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M E M O R A N D U M

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DATE: 27 July 2015

SUBJECT: Results of CU1 Subsurface Exploration

Geosyntec Consultants (Geosyntec) has prepared this technical memorandum to document the results of a limited subsurface investigation completed as part of the East Multnomah County Troutdale Sandstone Aquifer (TSA) remedy being conducted jointly by Cascade Corporation (Cascade) and The Boeing Company (Boeing). This work followed the guidelines outlined in the Confining Unit 1 (CU1) Subsurface Investigation Work Plan (Geosyntec, 2014), which was approved by the Oregon Department of Environmental Quality (DEQ) on 30 April 2014. This investigation was conducted under DEQ Consent Order No. WMCSR-NWR-96-08.

The CU1 subsurface investigation consisted of soil and rock sampling from three borings located north of the poplar tree field on the off-site remedy area site (Site; Figure 1). The borings were placed along the northern edge of the Troutdale Gravel Aquifer (TGA) and CU1 truncation. The purpose of the investigation was to determine if there are significantly elevated concentrations of trichloroethene (TCE) in the CU1 that have potential to migrate to the underlying TSA.

GEOLOGY

The TGA is described as a silty to sandy gravel unit and is underlain by a siltstone/claystone referred to as CU1 or Siltstone Unit 1 (Swanson, et al., 1993; Emcon and Landau Associates Inc. [Landau], 1995; DEQ, 1996; Prowell Environmental, 2012). The TGA ROD (DEQ, 1996) describes the Siltstone Unit 1 (SU1) as a fine-grained unit underlying the TGA and overlying the TSA, with four subunits, listed from shallowest to deepest:

1) Sandstone and siltstone (SU1A),
2) Clayey siltstone (SU1B) (this unit alone is referred to as CU1 in the Record of Decision (ROD; DEQ, 1996),
3) Sandstone with siltstone (SU1C), and

4) Siltstone with sandstone (SU1D).

The TSA ROD includes SU1C and SU1D as part of the upper TSA based on hydrogeologic characteristics. Similarly, at the adjacent Boeing site, SU1 is described including these four subunits (Landau, 1995). Prowell Environmental (2012) describes the CU1 with five subunits, roughly equivalent to the four subunits described in the ROD. For this document, CU1 is used to collectively refer to the four subunits, which comprise a package of fine-grained units that represent a change in geologic depositional setting above the TSA and below the TGA. The presence/absence of any one of these four subunits is likely to vary on a local scale, in particular along the erosional truncation. Both the TGA and CU1 are thin to the north and pinch out due to erosion in the vicinity of the poplar tree field, along a north-dipping slope that generally defines the erosional truncation (Figure 1).

CU1 is generally not saturated and has been described as an aquitard, although water is present on a local scale (e.g. MW-45 and MW-46 have some recharge). Where CU1 is absent, increased groundwater recharge into the underlying TSA is noted. (Emcon and Landau, 1995). Past investigations have shown that some diffusive and minor advective transport of TCE has occurred through the upper portion of the CU1 (SSPA, 2012). The lateral and vertical extent of fracturing in CU1 has not been well characterized in the vicinity of the subsurface investigation.

CU1 INVESTIGATION OBJECTIVES

The objectives of the subsurface investigation were as follows:

- Characterize the degree of fracturing in the CU1 near where it thins/pinches out at the Site. Both the CU1 and TGA are erosionally trunctated in the general area of the poplar tree field.
- Obtain samples for testing for volatile organic compounds (VOCs), specifically TCE.
- Use field data, observations, and sample results to evaluate the CU1 as a possible continuing source and migration route for persistent TCE mass in the upper TSA.

This technical memorandum outlines the subsurface investigation field procedures, sampling methods, geologic observations, and analytical testing results, as well as provides conclusions and recommendations.

DRILLING AND SAMPLING PROCEDURES

Public and private utility locates were completed prior to the investigation in order to locate underground utilities. Three borings (CU1-B1, CU1-B2, and CU1-B3) were completed by Cascade Drilling on 4, 5, and 6 June 2014 using a track-mounted direct-push sonic drilling rig. Telescoping procedures (i.e. step-down) were used at the base of the TGA/colluvium where the CU1 contact was encountered. Above the CU1 contact, an 8-inch diameter casing was used, and continuous soil/rock cores were collected using a 6-inch core barrel. Once the contact with the CU1 was encountered, a hydrated bentonite seal was placed at the base of the casing and allowed to hydrate and expand for one hour, prior to advancing a 6-inch diameter casing and 4-inch diameter core barrel into the CU1. Once the contact with the underlying TSA was reached, the borings were backfilled with hydrated bentonite chips to within 1 foot of the ground surface. Topsoil and/or gravel were placed in the top 1-foot of the boring to match the surrounding surface materials.

Soil and rock core sampling methods were completed as described in the Work Plan. Boring logs are provided in Attachment A, and soil and rock core photographs are provided in Attachment B.

TGA Sampling

TGA and overburden (colluvium) soil samples were extruded from the core barrel into plastic bags. The core was logged, screened for VOCs using a photoionization detector (PID), and soil samples were obtained for analytical testing using the EPA Method 5035 sampling protocol. One soil sample was collected from each boring at a depth just above the contact with the CU1. Soil samples were submitted to ESC Lab Sciences (ESC) in Mt. Juliet, Tennessee for testing of VOCs by EPA Method 8260. A total of three soil samples, one from each boring, were analyzed. The ESC analytical laboratory report is included in Attachment C.

CU1 Sampling

CU1 rock samples were collected in 4-inch diameter Lexan sleeves, and cores were collected in 2.5-foot runs to minimize heat and potential volatilization of VOCs in the core. The Lexan core liners were carefully cut open, the core photographed, logged to characterize lithology and fracturing, and samples were selected for analytical and grain size testing. Geosyntec and Stone Environmental Laboratory (Stone Environmental) both described and sampled CU1 rock cores in the field.

Core samples were collected for analytical testing based on field screening results (e.g. PID measurements, visual staining, odors), degree of fracturing, evidence of groundwater and to

provide adequately distributed samples. Core crushing and preservation was conducted in the field by Stone Environmental personnel. Once sample depths were selected, the core was placed on a stainless steel plate and crushed with a hydraulic press. A portion of the crushed core was then placed in laboratory-supplied containers with methanol preservative. Preserved rock core samples were shipped overnight to the Stone Environmental laboratory in New Hampshire for analytical testing of VOCs. VOCs were extracted from the crushed core samples using a microwave assisted extraction (MAE) procedure and analyzed for VOCs by EPA Method 8260. The Stone Environmental field report, including field descriptions, field procedures, and analytical testing methods and results, is provided as Attachment C.

Twelve CU1 samples (four samples from each of the three borings) were analyzed. Additional samples were field-preserved and held for potential analytical testing. Selected samples were also collected and four samples were submitted for grain size testing and analysis of TOC at Golder Associates in Mississauga, Ontario, Canada (subcontracted to Stone Environmental). Grain size and TOC results were used to calculate porewater concentrations. The Golder Associates laboratory report is included as part of the Stone Environmental report in Attachment C.

Porewater concentrations were calculated using the TCE concentrations from the rock samples, porosity, wet and dry bulk density, the TOC results, and partition coefficients from literature sources. The porewater calculation and table of partition coefficients used, along with the estimated porewater concentrations are provided in the Stone Environmental report (Attachment C).

CU1 INVESTIGATION RESULTS

At borings CU1-B1 and CU1-B3, interbedded sand and silt layers (possibly colluvium) were observed from the ground surface to the depth of the contact with the CU1 at 12 and 10 feet bgs, respectively. Characteristic TGA gravels were notably absent at these borings. At boring CU1-B2, silty sand and sandy silt layers were encountered from 0-7 feet bgs, underlain by sandy gravel and gravel and cobbles, interpreted to be the TGA, from approximately 7 to 14.5 feet bgs, with weathering rinds noted on gravels from 12 to 14.5 feet bgs. A silty sand/sandy silt with pieces of vesicular basalt was encountered from 14.5 to 18 feet bgs; this lower 3.5 feet appeared to be a weathered zone just above the CU1 contact at 18 feet bgs.

The observed CU1 stratigraphy consisted of several distinct subunits that are described below, and generally corresponded to the four subunits (SU1A through SU1D) described by others. The four subunits were generally highly weathered and fractured. A generalized, interpreted cross section is presented as Figure 2. At borings CU1-B1 and CU1-B3, the uppermost CU1 unit was

encountered at approximately 10-12 feet bgs, shallower than at boring CU1-B2 where it was encountered at 14.5 feet bgs. The upper CU1 at boring CU1-B2 consisted of a dark brown to black, weathered sandy silt from 14.5 to 18 feet bgs, underlain by a brown, laminated sandstone from 18-20 feet bgs.

A distinctive thickly bedded, massive, gray-green siltstone was encountered in borings CU1-B1, CU1-B2, and CU1-B3 at 12, 20, and 10 feet bgs, respectively. This gray-green siltstone is representative of the second subunit (SU1B) (this unit alone is referred to as CU1 in the ROD [DEQ, 1996]). The gray-green siltsone subunit grades with depth into thinly bedded layers of brown-red to brown and gray, moderate to weak siltstone and sandstone from approximately 17-23 feet bgs at CU1-B1 and 18 to 24 feet bgs CU1-B3, and gray and brown, thinly bedded sandstone from 24.5 to 27 feet bgs CU1-B2.

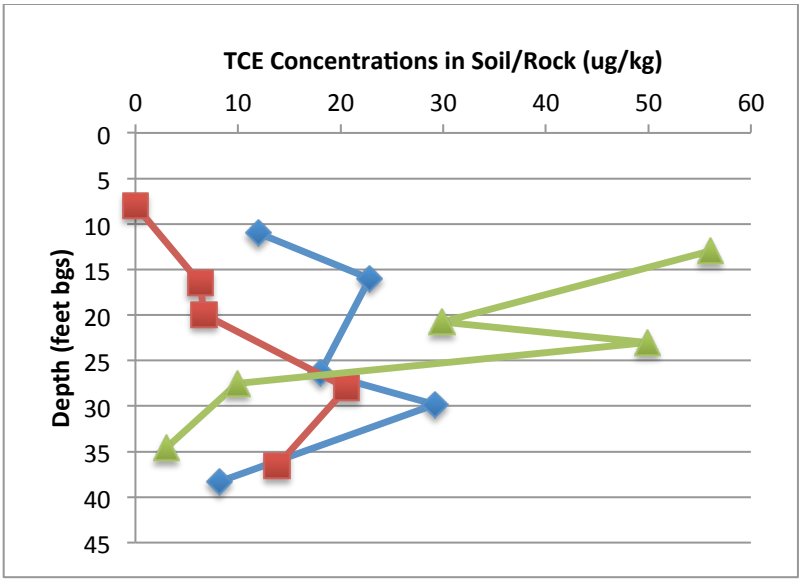
At approximately 23 to 27 feet bgs, the brown siltstone/sandstone was underlain by a gray to brown, thinly bedded, low to moderately fractured, and moderately weathered gray siltstone to depths ranging from approximately 28-30 feet bgs. This unit was underlain by a thinly bedded, highly fractured, weathered sandstone (SU1D) until the depth of the TSA contact, encountered at approximately 38-39.5 feet bgs, where the borings were terminated. The TSA below this depth was unweathered and a distinct dark gray, very hard sandstone. The contact was encountered slightly deeper than the expected 30 feet (as predicted by the EW-18 boring logs [Maul Foster & Alongi, 1998]). The thickness of CU1 was thinner (approximately 20-30 feet) than described at the VW-17d borings, where CU1 was observed up to 45 feet thick (SSPA, 2012 Prowell Environmental, 2012).

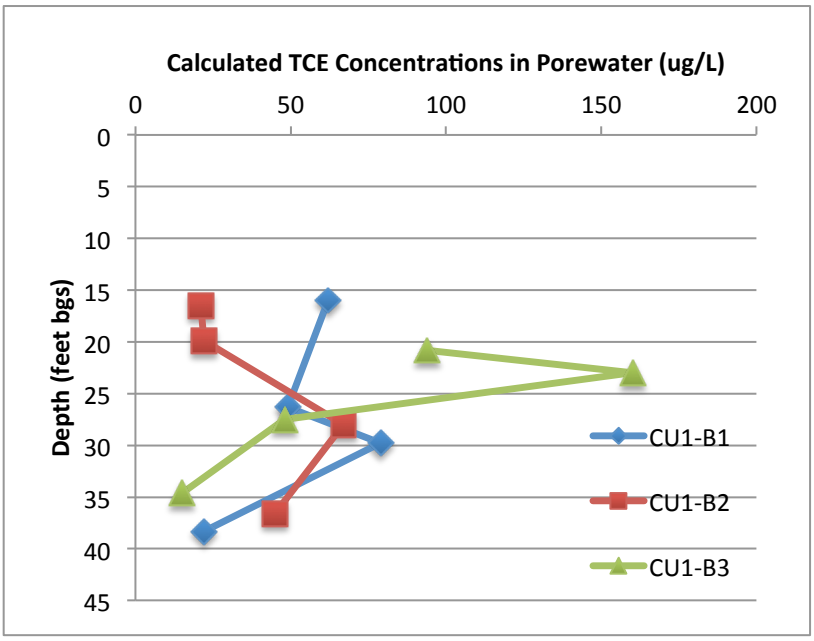
Groundwater was encountered at approximately 7 feet bgs in boring CU1-B2, and groundwater was not observed at boring CU1-B1 or CU1-B3. Some isolated areas of the interbedded sandstone and siltstone units had evidence of groundwater, either directly observed moisture or iron-staining (oxidation). These areas were targeted for sampling and analyses. No water or iron staining was observed in the gray-green siltstone.

ANALYTICAL RESULTS

TCE was detected in the soil (TGA or colluvium) samples from borings CU1-B1 and CU1-B3 at concentrations of 12 and 56 µg/kg respectively (Table 1). No other VOCs were detected in these soil samples. TCE was detected in each of the rock core samples from the CU1 at concentrations ranging from 3.03 to 49.9 µg/kg. Calculated pore water TCE concentrations ranged from 15 to 160 µg/L. The method for calculating pore water concentrations is described in the Stone Environmental report provided in Attachment C.

Rock core and porewater TCE concentrations generally increased with depth in the CU1, but decreased at the base of the CU1 in the brown weathered sandstone, as shown on the charts below.





TCE concentrations in soil and rock core samples are summarized in Table 1 and are shown on the cross-section in Figure 2. Calculated porewater TCE concentrations are also shown in Figure 2.

DISCUSSION

The geologic materials described in the three borings completed as part of this investigation indicated a high degree of weathering, as anticipated near the erosional margin (or truncation). The CU1 siltstones and sandstones were highly fractured, but the degree of weathering obscured any predominant fracture joints or fracture planes. No consistent weathering patterns, degree of weathering (or degradation), or zones of fracturing were observed laterally nor did they appear to increase/decrease with depth. The TGA was present at the middle boring (CU1-B2) but absent from boring CU1-B1 and CU1-B3

The presence of groundwater in boring CU1-B2 at 7 feet bgs is likely related to the presence of a transmissive, sandy gravel (TGA) overlying the CU1. The presence/absence of the TGA and heterogeneity of the TGA upgradient of the CU1 borings and Shepard Spring (near boring CU-B3) likely contributes to the variable presence/absence of groundwater observed in this investigation. Groundwater or significant water bearings zones were not observed in borings CU1-B1 and CU1-B3. Very low water production is also noticed at monitoring wells CMW-45 and CMW-46, which are located 20 feet west of CU1-B2 and 175 feet west of CU1-B3, respectively. These wells are screened across and into the top of CU1 (see CMW-45 on Figure 2).

TCE concentrations were highest in soil, rock core, and porewater at boring CU1-B3. Boring CU1-B3 was the furthest west and closest to Shepard Spring, where TCE concentrations were historically elevated prior to remediation. TCE concentrations were of similar magnitude and ratios relative to the previous study at boring VW-17d-95.5 (SSPA, 2012 Prowell Environmental, 2012), where TCE concentrations ranged from approximately less than 1 to 30 µg/kg in rock samples and from less than 1 up to 112 µg/L calculated in porewater. As concluded in the previous CU1 rock/porewater study (SSPA, 20120), TCE concentrations are greater in the upper portions of CU1 and declined with depth, likely the result of historic slow downward migration of TCE from the TGA (as well as from Shepard Spring, near CU1-B3) into CU1. Similarly, TCE concentrations in upgradient (relative to the CU1 borings) monitoring wells CMW-47c and CMW-48c ranged from 100 to 180 µg/L, and 120 to 190 µg/L, respectively, in 2013. Monitoring wells CMW-47c and CMW-48c are screened into the upper CU1. These concentrations are similar to the highest estimated at CU1-B3 (160 µg/L). As concluded by SSPA (2012), TCE concentrations "have persisted for an extended period of time, [in CU1], given that measured TCE concentrations in the TGA were less than 160 µg/L about 1996, some 16 years ago." These results suggest the TCE migrated into CU1 from the overlying TGA and halted, and TCE has not migrated into the base of the CU1 or upper TSA at significant concentrations.

TCE concentrations in monitoring well MW-45, located near boring CU1-B2, were around 50 µg/L prior to biopolishing (addition of emulsified oil) in 2008 and decreased to below detection

limits in 2010 through the final sampling event in 2013. No direct evidence of biopolishing was observed at CU1-B2; although the lower TCE concentrations in rock samples relative to the same unit at CU1-B1 and CU1-B3 (22.8 and 29.9 µg/kg, respectively), possibly indicating some degradation of TCE in the vicinity of CU1-B2 due to past addition of nutrients at MW-45.

CONCLUSIONS

The results of the CU1 investigation indicate that TCE is present in the rock matrix and pore water of CU1, with higher concentrations in the upper and middle portions the siltstone/sandstone subunits. Historically elevated TCE concentrations were associated with historical flow from Shepard Spring and downward migration from the TGA into CU1 or along the margin of CU1. TCE concentrations at the base of CU1 at CU1-B-2 and CU1-B3 were not elevated relative to overlying CU1 subunits, and were relatively low in the competent dark gray sandstone of the upper TSA at CU1- B1, indicating the TCE attenuated in the CU1 and is not present at significant concentrations in the Upper TSA at these locations. Lastly, the magnitude of TCE concentrations in the rock and pore water of CU1 do not indicate a significant source of ongoing TCE to the Upper TSA, in this area of the remedy. These findings are consistent with the TSA Remedy Mound Area investigation completed in 2012 (SSPA, 2012).

