| Bromobenzene | 1052 | 30 | 1000 | 0 | 105 | 65-120 | 1104 | 4.87 | 30 | |
| Bromochloromethane | 1024 | 30 | 1000 | 0 | 102 | 70-125 | 1104 | 7.61 | 30 | |
| Bromodichloromethane | 992 | 30 | 1000 | 0 | 99.2 | 70-130 | 1081 | 8.59 | 30 | |
| Bromoform | 890 | 30 | 1000 | 0 | 89 | 55-135 | 916.5 | 2.93 | 30 | |
| Bromomethane | 660 | 30 | 1000 | 0 | 66 | 30-160 | 747 | 12.4 | 30 | |
| Carbon disulfide | 1072 | 30 | 1000 | 0 | 107 | 45-160 | 1160 | 7.93 | 30 | |
| Carbon tetrachloride | 956.5 | 30 | 1000 | 0 | 95.6 | 65-135 | 1096 | 13.5 | 30 | |
| Chlorobenzene | 1006 | 30 | 1000 | 0 | 101 | 75-125 | 1066 | 5.79 | 30 | |
| Chloroethane | 934 | 100 | 1000 | 0 | 93.4 | 40-155 | 987 | 5.52 | 30 | |
| Chloroform | 999 | 30 | 1000 | 0 | 99.9 | 70-125 | 1046 | 4.55 | 30 | |
| Chloromethane | 873 | 30 | 1000 | 0 | 87.3 | 50-130 | 921.5 | 5.41 | 30 | |
| cis-1,2-Dichloroethene | 1032 | 30 | 1000 | 0 | 103 | 65-125 | 1089 | 5.33 | 30 | |
| cis-1,3-Dichloropropene | 918 | 30 | 1000 | 0 | 91.8 | 70-125 | 970 | 5.51 | 30 | |
| Dibromochloromethane | 816 | 30 | 1000 | 0 | 81.6 | 65-135 | 871 | 6.52 | 30 | |
| Dibromomethane | 978 | 30 | 1000 | 0 | 97.8 | 75-130 | 1037 | 5.86 | 30 | |
| Dichlorodifluoromethane | 775 | 30 | 1000 | 0 | 77.5 | 35-135 | 812.5 | 4.72 | 30 | |
| Ethylbenzene | 1054 | 30 | 1000 | 0 | 105 | 75-125 | 1112 | 5.26 | 30 | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

# QC BATCH REPORT

Batch ID: **42817** Instrument ID **VMS7** Method: **SW8260**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Hexachloroethane | 903.5 | 30 | 1000 | 0 | 90.4 | 70-135 | 931.5 | 3.05 | 30 |
| Isopropylbenzene | 1044 | 30 | 1000 | 0 | 104 | 75-130 | 1100 | 5.27 | 30 |
| m,p-Xylene | 2134 | 60 | 2000 | 0 | 107 | 80-125 | 2266 | 5.95 | 30 |
| Methyl tert-butyl ether | 1088 | 30 | 1000 | 0 | 109 | 75-125 | 1108 | 1.87 | 30 |
| Methylene chloride | 1158 | 30 | 1000 | 73.82 | 108 | 55-145 | 1178 | 1.67 | 30 |
| Naphthalene | 967.5 | 100 | 1000 | 0 | 96.8 | 40-140 | 939.5 | 2.94 | 30 |
| n-Butylbenzene | 985.5 | 30 | 1000 | 0 | 98.6 | 65-140 | 1001 | 1.56 | 30 |
| n-Propylbenzene | 1030 | 30 | 1000 | 0 | 103 | 65-135 | 1079 | 4.6 | 30 |
| o-Xylene | 1052 | 30 | 1000 | 0 | 105 | 75-125 | 1126 | 6.89 | 30 |
| p-Isopropyltoluene | 1028 | 30 | 1000 | 0 | 103 | 75-135 | 1042 | 1.3 | 30 |
| sec-Butylbenzene | 1092 | 30 | 1000 | 0 | 109 | 65-130 | 1098 | 0.502 | 30 |
| Styrene | 1050 | 30 | 1000 | 0 | 105 | 75-125 | 1115 | 6.05 | 30 |
| tert-Butylbenzene | 1088 | 30 | 1000 | 0 | 109 | 65-130 | 1122 | 3.03 | 30 |
| Tetrachloroethene | 976 | 30 | 1000 | 0 | 97.6 | 64-140 | 1042 | 6.59 | 30 |
| Tetrahydrofuran | 1132 | 100 | 1000 | 0 | 113 | 70-135 | 1078 | 4.89 | 30 |
| Toluene | 1067 | 30 | 1000 | 0 | 107 | 70-125 | 1139 | 6.53 | 30 |
| trans-1,2-Dichloroethene | 1058 | 30 | 1000 | 0 | 106 | 65-135 | 1103 | 4.16 | 30 |
| trans-1,3-Dichloropropene | 957 | 30 | 1000 | 0 | 95.7 | 65-125 | 1000 | 4.39 | 30 |
| trans-1,4-Dichloro-2-butene | 723.5 | 30 | 1000 | 0 | 72.4 | 70-135 | 691 | 4.6 | 30 |
| Trichloroethene | 935 | 30 | 1000 | 0 | 93.5 | 75-125 | 1012 | 7.86 | 30 |
| Trichlorofluoromethane | 904.5 | 30 | 1000 | 0 | 90.4 | 25-185 | 989.5 | 8.98 | 30 |
| Vinyl chloride | 850.5 | 30 | 1000 | 0 | 85 | 60-125 | 913 | 7.09 | 30 |
| *Surr: 1,2-Dichloroethane-d4* | *1083* | 0 | *1000* | 0 | *108* | *70-130* | 1102 | *1.69* | *30* |
| *Surr: 4-Bromofluorobenzene* | *1036* | 0 | *1000* | 0 | *104* | *70-130* | 1046 | *0.961* | *30* |
| *Surr: Dibromofluoromethane* | *1000* | 0 | *1000* | 0 | *100* | *70-130* | 1026 | *2.47* | *30* |
| *Surr: Toluene-d8* | *1048* | 0 | *1000* | 0 | *105* | *70-130* | 1036 | *1.1* | *30* |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208140-01B | 1208140-02B | 1208140-03B |
| 1208140-04B | 1208140-05B | 1208140-06B |
| 1208140-07B | 1208140-08A | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** AECOM Environment
**Work Order:** 1208140
**Project:** Marshall KRRI Source Area 7/31/12

# QC BATCH REPORT

Batch ID: **R108207** Instrument ID **MOIST** Method: **A2540 G**

**MBLK** Sample ID: **WBLKS1-R108207** Units: **% of sample** Analysis Date: **8/6/2012 04:13 PM**
Client ID: Run ID: **MOIST_120806B** SeqNo: **2046465** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | ND | 0.050 | | | | | | | | |

**LCS** Sample ID: **LCS-R108207** Units: **% of sample** Analysis Date: **8/6/2012 04:13 PM**
Client ID: Run ID: **MOIST_120806B** SeqNo: **2046461** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 100 | 0.050 | 100 | 0 | 100 | 99.5-100.5 | 0 | | | |

**DUP** Sample ID: **1208120-05A DUP** Units: **% of sample** Analysis Date: **8/6/2012 04:13 PM**
Client ID: Run ID: **MOIST_120806B** SeqNo: **2046443** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 87.39 | 0.050 | 0 | 0 | 0 | 0-0 | 87.42 | 0.0343 | 20 | |

**DUP** Sample ID: **1208156-01B DUP** Units: **% of sample** Analysis Date: **8/6/2012 04:13 PM**
Client ID: Run ID: **MOIST_120806B** SeqNo: **2046459** Prep Date: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Moisture | 14.01 | 0.050 | 0 | 0 | 0 | 0-0 | 14.5 | 3.44 | 20 | |

**The following samples were analyzed in this batch:**

| | | |
|---|---|---|
| 1208140-01A | 1208140-02A | 1208140-03A |
| 1208140-04A | 1208140-05A | 1208140-06A |
| 1208140-07A | | |

**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

1208140

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

| COC # | ENBRIDGE_073112_GMK1 | Task: KRRI_SOURCE AREA |
|---|---|---|
| Total # of Samples: 8 | | Event Complete? |
| Turn Around Time | 5 Day | Rush: No |
| BILLING CODE: 6.00 | | |

**Lab Information:**
Lab Name: ALS Laboratory Group
Address: 3352 128th Ave. Holland, MI 49424-9263
Lab PM: Ann Preston
Phone/Fax: 1-616-399-6070/1-616-399-6185
Lab PM email: ann.preston@alsglobal.com
Applicable Lab Quote #:

**Project Information:**
Site ID #:
Project #: 60162778
Site Address: 5555 Glenwood Parkway SE Suite 200
City: Grand Rapids State, Zip: MI
Site PM Name: Bryan Stiemsma
Phone/Fax: [redacted]
Site PM Email: Bryan.Stiemsma@aecom.com

**Other Information:**
Send Invoice to: Enbridge Energy - ATTN Accounts Payable
Address: 1100 Louisiana Suite 1100
City/State: Houson, TX Phone #: 713-821-2000
PO #
Send EDD to
CC Hardcopy report
CC Hardcopy report

| ITEM # | SAMPLE ID (Samples IDs MUST BE UNIQUE) | SAMPLE LOCATION | MATRIX CODE | G=GRAB C=COMP | SAMPLE DATE | #OF CONTAINERS | Comments/Lab Sample I.D. | Preservative | None | None | None | None | MeOH | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Analysis | % Moisture | Be,Mo,V,Ni by 6020 | ORO,DRO | PNAs by 8270 | VOC by 5035/8260 | | | | | | | | | | |
| 1 | SBSA0134S073112S007 | SBSA0134 | SO | G | 07/31/2012 12:00 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 2 | SBSA0134D073112S007 | SBSA0134 | SO | G | 07/31/2012 12:00 | 3 | DUPLICATE | | X | X | X | X | X | | | | | | | | | | |
| 3 | SBSA0134S073112S088 | SBSA0134 | SO | G | 07/31/2012 12:35 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 4 | SBSA0135S073112S005 | SBSA0135 | SO | G | 07/31/2012 14:10 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 5 | SBSA0135S073112S089 | SBSA0135 | SO | G | 07/31/2012 14:43 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 6 | SBSA0137S073112S006 | SBSA0137 | SO | G | 07/31/2012 15:37 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 7 | SBSA0137S073112S083 | SBSA0137 | SO | G | 07/31/2012 16:06 | 3 | | | X | X | X | X | X | | | | | | | | | | |
| 8 | SBSA0137T073112MX | SBSA0137 | SQ | G | 07/31/2012 00:00 | 1 | TRIP BLANK | | | | | | X | | | | | | | | | | |

**Additional Comments/Special Instructions:**

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| Gerald Kramer | 8-1-12 | 0900 | [illegible] | 8/1/12 | 0900 |
| [illegible] | 8-2-12 | 1735 | [illegible] | 8-2-12 | 1735 |
| | | | | | |
| | | | | | |

**Sample Receipt Conditions**

| Temp in OC | Samples on Ice? | Sample Intact? | Trip Blank? |
|---|---|---|---|
| 4.2°C | Y/N | Y/N | Y/N |
| | (Y)N | (Y)N | (Y)N |
| | Y/N | Y/N | Y/N |
| | Y/N | Y/N | Y/N |

SHIPPING INFO:
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: GERRY KRAMER (GMK1)
SIGNATURE of SAMPLER:
DATE Signed
Time:

ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **AECOM - GR** Date/Time Received: **02-Aug-12 17:35**

Work Order: **1208140** Received by: **PD**

Checklist completed by Keith Wierenga eSignature 03-Aug-12 Date Reviewed by: Alex Csaszar eSignature 04-Aug-12 Date

Matrices: Soil
Carrier name: ALSHN

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shipping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| Temperature(s)/Thermometer(s): | 4.2 C | | |
| Cooler(s)/Kit(s): | | | |
| Date/Time sample(s) sent to storage: | 8/3/2012 4:19:11 PM | | |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH acceptable upon receipt? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted? | Yes ☐ | No ☐ | N/A ☑ |
| pH adjusted by: | - | | |

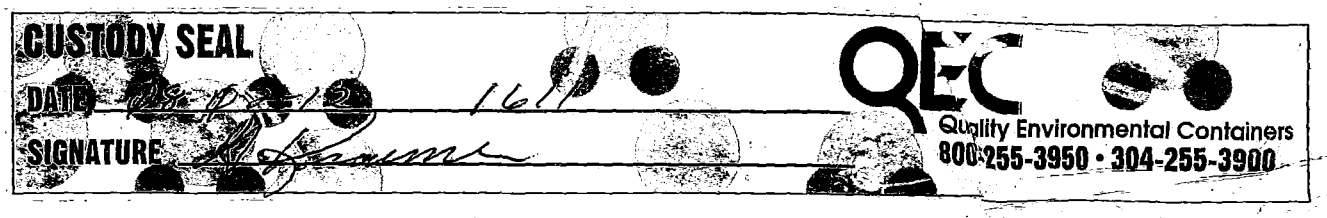
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:


CUSTODY SEAL
DATE
SIGNATURE
QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

# Appendix D

## Work Plans Approved in August 2012

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

Approved

# Enbridge Line 6B MP 608
# Marshall, MI Pipeline Release

## Response Action Work Plan for the Source Area

**Prepared for Michigan Department of Environmental Quality**

**Enbridge Energy, Limited Partnership**

**Originally Submitted: August 3, 2012**

**Approved: August 20, 2012**

Approved


1.0 INTRODUCTION & BACKGROUND ..... 1

2.0 CURRENT CONDITIONS ..... 1

2.1 Data Gaps ..... 2

3.0 PROPOSED RESPONSE MEASURES ..... 2

3.1 Proposed Response Objective ..... 2

3.1.1 Site Access ..... 3

3.1.2 Dewatering Activities ..... 3

3.1.3 Scraping Activities ..... 3

3.1.4 Verification Sampling ..... 4

3.1.5 Transportation and Disposal ..... 4

4.0 PROPOSED RESTORATION ACTIVITIES ..... 5

4.1 Backfill Activities ..... 5

4.2 Swale Installation ..... 5

4.3 Area Restoration ..... 5

5.0 SCHEDULE ..... 5

6.0 REFERENCES ..... 6


FIGURES


Figure 1 Site Location, Source Area

Figure 2 Potential Scrape Areas, Source Area

Figure 3 Grading Plan, Source Area


TABLE


Table 1 Potential Backfill Sources Soil Analytical Data

Approved

## LIST OF ACRONYMS

| | |
|---|---|
| Enbridge | Enbridge Energy, Limited Partnership |
| Line 6B | The pipeline owned by Enbridge Energy, Limited Partnership that runs just south of Marshall, Michigan |
| MDEQ | Michigan Department of Environmental Quality |
| MDEQ Order | Administrative Consent Order and Partial Settlement Agreement entered *In the Matter of Enbridge Energy Partners, L.P., and Enbridge Energy, Limited Partnership*, proceedings under the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.101 et seq. signed November 1, 2010 |
| MP | Mile Post |
| $S^3$TM | Sampling Strategies and Statistics Training Materials |
| U.S. EPA | United States Environmental Protection Agency |
| WTTD | Waste Treatment, Transportation, and Disposal Plan |

Approved

## 1.0 INTRODUCTION & BACKGROUND

Enbridge Energy, Limited Partnership (Enbridge) has committed to addressing impacts associated with the release of crude oil at the Line 6B Mile Post (MP) 608 in Marshall, Michigan per the Michigan Department of Environmental Quality (MDEQ) Administrative Consent Order and Partial Settlement Agreement entered *In the Matter of Enbridge Energy Partners, L.P., and Enbridge Energy, Limited Partnership*, proceedings under the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.101 et seq. signed November 1, 2010 (MDEQ Order).

The results of recent investigation activities at the Source Area were presented in the memorandum *Summary of Findings for the Investigation Work Plan for Source Area (A1)* (Enbridge, 2012) submitted to the United States Environmental Protection Agency (U.S. EPA) on July 6, 2012. Additional investigation activities were performed July 18 through and including July 23, 2012. Based upon these findings, Enbridge proposes surficial soil scraping activities. Soil scraping will occur at the areas shown to be impacted during the previous investigations. Scraping activities will also be performed based upon visual observations of impact during performance of proposed site activities. These activities will be performed in accordance with *Section 1.6* and *Section 2.0* of the *Source Area Response Plan* dated August 17, 2010 (Enbridge 2010a).

Following completion of the surficial soil scraping activities, backfill placement and swale construction will be completed to promote a natural drainage pattern for the area similar to pre-release conditions.

## 2.0 CURRENT CONDITIONS

This work plan applies to the area surrounding the Line 6B release point to where oil entered Talmadge Creek, known as Sub-Units A1 through A4, or the Source Area. The Source Area site location is presented in *Figure 1*. The Source Area is a wetland area that has remained at least partially inundated following initial response actions performed during August 2010 due to restored ground contours that did not match pre-release conditions. The release and resulting response activities created a ponded area that did not initially exist. The ponded area includes a portion of the pipeline right-of-way and extends to properties located immediately north and south of the Source Area.

## 2.1 Data Gaps

The MDEQ has expressed concerns regarding two locations within the source area where potential uncertainties, or data gaps, exist. These areas are located in the western end of the right-of-way corridor bisecting the source area, and the northeast tree-lined boundary of the source area. The western end of the right-of-way corridor was further investigated by installing four additional soil borings (two located north and two located south of the Line 6B pipeline) to depths up to 9 feet below ground surface. These borings were installed prior to commencing the work activities associated with this Work Plan. Due to problematic core recovery during boring installation, it may be necessary to install additional soil borings after implementation of the work activities associated with this plan. The northeast tree-lined boundary of the source area will be addressed by collecting additional soil borings after the scraping activities have been completed and before the area is backfilled. The soil borings will be screened using ultraviolet light (to determine fluorescence indicating the potential presence of impacts) and a verification sample will be collected from the boring. These additional investigation activities at both locations will address the data gap concern as expressed by MDEQ.

# 3.0 PROPOSED RESPONSE MEASURES

Based upon visual observations during previous investigations, the subject area contains residual impact that requires response measures. Proposed response measures include surficial soil scraping for the removal of oil and oil-impacted media, backfill placement in Source Area Sub-Unit A-1, and creation of a swale with a drainage pattern similar to pre-release conditions.

## 3.1 Proposed Response Objective

The objectives of the proposed response activities are as follows:

- Prevent oil and/or sheen from reaching the creek (source removal),
- Prevent potential exposure to humans and wildlife (direct exposure),
- Comply with the requirements of the Clean Water Act, and
- Improve aesthetics of the subject property.

These objectives will be accomplished by the removal of all oil-contaminated soil/sediment and/or oil encountered in the Source Area (Sub-Units A-1 through A-4) and to re-establish drainage patterns similar to those that existed prior to the release.

### 3.1.1 Site Access

Access to the Source Area will be from the Enbridge property access road located off of Old 27 (Kalamazoo Avenue). This access route approaches the Source Area from the south.

### 3.1.2 Dewatering Activities

Dewatering activities, if necessary, are expected to be limited. Ponded water will be removed utilizing a cistern/sump pump arrangement. The water will be transported and disposed at an approved disposal facility per the *Waste Treatment, Transportation, and Disposal Plan* approved by the U.S. EPA on May 20, 2011 (Enbridge, 2011a) (WTTD).

### 3.1.3 Scraping Activities

The proposed scraping activities will be completed to the depth necessary to remove oil and oil impacted soil observed before and/or during re-grading activities. The scraped areas are not expected to exceed 6 inches in depth. Oil impacted media will be removed at the locations shown in *Figure 2*. Field conditions may require modifications to the area and volume of soil to be scraped. Visibly impacted areas including trees with significant oil impact in their root systems will be assessed for removal. Specifically, visible impacts have been identified at locations north of the pipeline right-of-way (Sub-Units A-1 and A-2) and immediately south of the pipeline right-of-way (Sub-Unit A-3). It is not expected that scraping activities will be necessary south of the pipeline right-of-way (Sub-Units A-3 and A-4) with the exception of one isolated location. Previous activities, including source area removal and more recently the Talmadge Creek remedial activities, have addressed impacted areas within Sub-Units A-3 and A-4.

Field conditions encountered during excavation may require modifications to the area and volume of soil to be scraped. Additional scraping may be necessary to remove oil prior to backfill placement.

### 3.1.4 Verification Sampling

Samples will be collected from the scraped areas in general accordance with the sampling strategies outlined in the MDEQ guidance document entitled *Sampling Strategies and Statistics Training Materials* ($S^3$TM) as applicable. Sampling will be conducted per the *Sampling and Analysis Plan* (Enbridge, 2011b) approved by the MDEQ on August 30, 2011 and as amended. Soil samples will be analyzed for crude-oil related constituents including volatile organic compounds, polynuclear aromatic hydrocarbons, total petroleum hydrocarbons (measured as diesel range organics and oil range organics), and the select metals beryllium, molybdenum, nickel, and vanadium. Scraping activities will be conducted until no visible oil is observed and verification samples will be collected as outlined below:

- Sediment/soil samples will be collected from saturated and unsaturated areas.
- Sample collection will be performed in accordance with *Section 1.3* of the $S^3$TM guidance. Soil samples will be collected from locations biased by field observations towards potentially impacted areas.
- Global Positioning System coordinates will be recorded at each sediment/soil sample location. Vertical coordinates will also be recorded at each sediment/soil sample location (tolerance of +/- 0.1 foot).

### 3.1.5 Transportation and Disposal

Soil removed during scraping activities will be handled in accordance with the WTTD and the *Addendum to the Waste Treatment, Transportation, and Disposal Plan commonly referred to as Waste Characterization and Oil Recovery Sampling for Soils and Sediment* approved by the U.S. EPA on June 20, 2011 (Enbridge, 2011c).

The proposed plan for soil management at the site relies on transportation of the limited amount of soil from the scraped area via direct load for transport directly to the approved landfill. Based upon field conditions and operational efficiencies, the impacted soils may instead be transported to Frac Tank City for temporary staging.

- Methods of soil transportation from the scraped area to the landfill or Frac Tank City are as follows:
    - Sealed transport vehicle (i.e. poly-lined, welded, or other approved method such as poly sheeting along access route), and
    - Stabilization of soil with sawdust or backfill from the scraped area.

Approved

## 4.0 PROPOSED RESTORATION ACTIVITIES

### 4.1 Backfill Activities

Backfill activities will be performed within the scraped areas and extend to cover Sub-Area A-1 to achieve grade elevations appropriate for drainage purposes. Backfill activities will be conducted using non-impacted off-site backfill material from a source previously used for the restoration of Talmadge Creek. Analytical results for potential backfill sources are presented in *Table 1*. Backfill activities will be limited to promote positive drainage south towards Talmadge Creek. This is intended to minimize ponding of water in Sub-Units A-1 and A-2.

### 4.2 Swale Installation

A drainage swale will be constructed to restore area drainage patterns and prevent large areas of ponding water. The soil displaced during swale construction will be removed and disposed according to the WTTD. *Figure 3* shows the proposed elevation plan including final elevations within Source Area Sub-Unit A-1 and the swale construction.

### 4.3 Area Restoration

Once scraping, verification sampling, backfill, and swale construction are complete, and the area will no longer be subject to disturbance, restoration measures will be completed in accordance with conditions identified within the MDEQ permit issued for the site.

## 5.0 SCHEDULE

The work outlined above is proposed to commence upon receipt of the permit and an access agreement for the property immediately north of the pipeline right-of-way. Enbridge estimates completion of field activities within six working days of start date. MDEQ and U.S. EPA will be notified of the specific start date and time a minimum of two days prior to commencing field activities.

## 6.0 REFERENCES

Enbridge, 2010a. Enbridge Line 6B Pipeline Release, Marshall, Michigan; *Source Area Response Plan*. August 17, 2010.

Enbridge, 2011a. Enbridge Line 6B Pipeline Release, Marshall, Michigan; *Waste Treatment, Transportation, and Disposal Plan*. May 20, 2011.

Enbridge, 2011b. Enbridge Line 6B Pipeline Release, Marshall, Michigan; *Sampling and Analysis Plan*. August 30, 2011. and as amended.

Enbridge, 2011c. Enbridge Line 6B Pipeline Release, Marshall, Michigan*; Addendum to the Waste Treatment, Transportation, and Disposal Plan commonly referred to as Waste Characterization and Oil Recovery Sampling for Soils and Sediment*. June 20, 2011.

Enbridge, 2012. Enbridge Line 6B Pipeline Release, Marshall, Michigan; *Summary of Findings for Investigation Work Plan for Source Area (A1)*. July 6, 2012.