REFERENCES

DEQ, 1996. DEQ Remedial Action Record of Decision for the East Multnomah County Groundwater Contamination Site Troutdale Sandstone Aquifer, December 1996.

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Swanson, R. D., W. D. McFarland, J. B. Gonthier, and J. M. Wilkinson. 1993. A Description of Hydrogeologic Units in the Portland Basin, Oregon and Washington. U.S. Geological Survey Water-Resources Investigations Report 90-4196.

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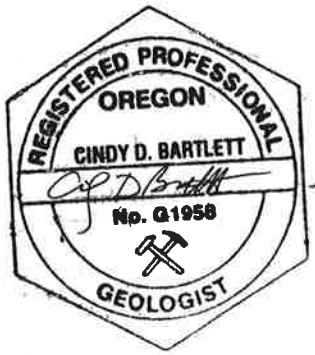
ATTACHMENTS

Figure 1: Site Plan: CU1 Exploration Area
Figure 2: Interpreted Cross Section, Cascade TSA CU1 Investigation
Table 1: Confining Unit (CU1) - Analytical Summary

Attachment A: Boring Logs
Attachment B: CU1 Exploration Sampling Photolog
Attachment C: Analytical Laboratory Reports and Data Validation Memorandum

Prepared by:



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Geologist

Reviewed and Approved by:

Brent Miller, P.E.
Principal

N

CMW-14Rds

CMW-46

CMW-45

CU1-B2

SW-1A (Shepard Spring)

CU1-B3

EW-18

CU1-B1

Manhole 17

B-5

B-6

CMW-47C

CMW-17ds

CMW-47A

CMW-47B

CMW-48C

CMW-48A

CMW-48B

CMW-31s

CMW-32s

CMW-49

Manhole 18

CMW-35s

CMW-18ds

CMW-43

CMW-33s

CMW-42

Legend

- CU1 - Boring
- Manhole
- CU1 Monitoring Well
- Shepard Springs Sample Location
- TGA Monitoring Well
- Upper & Lower TSA Monitoring Well
- Upper TSA Monitoring Well
- Lower TSA Monitoring Well
- Monitoring Well Where Biosubstrate Previoulsy Added (2008 - 2010)
- Approximate Northern Edge of TGA and CU1 Truncation
- Bioremediation Treatment Wall
- **Cascade Corporation Property Boundary**

60 30 0 60 Feet

Site Plan: CU1 Exploration Area

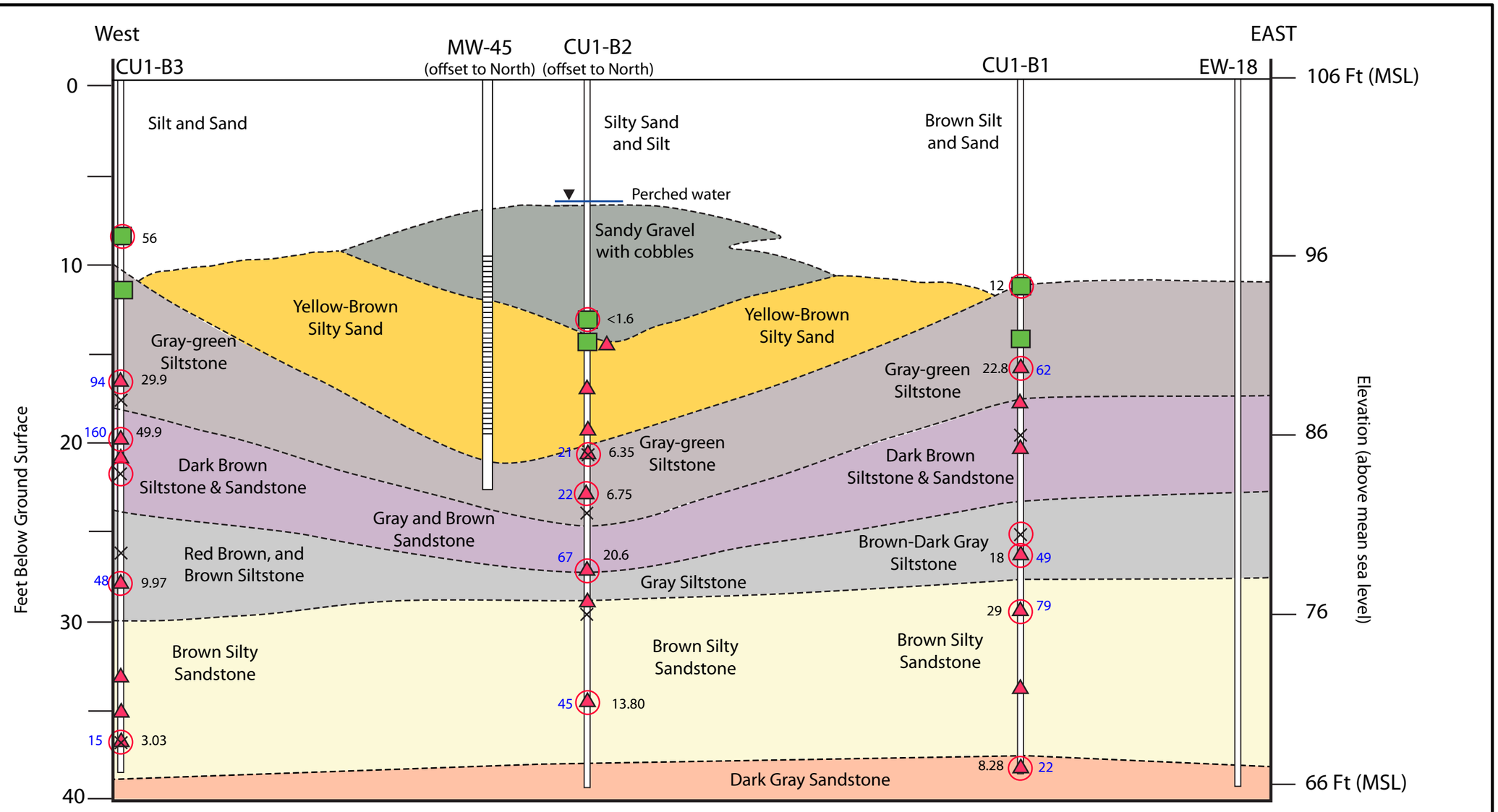
East Multnomah County

Geosyntec consultants

Figure 1

PNG0564S | August 2014

SantaBarbara-01\Data P:\GIS\PNG0564 - Cascade\Projects\2014\TSA Misc\Fig01_Site_Plan_CU1_Exploration_Area.mxd STM 20140807



LEGEND

- Physical Properties Samples
- Submitted for Analysis
- 'Rock' Sample
- 3.03 TCE Results (µg/Kg)
- Soil Sample
- 94 TCE Results Porewater (µg/L)

Topographic profile and scales approximated

10 Feet
5
0

0 10 20 Feet

LITHOLOGIC UNITS

Silt and Sand	
Sandy Gravel with Cobbles	TGA
Yellow-Brown Silty Sand	
Gray-Green Siltstone	
Siltstone & Sandstone	CU1
Brown-Gray Siltstone	
Brown Silty Sandstone	
Gray Sandstone	TSA

Interpreted Cross Section
Cascade TSA CU1 Investigation

Geosyntec consultants

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Figure 2

Table 1
Confining Unit 1 (CU1) - Analytical Summary
Cascade TSA Fairview, Oregon

				Analyte	Trichloroethene (TCE)	Tetrachloroethene (PCE)	cis-1,2-Dichloroethene	Vinyl Chloride	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-dichloro-1-Propene	1,1-Dichloroethane	1,1-Dichloroethene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,3-Trimethylbenzene	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-Chloropropane
Sample ID	**Location**	**Depth**	**Matrix**	**Date Sampled**																	
CU1-B1-16.00-VOC	CU1-B1	16	Rock	6/2/14	0.0228 J	< 0.00156 J	< 0.0156 J	-	-	< 0.00156 J	-	-	-	-	< 0.0156 J	-	-	-	-	-	-
CU1-B1-26.30-VOC	CU1-B1	26.3	Rock	6/2/14	0.0180 J	< 0.00111	< 0.0111 J	-	-	< 0.00111 J	-	-	-	-	< 0.0111 J	-	-	-	-	-	-
CU1-B1-29.80-VOC	CU1-B1	29.8	Rock	6/2/14	0.0292 J	< 0.00104	< 0.0104 J	-	-	< 0.00104 J	-	-	-	-	< 0.0104 J	-	-	-	-	-	-
CU1-B1-38.30-VOC	CU1-B1	38.3	Rock	6/2/14	0.00828 J	< 0.000840 J	< 0.00840 J	-	-	< 0.000840 J	-	-	-	-	< 0.00840 J	-	-	-	-	-	-
CU1-B2-20.80-VOC	CU1-B3	20.8	Rock	6/3/14	0.00635 J	< 0.00121 J	< 0.0121 J	-	-	< 0.00121 J	-	-	-	-	< 0.0121 J	-	-	-	-	-	-
CU1-B2-23.00-VOC	CU1-B3	23	Rock	6/3/14	0.00675 J	< 0.00119 J	< 0.0119 J	-	-	< 0.00119 J	-	-	-	-	< 0.0119 J	-	-	-	-	-	-
CU1-B2-27.50-VOC	CU1-B3	27.5	Rock	6/3/14	0.0206 J	< 0.00100 J	< 0.0100 J	-	-	< 0.00100 J	-	-	-	-	< 0.0100 J	-	-	-	-	-	-
CU1-B2-34.60-VOC	CU1-B3	34.6	Rock	6/3/14	0.0138 J	< 0.00106 J	< 0.0106 J	-	-	< 0.00106 J	-	-	-	-	< 0.0106 J	-	-	-	-	-	-
CU1-B3-16.50-VOC	CU1-B2	16.5	Rock	6/4/14	0.0299 J	< 0.00123	< 0.0123 J	-	-	< 0.00123 J	-	-	-	-	< 0.0123 J	-	-	-	-	-	-
CU1-B3-19.90-VOC	CU1-B2	19.9	Rock	6/4/14	0.0499 J	< 0.00107	< 0.0107 J	-	-	< 0.00107 J	-	-	-	-	< 0.0107 J	-	-	-	-	-	-
CU1-B3-28.00-VOC	CU1-B2	28	Rock	6/4/14	0.00997 J	< 0.00134 J	< 0.0134 J	-	-	< 0.00134 J	-	-	-	-	< 0.0134 J	-	-	-	-	-	-
CU1-B3-36.60-VOC	CU1-B2	36.6	Rock	6/4/14	0.00303 J	< 0.000927 J	< 0.00927 J	-	-	< 0.000927 J	-	-	-	-	< 0.00927 J	-	-	-	-	-	-
CU1-B1/11-12 FT	CU1-B1	11	Soil	6/2/14	0.012	< 0.0013	0.0045	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0033	< 0.0013	< 0.0013	< 0.0013	< 0.0066
CU1-B2/13-14 FT	CU1-B3	13	Soil	6/2/14	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0039	< 0.0016	< 0.0016	< 0.0016	< 0.0079
CU1-B3/8-9 FT	CU1-B2	8	Soil	6/2/14	0.056	< 0.0015	0.0080	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0038	< 0.0015	< 0.0015	< 0.0015	< 0.0075

Notes:

Rock samples analyzed by EPA Method 8260 with microwave assisted extraction (MAE). Soil samples analyzed by EPA Method 8260.

Results are reported in milligrams per kilogram (mg/kg).

J = The reported result is an estimated value (e.g., matrix interference was observed or the analyte was positively identified, but the associated numerical value is between the method detection limit and reporting limit).

- = not analyzed

Table 1
Confining Unit 1 (CU1) - Analytical Summary
Cascade TSA Fairview, Oregon

				Analyte	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	Acetone	acrylonitrile	Benzene	bromobenzene	Bromoform	Butylbenzene	Carbon Tetrachloride	Chlorobenzene	Chlorodibromomethane
Sample ID	**Location**	**Depth**	**Matrix**	**Date Sampled**																		
CU1-B1-16.00-VOC	CU1-B1	16	Rock	6/2/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.00156 J	-	-
CU1-B1-26.30-VOC	CU1-B1	26.3	Rock	6/2/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.00111 J	-	-
CU1-B1-29.80-VOC	CU1-B1	29.8	Rock	6/2/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.00104 J	-	-
CU1-B1-38.30-VOC	CU1-B1	38.3	Rock	6/2/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.000840 J	-	-
CU1-B2-20.80-VOC	CU1-B3	20.8	Rock	6/3/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.00121 J	-	-
CU1-B2-23.00-VOC	CU1-B3	23	Rock	6/3/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.00119 J	-	-
CU1-B2-27.50-VOC	CU1-B3	27.5	Rock	6/3/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.00100 J	-	-
CU1-B2-34.60-VOC	CU1-B3	34.6	Rock	6/3/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.00106 J	-	-
CU1-B3-16.50-VOC	CU1-B2	16.5	Rock	6/4/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.00123 J	-	-
CU1-B3-19.90-VOC	CU1-B2	19.9	Rock	6/4/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.00107 J	-	-
CU1-B3-28.00-VOC	CU1-B2	28	Rock	6/4/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.00134 J	-	-
CU1-B3-36.60-VOC	CU1-B2	36.6	Rock	6/4/14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.000927 J	-	-
CU1-B1/11-12 FT	CU1-B1	11	Soil	6/2/14	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.066	< 0.013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013
CU1-B2/13-14 FT	CU1-B3	13	Soil	6/2/14	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.079	< 0.016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016
CU1-B3/8-9 FT	CU1-B2	8	Soil	6/2/14	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.075	< 0.015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015

Notes:

Rock samples analyzed by EPA Method 8260 with microwave assisted extraction (MAE). Soil samples analyzed by EPA Method 8260.

Results are reported in milligrams per kilogram (mg/kg).

J = The reported result is an estimated value (e.g., matrix interference was observed or the analyte was positively identified, but the associated numerical value is between the method detection limit and reporting limit).

- = not analyzed

Table 1
Confining Unit 1 (CU1) - Analytical Summary
Cascade TSA Fairview, Oregon

				Analyte	Chloroform	Chloromethane	cis-1,3-Dichloropropene	Dibromomethane	Dichlorobromomethane	Diisopropyl Ether	Ethyl Chloride	Ethylbenzene	Freon 11	Freon 113	Freon 12	Hexachlorobutadiene (HCBD)	Isopropylbenzene	Methyl Bromide	Methyl ethyl ketone	Methyl Isobutyl Ketone (MIBK)	Methyl tert-Butyl Ether (MTBE)	Methylene Chloride (DCM)
Sample ID	**Location**	**Depth**	**Matrix**	**Date Sampled**																		
CU1-B1-16.00-VOC	CU1-B1	16	Rock	6/2/14	< 0.00156 J	-	-	-	-	-	-	-	-	< 0.00156 J	-	-	-	-	-	-	-	-
CU1-B1-26.30-VOC	CU1-B1	26.3	Rock	6/2/14	< 0.00111 J	-	-	-	-	-	-	-	-	< 0.00111 J	-	-	-	-	-	-	-	-
CU1-B1-29.80-VOC	CU1-B1	29.8	Rock	6/2/14	< 0.00104 J	-	-	-	-	-	-	-	-	< 0.00104 J	-	-	-	-	-	-	-	-
CU1-B1-38.30-VOC	CU1-B1	38.3	Rock	6/2/14	< 0.000840 J	-	-	-	-	-	-	-	-	< 0.000840 J	-	-	-	-	-	-	-	-
CU1-B2-20.80-VOC	CU1-B3	20.8	Rock	6/3/14	< 0.00121 J	-	-	-	-	-	-	-	-	< 0.00121 J	-	-	-	-	-	-	-	-
CU1-B2-23.00-VOC	CU1-B3	23	Rock	6/3/14	< 0.00119 J	-	-	-	-	-	-	-	-	< 0.00119 J	-	-	-	-	-	-	-	-
CU1-B2-27.50-VOC	CU1-B3	27.5	Rock	6/3/14	< 0.00100 J	-	-	-	-	-	-	-	-	< 0.00100 J	-	-	-	-	-	-	-	-
CU1-B2-34.60-VOC	CU1-B3	34.6	Rock	6/3/14	< 0.00106 J	-	-	-	-	-	-	-	-	< 0.00106 J	-	-	-	-	-	-	-	-
CU1-B3-16.50-VOC	CU1-B2	16.5	Rock	6/4/14	< 0.00123 J	-	-	-	-	-	-	-	-	< 0.00123 J	-	-	-	-	-	-	-	-
CU1-B3-19.90-VOC	CU1-B2	19.9	Rock	6/4/14	< 0.00107 J	-	-	-	-	-	-	-	-	< 0.00107 J	-	-	-	-	-	-	-	-
CU1-B3-28.00-VOC	CU1-B2	28	Rock	6/4/14	< 0.00134 J	-	-	-	-	-	-	-	-	< 0.00134 J	-	-	-	-	-	-	-	-
CU1-B3-36.60-VOC	CU1-B2	36.6	Rock	6/4/14	< 0.000927 J	-	-	-	-	-	-	-	-	< 0.000927 J	-	-	-	-	-	-	-	-
CU1-B1/11-12 FT	CU1-B1	11	Soil	6/2/14	< 0.0066	< 0.0033	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0066	< 0.0013	< 0.0066	< 0.0013	< 0.0066	< 0.0013	< 0.0013	< 0.0066	< 0.013	< 0.013	< 0.0013	< 0.0066
CU1-B2/13-14 FT	CU1-B3	13	Soil	6/2/14	< 0.0079	< 0.0039	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0079	< 0.0016	< 0.0079	< 0.0016	< 0.0079	< 0.0016	< 0.0016	< 0.0079	< 0.016	< 0.016	< 0.0016	< 0.0079
CU1-B3/8-9 FT	CU1-B2	8	Soil	6/2/14	< 0.0075	< 0.0038	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0075	< 0.0015	< 0.0075	< 0.0015	< 0.0075	< 0.0015	< 0.0015	< 0.0075	< 0.015	< 0.015	< 0.0015	< 0.0075

Notes:

Rock samples analyzed by EPA Method 8260 with microwave assisted extraction (MAE). Soil samples analyzed by EPA Method 8260.

Results are reported in milligrams per kilogram (mg/kg).

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- = not analyzed

Table 1
Confining Unit 1 (CU1) - Analytical Summary
Cascade TSA Fairview, Oregon

				Analyte	Naphthalene	n-Propylbenzene	o-Chlorotoluene	p-Chlorotoluene	p-Cymene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Vinyl 2-Chloroethyl ether	Xylenes, Total
Sample ID	**Location**	**Depth**	**Matrix**	**Date Sampled**													
CU1-B1-16.00-VOC	CU1-B1	16	Rock	6/2/14	-	-	-	-	-	-	-	-	-	< 0.0156 J	-	-	-
CU1-B1-26.30-VOC	CU1-B1	26.3	Rock	6/2/14	-	-	-	-	-	-	-	-	-	< 0.0111 J	-	-	-
CU1-B1-29.80-VOC	CU1-B1	29.8	Rock	6/2/14	-	-	-	-	-	-	-	-	-	< 0.0104 J	-	-	-
CU1-B1-38.30-VOC	CU1-B1	38.3	Rock	6/2/14	-	-	-	-	-	-	-	-	-	< 0.00840 J	-	-	-
CU1-B2-20.80-VOC	CU1-B3	20.8	Rock	6/3/14	-	-	-	-	-	-	-	-	-	< 0.0121 J	-	-	-
CU1-B2-23.00-VOC	CU1-B3	23	Rock	6/3/14	-	-	-	-	-	-	-	-	-	< 0.0119 J	-	-	-
CU1-B2-27.50-VOC	CU1-B3	27.5	Rock	6/3/14	-	-	-	-	-	-	-	-	-	< 0.0100 J	-	-	-
CU1-B2-34.60-VOC	CU1-B3	34.6	Rock	6/3/14	-	-	-	-	-	-	-	-	-	< 0.0106 J	-	-	-
CU1-B3-16.50-VOC	CU1-B2	16.5	Rock	6/4/14	-	-	-	-	-	-	-	-	-	< 0.0123 J	-	-	-
CU1-B3-19.90-VOC	CU1-B2	19.9	Rock	6/4/14	-	-	-	-	-	-	-	-	-	< 0.0107 J	-	-	-
CU1-B3-28.00-VOC	CU1-B2	28	Rock	6/4/14	-	-	-	-	-	-	-	-	-	< 0.0134 J	-	-	-
CU1-B3-36.60-VOC	CU1-B2	36.6	Rock	6/4/14	-	-	-	-	-	-	-	-	-	< 0.00927 J	-	-	-
CU1-B1/11-12 FT	CU1-B1	11	Soil	6/2/14	< 0.0066	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0013	< 0.0066	< 0.0013	< 0.0013	< 0.066	< 0.0040
CU1-B2/13-14 FT	CU1-B3	13	Soil	6/2/14	< 0.0079	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0016	< 0.0079	< 0.0016	< 0.0016	< 0.079	< 0.0047
CU1-B3/8-9 FT	CU1-B2	8	Soil	6/2/14	< 0.0075	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0075	< 0.0015	< 0.0015	< 0.075	< 0.0045

Notes:

Rock samples analyzed by EPA Method 8260 with microwave assisted extraction (MAE). Soil samples analyzed by EPA Method 8260.

Results are reported in milligrams per kilogram (mg/kg).

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- = not analyzed

ATTACHMENT A

Boring Logs

Geosyntec consultants
621 SW Morrison Street, Suite 600
Portland, Oregon 97205
Phone: 503.222.9518

PROJECT Cascade Corporation - Fairview, OR
PROJECT LOCATION 2525 NE 201st St.
PROJECT NUMBER PNG0564S14

KEY SHEET - CLASSIFICATIONS AND SYMBOLS

GS FORM: KEY 09/99

EMPIRICAL CORRELATIONS WITH STANDARD PENETRATION RESISTANCE N VALUES *

	N VALUE * (BLOWS/FT)	CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS/SQ FT)
FINE GRAINED SOILS	0 - 2	VERY SOFT	<0.25
	3 - 4	SOFT	0.25 - 0.50
	5 - 8	FIRM	0.50 - 1.00
	9 - 15	STIFF	1.00 - 2.00
	16 - 30	VERY STIFF	2.00 - 4.00
	31 - 50	HARD	>4.00
	>50	VERY HARD	

	N VALUE * (BLOWS/FT)	RELATIVE DENSITY
COARSE GRAINED SOILS	0 - 4	VERY LOOSE
	5 - 10	LOOSE
	11 - 30	MEDIUM DENSE
	31 - 50	DENSE
	>50	VERY DENSE

* ASTM D 1586; NUMBER OF BLOWS OF 140 POUND HAMMER FALLING 30 INCHES TO DRIVE A 2 IN. O.D., 1.4 IN. I.D. SAMPLER ONE FOOT.

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

MAJOR DIVISIONS			SYMBOLS	DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL COARSER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO.4 SIEVE	CLEAN GRAVELS — LITTLE OR NO FINES	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES — APPRECIABLE AMOUNT OF FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING NO.4 SIEVE	CLEAN SANDS — LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES — APPRECIABLE AMOUNT OF FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL FINER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILT
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENT

NOTE: DUAL SYMBOLS USED FOR BORDERLINE CLASSIFICATIONS

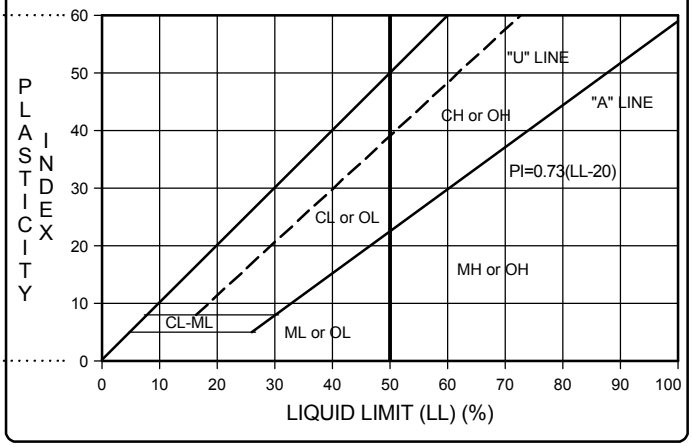
PARTICLE SIZE IDENTIFICATION

BOULDERS	>300 mm
COBBLES	75 - 300 mm
GRAVEL: COARSE	19.0 - 75 mm
GRAVEL: FINE	4.75 - 19 mm
SAND: COARSE	2.00 - 4.75 mm
SAND: MEDIUM	0.425 - 2.00 mm
SAND: FINE	0.075 - 0.425 mm
SILT	0.075 - 0.002 mm
CLAY	<0.002 mm

WELL GRADED - HAVING WIDE RANGE OF GRAIN SIZES AND APPRECIABLE AMOUNTS OF ALL INTERMEDIATE PARTICLE SIZES

POORLY GRADED - PREDOMINANTLY ONE GRAIN SIZE, OR HAVING A RANGE OF SIZES WITH SOME INTERMEDIATE SIZES MISSING

PLASTICITY CHART



OTHER MATERIAL SYMBOLS

- Siltstone
- Sandstone
- Siltstone/Claystone
- Claystone
- Shale
- Siltstone/Sandstone
- Conglomerate
- Granitic
- Sand
- Silt
- Silty Sand
- Alluvium
- Artificial Fill
- Debris Fill
- Asphalt
- Cement

WELL SYMBOLS

- HYDRATED GRANULAR BENTONITE
- BENTONITE CEMENT GROUT
- FILTER PACK
- CONCRETE
- NATIVE/ SLOUGH
- CENTRAL-IZER

SAMPLER AND OTHER SYMBOLS

- GRAB SAMPLE
- SPLIT SPOON
- STANDARD PENETRATION TEST (SPT)
- SHELBY TUBE
- CALIFORNIA SAMPLER

- Water Level at Time Drilling, or as Shown
- Static Water Level
- MSL: Mean Sea Level
- MC: Moisture Content
- DD: Dry Density
- SA: Sieve Analysis
- PI: Plasticity Index
- LL: Liquid Limit
- c: Cohesion
- K: Hydraulic Conductivity
- Phi: Friction Angle

KEY-PORTLAND PNG0564S.GPJ SAN DIEGO GINT LIBRARY.GLB 7/22/14

Geosyntec consultants
621 SW Morrison Street, Suite 600
Portland, Oregon 97205
Phone: 503.222.9518

GS FORM: BORE 1/99

BOREHOLE RECORD

BORING CU1-B1 **SHEET** 1 OF 2
START DATE 6/2/2014 **ELEVATION**
FINISH DATE 6/2/2014
PROJECT Cascade Corporation - Fairview, OR
LOCATION 2525 NE 201st St.
PROJECT NUMBER PNG0564S14

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES: SAMPLE NAME	SAMPLES: TYPE	SAMPLES: BLOW COUNTS	% RECOVERY	PID READING (ppm)	USCS Symbol	COMMENTS
0	Brown [2.5YR, 5/2], loose, dry to moist silty SAND								SM	
2	Gray [2Gley, 5/10G] and brown [2.5YR, 4/8] mottled, stiff, moist, SILT with some fine sand.								ML	Drilled to 13 feet with 8-inch casing and 6-inch core barrel.
3								0.6		
4							100	0.8		
5	Brown [7.5YR, 4/3], loose, wet, fine SAND with some coarse gravels, micaceous, roots.								SP	
6								10.4		
7	Gray brown [5YR, 6/1], very stiff, moist SILT with red brown [5YR, 5/8] mottling, trace clay.								ML	
8										
9							100	1.3		
10										Hard drilling
11								0.3		
12								0.6		
13	Gray green [2 Gley, 4/5B], high strength, thickly bedded, weathered SILTSTONE with some fine sand [CONFINING UNIT1].			CU1-B1/11-12 @ 10:20			100		SILT-STONE	Sealed 8-inch casing at 13 feet with one bag of hydrated bentonite chips.
14	Grades to gray and dark brown [5YR, 2.5/1], SILTSTONE with some clay.						100			
15				CU1-B1/14-15 @ 12:15				7.0		Switched to 6-inch casing and 4-inch core barrel. Switched to Lexan liners, advanced at 2.5 feet per run.
16				CU1-B1/16.00 -VOC						
17							100			
18	Red brown [7.5YR, 5/8] and gray [7.5YR, 6/2], medium strength,, thickly bedded, moist with wet lens, fine sandy SILTSTONE with some mottled weathered fine to coarse gravel.							-	SILT-STONE	
19				CU1-B1/18.80 -VOC						
20	Dark brown [7.5YR, 3/4], angular, well-graded, thickly bedded, weak, SANDSTONE in silty matrix.			CU1-B1/18-21 (physical prop.)			100	-	SAND-STONE	
21	A thin sand lens at approximately 21 feet.			CU1-B1/20.70 -VOC						
22							100	-		
23	Brown [5YR, 4/4], weakly cemented (low strength), moderately thick beds, very weathered, clayey SILTSTONE.								SILT-STONE	
24				CU1-B1/24.00 -VOC						
25							100	-		

CONTRACTOR Cascade Drilling
EQUIPMENT Jeff Johnson
DRILL MTHD Sonic - Track
DIAMETER 8" / 6"
LOGGER B. Lary **REVIEWER**

NORTHING
EASTING
ANGLE Vertical
BEARING ------
PRINTED 08/11/14

REMARKS:

COORDINATE SYSTEM:

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORING LOG NO WELL (PORTLAND) PNG0564S.GPJ SAN DIEGO GINT LIBRARY.GLB 8/11/14

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Portland, Oregon 97205
Phone: 503.222.9518

GS FORM: BORE 1/99

BOREHOLE RECORD

BORING CU1-B1 **SHEET** 2 OF 2
START DATE 6/2/2014 **ELEVATION**
FINISH DATE 6/2/2014
PROJECT Cascade Corporation - Fairview, OR
LOCATION 2525 NE 201st St.
PROJECT NUMBER PNG0564S14

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES: SAMPLE NAME	SAMPLES: TYPE	SAMPLES: BLOW COUNTS	% RECOVERY	PID READING (ppm)	USCS Symbol	COMMENTS
26	Dark gray-black, low strength, thickly bedded, very weathered SILTSTONE with some clay.			CU1-B1/25-26 (physical prop.)					SILT-STONE	
27				CU1-B1/26.30 -VOC			100	-		
28	Brown, low strength, highly fractured, very weathered, SANDSTONE.								SAND-STONE	
29										More solidified (thicker solid cores).
30				CU1-B1/29.80 -VOC			100	-		
31										
32	Thinly bedded, highly fractured.						100	-		
33										
34				CU1-B1/34.00 -VOC						
35							100	-		
36										
37							100	-		
38	Gray, moist, high strength, slight weathering, SANDSTONE with fine volcanic grains [TROUTDALE SANDSTONE AQUIFER].								SAND-STONE	
39				CU1-B1/38.30 -VOC			100	-		
	End of boring; backfilled with hydrated bentonite chips (10 bags).									

CONTRACTOR Cascade Drilling
EQUIPMENT Jeff Johnson
DRILL MTHD Sonic - Track
DIAMETER 8" / 6"
LOGGER B. Lary **REVIEWER**

NORTHING
EASTING
ANGLE Vertical
BEARING ------
PRINTED 08/11/14

REMARKS:

COORDINATE SYSTEM:
SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

Geosyntec consultants
621 SW Morrison Street, Suite 600
Portland, Oregon 97205
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GS FORM: BORE 1/99

BOREHOLE RECORD

BORING CU1-B2 **SHEET** 1 OF 2
START DATE 6/3/2014 **ELEVATION**
FINISH DATE 6/3/2014
PROJECT Cascade Corporation - Fairview, OR
LOCATION 2525 NE 201st St.
PROJECT NUMBER PNG0564S14

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES: SAMPLE NAME	SAMPLES: TYPE	SAMPLES: BLOW COUNTS	% RECOVERY	PID READING (ppm)	USCS Symbol	COMMENTS
1	Brown [5YR, 3/3], and gray [7.5YR, 5/1], loose, moist, silty SAND.								SM	
2								0.2		Drilled to 15 feet with 8-inch casing and 6-inch core barrel.
3										
4								0.2		
5	Brown [7.5YR, 4/3], soft, moist, sandy SILT, micaceous, with roots at about 5 feet.								ML	
6							100			
7	Gray brown [7.5YR, 3/2], medium dense, wet, sandy GRAVEL and COBBLES, with trace silt [TROUTDALE GRAVEL AQUIFER].							0.2	GW-GM	GW: 7 feet bgs at time of drilling.
8										
9										
10							100			
11										
12	Brown [7.5YR, 4/4], dense, wet, silty, sandy GRAVEL, with weathering rinds on some gravel [TROUTDALE GRAVEL AQUIFER].						100	0.2	GM	
13				CU1-B2/13-14 @ 9:40						
14										
15	Dark brown and black [7.5YR, 2.5/1], moderate strength, highly weathered, sandy SILT with some vesicular basalt pieces in a silty sand matrix.			CU1-B2/14-15 @ 9:45			100		MLS	
16				CU1-B2-14.60 -VOC				0.2		Sealed 8-inch casing at 15 feet with one bag of hydrated bentonite chips. Switched to 6-inch casing and 4-inch core barrel. Switched to Lexan liners, advanced at 2.5 feet per run.
17										
18	Brown [7.5YR, 3/2 & 3/4], finely laminated, low strength, SANDSTONE with some silts and clays. [CONFINING UNIT 1]			CU1-B2-17.20 -VOC			100	0.0	SAND-STONE	
19										
20	Gray green and brown [Gley 1, 5/5GY], dry, thickly bedded, SILTSTONE with some clay.			CU1-B2-19.40 -VOC			100	0.0	SILT-STONE	
21				CU1-B2/20-21 (physical prop.) CU1-B2-20.80 -VOC						
22							100	0.4		
23	Grades to [Gley 1, 3/10Y], moderate to thinly bedded.			CU1-B2-23.00 -VOC						
24										
25	Mottled gray green and brown [7.5YR, 4/4], thinly bedded, low			CU1-B2/23-25			100	0.8	SAND-	

CONTRACTOR Cascade Drilling **NORTHING**
EQUIPMENT Jeff Johnson **EASTING**
DRILL MTHD Sonic - Track **ANGLE** Vertical
DIAMETER 8" / 6" **BEARING** ------
LOGGER B. Lary **REVIEWER** **PRINTED** 08/11/14

REMARKS:

COORDINATE SYSTEM:

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORING LOG NO WELL (PORTLAND) PNG0564S.GPJ SAN DIEGO GINT LIBRARY.GLB 8/11/14

Geosyntec consultants
621 SW Morrison Street, Suite 600
Portland, Oregon 97205
Phone: 503.222.9518

GS FORM: BORE 1/99

BOREHOLE RECORD

BORING CU1-B2 **SHEET** 2 OF 2
START DATE 6/3/2014 **ELEVATION**
FINISH DATE 6/3/2014
PROJECT Cascade Corporation - Fairview, OR
LOCATION 2525 NE 201st St.
PROJECT NUMBER PNG0564S14

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES: SAMPLE NAME	SAMPLES: TYPE	SAMPLES: BLOW COUNTS	% RECOVERY	PID READING (ppm)	USCS Symbol	COMMENTS
	strength, very weathered SANDSTONE with silt matrix.			(physical prop.)					STONE	
26										
27	Grades to brown Gray [Gley 1, 3/N], thinly bedded, dry, moderately weathered, sandy SILTSTONE.						100	0.1	SILT-STONE	
28				CU1-B2-27.50 -VOC						
	Brown [7.5YR, 5/4], thinly bedded, highly weathered, SANDSTONE. Larger sand grains at about 29 feet.			CU1-B2/28-30 (physical prop.)					SAND-STONE	
29				CU1-B2-29.00 -VOC						
30							100	0.0		
31										
32							100			
33	Grades to dark gray [Gley 1, 3/N], slightly thicker bedding, moderate strength, slightly moist.									
34										
35				CU1-B2-34.60 -VOC			100	-		
36	Interbedded brown and gray									
37	Very high strength, platey structure						100	-		
38							100	-	SAND-STONE	Very hard drilling
39	Dark gray, very high strength, slightly weathered, SANDSTONE with mica, quartz, obsidian grains. [TROUTDALE SANDSTONE AQUIFER]									
	End of boring; backfilled with hydrated bentonte chips, 10 bags.									