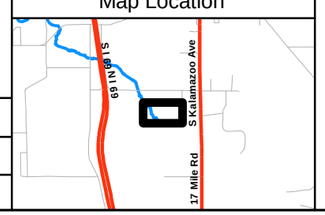
# Figures




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 08/03/2012 |
| Approved: | BY | 08/03/2012 |
| Project #: | 60246209 | |

Map Location




**Legend**

- Line 6B Pipeline
- Vector Pipeline
- Sub-Unit Boundary
- Parcel Boundary
- Quarter Mile Grid Segments

**A-1** Release Division
TC-A-001 Parcel Number

N

0 75 150 300
Scale in Feet

FIGURE 1
SITE LOCATION
SOURCE AREA

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\2012_Source_Area_Reassessment\MXDs\120709_Fig1_Site_Location.mxd

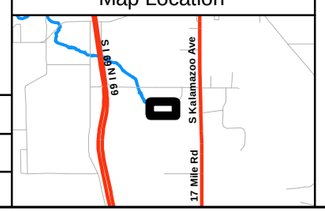
Aerial Photography Date: April 2011




ENBRIDGE

| | | |
|---|---|---|
| Drawn: | NS | 08/03/2012 |
| Approved: | BY | 08/03/2012 |
| Project #: | 60246209 | |

Map Location




**Legend**

- Line 6B Pipeline
- Vector Pipeline
- Sub-Unit Boundary
- Scrape Area
- Parcel Boundary
- Quarter Mile Grid Segments
- **A-1** Release Division
- TC-A-001 Parcel Number

N

0 50 100 200

Scale in Feet

FIGURE 2
POTENTIAL SCRAPE AREAS
SOURCE AREA

ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHIP

Z:\Work\GIS\2012_Source_Area_Reassessment\MXDs\120709_Fig2_Potential_Scrape_v2.mxd

Aerial Photography Date: April 2011

EXTENT OF BACKFILL

SWALE

PARCEL LINES

ENBRIDGE LINE 6B PIPELINE

VECTOR PIPELINE

MP 0.00

ENBRIDGE

| | |
|---|---|
| Drawn: | WKL 08/02/2012 |
| Approved: | BM 08/02/2012 |
| Project #: | 1008114.00 |

MAP LOCATION



PROJECT LOCATION




LEGEND

- EXISTING INDEX CONTOUR
- TALMADGE CREEK
- PROPOSED CONTOUR
- PARCEL LINES
- EXTENT OF BACKFILL
- BACKFILL PLACEMENT AREA
- QUARTER MILE GRID SEGMENT
- +0+50 TALMADGE CREEK STATIONS

N

0 40 80

SCALE IN FEET

FIGURE 3
GRADING PLAN
SOURCE AREA
ENBRIDGE LINE 6B MP 608
MARSHALL, MI PIPELINE RELEASE
ENBRIDGE ENERGY, LIMITED PARTNERSHI P

Location: R:\Projects\1010\09\3114_Enbridge_Talmadge\Work\CAD\TALMADGE CREEK FINAL RESTORATION PLAN\1009070\C10\Grading Plan (4g).dwg
Last Saved By: Brian Mayer Date: 8/2/2012 2:51:39 PM
Xrefs: Images: ENBRIDGE LOGO 20111024.jpg Location Map - Enbridge Project Area.jpg Source Area2.jpg Talmadge Creek Aerial 900 DPI.jpg TC Road Aerial.JPG
Plotted By: Wesley Landon (GrandHaven Plotter) August 2, 2012 2:38:18 PM