CONTRACTOR Cascade Drilling **NORTHING**
EQUIPMENT Jeff Johnson **EASTING**
DRILL MTHD Sonic - Track **ANGLE** Vertical
DIAMETER 8" / 6" **BEARING** ------
LOGGER B. Lary **REVIEWER** **PRINTED** 08/11/14

REMARKS:

COORDINATE SYSTEM:

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORING LOG NO WELL (PORTLAND) PNG0564S.GPJ SAN DIEGO GINT LIBRARY.GLB 8/11/14

Geosyntec consultants
621 SW Morrison Street, Suite 600
Portland, Oregon 97205
Phone: 503.222.9518

GS FORM: BORE 1/99

BOREHOLE RECORD

BORING CU1-B3 **SHEET** 1 OF 2
START DATE 6/3/2014 **ELEVATION**
FINISH DATE 6/4/2014
PROJECT Cascade Corporation - Fairview, OR
LOCATION 2525 NE 201st St.
PROJECT NUMBER PNG0564S14

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES: SAMPLE NAME	SAMPLES: TYPE	SAMPLES: BLOW COUNTS	% RECOVERY	PID READING (ppm)	USCS Symbol	COMMENTS
1	Brown [7.5YR, 5/1 & 4/2], and gray, medium stiff, moist, fine sandy SILT.								ML	
2	Mottled brown (7.5YR, 4/6] and gray and red, loose, moist, silty fine SAND with some clay.								SM	Drilled to 13 feet with 8-inch casing and 6-inch core barrel.
4	Red brown [5YR, 3/4], medium dense, moist, silty SAND with trace angular gravel.						100	0.1	SM	
6	Gray brown [10YR, 5/2 & 6/3] to red brown [7.5YR, 5/6], very stiff, dry, sandy SILT.								ML	
7								0.3		
9				CU1-B3/8-9 @ 16:00			100			
10	Gray green [Gley 2, 4/5BG], moderate to high strength, moderate to thickly bedded, dry SILTSTONE. [CONFINING UNIT 1]								SILT-STONE	
12				CU1-B3/11-12 @ 15:25			100	3.0		
13										Sealed 8-inch casing at 13 feet with one bag of hydrated bentonite chips. Lost 13-15 during setting of casing. Switched to 6-inch casing and 4-inch core barrel. Switched to Lexan liners, advanced at 2.5 feet per run.
14							0			
15	Grades to mottled gray green [Gley 2, 5/10BG] and brown [7.5YR, 4/4], high strength, thinly bedded (16 feet bgs) to moderately bedded (16.5-18 feet bgs).									
17				CU1-B3-16.50 -VOC CU1-B3/17-17.4 (physical prop.)			100	0.8		
18	Red brown to dark brown, moderate strength, moderate bedding thickness, moist to wet, sandy SILTSTONE with some clay.								SILT-STONE	
19								0.5		
20	Dark brown, moderate strength, moderate to thinly bedded,moist, gravelly SANDSTONE with some silt, rounded to angular gravel.			CU1-B3-19.90 -VOC			100	0.6	SAND-STONE	
21				CU1-B3-20.80 -VOC						
22				CU1-B3/21-22 (physical prop.)			100	0.2		
24	Medium red brown, high strength, moderate to thinly bedded, dry SILTSTONE.			CU1-B3-24.00 -VOC			100		SILT-STONE	
25										

CONTRACTOR Cascade Drilling **NORTHING**
EQUIPMENT Jeff Johnson **EASTING**
DRILL MTHD Sonic - Track **ANGLE** Vertical
DIAMETER 8" / 6" **BEARING** ------
LOGGER B. Lary **REVIEWER** **PRINTED** 08/11/14

REMARKS:

COORDINATE SYSTEM:
SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORING LOG NO WELL (PORTLAND) PNG0564S.GPJ SAN DIEGO GINT LIBRARY.GLB 8/11/14

Geosyntec consultants
621 SW Morrison Street, Suite 600
Portland, Oregon 97205
Phone: 503.222.9518

GS FORM: BORE 1/99

BOREHOLE RECORD

BORING CU1-B3 **SHEET** 2 OF 2
START DATE 6/3/2014 **ELEVATION**
FINISH DATE 6/4/2014
PROJECT Cascade Corporation - Fairview, OR
LOCATION 2525 NE 201st St.
PROJECT NUMBER PNG0564S14

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOLIC LOG	ELEVATION (ft)	SAMPLES: SAMPLE NAME	SAMPLES: TYPE	SAMPLES: BLOW COUNTS	% RECOVERY	PID READING (ppm)	USCS Symbol	COMMENTS
26	Grades to blue green,[Gley 1, 4/5GY], thickly bedded, SILTSTONE.			CU1-B3/25-27 (physical prop.)				0.1		
27							100	0.6		
28				CU1-B3-28.00 -VOC						
29	Grades to brown [7.5YR, 4/4], high strength, thinly bedded and platey, moist, SILTSTONE.						100			
30	Brown [7.5YR, 3/4], high strength, very slightly weathered, SANDSTONE with some silt, alternating thick and thin bedded layers.							0.4	SAND-STONE	
31							100			Very hard drilling.
32										
33				CU1-B3-33.10 -VOC			100	0.2		
34										
35				CU1-B3-35.00 -VOC			100	-		
36										
37				CU1-B3-36.60 -VOC			100	-		
	End of boring; backfilled with hydrated bentontie chips, 10 bags.			CU1-B3/36-37 (physical prop.)						Very hard drilling. Noted TSA Sandstone in shoe.

CONTRACTOR Cascade Drilling **NORTHING**
EQUIPMENT Jeff Johnson **EASTING**
DRILL MTHD Sonic - Track **ANGLE** Vertical
DIAMETER 8" / 6" **BEARING** ------
LOGGER B. Lary **REVIEWER** **PRINTED** 08/11/14

REMARKS:

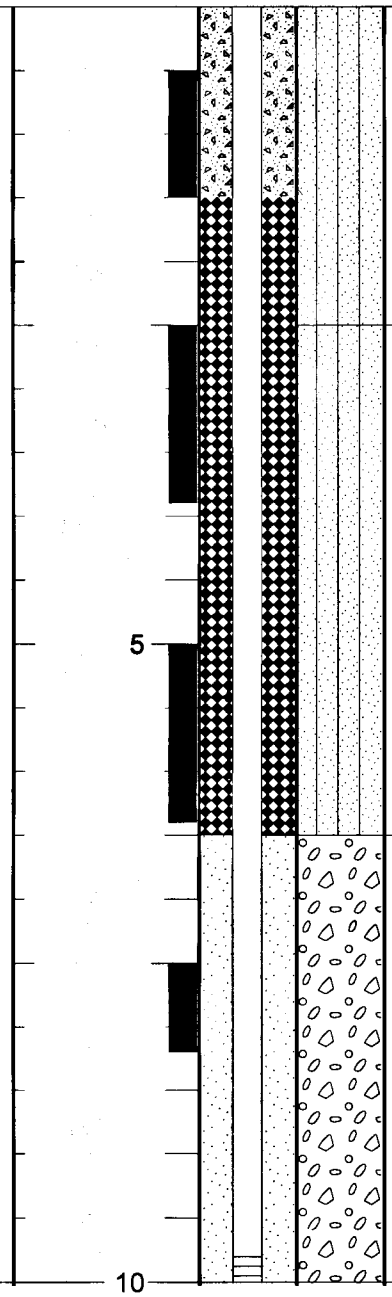
COORDINATE SYSTEM:
SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

TGA MW-45 Well Log

LOG OF EXPLORATORY BORING

PROJECT NAME	**Cascade Corporation, TGA Remedy**	BORING NO.	**MW-45**
LOCATION	**Fairview, Oregon**	PAGE	**1 of 3**
DRILLED BY	**Geo-Tech Explorations, Inc.**	TOC ELEVATION	**105.78**
DRILL METHOD	**Hollow-stem Auger**	TOTAL DEPTH	**27.0'**
LOGGED BY	**Craig D. Fanshier, RG**	DATE COMPLETED	**7/25/02**

SAMPLE NUMBER (SAMPLE TYPE)	BLOWS PER 6 INCHES	RECOVERY (feet)	LITHOLOGIC DESCRIPTION
G-1 (Grab)			**0 to 2.5 feet: SILTY SAND (SM)**; dark yellowish brown (10YR 3/4 to 4/4); 30 to 40 percent non to low plasticity fines; 60 to 70 percent very fine sand (0.075 to 0.3 mm); firm; moist. (TOPSOIL)
SS-1	5-4-3 (7)	1.4	**2.5 to 6.5 feet: SILTY SAND (SM)**; dark yellowish brown (10YR 3/4), some reddish mottling; 15 to 25 percent nonplasticity fines (medium dilatancy); 75 to 85 percent very fine sand (0.075 to 0.3 mm), with mica; firm; moist.
			@ 4.0 feet: slightly coarser sands 0.3 to 0.5 mm.
SS-2	4-4-37 (41)	1.4	@ 6.0 to 6.5 feet: moist to wet.
SS-3	15-21-15 (36)	0.7	**6.5 to 11.5 feet: SANDY GRAVEL (GP)**; 15 to 20 percent nonplastic fines; 15 to 20 percent fine to medium subrounded to subangular sand; 15 to 20 percent fine to medium rounded gravels; with cobbles inferred by rocky drill action. Soil cuttings from auger spin up shows silty sand as moist dark yellowish brown matrix of gravels; dense; moist. (UPPER TGA GRAVELS)



REMARKS

Borehole drilled with a Mobile B-59 equipped with 11-inch OD hollow stem augers. Soil samples were collected with a 1.4-inch ID split barrel sampler driven with a 140-pound wire-line hammer. A 2-inch PVC monitoring well was constructed. A 2-inch PVC monitoring well was constructed in the borehole see well construction diagrams for details.

LOG OF EXPLORATORY BORING

PROJECT NAME	**Cascade Corporation, TGA Remedy**	BORING NO.	**MW-45**
LOCATION	**Fairview, Oregon**	PAGE	**2 of 3**
DRILLED BY	**Geo-Tech Explorations, Inc.**	TOC ELEVATION	**105.78**
DRILL METHOD	**Hollow-stem Auger**	TOTAL DEPTH	**27.0'**
LOGGED BY	**Craig D. Fanshier, RG**	DATE COMPLETED	**7/25/02**

SAMPLE NUMBER (SAMPLE TYPE)	BLOWS PER 6 INCHES	RECOVERY (feet)	LITHOLOGIC DESCRIPTION
SS-4	14-29-27 (56)	0.9	@ 10.0 feet: color changes to dark olive gray (2.5Y 3/3); 15 to 25 percent non to low plasticity fines; 15 to 35 percent fine to coarse sand (mostly fine, some ~5 to 10 percent 1 to 2 mm, 3 to 5 percent 3 to 5 mm); 40 to 70 percent gravels (inferred from drilling action but not recovered in sampler); very dense; moist.
SS-5	10-11-13 (24)	1.1	@ 11.5 feet: drilling action becomes smoother indicating contact. **11.5 to 14.0 feet: SANDY SILT (ML)**; yellowish brown (10YR 5/6) with brownish yellow mottling (10YR 6/8), with a waxy appearance; 60 percent low plasticity fines; 40 percent very fine sand; very stiff, moderately indurated; moist. (~~LOWER TOA or~~ SILTSTONE TRANSITION ZONE). @ 12.0 feet: color changes to buff, yellowish red with trace gray mottling, less waxy appearance.
SS-6	23-26-50 (86)	1.3	@ 12.5 feet: color changes to yellowish red (5YR 4/6), plasticity increases to medium, with cubic soil peds. @ 13.5 feet: soft zone; trace fine gravels. **14.0 to 19.2 feet: SILTY SAND/SANDSTONE (SM)**; yellowish red (5YR 4/6); 15 to 20 percent nonplastic fines; 80 to 85 percent very fine angular to subangular sand; <5 percent fine gravels (~1/2-inch); very dense, weak to moderately cemented; wet. (SILTSTONE TRANSITION ZONE).
SS-7	44-50/4"	1.0	@ 14.0 to 14.7 feet: moist to wet. @ 14.7 feet: slightly lighter color, dark yellowish brown (10YR 3/4). @ 15.1 to 15.5 feet: very dark gray to black silty sand.
SS-8	21-44-50/5"	1.5	@ 15.5 to 16.0 feet: color changes to dark reddish brown (5YR 3/2) with 0.1-foot thick intervals of sandy clay. @ 16.0 to 16.1 feet: very dark gray to black silty sand, fine to coarse sand, more cemented; moist to wet. @ 16.1 to 16.4 feet: brown silty sand; 15 percent non to low plasticity fines; 85 percent poorly sorted sand (0.1 to 0.7 mm); moist.
SS-9	8-11-17	1.7	@ 17.0 feet: color changes to dark brown; weakly cemented to compacted, subrounded to subangular sand; very hard drilling; moist. @ 18.5 to 19.2 feet: moist to wet. **19.2 to 21.6 feet: CLAYEY SILT (ML)**; dark yellowish

REMARKS

Borehole drilled with a Mobile B-59 equipped with 11-inch OD hollow stem augers. Soil samples were collected with a 1.4-inch ID split barrel sampler driven with a 140-pound wire-line hammer. A 2-inch PVC monitoring well was constructed. A 2-inch PVC monitoring well was constructed in the borehole see well construction diagrams for details.

LOG OF EXPLORATORY BORING

PROJECT NAME	**Cascade Corporation, TGA Remedy**	BORING NO.	**MW-45**
LOCATION	**Fairview, Oregon**	PAGE	**3 of 3**
DRILLED BY	**Geo-Tech Explorations, Inc.**	TOC ELEVATION	**105.78**
DRILL METHOD	**Hollow-stem Auger**	TOTAL DEPTH	**27.0'**
LOGGED BY	**Craig D. Fanshier, RG**	DATE COMPLETED	**7/25/02**

SAMPLE NUMBER (SAMPLE TYPE)	BLOWS PER 6 INCHES	RECOVERY (feet)	LITHOLOGIC DESCRIPTION
SS-10	6-8-15	1.6	brown to yellowish brown (10YR 3/4 to 5/8), with some reddish mottling; 90 percent low plasticity fines; 10 percent fine sand; very stiff; dry to moist. (CONFINING UNIT 1).
SS-11	NR	1.7	**21.6 to 23.0 feet: CLAYEY SILT (ML)**; dark greenish gray (5GY 4/1) to dark olive gray (5Y 3/2); medium plasticity fines; very stiff to hard; dry to moist. (CONFINING UNIT 1).
			Total depth drilled = 23.0 feet. Total depth sampled = 23.0 feet.

25

30

REMARKS

Borehole drilled with a Mobile B-59 equipped with 11-inch OD hollow stem augers. Soil samples were collected with a 1.4-inch ID split barrel sampler driven with a 140-pound wire-line hammer. A 2-inch PVC monitoring well was constructed. A 2-inch PVC monitoring well was constructed in the borehole see well construction diagrams for details.

WELL CONSTRUCTION DETAILS

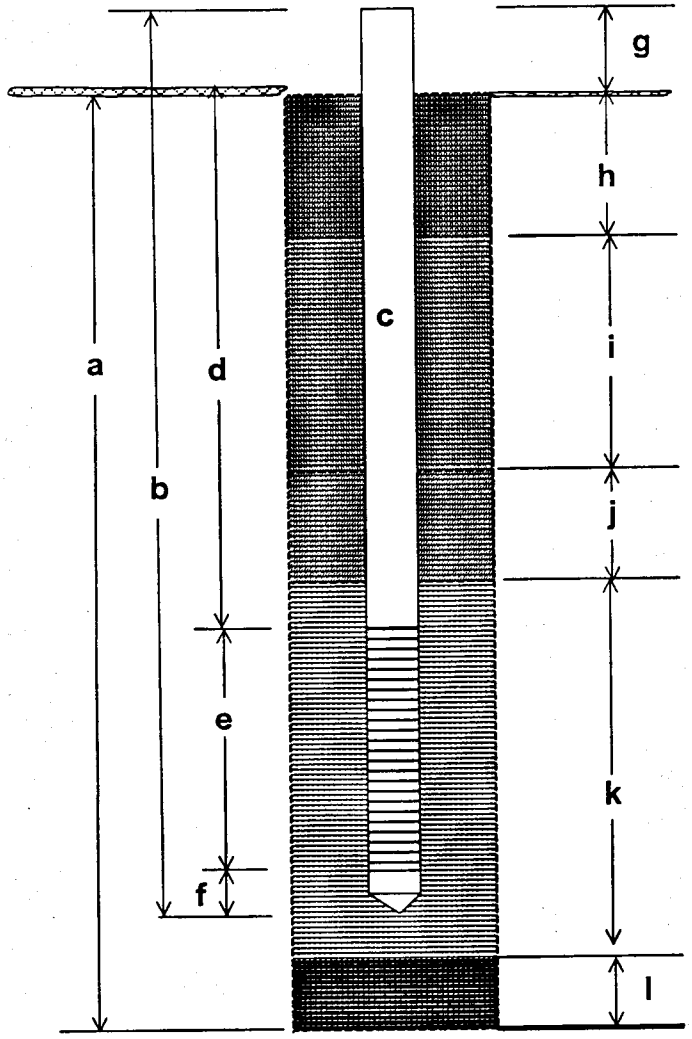
Natural Resource Management Group

3025 SW Canby Street, Portland, OR 97219 (503) 293-3895

Well Number: MW-45

Project Location	Portland Oregon
Project Name	TGA Remedy
Project Number	NRMG # 2001E-52.01
Start Card Number	150057
WRD Well Number	L58160
Well Construction Contractor	Geo-Tech Explorations, Inc. Joel Welsh

Top of PVC well casing elev.	105.78
Concrete well pad	104.01
Datum	MSL 1929 NVGD
Installation Date	7/25/02
Construction Inspector	Craig D. Fanshier, R.G.
Site Coordinates	N = 68961.39 E = 1498941.1



Centralizers none

Other comments

Exploratory Boring

a	Total depth	23
	Borehole diameter	11.0-inches
	Drilling method	Hollow stem auger

Well Construction Materials

Material	Schedule 40 PVC, factory wrapped
Joints	Flush threaded joints with o-rings

Well Construction Specifications

b	Total casing length	22.5
c	Well and casing diameter	2-inches
d	Depth to top of perforations	9.8 ft bgs
e	Perforated length	9.8 ft
	Perforated interval	9.7 to 19.5 ft bgs
	Perforation type	machine slotted
	Perforation slot size	20-slot (0.020 inches)
f	Sump length	0.5 foot
g	Stick-up	2.5-feet
h	Surface seal	Concrete 0 to 1.5 feet bgs
I	Backfill	none
	Backfill material	na
	Volume used	na
j	Well Seal	1 to 6.5 ft bgs
	Seal material	3/4-inch bentonite chips
	Volume used	7-50# bags
k	Gravel Pack	6.5 to 20.5 ft bgs
	Gravel pack material	8-12 gradation (Colorado Silica Sand™)
	Volume used	18-50# bags
l	Bottom Seal	20.5 to 23.0 ft bgs
	Backfill material	3/4-inch bentonite chips
	Volume used	1.5-50# bags

STATE OF OREGON

MONITORING WELL REPORT

(as required by ORS 537.765 & OAR 690-240-095)

Instructions for completing this report are on the last page of this form.

AwMULT 67574 Well Report

~~3160

MULT# 67574

Start Card # 150057

(1) OWNER/PROJECT:

WELL NO. MW-4S

Name Cascade Corporation

Address 2201 NE 201st Ave

City Fairview State OR Zip 972024918

(2) TYPE OF WORK:

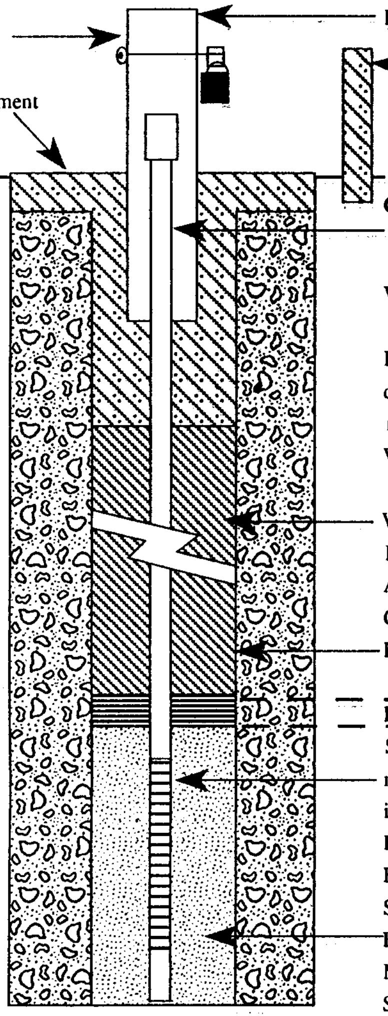
[X] New construction [ ] Alteration (Repair/Recondition)
[ ] Conversion [ ] Deepening [ ] Abandonment

(3) DRILLING METHOD

[ ] Rotary Air [ ] Rotary Mud [ ] Cable
[X] Hollow Stem Auger [ ] Other ____

(4) BORE HOLE CONSTRUCTION

Special Standards Yes [ ] No [X] Depth of completed well 23 ft.



Casing diameter 2 in.
material PVC
Welded [ ] Threaded [X] Glued [ ]

Liner diameter ____ in.
material ____
Welded [ ] Threaded [ ] Glued [ ]

Well seal:
Material Bentonite
Amount 3 bags
Grout weight ____

Borehole diameter 11 in.

Bentonite plug at least 3 ft. thick

Screen material PVC
interval(s): From 9.5 To 19.5
From ____ To ____
Slot size .020 in.

Filter pack: .020
Material Sand
Size 8x12 in.

(5) WELL TEST:

[ ] Pump [ ] Bailer [ ] Air [ ] Flowing Artesian

Permeability ____ Yield ____ GPM

Conductivity ____ PH ____

Temperature of water 53 °F/C Depth artesian flow found ____ ft.

Was water analysis done? [ ] Yes [X] No

By whom? ____

Depth of strata to be analyzed. From ____ ft. to ____ ft.

Remarks: ____

Name of supervising Geologist/Engineer ____

(6) LOCATION OF WELL By legal description

Well Location: County Multnomah

Township 1 (N or S) Range 3 (E or W) Section 29

1. SE 1/4 of NE 1/4 of above section.

2. Either Street address of well location 2201 NE 201st.

or Tax lot number of well location 1000

3. ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include approximate scale and north arrow.

(7) STATIC WATER LEVEL:

15 Ft. below land surface. Date 7/26/02

Artesian Pressure ____ lb/sq. in. Date ____

(8) WATER BEARING ZONES:

Depth at which water was first found 15

From	To	Est. Flow Rate	SWL
15			

(9) WELL LOG:

Ground elevation ____

Material	From	To	SWL
Silty Sand	0	5	
Gravelly Cobbles	5	12	
Sandstone	12	23	15
Note:			
Well was overdrilled to a depth of 23'. Backfilled with bentonite chips 20.5 to 23', 2 bags of bentonite			

RECEIVED
SEP 25 2002
WATER RESOURCES DEPT
SALEM, OREGON

Date started 7/25/02 Completed 7/26/02

(unbonded) Monitor Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.

MWC Number 10328

Signed ____ Date 8/15/02

(bonded) Monitor Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.

MWC Number 10442

Signed ____ Date 9/11/02

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

STATE OF OREGON

MONITORING WELL REPORT

(as required by ORS 537.765 & OR 690-240-095)

MULT, 67574

L 58160

Start Card # 150057

Instructions for completing this report are on the last page of this form.

(1) OWNER/PROJECT: WELL NO.

Name Cascade Corporation

Address 2201 NE 201st Ave

City Fairview State OR Zip 97024-9718

(2) TYPE OF WORK:

☒ New construction ☐ Alteration (Repair/Recondition)

☐ Conversion ☐ Deepening ☐ Abandonment

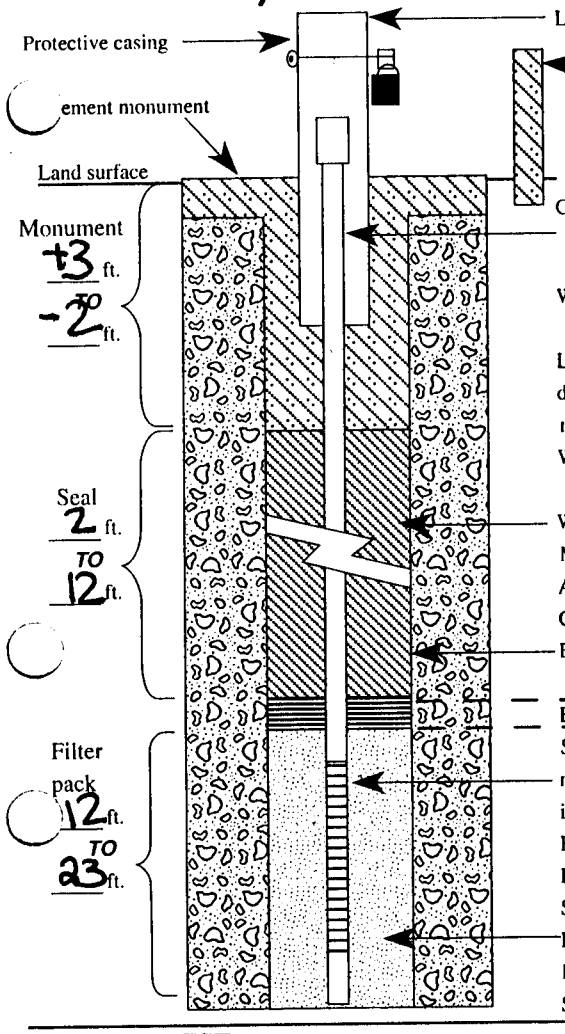
(3) DRILLING METHOD

☐ Rotary Air ☐ Rotary Mud ☐ Cable

☒ Hollow Stem Auger ☐ Other

(4) BORE HOLE CONSTRUCTION

Special Standards ☐ Yes ☒ No Depth of completed well 23 ft.



Casing diameter 2 in. material PVC

Welded ☐ Threaded ☒ Glued ☐

Liner diameter ____ in. material ____

Welded ☐ Threaded ☐ Glued ☐

Well seal: Material Bentonite Amount 8 bags

Grout weight ____

Borehole diameter 10 in.

☐ Bentonite plug at least 3 ft. thick

Screen material PVC

interval(s): From 13 To 23

From ____ To ____

Slot size .010 in.

Filter pack: Material Sand

Size 10-20 in.

(5) WELL TEST:

☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Permeability ____ Yield ____ GPM

Conductivity ____ PH ____

Temperature of water 53 °F/C Depth artesian flow found ____ ft.

Was water analysis done? ☐ Yes ☒ No

By whom? ____

Depth of strata to be analyzed. From ____ ft. to ____ ft.

Remarks: ____

Name of supervising Geologist/Engineer ____

(6) LOCATION OF WELL By legal description

Well Location: County Multnomah

Township 1 (N or S) Range 3 (E or W) Section 29

1. SE 1/4 of NE 1/4 of above section.

2. Either Street address of well location 2201 NE 201st.

or Tax lot number of well location 1000

3. ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include approximate scale and north arrow.

(7) STATIC WATER LEVEL:

15 Ft. below land surface. Date 7/26/02

Artesian Pressure ____ lb/sq. in. Date ____

(8) WATER BEARING ZONES:

Depth at which water was first found 15

From	To	Est. Flow Rate	SWL
15	23		15

(9) WELL LOG: Ground elevation ____

Material	From	To	SWL
Silty Sand	0	5	
Gravelly Cobbles	5	12	
Sandstone	12	21	15
Silty Clay	21	23	

RECEIVED
AUG 16 2002
WATER RESOURCES DEPT
SALEM, OREGON

Date started 7/25/02 Completed 7/26/02

(unbonded) Monitor Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.

MWC Number 10329

Signed ____ Date 8/15/02

(bonded) Monitor Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.

MWC Number 10442

Signed ____ Date 8/15/02

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

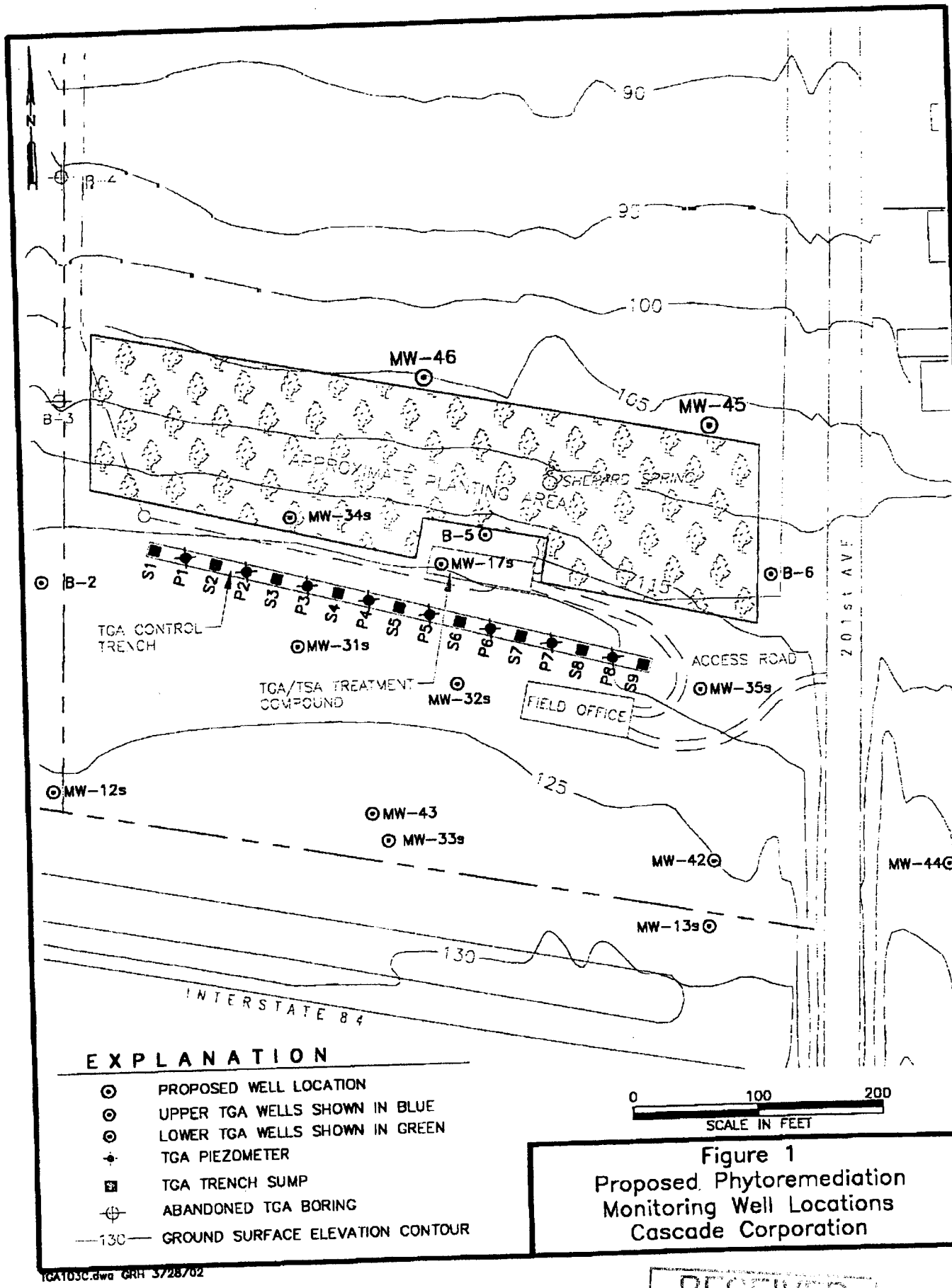


Figure 1
Proposed Phytoremediation
Monitoring Well Locations
Cascade Corporation

TGA103C.dwg GRH 3/28/02

Geologic Borehole Log/Well Construction

Maul Foster & Alongi, Inc.

Project Number	Well Number	Sheet
8076-001.001	EW-18	1 of 8

Project Name	Phase 2b TSA Remedy Implementation	TOC Elevation (feet above MSL)	
Project Location	Fairview, OR	Surface Elevation (feet above MSL)	
Start/End Date	5/6/98 to 5/8/98	Northing	689596.5
Driller/Equipment	Cascade Drilling/Ingersol Rand T3W-Downhole Air Rotary	Easting	1498965.0
Geologist/Engineer	E. Roth	Hole Depth	159.0-feet
Sample Method	Grab Sample/Split Spoon	Outer Hole Diam	12.75-inch

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
1									@ 1.0 foot: SANDY SILT (ML); reddish brown; 60% fines, low plasticity; 40% sand, fine; moist. (SILTY LOAM)
2				C	1				
3									
4									
5									
6									
7									
8									
9									
10									
11									
12				C	2				@ 12.0 feet: SANDY SILT (ML); reddish brown; 60% fines, low plasticity; 40% sand, fine; moist. (SILTY LOAM)
13									
14									
15				C	3				15.0 to 30.0 feet: SILT (ML); yellowish brown; 70% fines, low plasticity; 30% sand, fine to medium; dry. (CONFINING UNIT 1)
16									@ 16.0 feet: Added water to the hole.
17									
18									
19									
20									

NOTES: 1) Pilot hole was advanced from 0 to 12 feet below ground surface using a 18-inch O.D. tricone bit and a 16-inch O.D. steel casing was installed. 2) Borehole was drilled using a 12.75-inch under reaming bit system with 11.75-inch casing advanced. 3) C = Cuttings sample collected from the cyclone. 4) SS = Split Spoon sample 1.5-feet long x 2.0-inch O.D. driven using a 140-lb jar hammer. 5) A water-air mixture was used as a drilling fluid below 16-feet bgs. 6) White triangle = approximate depth at which water was encountered during drilling. Black triangle = water level in completed well. 7) Northing and Easting relative to NAD 27.

▽ Water level 50.0 feet (Borehole) ▼ Water level 94.6 feet (Well)

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
8076-001.001	EW-18	2 of 8

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
21				C	4				@ 20.0 feet: SILT (ML); yellowish brown with orange brown mottling; 60% fines, low to medium plasticity; 30% sand, fine to medium; 10% gravel, fine, subangular. (CONFINING UNIT 1)
22									
23									
24									
25				C	5				@ 25.0 feet: SILT (ML); yellowish brown; 50% fines, low plasticity; 30% sand, fine to coarse; 20% gravel, fine, subangular. (CONFINING UNIT 1)
26									
27									
28									
29									
30				C	6				30.0 TO 90.0 feet: SANDSTONE (SS); yellowish brown; 20% fines, low plasticity; 50% sand, fine to coarse; 30% gravel, fine to medium, subangular; poorly cemented. (UPPER TROUTDALE SANDSTONE AQUIFER - SANDSTONE)
31									
32									
33									
34									
35				C	7				@ 30.0 feet: Added water to the hole.
36									
37									
38									
39									
40				C	8				@ 40.0 feet: SANDSTONE (SS); greenish black gray; <10% fines; 75% sand, medium to coarse; 15% gravel, fine, angular; poorly cemented.
41									
42									

NOTES: 1) Pilot hole was advanced from 0 to 12 feet below ground surface using a 18-inch O.D. tricone bit and a 16-inch O.D. steel casing was installed. 2) Borehole was drilled using a 12.75-inch under reaming bit system with 11.75-inch casing advanced. 3) C = Cuttings sample collected from the cyclone. 4) SS = Split Spoon sample 1.5-feet long x 2.0-inch O.D. driven using a 140-lb jar hammer. 5) A water-air mixture was used as a drilling fluid below 16-feet bgs. 6) White triangle = approximate depth at which water was encountered during drilling. Black triangle = water level in completed well. 7) Northing and Easting relative to NAD 27.