## Table

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | Part 201 Generic Residential Cleanup Criteria | | | | | Target Detection Limits - Soil | 11/2/2011 9:45:00 AM | 11/2/2011 10:00:00 AM | 11/2/2011 10:10:00 AM | 11/2/2011 10:10:00 AM | 11/2/2011 10:25:00 AM | 11/2/2011 10:35:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | | | | | | | ANDERSON-01 | ANDERSON-02 | ANDERSON-03 | ANDERSON-03 | ANDERSON-04 | ANDERSON-05 |
| | Sample | Direct Contact Criteria | Drinking Water Protection Criteria | Groundwater Contact Protection Criteria | Groundwater Surface Water Interface Protection Criteria | Soil Volatilization to Indoor Air Inhalation Criteria | | ANDERSON-01-110211 | ANDERSON-02-110211 | ANDERSON-03-110211 | AB86372 | ANDERSON-04-110211 | ANDERSON-05-110211 |
| | Depth | | | | | | | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | | | | | | | N | N | N | RD | N | N |
| Analyte | Units | | | | | | | Result | Result | Result | Result | Result | Result |
| Metals | | | | | | | | | | | | | |
| Arsenic | mg/kg | 7.6 | 4.6 | 2000 | 4.6 | NLV | 0.1 | 2.1 | 1.7 | 2.8 | 2.2 | 3.1 | 2.0 |
| Barium | mg/kg | 37000(B) | 1300(B) | 1e+006(B)(D) | 720(B)(G) | (B)NLV | 1 | 74 | 50 | 110 | 110 | 180 | 58 |
| Beryllium | mg/kg | 410 | 51 | 1e+006(D) | 250(G) | NLV | 0.5 | < 0.50 | < 0.50 | < 0.50 | 0.29 | < 0.50 | < 0.50 |
| Cadmium | mg/kg | 550(B) | 6(B) | 230000(B) | 5(B)(G,X) | (B)NLV | 0.2 | 0.32 | < 0.20 | < 0.20 | < 0.2 | < 0.45 | 0.25 |
| Chromium (Total) | mg/kg | NCE | NCE | NCE | 1e+006 | NCE | 2 | 14 | 15 | 9.3 | 9.8 | 14 | 13 |
| Copper | mg/kg | 20000(B) | 5800(B) | 1e+006(B)(D) | 100(B)(G) | (B)NLV | 1 | 17 | 10 | 7.6 | 9.5 | 12 | 11 |
| Iron | mg/kg | 160000(B) | 6(B) | 1e+006(B)(D) | (B)NA | (B)NLV | 5 | --- | --- | --- | 10000 | --- | --- |
| Lead | mg/kg | 400(B) | 700(B) | (B)ID | 4600(B)(G,X) | (B)NLV | 1 | 11 | 7.8 | 6.6 | 7 | 10 | 8.6 |
| Mercury (Total) | mg/kg | 160(B,Z) | 1.7(B,Z) | 47(B,Z) | 0.05(B,Z)(M);1.2 | 48(B,Z) | 0.05 | < 0.050 | < 0.050 | < 0.050 | --- | < 0.051 | < 0.050 |
| Molybdenum | mg/kg | 2600(B) | 1.5(B) | 19000(B) | 64(B)(X) | (B)NLV | 1 | < 1.0 | < 1.0 | 1.6 | 1.6 | 3.0 | < 1.0 |
| Nickel | mg/kg | 40000(B) | 100(B) | 1e+006(B)(D) | 110(B)(G) | (B)NLV | 1 | 17 | 14 | 9.2 | 13 | 15 | 14 |
| Selenium | mg/kg | 2600(B) | 4(B) | 78000(B) | 0.4(B) | (B)NLV | 0.2 | 0.88 | 0.40 | 0.80 | 1 | 1.5 | 0.63 |
| Silver | mg/kg | 2500(B) | 4.5(B) | 200000(B) | 0.1(B)(M);27 | (B)NLV | 0.1 | 0.35 | 0.25 | < 0.10 | < 0.1 | 0.37 | 0.13 |
| Vanadium | mg/kg | 750(DD) | 72 | 1e+006(D) | 190 | NLV | 1 | 26 | 20 | 15 | 14 | 22 | 23 |
| Zinc | mg/kg | 170000(B) | 2400(B) | 1e+006(B)(D) | 240(B)(G) | (B)NLV | 1 | 47 | 34 | 30 | 35 | 47 | 39 |
| PNA | | | | | | | | | | | | | |
| 2-Methylnaphthalene | ug/kg | 8.1e+006 | 57000 | 5.5e+006 | 4200 | 2.7e+006 | 330 | < 330 | < 330 | < 330 | < 710 | < 330 | < 330 |
| Acenaphthene | ug/kg | 4.1e+007 | 300000 | 970000 | 8700 | 1.9e+008 | 330 | < 330 | < 330 | < 330 | < 280 | < 330 | < 330 |
| Acenaphthylene | ug/kg | 1.6e+006 | 5900 | 440000 | ID | 1.6e+006 | 330 | < 330 | < 330 | < 330 | < 280 | < 330 | < 330 |
| Anthracene | ug/kg | 2.3e+008 | 41000 | 41000 | ID | 1e+009(D) | 330 | < 330 | < 330 | < 330 | < 280 | < 330 | < 330 |
| Benzo(a)anthracene | ug/kg | 20000(Q) | (Q)NLL | (Q)NLL | (Q)NLL | (Q)NLV | 330 | < 330 | < 330 | < 330 | < 280 | < 330 | < 330 |
| Benzo(a)pyrene | ug/kg | 2000(Q) | (Q)NLL | (Q)NLL | (Q)NLL | (Q)NLV | 330 | < 330 | < 330 | < 330 | < 570 | < 330 | < 330 |
| Benzo(b)fluoranthene | ug/kg | 20000(Q) | (Q)NLL | (Q)NLL | (Q)NLL | (Q)ID | 330 | < 330 | < 330 | < 330 | < 570 | < 330 | < 330 |
| Benzo(g,h,i)perylene | ug/kg | 2.5e+006 | NLL | NLL | NLL | NLV | 330 | < 330 | < 330 | < 330 | < 570 | < 330 | < 330 |
| Benzo(k)fluoranthene | ug/kg | 200000(Q) | (Q)NLL | (Q)NLL | (Q)NLL | (Q)NLV | 330 | < 330 | < 330 | < 330 | < 570 | < 330 | < 330 |
| Chrysene | ug/kg | 2e+006(Q) | (Q)NLL | (Q)NLL | (Q)NLL | (Q)ID | 330 | < 330 | < 330 | < 330 | < 280 | < 330 | < 330 |
| Dibenzo(a,h)anthracene | ug/kg | 2000(Q) | (Q)NLL | (Q)NLL | (Q)NLL | (Q)NLV | 330 | < 330 | < 330 | < 330 | < 570 | < 330 | < 330 |
| Fluoranthene | ug/kg | 4.6e+007 | 730000 | 730000 | 5500 | 1e+009(D) | 330 | < 330 | < 330 | < 330 | < 280 | < 330 | < 330 |
| Fluorene | ug/kg | 2.7e+007 | 390000 | 890000 | 5300 | 5.8e+008 | 330 | < 330 | < 330 | < 330 | < 280 | < 330 | < 330 |
| Indeno(1,2,3-c,d)pyrene | ug/kg | 20000(Q) | (Q)NLL | (Q)NLL | (Q)NLL | (Q)NLV | 330 | < 330 | < 330 | < 330 | < 570 | < 330 | < 330 |
| Naphthalene | ug/kg | 1.6e+007 | 35000 | 2.1e+006 | 730 | 250000 | 330 | < 330 | < 330 | < 330 | < 280 | < 330 | < 330 |
| Phenanthrene | ug/kg | 1.6e+006 | 56000 | 1.1e+006 | 2100 | 2.8e+006 | 330 | < 330 | < 330 | < 330 | < 280 | < 330 | < 330 |
| Pyrene | ug/kg | 2.9e+007 | 480000 | 480000 | ID | 1e+009(D) | 330 | < 330 | < 330 | < 330 | < 280 | < 330 | < 330 |
| Solids | | | | | | | | | | | | | |
| Moisture | % | NCE | NCE | NCE | NCE | NCE | NCE | 17 | 15 | 30 | --- | 36 | 13 |
| Solids | % | NCE | NCE | NCE | NCE | NCE | NCE | --- | --- | --- | 70.4 | --- | --- |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | Part 201 Generic Residential Cleanup Criteria | | | | | Target Detection Limits - Soil | 11/2/2011 9:45:00 AM | 11/2/2011 10:00:00 AM | 11/2/2011 10:10:00 AM | 11/2/2011 10:10:00 AM | 11/2/2011 10:25:00 AM | 11/2/2011 10:35:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | | | | | | | ANDERSON-01 | ANDERSON-02 | ANDERSON-03 | ANDERSON-03 | ANDERSON-04 | ANDERSON-05 |
| | Sample | Direct Contact Criteria | Drinking Water Protection Criteria | Groundwater Contact Protection Criteria | Groundwater Surface Water Interface Protection Criteria | Soil Volatilization to Indoor Air Inhalation Criteria | | ANDERSON-01-110211 | ANDERSON-02-110211 | ANDERSON-03-110211 | AB86372 | ANDERSON-04-110211 | ANDERSON-05-110211 |
| | Depth | | | | | | | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | | | | | | | N | N | N | RD | N | N |
| Analyte | Units | | | | | | | Result | Result | Result | Result | Result | Result |
| TPH | | | | | | | | | | | | | |
| Diesel Range Organics (C10-C20) | mg/kg | NCE | NCE | NCE | NCE | NCE | 10 | < 12 | < 11 | 14 | --- | < 24 | < 11 |
| Diesel Range Organics (C10-C20) | ug/kg | NCE | NCE | NCE | NCE | NCE | 10000 | --- | --- | --- | < 36000 | --- | --- |
| Gasoline Range Organics (C6-C10) | mg/kg | NCE | NCE | NCE | NCE | NCE | 10 | < 4.0 | < 4.0 | < 4.0 | --- | < 4.0 | < 4.0 |
| Gasoline Range Organics (C6-C10) | ug/kg | NCE | NCE | NCE | NCE | NCE | 10000 | --- | --- | --- | < 9400 | --- | --- |
| Oil Range Organics (C20-C34) | mg/kg | NCE | NCE | NCE | NCE | NCE | 20 | 52 | 34 | 130 | --- | 120 | 71 |
| Oil Range Organics (C20-C34) | ug/kg | NCE | NCE | NCE | NCE | NCE | 20000 | --- | --- | --- | < 140000 | --- | --- |
| VOC | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ug/kg | 440000(C) | 1500 | 440000(C) | ID | 6200 | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| 1,1,1-Trichloroethane | ug/kg | 460000(C) | 4000 | 460000(C) | 1800 | 250000 | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| 1,1,2,2-Tetrachloroethane | ug/kg | 53000 | 170 | 94000 | 1600(X) | 4300 | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| 1,1,2-Trichloroethane | ug/kg | 180000 | 100 | 420000 | 6600(X) | 4600 | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| 1,1-Dichloroethane | ug/kg | 890000(C) | 18000 | 890000(C) | 15000 | 230000 | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| 1,1-Dichloroethylene | ug/kg | 200000(I) | 140(I) | 220000(I) | 2600(I) | 62(I) | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| 1,2,3-Trichlorobenzene | ug/kg | NCE | NCE | NCE | NCE | NCE | 250 | < 250 | < 250 | < 250 | < 470 | < 250 | < 250 |
| 1,2,3-Trichloropropane | ug/kg | 830000(C) | 840 | 830000(C) | NA | 4000 | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| 1,2,3-Trimethylbenzene | ug/kg | NCE | NCE | NCE | NCE | NCE | 250 | < 250 | < 250 | < 250 | < 94 | < 250 | < 250 |
| 1,2,4-Trichlorobenzene | ug/kg | 990000(DD) | 4200 | 1.1e+006(C) | 5900(X) | 1.1e+006(C) | 330 | < 250 | < 250 | < 250 | < 470 | < 250 | < 250 |
| 1,2,4-Trimethylbenzene | ug/kg | 110000(I)(C) | 2100(I) | 110000(I)(C) | 570(I) | 110000(I)(C) | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| 1,2-Dichlorobenzene | ug/kg | 210000(C) | 14000 | 210000(C) | 280 | 210000(C) | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| 1,2-Dichloroethane | ug/kg | 91000(I) | 100(I) | 380000(I) | 7200(I)(X) | 2100(I) | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| 1,2-Dichloropropane | ug/kg | 140000(I) | 100(I) | 320000(I) | 4600(I)(X) | 4000(I) | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| 1,3,5-Trimethylbenzene | ug/kg | 94000(I)(C) | 1800(I) | 94000(I)(C) | 1100(I) | 94000(I)(C) | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| 1,3-Dichlorobenzene | ug/kg | 170000(C) | 170 | 51000 | 680 | 26000 | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| 1,3-Dichloropropene, cis | ug/kg | NCE | NCE | NCE | NCE | NCE | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| 1,3-Dichloropropene, trans | ug/kg | NCE | NCE | NCE | NCE | NCE | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| 1,4-Dichloro-2-butene, trans | ug/kg | NCE | NCE | NCE | NCE | NCE | 50 | < 51 | < 50 | < 80 | < 470 | < 160 | < 50 |
| 1,4-Dichlorobenzene | ug/kg | 400000 | 1700 | 140000 | 360 | 19000 | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| 2-Butanone (MEK) | ug/kg | 2.7e+007(I)(C,DD) | 260000(I) | 2.7e+007(I)(C) | 44000(I) | 2.7e+007(I)(C) | 750 | < 750 | < 750 | < 750 | < 470 | < 750 | < 750 |
| 2-Hexanone | ug/kg | 2.5e+006(C) | 20000 | 2.5e+006(C) | ID | 990000 | 2500 | < 2500 | < 2500 | < 2500 | < 470 | < 2500 | < 2500 |
| 2-Methylnaphthalene | ug/kg | 8.1e+006 | 57000 | 5.5e+006 | 4200 | 2.7e+006 | 330 | < 330 | < 330 | < 330 | < 470 | < 520 | < 330 |
| 4-Methyl-2-pentanone (MIBK) | ug/kg | 2.7e+006(I)(C) | 36000(I) | 2.7e+006(I)(C) | (I)ID | 2.7e+006(I)(C) | 2500 | < 2500 | < 2500 | < 2500 | < 470 | < 2500 | < 2500 |
| Acetone | ug/kg | 2.3e+007(I) | 15000(I) | 1.1e+008(I)(C) | 34000(I) | 1.1e+008(I)(C) | 1000 | < 1000 | < 1000 | < 1200 | < 1900 | < 1600 | < 1000 |
| Acrylonitrile | ug/kg | 16000(I) | 100(I)(M);52 | 280000(I) | 100(I)(M);40 | 6600(I) | 100 | < 100 | < 100 | < 100 | < 470 | < 160 | < 100 |
| Benzene | ug/kg | 180000(I) | 100(I) | 220000(I) | 4000(I)(X) | 1600(I) | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| Bromobenzene | ug/kg | 540000(I) | 550(I) | 360000(I) | (I)NA | 310000(I) | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| Bromochloromethane | ug/kg | NCE | NCE | NCE | NCE | NCE | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | Part 201 Generic Residential Cleanup Criteria | | | | | Target Detection Limits - Soil | 11/2/2011 9:45:00 AM | 11/2/2011 10:00:00 AM | 11/2/2011 10:10:00 AM | 11/2/2011 10:10:00 AM | 11/2/2011 10:25:00 AM | 11/2/2011 10:35:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | | | | | | | ANDERSON-01 | ANDERSON-02 | ANDERSON-03 | ANDERSON-03 | ANDERSON-04 | ANDERSON-05 |
| | Sample | Direct Contact Criteria | Drinking Water Protection Criteria | Groundwater Contact Protection Criteria | Groundwater Surface Water Interface Protection Criteria | Soil Volatilization to Indoor Air Inhalation Criteria | | ANDERSON-01-110211 | ANDERSON-02-110211 | ANDERSON-03-110211 | AB86372 | ANDERSON-04-110211 | ANDERSON-05-110211 |
| | Depth | | | | | | | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | | | | | | | N | N | N | RD | N | N |
| Analyte | Units | | | | | | | Result | Result | Result | Result | Result | Result |
| Bromodichloromethane | ug/kg | 110000 | 1600(W) | 280000 | ID | 1200 | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| Bromoform | ug/kg | 820000 | 1600(W) | 870000(C) | ID | 150000 | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| Bromomethane | ug/kg | 320000 | 200 | 1.4e+006 | 700 | 860 | 200 | < 200 | < 200 | < 200 | < 380 | < 200 | < 200 |
| Carbon disulfide | ug/kg | 280000(I,R)(C,DD) | 16000(I,R) | 280000(I,R)(C) | (I,R)ID | 76000(I,R) | 250 | < 250 | < 250 | < 250 | < 94 | < 250 | < 250 |
| Carbon tetrachloride | ug/kg | 96000 | 100 | 92000 | 900(X) | 190 | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| Chlorobenzene | ug/kg | 260000(I)(C) | 2000(I) | 260000(I)(C) | 500(I) | 120000(I) | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| Chloroethane | ug/kg | 950000(C) | 8600 | 950000(C) | 22000(X) | 950000(C) | 250 | < 250 | < 250 | < 270 | < 470 | < 520 | < 250 |
| Chloroform | ug/kg | 1.2e+006 | 1600(W) | 1.5e+006(C) | 7000 | 7200 | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| Chloromethane | ug/kg | 1.1e+006(I)(C) | 5200(I) | 1.1e+006(I)(C) | (I)ID | 2300(I) | 250 | < 250 | < 250 | < 670 | < 470 | < 520 | < 250 |
| cis-1,2-Dichloroethylene | ug/kg | 640000(C) | 1400 | 640000(C) | 12000 | 22000 | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| Cyclohexane | ug/kg | NCE | NCE | NCE | NCE | NCE | 500 | < 500 | < 500 | < 500 | < 470 | < 500 | < 500 |
| Dibromochloromethane | ug/kg | 110000 | 1600(W) | 360000 | ID | 3900 | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| Dibromochloropropane | ug/kg | 1200(C) | 10(M);4 | 1200(C) | ID | 1200(C) | 10 | < 51 | < 48 | < 80 | < 470 | < 160 | < 47 |
| Dibromomethane | ug/kg | 2e+006(C) | 1600 | 2e+006(C) | NA | ID | 250 | < 250 | < 250 | < 250 | < 94 | < 250 | < 250 |
| Dichlorodifluoromethane | ug/kg | 1e+006(C) | 95000 | 1e+006(C) | ID | 900000 | 250 | < 250 | < 250 | < 250 | < 470 | < 250 | < 250 |
| Diethyl ether | ug/kg | 7.4e+006(C) | 200 | 7.4e+006(C) | ID | 7.4e+006(C) | 200 | < 200 | < 200 | < 200 | < 380 | < 200 | < 200 |
| Di-isopropyl ether (DIPE) | ug/kg | 1300(C) | 600 | 1300(C) | ID | 1300(C) | 250 | < 250 | < 250 | < 250 | < 470 | < 250 | < 250 |
| Ethylbenzene | ug/kg | 140000(I)(C) | 1500(I) | 140000(I)(C) | 360(I) | 87000(I) | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| Ethylene dibromide | ug/kg | 92 | 20(M);1 | 500 | 110(X) | 670 | 20 | < 51 | < 48 | < 80 | < 94 | < 160 | < 47 |
| Ethyl-tert-butyl ether (ETBE) | ug/kg | ID | 980 | ID | ID | 540000 | 250 | < 250 | < 250 | < 250 | < 470 | < 250 | < 250 |
| Hexachloroethane | ug/kg | 230000 | 430 | 110000 | 1800(X) | 40000 | 300 | < 300 | < 300 | < 300 | < 470 | < 300 | < 300 |
| Isopropyl benzene | ug/kg | 390000(C) | 91000 | 390000(C) | 3200 | 390000(C) | 250 | < 250 | < 250 | < 250 | < 94 | < 250 | < 250 |
| m&p-Xylene | ug/kg | (J) | (J) | (J) | (J) | (J) | 100 | < 100 | < 100 | < 160 | < 190 | < 310 | < 100 |
| Methyl Iodide | ug/kg | NCE | NCE | NCE | NCE | NCE | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| Methylene chloride | ug/kg | 1.3e+006 | 100 | 2.3e+006(C) | 30000(X) | 45000 | 100 | < 100 | < 100 | < 100 | < 190 | < 160 | < 100 |
| Methyl-tert-butyl ether (MTBE) | ug/kg | 1.5e+006 | 800 | 5.9e+006(C) | 140000(X) | 5.9e+006(C) | 250 | < 250 | < 250 | < 250 | < 94 | < 250 | < 250 |
| Naphthalene | ug/kg | 1.6e+007 | 35000 | 2.1e+006 | 730 | 250000 | 330 | < 330 | < 330 | < 330 | < 470 | < 520 | < 330 |
| n-Butylbenzene | ug/kg | 2.5e+006 | 1600 | 120000 | ID | ID | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| n-Propylbenzene | ug/kg | 2.5e+006(I) | 1600(I) | 300000(I) | (I)ID | (I)ID | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| o-Xylene | ug/kg | (J) | (J) | (J) | (J) | (J) | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| p-Isopropyl toluene (p-Cymene) | ug/kg | NCE | NCE | NCE | NCE | NCE | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| sec-Butylbenzene | ug/kg | 2.5e+006 | 1600 | 88000 | ID | ID | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| Styrene | ug/kg | 400000 | 2700 | 270000 | 2100(X) | 250000 | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| t-Amyl methyl ether (TAME) | ug/kg | 440000(C) | 3900 | 440000(C) | NA | 58000 | 250 | < 250 | < 250 | < 250 | < 470 | < 250 | < 250 |
| t-Butyl alcohol | ug/kg | 1.1e+008(C) | 78000 | 1.1e+008(C) | NA | 1.1e+008(C) | 2500 | < 2500 | < 2500 | < 2500 | < 4700 | < 2500 | < 2500 |
| t-Butylbenzene | ug/kg | 2.5e+006(I) | 1600(I) | 180000(I) | (I)ID | (I)ID | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| Tetrachloroethylene | ug/kg | 88000(C) | 100 | 88000(C) | 1200(X) | 11000 | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | Part 201 Generic Residential Cleanup Criteria | | | | | Target Detection Limits - Soil | 11/2/2011 9:45:00 AM | 11/2/2011 10:00:00 AM | 11/2/2011 10:10:00 AM | 11/2/2011 10:10:00 AM | 11/2/2011 10:25:00 AM | 11/2/2011 10:35:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | | | | | | | ANDERSON-01 | ANDERSON-02 | ANDERSON-03 | ANDERSON-03 | ANDERSON-04 | ANDERSON-05 |
| | Sample | Direct Contact Criteria | Drinking Water Protection Criteria | Groundwater Contact Protection Criteria | Groundwater Surface Water Interface Protection Criteria | Soil Volatilization to Indoor Air Inhalation Criteria | | ANDERSON-01-110211 | ANDERSON-02-110211 | ANDERSON-03-110211 | AB86372 | ANDERSON-04-110211 | ANDERSON-05-110211 |
| | Depth | | | | | | | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | | | | | | | N | N | N | RD | N | N |
| Analyte | Units | | | | | | | Result | Result | Result | Result | Result | Result |
| Tetrahydrofuran | ug/kg | 2.9e+006 | 1900 | 3.2e+007 | 220000(X) | 1.3e+006 | 1000 | < 1000 | < 1000 | < 1000 | < 470 | < 1000 | < 1000 |
| Toluene | ug/kg | 250000(I)(C) | 16000(I) | 250000(I)(C) | 5400(I) | 250000(I)(C) | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| trans-1,2-Dichloroethylene | ug/kg | 1.4e+006(C) | 2000 | 1.4e+006(C) | 30000(X) | 23000 | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| Trichloroethylene | ug/kg | 500000(C,DD) | 100 | 440000 | 4000(X) | 7100 | 50 | < 51 | < 50 | < 80 | < 94 | < 160 | < 50 |
| Trichlorofluoromethane | ug/kg | 560000(C) | 52000 | 560000(C) | NA | 560000(C) | 100 | < 100 | < 100 | < 100 | < 94 | < 160 | < 100 |
| Vinyl chloride | ug/kg | 3800 | 40 | 20000 | 260(X) | 270 | 40 | < 51 | < 48 | < 80 | < 94 | < 160 | < 47 |
| Xylenes | ug/kg | 150000(I)(C) | 5600(I) | 150000(I)(C) | 820(I) | 150000(I)(C) | 150 | < 100 | < 100 | < 160 | --- | < 310 | < 100 |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | 11/2/2011 10:40:00 AM | 11/2/2011 10:50:00 AM | 11/2/2011 10:50:00 AM | 11/2/2011 11:05:00 AM | 11/2/2011 11:10:00 AM | 11/2/2011 11:20:00 AM | 10/24/2011 10:55:00 AM | 10/24/2011 11:07:00 AM | 10/24/2011 11:12:00 AM | 10/24/2011 11:18:00 AM | 10/24/2011 11:23:00 AM | 1/13/2012 10:15:00 AM | 1/13/2012 10:15:00 AM | 1/13/2012 10:25:00 AM | 1/13/2012 10:30:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | ANDERSON-06 | ANDERSON-07 | ANDERSON-07 | ANDERSON-08 | ANDERSON-09 | ANDERSON-10 | CARR PIT-01-102411 | CARR PIT-02-102411 | CARR PIT-03-102411 | CARR PIT-04-102411 | CARR PIT-05-102411 | ELM ROW-25-011312 | ELM ROW-25-011312 | ELM ROW-26-011312 | ELM ROW-27-011312 |
| | Sample | ANDERSON-06-110211 | ANDERSON-07-110211 | AB86373 | ANDERSON-08-110211 | ANDERSON-09-110211 | ANDERSON-10-110211 | CARR PIT-01-102411 | CARR PIT-02-102411 | CARR PIT-03-102411 | CARR PIT-04-102411 | CARR PIT-05-102411 | ELM ROW-25-011312 | AB89635 | ELM ROW-26-011312 | ELM ROW-27-011312 |
| | Depth | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | N | N | RD | N | N | N | N | N | N | N | N | N | RD | N | N |
| Analyte | Units | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| Metals | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 2.1 | 5.2 | 11 | 4.9 | 9.5 | 7.5 | 26 | 3.8 | 9.0 | 4.4 | 6.0 | 11 | 11 | 17 | 14 |
| Barium | mg/kg | 56 | 19 | 20 | 13 | 12 | 13 | 100 | 80 | 74 | 100 | 95 | 54 | 47 | 67 | 57 |
| Beryllium | mg/kg | < 0.50 | < 0.50 | 0.23 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | < 0.50 | 0.35 | < 0.50 | < 0.50 |
| Cadmium | mg/kg | 0.23 | < 0.20 | < 0.2 | < 0.20 | < 0.20 | < 0.20 | 0.64 | 0.42 | 0.37 | 0.60 | 0.43 | 0.22 | < 0.2 | 0.33 | 0.24 |
| Chromium (Total) | mg/kg | 12 | 14 | 10 | 7.0 | 4.2 | 5.9 | 6.4 | 11 | 9.4 | 13 | 13 | 11 | 10 | 9.9 | 11 |
| Copper | mg/kg | 11 | 8.2 | 11 | 7.8 | 4.3 | 5.6 | 36 | 15 | 11 | 20 | 18 | 12 | 12 | 12 | 12 |
| Iron | mg/kg | --- | --- | 9700 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 17000 | --- | --- |
| Lead | mg/kg | 8.4 | 5.7 | 6.5 | 4.3 | 4.2 | 4.3 | 11 | 12 | 11 | 19 | 19 | 16 | 15 | 21 | 14 |
| Mercury (Total) | mg/kg | < 0.050 | < 0.050 | --- | < 0.050 | < 0.050 | < 0.050 | 0.10 | 0.068 | < 0.050 | 0.065 | 0.073 | < 0.050 | --- | < 0.050 | < 0.050 |
| Molybdenum | mg/kg | < 1.0 | 1.0 | 1.4 | 1.1 | 1.1 | 1.5 | 4.2 | 1.7 | 1.3 | 1.8 | 1.4 | 1.4 | 1.1 | 2.0 | 1.3 |
| Nickel | mg/kg | 15 | 13 | 15 | 10 | 5.9 | 8.3 | 9.7 | 12 | 10 | 14 | 13 | 14 | 14 | 23 | 12 |
| Selenium | mg/kg | 0.60 | < 0.30 | 0.31 | 0.27 | 0.35 | 0.32 | 3.5 | 2.2 | 1.4 | 3.0 | 1.7 | 1.1 | 0.47 | 1.2 | 1.2 |
| Silver | mg/kg | < 0.10 | < 0.10 | < 0.1 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.1 | < 0.10 | < 0.10 |
| Vanadium | mg/kg | 22 | 11 | 14 | 9.0 | 7.8 | 8.2 | 18 | 18 | 15 | 20 | 21 | 20 | 17 | 18 | 18 |
| Zinc | mg/kg | 36 | 23 | 27 | 21 | 16 | 17 | 33 | 45 | 44 | 64 | 83 | 52 | 44 | 79 | 43 |
| PNA | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | ug/kg | < 330 | < 330 | < 560 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 610 | < 330 | < 330 |
| Acenaphthene | ug/kg | < 330 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 240 | < 330 | < 330 |
| Acenaphthylene | ug/kg | < 330 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 240 | < 330 | < 330 |
| Anthracene | ug/kg | < 330 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | 550 | < 330 | < 330 | < 240 | < 330 | < 330 |
| Benzo(a)anthracene | ug/kg | < 330 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | 360 | < 330 | < 330 | < 240 | < 330 | < 330 |
| Benzo(a)pyrene | ug/kg | < 330 | < 330 | < 450 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | 430 | < 330 | < 330 | < 480 | < 330 | < 330 |
| Benzo(b)fluoranthene | ug/kg | < 330 | < 330 | < 450 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 480 | < 330 | < 330 |
| Benzo(g,h,i)perylene | ug/kg | < 330 | < 330 | < 450 | < 330 | < 330 | < 330 | < 330 | 360 | < 330 | 470 | < 330 | < 330 | < 480 | < 330 | < 330 |
| Benzo(k)fluoranthene | ug/kg | < 330 | < 330 | < 450 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | 370 | < 330 | < 330 | < 480 | < 330 | < 330 |
| Chrysene | ug/kg | < 330 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | 660 | < 330 | < 330 | < 240 | < 330 | < 330 |
| Dibenzo(a,h)anthracene | ug/kg | < 330 | < 330 | < 450 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 480 | < 330 | < 330 |
| Fluoranthene | ug/kg | < 330 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | 790 | < 330 | < 330 | < 240 | < 330 | < 330 |
| Fluorene | ug/kg | < 330 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 | 360 | < 330 | 430 | < 330 | < 330 | < 240 | < 330 | < 330 |
| Indeno(1,2,3-c,d)pyrene | ug/kg | < 330 | < 330 | < 450 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 480 | < 330 | < 330 |
| Naphthalene | ug/kg | < 330 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 330 | < 240 | < 330 | < 330 |
| Phenanthrene | ug/kg | < 330 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 | 520 | < 330 | 1800 | < 330 | < 330 | < 240 | < 330 | < 330 |
| Pyrene | ug/kg | < 330 | < 330 | < 230 | < 330 | < 330 | < 330 | 410 | 500 | < 330 | 1200 | 360 | < 330 | < 240 | < 330 | < 330 |
| Solids | | | | | | | | | | | | | | | | |
| Moisture | % | 17 | 12 | --- | 9.5 | 12 | 6.8 | 52 | 49 | 29 | 54 | 46 | 18 | --- | 17 | 16 |
| Solids | % | --- | --- | 88.8 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 82.6 | --- | --- |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | 11/2/2011 10:40:00 AM | 11/2/2011 10:50:00 AM | 11/2/2011 10:50:00 AM | 11/2/2011 11:05:00 AM | 11/2/2011 11:10:00 AM | 11/2/2011 11:20:00 AM | 10/24/2011 10:55:00 AM | 10/24/2011 11:07:00 AM | 10/24/2011 11:12:00 AM | 10/24/2011 11:18:00 AM | 10/24/2011 11:23:00 AM | 1/13/2012 10:15:00 AM | 1/13/2012 10:15:00 AM | 1/13/2012 10:25:00 AM | 1/13/2012 10:30:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | ANDERSON-06 | ANDERSON-07 | ANDERSON-07 | ANDERSON-08 | ANDERSON-09 | ANDERSON-10 | CARR PIT-01-102411 | CARR PIT-02-102411 | CARR PIT-03-102411 | CARR PIT-04-102411 | CARR PIT-05-102411 | ELM ROW-25-011312 | ELM ROW-25-011312 | ELM ROW-26-011312 | ELM ROW-27-011312 |
| | Sample | ANDERSON-06-110211 | ANDERSON-07-110211 | AB86373 | ANDERSON-08-110211 | ANDERSON-09-110211 | ANDERSON-10-110211 | CARR PIT-01-102411 | CARR PIT-02-102411 | CARR PIT-03-102411 | CARR PIT-04-102411 | CARR PIT-05-102411 | ELM ROW-25-011312 | AB89635 | ELM ROW-26-011312 | ELM ROW-27-011312 |
| | Depth | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | N | N | RD | N | N | N | N | N | N | N | N | N | RD | N | N |
| Analyte | Units | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| TPH | | | | | | | | | | | | | | | | |
| Diesel Range Organics (C10-C20) | mg/kg | < 12 | < 11 | --- | 31 | 23 | 13 | 82 | < 19 | 32 | 35 | 52 | < 12 | --- | < 12 | < 12 |
| Diesel Range Organics (C10-C20) | ug/kg | --- | --- | < 28000 | --- | --- | --- | --- | --- | --- | --- | --- | --- | < 30000 | --- | --- |
| Gasoline Range Organics (C6-C10) | mg/kg | < 4.0 | < 4.0 | --- | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | --- | < 4.0 | < 4.0 |
| Gasoline Range Organics (C6-C10) | ug/kg | --- | --- | < 6200 | --- | --- | --- | --- | --- | --- | --- | --- | --- | < 7000 | --- | --- |
| Oil Range Organics (C20-C34) | mg/kg | 50 | 41 | --- | 98 | 120 | 53 | 650 | 230 | 170 | 330 | 240 | 25 | --- | 45 | 140 |
| Oil Range Organics (C20-C34) | ug/kg | --- | --- | < 110000 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 180000 | --- | --- |
| VOC | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| 1,1,1-Trichloroethane | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| 1,1,2,2-Tetrachloroethane | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| 1,1,2-Trichloroethane | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| 1,1-Dichloroethane | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| 1,1-Dichloroethylene | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| 1,2,3-Trichlorobenzene | ug/kg | < 250 | < 250 | < 310 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 350 | < 250 | < 250 |
| 1,2,3-Trichloropropane | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| 1,2,3-Trimethylbenzene | ug/kg | < 250 | < 250 | < 62 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 70 | < 250 | < 250 |
| 1,2,4-Trichlorobenzene | ug/kg | < 250 | < 250 | < 310 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 350 | < 250 | < 250 |
| 1,2,4-Trimethylbenzene | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| 1,2-Dichlorobenzene | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| 1,2-Dichloroethane | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| 1,2-Dichloropropane | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| 1,3,5-Trimethylbenzene | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| 1,3-Dichlorobenzene | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| 1,3-Dichloropropene, cis | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| 1,3-Dichloropropene, trans | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| 1,4-Dichloro-2-butene, trans | ug/kg | < 68 | < 50 | < 310 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 350 | < 51 | < 50 |
| 1,4-Dichlorobenzene | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| 2-Butanone (MEK) | ug/kg | < 750 | < 750 | < 310 | < 750 | < 750 | < 750 | < 750 | < 750 | < 750 | < 750 | < 750 | < 750 | < 350 | < 750 | < 750 |
| 2-Hexanone | ug/kg | < 2500 | < 2500 | < 310 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 350 | < 2500 | < 2500 |
| 2-Methylnaphthalene | ug/kg | < 330 | < 330 | < 310 | < 330 | < 330 | < 330 | < 660 | < 570 | < 330 | < 730 | < 500 | < 330 | < 350 | < 330 | < 330 |
| 4-Methyl-2-pentanone (MIBK) | ug/kg | < 2500 | < 2500 | < 310 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 350 | < 2500 | < 2500 |
| Acetone | ug/kg | < 1000 | < 1000 | < 1200 | < 1000 | < 1000 | < 1000 | < 1600 | < 1400 | < 1000 | < 1800 | < 1200 | < 1000 | < 1400 | < 1000 | < 1000 |
| Acrylonitrile | ug/kg | < 100 | < 100 | < 310 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 350 | < 100 | < 100 |
| Benzene | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| Bromobenzene | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| Bromochloromethane | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | 11/2/2011 10:40:00 AM | 11/2/2011 10:50:00 AM | 11/2/2011 10:50:00 AM | 11/2/2011 11:05:00 AM | 11/2/2011 11:10:00 AM | 11/2/2011 11:20:00 AM | 10/24/2011 10:55:00 AM | 10/24/2011 11:07:00 AM | 10/24/2011 11:12:00 AM | 10/24/2011 11:18:00 AM | 10/24/2011 11:23:00 AM | 1/13/2012 10:15:00 AM | 1/13/2012 10:15:00 AM | 1/13/2012 10:25:00 AM | 1/13/2012 10:30:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | ANDERSON-06 | ANDERSON-07 | ANDERSON-07 | ANDERSON-08 | ANDERSON-09 | ANDERSON-10 | CARR PIT-01-102411 | CARR PIT-02-102411 | CARR PIT-03-102411 | CARR PIT-04-102411 | CARR PIT-05-102411 | ELM ROW-25-011312 | ELM ROW-25-011312 | ELM ROW-26-011312 | ELM ROW-27-011312 |
| | Sample | ANDERSON-06-110211 | ANDERSON-07-110211 | AB86373 | ANDERSON-08-110211 | ANDERSON-09-110211 | ANDERSON-10-110211 | CARR PIT-01-102411 | CARR PIT-02-102411 | CARR PIT-03-102411 | CARR PIT-04-102411 | CARR PIT-05-102411 | ELM ROW-25-011312 | AB89635 | ELM ROW-26-011312 | ELM ROW-27-011312 |
| | Depth | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | N | N | RD | N | N | N | N | N | N | N | N | N | RD | N | N |
| Analyte | Units | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| Bromodichloromethane | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| Bromoform | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| Bromomethane | ug/kg | < 200 | < 200 | < 250 | < 200 | < 200 | < 200 | < 200 | < 200 | < 200 | < 220 | < 200 | < 200 | < 280 | < 200 | < 200 |
| Carbon disulfide | ug/kg | < 250 | < 250 | < 62 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 70 | < 250 | < 250 |
| Carbon tetrachloride | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| Chlorobenzene | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| Chloroethane | ug/kg | < 250 | < 250 | < 310 | < 250 | < 250 | < 250 | < 660 | < 570 | < 250 | < 730 | < 500 | < 250 | < 350 | < 250 | < 250 |
| Chloroform | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| Chloromethane | ug/kg | < 570 | < 250 | < 310 | < 250 | < 360 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 350 | < 250 | < 250 |
| cis-1,2-Dichloroethylene | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| Cyclohexane | ug/kg | < 500 | < 500 | < 310 | < 500 | < 500 | < 500 | < 500 | < 500 | < 500 | < 500 | < 500 | < 500 | < 350 | < 500 | < 500 |
| Dibromochloromethane | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| Dibromochloropropane | ug/kg | < 68 | < 44 | < 310 | < 40 | < 44 | < 37 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 350 | < 51 | < 50 |
| Dibromomethane | ug/kg | < 250 | < 250 | < 62 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 70 | < 250 | < 250 |
| Dichlorodifluoromethane | ug/kg | < 250 | < 250 | < 310 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 350 | < 250 | < 250 |
| Diethyl ether | ug/kg | < 200 | < 200 | < 250 | < 200 | < 200 | < 200 | < 200 | < 200 | < 200 | < 220 | < 200 | < 200 | < 280 | < 200 | < 200 |
| Di-isopropyl ether (DIPE) | ug/kg | < 250 | < 250 | < 310 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 350 | < 250 | < 250 |
| Ethylbenzene | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| Ethylene dibromide | ug/kg | < 68 | < 44 | < 62 | < 40 | < 44 | < 37 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| Ethyl-tert-butyl ether (ETBE) | ug/kg | < 250 | < 250 | < 310 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 350 | < 250 | < 250 |
| Hexachloroethane | ug/kg | < 300 | < 300 | < 310 | < 300 | < 300 | < 300 | < 300 | < 300 | < 300 | < 300 | < 300 | < 300 | < 350 | < 300 | < 300 |
| Isopropyl benzene | ug/kg | < 250 | < 250 | < 62 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 70 | < 250 | < 250 |
| m&p-Xylene | ug/kg | < 140 | < 100 | < 120 | < 100 | < 100 | < 100 | < 390 | < 340 | < 150 | < 440 | < 300 | < 110 | < 140 | < 100 | < 100 |
| Methyl Iodide | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| Methylene chloride | ug/kg | < 100 | < 100 | < 120 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 140 | < 100 | < 100 |
| Methyl-tert-butyl ether (MTBE) | ug/kg | < 250 | < 250 | < 62 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 70 | < 250 | < 250 |
| Naphthalene | ug/kg | < 330 | < 330 | < 310 | < 330 | < 330 | < 330 | < 660 | < 570 | < 330 | < 730 | < 500 | < 330 | < 350 | < 330 | < 330 |
| n-Butylbenzene | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| n-Propylbenzene | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| o-Xylene | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| p-Isopropyl toluene (p-Cymene) | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| sec-Butylbenzene | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| Styrene | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| t-Amyl methyl ether (TAME) | ug/kg | < 250 | < 250 | < 310 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 250 | < 350 | < 250 | < 250 |
| t-Butyl alcohol | ug/kg | < 2500 | < 2500 | < 3100 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 2500 | < 3500 | < 2500 | < 2500 |
| t-Butylbenzene | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| Tetrachloroethylene | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | 11/2/2011 10:40:00 AM | 11/2/2011 10:50:00 AM | 11/2/2011 10:50:00 AM | 11/2/2011 11:05:00 AM | 11/2/2011 11:10:00 AM | 11/2/2011 11:20:00 AM | 10/24/2011 10:55:00 AM | 10/24/2011 11:07:00 AM | 10/24/2011 11:12:00 AM | 10/24/2011 11:18:00 AM | 10/24/2011 11:23:00 AM | 1/13/2012 10:15:00 AM | 1/13/2012 10:15:00 AM | 1/13/2012 10:25:00 AM | 1/13/2012 10:30:00 AM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | ANDERSON-06 | ANDERSON-07 | ANDERSON-07 | ANDERSON-08 | ANDERSON-09 | ANDERSON-10 | CARR PIT-01-102411 | CARR PIT-02-102411 | CARR PIT-03-102411 | CARR PIT-04-102411 | CARR PIT-05-102411 | ELM ROW-25-011312 | ELM ROW-25-011312 | ELM ROW-26-011312 | ELM ROW-27-011312 |
| | Sample | ANDERSON-06-110211 | ANDERSON-07-110211 | AB86373 | ANDERSON-08-110211 | ANDERSON-09-110211 | ANDERSON-10-110211 | CARR PIT-01-102411 | CARR PIT-02-102411 | CARR PIT-03-102411 | CARR PIT-04-102411 | CARR PIT-05-102411 | ELM ROW-25-011312 | AB89635 | ELM ROW-26-011312 | ELM ROW-27-011312 |
| | Depth | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | N | N | RD | N | N | N | N | N | N | N | N | N | RD | N | N |
| Analyte | Units | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| Tetrahydrofuran | ug/kg | < 1000 | < 1000 | < 310 | < 1000 | < 1000 | < 1000 | < 1000 | < 1000 | < 1000 | < 1000 | < 1000 | < 1000 | < 350 | < 1000 | < 1000 |
| Toluene | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| trans-1,2-Dichloroethylene | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| Trichloroethylene | ug/kg | < 68 | < 50 | < 62 | < 50 | < 50 | < 50 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| Trichlorofluoromethane | ug/kg | < 100 | < 100 | < 62 | < 100 | < 100 | < 100 | < 200 | < 170 | < 100 | < 220 | < 150 | < 100 | < 70 | < 100 | < 100 |
| Vinyl chloride | ug/kg | < 68 | < 44 | < 62 | < 40 | < 44 | < 40 | < 200 | < 170 | < 76 | < 220 | < 150 | < 53 | < 70 | < 51 | < 50 |
| Xylenes | ug/kg | < 140 | < 100 | --- | < 100 | < 100 | < 100 | < 390 | < 340 | < 150 | < 440 | < 300 | < 110 | --- | < 100 | < 100 |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | 1/13/2012 10:35:00 AM | 10/24/2011 12:22:00 PM | 10/24/2011 12:39:00 PM | 10/24/2011 12:45:00 PM | 10/24/2011 12:50:00 PM | 10/24/2011 1:32:00 PM | 10/24/2011 1:34:00 PM | 10/24/2011 1:36:00 PM | 10/24/2011 1:38:00 PM | 11/2/2011 1:35:00 PM | 11/2/2011 1:35:00 PM | 11/2/2011 1:45:00 PM | 11/2/2011 1:55:00 PM | 11/2/2011 2:05:00 PM | 10/24/2011 3:09:00 PM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | ELM ROW-28-011312 | ELMROW-01-102411 | ELMROW-02-102411 | ELMROW-03-102411 | ELMROW-04-102411 | ELMROW-17-102411 | ELMROW-18-102411 | ELMROW-19-102411 | ELMROW-20-102411 | ELMROW-21 | ELMROW-21 | ELMROW-22 | ELMROW-23 | ELMROW-24 | S PARMA-01-102411 |
| | Sample | ELM ROW-28-011312 | ELMROW-01-102411 | ELMROW-02-102411 | ELMROW-03-102411 | ELMROW-04-102411 | ELMROW-17-102411 | ELMROW-18-102411 | ELMROW-19-102411 | ELMROW-20-102411 | ELMROW-21-110211 | AB86375 | ELMROW-22-110211 | ELMROW-23-110211 | ELMROW-24-110211 | SOUTH PARMA-01-102411 |
| | Depth | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | N | N | N | N | N | N | N | N | N | N | RD | N | N | N | N |
| Analyte | Units | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| Metals | | | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 15 | 4.6 | 5.9 | 9.6 | 5.1 | 4.2 | 12 | 18 | 6.0 | 10 | 12 | 12 | 7.3 | 13 | 11 |
| Barium | mg/kg | 69 | 63 | 30 | 68 | 22 | 34 | 9.4 | 19 | 6.1 | 52 | 60 | 58 | 53 | 60 | 47 |
| Beryllium | mg/kg | < 0.50 | 0.31 | < 0.18 | 0.20 | 0.11 | < 0.20 | < 0.23 | 0.21 | < 0.10 | < 0.50 | 0.4 | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Cadmium | mg/kg | 0.29 | 0.041 | 0.066 | < 0.053 | 0.071 | < 0.068 | < 0.076 | < 0.042 | < 0.17 | < 0.20 | 0.22 | < 0.20 | < 0.20 | 0.27 | 0.75 |
| Chromium (Total) | mg/kg | 13 | 7.2 | 9.1 | 4.8 | 6.9 | 4.8 | 5.2 | 6.6 | 3.7 | 7.2 | 10 | 10 | 8.7 | 8.0 | 3.8 |
| Copper | mg/kg | 15 | 6.8 | 8.1 | 6.4 | 5.2 | 4.6 | 6.4 | 8.1 | 3.3 | 11 | 14 | 11 | 8.3 | 12 | 28 |
| Iron | mg/kg | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 17000 | --- | --- | --- | --- |
| Lead | mg/kg | 17 | 3.7 | 5.6 | 5.2 | 4.1 | 3.3 | 15 | 6.4 | 4.8 | 12 | 15 | 15 | 11 | 11 | 4.8 |
| Mercury (Total) | mg/kg | < 0.050 | < 0.018 | < 0.017 | < 0.019 | < 0.019 | < 0.019 | < 0.017 | 0.052 | < 0.019 | 0.057 | --- | < 0.050 | < 0.050 | 0.054 | < 0.051 |
| Molybdenum | mg/kg | 1.6 | 0.48 | 0.42 | 0.40 | 0.46 | < 0.41 | 0.92 | 0.32 | 0.55 | 1.1 | 1.3 | 1.1 | < 1.0 | 1.7 | 1.9 |
| Nickel | mg/kg | 13 | 10 | 8.8 | 7.0 | 6.4 | 5.2 | 9.4 | 23 | 5.0 | 9.1 | 13 | 12 | 9.0 | 9.9 | 9.7 |
| Selenium | mg/kg | 1.2 | 0.40 | 0.46 | 0.61 | 0.45 | 0.74 | 0.68 | 0.82 | 0.36 | 0.56 | 0.49 | 0.81 | 0.76 | 0.82 | 4.7 |
| Silver | mg/kg | < 0.10 | < 0.016 | < 0.029 | < 0.026 | < 0.017 | < 0.034 | < 0.038 | 0.047 | < 0.017 | < 0.10 | < 0.1 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Vanadium | mg/kg | 19 | 12 | 10 | 9.6 | 10 | 7.6 | 6.3 | 7.2 | 6.2 | 13 | 18 | 16 | 15 | 13 | 15 |
| Zinc | mg/kg | 51 | 20 | 19 | 19 | 17 | 13 | 15 | 7.5 | 15 | 33 | 43 | 39 | 30 | 32 | 25 |
| PNA | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | ug/kg | < 330 | < 53 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 580 | < 330 | < 330 | < 330 | < 330 |
| Acenaphthene | ug/kg | < 330 | < 53 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 |
| Acenaphthylene | ug/kg | < 330 | < 53 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 |
| Anthracene | ug/kg | < 330 | < 53 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 |
| Benzo(a)anthracene | ug/kg | < 330 | < 53 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 |
| Benzo(a)pyrene | ug/kg | < 330 | < 53 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 460 | < 330 | < 330 | < 330 | < 330 |
| Benzo(b)fluoranthene | ug/kg | < 330 | < 53 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 460 | < 330 | < 330 | < 330 | < 330 |
| Benzo(g,h,i)perylene | ug/kg | < 330 | < 53 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 460 | < 330 | < 330 | < 330 | < 330 |
| Benzo(k)fluoranthene | ug/kg | < 330 | < 53 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 460 | < 330 | < 330 | < 330 | < 330 |
| Chrysene | ug/kg | < 330 | 150 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 |
| Dibenzo(a,h)anthracene | ug/kg | < 330 | < 53 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 460 | < 330 | < 330 | < 330 | < 330 |
| Fluoranthene | ug/kg | < 330 | 93 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 |
| Fluorene | ug/kg | < 330 | < 53 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 |
| Indeno(1,2,3-c,d)pyrene | ug/kg | < 330 | < 53 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 460 | < 330 | < 330 | < 330 | < 330 |
| Naphthalene | ug/kg | < 330 | < 53 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 |
| Phenanthrene | ug/kg | < 330 | 65 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 |
| Pyrene | ug/kg | < 330 | 210 | < 50 | < 52 | < 51 | < 50 | < 50 | < 50 | < 50 | < 330 | < 230 | < 330 | < 330 | < 330 | < 330 |
| Solids | | | | | | | | | | | | | | | | |
| Moisture | % | 22 | 6.9 | 4.5 | 6.4 | 6.0 | 4.4 | 2.7 | 3.4 | 4.2 | 15 | --- | 19 | 13 | 15 | 64 |
| Solids | % | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 86.5 | --- | --- | --- | --- |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | 1/13/2012 10:35:00 AM | 10/24/2011 12:22:00 PM | 10/24/2011 12:39:00 PM | 10/24/2011 12:45:00 PM | 10/24/2011 12:50:00 PM | 10/24/2011 1:32:00 PM | 10/24/2011 1:34:00 PM | 10/24/2011 1:36:00 PM | 10/24/2011 1:38:00 PM | 11/2/2011 1:35:00 PM | 11/2/2011 1:35:00 PM | 11/2/2011 1:45:00 PM | 11/2/2011 1:55:00 PM | 11/2/2011 2:05:00 PM | 10/24/2011 3:09:00 PM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | ELM ROW-28-011312 | ELMROW-01-102411 | ELMROW-02-102411 | ELMROW-03-102411 | ELMROW-04-102411 | ELMROW-17-102411 | ELMROW-18-102411 | ELMROW-19-102411 | ELMROW-20-102411 | ELMROW-21 | ELMROW-21 | ELMROW-22 | ELMROW-23 | ELMROW-24 | S PARMA-01-102411 |
| | Sample | ELM ROW-28-011312 | ELMROW-01-102411 | ELMROW-02-102411 | ELMROW-03-102411 | ELMROW-04-102411 | ELMROW-17-102411 | ELMROW-18-102411 | ELMROW-19-102411 | ELMROW-20-102411 | ELMROW-21-110211 | AB86375 | ELMROW-22-110211 | ELMROW-23-110211 | ELMROW-24-110211 | SOUTH PARMA-01-102411 |
| | Depth | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | N | N | N | N | N | N | N | N | N | N | RD | N | N | N | N |
| Analyte | Units | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| TPH | | | | | | | | | | | | | | | | |
| Diesel Range Organics (C10-C20) | mg/kg | < 13 | < 11 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 110 | < 12 | --- | 13 | < 11 | < 11 | 54 |
| Diesel Range Organics (C10-C20) | ug/kg | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | < 29000 | --- | --- | --- | --- |
| Gasoline Range Organics (C6-C10) | mg/kg | < 4.0 | < 1.1 | < 1.0 | < 1.1 | < 1.1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 4.0 | --- | < 4.0 | < 4.0 | < 4.0 | < 4.0 |
| Gasoline Range Organics (C6-C10) | ug/kg | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | < 6700 | --- | --- | --- | --- |
| Oil Range Organics (C20-C34) | mg/kg | 120 | 42 | 31 | 25 | 24 | 28 | 33 | 30 | 52 | 100 | --- | 95 | 85 | 95 | 650 |
| Oil Range Organics (C20-C34) | ug/kg | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | < 120000 | --- | --- | --- | --- |
| VOC | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| 1,1,1-Trichloroethane | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| 1,1,2,2-Tetrachloroethane | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| 1,1,2-Trichloroethane | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| 1,1-Dichloroethane | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| 1,1-Dichloroethylene | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| 1,2,3-Trichlorobenzene | ug/kg | < 250 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 250 | < 340 | < 250 | < 250 | < 250 | < 410 |
| 1,2,3-Trichloropropane | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| 1,2,3-Trimethylbenzene | ug/kg | < 250 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 250 | < 67 | < 250 | < 250 | < 250 | < 410 |
| 1,2,4-Trichlorobenzene | ug/kg | < 250 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 250 | < 340 | < 250 | < 250 | < 250 | < 410 |
| 1,2,4-Trimethylbenzene | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| 1,2-Dichlorobenzene | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| 1,2-Dichloroethane | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| 1,2-Dichloropropane | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| 1,3,5-Trimethylbenzene | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| 1,3-Dichlorobenzene | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| 1,3-Dichloropropene, cis | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| 1,3-Dichloropropene, trans | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| 1,4-Dichloro-2-butene, trans | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 340 | < 54 | < 50 | < 50 | < 410 |
| 1,4-Dichlorobenzene | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| 2-Butanone (MEK) | ug/kg | < 750 | < 120 | < 110 | < 120 | < 120 | < 110 | < 110 | < 110 | < 110 | < 750 | < 340 | < 750 | < 750 | < 750 | < 1400 |
| 2-Hexanone | ug/kg | < 2500 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 2500 | < 340 | < 2500 | < 2500 | < 2500 | < 2500 |
| 2-Methylnaphthalene | ug/kg | < 330 | < 120 | < 110 | < 120 | < 120 | < 110 | < 110 | < 110 | < 110 | < 330 | < 340 | < 330 | < 330 | < 330 | < 1400 |
| 4-Methyl-2-pentanone (MIBK) | ug/kg | < 2500 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 2500 | < 340 | < 2500 | < 2500 | < 2500 | < 2500 |
| Acetone | ug/kg | < 1000 | < 310 | < 290 | < 300 | < 300 | 290 | < 270 | < 280 | < 280 | < 1000 | < 1300 | < 1000 | < 1000 | < 1000 | < 3400 |
| Acrylonitrile | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 340 | < 100 | < 100 | < 100 | < 410 |
| Benzene | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| Bromobenzene | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| Bromochloromethane | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | 1/13/2012 10:35:00 AM | 10/24/2011 12:22:00 PM | 10/24/2011 12:39:00 PM | 10/24/2011 12:45:00 PM | 10/24/2011 12:50:00 PM | 10/24/2011 1:32:00 PM | 10/24/2011 1:34:00 PM | 10/24/2011 1:36:00 PM | 10/24/2011 1:38:00 PM | 11/2/2011 1:35:00 PM | 11/2/2011 1:35:00 PM | 11/2/2011 1:45:00 PM | 11/2/2011 1:55:00 PM | 11/2/2011 2:05:00 PM | 10/24/2011 3:09:00 PM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | ELM ROW-28-011312 | ELMROW-01-102411 | ELMROW-02-102411 | ELMROW-03-102411 | ELMROW-04-102411 | ELMROW-17-102411 | ELMROW-18-102411 | ELMROW-19-102411 | ELMROW-20-102411 | ELMROW-21 | ELMROW-21 | ELMROW-22 | ELMROW-23 | ELMROW-24 | S PARMA-01-102411 |
| | Sample | ELM ROW-28-011312 | ELMROW-01-102411 | ELMROW-02-102411 | ELMROW-03-102411 | ELMROW-04-102411 | ELMROW-17-102411 | ELMROW-18-102411 | ELMROW-19-102411 | ELMROW-20-102411 | ELMROW-21-110211 | AB86375 | ELMROW-22-110211 | ELMROW-23-110211 | ELMROW-24-110211 | SOUTH PARMA-01-102411 |
| | Depth | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | N | N | N | N | N | N | N | N | N | N | RD | N | N | N | N |
| Analyte | Units | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| Bromodichloromethane | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| Bromoform | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| Bromomethane | ug/kg | < 200 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 200 | < 270 | < 200 | < 200 | < 200 | < 410 |
| Carbon disulfide | ug/kg | < 250 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 250 | < 67 | < 250 | < 250 | < 250 | < 410 |
| Carbon tetrachloride | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| Chlorobenzene | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| Chloroethane | ug/kg | < 250 | < 120 | < 110 | < 120 | < 120 | < 110 | < 110 | < 110 | < 110 | < 250 | < 340 | < 250 | < 250 | < 250 | < 1400 |
| Chloroform | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| Chloromethane | ug/kg | < 250 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 400 | < 340 | < 450 | < 340 | < 250 | < 410 |
| cis-1,2-Dichloroethylene | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| Cyclohexane | ug/kg | < 500 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 500 | < 340 | < 500 | < 500 | < 500 | < 500 |
| Dibromochloromethane | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| Dibromochloropropane | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 48 | < 340 | < 54 | < 45 | < 48 | < 410 |
| Dibromomethane | ug/kg | < 250 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 250 | < 67 | < 250 | < 250 | < 250 | < 410 |
| Dichlorodifluoromethane | ug/kg | < 250 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 250 | < 340 | < 250 | < 250 | < 250 | < 410 |
| Diethyl ether | ug/kg | < 200 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 200 | < 270 | < 200 | < 200 | < 200 | < 410 |
| Di-isopropyl ether (DIPE) | ug/kg | < 250 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 250 | < 340 | < 250 | < 250 | < 250 | < 410 |
| Ethylbenzene | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| Ethylene dibromide | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 48 | < 67 | < 54 | < 45 | < 48 | < 410 |
| Ethyl-tert-butyl ether (ETBE) | ug/kg | < 250 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 250 | < 340 | < 250 | < 250 | < 250 | < 410 |
| Hexachloroethane | ug/kg | < 300 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 300 | < 340 | < 300 | < 300 | < 300 | < 410 |
| Isopropyl benzene | ug/kg | < 250 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 250 | < 67 | < 250 | < 250 | < 250 | < 410 |
| m&p-Xylene | ug/kg | < 120 | < 74 | < 69 | < 73 | < 72 | < 69 | < 65 | < 67 | < 68 | < 100 | < 130 | < 110 | < 100 | < 100 | < 820 |
| Methyl Iodide | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| Methylene chloride | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 130 | < 100 | < 100 | < 100 | < 410 |
| Methyl-tert-butyl ether (MTBE) | ug/kg | < 250 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 250 | < 67 | < 250 | < 250 | < 250 | < 410 |
| Naphthalene | ug/kg | < 330 | < 120 | < 110 | < 120 | < 120 | < 110 | < 110 | < 110 | < 110 | < 330 | < 340 | < 330 | < 330 | < 330 | < 1400 |
| n-Butylbenzene | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| n-Propylbenzene | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| o-Xylene | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| p-Isopropyl toluene (p-Cymene) | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| sec-Butylbenzene | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| Styrene | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| t-Amyl methyl ether (TAME) | ug/kg | < 250 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 250 | < 340 | < 250 | < 250 | < 250 | < 410 |
| t-Butyl alcohol | ug/kg | < 2500 | < 120 | < 110 | < 120 | < 120 | < 110 | < 110 | < 110 | < 110 | < 2500 | < 3400 | < 2500 | < 2500 | < 2500 | < 2500 |
| t-Butylbenzene | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| Tetrachloroethylene | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | 1/13/2012 10:35:00 AM | 10/24/2011 12:22:00 PM | 10/24/2011 12:39:00 PM | 10/24/2011 12:45:00 PM | 10/24/2011 12:50:00 PM | 10/24/2011 1:32:00 PM | 10/24/2011 1:34:00 PM | 10/24/2011 1:36:00 PM | 10/24/2011 1:38:00 PM | 11/2/2011 1:35:00 PM | 11/2/2011 1:35:00 PM | 11/2/2011 1:45:00 PM | 11/2/2011 1:55:00 PM | 11/2/2011 2:05:00 PM | 10/24/2011 3:09:00 PM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location | ELM ROW-28-011312 | ELMROW-01-102411 | ELMROW-02-102411 | ELMROW-03-102411 | ELMROW-04-102411 | ELMROW-17-102411 | ELMROW-18-102411 | ELMROW-19-102411 | ELMROW-20-102411 | ELMROW-21 | ELMROW-21 | ELMROW-22 | ELMROW-23 | ELMROW-24 | S PARMA-01-102411 |
| | Sample | ELM ROW-28-011312 | ELMROW-01-102411 | ELMROW-02-102411 | ELMROW-03-102411 | ELMROW-04-102411 | ELMROW-17-102411 | ELMROW-18-102411 | ELMROW-19-102411 | ELMROW-20-102411 | ELMROW-21-110211 | AB86375 | ELMROW-22-110211 | ELMROW-23-110211 | ELMROW-24-110211 | SOUTH PARMA-01-102411 |
| | Depth | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | N | N | N | N | N | N | N | N | N | N | RD | N | N | N | N |
| Analyte | Units | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result | Result |
| Tetrahydrofuran | ug/kg | < 1000 | < 120 | < 110 | < 120 | < 120 | < 110 | < 110 | < 110 | < 110 | < 1000 | < 340 | < 1000 | < 1000 | < 1000 | < 1400 |
| Toluene | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| trans-1,2-Dichloroethylene | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| Trichloroethylene | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 50 | < 67 | < 54 | < 50 | < 50 | < 410 |
| Trichlorofluoromethane | ug/kg | < 100 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 100 | < 67 | < 100 | < 100 | < 100 | < 410 |
| Vinyl chloride | ug/kg | < 60 | < 37 | < 34 | < 36 | < 36 | < 34 | < 33 | < 33 | < 34 | < 48 | < 67 | < 54 | < 45 | < 48 | < 410 |
| Xylenes | ug/kg | < 120 | < 74 | < 69 | < 73 | < 72 | < 69 | < 65 | < 67 | < 68 | < 100 | --- | < 110 | < 100 | < 100 | < 820 |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | 10/24/2011 3:09:00 PM | 10/24/2011 3:18:00 PM | 10/24/2011 3:23:00 PM | 10/24/2011 3:26:00 PM |
|---|---|---|---|---|---|
| | Location | S PARMA-01-102411 | S PARMA-02-102411 | S PARMA-03-102411 | S PARMA-04-102411 |
| | Sample | SOUTH PARMA-01-102411-DUP | SOUTH PARMA-02-102411 | SOUTH PARMA-03-102411 | SOUTH PARMA-04-102411 |
| | Depth | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | N | N | N | N |
| Analyte | Units | Result | Result | Result | Result |
| Metals | | | | | |
| Arsenic | mg/kg | 15 | 13 | 9.3 | 13 |
| Barium | mg/kg | 83 | 67 | 57 | 76 |
| Beryllium | mg/kg | < 0.50 | < 0.50 | < 0.50 | < 0.50 |
| Cadmium | mg/kg | 0.83 | 0.51 | 0.47 | 0.54 |
| Chromium (Total) | mg/kg | 6.0 | 8.2 | 6.9 | 5.3 |
| Copper | mg/kg | 45 | 40 | 48 | 40 |
| Iron | mg/kg | --- | --- | --- | --- |
| Lead | mg/kg | 8.4 | 15 | 11 | 8.5 |
| Mercury (Total) | mg/kg | 0.14 | 0.23 | 0.12 | 0.12 |
| Molybdenum | mg/kg | 2.5 | 5.0 | 1.7 | 2.5 |
| Nickel | mg/kg | 14 | 9.6 | 12 | 10 |
| Selenium | mg/kg | 6.2 | 2.1 | 3.3 | 2.8 |
| Silver | mg/kg | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Vanadium | mg/kg | 14 | 11 | 13 | 10 |
| Zinc | mg/kg | 41 | 52 | 38 | 33 |
| PNA | | | | | |
| 2-Methylnaphthalene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Acenaphthene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Acenaphthylene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Anthracene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Benzo(a)anthracene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Benzo(a)pyrene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Benzo(b)fluoranthene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Benzo(g,h,i)perylene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Benzo(k)fluoranthene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Chrysene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Dibenzo(a,h)anthracene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Fluoranthene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Fluorene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Indeno(1,2,3-c,d)pyrene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Naphthalene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Phenanthrene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Pyrene | ug/kg | < 330 | < 330 | < 330 | < 330 |
| Solids | | | | | |
| Moisture | % | 70 | 51 | 51 | 64 |
| Solids | % | --- | --- | --- | --- |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | 10/24/2011 3:09:00 PM | 10/24/2011 3:18:00 PM | 10/24/2011 3:23:00 PM | 10/24/2011 3:26:00 PM |
|---|---|---|---|---|---|
| | Location | S PARMA-01-102411 | S PARMA-02-102411 | S PARMA-03-102411 | S PARMA-04-102411 |
| | Sample | SOUTH PARMA-01-102411-DUP | SOUTH PARMA-02-102411 | SOUTH PARMA-03-102411 | SOUTH PARMA-04-102411 |
| | Depth | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | N | N | N | N |
| Analyte | Units | Result | Result | Result | Result |
| TPH | | | | | |
| Diesel Range Organics (C10-C20) | mg/kg | 35 | 53 | 43 | 48 |
| Diesel Range Organics (C10-C20) | ug/kg | --- | --- | --- | --- |
| Gasoline Range Organics (C6-C10) | mg/kg | < 4.0 | < 4.0 | < 4.0 | < 4.0 |
| Gasoline Range Organics (C6-C10) | ug/kg | --- | --- | --- | --- |
| Oil Range Organics (C20-C34) | mg/kg | 640 | 1100 | 390 | 460 |
| Oil Range Organics (C20-C34) | ug/kg | --- | --- | --- | --- |
| VOC | | | | | |
| 1,1,1,2-Tetrachloroethane | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,1,1-Trichloroethane | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,1,2,2-Tetrachloroethane | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,1,2-Trichloroethane | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,1-Dichloroethane | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,1-Dichloroethylene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,2,3-Trichlorobenzene | ug/kg | < 590 | < 250 | < 250 | < 380 |
| 1,2,3-Trichloropropane | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,2,3-Trimethylbenzene | ug/kg | < 590 | < 250 | < 250 | < 380 |
| 1,2,4-Trichlorobenzene | ug/kg | < 590 | < 250 | < 250 | < 380 |
| 1,2,4-Trimethylbenzene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,2-Dichlorobenzene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,2-Dichloroethane | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,2-Dichloropropane | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,3,5-Trimethylbenzene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,3-Dichlorobenzene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,3-Dichloropropene, cis | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,3-Dichloropropene, trans | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,4-Dichloro-2-butene, trans | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 1,4-Dichlorobenzene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| 2-Butanone (MEK) | ug/kg | < 2000 | < 750 | < 750 | < 1300 |
| 2-Hexanone | ug/kg | < 2500 | < 2500 | < 2500 | < 2500 |
| 2-Methylnaphthalene | ug/kg | < 2000 | < 690 | < 730 | < 1300 |
| 4-Methyl-2-pentanone (MIBK) | ug/kg | < 2500 | < 2500 | < 2500 | < 2500 |
| Acetone | ug/kg | < 4900 | < 1700 | < 1800 | < 3200 |
| Acrylonitrile | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Benzene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Bromobenzene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Bromochloromethane | ug/kg | < 590 | < 210 | < 220 | < 380 |

Table 1. Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| | Date \ Time Collected | 10/24/2011 3:09:00 PM | 10/24/2011 3:18:00 PM | 10/24/2011 3:23:00 PM | 10/24/2011 3:26:00 PM |
|---|---|---|---|---|---|
| | Location | S PARMA-01-102411 | S PARMA-02-102411 | S PARMA-03-102411 | S PARMA-04-102411 |
| | Sample | SOUTH PARMA-01-102411-DUP | SOUTH PARMA-02-102411 | SOUTH PARMA-03-102411 | SOUTH PARMA-04-102411 |
| | Depth | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | N | N | N | N |
| Analyte | Units | Result | Result | Result | Result |
| Bromodichloromethane | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Bromoform | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Bromomethane | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Carbon disulfide | ug/kg | < 590 | < 250 | < 250 | < 380 |
| Carbon tetrachloride | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Chlorobenzene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Chloroethane | ug/kg | < 2000 | < 690 | < 730 | < 1300 |
| Chloroform | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Chloromethane | ug/kg | < 590 | < 250 | < 250 | < 380 |
| cis-1,2-Dichloroethylene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Cyclohexane | ug/kg | < 590 | < 500 | < 500 | < 500 |
| Dibromochloromethane | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Dibromochloropropane | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Dibromomethane | ug/kg | < 590 | < 250 | < 250 | < 380 |
| Dichlorodifluoromethane | ug/kg | < 590 | < 250 | < 250 | < 380 |
| Diethyl ether | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Di-isopropyl ether (DIPE) | ug/kg | < 590 | < 250 | < 250 | < 380 |
| Ethylbenzene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Ethylene dibromide | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Ethyl-tert-butyl ether (ETBE) | ug/kg | < 590 | < 250 | < 250 | < 380 |
| Hexachloroethane | ug/kg | < 590 | < 300 | < 300 | < 380 |
| Isopropyl benzene | ug/kg | < 590 | < 250 | < 250 | < 380 |
| m&p-Xylene | ug/kg | < 1200 | < 420 | < 440 | < 760 |
| Methyl Iodide | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Methylene chloride | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Methyl-tert-butyl ether (MTBE) | ug/kg | < 590 | < 250 | < 250 | < 380 |
| Naphthalene | ug/kg | < 2000 | < 690 | < 730 | < 1300 |
| n-Butylbenzene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| n-Propylbenzene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| o-Xylene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| p-Isopropyl toluene (p-Cymene) | ug/kg | < 590 | < 210 | < 220 | < 380 |
| sec-Butylbenzene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Styrene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| t-Amyl methyl ether (TAME) | ug/kg | < 590 | < 250 | < 250 | < 380 |
| t-Butyl alcohol | ug/kg | < 2500 | < 2500 | < 2500 | < 2500 |
| t-Butylbenzene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Tetrachloroethylene | ug/kg | < 590 | < 210 | < 220 | < 380 |

| | Date \ Time Collected | 10/24/2011 3:09:00 PM | 10/24/2011 3:18:00 PM | 10/24/2011 3:23:00 PM | 10/24/2011 3:26:00 PM |
|---|---|---|---|---|---|
| | Location | S PARMA-01-102411 | S PARMA-02-102411 | S PARMA-03-102411 | S PARMA-04-102411 |
| | Sample | SOUTH PARMA-01-102411-DUP | SOUTH PARMA-02-102411 | SOUTH PARMA-03-102411 | SOUTH PARMA-04-102411 |
| | Depth | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft | 0 - 0.5 ft |
| | Type | N | N | N | N |
| Analyte | Units | Result | Result | Result | Result |
| Tetrahydrofuran | ug/kg | < 2000 | < 1000 | < 1000 | < 1300 |
| Toluene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| trans-1,2-Dichloroethylene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Trichloroethylene | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Trichlorofluoromethane | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Vinyl chloride | ug/kg | < 590 | < 210 | < 220 | < 380 |
| Xylenes | ug/kg | < 1200 | < 420 | < 440 | < 760 |

Table 1. Footnotes - Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| Soil Footnotes: |
|---|
| Criteria were promulgated March 25, 2011 within the Administrative Rules for Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. |
| MDEQ Operational Memorandum 2, Attachment 5 states that soil samples taken from the saturated zone cannot be accurately compared to criteria developed for unsaturated soils. |
| **Bold values are concentrations detected above the reporting limit.** |
| Shaded values exceed Part 201 Generic Residential Cleanup Criteria. |
| (B) = Background, as defined in R 299.5701(b), may be substituted if higher than the calculated cleanup criterion. Background levels may be less than criteria for some inorganic compounds. |
| (C) = Value presented is a screening level based on the chemical-specific generic soil saturation concentration ($C_{sat}$) since the calculated risk-based criterion is greater than $C_{sat}$. Concentrations greater than $C^{sat}$ are acceptable criteria for this pathway where a site-specific demonstration indicates that free-phase material containing a hazardous substance is not present. |
| (D) = Calculated criterion exceeds 100 percent, hence it is reduced to 100 percent or 1.0E+9 parts per billion (ppb). |
| (G) = Groundwater surface water interface (GSI) criterion depends on the pH or water hardness, or both, of the receiving surface water…A spreadsheet that may be used to calculate GSI and GSI Protection Criteria for (G)-footnoted hazardous substances is available on the Department of Environmental Quality (DEQ) internet web site. *(See RRD Operational Memorandum No. 1, Attachment 1, Footnotes for additional information.)* |
| (I) = Hazardous substance may exhibit the characteristic of ignitability as defined in 40 C.F.R. §261.21 (revised as of July 1, 2001), which is adopted by reference in these rules and is available for inspection at the DEQ, 525 West Allegan Street, Lansing, Michigan. Copies of the regulation may be purchased, at a cost as of the time of adoption of these rules of $45, from the Superintendent of Documents, Government Printing Office, Washington, DC 20401 (stock number 869-044-00155-1), or from the DEQ, Remediation and Redevelopment Division (RRD), 525 West Allegan Street, Lansing, Michigan 48933, at cost. |
| (J) = Hazardous substance may be present in several isomer forms. Isomer-specific concentrations shall be added together for comparison to criteria. |
| (M) = Calculated criterion is below the analytical target detection limit, therefore, the criterion defaults to the target detection limit. |
| (Q) = Criteria for carcinogenic polycyclic aromatic hydrocarbons were developed using relative potential potencies to benzo(a)pyrene. |
| (R) = Hazardous substance may exhibit the characteristic of reactivity as defined in 40 C.F.R. §261.23 (revised as of July 1, 2001), which is adopted by reference in these rules and is available for inspection at the DEQ, 525 West Allegan Street, Lansing, Michigan. Copies of the regulation may be purchased, at a cost as of the time of adoption of these rules of $45, from the Superintendent of Documents, Government Printing Office, Washington, DC 20401 (stock number 869-044-00155-1), or from the DEQ, 525 West Allegan Street, Lansing, Michigan 48933, at cost. |
| (W) Concentrations of trihalomethanes in groundwater shall be added together to determine compliance with the Michigan drinking water standard of 80 ug/L. Concentrations of trihalomethanes in soil shall be added together to determine compliance with the drinking water protection criterion of 1,600 ug/kg. |
| (X) = The GSI criterion shown in the generic cleanup criteria tables is not protective for surface water that is used as a drinking water source. |
| (Z) = Mercury is typically measured as total mercury. The generic cleanup criteria, however, are based on data for different species of mercury. |
| (DD) = Hazardous substance causes developmental effects. Residential direct contact criteria are protective of both prenatal and postnatal exposure. Nonresidential direct contact criteria are protective for a pregnant adult receptor. |
| % = percent. |
| --- = not completed/not analyzed. |
| ft = feet. |
| ID = insufficient data to develop criterion. |
| mg/kg = milligrams per kilogram. |
| N = normal. |

Table 1. Footnotes - Potential Backfill Sources Soil Analytical Data
Enbridge Line 6B MP 608 Marshall, MI Pipeline Release
Enbridge Energy, Limited Partnership

| |
|---|
| NA = criterion or value is not available or data is not applicable. |
| NCE = no criteria established. |
| NLL = hazardous substance is not likely to leach under most soil conditions. |
| NLV = hazardous substance is not likely to volatilize under most conditions. |
| pH = a measure of the acidity or basicity of an aqueous solution. |
| PNA = polynuclear aromatic hydrocarbon. |
| ppb = parts per billion. |
| RD = regulatory duplicate. |
| TPH = total petroleum hydrocarbon. |
| ug/kg = micrograms per kilogram. |
| VOC = volatile organic compound. |

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

# Appendix E

# Level 1 Reviews of Laboratory Analytical Results

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

**Project Name: Marshall Line 6B Incident**
**Laboratory: Alpha Analytical, Inc.**
**Laboratory Report No.: 1207011**
**Matrix: Sediment and Soil/Solid Quality Control Matrix**

The laboratory report cited above contained the results for eleven field samples, one field duplicate and one trip blank.