▽ Water level 50.0 feet (Borehole) ▼ Water level 94.6 feet (Well)

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
8076-001.001	EW-18	3 of 8

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
43									
44									
45				C	9				@ 45.0 feet: SANDSTONE (SS); greenish yellowish brown; <10% fines; 90% sand, fine to medium; poorly cemented.
46									
47									
48									
49									
50	▽			C	10	WL=50.0' 5/6/98 TD=50.0'			@ 50.0 feet: SANDSTONE (SS); black; <5% fines; yellowish brown; 80% sand, medium to coarse; 15% gravel, fine to medium, subrounded to subangular; basaltic. Hole producing water (approximately 5 gpm), but still adding water to the hole to facilitate drilling.
51									
52									
53									
54									
55									
56									
57									
58									
59									
60				C	11				@ 60.0 feet: SANDSTONE (SS); black; <10% yellowish brown fines ; 80% sand, fine to coarse; <10% gravel, fine subrounded to subangular; basaltic.
61									
62									
63									
64									
65									

NOTES: 1) Pilot hole was advanced from 0 to 12 feet below ground surface using a 18-inch O.D. tricone bit and a 16-inch O.D. steel casing was installed. 2) Borehole was drilled using a 12.75-inch under reaming bit system with 11.75-inch casing advanced. 3) C = Cuttings sample collected from the cyclone. 4) SS = Split Spoon sample 1.5-feet long x 2.0-inch O.D. driven using a 140-lb jar hammer. 5) A water-air mixture was used as a drilling fluid below 16-feet bgs. 6) White triangle = approximate depth at which water was encountered during drilling. Black triangle = water level in completed well. 7) Northing and Easting relative to NAD 27.

▽ Water level 50.0 feet (Borehole) ▼ Water level 94.6 feet (Well)

Maul Foster & Alongi, Inc.	Geologic Borehole Log/Well Construction		
	Project Number 8076-001.001	Well Number EW-18	Sheet 4 of 8

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
66				C	12				@ 65.0 feet: SANDSTONE (SS); black; 10% yellowish brown fines; 60% sand, fine to coarse; 30% gravel, fine to medium, subangular to subrounded; basaltic.
67									
68									
69									
70				C	13				@ 70.0 feet: SANDSTONE (SS); black; 10% yellowish brown fines; 90% sand, fine to coarse.
71									
72									
73									
74									
75				C	14				@ 75.0 feet: SANDSTONE; black; 10% yellowish brown fines; 90% sand, fine to coarse.
76									
77									@ 77.0 feet: Color change to greenish gray.
78									
79									
80				C	15				@ 80.0 feet: SANDSTONE (SS); greenish gray; 30% fines, low plasticity; 70% sand, fine to medium.
81									
82									
83									
84									
85				C	16				@ 85.0 feet: SANDSTONE (SS); greenish gray; 10% fines; 50% sand, fine to coarse; 40% gravel, fine to medium, subrounded to subangular.
86									
87									

NOTES: 1) Pilot hole was advanced from 0 to 12 feet below ground surface using a 18-inch O.D. tricone bit and a 16-inch O.D. steel casing was installed. 2) Borehole was drilled using a 12.75-inch under reaming bit system with 11.75-inch casing advanced. 3) C = Cuttings sample collected from the cyclone. 4) SS = Split Spoon sample 1.5-feet long x 2.0-inch O.D. driven using a 140-lb jar hammer. 5) A water-air mixture was used as a drilling fluid below 16-feet bgs. 6) White triangle = approximate depth at which water was encountered during drilling. Black triangle = water level in completed well. 7) Northing and Easting relative to NAD 27.

▽ Water level 50.0 feet (Borehole) ▼ Water level 94.6 feet (Well)

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
8076-001.001	EW-18	5 of 8

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
88–94									
90				C	17				@ 90.0 feet: SANDSTONE (SS); greenish gray; 40% fines, low plasticity; 50% sand, fine to coarse; 10% gravel, fine, angular; basaltic.
95	▼			C	18	WL=94.6' 5/13/98 TD=149.5'			95.0 to 154.1 feet: SANDY GRAVEL (GW); greenish brown; 10% fines; 30% sand, medium to coarse; 60% gravel, fine to coarse, angular to subangular, composed of quartzite and basalt. (LOWER TROUTDALE SANDSTONE AQUIFER - CONGLOMERATE)
100				C	19				@ 100.0 feet: SANDY GRAVEL (GW); yellowish brown; 10% fines, 20% sand, fine to coarse; 70% gravel, fine to medium, angular to subangular; composed of basalt and quartzite.
105				C	20				@ 105.0 feet: SANDY GRAVEL (GW); yellowish brown; 10% fines; 30% sand, fine to coarse; 60% gravel, fine angular to subangular, composed of basalt and quartzite.
106–110									

NOTES: 1) Pilot hole was advanced from 0 to 12 feet below ground surface using a 18-inch O.D. tricone bit and a 16-inch O.D. steel casing was installed. 2) Borehole was drilled using a 12.75-inch under reaming bit system with 11.75-inch casing advanced. 3) C = Cuttings sample collected from the cyclone. 4) SS = Split Spoon sample 1.5-feet long x 2.0-inch O.D. driven using a 140-lb jar hammer. 5) A water-air mixture was used as a drilling fluid below 16-feet bgs. 6) White triangle = approximate depth at which water was encountered during drilling. Black triangle = water level in completed well. 7) Northing and Easting relative to NAD 27.

▽ Water level 50.0 feet (Borehole) ▼ Water level 94.6 feet (Well)

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
8076-001.001	EW-18	6 of 8

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
111				C	21				@ 110.0 feet: SANDY GRAVEL (GW); yellowish brown; 10% fines; 20% sand, fine to coarse; 70% gravel, fine to medium, subangular to subrounded, composed of quartzite, basalt and other volcanics.
112									
113									
114									
115				C	22				@ 115.0 feet: GRAVEL (GP); yellowish brown; <5% fines; 10% sand, medium to coarse; 85% gravel, fine, subangular, slightly micaceous.
116									
117									
118									
119									
120				C	23				@ 120.0 feet: SANDY GRAVEL (GW); yellowish brown; <10% fines; 40% sand, fine to coarse, micaceous (large flakes); 50% gravel, fine to coarse, subangular, composed of quartzite and basalt.
121									
122									
123									
124									
125				C	24				@ 125.0 feet: GRAVEL (GP); yellowish brown; <10% fines, 20% sand, fine to medium, micaceous (large flakes); 70% gravel, medium to coarse, subrounded to subangular.
126									
127									
128									
129									
130				C	25				@ 130.0 feet: SANDY GRAVEL (GW); yellowish brown; <10% fines, 35% sand, fine to medium, micaceous (large flakes); 55% gravel, fine to medium, subangular.
131									
132									

NOTES: 1) Pilot hole was advanced from 0 to 12 feet below ground surface using a 18-inch O.D. tricone bit and a 16-inch O.D. steel casing was installed. 2) Borehole was drilled using a 12.75-inch under reaming bit system with 11.75-inch casing advanced. 3) C = Cuttings sample collected from the cyclone. 4) SS = Split Spoon sample 1.5-feet long x 2.0-inch O.D. driven using a 140-lb jar hammer. 5) A water-air mixture was used as a drilling fluid below 16-feet bgs. 6) White triangle = approximate depth at which water was encountered during drilling. Black triangle = water level in completed well. 7) Northing and Easting relative to NAD 27.

▽ Water level 50.0 feet (Borehole) ▼ Water level 94.6 feet (Well)

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
8076-001.001	EW-18	7 of 8

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
133									
134									
135				C	26				@ 135.0 feet: GRAVEL (GP); yellowish brown; <5% fines; 15% sand; 80% gravel, fine to medium, composed of basalt and quartzite.
136									
137									
138									
139									
140				C	27				@ 140.0 feet: SANDY GRAVEL (GW); <10% fines, yellowish brown; 40% sand, fine to medium; 50% gravel, fine to medium, composed of quartzite and basalt; slightly micaceous.
141									@ 141.0 to 149.5 feet: SAND (SP); grayish, yellowish brown; <5% fines; 85% sand, fine to coarse, micaceous; 10% gravel, fine subangular.
142									
143									
144			10%	SS	28		6		
145							6		
146							6		
147			30%	SS	29		7		
148							9		
149							11		
150				C	30				@ 150.0 feet: SANDY GRAVEL (GW); yellowish brown; <10% fines; 35% sand, fine; 55% gravel, fine to medium, subangular, composed of quartzite, basalt and other volcanics.
151									
152				C	31				
153				C	32				@ 152.6 feet: Color change to greenish gray, with an increase in silt. (CONFINING UNIT 2 - WEATHERED HORIZON)
154				C	33				154.1 to 159.0 feet: SILT (ML); see description on following page.
155									

NOTES: 1) Pilot hole was advanced from 0 to 12 feet below ground surface using a 18-inch O.D. tricone bit and a 16-inch O.D. steel casing was installed. 2) Borehole was drilled using a 12.75-inch under reaming bit system with 11.75-inch casing advanced. 3) C = Cuttings sample collected from the cyclone. 4) SS = Split Spoon sample 1.5-feet long x 2.0-inch O.D. driven using a 140-lb jar hammer. 5) A water-air mixture was used as a drilling fluid below 16-feet bgs. 6) White triangle = approximate depth at which water was encountered during drilling. Black triangle = water level in completed well. 7) Northing and Easting relative to NAD 27.

▽ Water level 50.0 feet (Borehole) ▼ Water level 94.6 feet (Well)

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Geologic Borehole Log/Well Construction

Maul Foster & Alongi, Inc.

Project Number	Well Number	Sheet
8076-001.001	EW-18	8 of 8

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
156			40%	SS	34		12 27 32		154.1 to 159.0 feet: SILT (ML); greenish gray; 90% fines, 10% sand, fine to medium; stiff; massive; competent; micaceous, no fractures. (CONFINING UNIT 2)
157									
158			90%	SS	35		50/5" 36 50/5"		
159									Total Depth = 159.0 feet below ground surface.

WELL CONSTRUCTION DETAILS

0 to 119.5 feet: 8.6-inch O.D. steel casing.
119.5 to 149.5 feet: 8.6-inch O.D. stainless steel wire-wrap screen with 0.040-inch slots.
149.5 to 151.5 feet: 8.6-inch O.D. steel sump.

---

0 to 2.0 feet: Morris flush mount set in concrete (temporary installation prior to conveyance line tie-in).
2.0 to 30.0 feet: 3/8-inch bentonite chips hydrated with potable water.
30 to 113.7 feet: bentonite grout.
113.7 to 116.5 feet: Filter pack seal composed of 20-40 Colorado Silica Sand.
116.5 to 152.6 feet: Filter pack composed of 8-12 Colorado Silica Sand.
152.6 to 159.0 feet: 3/8-inch bentonite chips.

NOTES: 1) Pilot hole was advanced from 0 to 12 feet below ground surface using a 18-inch O.D. tricone bit and a 16-inch O.D. steel casing was installed. 2) Borehole was drilled using a 12.75-inch under reaming bit system with 11.75-inch casing advanced. 3) C = Cuttings sample collected from the cyclone. 4) SS = Split Spoon sample 1.5-feet long x 2.0-inch O.D. driven using a 140-lb jar hammer. 5) A water-air mixture was used as a drilling fluid below 16-feet bgs. 6) White triangle = approximate depth at which water was encountered during drilling. Black triangle = water level in completed well. 7) Northing and Easting relative to NAD 27.

▽ Water level 50.0 feet (Borehole) ▼ Water level 94.6 feet (Well)

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L17205

STATE OF OREGON
MONITORING WELL REPORT
(as required by ORS 537.765 & OAR 690-240-095)

Start Card # 110376

Instructions for completing this report are on the last page of this form.

(1) OWNER/PROJECT:
WELL NO. EW-18

Name [illegible] Corporation

Address P.O. Box 20187

City Portland State OR Zip 97220

(2) TYPE OF WORK:
- [x] New construction
- [ ] Alteration (Repair/Recondition)
- [ ] Conversion
- [ ] Deepening
- [ ] Abandonment

(3) DRILLING METHOD
- [x] Rotary Air
- [ ] Rotary Mud
- [ ] Cable
- [ ] Hollow Stem Auger
- [ ] Other

(4) BORE HOLE CONSTRUCTION
Special Standards: Yes [ ] No [x] Depth of completed well 151.6 ft.

Land surface

Vault ft. TO ft.

Seal 1 ft. TO 114.5 ft.

Filter pack 5 16' ft. TO 153.5 ft.

- Water-tight cover
- Surface flush vault
- Locking cap
- Casing diameter 8" in. material steel
  Welded [x] Threaded [ ] Glued [ ]
- Liner diameter N/A in. material ~~PVC~~
  Welded [ ] Threaded [ ] Glued [ ]
- Well seal: Material Volclay Amount 750 lb Grout weight 9.5
- Borehole diameter 12 3/4 in.
- ~~Bentonite plug at least 3 ft. thick~~
- Screen material S.S interval(s): From 119.5 To 152.5 From ____ To ____ Slot size .040 in.
- Filter pack: Material Sand Size 8/12 in.

(5) WELL TEST:
[ ] Pump [ ] Bailer [x] Air [ ] Flowing Artesian

Permeability ____ Yield 20 GPM

Conductivity n/a PH n/a

Temperature of water 54 °F/C Depth artesian flow found ____ ft.

Was water analysis done? [x] Yes [ ] No

By whom? Paul Foster

Depth of strata to be analyzed. From 114.5 ft. to 152.5 ft.

Remarks: [illegible]

Name of supervising Geologist/Engineer [illegible]

(6) LOCATION OF WELL By legal description
Well Location: County Multnomah

Township 1N (N or S) Range 3E (E or W) Section 29

1. SE 1/4 of NW 1/4 of above section.

2. **Either** Street address of well location 2011 NE 201st Ave Gresham

or Tax lot number of well location 2300

3. ATTACH MAP WITH LOCATION IDENTIFIED. Map shall include approximate scale and north arrow.

(7) STATIC WATER LEVEL:
94 Ft. below land surface. Date 9-10-95

Artesian Pressure N/A lb/sq. in. Date ____

(8) WATER BEARING ZONES:
Depth at which water was first found 94

From	To	Est. Flow Rate	SWL
119.5	152.5	20 GPM	94

(9) WELL LOG:
Ground elevation ____

Material	From	To	SWL
Brown Soil	0	7	
Boulders	7	30	
Sand Stone	30	70	
Gravel & Cobbles	70	152.5	
2'-20/40 Sand			

Date started 5-5-95 Completed 5-8-95

(unbonded) Monitor Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to the best knowledge and belief.

Signed [signature] MWC Number 1045 Date 5-10-95

(bonded) Monitor Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. **All** work performed during this time is in compliance with Oregon well construction standards. This report is **true** to the best of my knowledge and belief.

Signed [signature] MWC Number 1026 Date 5-11-95

3063 ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

FOR WATER RESOURCES DEPARTMENT USE ONLY

Date Postmarked_____ W 110776

Date Hand-Delivered_____ WRD Receipt_____

Watermaster Initials_____ Date Fee Received_____

Check No._____

START CARD

NOTICE OF BEGINNING OF WELL CONSTRUCTION

(as required by ORS 537.762)

This form must be completed and the original copy mailed or delivered to the Water Resources Department, 158 12th St. NE, Salem, OR 97310, for all new well construction, or conversion of an existing hole not previously used to seek water. This original copy must be mailed or delivered no later than the day construction or conversion work begins. A $75 fee shall accompany the original copy for all new well construction and conversion (make checks payable to the Water Resources Department). Notices meeting the submittal requirements but received without the required fee will not be accepted as properly and timely filed. In addition, the constructor shall provide the "Watermaster Copy" of this notice to the office of the district watermaster within which the well is being constructed, altered, converted or abandoned using one of the following options: (a) by regular mail no later than three (3) calendar days (72 hours) prior to commencement of work; or, (b) by hand delivery, during regular office hours, no later than the day work is commenced; or, (c) by FAX no later than the day work is commenced. If method (c) is used, the original "Watermaster Copy" of this notice shall also be mailed or delivered to the office of the district watermaster no later than the day work is commenced. The Water Resources Commission has authority to impose civil penalties for failure to submit the required $75 fee with the start card and for failure to submit cards prior to beginning any construction, alteration, conversion or abandonment work.

Owner's name and mailing address: corporation c/o Prowell Env.

Home Phone: n/a — P.O. Box 20187 7231 SW 2nd Ave

Work Phone: 503/ 86 — Portland OR 97219

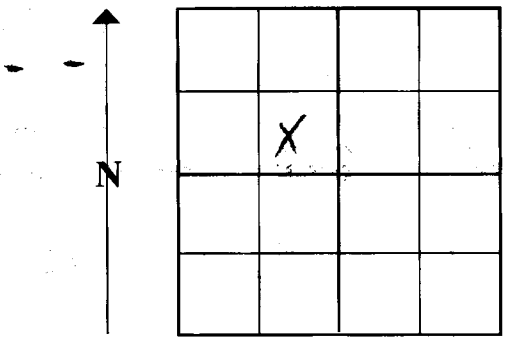
Check type of work: Fee Required: { ☑ New Construction ☐ Conversion } No Fee Required: { ☐ Alteration (Repair/Recondition) ☐ Deepening ☐ Abandonment } Original Start Card Number n/a

Proposed Commencement Date: 5-4-98

Existing or Proposed Well Depth: 150' Diameter: 8" Original Well I.D. Label Number: EW-15

Check Use: ☐ Domestic ☐ Public System (Community) ☐ Industrial ☐ Irrigation ☑ Monitoring ☐ Thermal ☐ Injection ☐ Other_____

Proposed Well Location: County Klamath Township: 1N (North or South) Range: 3E (East or West) Section: 29



1. SE 1/4 of NW 1/4 of above section.
2. Street Address of well location (or directions if not assigned). 1201 NE 20th Ave
3. Tax-lot number of well location: 2300
4. Attach map with location identified. (See reverse for approved maps)
5. Show well location within 1/4, 1/4 of section grid at left.

We hereby certify that we have read the back of this form and that the information provided is accurate to the best of our knowledge.

NIERMEIER — Owner/Agent

[signature] — Bonded Water/Monitor Well Constructor — License No._____

[illegible] — Date Signed

[illegible] — Company

4-3-98 — Date Signed

OWNER PLEASE NOTE: This is not a water right application. The owner is responsible for obtaining a water right through the Water Resources Department, if required. The Oregon Health Division requires plans to be submitted and approved prior to construction if the well is to be used as a public system.

ADDITIONAL IMPORTANT INFORMATION ON BACK.

THIS COPY TO CUSTOMER.