Level 1 review was performed using the laboratory report and electronic data deliverable. The review included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody;
- Verification of field sample IDs;
- Review of the sample receipt forms for proper sample preservation.
- Identification of potential data usability issues based on holding times, recoveries of surrogates, laboratory control samples, or matrix spikes, and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *USEPA National Functional Guidelines for Organic Data Review, USEPA National Functional Guidelines for Inorganic Data Review*, and the Kalamazoo River Analytical Quality Assurance Plan (version 2.2).

The following samples were reviewed:

| Sample ID | Lab ID | Sample Date | Analyses |
|---|---|---|---|
| CSKR1925C05S071012DX | 1207011-01 | 07/10/2012 | 1,2,3 |
| CSKR1925C04S071012DX | 1207011-02 | 07/10/2012 | 1,2,3 |
| CSKR1925C04D071012DX | 1207011-03 | 07/10/2012 | 1,2,3 |
| CSKR1925C04T071012MX | 1207011-04 | 07/10/2012 | 1,2 |
| CSKR1475C01S071112DX | 1207011-05 | 07/11/2012 | 1,2,3 |
| CSKR1475C02S071112DX | 1207011-06 | 07/11/2012 | 1,2,3 |
| CSKR1475C03S071112DX | 1207011-07 | 07/11/2012 | 1,2,3 |
| CSKR2150C01S071212DX | 1207011-08 | 07/12/2012 | 1,2,3 |
| CSKR2150C02S071212DX | 1207011-09 | 07/12/2012 | 1,2,3 |
| CSKR2150C03S071212DX | 1207011-10 | 07/12/2012 | 1,2,3 |
| CSKR3610C01S071612DX | 1207011-11 | 07/16/2012 | 1,2,3 |
| CSKR3610C02S071612DX | 1207011-12 | 07/16/2012 | 1,2,3 |
| CSKR3610C03S071612DX | 1207011-13 | 07/16/2012 | 1,2,3 |

**Analyses Performed Codes:**
[1] Alkylated PAHs/Biomarkers by GC/MS Modified8270C-SIM
[2] Saturated Hydrocarbons by GC-FID Modified Method 8015D
[3] Total Organic Carbon

Results:

- All requested analyses identified on the Chain-of-Custody were performed.

- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data are therefore considered acceptable for use with the following advisories: The trip blank for these samples was an empty Mason jar used in the Cylindrical Sampling Devices and was not pre-cleaned prior to use. The trip blank and method blanks were positive for selected compounds at low levels. The field duplicate pair CSKR1925C04S071012DX /CSKR1925C04D071012DX exceeded the RPD criteria for n-Tetracontane (C40), n-Tridecane, n-Nonatriacontane (C39), and TOC.

**Project Name: Marshall Line 6B Incident**
**Laboratory: Alpha Analytical, Inc.**
**Laboratory Report No.: 1208009**
**Matrix: Sediment and Soil/Solid Quality Control Matrix**

The laboratory report cited above contained the results for seventeen field samples.

Level 1 review was performed using the laboratory report and electronic data deliverable. The review included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody;
- Verification of field sample IDs;
- Review of the sample receipt forms for proper sample preservation.
- Identification of potential data usability issues based on holding times, recoveries of surrogates, laboratory control samples, or matrix spikes, and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *USEPA National Functional Guidelines for Organic Data Review, USEPA National Functional Guidelines for Inorganic Data Review*, and the Kalamazoo River Analytical Quality Assurance Plan (version 2.2).

The following samples were reviewed:

| Sample ID | Lab ID | Sample Date | Analyses |
|---|---|---|---|
| SEKR2025C702S072412DX | 1208009-01 | 07/24/2012 | 1,2 |
| SEKR2025C702S072412D005 | 1208009-02 | 07/24/2012 | 1,2 |
| SEKR2850C701S072412DX | 1208009-03 | 07/24/2012 | 1,2 |
| SEKR2850C701S072412D003 | 1208009-04 | 07/24/2012 | 1,2 |
| SEKR1900C701S072512DX | 1208009-05 | 07/25/2012 | 1,2 |
| SEKR1900C701S072512D005 | 1208009-06 | 07/25/2012 | 1,2 |
| SEKR1900C701S072512D009 | 1208009-07 | 07/25/2012 | 1,2 |
| SEKR3650C701S072512DX | 1208009-08 | 07/25/2012 | 1,2 |
| SEKR3650C701S072512D006 | 1208009-09 | 07/25/2012 | 1,2 |
| SEKR3650C701S072512D010 | 1208009-10 | 07/25/2012 | 1,2 |
| SEKR3750C701S072512DX | 1208009-11 | 07/25/2012 | 1,2 |
| SEKR3750C701S072512D006 | 1208009-12 | 07/25/2012 | 1,2 |
| SEKR3750C701S072512D010 | 1208009-13 | 07/25/2012 | 1,2 |
| SEKR0425C701S072512DX | 1208009-14 | 07/25/2012 | 1,2 |
| SEKR0425C701S072512D007 | 1208009-15 | 07/25/2012 | 1,2 |
| SEKR3950C701S072612DX | 1208009-16 | 07/26/2012 | 1,2 |
| SEKR3950C701S072612D007 | 1208009-17 | 07/26/2012 | 1,2 |

**Analyses Performed Codes:**
[1] Alkylated PAHs/Biomarkers by GC/MS Modified8270C-SIM
[2] Saturated Hydrocarbons by GC-FID Modified Method 8015D

Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data are therefore considered acceptable for use with the following advisories:Samples 1208009-08, 09,11, 14, 16, and 17 were 20.5 to 29.6 %solids, low level hits were present in all method blanks, and laboratory duplicate analysis for all analyses had several compounds with RPD nonconformances.

**Project Name: Marshall Line 6B Incident**
**Laboratory: Alpha Analytical, Inc.**
**Laboratory Report No.: 1208010**
**Matrix: Sediment and Soil/Solid Quality Control Matrix**

The laboratory report cited above contained the results for eighteen field samples.

Level 1 review was performed using the laboratory report and electronic data deliverable. The review included the following:

- Comparison of results to the requested analyses on the Chain-of-Custody;
- Verification of field sample IDs;
- Review of the sample receipt forms for proper sample preservation.
- Identification of potential data usability issues based on holding times, recoveries of surrogates, laboratory control samples, or matrix spikes, and/or quality control issues identified in the laboratory report narrative.

Criteria for assessing data usability were derived from the *USEPA National Functional Guidelines for Organic Data Review, USEPA National Functional Guidelines for Inorganic Data Review*, and the Kalamazoo River Analytical Quality Assurance Plan (version 2.2).

The following samples were reviewed:

| Sample ID | Lab ID | Sample Date | Analyses |
|---|---|---|---|
| SEKR3950C701S072612D013 | 1208010-01 | 07/26/2012 | 1,2 |
| SEKR1575C702S072612DX | 1208010-02 | 07/26/2012 | 1,2 |
| SEKR1575C702S072612D005 | 1208010-03 | 07/26/2012 | 1,2 |
| SEKR1575C702S072612D010 | 1208010-04 | 07/26/2012 | 1,2 |
| SEKR1575C701S072612DX | 1208010-05 | 07/26/2012 | 1,2 |
| SEKR1575C701S072612D007 | 1208010-06 | 07/26/2012 | 1,2 |
| SEKR1575C701S072612D013 | 1208010-07 | 07/26/2012 | 1,2 |
| SEKR1575C701S072612D019 | 1208010-08 | 07/26/2012 | 1,2 |
| SEKR3800C707S072712DX | 1208010-09 | 07/27/2012 | 1,2 |
| SEKR3800C707S072712D004 | 1208010-10 | 07/27/2012 | 1,2 |
| SEKR3800C707S072712D009 | 1208010-11 | 07/27/2012 | 1,2 |
| SEKR3800C707S072712D014 | 1208010-12 | 07/27/2012 | 1,2 |
| SEKR3800C709S072712DX | 1208010-13 | 07/27/2012 | 1,2 |
| SEKR3800C709S072712D006 | 1208010-14 | 07/27/2012 | 1,2 |
| SEKR3800C709S072712D011 | 1208010-15 | 07/27/2012 | 1,2 |
| SEKR3775C702S072712DX | 1208010-16 | 07/27/2012 | 1,2 |
| SEKR3775C702S072712D005 | 1208010-17 | 07/27/2012 | 1,2 |
| SEKR3775C702S072712D009 | 1208010-18 | 07/27/2012 | 1,2 |

**Analyses Performed Codes:**
[1] Alkylated PAHs/Biomarkers by GC/MS Modified8270C-SIM
[2] Saturated Hydrocarbons by GC-FID Modified Method 8015D

Results:

- All requested analyses identified on the Chain-of-Custody were performed.
- Sample IDs match the Chain-of-Custody.
- Sample condition and preservation on receipt at the laboratory was acceptable.
- No significant data usability issues were noted; the data are therefore considered acceptable for use with the following advisories:

All analyses have low level detects in the method blanks, selected laboratory duplicate RPDs exceeded the criteria, and samples 1208010-01, 02, 03,05, 06, 09, and 16 < 30% solids ranging 23.3% - 29.7%.

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

Appendix F

Waste Disposal

Bills of Lading

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

# STRAIGHT BILL OF LADING

ORIGINAL — NOT NEGOTIABLE

Shipper No. _____

Carrier No. 7184

Page 1 of 1

SET

(Name of carrier) (SCAC)

Date 7-27-12

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee FTC

Street

City Marshall State, MI Zip Code

FROM:
Shipper Wildlife Center

Street

City Battle Creek State MI Zip Code

24 hr. Emergency Contact Tel. No.

Route

Vehicle Number

| No. of Units & Container Type | HM | BASIC DESCRIPTION Proper Shipping Name, Hazard Class UN or NA Number, Packing Group or UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group | TOTAL QUANTITY (Weight, Volume, Gallons, etc.) | WEIGHT (Subject to Correction) | RATE | CHARGES (For Carrier Use Only) |
|---|---|---|---|---|---|---|
| 001 DM | | 1 DM of Decon Water to Cell 4 b sump | 25 gal | | | |
| 001 DM | | .1 yards of soil to FTC Cell 8 pile 137 | .1 yard | | | |
| 003 bags | | 3 bags of IDW trash to oily debris roll off | 50 lbs. | | | |

PLACARDS TENDERED: YES ☐ NO ☐

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(a) of Item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

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 labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

_____ Signature

REMIT C.O.D. TO: ADDRESS

COD Amt: $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shippor and accepted for himself and his assigns.

SHIPPER SM Dm 7-27-12

PER

CARRIER Bill Reid

PER 07/12/12

DATE

1

Permanent post-office address of shipper.

PRINTED ON RECYCLED PAPER USING SOYBEAN INK PRINTED WITH SOY INK

STYLE F365-4 © 2003 LABELMASTER® (800) 621-5808 www.labelmaster.com

# STRAIGHT BILL OF LADING

ORIGINAL — NOT NEGOTIABLE

Shipper No. 4931 *

Carrier No. 2184

Page 1 of 1

SET

(Name of carrier) ( SCAC)

Date 8-9-12

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee FTC

Street

City State, Zip Code

FROM:
Shipper C.3.2 Wildlife Center

Street

City State Zip Code

24 hr. Emergency Contact Tel. No.

Route

Vehicle Number

| No. of Units & Container Type | HM | BASIC DESCRIPTION Proper Shipping Name, Hazard Class UN or NA Number, Packing Group or UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group | TOTAL QUANTITY (Weight, Volume, Gallons, etc.) | WEIGHT (Subject to Correction) | RATE | CHARGES (For Carrier Use Only) |
|---|---|---|---|---|---|---|
| 002 DM | | 55 gallon Drums of water | 100 G | | | |
| 001 DM | | 55 Gallon drum of Soil | .1 yard | | | |
| 008 | | Jarvis bags of IDW | | | | |
| | | to city debris rolloff | | | | |

PLACARDS TENDERED: YES ☐ NO ☐

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of Item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

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 labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Signature

REMIT C.O.D. TO:
ADDRESS

COD Amt: $

C.O.D. FEE:
PREPAID ☐
COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐
Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER [signature]

PER SET

8-9-12

CARRIER [signature]

PER

DATE 8-9-12

1

Permanent post-office address of shipper.

PRINTED ON RECYCLED PAPER USING SOYBEAN INK PRINTED WITH SOY INK

STYLE F365-4 © 2003 LABELMASTER® (800) 621-5808 www.labelmaster.com

# STRAIGHT BILL OF LADING

ORIGINAL — NOT NEGOTIABLE

Shipper No. 4932

Carrier No. 2184

Page 1 of 1

SET - 0

(Name of carrier) ( SCAC)

Date 8-14-12

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee FTC Cell A/B Sump

Street

City Marshall State, MI Zip Cocle

FROM:
Shipper C3.2 - R.I.

Street

City Battle Creek State MI Zip Code

24 hr. Emergency Contact Tel. No.

Route

Vehicle Number 2184

| No. of Units & Container Type | HM | BASIC DESCRIPTION<br>Proper Shipping Name, Hazard Class UN or NA Number, Packing Group or UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group | TOTAL QUANTITY (Weight, Volume, Gallons, etc.) | WEIGHT (Subject to Correction) | RATE | CHARGES (For Carrier Use Only) |
|---|---|---|---|---|---|---|
| 001TP | | (Non-Haz, Non-Reg.) Water | 350 G | 2,800 P | | |

**PLACARDS TENDERED: YES ☐ NO ☒**

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of Item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

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 labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Signature

REMIT C.O.D. TO: ADDRESS

COD Amt: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER SET Env.

PER 8-14-12

CARRIER SET Env.

PER

DATE 8-14-12

1

Permanent post-office address of shipper.

PRINTED ON RECYCLED PAPER USING SOYBEAN INK PRINTED WITH SOY INK

STYLE F365-4 © 2003 LABELMASTER® (800) 621-5808 www.labelmaster.com

# STRAIGHT BILL OF LADING

ORIGINAL — NOT NEGOTIABLE

Shipper No. 4933 *

Carrier No. 2184

Page 1 of 1

SET
(Name of carrier) (SCAC)

Date 8-14-12

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:
Consignee 222 C-Drive North

Street

City Ceresco State, MI Zip Code

FROM:
Shipper SET

Street Pratt Ave

City Marshall, MI State Zip Code

24 hr. Emergency Contact Tel. No.

Route

Vehicle Number 2184

| No. of Units & Container Type | HM | BASIC DESCRIPTION Proper Shipping Name, Hazard Class UN or NA Number, Packing Group or UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group | TOTAL QUANTITY (Weight, Volume, Gallons, etc.) | WEIGHT (Subject to Correction) | RATE | CHARGES (For Carrier Use Only) |
|---|---|---|---|---|---|---|
| 001 TP | | Non-Potable Water - (used for fugitive dust control) | 1,000 G | 8,300 | | |

PLACARDS TENDERED: YES ☐ NO ☒

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of Item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

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.

_____ Signature

REMIT C.O.D. TO:
ADDRESS

COD Amt: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

_____ (Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID (except when box at right is checked) ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER SET Env.

PER [signature]

8-14-12

CARRIER SET Env.

PER

DATE 8-14-12

1

Permanent post-office address of shipper.

PRINTED ON RECYCLED PAPER USING SOYBEAN INK PRINTED WITH SOY INK

STYLE F365-4 © 2003 LABELMASTER® (800) 621-5808 www.labelmaster.com

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

# Appendix F

## Waste Disposal

## Hazardous Waste Manifests

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

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: MIK 752 366 161
2. Page 1 of: 1
3. Emergency Response Phone: 218-764-0361
4. Manifest Tracking Number: 006933129 JJK

**GENERATOR**

5. Generator's Name and Mailing Address
Enbridge Energy Partners
1601 Pratt
Marshall, MI
Generator's Phone: [redacted]

Generator's Site Address (if different than mailing address)
Enbridge Energy Partners
N1/2 Sec 1 & 2 T3S R6W
Marshall, MI 49068

6. Transporter 1 Company Name: Valley City ES
U.S. EPA ID Number: MID981156063

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

8. Designated Facility Name and Site Address
Plummers Environmental Services Inc.
10075 Sedrec Industrial Drive SW
Byron Center, MI 49315
Facility's Phone: [redacted]
U.S. EPA ID Number: MIK 111 229 563

| 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 |
|---|---|---|---|---|---|---|
| | 1. Water (not regulated by USDOT or USEPA) | 001 | TT | 10,000 | G | 029L |
| | 2. | | | | | |
| | 3. | | | | | |
| | 4. | | | | | |

14. Special Handling Instructions and Additional Information
1.) Non-Hazardous water (800) 878-3996

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: [illegible] Signature: [illegible] Month: 08 Day: 13 Year: 12

**INT'L**

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

**TRANSPORTER**

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Christopher C Potts Signature: [signature] Month: 08 Day: 13 Year: 12

Transporter 2 Printed/Typed Name: Signature: Month: Day: Year:

**DESIGNATED FACILITY**

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. 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.

GENERATOR'S INITIAL COPY

# VALLEY CITY ENVIRONMENTAL SERVICES, INC.

1040 Market Street SW, Grand Rapids, Michigan 49503-4893
Phone: (616) 235-1500 Fax: (616) 235-9507

**WO# 167929**

| | | | |
|---|---|---|---|
| **Generator** Enbridge Pipeline-Division Ave<br>1600 Division Dr<br>Marshall MI 49068 | **Driver** Chris Perkins | | **Start Day/Time** Mon 8/13/12 5:15 AM |
| | **Tractor** T164 **Trailer** 102 | | **Pickup Day/Time** Mon 8/13/12 8:00AM |
| **Phone** 847-276-7913 | **Box-In** | **Box-Out** | **Delivery Day/Time** Mon 8/13/12 |
| **Customer** SET Marshall Site<br>**Phone** | | | |

**Waste Stream/Activity:** Transportation from Enbridge Pipeline - Division Dr to Plummers Env.

**TSDF:** Plummers Environmental
10075 Sedroc Industrial Drive
Byron Center MI 49315
**TSDF Phone:** 616/877-3930

**TSDF#** MIK111229563

**ERG:**
**Manifest:** Generator
**Land Ban:** No
**EPA:** 029L
**Approval #:**

**DOT:** Non Regulated Waste Water
**Hzd Cls:** **UN/NA:** **PG:** **Components:**

#1 **Manifest #** 006933129 JJK **Volume:** 10000 gal
#2 **Other:** 007679754 JJK 6,200 gal **PO #:**

**Instructions:**

BRING A 4-3 REDUCER

TANKER WILL BE LOADED WITH A TRASH PUMP ONSITE

ONSITE CONTACT IS SEN DECKER 847-276-7913 *****CALL WHEN YOU ARE 1/2 HOUR AWAY******

**Directions:**

TRACK TIME PORTAL TO PORTAL

LEAVE VCES 5:45am

RETURN TO VCES _____

1. Customer acknowledges completion of activity described on this work order. Customer must pay all fees and expenses charged by Valley City Environmental Services, Inc. (Valley City) for the services, including any costs of collection.
2. Customer's Statements: (a) All of Customer's oral and written descriptions of the waste provided to Valley City are accurate. (b) Customer has chosen the facility to which the materials are to be transported. (c) The waste has been properly prepared for transport, recycling, or disposal. (d) Customer has authority to contract for transport, recycling, and disposal of the waste.
3. Customer must pay all costs incurred by Valley City resulting from any inaccuracy in Customer's Statements. Customer must indemnify Valley City for any damage to equipment or property incurred while equipment is under Customer's control, and for any claim arising from Valley City's

**Customer Signature** Shon Dan **Date** 8-13-12

| **Comments** | | **Arrival** | **Departure** |
|---|---|---|---|
| Load #1 | **Loading** | 8:00am | 9:15am |
| | **Unloading** | 10:43am | ~~11:45am~~ |

**Driver Instructions**

Load #2 Load Unload 1:15pm 2:15pm

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: MIK 752 366 161
2. Page 1 of: 1
3. Emergency Response Phone: 218-267-0346
4. Manifest Tracking Number: 007679753 JJK

**GENERATOR**

5. Generator's Name and Mailing Address
Everidge Energy Brothers
160 Fifth St
Marshall MI 49068
Generator's Phone: [redacted]

Generator's Site Address (if different than mailing address)
Everidge Energy Brothers
NW2 Section 2 T3S R6W
Marshall, MI 49068

6. Transporter 1 Company Name: Wellcity Envr
U.S. EPA ID Number: MID 981 956 963

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

8. Designated Facility Name and Site Address
Plummers Environmental Service Inc
12075 Sedgley Industrial Drive
Byron Center MI 49315
Facility's Phone:
U.S. EPA ID Number: MIK 111 229 563

| 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 |
|---|---|---|---|---|---|---|
| | 1. Waste Antifreeze (Non-hazardous per 49 CFR 172.101) | 001 | DT | 5000 | P | D35 |
| | 2. | | | | | |
| | 3. | | | | | |
| | 4. | | | | | |

14. Special Handling Instructions and Additional Information
(1) Use nitrile gloves (7502 or 7496)

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: Crystal Vasilion
Signature:
Month: 8 Day: 20 Year: 12

**INT'L**

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

**TRANSPORTER**

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: GARY EDEMA
Signature:
Month: 8 Day: 20 Year: 12

Transporter 2 Printed/Typed Name
Signature
Month Day Year

**DESIGNATED FACILITY**

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. | 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.

GENERATOR'S INITIAL COPY

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: MIK 752 366 161
2. Page 1 of: 1
3. Emergency Response Phone: 218-769-[redacted]
4. Manifest Tracking Number: 007679754 JJK

**GENERATOR**

5. Generator's Name and Mailing Address
Enbridge Energy Partners
1401 Front
Marshall MI [redacted]
Generator's Phone:

Generator's Site Address (if different than mailing address)
Enbridge Energy Partners
NW 1/2 Section 2 T3S R6W
Marshall, MI 49068

6. Transporter 1 Company Name: Veller Oil Co Inc
U.S. EPA ID Number:

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

8. Designated Facility Name and Site Address
Pheasant Environmental Services
10275 Salvage Industrial Dr. SW
Byron Center MI 49315
Facility's Phone: [redacted]
U.S. EPA ID Number: MIK 111 229 563

| 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 |
|---|---|---|---|---|---|---|
| | 1. Waste Non Regulated by USDOT or USEPA | 001 | TT | 6200 | G | D249 |
| | 2. | | | | | |
| | 3. | | | | | |
| | 4. | | | | | |

14. Special Handling Instructions and Additional Information
1.) Non Hazardous Water [redacted]

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: Alison Schmitt — Signature — Month: 08 Day: 13 Year: 12

**INT'L**

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

**TRANSPORTER**

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Chester G Parkis — Signature — Month: 08 Day: 13 Year: 12

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

**DESIGNATED FACILITY**

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. | 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.

GENERATOR'S INITIAL COPY

# VALLEY CITY ENVIRONMENTAL SERVICES, INC.

1040 Market Street SW, Grand Rapids, Michigan 49503-4893
Phone: (616) 235-1500 Fax: (616) 235-9507

**WO# 167929**

| | | | |
|---|---|---|---|
| **Generator** Enbridge Pipeline-Division Ave<br>1600 Division Dr<br>Marshall MI 49068 | **Driver** Chris Perkins | | **Start Day/Time** Mon 8/13/12 5:15 AM |
| | **Tractor** T164 **Trailer** 102 | | **Pickup Day/Time** Mon 8/13/12 8:00AM |
| **Phone** 847-276-7913 | **Elox-In** | **Box-Out** | **Delivery Day/Time** Mon 8/13/12 |
| **Customer** SET Marshall Site<br>**Phone** | | | |

**Waste Stream/Activity:** Transportation from Enbridge Pipeline - Division Dr to Plummers Env.

**TSDF:** Plummers Environmental
10075 Sedroc Industrial Drive
Byron Center MI 49315
**TSDF Phone:** 616/877-3930
**DOT:** Non Regulated Waste Water

**TSDF#** MIK111229563

**ERG:**
**Manifest:** Generator
**Land Ban:** No
**EPA:** 029L
**Approval #:**

**Hzd Cls:** **UN/NA:** **PG:** **Components:**

#1 **Manifest #** 006933129 JJK **Volume:** 10000 gal
#2 **Other:** 007629754 JJK 6,200 gal **PO #:**

**Instructions:**

BRING A 4-3 REDUCER

TANKER WILL BE LOADED WITH A TRASH PUMP ONSITE

ONSITE CONTACT IS SEN DECKER 847-276-7913 *****CALL WHEN YOU ARE 1/2 HOUR AWAY*****

**Directions:**

TRACK TIME PORTAL TO PORTAL

LEAVE VCES 5:45pm

RETURN TO VCES _____

1. Customer acknowledges completion of activity described on this work order. Customer must pay all fees and expenses charged by Valley City Environmental Services, Inc. (Valley City) for the services, including any costs of collection.
2. Customer's Statements: (a) All of Customer's oral and written descriptions of the waste provided to Valley City are accurate. (b) Customer has chosen the facility to which the materials are to be transported. (c) The waste has been properly prepared for transport, recycling, or disposal. (d) Customer has authority to contract for transport, recycling, and disposal of the waste.
3. Customer must pay all costs incurred by Valley City resulting from any inaccuracy in Customer's Statements. Customer must indemnify Valley City for any damage to equipment or property incurred while equipment is under Customer's control, and for any claim arising from Valley City's

**Customer Signature** Shon Dan **Date** 8-13-12

| **Comments** | | **Arrival** | **Departure** |
|---|---|---|---|
| Load #1 | **Loading** | 8:00am | 9:15am |
| | **Unloading** | 10:45am | 11:45am |

**Driver Instructions**

Load #2 Ld 1:15pm 2:15pm
Unld

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: MIK752366161
2. Page 1 of: 1
3. Emergency Response Phone: (800) 396-5994
4. Manifest Tracking Number: 009610720 JJK

**GENERATOR**

5. Generator's Name and Mailing Address
ENBRIDGE ENERGY, LIMITED PARTNERSHIP
ATTN: ~~DORAN LEFAVE~~ Alison Schoeff
1601 PRATT AVE
MARSHALL, MI 49068
Generator's Phone:

Generator's Site Address (if different than mailing address)
ENBRIDGE ENERGY, LIMITED PARTNERSHIP
1601 PRATT AVE
MARSHALL, MI 49068

6. Transporter 1 Company Name: LIQUID INDUSTRIAL WASTE SERVICE INC.
U.S. EPA ID Number: MID006546121

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

8. Designated Facility Name and Site Address
LIQUID INDUSTRIAL WASTE SERVICE INC.
11325 E LAKEWOOD BLVD
HOLLAND, MI 49424
(616) 396-5994
Facility's Phone:
U.S. EPA ID Number: MID006546121

| 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 |
|---|---|---|---|---|---|---|
| | 1. NON-HAZARDOUS WATER, N.O.S. | 1 | TT | 12000 | G | 029L |
| | 2. | | | | | |
| | 3. | | | | | |
| | 4. | | | | | |

14. Special Handling Instructions and Additional Information
LWG APPROVAL #11-180
ON BEHALF OF ENBRIDGE ENERGY LIMITED PARTNERSHIP

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: Alison Schoeff
Signature:
Month: 07 Day: 25 Year: 12

**INT'L**

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

**TRANSPORTER**

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: LEE NIENHUIS/JAMIE NIENHUIS/KIRK GEERLINGS/STEVE KAPTEIN
Signature:
Month: 07 Day: 25 Year: 12

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

**DESIGNATED FACILITY**

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. | 2. | 3. | 4. |
|---|---|---|---|
| H135 | | | |

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: JULIE SNIDER/ LAUREN NYKAMP
Signature:
Month: 7 Day: 25 Year: 12

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR

Enbridge Line 6B MP 608 Pipeline Release

Marshall, Michigan

# Appendix F

## Waste Disposal

## Non-Hazardous Waste Manifests

Prepared for U.S. EPA and MDEQ

Enbridge Energy, Limited Partnership

Submitted: September 27, 2012

MANIFEST NUMBER
697001

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPAN  b. Generator Location: C04

c. Address: VOLPENTEST AVE.  d. Address:

MARSHALL, MI 49068  BOX # 3402

e. Phone No.: [redacted]  f. Phone No.: LOC

g. Waste Common Name: SOIL FROM ANS PIPELINE RELEASE  MSW

Color: GUNCK 3039  Odor:

h. Special Waste Approval Number: EGLE ANS  POLLUTION ANS  ANS 2.04 (n)

i. Customer Account Number:

On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schaeffer  Generator Authorized Agent Name

Signature

08/17/12  Shipment Date

| TYPE | |
|---|---|
| DM | - METAL DRUM |
| DP | - PLASTIC DRUM |
| DF | - FIBER DRUM |
| BG | - BAG |
| TR | - TRUCK |
| OT | - OTHER |

| UNITS | |
|---|---|
| P | - POUNDS |
| Y | - CUBIC YARDS |
| T | - TONS |
| O | - OTHER |

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley City E.S.

b. Address: 1040 Market St

Grand Rapids MI.

c. Driver Name: Terry Fe Angel

d. Phone No. [redacted]  Truck No.: 118

f. Vehicle License No./State: RA 32563 MI

Acknowledgement of Receipt of Materials Described Above.

g. Driver Signature

08/17/12  Shipment Date

### TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.:  l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature  Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL  b. Phone No.: 269-781-9742

c. Physical Address: 14300 P. DRIVE NORTH  d. Mailing Address: 9:19

MARSHALL, MI 49068  VALLEY 118

e. TICKET No.: 21680

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Authorized Agent Name  Signature  08/17/12  Shipment Date

White - Disposal Facility  Yellow - Transporter Copy  Pink - Generator 2nd Copy  Gold - Generator 1st Copy

MANIFEST NUMBER
697001

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: CC4

c. Address: 1411 PRATT AVE

MARSHALL, MI 49068

d. Address: BOX # 3402

e. Phone No.: [redacted]

f. Phone No.: LOC

g. Waste Common Name: SITE ERO'S PIPELINE RELEASE MSW

Color: BLACK 5YR 2.5/1 30 39

Odor:

h. Special Waste Approval Number: 204 IN

i. Customer Account Number: Enbridge Energy Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

TYPE
DM - METAL DRUM
DP - PLASTIC DRUM
DF - FIBER DRUM
BG - BAG
TR - TRUCK
OT - OTHER

UNITS
P - POUNDS
Y - CUBIC YARDS
T - TONS
O - OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Allison Schmidt — Generator Authorized Agent Name

Signature

Shipment Date: 08/17/12

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Lady Bug Trucking

b. Address: 1010 Hwy 55

Grand Rapids, MN

c. Driver Name: Tony Te Brake

d. Phone No.: [redacted] Truck No.: 115

f. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

g. Driver Signature

Shipment Date: 08/17/12

### TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature

Shipment Date:

## DISPOSAL FACILITY INFORMATION

a. Site Name: CSC LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14300 P. DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address: 4:17 PM Valley 4 112

e. TICKET No.: 21600

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Authorized Agent Name

Signature

Shipment Date: 08/17/12

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

00026471

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 500710130389

| SITE | TICKET | GRID |
|---|---|---|
| | 211680 | |

WEIGHTMASTER: AMY B

| DATE IN | TIME IN |
|---|---|
| 17 August 2012 | 7:19 AM |

| DATE OUT | TIME OUT |
|---|---|
| 17 August 2012 | 7:19 AM |

| VEHICLE | ROLL OFF |
|---|---|
| WELLSTEAD | |

| REFERENCE | ORIGIN |
|---|---|
| 697001 | CALHOUN |

Gross Weight 40,340.00 lb
Stored Tare Weight 36,260.00 lb Inbound - TICKET
Net Weight 4,080.00 lb 2.04 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 2.04 | TN | SUB-CONT SOIL | | | | |

Manifest:

THANK YOU ! HAVE A GREAT DAY !
HOURS
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| CHANGE |
| CHECK NO. |

REPUBLIC SERVICES, INC.

REV 06/12

SIGNATURE

RS-F04

MANIFEST NUMBER
697002

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY
b. Generator Location: FTC
c. Address: 1601 PRATT AVE.
MARSHALL, MI 49068
d. Address: BOX # [redacted]03273
e. Phone No.: [redacted]
f. Phone No.: LOC:
g. Waste Common Name: ~~SEE FROM PIPELINE RELEASE~~ MNS Municipal Solid Waste
Color:
Odor: 600710130039
h. Special Waste Approval Number: ~~BOIR-11-0280~~ MNS ~~FOIR-23-08~~ MNS 2,65 ton
i. Customer Account Number:
On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

TYPE
DM - METAL DRUM
DP - PLASTIC DRUM
DF - FIBER DRUM
BG - BAG
TR - TRUCK
OT - OTHER

UNITS
P - POUNDS
Y - CUBIC YARDS
T - TONS
O - OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alisa Schoeff — Generator Authorized Agent Name
Signature
Shipment Date: 08/17/12

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley City E.S.
b. Address: 1040 Market St
Grand Rapids, MI.
c. Driver Name: Jerry Ter Avest
d. Phone No.: [redacted]
e. Truck No.: 118
f. Vehicle License No./State: EA 37863 MI
Acknowledgement of Receipt of Materials Described Above.
g. Driver Signature
Shipment Date: 08/17/12

### TRANSPORTER 2

h. Name:
i. Address:
j. Driver Name:
k. Phone No.:
l. Truck No.:
m. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
n. Driver Signature
Shipment Date:

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 14300 P. DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address:
e. TICKET No.: 211702

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Authorized Agent Name
Signature
Shipment Date: 08/17/12

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

MANIFEST NUMBER
697002

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY
b. Generator Location: FTC

c. Address: [illegible]
MARSHALL, MI 49068
d. Address: BOX # [redacted] 3273

e. Phone No.: [redacted]
f. Phone No.: LOC:

g. Waste Common Name: ~~SAND FROM PIPELINE RELEASE~~ Municipal Solid Waste
Color: [illegible]
Odor: [illegible]
h. Special Waste Approval Number: [illegible]
2,65 ton

i. Customer Account Number: On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | | 25 | Y |

TYPE
DM - METAL DRUM
DP - PLASTIC DRUM
DF - FIBER DRUM
BG - BAG
TR - TRUCK
OT - OTHER

UNITS
P - POUNDS
Y - CUBIC YARDS
T - TONS
O - OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Allison Schmitt — Generator Authorized Agent Name
[signature] — Signature
Shipment Date: 08/17/14

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley Eco Ex
b. Address: 1000 N. [illegible]
Grand Rapids MI
c. Driver Name: Jeff Fox
d. Phone No.: [redacted]
e. Truck No.: 118
f. Vehicle License No./State: AA 37323 MI
Acknowledgement of Receipt of Materials Described Above.
g. [signature] — Driver Signature
Shipment Date: 08/17/14

### TRANSPORTER 2

h. Name:
i. Address:
j. Driver Name:
k. Phone No.: l. Truck No.:
m. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
n. Driver Signature
Shipment Date:

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 14300 M-96 DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address:
e. TICKET No.: 211702

I hereby certify that the material described above has been accepted for disposal at this facility.

f. [signature] — Authorized Agent Name
[signature] — Signature
Shipment Date: 08/17/14

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

00026493

C&C LANDFILL
14800 P DRIVE NORTH
MARSHALL MI
49068
000228
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 500710139?

| SITE | TICKET | GRID |
|---|---|---|
| | 211702 | |

WEIGHMASTER: AMY B

| DATE IN | TIME IN |
|---|---|
| 27 August 2012 | 10:43 AM |

| DATE OUT | TIME OUT |
|---|---|
| 27 August 2012 | 10:43 AM |

| VEHICLE | ROLL OFF |
|---|---|
| VAL118T250 | |

| REFERENCE | ORIGIN |
|---|---|
| 577003 | CALHOUN |

Gross Weight 41,560.00 lb
Stored Tare Weight 36,260.00 lb Inbound - TICKET
Net Weight 5,300.00 lb 2.65 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 2.65 | TN | SH-CONT SOIL | | | | |

manifest:

THANK YOU ! HAVE A GREAT DAY !
***** HOURS *****
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

REV 06/12

SIGNATURE _____

RS-F04

MANIFEST NUMBER
697003

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: FTC

c. Address: 1601 PRATT AVE.

MARSHALL, MI 49068

d. Address: BOX # 69

e. Phone No.: [redacted]

f. Phone No.: LOC:

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ Municipal Solid Waste

Color:

Odor:

h. Special Waste Approval Number: ~~SOIL~~ ~~FOR~~ 6007101303 9

i. Customer Account Number:

On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 20 | Y |

TYPE
DM - METAL DRUM
DP - PLASTIC DRUM
DF - FIBER DRUM
BG - BAG
TR - TRUCK
OT - OTHER

UNITS
P - POUNDS
Y - CUBIC YARDS
T - TONS
O - OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoff — Generator Authorized Agent Name

Signature

08/17/12 — Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley City Fuels

b. Address: 1010 Market St

Grand Rapids MI.

c. Driver Name: Jerry Turbest

d. Phone No.: [redacted] e. Truck No.: 115

f. Vehicle License No./State: 1A 37563 MI

Acknowledgement of Receipt of Materials Described Above.

g. Jerry Turbest — Driver Signature

08/17/12 — Shipment Date

### TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature

Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14900 P. DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address:

e. TICKET No.: 211722

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Statler — Authorized Agent Name

Amy Statler — Signature

08/17/12 — Shipment Date

White - Disposal Facility  Yellow - Transporter Copy  Pink - Generator 2nd Copy  Gold - Generator 1st Copy

1.44 tn

MANIFEST NUMBER
697003

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: FTC

c. Address: 101 PRATT AVE

d. Address: BOX 471

MARSHALL, MI 49068

e. Phone No.: [redacted]

f. Phone No.: LOCK

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ Municipal Solid Waste

Color: _____ Odor: _____

h. Special Waste Approval Number: ~~MDEQ 2-0000~~ ~~MDEQ 2-00~~ 6A710139

i. Customer Account Number: On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 20 | Y |

| TYPE | |
|---|---|
| DM | - METAL DRUM |
| DP | - PLASTIC DRUM |
| DF | - FIBER DRUM |
| BG | - BAG |
| TR | - TRUCK |
| OT | - OTHER |

| UNITS | |
|---|---|
| P | - POUNDS |
| Y | - CUBIC YARDS |
| T | - TONS |
| O | - OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schaaf — Generator Authorized Agent Name

Signature

Shipment Date: 08 17 12

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Hall & Sons E.S.

b. Address: 10 Main St

Grand Rapids MI

c. Driver Name: Jerry Parker

d. Phone No.: [redacted] e. Truck No.: 118

f. Vehicle License No./State: [illegible]

Acknowledgement of Receipt of Materials Described Above.

g. _____ Driver Signature — Shipment Date: 08 17 12

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____ Driver Signature — Shipment Date: _____

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&D LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 13800 R. DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address: _____

e. TICKET No.: 211722

I hereby certify that the material described above has been accepted for disposal at this facility.

f. _____ Authorized Agent Name — Signature — Shipment Date: 08 17 12

White - Disposal Facility  Yellow - Transporter Copy  Pink - Generator 2nd Copy  Gold - Generator 1st Copy

00026513

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000723
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 50071013009

| SITE | TICKET | GRID |
|---|---|---|
| | 211722 | |

WEIGHTMASTER: AMY B

| DATE IN | TIME IN |
|---|---|
| 17 August 2012 | 12:00 pm |

| DATE OUT | TIME OUT |
|---|---|
| 17 August 2012 | 2:00 pm |

| VEHICLE | ROLL OFF |
|---|---|
| YHL118T300 | |

| REFERENCE | ORIGIN |
|---|---|
| 697003 | CALHOUN |

Gross Weight 38,960.00 lb
Stored Tare Weight 36,080.00 lb Inbound - TICKET
Net Weight 2,880.00 lb 1.44 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 1.44 | TN | SW-CONT SOIL | | | | |

ManiTest1

THANK YOU ! HAVE A GREAT DAY !
HOURS
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

REV 06/12

SIGNATURE _____

RS-F04

MANIFEST NUMBER
697004

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: FTC

c. Address: 1001 PRATT AVE.
MARSHALL, MI 49068

d. Address: BOX # X 2069

e. Phone No.: [redacted]

f. Phone No.: LOC:

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ ANS Municipal Solid Waste

Color: _____ Odor: dc per Glen

h. Special Waste Approval Number: ~~EGLE 10000~~ ANS ~~PEA 21-08~~ ANS

i. Customer Account Number: _____

On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 20 | Y |

| TYPE | |
|---|---|
| DM | - METAL DRUM |
| DP | - PLASTIC DRUM |
| DF | - FIBER DRUM |
| BG | - BAG |
| TR | - TRUCK |
| OT | - OTHER |

| UNITS | |
|---|---|
| P | - POUNDS |
| Y | - CUBIC YARDS |
| T | - TONS |
| O | - OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schaft — Generator Authorized Agent Name

Signature

Shipment Date: 08/23/12

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley City E.S.

b. Address: 1010 Market
Grand Rapids, MI

c. Driver Name: Scrap Tire Asst

d. Phone No. [redacted] e. Truck No.: 118

f. Vehicle License No./State: R137863 MI

Acknowledgement of Receipt of Materials Described Above.

g. Driver Signature — Shipment Date: 08/23/12

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature — Shipment Date: _____

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14900 P. DRIVE NORTH
MARSHALL, MI 49068

d. Mailing Address: VALLEY 118 9:03 PM

212287

e. TICKET No.: _____

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Scatterday — Authorized Agent Name

Signature

Shipment Date: 08/23/12

White - Disposal Facility  Yellow - Transporter Copy  Pink - Generator 2nd Copy  Gold - Generator 1st Copy

MANIFEST NUMBER
697004

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPAN
b. Generator Location: FTC
c. Address: 1401 PRATT AVE.
MARSHALL, MI 49068
d. Address: BOX Y 3009
e. Phone No.: [redacted]
f. Phone No.: LOC:
g. Waste Common Name: ANS ~~SEE FROM PIPELINE RELEASE~~ Municipal Solid Waste
Color: ~~BRIGHT GREEN~~ Odor: ~~PETROLEUM~~ DK Brown
h. Special Waste Approval Number: ~~EXEMPT DEQ~~ ANS ~~PGW-E-~~ PGW
i. Customer Account Number:
On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 20 | Y |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |
| **UNITS** | | |
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Mitch Smith — Generator Authorized Agent Name
Signature
Shipment Date: 08/23/12

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley City E.S.
b. Address: 1005 Main St
Grand Rapids, MI
c. Driver Name: Sandy Fox Auto
d. Phone No. [redacted] e. Truck No.: 116
f. Vehicle License No./State: 873763 MI
Acknowledgement of Receipt of Materials Described Above.
g. Driver Signature
Shipment Date: 08/23/12

### TRANSPORTER 2

h. Name:
i. Address:
j. Driver Name:
k. Phone No.: l. Truck No.:
m. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
n. Driver Signature
Shipment Date:

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 18300 F2 DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address: Valley 117 9.03 mm
e. TICKET No.: 212287

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Mary Beth Statler — Authorized Agent Name
Mary Beth Statler — Signature
Shipment Date: 08/23/12

White - Disposal Facility  Yellow - Transporter Copy  Pink - Generator 2nd Copy  Gold - Generator 1st Copy

00022080

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: GATE RATE

| SITE | TICKET | GRID |
|---|---|---|
| 48 | 612287 | |

WEIGHTMASTER: AMY B

| DATE IN | TIME IN |
|---|---|
| 23 August 2012 | 7:02 am |

| DATE OUT | TIME OUT |
|---|---|
| 23 August 2012 | 7:02 am |

| VEHICLE | ROLL OFF |
|---|---|
| VAL18T300 | |

| REFERENCE | ORIGIN |
|---|---|
| 597004 | CALHOUN |

Gross Weight 38,720.00 lb
Stored Tare Weight 36,080.00 lb Inbound - TICKET
Net Weight 2,640.00 lb 1.32 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 1.32 | TN | MSW | | | | |
| | | Manifest: | | | | |

THANK YOU ! HAVE A GREAT DAY !
****** HOURS ******
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

REV 06/12

SIGNATURE Jerry Lacoste

RS-F04

MANIFEST NUMBER
697006

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY
b. Generator Location: 13000 15 mile Rd

c. Address: 1501 PRATT AVE.
MARSHALL, MI 49068

d. Address: BOX # 2045

e. Phone No.: [redacted]

f. Phone No.: LOC:

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ ANS Municipal Solid Waste

Color: _____ Odor: _____

h. Special Waste Approval Number: ~~ANS~~ ~~ANS~~ 1,16 tn

i. Customer Account Number: _____

On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | CT | 25 | Y |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |
| **UNITS** | | |
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schaeffer _____ Shipment Date: 08/23/12
Generator Authorized Agent Name Signature

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley City E.S.

b. Address: 1010 Market
Grand Rapids MI.

c. Driver Name: James Fer Avot

d. Phone No. [redacted] e. Truck No.: 115

f. Vehicle License No./State: RA37863 MI

Acknowledgement of Receipt of Materials Described Above.

g. _____ Shipment Date: 08/23/12
Driver Signature

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____ Shipment Date: _____
Driver Signature

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14900 P. DRIVE NORTH
MARSHALL, MI 49068

d. Mailing Address: _____

e. TICKET No.: 212314

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Tony Keatley Tony Keatley Shipment Date: 08/23/12
Authorized Agent Name Signature

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

MANIFEST NUMBER
697006

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY
b. Generator Location: 1
c. Address: 400 PRATT AVE
MARSHALL, MI 49068
d. Address: BOX
e. Phone No.: [redacted]
f. Phone No.: LOC
g. Waste Common Name: ~~SOIL FROM POTENTIAL RELEASE~~ ANS Municipal Solid Waste
Color:
Odor: ANS
h. Special Waste Approval Number: ~~[illegible]~~ ANS ~~[illegible]~~ 1.16 lv
i. Customer Account Number:
On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| | | | |

| TYPE | |
|---|---|
| DM | - METAL DRUM |
| DP | - PLASTIC DRUM |
| DF | - FIBER DRUM |
| BG | - BAG |
| TR | - TRUCK |
| OT | - OTHER |

| UNITS | |
|---|---|
| P | - POUNDS |
| Y | - CUBIC YARDS |
| T | - TONS |
| O | - OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Allison Schenk — Generator Authorized Agent Name
Signature
Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Veolia ES
b. Address: 1015 Mill
Grand Rapids MI
c. Driver Name: Jerry Fox
d. Phone No.: [redacted] e. Truck No.:
f. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
g. Jerry Fox — Driver Signature
Shipment Date

### TRANSPORTER 2

h. Name:
i. Address:
j. Driver Name:
k. Phone No.: l. Truck No.:
m. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
n. Driver Signature
Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 13800 P. DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address:
e. TICKET No.: 212314

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Tim Kreiter — Authorized Agent Name
Signature
Shipment Date

White - Disposal Facility  Yellow - Transporter Copy  Pink - Generator 2nd Copy  Gold - Generator 1st Copy

00022107

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
0007238
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: GATE RATE

| | | |
|---|---|---|
| SITE 16 | TICKET 212314 | GRID |
| AMY B | WEIGHTMASTER | |
| DATE IN 23 August 2012 | | TIME IN 10:18 am |
| DATE OUT 23 August 2012 | | TIME OUT 10:18 am |
| VEHICLE VPL118T200 | | ROLL OFF |
| REFERENCE 697006 | ORIGIN CALHOUN | |

Gross Weight 38,400.00 lb
Stored Tare Weight 36,080.00 lb Inbound - TICKET
Net Weight 2,320.00 lb 1.16 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 1.16 | TN | MSW | | | | |
| | | Manifest: | | | | |

THANK YOU ! HAVE A GREAT DAY !
HOURS
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| TENDERED |
| CHANGE |
| CHECK NO. |

REPUBLIC SERVICES, INC.