ATTACHMENT B

Photolog

GEOSYNTEC CONSULTANTS

Photographic Record

Geosyntec consultants

Client:	Cascade Corporation
Project Number:	PNG0564S.14
Subject Site:	Cascade Corporation TSA Off-Site Remedy Area, CU1 Exploration

Photograph 1	
Date: 4 June 2014	
Direction:	
Comments: Silt from 5-10 feet bgs in B-1	

Photograph 2	
Date: 4 June 2014	
Direction:	
Comments: Sandy gravel from 10-12.5 feet bgs in B-2	

GEOSYNTEC CONSULTANTS

Photographic Record

Geosyntec consultants

Client:	Cascade Corporation
Project Number:	PNG0564S.14
Subject Site:	Cascade Corporation TSA Off-Site Remedy Area, CU1 Exploration

Photograph 3	
Date: 4 June 2014	
Direction:	
Comment: Gray-green silt from 10-12.5 feet bgs in B-3	

Photograph 4	
Date: 4 June 2014	
Direction:	
Comment: Sandy silt/siltstone unit from 20-22.5 bgs in B-3	

GEOSYNTEC CONSULTANTS

Photographic Record

Client: Cascade Corporation Project Number: PNG0564S.14

Subject Site: Cascade Corporation TSA Off-Site Remedy Area, CU1 Exploration

Photograph 5	
Date: 4 June 2014	
Direction:	
Comment: Silt/siltstone unit from 25-27.5 bgs in B-1	

Photograph 6	
Date: 4 June 2014	
Direction:	
Comment: Weathered sandstone unit from 27.5-30 feet bgs in B-3	

GEOSYNTEC CONSULTANTS Photographic Record	Geosyntec consultants
Client: Cascade Corporation	Project Number: PNG0564S.14
Subject Site: Cascade Corporation TSA Off-Site Remedy Area, CU1 Exploration	

Photograph 7	
Date: 4 June 2014	
Direction:	
Comment: Weathered sandstone unit from 33.5-35 feet bgs in B-3	

Photograph 7	
Date: 4 June 2014	
Direction:	
Comment: Base of weathered sandstone, top of TSA at 35-39 feet bgs B-2	

ATTACHMENT C

Stone Environmental Report

ESC Lab Sciences Report

Data Validation Memorandum

ROCK CORE SAMPLING AND ANALYSIS AT THE CASCADE CORP TSA REMEDY SITE

FAIRVIEW, OR

DATA REPORT
14-080

July 21st, 2014

CORE DFN™

DISCRETE FRACTURE NETWORK APPROACH

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STONE ENVIRONMENTAL INC

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1. INTRODUCTION

Stone Environmental, Inc. (Stone) was retained by Geosyntec to support a program of rock core sampling and laboratory analysis at three locations (CU1-B1, CU1-B2, and CU1-B3) at the Cascade Corp TSA Remedy Site in Fairview, Oregon. The purpose of this work was to assess the distribution of chlorinated volatile organic compounds (VOCs) within the bedrock matrix. Because an abbreviated number of samples were collected for this investigation, and a sonic drill rig was used to collect cores, it deviates from Stone's CORE DFN Procedure (SEI-SOP-6.37.1).

Sampling was conducted during drilling of coreholes CU1-B1, CU1-B2, and CU1-B3 on June 2nd, 3rd, and 4th, 2014, respectively. The location of the coreholes was selected by Geosyntec.

A total of 99 linear feet of rock core was cored from the three coring locations (24 feet from CU1-B1, 37.5 feet from CU1-B2, and 37.5 feet from CU1-B3). Total recovery was 111.9 feet (26.3 feet from CU1-B1, 45.1 feet from CU1-B2, and 40.5 feet from CU1-B3). A total of 24 rock VOC samples were collected. Of these, 12 were selected for analysis.. In addition, 1 field duplicate, 1 MS/MSD sample pairs (2 samples), 6 equipment blank samples, 1 methanol blank samples, and 1 trip blank sample, were also collected for VOC analysis. Nine core samples were collected for physical property analyses, in accordance with CORE DFN procedure (SEI-SOP-6.37.1). However, only four physical properties samples were submitted to Golder for analysis. VOC extraction and analyses of the rock core samples were conducted at the Stone laboratory in Barre, VT. Physical properties samples were analyzed at Golder Associates Laboratory in Mississauga, Ontario in July, 2014.

Results of physical property analyses for bulk density, porosity and organic carbon content were used in conjunction with the VOC data for the calculation of rock porewater concentrations, as presented in this report. A full description of the methods used for the estimation of porewater concentrations is contained in Section 4.1.

2. FIELD SAMPLE COLLECTION METHODS

The following is a summary of the field methods used for drilling, rock sample collection and processing during the field program. The sampling was undertaken by a Stone staff working in concert with a Geosyntec geologist who logged the core and directed drilling operations. Subsequent to the sample collection, Stone performed extraction and analysis of the crushed rock VOC subsamples at the laboratory in Barre, VT. Physical properties analyses were conducted by Golder Associates in Mississauga, Ontario, Canada.

2.1. Drilling and Core Collection

Drilling was conducted from June 2nd to June 4th, 2014 by Cascade Drilling. Coring of the overburden was completed by advancing sonic tooling with a GeoProbe Sonic rig, producing 6" cores extracted in plastic bags. Once reaching relatively competent rock, smaller diameter casing was advanced, producing 4-inch cores in lexan sleeves. Advancement of coring tooling by sonic drilling methods is not recommended for CORE DFN investigations, as it yields very poor quality cores, and has the potential to heat the core significantly, increasing volatile losses. A Geosyntec geologist supervised the progression of drilling and terminated drilling at the corehole location upon reaching depths of 39.0 feet in CU1-B1; 40.0 feet in CU1-B2; and 37.5 feet in CU1-B3. Table 1 summarizes the drilling progression and the number of samples collected.

2.2. VOC Sample Collection and Processing

Immediately following retrieval, the core was transferred from the liners to a PVC tray lined with aluminum foil. The PVC tray was placed on a table in the vicinity of the drill rig, where the core was logged by a Geosyntec geologist and sampled by a Stone geologist. Two PVC trays were utilized and decontaminated after each use; the aluminum foil was disposed between uses. A limited number of sample locations were selected by Geosyntec. This deviates from CORE DFN procedure where samples are selected at least every 1.5 feet of core - this procedure was not followed at the client's request. Prior to sampling, the core was photographed with labels indicating the site name, corehole name, run number, depth bgs of the top and bottom of the run, Recovery, RQD, and wooden blocks indicating the approximate locations of VOC and Physical Properties samples. Samples were collected both from fracture surfaces and from the intervening unfractured rock matrix. Samples approximately 0.1 feet thick were broken from the core using a hammer and chisel at the selected sample depths. The samples were then immediately wrapped in aluminum foil, and given a unique field ID. Immediately following sampling and wrapping, the samples were delivered to the sample processing area, which was located in the vicinity of the sampling table. Details on sample depths, collection times, position relative to fractures, and other relevant information were recorded on forms in Stone's CORE^{DFN} field database on a hand held computer. After completion of geologic logging and sample collection the remainder of the core was transferred into core boxes.

Immediately after samples arrived at the processing area, samples were individually unwrapped and placed in a stainless steel trimming cell, if crushing was necessary. Due to the friable nature of the rock, and the mechanical disturbance of the sonic drilling methods, many samples needed no crushing. When necessary, the outer portion of the sample (that had been exposed to drill tooling and fluids) was removed with a hammer and chisel. The remaining subsample was then placed in a stainless steel cell and crushed using a hydraulic press.

Subsamples were crushed under a pressure of approximately 6,000 psi. The crushed subsample was then immediately transferred to a pre-labeled 40 mL VOA vial containing 15 mL of purge-and-trap grade methanol.

Trimming cells, crushing cells, chisels, and all other equipment associated with sample processing were decontaminated between each subsample. Stone provided 5 sets of trimming cells, crushing cells, and chisels enabling staff to process all samples from a given run before starting the five step decontamination process. The five step decontamination process involves: (1) full immersion in detergent (Alconox) wash with scrubbing to remove sediment, (2) full immersion or rinse in distilled water, (3) spray rinse with clean wash-grade methanol, (4) spray rinse with clean distilled water to remove any traces of methanol, and (5) drying with clean/disposable towels before next use. Equipment Blanks (EBs) were collected at the beginning and end of each day. To collect EBs, Kim-wipes were removed from a pre-prepped and pre-labeled vial containing 15 mL of purge-and-trap grade methanol then used to wipe the inside of decontaminated crushing cells and other equipment that had come in contact with subsamples. Kim-wipes were then replaced into the pre-labeled vials they were taken from. EBs were analyzed for VOCs.

Sample vials were prepared at Stone's laboratory in Vermont prior to field deployment. Vials were labeled and weighed before the addition of methanol, after the addition of 15 mL of purge-and-trap grade methanol, and again after the addition of crushed rock. Additionally, several vials were prepped with 10ml of methanol for soil samples, but were used for rock samples. Please refer to the lab narrative for further details. Calibration of the balance was checked at least daily. Sample vial IDs were cross-referenced with the field ID, which in turn references a sample depth. Sample depths were used to generate sample IDs which are unique to each sample depth and drilling location. Each sample was labeled with its sample ID then packaged for storage and transport to the Stone laboratory in Barre, VT. For sample storage and transport VOA vials screw caps were wrapped with Teflon tape. Samples were kept in a cooler with ice packs and transported under Chain of Custody (COC) to the Stone lab where analyses began on June 11th, 2014. At the Stone lab, they were stored in a temperature-verified freezer until being extracted and analyzed for VOCs.

In total, 12 samples were collected for VOC analysis from 111.9 feet of rock retrieved. One field duplicate (FD) was collected by crushing additional mass of selected field samples, but Geosyntec elected to not run the field duplicate sample. One MS/MSD sample pair were collected by crushing additional mass of selected field samples. Two trip blanks (TBs) were prepared and packed with the sample shipment. Six (6) equipment blanks were collected. Results of VOC analysis for Equipment Blanks, and Trip Blanks are presented in Table 6.

2.3. Physical Property Sample Collection

Four core samples (representing approximately 1.0 feet of core each) were collected from the cores for analysis of physical properties (porosity, bulk density, percent moisture, specific gravity, and total organic carbon). Physical property samples were not collected until after VOC sample collection was completed for each applicable run. Details about lithology, mineralogy, sample depth interval, and other relevant information were recorded in forms on Stone's CORE^{DFN} field database. Samples were sealed in a plastic bag to limit moisture loss. Each sample was shipped on ice under COC to Golder Associates in Mississauga, Ontario for analysis. A

summary of the samples collected for these physical property analyses are offered in Table 2 and the results of these analyses are presented in Table 3. The physical property sample analytical report is found in Appendix B.

3. LABORATORY ANALYSIS AND VOC EXTRACTION

Sample extraction and analysis were performed June 11th and June 14th, 2014 at the Stone laboratory in Barre, VT. Samples were extracted into methanol for analysis by SOP SEI-10.17.0, "Microwave Assisted Extraction (MAE) of Volatile Organic Compounds from Rock Samples". The methanol extracts were analyzed for nine target VOCs: 1,1,2-Trichloro-1,2,2-trifluoroethane; 1,1-Dichloroethene; trans-1,2-Dichloroethene; cis-1,2-Dichloroethene; Chloroform; 1,1,1-Trichloroethane; Carbon Tetrachloride; Trichloroethene; and Tetrachloroethene.

Minimum detection limits (MDL) for all analytes ranged from 0.840 µg/kg to 15.6 µg/kg in methanol extract. A Full Laboratory Report is presented in Appendix A.

4. RESULTS

The following sections provide the results of the rock core chemical analyses and a discussion of the method of estimation of porewater concentration and total VOC mass estimated from that data. A full laboratory report detailing Stone's VOC Analysis is provided in Appendix A.

4.1. Rock Core VOC Results and Porewater Estimates

A summary of core sample depths is provided in Table 1. VOC concentrations in rock are provided in Table 4. Estimates of porewater concentrations are provided in Table 5. Results for equipment blanks (EB), trip blanks (TB), and methanol blanks (MB) are presented in Table 6.

The concentrations of the analytes extracted into methanol (C_{MEOH}) were measured using GC/MS (EPA m8260c) methods as µg/kg in methanol. The concentration of analytes in the bulk rock (C_t) sample was then calculated using the analysis of the methanol extract (C_{MEOH}), mass of crushed rock in sample (M_{rock}) and volume of methanol (V_{MEOH}) as follows:

$$C_t = \frac{C_{MeOH} \times V_{MeOH}}{M_{rock}}$$

Sample RLs can be calculated for each sample from the above equation by setting the C_{MEOH} to the respective values for each analyte; for samples where analyte concentrations are between the MDL and the RL, an estimated value has been assigned and the results flagged with a "J". This calculation reflects VOC mass present in dissolved, sorbed, and immiscible phases.

The bulk rock VOC concentrations (C_t) are converted to matrix pore water concentrations (C_w) in µg/L of pore water utilizing the wet rock bulk density in g/cm^3 ($P_{b(wet)}$); the dry rock bulk density ($P_{b(dry)}$) in g/cm^3; matrix porosity, a unitless factor (ϕ); and the soil-water partitioning coefficient (K_d) in mL/g as shown below:

$$C_w = \frac{C_{t\,Pb(wet)}}{KdPb(dry)+\phi}$$

This equation assumes that the matrix porosity (i.e., primary porosity) is 100% saturated with water and that the VOC mass occurs in only the dissolved and sorbed phases (i.e., no NAPL is present). Pore water concentrations that approach or exceed aqueous solubility limits for given compounds may indicate the presence of DNAPL (Feenstra et al, 1991).

The partitioning coefficient (k_d) is based on the assumption that sorption is rapid, reversible and that there is no variation with concentration. This coefficient is calculated using the organic carbon portioning coefficient (K_{oc}) for each compound, obtained from the literature (e.g. Pankow and Cherry, 1996), and fraction of organic carbon (f_{oc}) obtained through physical property analysis using the following equation:

$$K_d = K_{oc} f_{oc}$$

This coefficient assumes that sorption is entirely dependent upon solid phase organic carbon in the rock matrix, this being a reasonable assumption for the low molecular weights of the chlorinated ethenes of interest (Schwarzenbach et al. 1993).

Physical parameter tests were conducted by Golder Associates. Full laboratory reports for these analyses are provided in Appendix B. These results are summarized in Table 3. Physical properties samples were representative of the major rock types encountered on the site (silt, sand, silty sand). The values for porosity ($\emptyset$) bulk density (ρ_b), and fraction of organic carbon (f_{oc}) used to estimate matrix porewater concentrations are based on the nearest physical property sample, or the one that most closely reflects the lithology of the VOC sample. Physical property data are provided in Tables 2 and 3, attached.

The organic carbon portioning coefficient (K_{oc}) for each compound was obtained from Pankow and Cherry (1996) or other sources. Table A below summarizes the (K_{oc}) values used to calculate matrix porewater concentrations.

Table A: Organic Carbon Portioning Coefficients (K_{oc})

Compound	Koc	Source
1,1-Dichloroethene	65	Pankow and Cherry (1996)
1,1,1-Trichloroethane	152	Pankow and Cherry (1996)
Carbon Tetrachloride	174	http://www.epa.gov/superfund/health/conmedia/soil/pdfs/appd_k.pdf
Trichloroethene	126	Pankow and Cherry (1996)
cis-1,2-Dichloroethene	86	Pankow and Cherry (1996)
Tetrachloroethene	364	Pankow and Cherry (1996)
Chloroform	44	Pankow and Cherry (1996)
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	372	http://www.epa.gov/chemfact/s_freon.txt
trans-1,2-Dichloroethene	59	Pankow and Cherry (1996)

VOC concentrations in rock (as µg/kg) are shown in Table 4. Estimated pore water concentrations (as µg/L) for each sample are shown in Table 5. These concentrations were calculated using the porosity (Ø), bulk density (P_b), and fraction of organic carbon (f_{oc}) as reported by Golder Associates for each separate physical property sample (see Table 3).

4.2. Results from Field Blanks and Duplicates

Field blank results, including equipment blanks (EBs), and trip blanks (TBs), are provided with the Analytical Report in Appendix A, and summarized in Table 6.

One field duplicate sample was collected, but Geosyntec elected not to run this sample.

4.3. Physical Properties Sample Results

Results of Physical Properties tests are presented in Table 3. A summary of the physical properties samples chosen are presented in Table 2.

5. REFERENCES

Feenstra, S., D.M. Mackay and J.A. Cherry. 1991. A method for assessing residual NAPL based on organic chemical concentrations in soil samples. Ground Water Monitoring Review, 11, 128-136.

Pankow, J.F. and J.A. Cherry. 1996. Dense Chlorinated Solvents and other DNAPLs in Groundwater. Waterloo Press, Portland, Oregon.

Schwarzenbach, R., P. Gschwend, and D. Imboden. 1993. Environmental Organic Chemistry. John Wiley and Sons Inc., New York.