REV 06/12

SIGNATURE

RS-F0

MANIFEST NUMBER
697012

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: 800 15 Mile Road

c. Address: 1601 PRATT AVE.
MARSHALL, MI 49068

d. Address: BOX 69 2069

e. Phone No.: [redacted]

f. Phone No.: LOC

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ PNS Municipal Solid Waste

Color: _____ Odor: _____

h. Special Waste Approval Number: ~~PNS~~ ~~SOIL-11-0003~~ PNS ~~PSW-21-08~~ 2.62 tn

i. Customer Account Number: _____

On behalf of Enbridge Energy Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 010 | T | 20 | Y |

| TYPE | |
|---|---|
| DM | - METAL DRUM |
| DP | - PLASTIC DRUM |
| DF | - FIBER DRUM |
| BG | - BAG |
| TR | - TRUCK |
| OT | - OTHER |

| UNITS | |
|---|---|
| P | - POUNDS |
| Y | - CUBIC YARDS |
| T | - TONS |
| O | - OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schmidt — Generator Authorized Agent Name

Signature

09 23 12 — Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley City E.S.

b. Address: 1010 Market
Grand Rapids, MI.

c. Driver Name: Jerry Terhorst

d. Phone No: [redacted] e. Truck No.: 114

f. Vehicle License No./State: R1-32563 MI

Acknowledgement of Receipt of Materials Described Above.

g. Jerry Terhorst — Driver Signature

09 23 12 — Shipment Date

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____ — Driver Signature

Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14300 F. DRIVE NORTH
MARSHALL, MI 49068

d. Mailing Address: _____

e. TICKET No.: 212353

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Beattie — Authorized Agent Name

Amy Beattie — Signature

09 23 12 — Shipment Date

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

MANIFEST NUMBER
697012

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: 1500 15 Mile Road

c. Address: 1401 PRATT AVE

MARSHALL, MI 49068

d. Address: BOX [illegible] 2069

e. Phone No.: [redacted]

f. Phone No.: 800

g. Waste Common Name: ~~SEE FROM PIPELINE RELEASE~~ Municipal Solid Waste

Color: _____ Odor: _____

h. Special Waste Approval Number: _____

i. Customer Account Number: _____

On behalf of Enbridge Energy Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 1 | DM | 60 | Y |

TYPE
DM - METAL DRUM
DP - PLASTIC DRUM
DF - FIBER DRUM
BG - BAG
TR - TRUCK
OT - OTHER

UNITS
P - POUNDS
Y - CUBIC YARDS
T - TONS
O - OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alan Seford — Generator Authorized Agent Name

Signature

Shipment Date: 6 2 0 1 2

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley Fly E.S.

b. Address: [illegible]

Grand Rapids MI

c. Driver Name: [illegible]

d. Phone No.: [redacted] e. Truck No.: [illegible]

f. Vehicle License No./State: [illegible]

Acknowledgement of Receipt of Materials Described Above.

g. _____ Driver Signature

Shipment Date: 6 2 5 1 2

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____ Driver Signature

Shipment Date: _____

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14300 F DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address: _____

e. TICKET No.: 12353

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Tony Castle — Authorized Agent Name

Signature

Shipment Date: 6 2 3 1 2

White - Disposal Facility  Yellow - Transporter Copy  Pink - Generator 2nd Copy  Gold - Generator 1st Copy

00022147

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: GATE RATE

| SITE 16 | TICKET 112353 | GRID |
|---|---|---|
| AMY B | WEIGHTMASTER | |
| DATE IN 13 August 2012 | | TIME IN 12:14 pm |
| DATE OUT 13 August 2012 | | TIME OUT 12:14 pm |
| VEHICLE VAL118T200 | | ROLL OFF |
| REFERENCE 8/7/2012 | ORIGIN CALHOUN | |

Gross Weight 41,320.00 lb
Stored Tare Weight 36,080.00 lb Inbound - TICKET
Net Weight 5,240.00 lb 2.62 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 2.62 | TN | MSW | | | | |
| | | Manifest: | | | | |

THANK YOU ! HAVE A GREAT DAY !
****** HOURS ******
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

REV 06/12

SIGNATURE Amy B Coats

RS-

MANIFEST NUMBER
697013

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY
b. Generator Location: ETC
c. Address: 1401 PRATT AVE
MARSHALL, MI 49068
d. Address: BOX # 3273
e. Phone No.: [redacted]
f. Phone No.: LOC:
g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ Ans Municipal Solid Waste
Color:
Odor:
h. Special Waste Approval Number: ~~EGLE-10003~~ Ans ~~PDF-10-08~~ 0.67 tn
i. Customer Account Number:
On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

TYPE: DM - METAL DRUM; DP - PLASTIC DRUM; DF - FIBER DRUM; BG - BAG; TR - TRUCK; OT - OTHER
UNITS: P - POUNDS; Y - CUBIC YARDS; T - TONS; O - OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schuft — Generator Authorized Agent Name
Signature
Shipment Date: 10/3/12

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley City E.S.
b. Address: 1010 Market
Grand Rapids, MI
c. Driver Name: Jerry Taylor West
d. Phone No.: [redacted] Truck No.: 118
f. Vehicle License No./State: R4275C MC
Acknowledgement of Receipt of Materials Described Above.
g. Driver Signature
Shipment Date: 10/3/12

### TRANSPORTER 2

h. Name:
i. Address:
j. Driver Name:
k. Phone No.: l. Truck No.:
m. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
n. Driver Signature
Shipment Date:

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 14900 P. DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address:
e. TICKET No.: 212389

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Heather Statler — Authorized Agent Name
Signature
Shipment Date: 10/3/12

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

MANIFEST NUMBER
697013

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY
b. Generator Location: FC
c. Address: 601 PRATT AVE
MARSHALL, MI 49068
d. Address: BOX # 3273
e. Phone No.: [redacted]
f. Phone No.: LDC
g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ Municipal Solid Waste
Color:
Odor:
h. Special Waste Approval Number: ~~EGLE # 6803~~ ~~PSW-2-08~~ 0.67 tn
i. Customer Account Number: Enbridge Energy

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | | 3 | Y |

| TYPE | |
|---|---|
| DM | METAL DRUM |
| DP | PLASTIC DRUM |
| DF | FIBER DRUM |
| BG | BAG |
| TR | TRUCK |
| OT | OTHER |

| UNITS | |
|---|---|
| P | POUNDS |
| Y | CUBIC YARDS |
| T | TONS |
| O | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name: Nicole Shaffer
Signature
Shipment Date: 12/2/21

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley City E.S.
b. Address: 1000 Market
Groundale, MI
c. Driver Name: Terry Fox Scott
d. Phone No.: [redacted] Truck No.: 45
f. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
g. Terry Fox Scott
Driver Signature
Shipment Date: 12/2/21

### TRANSPORTER 2

h. Name:
i. Address:
j. Driver Name:
k. Phone No.: l. Truck No.:
m. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
n.
Driver Signature
Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-7742
c. Physical Address: 14300 F DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address:
e. TICKET No.: 212389

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Tony Chatfield
Authorized Agent Name
Signature
Shipment Date: 12/2/21

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

00022183

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: GATE RATE

| SITE | TICKET 12365 | GRID |
|---|---|---|
| WEIGHTMASTER: AMY B | | |
| DATE IN: 23 August 2012 | TIME IN: 2:03 pm | |
| DATE OUT: 23 August 2012 | TIME OUT: 2:08 pm | |
| VEHICLE: VAL11ST250 | ROLL OFF | |
| REFERENCE: 697013 | ORIGIN: CALHOUN | |

Gross Weight 37,600.00 lb
Stored Tare Weight 36,260.00 lb Inbound - TICKET
Net Weight 1,340.00 lb 0.67 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 0.67 | TN | MSW | | | | |
| | | Manifest: | | | | |

THANK YOU ! HAVE A GREAT DAY !
****** HOURS ******
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

SIGNATURE _____

REV 06/12

RS-F04

MANIFEST NUMBER
697105

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: FTC

c. Address: 1409 PRATT AVE
MARSHALL, MI 49068

d. Address: BOX # 2650

e. Phone No.: [redacted]

f. Phone No.: LOC: 0.60th

g. Waste Common Name: ANS ~~SOIL FROM PIPELINE RELEASE~~ Crude oil Cont. Media & Debris

Color: _____ Odor: _____

h. Special Waste Approval Number: ANS ~~5007 1 0002~~ ANS ~~FOR 21 YRS~~ 5007 10 13039

i. Customer Account Number: On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |

| UNITS | | |
|---|---|---|
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoeff — Generator Authorized Agent Name

Signature

0 7 3 0 1 2 — Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: SET Environmental

b. Address: 450 Summit Rd
Whitby, IL 60085

c. Driver Name: [redacted]

d. Phone No.: [redacted] e. Truck No.: 1421

f. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

g. _____ — Driver Signature

0 7 3 0 1 3 — Shipment Date

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____ — Driver Signature

_____ — Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14300 P. DRIVE NORTH
MARSHALL, MI 49068

d. Mailing Address: _____

e. TICKET No.: 209554

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Coates — Authorized Agent Name

Signature

0 7 3 0 1 3 — Shipment Date

White - Disposal Facility  Yellow - Transporter Copy  Pink - Generator 2nd Copy  Gold - Generator 1st Copy

MANIFEST NUMBER
697105

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY b. Generator Location: FTC

c. Address: 1601 SCHUETT AVE d. Address:

MARSHALL, MI 49068 BOX # 2450

e. Phone No.: [redacted] f. Phone No.: LOC

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ AWS Crude Oil Cont. Media + Debris

Color: Odor:

h. Special Waste Approval Number: ~~AWS~~ ~~AWS~~ 5007 10 13039

i. Customer Account Number:

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | CY | 25 | Y |

| TYPE | |
|---|---|
| DM | METAL DRUM |
| DP | PLASTIC DRUM |
| DF | FIBER DRUM |
| BG | BAG |
| TR | TRUCK |
| OT | OTHER |

| UNITS | |
|---|---|
| P | POUNDS |
| Y | CUBIC YARDS |
| T | TONS |
| O | OTHER |

On behalf of Enbridge Energy, Limited Partnership

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoeff — Generator Authorized Agent Name

Signature

0 7 3 0 1 2 — Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: SET Environmental

b. Address: 450 Summit Rd

Whitby, ON L1N 0B2

c. Driver Name:

d. Phone No. [redacted] e. Truck No.: 1821

f. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

g. Driver Signature — Shipment Date: 0 7 3 0 1 2

### TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature — Shipment Date:

## DISPOSAL FACILITY INFORMATION

a. Site Name: CEC LANDFILL b. Phone No.: 269-781-9742

c. Physical Address: 14300 P. DRIVE NORTH d. Mailing Address:

MARSHALL, MI 49068

e. TICKET No.: 209554

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Authorized Agent Name — Signature — Shipment Date: 0 7 3 0 1 2

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

00025323

C&C LANDFILL
14800 P DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 50071013035

| SITE | TICKET | GRID |
|---|---|---|
| | | |

WEIGHTMASTER: AMY B

| DATE IN | TIME IN |
|---|---|
| 30 July 2012 | 2:39 pm |

| DATE OUT | TIME OUT |
|---|---|
| 30 July 2012 | 2:43 pm |

| VEHICLE | ROLL OFF |
|---|---|
| SET01T250 | |

| REFERENCE | ORIGIN |
|---|---|
| 597105 | CALHOUN |

Gross Weight 36,220.00 lb
Stored Tare Weight 35,020.00 lb
Net Weight 1,200.00 lb 0.60 TN

Inbound - TICKET

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 0.60 | TN | SM-CONT SOIL | | | | |

Manifests:

THANK YOU ! HAVE A GREAT DAY !
HOURS
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| CHANGE |
| CHECK NO. |

REPUBLIC SERVICES, INC.

REV 06/12

SIGNATURE _____

RS-F04

MANIFEST NUMBER
697107

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: CC 4

c. Address: 1401 PRATT AVE.
MARSHALL, MI 49068

d. Address: BOX # 69

e. Phone No.: [redacted]

f. Phone No.: LOC

g. Waste Common Name: ANS Crude oil Cont. Media + Debris, S./vegetation
~~SOIL FROM PIPELINE RELEASE~~

Color:

Odor: 6.91 T

h. Special Waste Approval Number: ANS ~~[illegible]~~ ANS ~~[illegible]~~ 500710 13039

i. Customer Account Number:

On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | CT | 25 | Y |

TYPE: DM - METAL DRUM; DP - PLASTIC DRUM; DF - FIBER DRUM; BG - BAG; TR - TRUCK; OT - OTHER

UNITS: P - POUNDS; Y - CUBIC YARDS; T - TONS; O - OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alisa Schoeff — Generator Authorized Agent Name

Signature

Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: SET ENVIRONMENTAL INC

b. Address: 450 SUMMIT RD
Wheeling IL 60090

c. Driver Name: RAY FRANCO

d. Phone No.: [redacted]

e. Truck No.: 1421

f. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

g. Driver Signature

Shipment Date: 08/23/12

### TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature

Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14800 P. DRIVE NORTH
MARSHALL, MI 49068

d. Mailing Address:

e. TICKET No.: Z10802

I hereby certify that the material described above has been accepted for disposal at this facility.

f. DEB BOUGHTON — Authorized Agent Name

Signature

Shipment Date: 8/24/12

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

MANIFEST NUMBER
697107

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY b. Generator Location: _____

c. Address: 1901 PRATT AVE d. Address: _____

MARSHALL, MI 49068

e. Phone No.: [redacted] f. Phone No.: LOC:

g. Waste Common Name: ~~SEE ATTACHED~~ ANS Crude Oil Cont. Media + Debris / vegetation

Color: _____ Odor: 6.91 T

h. Special Waste Approval Number: ~~NWS~~ ANS 5007 10 13039

i. Customer Account Number: _____

On behalf of Enbridge Energy Limited Partnership

| J. Containers No. | Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| | | | |

| TYPE | |
|---|---|
| DM | - METAL DRUM |
| DP | - PLASTIC DRUM |
| DF | - FIBER DRUM |
| BG | - BAG |
| TR | - TRUCK |
| OT | - OTHER |

| UNITS | |
|---|---|
| P | - POUNDS |
| Y | - CUBIC YARDS |
| T | - TONS |
| O | - OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoeff _____ _____
Generator Authorized Agent Name Signature Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: ET Environmental Inc

b. Address: 420 Summit St

Walling IL 61350

c. Driver Name: Ed Fox

d. Phone No. [redacted] e. Truck No.: 421

f. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

g. _____ 9/12
Driver Signature Shipment Date

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____
Driver Signature Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL b. Phone No.: 269-781-9742

c. Physical Address: 14900 P. DRIVE NORTH d. Mailing Address: _____

MARSHALL, MI 49068

e. TICKET No.: 210802

I hereby certify that the material described above has been accepted for disposal at this facility.

f. D B BURGETT _____ 9/12
Authorized Agent Name Signature Shipment Date

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

00016584

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
0007228
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 50071013039

| SITE | TICKET | GRID |
|---|---|---|
| | | |
| WEIGHMASTER | | |
| DATE IN August 2012 | | TIME IN |
| DATE OUT August 2012 | | TIME OUT |
| VEHICLE | | ROLL OFF |
| REFERENCE | ORIGIN | |
| | CALHOUN | |

Gross Weight 48,840.00 lb
Stored Tare Weight 35,020.00 lb Inbound - TICKET
Net Weight 13,820.00 lb 6.91 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 6.91 | TN | | | | | |

Manifest:

THANK YOU ! HAVE A GREAT DAY
HOURS
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

SIGNATURE

REV 06/12

RS-F04

MANIFEST NUMBER
697108

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY
b. Generator Location: CO.4

c. Address: 1601 PRATT AVE
MARSHALL, MI 49068
d. Address: BOX # 69

e. Phone No.: [redacted]
f. Phone No.: LOCAL

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ ANS Crude Oil Cont Media + Debris/Vegetation
6.30 tn

Color: _____ Odor: _____

h. Special Waste Approval Number: ~~5007 10 13039~~ ANS ~~5007 10 13039~~ ANS 5007 10 13039

i. Customer Account Number: On behalf of Enbridge Energy Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |

| UNITS | | |
|---|---|---|
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoeff — Generator Authorized Agent Name
Signature
08/16/12 — Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley City
b. Address: 1040 Market St
Grand Rapids, MI
c. Driver Name: Jerry Tuckerest
d. Phone No.: [redacted] e. Truck No.: 118
f. Vehicle License No./State: RA-3785 MI
Acknowledgement of Receipt of Materials Described Above.
g. Driver Signature — 08/16/12 Shipment Date

### TRANSPORTER 2

h. Name: _____
i. Address: _____
j. Driver Name: _____
k. Phone No.: _____ l. Truck No.: _____
m. Vehicle License No./State: _____
Acknowledgement of Receipt of Materials Described Above.
n. Driver Signature — Shipment Date

TRK VAL 118

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 14300 F. DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address: _____

e. TICKET No.: 21593

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Seattle — Authorized Agent Name
Signature
08/16/12 — Shipment Date

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

MANIFEST NUMBER
697108

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY b. Generator Location: CO.4

c. Address: 1409 BRATT AVE d. Address: BOX 69

MARSHALL, MI 49068

e. Phone No.: [redacted] f. Phone No.: 800

g. Waste Common Name: ~~ANS CRUDE OIL~~ Cont Media Debris/Vegetation 6.30TN

Color: _____ Odor: _____

h. Special Waste Approval Number: ~~ANS~~ ~~ANS~~ 5007 10 13039

i. Customer Account Number: On behalf of Enbridge Energy Limited Partnership

| J. Containers No. | Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |

| UNITS | | |
|---|---|---|
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Allison Schoff _____ 08/16/12

Generator Authorized Agent Name Signature Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley City

b. Address: 1010 Market ST Grand Rapids, MI

c. Driver Name: Jason Fox

d. Phone No.: [redacted] e. Truck No.: 118

f. Vehicle License No./State: RA 3763 MI

Acknowledgement of Receipt of Materials Described Above.

g. _____ 08/16/12

Driver Signature Shipment Date

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____

Driver Signature Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL b. Phone No.: 269-781-9742

c. Physical Address: 14900 P. DRIVE NORTH d. Mailing Address: _____

MARSHALL, MI 49068

e. TICKET No.: 211593

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Spatter _____ 08/16/12

Authorized Agent Name Signature Shipment Date

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

TRK VAL 118

00026381

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000228
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 500710130037

| SITE | TICKET | GRID |
|---|---|---|
| | 211593 | |

WEIGHTMASTER: AMY B

| DATE IN | TIME IN |
|---|---|
| 10 August 2012 | 12:15 pm |

| DATE OUT | TIME OUT |
|---|---|
| 10 August 2012 | 02:48 pm |

| VEHICLE | ROLL OFF |
|---|---|
| ML116T200 | |

| REFERENCE | ORIGIN |
|---|---|
| 577105 | CALHOUN |

00 Gross Weight 48,680.00 lb
Tare Weight 36,080.00 lb Inbound - TICKET
Net Weight 12,600.00 lb 6.30 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 6.30 | TN | SW-CONT SOIL | | | | |
| | | Manifest: | | | | |

| NET AMOUNT |
|---|
| |
| TENDERED |
| CHANGE |
| CHECK NO. |

THANK YOU ! HAVE A GREAT DAY !
HOURS
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

REPUBLIC SERVICES, INC.

SIGNATURE

REV 06/12

RS-F04

MANIFEST NUMBER
697111

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: C0.4

c. Address: 601 PRATT AVE

MARSHALL, MI 49068

d. Address: BOX # 3287

e. Phone No.: [redacted]

f. Phone No.: LOC:

g. Waste Common Name: ANS ~~SOUR CRUDE PIPELINE RELEASE~~ Crude Oil Cont Media + Debris / Vegetation

Color: _____ Odor: _____

h. Special Waste Approval Number: ANS ~~SOUR CRUDE~~ ANS ~~PIPELINE~~ 5007 10 13039 6.24tn

i. Customer Account Number: On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | BOT | 20 | Y |

TYPE
DM - METAL DRUM
DP - PLASTIC DRUM
DF - FIBER DRUM
BG - BAG
TR - TRUCK
OT - OTHER

UNITS
P - POUNDS
Y - CUBIC YARDS
T - TONS
O - OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoeff — Generator Authorized Agent Name

Signature

Shipment Date: 08/02/12

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Q Valley Cty Environ

b. Address: 1040 Mahr St SW Unit B2

MI

c. Driver Name: Chris Mills

d. Phone No.: [redacted] e. Truck No.: 22

f. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

g. _____ Driver Signature — Shipment Date: 08/2/12

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____ Driver Signature — Shipment Date: _____

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14300 P. DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address: _____

e. TICKET No.: 209986

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Sattler — Authorized Agent Name

Signature

Shipment Date: 08/2/12

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

MANIFEST NUMBER
697111

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: C0.4

c. Address: WOLVERINE AVE

d. Address: BOX 3257

MARSHALL, MI 49068

e. Phone No.: [redacted]

f. Phone No.: [illegible]

g. Waste Common Name: ~~SEE ATTACHED PIPELINE RELEASE~~ ANS Crude Oil Cut Media + Debris / Vegetation

Color: _____ Odor: _____

h. Special Waste Approval Number: ~~[illegible]~~ ANS 5007 1013039 6.24.17

i. Customer Account Number: _____

On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | BOT | 020 | Y |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |

| UNITS | | |
|---|---|---|
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Allison Schaff _____ 06/21/17

Generator Authorized Agent Name | Signature | Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley Co. Equip

b. Address: 1040 [illegible]

c. Driver Name: Chris Ayers

d. Phone No. [redacted] e. Truck No.: 72

f. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

g. _____ 06/21/17

Driver Signature | Shipment Date

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____ _____

Driver Signature | Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: ISC LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14900 E. DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address: _____

e. TICKET No.: 209926

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Sattler Amy Sattler 06/24/17

Authorized Agent Name | Signature | Shipment Date

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

00025760

C&C LANDFILL
14800 P DRIVE NORTH
MARSHALL MI
49068
0007239
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 500710130

| SITE | TICKET | GRID |
|---|---|---|
| | | |

WEIGHTMASTER: AMY B

| DATE IN | TIME IN |
|---|---|
| 2 August 2012 | 11:14 am |

| DATE OUT | TIME OUT |
|---|---|
| 2 August 2012 | 11:14 am |

| VEHICLE | ROLL OFF |
|---|---|
| | |

| REFERENCE | ORIGIN |
|---|---|
| 577111 | CALHOUN |

00 Gross Weight 46,240.00 lb
Stored Tare Weight 33,760.00 lb
Net Weight 12,480.00 lb 6.24 TN

Inbound - TICKET

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 6.24 | TN | SM-CONT SOIL | | | | |

MANIFEST#

THANK YOU ! HAVE A GREAT DAY !
HOURS
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

SIGNATURE _____

REV 06/12

RS-F04

MANIFEST NUMBER
697112

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: CO. 4

c. Address: 1601 PRATT AVE.
MARSHALL, MI 49068

d. Address: BOX #: 3257

e. Phone No.: [redacted]

f. Phone No.: LOC:

g. Waste Common Name: ANS ~~SOIL FROM PIPELINE RELEASE~~ Crude oil Cont. Media + Debris/ Vegetation

Color: _____ Odor: _____

h. Special Waste Approval Number: ANS ~~SOIL FROM~~ ANS ~~POA-1-08~~ 5007 10 13639

i. Customer Account Number: _____

On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

TYPE
DM - METAL DRUM
DP - PLASTIC DRUM
DF - FIBER DRUM
BG - BAG
TR - TRUCK
OT - OTHER

UNITS
P - POUNDS
Y - CUBIC YARDS
T - TONS
O - OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoff — Generator Authorized Agent Name

Signature

Shipment Date: 07/30/12

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: SET Environmental

b. Address: 450 SUMAC RD
Wheeling IL ~~60090~~ 60090

c. Driver Name: RAUL FIGUEROA

d. Phone No. [redacted] Truck No.: 1421

f. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

g. _____ — Driver Signature

Shipment Date: 07/30/12

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____ — Driver Signature

Shipment Date: _____

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14300 P DRIVE NORTH
MARSHALL, MI 49068

d. Mailing Address: _____

e. TICKET No.: 209500

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Timothy Sattler — Authorized Agent Name

Signature

Shipment Date: 07/30/12

White - Disposal Facility  Yellow - Transporter Copy  Pink - Generator 2nd Copy  Gold - Generator 1st Copy

MANIFEST NUMBER
697112

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: CC. 4

c. Address: [illegible] AVE

MARSHALL MI 49068

d. Address: BOX 3257

e. Phone No.: [redacted]

f. Phone No.: LOC

g. Waste Common Name: ANS ~~SOIL FROM PIPELINE RELEASE~~ Crude oil Cont. Media & Debris

Color: [illegible]

Odor: Vegetation

h. Special Waste Approval Number: ANS ~~[illegible]~~ ANS ~~[illegible]~~ 5007 10 13039

i. Customer Account Number: On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 1 | DT | 25 | Y |

| TYPE | |
|---|---|
| DM | METAL DRUM |
| DP | PLASTIC DRUM |
| DF | FIBER DRUM |
| BG | BAG |
| TR | TRUCK |
| OT | OTHER |

| UNITS | |
|---|---|
| P | POUNDS |
| Y | CUBIC YARDS |
| T | TONS |
| O | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoff — Generator Authorized Agent Name

Signature

Shipment Date: 07/31/12

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: SET Environmental

b. Address: 450 Sumac Rd

Wheeling IL ~~[illegible]~~ 60090

c. Driver Name: Raul Ramos

d. Phone No.: [redacted] Truck No.: 1421

f. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

g. Driver Signature — Shipment Date: 07/31/12

### TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature — Shipment Date:

## DISPOSAL FACILITY INFORMATION

a. Site Name: CRC LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14300 FL DRIVE NORTH

MARSHALL MI 49068

d. Mailing Address:

e. TICKET No.: 209500

I hereby certify that the material described above has been accepted for disposal at this facility.

f. [illegible] — Authorized Agent Name

Signature

Shipment Date: 7/30/12

White - Disposal Facility  Yellow - Transporter Copy  Pink - Generator 2nd Copy  Gold - Generator 1st Copy

00025268

C&C LANDFILL
14800 P DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 50071013039

| SITE | TICKET | GRID |
|---|---|---|
| | | |

WEIGHMASTER: Amy B

| DATE IN | TIME IN |
|---|---|
| 30 July 2012 | |

| DATE OUT | TIME OUT |
|---|---|
| 30 July 2012 | |

| VEHICLE | ROLL OFF |
|---|---|
| SET21T250 | |

| REFERENCE | ORIGIN |
|---|---|
| 677112 | CALHOUN |

Gross Weight 43,620.00 lb
Stored Tare Weight 35,020.00 lb Inbound - TICKET
Net Weight 8,600.00 lb 4.30 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 4.30 | TN | SW-CONT SOIL | | | | |

Manifest:

THANK YOU ! HAVE A GREAT DAY !
HOURS
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

REV 06/12

SIGNATURE _____

RS-F04

MANIFEST NUMBER
697113

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY
b. Generator Location: FTC
c. Address: 1601 PRATT AVE
MARSHALL, MI 49068
d. Address: BOX # 3273
e. Phone No.: [redacted]
f. Phone No.: LOC:
g. Waste Common Name: ANS ~~SOIL FROM PIPELINE RELEASE~~ Municipal Solid Waste
Color:
Odor: 1/19
h. Special Waste Approval Number: ANS ~~EGLE # PEND~~ ANS ~~PENDING~~ 5007013039
i. Customer Account Number:
On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

TYPE
DM - METAL DRUM
DP - PLASTIC DRUM
DF - FIBER DRUM
BG - BAG
TR - TRUCK
OT - OTHER

UNITS
P - POUNDS
Y - CUBIC YARDS
T - TONS
O - OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoff — Generator Authorized Agent Name
Signature
07/30/12 — Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: SET Environmental, INC
b. Address: 450 SUMAC RD
Wheeling, IL 60090
c. Driver Name: Raul Franco
d. Phone No. [redacted] e. Truck No.: 1421
f. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
g. Driver Signature — Shipment Date: 07/30/12

### TRANSPORTER 2

h. Name:
i. Address:
j. Driver Name:
k. Phone No.: l. Truck No.:
m. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
n. Driver Signature — Shipment Date:

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 14300 PL DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address:
e. TICKET No.: 209521

I hereby certify that the material described above has been accepted for disposal at this facility.

f. JEB Boughton — Authorized Agent Name
Signature
7/30/12 — Shipment Date

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

MANIFEST NUMBER
697113

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY
b. Generator Location: FTC
c. Address: WOLVERATT AVE
MARSHALL, MI 49068
d. Address: BOX 3273
e. Phone No.: [redacted]
f. Phone No.: LOC
g. Waste Common Name: ~~SEE FACT SHEET CRUDE RELEASE~~ ANS Municipal Solid Waste
Color: ~~SEE FACT SHEET~~
Odor: ~~SEE FACT SHEET~~ ANS 1 of 9
h. Special Waste Approval Number: ~~SEE FACT SHEET~~ ANS 5007101303 9
i. Customer Account Number:
On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | CT | 25 | Y |

TYPE: DM - METAL DRUM; DP - PLASTIC DRUM; DF - FIBER DRUM; BG - BAG; TR - TRUCK; OT - OTHER
UNITS: P - POUNDS; Y - CUBIC YARDS; T - TONS; O - OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alan Schaft — Generator Authorized Agent Name
Signature
Shipment Date: 07/30/12

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: SET Environmental, Inc
b. Address: 450 Sumac Rd
Wheeling, IL 60090
c. Driver Name: Carl Thomas
d. Phone No. [redacted] e. Truck No.: 1421
f. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
g. Driver Signature
Shipment Date: 07/30/12

### TRANSPORTER 2

h. Name:
i. Address:
j. Driver Name:
k. Phone No.: l. Truck No.:
m. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
n. Driver Signature
Shipment Date:

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 14900 M. DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address:
e. TICKET No.: 209521

I hereby certify that the material described above has been accepted for disposal at this facility.

f. J. Boughter — Authorized Agent Name
Signature
Shipment Date: 7/30/12

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

00025290

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 500710130389

| SITE | TICKET | GRID |
|---|---|---|
| 16 | 2095321 | |

WEIGHMASTER: D8000008 DEBORAH C

| DATE IN | TIME IN |
|---|---|
| 30 July 2012 | 1112 pm |

| DATE OUT | TIME OUT |
|---|---|
| 30 July 2012 | 1112 pm |

| VEHICLE | ROLL OFF |
|---|---|
| SET21,T250 | |

| REFERENCE | ORIGIN |
|---|---|
| 497113 | CALHOUN |

Gross Weight 37,400.00 lb
Stored Tare Weight 35,020.00 lb Inbound - TICKET
Net Weight 2,380.00 lb 1.19 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 1.19 | TN | SW-CONT SOIL | | | | |

manifest:

THANK YOU ! HAVE A GREAT DAY !
HOURS
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

REV 06/12

SIGNATURE _____

RS-F04

MANIFEST NUMBER
697114

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: C0.4

c. Address: 1409 WYATT AVE
MARSHALL, MI 49068

d. Address: BOX # 3402

e. Phone No.: [redacted]

f. Phone No.: LOC:

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ ANUS Municipal Solid Waste

Color: _____ Odor: _____

h. Special Waste Approval Number: ~~ANUS~~ ~~ANUS~~ 2.07

i. Customer Account Number: On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |

| UNITS | | |
|---|---|---|
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoeff — Generator Authorized Agent Name
Signature
08/16/12 — Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley Fuels Inc.

b. Address: 1040 Market St SE
Grand Rapids, MI.

c. Driver Name: Jerry Fenstad

d. Phone No.: [redacted] e. Truck No.: 118

f. Vehicle License No./State: RA 35263

Acknowledgement of Receipt of Materials Described Above.

g. Driver Signature — 08/16/12 Shipment Date

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature — Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14800 P. DRIVE NORTH
MARSHALL, MI 49068

d. Mailing Address: _____

e. TICKET No.: 211638

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Authorized Agent Name — Signature — 08/16/12 Shipment Date

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

MANIFEST NUMBER
697114

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY
b. Generator Location: C04

c. Address: 1001 PRATT AVE
MARSHALL, MI 49068
d. Address: BOX # 3402

e. Phone No.: [redacted]
f. Phone No.: 1001

g. Waste Common Name: ~~OIL FROM PIPELINE RELEASE~~ AMS Municipal Solid Waste

Color: _____ Odor: _____

h. Special Waste Approval Number: ~~AMS~~ ~~AMS~~ 2107

i. Customer Account Number: On behalf of Enbridge Energy Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | DM | 25 | Y |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |

| UNITS | | |
|---|---|---|
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoff — Generator Authorized Agent Name
Signature
Shipment Date: 08/16/12

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley Tank Lines
b. Address: 1000 Hastings St
Grand Rapids, MI
c. Driver Name: Scott Tedford
d. Phone No.: [redacted] e. Truck No.: 116
f. Vehicle License No./State: R13512
Acknowledgement of Receipt of Materials Described Above.
g. Driver Signature — Shipment Date: 08/16/12

### TRANSPORTER 2

h. Name: _____
i. Address: _____
j. Driver Name: _____
k. Phone No.: _____ l. Truck No.: _____
m. Vehicle License No./State: _____
Acknowledgement of Receipt of Materials Described Above.
n. Driver Signature — Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 14300 M DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address: _____

e. TICKET No.: 211638

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Authorized Agent Name — Signature — Shipment Date: 08/16/12

White - Disposal Facility  Yellow - Transporter Copy  Pink - Generator 2nd Copy  Gold - Generator 1st Copy

00026426

C&C LANDFILL
14300 P DRIVE NORTH
MARSHALL MI
49068
000725
SET ENVIRONMENTAL INC
450 BUMAC ROAD
WHEELING, IL 60090

Contract: 50071013039

| SITE | TICKET | GRID |
|---|---|---|
| 18 | 211638 | |
| WEIGHMASTER: AMY B | | |
| DATE IN: 15 August 2012 | TIME IN: 4:06 pm | |
| DATE OUT: 15 August 2012 | TIME OUT: 4:06 pm | |
| VEHICLE: VAL16T200 | ROLL OFF | |
| REFERENCE: 697114 | ORIGIN: CALHOUN | |

Gross Weight 40,220.00 lb
Stored Tare Weight 36,080.00 lb Inbound - TICKET
Net Weight 4,140.00 lb 2.07 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 2.07 | TN | EM-CONT SOIL | | | | |

manifest:

THANK YOU ! HAVE A GREAT DAY !
****** HOURS ******
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

REV 06/12

SIGNATURE _____

RS-F04

MANIFEST NUMBER
697115

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: FTC

c. Address: 1601 PRATT AVE.
MARSHALL, MI 49068

d. Address: BOX # ~~2402~~ SO. #69

e. Phone No.: [redacted]

f. Phone No.: LOC:

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ ANS Municipal Solid Waste

Color: _____ Odor: 3039

h. Special Waste Approval Number: ~~ANS~~ ~~ANS~~ 8.86 tn

i. Customer Account Number: On behalf of Enbridge Energy Limited Partnership

| J. Containers No. | Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoeff — Generator Authorized Agent Name
Signature
08/16/12 — Shipment Date

| TYPE | |
|---|---|
| DM | - METAL DRUM |
| DP | - PLASTIC DRUM |
| DF | - FIBER DRUM |
| BG | - BAG |
| TR | - TRUCK |
| OT | - OTHER |
| **UNITS** | |
| P | - POUNDS |
| Y | - CUBIC YARDS |
| T | - TONS |
| O | - OTHER |

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley C.T. E.S.

b. Address: 1040 Market ST
Grand Rapids MI.

c. Driver Name: Jerry Ten Have

d. Phone No. [redacted] e. Truck No.: 118

f. Vehicle License No./State: RA 37853 MI

Acknowledgement of Receipt of Materials Described Above.

g. Jerry Ten Have — Driver Signature
08/16/12 — Shipment Date

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____ — Driver Signature
Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14900 P. DRIVE NORTH
MARSHALL, MI 49068

d. Mailing Address: _____

e. TICKET No.: 211627

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Mary Stotler — Authorized Agent Name
Mary Stotler — Signature
08/16/12 — Shipment Date

White - Disposal Facility  Yellow - Transporter Copy  Pink - Generator 2nd Copy  Gold - Generator 1st Copy

MANIFEST NUMBER
697115

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY b. Generator Location: ETC

c. Address: 400 READY AVE d. Address: ~~50.~~ #69

MARSHALL, MI 49068 BOX

e. Phone No.: [redacted] f. Phone No.: LOCK

g. Waste Common Name: ~~ANS SOIL FROM PIPELINE RELEASE~~ Municipal Solid Waste 3339

Color: Odor: 8.26.14

h. Special Waste Approval Number: ~~ANS~~ ~~ANS~~

i. Customer Account Number: On behalf of Enbridge Energy Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 05 | | 25 | Y |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |

| UNITS | | |
|---|---|---|
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Heidi Schott _____ 08/12/14

Generator Authorized Agent Name Signature Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: Valley Transfer

b. Address: 1100 Hart St

Kalamazoo, MI

c. Driver Name: Jerry Forbes

d. Phone No.: [redacted] e. Truck No.: 48

f. Vehicle License No./State: [illegible]

Acknowledgement of Receipt of Materials Described Above.

g. _____ 08/12/14

Driver Signature Shipment Date

### TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: GFC LANDFILL b. Phone No.: 269-781-9742

c. Physical Address: 14800 F. DRIVE NORTH d. Mailing Address:

MARSHALL, MI 49068

e. TICKET No.: 21627

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Mary Slatter Mary Slatter 08/12/14

Authorized Agent Name Signature Shipment Date

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

00026415

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 500710130??

| SITE | TICKET | GRID |
|---|---|---|
| | 211627 | |

| WEIGHTMASTER |
|---|
| AMY B |

| DATE IN | TIME IN |
|---|---|
| 30 August 2012 | 2:34 pm |

| DATE OUT | TIME OUT |
|---|---|
| 30 August 2012 | 3:03 pm |

| VEHICLE | ROLL OFF |
|---|---|
| WIL116T250 | |

| REFERENCE | ORIGIN |
|---|---|
| 877115 | CALHOUN |

00 Gross Weight 54,000.00 lb
Tare Weight 36,280.00 lb Inbound - TICKET
Net Weight 17,720.00 lb 8.86 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 8.86 | TN | SW-CONT SOIL | | | | |

Manifest:

THANK YOU ! HAVE A GREAT DAY !
****** HOURS ******
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

SIGNATURE

REV 06/12

RS-F04

MANIFEST NUMBER
697116

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY
b. Generator Location: EXC C04

c. Address: 601 PRATT AVE
MARSHALL, MI 49068

d. Address: BOX 6 1078

e. Phone No.: [redacted]
f. Phone No.: LOC:

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ ANS Municipal Solid Waste
1.68 tn

Color: _____ Odor: _____

h. Special Waste Approval Number: ~~ANS~~ ~~ANS~~ 3639

i. Customer Account Number: _____
On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | DT | 25 | Y |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |

| UNITS | | |
|---|---|---|
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schaff — Generator Authorized Agent Name
Signature
0 8 1 6 1 7 — Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: SET EM
b. Address: 150 Sunset Rd
Wheeling IL 60090
c. Driver Name: Shawn Nekter
d. Phone No.: [redacted] e. Truck No.: 177
f. Vehicle License No./State: _____
Acknowledgement of Receipt of Materials Described Above.
g. Shawn — Driver Signature
0 8 1 6 1 7 — Shipment Date

### TRANSPORTER 2

h. Name: _____
i. Address: _____
j. Driver Name: _____
k. Phone No.: _____ l. Truck No.: _____
m. Vehicle License No./State: _____
Acknowledgement of Receipt of Materials Described Above.
n. _____ Driver Signature
Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 14900 P. DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address: _____

e. TICKET No.: 211594

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Beattie — Authorized Agent Name
Amy Beattie — Signature
0 8 1 6 1 7 — Shipment Date

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

dead trailer

MANIFEST NUMBER
697116

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: N 5

c. Address: 1409 BEATT AVE

d. Address: BOX 6 [illegible] 1.75

MARSHALL, MI 49068

e. Phone No.: [redacted]

f. Phone No.: LOG

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ NMS Municipal Solid Waste

1.68 tn

Color: _____ Odor: _____

h. Special Waste Approval Number: ~~NMS~~ NMS 3439

i. Customer Account Number: _____

On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| | | | |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |
| **UNITS** | | |
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Allison Schott _____ _____

Generator Authorized Agent Name | Signature | Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: _____

b. Address: _____

c. Driver Name: _____

d. Phone No.: [redacted] e. Truck No.: _____

f. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

g. _____ _____

Driver Signature | Shipment Date

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____ _____

Driver Signature | Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: CSC LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14800 F. DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address: _____

e. TICKET No.: 211594

I hereby certify that the material described above has been accepted for disposal at this facility.

f. [illegible] [illegible] 9/1/17

Authorized Agent Name | Signature | Shipment Date

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

00026382

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 50071013039

| SITE | TICKET | GRID |
|---|---|---|
| | 211594 | |

WEIGHMASTER: AMY D

| DATE IN | TIME IN |
|---|---|
| 10 August 2012 | 10:13 am |

| DATE OUT | TIME OUT |
|---|---|
| 10 August 2012 | 10:51 am |

| VEHICLE | ROLL OFF |
|---|---|
| ALT1 | |

| REFERENCE | ORIGIN |
|---|---|
| | CALHOUN |

00 Gross Weight 13,920.00 lb
Tare Weight 10,560.00 lb Inbound - TICKET
Net Weight 3,360.00 lb 1.68 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 1.68 | TN | SU-CONT SOIL | | | | |
| | | Manifest: | | | | |

THANK YOU ! HAVE A GREAT DAY !
***** HOURS *****
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

REV 06/12

SIGNATURE Shon

RS-F04

MANIFEST NUMBER
697117

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: FTC

c. Address: 1601 PRATT AVE

MARSHALL, MI 49068

d. Address: BOX # 3273

e. Phone No.: [redacted]

f. Phone No.: LOC

g. Waste Common Name: ANS ~~SEE FROM PIPELINE RELEASE~~ Municipal Solid Waste

Color: _____ Odor: 3039

h. Special Waste Approval Number: ANS ~~EQ[illegible]~~ ANS ~~EQ[illegible]~~

1.69 tn

i. Customer Account Number: _____

On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |

| UNITS | | |
|---|---|---|
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoeff — Generator Authorized Agent Name

Signature

09 | 13 | 12 — Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: JET Environmental

b. Address: 450 Sumac Road

Wheeling IL 60090

c. Driver Name: [illegible]

d. Phone No.: [redacted] e. Truck No.: 1421

f. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

g. _____ — Driver Signature

09 | 13 | 12 — Shipment Date

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____

Acknowledgement of Receipt of Materials Described Above.

n. _____ — Driver Signature

Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-5742

c. Physical Address: 14300 P. DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address: _____

211135

e. TICKET No.: _____

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Amy Beattie — Authorized Agent Name

Signature

09 | 13 | 12 — Shipment Date

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

MANIFEST NUMBER
697117

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: FTC

c. Address: 1409 PRATT AVE

d. Address: BOX 3273

MARSHALL, MI 49068

e. Phone No.: [redacted]

f. Phone No.: LOC

g. Waste Common Name: ANS SEE PROP PIPELINE RELEASE Municipal Solid Waste

Color: Odor: 3039

h. Special Waste Approval Number: ANS ANS 1.09 tn

i. Customer Account Number:

On behalf of Enbridge Energy Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

TYPE: DM - METAL DRUM; DP - PLASTIC DRUM; DF - FIBER DRUM; BG - BAG; TR - TRUCK; OT - OTHER

UNITS: P - POUNDS; Y - CUBIC YARDS; T - TONS; O - OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoff — Generator Authorized Agent Name

Signature

Shipment Date: 03 13 12

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: JET Environmental

b. Address: 450 Sumac Road

Wheeling, IL 60090

c. Driver Name: Fidelity

d. Phone No.: [redacted] e. Truck No.: 121

f. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

g. Driver Signature

Shipment Date: 03 13 12

### TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature

Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: T&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14800 F DRIVE NORTH

MARSHALL, MI 49068

d. Mailing Address:

e. TICKET No.: 11135

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Tammy Beattie — Authorized Agent Name

Signature

Shipment Date: 03 13 12

White - Disposal Facility  Yellow - Transporter Copy  Pink - Generator 2nd Copy  Gold - Generator 1st Copy

00016923

C&C LANDFILL
14800 P DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 50071013039

| SITE | TICKET | GRID |
|---|---|---|
| 16 | 211135 | |

WEIGHMASTER: AMY B

| DATE IN | TIME IN |
|---|---|
| 13 August 2012 | 12:42 pm |

| DATE OUT | TIME OUT |
|---|---|
| 13 August 2012 | 12:42 pm |

| VEHICLE | ROLL OFF |
|---|---|
| SET21T250 | |

| REFERENCE | ORIGIN |
|---|---|
| 677117 | CALHOUN |

Gross Weight 38,400.00 lb
Stored Tare Weight 35,020.00 lb Inbound - TICKET
Net Weight 3,380.00 lb 1.69 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 1.69 | TN | SW-CONT SOIL | | | | |

Manifest:

THANK YOU ! HAVE A GREAT DAY !
HOURS
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| CHANGE |
| CHECK NO. |

REPUBLIC SERVICES, INC.

SIGNATURE

REV 06/12

RS-F04

MANIFEST NUMBER
697122

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY
b. Generator Location: 13006 15 Mile Road

c. Address: 1601 FRONT AVE
MARSHALL, MI 49068
d. Address: BOX # 3402

2.02 ton

e. Phone No.: [redacted]
f. Phone No.: LOC:

g. Waste Common Name: ~~AN S SOIL FROM PIPELINE RELEASE~~ MSW

Color:
Odor:

h. Special Waste Approval Number: ~~AN S 0001110103~~ ~~AN S FOR 11-0103~~ 3059

i. Customer Account Number:
On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

| TYPE | |
|---|---|
| DM | - METAL DRUM |
| DP | - PLASTIC DRUM |
| DF | - FIBER DRUM |
| BG | - BAG |
| TR | - TRUCK |
| OT | - OTHER |
| **UNITS** | |
| P | - POUNDS |
| Y | - CUBIC YARDS |
| T | - TONS |
| O | - OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alisa Schoeff — Generator Authorized Agent Name
Signature
08/13/12 — Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: SET Environmental
b. Address: 450 Sumac Road
Wheeling, IL 60090
c. Driver Name: Ed Duffy
d. Phone No.: [redacted] Truck No.: 1421
f. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
g. X — Driver Signature
08/13/12 — Shipment Date

### TRANSPORTER 2

h. Name:
i. Address:
j. Driver Name:
k. Phone No.: l. Truck No.:
m. Vehicle License No./State:
Acknowledgement of Receipt of Materials Described Above.
n. Driver Signature
Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL
b. Phone No.: 269-781-9742
c. Physical Address: 14300 P DRIVE NORTH
MARSHALL, MI 49068
d. Mailing Address:

e. TICKET No.: 211090

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Authorized Agent Name — Signature — 08/13/12 — Shipment Date

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

MANIFEST NUMBER
697122

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: 13000 15 Mile Road

c. Address: [illegible] MARSHALL, MI 49068

d. Address: BOX 3402

e. Phone No.: [redacted]

f. Phone No.: LDC

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ MSW

Color: [illegible]

Odor: [illegible]

h. Special Waste Approval Number: [illegible] 3039

i. Customer Account Number: [illegible]

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | OT | 25 | Y |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |

| UNITS | | |
|---|---|---|
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

[illegible] — Generator Authorized Agent Name

[signature] — Signature

08 13 12 — Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: SET Environmental

b. Address: 450 Sumac Road
Wheeling, IL 60090

c. Driver Name: Ed Duffy

d. Phone No.: [redacted] e. Truck No.: 1421

f. Vehicle License No./State: [illegible]

Acknowledgement of Receipt of Materials Described Above:

g. [signature] — Driver Signature

08 13 12 — Shipment Date

### TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature

Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: LDC LANDFILL

b. Phone No.: 269-781-7742

c. Physical Address: 14300 ft. NEVE NORTH
MARSHALL, MI 49068

d. Mailing Address:

e. TICKET No.: 211090

I hereby certify that the material described above has been accepted for disposal at this facility.

f. [illegible] — Authorized Agent Name

[signature] — Signature

08 13 12 — Shipment Date

White - Disposal Facility | Yellow - Transporter Copy | Pink - Generator 2nd Copy | Gold - Generator 1st Copy

00016878

C&C LANDFILL
14800 F DRIVE NORTH
MARSHALL, MI
49068
000723
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 500710130

| SITE | TICKET | GRID |
|---|---|---|
| | 211050 | |
| AMT 1 | WEIGHMASTER | |
| DATE IN | 13 August 2012 | TIME IN 10:20 am |
| DATE OUT | 13 August 2012 | TIME OUT 10:20 am |
| VEHICLE | 211050 | ROLL OFF |
| REFERENCE | 577122 | ORIGIN CALHOUN |

Gross Weight 39,060.00 lb
Stored Tare Weight 35,020.00 lb Inbound - TICKET
Net Weight 4,040.00 lb 2.02 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 2.02 | TN | SW-Contr SOIL | | | | |
| | | Manifest: | | | | |

THANK YOU ! HAVE A GREAT DAY !
***** HOURS *****
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

SIGNATURE _____

REV 06/12

RS-F04

MANIFEST NUMBER
697123

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY

b. Generator Location: FTC

c. Address: 1601 PROUTY AVE.
MARSHALL, MI 49068

d. Address: BOX # 3407

e. Phone No.: [redacted]

f. Phone No.: LOC:

g. Waste Common Name: ~~SOIL FROM PIPELINE RELEASE~~ ANS MSW

Color: _____ Odor: _____

h. Special Waste Approval Number: ~~[redacted]~~ ANS ~~[redacted]~~ ANS 2.32 tn

i. Customer Account Number: On behalf of Enbridge Energy, Limited Partnership

| J. Containers No. | Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| 01 | 01 | 25 | Y |

| TYPE | | |
|---|---|---|
| DM | - | METAL DRUM |
| DP | - | PLASTIC DRUM |
| DF | - | FIBER DRUM |
| BG | - | BAG |
| TR | - | TRUCK |
| OT | - | OTHER |

| UNITS | | |
|---|---|---|
| P | - | POUNDS |
| Y | - | CUBIC YARDS |
| T | - | TONS |
| O | - | OTHER |

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schoeff _____ 0 8 0 9 1 2
Generator Authorized Agent Name Signature Shipment Date

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: SET Environmental

b. Address: 450 Summit Rd
Whiting, IN 46394

c. Driver Name: Raul Franco

d. Phone No.: [redacted] e. Truck No.: 1421

f. Vehicle License No./State: _____
Acknowledgement of Receipt of Materials Described Above.

g. _____ 0 8 0 9 1 2
Driver Signature Shipment Date

### TRANSPORTER 2

h. Name: _____

i. Address: _____

j. Driver Name: _____

k. Phone No.: _____ l. Truck No.: _____

m. Vehicle License No./State: _____
Acknowledgement of Receipt of Materials Described Above.

n. _____
Driver Signature Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL

b. Phone No.: 269-781-9742

c. Physical Address: 14300 P. DRIVE NORTH
MARSHALL, MI 49068

d. Mailing Address: _____

fri 14 21 1:19 pm

e. TICKET No.: 210840

I hereby certify that the material described above has been accepted for disposal at this facility.

f. _____ _____ 0 8 0 9 1 2
Authorized Agent Name Signature Shipment Date

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

MANIFEST NUMBER
697123

# NON-HAZARDOUS SPECIAL WASTE MANIFEST

**Directions: Print or type all information except where signature is required.**
**Make sure information is transmitted on all copies.**

## GENERATOR INFORMATION

a. Generator Name: ENBRIDGE ENERGY COMPANY b. Generator Location: FTC

c. Address: 1409 PRATT AVE d. Address:

MARSHALL, MI 49068 BOX

e. Phone No.: [redacted] f. Phone No.: LOC

g. Waste Common Name: ANS SOIL CONT. PIPELINE RELEASE MSW

Color: Odor:

h. Special Waste Approval Number: ANS ANS 2.32 T

i. Customer Account Number:

| J. Containers No. | J. Containers Type | K. Total Quantity | L. Unit Wt/Vol |
|---|---|---|---|
| | | 75 | Y |

On behalf of Enbridge Energy, Limited Partnership

GENERATOR'S CERTIFICATION: I hereby certify that the above mentioned material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law; has been properly classified and packaged, and is in proper condition for transportation according to applicable regulations.

Alison Schaft — Generator Authorized Agent Name

Signature

Shipment Date

| TYPE | |
|---|---|
| DM | - METAL DRUM |
| DP | - PLASTIC DRUM |
| DF | - FIBER DRUM |
| BG | - BAG |
| TR | - TRUCK |
| OT | - OTHER |

| UNITS | |
|---|---|
| P | - POUNDS |
| Y | - CUBIC YARDS |
| T | - TONS |
| O | - OTHER |

## TRANSPORTER INFORMATION

### TRANSPORTER 1

a. Name: ET Environmental

b. Address: 450 Iowa Ave

Whiting, IN 46394

c. Driver Name: Raul Franco

d. Phone No [redacted] e. Truck No.: 1421

f. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

g. Driver Signature — Shipment Date

### TRANSPORTER 2

h. Name:

i. Address:

j. Driver Name:

k. Phone No.: l. Truck No.:

m. Vehicle License No./State:

Acknowledgement of Receipt of Materials Described Above.

n. Driver Signature — Shipment Date

## DISPOSAL FACILITY INFORMATION

a. Site Name: C&C LANDFILL b. Phone No.: 269-781-9742

c. Physical Address: 14500 M DRIVE NORTH d. Mailing Address:

MARSHALL, MI 49068

fax 1421 1:19 pm

e. TICKET No.: 210740

I hereby certify that the material described above has been accepted for disposal at this facility.

f. Authorized Agent Name — Signature — Shipment Date

White - Disposal Facility Yellow - Transporter Copy Pink - Generator 2nd Copy Gold - Generator 1st Copy

00016622

D&C LANDFILL
14800 P DRIVE NORTH
MARSHALL MI
49068
000728
SET ENVIRONMENTAL INC
450 SUMAC ROAD
WHEELING, IL 60090

Contract: 50071013009

| SITE | TICKET | GRID |
|---|---|---|
| 16 | 210340 | |

WEIGHMASTER: AMY E

| DATE IN | TIME IN |
|---|---|
| 7 August 2012 | 2:29 pm |

| DATE OUT | TIME OUT |
|---|---|
| 7 August 2012 | 2:29 pm |

| VEHICLE | ROLL OFF |
|---|---|
| SET2LT250 | |

| REFERENCE | ORIGIN |
|---|---|
| 697123 | CALHOUN |

Gross Weight 39,660.00 lb
Stored Tare Weight 35,020.00 lb Inbound - TICKET
Net Weight 4,640.00 lb 2.32 TN

| QTY. | UNIT | DESCRIPTION | RATE | EXTENSION | TAX | TOTAL |
|---|---|---|---|---|---|---|
| 2.32 | TN | SW-CONT SOIL | | | | |
| | | Manifest: | | | | |

THANK YOU ! HAVE A GREAT DAY !
HOURS
MONDAY THRU FRIDAY 7 TO 4:30
SATURDAY 7:00 TO NOON

| NET AMOUNT |
|---|
| |
| TENDERED |
| |
| CHANGE |
| |
| CHECK NO. |
| |

REPUBLIC SERVICES, INC.

SIGNATURE _____

REV 06/12

RS-F04