6. TABLES

Table 1 Summary of Drilling Progression and Samples Collected

Field Location	Core Run	Date (dd/mm/yy)	Depth From (ft bgs)	Depth to (ft bgs)	Core Run Length (ft)	Recovery (ft)	RQD (%)	# Field VOC Samples	# Field VOC Duplicates	# Field VOC MS	# Field VOC MSD	# Physical Property Samples
CU1-B1	4	6/2/2014	15	17.5	2.5	2.5	0	1				
	5		17.5	20	2.5	2.8	0					
	6		20	22.5	2.5	3	0					
	7		22.5	25	2.5	3	0					
	8		25	27.5	2.5	2.5	0	1				1
	9		27.5	30	2.5	2.5	0	1				
	10		30	32.5	2.5	2.6	0					
	11		32.5	35	2.5	2.5	0					
	12		35	37.5	2.5	2.9	0					
	13		37.5	39	1.5	2	0	1				
CU1-B2	1	6/3/2014	2.5	7.5	5	5	0					
	2		7.5	12.5	5	5	0					
	3		12.5	15	2.5	2.5	0					
	4		15	17.5	2.5	3	0					
	5		17.5	20	2.5	3.5	0					
	6		20	22.5	2.5	3.9	0	1				1
	7		22.5	25	2.5	3.4	0	1				
	8		25	27.5	2.5	3.5	0					
	9		27.5	30	2.5	3.2	0	1	1	1	1	
	10		30	32.5	2.5	2.5	0					
	11		32.5	35	2.5	2.8	0	1				
	12		35	37.5	2.5	3.5	0					
	13		37.5	40	2.5	3.3	0					
CU1-B3	1	6/3/2014	0	5	5	5	0					
	2		5	10	5	5	0					
	3		10	12.5	2.5	2.5	0					
	4	6/4/2014	15	17.5	2.5	2.8	0	1				
	5		17.5	20	2.5	3.5	0	1				
	6		20	22.5	2.5	1.8	0					1
	7		22.5	25	2.5	3.1	0					
	8		25	27.5	2.5	3.1	0					
	9		27.5	30	2.5	3.1	0	1				
	10		30	31	1	1.7	0					
	11		31	33.5	2.5	2.8	0					
	12		33.5	35	1.5	2.9	0					
	13		35	37.5	2.5	3.2	0	1				1
				Totals	**96.5**	**111.9**		**12**	**1**	**1**	**1**	**4**

Table 2 Summary of Physical properties Samples Collected

Sample Name	Date Collected (dd/mm/yy)	Location	Core Run	Core Run Interval (ft bgs)	Sample Interval (ft bgs)		Sample Mid-Depth (ft bgs)	Sample Length (ft)
CU1-B1-25.0-26.0-PHY	6/2/2014	CU1-B1	8	25 - 27.5	25.0	26.0	25.5	1.0
CU1-B2-20.0-21.0-PHY	6/3/2014	CU1-B2	6	20 - 22.5	20.0	21.0	20.5	1.0
CU1-B3-21.0-22.0-PHY	6/4/2014	CU1-B3	6	20 - 22.5	21.0	22.0	21.5	1.0
CU1-B3-36.0-37.0-PHY	6/4/2014	CU1-B3	13	35 - 37.5	36.0	37.0	36.5	1.0

Notes: Samples submitted to Golder Associates for physical parameter testing (porosity, percent moisture, TOC, and bulk density)

Table 3 Results of Physical Properties and TOC Measurements

Sample ID	Depth Interval (ft bgs)		Lithology Description	Porosity (-)	Water Content (%)	Wet Bulk Density (g/cm^3)	Dry Bulk Density (g/cm^3)	Specific Gravity (-)	TOC (%)
	Top Depth	Bottom Depth							
CU1-B1-25.0-26.0-PHY	25.0	26.0	silt	0.445	31.3	1.90	1.45	2.61	0.14
CU1-B2-20.0-21.0-PHY	20.0	21.0	silt	0.397	23.6	1.92	1.56	2.59	0.10
CU1-B3-21.0-22.0-PHY	21.0	22.0	sandy silt	0.503	39.9	1.73	1.23	2.48	0.03
CU1-B3-36.0-37.0-PHY	36.0	37.0	sand	0.39	25.2	1.99	1.59	2.60	0.01
			Minimum	0.39	23.60	1.73	1.23	2.48	0.01
Notes:			**Maximum**	0.503	39.90	1.99	1.59	2.61	0.14
			Average	0.43	30.00	1.89	1.46	2.57	0.070

For shaded results, test was run two or more times.
Reported value is average of tests.

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Table 4: Total VOC Concentrations in Rock Core Samples

						Comments/Interpretation (3)			TOTAL VOC CONCENTRATION IN ROCK CORE SAMPLES (µg/kg)																					
			Depth from	Depth to	Avg. Depth																									
Sample ID	Location ID	Interval (linear feet)	linear ft	linear ft	linear feet	Sample Lithology (3a)	Position Relative to Fracturing (3b)	Fracture Type (3c)	1,1,2-Trichloro-1,2,2-trifluoroethane		1,1-Dichloroethene		trans-1,2-Dichloroethene		cis-1,2-Dichloroethene		Chloroform		1,1,1-Trichloroethane		Carbon Tetrachloride		Trichloroethene		Tetrachloroethene	
CU1-B1-16.00-VOC	CU1-B1	16 - 16.1	16	16.1	16.05	unconsolidated deposits	NA	NA	1.56	U	15.6	U	15.6	U	15.6	U	1.56	U	1.56	U	1.56	U	22.8		1.56	U
CU1-B1-26.30-VOC		26.3 - 26.4	26.3	26.4	26.35	unconsolidated deposits	NA	NA	1.11	U	11.1	U	11.1	U	11.1	U	1.11	U	1.11	U	1.11	U	18.0		0.602	JB
CU1-B1-29.80-VOC		29.8 - 29.9	29.8	29.9	29.85	Sandstone	BF	NA	1.04	U	10.4	U	10.4	U	10.4	U	1.04	U	1.04	U	1.04	U	29.2		0.729	JB
CU1-B1-38.30-VOC		38.3 - 38.4	38.3	38.4	38.35	Sandstone	NA	NA	0.840	U	8.40	U	8.40	U	8.40	U	0.840	U	0.840	U	0.840	U	8.28		0.840	U
CU1-B2-20.80-VOC	CU1-B2	20.8 - 20.9	20.8	20.9	20.85	unconsolidated deposits	NA	NA	1.21	U	12.1	U	12.1	U	12.1	U	1.21	U	1.21	U	1.21	U	6.35		1.21	U
CU1-B2-23.00-VOC		23 - 23.1	23	23.1	23.05	unconsolidated deposits	NA	NA	1.19	U	11.9	U	11.9	U	11.9	U	1.19	U	1.19	U	1.19	U	6.75		1.19	U
CU1-B2-27.50-VOC		27.5 - 27.6	27.5	27.6	27.55	welded tuff	NA	NA	1.00	U	10.0	U	10.0	U	10.0	U	1.00	U	1.00	U	1.00	U	20.6		1.00	U
CU1-B2-34.60-VOC		34.6 - 34.8	34.6	34.8	34.70	Sandstone	NA	NA	1.06	U	10.6	U	10.6	U	10.6	U	1.06	U	1.06	U	1.06	U	13.8		1.06	U
CU1-B3-16.50-VOC	CU1-B3	16.5 - 16.6	16.5	16.6	16.55	unconsolidated deposits	NA	NA	1.23	U	12.3	U	12.3	U	12.3	U	1.23	U	1.23	U	1.23	U	29.9		0.703	JB
CU1-B3-19.90-VOC		19.9 - 20	19.9	20	19.95	Sandstone	NA	NA	1.07	U	10.7	U	10.7	U	10.7	U	1.07	U	1.07	U	1.07	U	49.9		0.758	JB
CU1-B3-28.00-VOC		28 - 28.1	28	28.1	28.05	Sandstone	NA	NA	1.34	U	13.4	U	13.4	U	13.4	U	1.34	U	1.34	U	1.34	U	9.97		1.34	U
CU1-B3-36.60-VOC		36.6 - 36.7	36.6	36.7	36.65	Sandstone	NA	NA	0.927	U	9.27	U	9.27	U	9.27	U	0.927	U	0.927	U	0.927	U	3.03		0.927	U

Notes:

1. This table presents data recorded in conducting field sampling and laboratory analysis of rock core samples from three coring locations: CU1-B1, CU1-B2, and CU1-B3. The samples were collected, processed and preserved in the field by Stone Environmental Inc. (Stone) personnel then transported under COC to Stone's fixed lab in Barre, VT where they were extracted and analyzed for the listed target Volatile Organic Compounds (VOCs) using methods developed by the University of Guelph. Refer to the Stone report text and tables for additional details regarding sampling, sample preparation, extraction, and analysis.

2. The Comments/Interpretation section include general notes regarding the sample characteristics, field classified lithology, position relative to fracturing, and type of fracturing according to Stone standard protocols as explained further below.
   a) Lithology reflects Stone personnel classification of the sample at the time of collection.
   b) Position relative to fracturing indicates the position of the sample relative to observed fractures inferred to reflect insitu features with the following legend:
   "bet"= between closely spaced fractures; "af"=above fracture surface; "bf"=below fracture surface; "bkn"=broken or crumbled region; "f#" = sampled distance in tenths of feet from fracture surface; "NA" = not applicable.
   c) Fracture type denotes relative orientation of fracture relative to the axis of the core with "hf" denoting a horizontal fracture, "vf" a nominally vertical fracture, "ang" an angled fracture, "bkn" a highly fractured/broken zone, and "mech" a mechanical (drilling induced) break; "NA" not applicable.

3. The laboratory results for volatile organic compounds in rock are expressed in units of micrograms per kilogram (ug/kg) of rock sample at field moisture conditions at the time of sampling for the target compounds including:1,1,2-Trichloro-1,2,2-trifluoroethane; 1,1-Dichloroethene; trans-1,2-Dichloroethene; cis-1,2-Dichloroethene; Chloroform; 1,1,1-Trichloroethane; Carbon Tetrachloride; Trichloroethene; Tetrachloroethene. The values are rounded to two significant figures. Please refer to the report text and appendices for information regarding detection and quantitation limits. The second column for each compound denotes quality assurance flags including: "U" denoting that the analyte was analyzed for, but was not detected above the reported quantitation limit; "J" the analyte was positively identified, the associated numerical value is the approximate concentration of the analyte in the sample; "UJ" the analyte was analyzed for, but was not detected, the sample reported limit is an estimated quantity; "B" indicates the analyte was found in the associated laboratory blank as well as the sample; "R" denotes sample result rejected due to chromatographic interference causing inadequate peak separation or resolution or other deficiency in data generation process.

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Table 5: Estimated Porewater Concentrations (ug/L) in Rock Core Samples

						Comments/Interpretation (2)			Estimated Pore Water Concentration (µg/L) (3)																					
			Depth from	Depth to	Avg. Depth																									
Sample ID	Location ID	Interval (linear feet)	linear ft	linear ft	linear ft	Sample Lithology (3a)	Position Relative to Feature (3b)	Feature Type (3c)	1,1,2-Trichloro-1,2,2-trifluoroethane		1,1-Dichloroethene		trans-1,2-Dichloroethene		cis-1,2-Dichloroethene		Chloroform		1,1,1-Trichloroethane		Carbon Tetrachloride		Trichloroethene		Tetrachloroethene	
CU1-B1-16.00-VOC	CU1-B1	16 - 16.1	16	16.1	16.05	unconsolidated deposits	NA	NA	2.5	U	51	U	52	U	48	U	5.5	U	3.9	U	3.7	U	62		2.5	U
CU1-B1-26.30-VOC		26.3 - 26.4	26.3	26.4	26.35	unconsolidated deposits	NA	NA	1.8	U	37	U	37	U	34	U	3.9	U	2.8	U	2.6	U	49		0.97	JB
CU1-B1-29.80-VOC		29.8 - 29.9	29.8	29.9	29.85	Sandstone	BF	NA	1.6	U	34	U	35	U	32	U	3.7	U	2.6	U	2.5	U	79		1.2	JB
CU1-B1-38.30-VOC		38.3 - 38.4	38.3	38.4	38.35	Sandstone	NA	NA	1.3	U	28	U	28	U	26	U	3	U	2.1	U	2	U	22		1.3	U
CU1-B2-20.80-VOC	CU1-B2	20.8 - 20.9	20.8	20.9	20.85	unconsolidated deposits	NA	NA	2.4	U	47	U	48	U	44	U	5	U	3.7	U	3.5	U	21		2.4	U
CU1-B2-23.00-VOC		23 - 23.1	23	23.1	23.05	unconsolidated deposits	NA	NA	2.3	U	46	U	47	U	43	U	4.9	U	3.6	U	3.4	U	22		2.4	U
CU1-B2-27.50-VOC		27.5 - 27.6	27.5	27.6	27.55	welded tuff	NA	NA	2	U	39	U	39	U	36	U	4.1	U	3	U	2.9	U	67		2	U
CU1-B2-34.60-VOC		34.6 - 34.8	34.6	34.8	34.70	Sandstone	NA	NA	2.1	U	41	U	42	U	38	U	4.4	U	3.2	U	3.1	U	45		2.1	U
CU1-B3-16.50-VOC	CU1-B3	16.5 - 16.6	16.5	16.6	16.55	unconsolidated deposits	NA	NA	3.3	U	40	U	40	U	40	U	4.1	U	3.8	U	3.7	U	94		1.9	JB
CU1-B3-19.90-VOC		19.9 - 20	19.9	20	19.95	Sandstone	NA	NA	2.9	U	35	U	35	U	35	U	3.6	U	3.3	U	3.3	U	160		2.1	JB
CU1-B3-28.00-VOC		28 - 28.1	28	28.1	28.05	Sandstone	NA	NA	5.9	U	67	U	67	U	66	U	6.7	U	6.4	U	6.4	U	48		6	U
CU1-B3-36.60-VOC		36.6 - 36.7	36.6	36.7	36.65	Sandstone	NA	NA	4.1	U	46	U	46	U	46	U	4.7	U	4.5	U	4.4	U	15		4.1	U

NOTES:

1. This table presents data recorded in conducting field sampling and laboratory analysis of rock core samples from three coring locations: CU1-B1, CU1-B2, and CU1-B3. The samples were collected, processed and preserved in the field by Stone Environmental Inc. (Stone) personnel then transported under COC to Stone's fixed lab in Barre, VT where they were extracted and analyzed for the listed target Volatile Organic Compounds (VOCs) using methods developed by the University of Guelph. Refer to the Stone report text and tables for additional details regarding sampling, sample preparation, extraction, and analysis.

2. The Comments/Interpretation section include general notes regarding the sample characteristics, field classified lithology, position relative to fracturing, and type of fracturing according to Stone standard protocols as explained further below.
   a) Lithology reflects Stone personnel classification of the sample at the time of collection.
   b) Position relative to fracturing indicates the position of the sample relative to observed fractures inferred to reflect insitu features with the following legend:
   "bet"= between closely spaced fractures; "af"=above fracture surface; "bf"=below fracture surface; "bkn"=broken or crumbled region; "f#" = sampled distance in tenths of feet from fracture surface; "NA" = not applicable.
   c) Fracture type denotes relative orientation of fracture relative to the axis of the core with "hf" denoting a horizontal fracture, "vf" a nominally vertical fracture, "ang" an angled fracture, "bkn" a highly fractured/broken zone, and "mech" a mechanical (drilling induced) break; "NA" not applicable.

The laboratory results for volatile organic compounds in rock are expressed in units of micrograms per kilogram (ug/kg) of rock sample at field moisture conditions at the time of sampling for the target compounds including:1,1,2-Trichloro-1,2,2-trifluoroethane; 1,1-Dichloroethene; trans-1,2-Dichloroethene; cis-1,2-Dichloroethene; Chloroform; 1,1,1-Trichloroethane; Carbon Tetrachloride; Trichloroethene; Tetrachloroethene. The values are rounded to two significant figures. Please refer to the report text and appendices for information regarding detection and quantitation limits. The second column for each compound denotes quality assurance flags including: "U" denoting that the analyte was analyzed for, but was not detected above the reported quantitation limit; "J" the analyte was positively identified, the associated numerical value is the approximate concentration of the analyte in the sample; "UJ" the analyte was analyzed for, but was not detected, the sample reported limit is an estimated quantity; "B" indicates the analyte was found in the associated laboratory blank as well as the sample; "R" denotes sample result rejected due to chromatographic interference causing inadequate peak separation or resolution or other deficiency in data generation process.

3. The Estimated Pore Water Concentration in micrograms per liter (ug/L) represents an estimate of the equivalent matrix porewater concentrations (Cw) computed based on the laboratory determined total mass concentration (mg/g of wet rock), as outlined in the report text, using estimated or measured parameters including rock wet bulk density (g/cm3) as received in the field, matrix porosity, and matrix retardation factor (R). This simplified partitioning analysis assumes the rock matrix porosity was fully saturated with water, and that mass occurs at equilibrium in the dissolved and sorbed phase. Refer to the Stone report text for additional details.

Table 6: Summary of VOC Results for Field and Laboratory Blanks

		[VOLATILE ORGANIC COMPOUNDS IN METHANOL EXTRACT] (µg/kg of MeOH)																	
Blank ID	Date Sampled	1,1,2-Trichloro-1,2,2-trifluoroethane		1,1-Dichloroethene		trans-1,2-Dichloroethene		cis-1,2-Dichloroethene		Chloroform		1,1,1-Trichloroethane		Carbon Tetrachloride		Trichloroethene		Tetrachloroethene	
EB-01	6/4/2014	1.33	U	13.3	U	13.3	U	13.3	U	1.33	U	1.33	U	1.33	U	1.33	U	1.33	U
EB-02	6/4/2014	1.33	U	13.3	U	13.3	U	13.3	U	1.33	U	1.33	U	1.33	U	1.33	U	1.33	U
EB-03	6/3/2014	1.33	U	13.3	U	13.3	U	13.3	U	1.33	U	1.33	U	1.33	U	1.33	U	1.33	U
EB-04	6/4/2014	1.33	U	13.3	U	13.3	U	13.3	U	1.33	U	1.33	U	1.33	U	1.33	U	1.33	U
EB-05	6/4/2014	1.33	U	13.3	U	13.3	U	13.3	U	1.33	U	1.33	U	1.33	U	1.33	U	1.33	U
EB-06	6/4/2014	1.33	U	13.3	U	13.3	U	13.3	U	1.33	U	1.33	U	1.33	U	1.33	U	1.33	U
TB-01	6/4/2014	1.33	U	13.3	U	13.3	U	13.3	U	8.91		1.33	U	1.33	U	1.33	U	1.33	U
TB-02	6/4/2014	1.33	U	13.3	U	13.3	U	13.3	U	9.16		1.33	U	1.33	U	1.33	U	1.33	U

Notes:

The laboratory results for volatile organic compounds in rock are expressed in units of micrograms per kilogram (ug/kg) of rock sample at field moisture conditions at the time of sampling for the target compounds including:1,1,2-Trichloro-1,2,2-trifluoroethane; 1,1-Dichloroethene; trans-1,2-Dichloroethene; cis-1,2-Dichloroethene; Chloroform; 1,1,1-Trichloroethane; Carbon Tetrachloride; Trichloroethene; Tetrachloroethene. The values are rounded to two significant figures. Please refer to the report text and appendices for information regarding detection and quantitation limits. The second column for each compound denotes quality assurance flags including: "U" denoting that the analyte was analyzed for, but was not detected above the reported quantitation limit; "J" the analyte was positively identified, the associated numerical value is the approximate concentration of the analyte in the sample; "UJ" the analyte was analyzed for, but was not detected, the sample reported limit is an estimated quantity; "B" indicates the analyte was found in the associated laboratory blank as well as the sample; "R" denotes sample result rejected due to chromatographic interference causing inadequate peak separation or resolution or other deficiency in data generation process.

APPENDICES

APPENDIX A: VOC ANALYTICAL REPORT

Final Data Report for Laboratory Services

PREPARED FOR: GEOSYNTEC

SITE ID: GEOSYNTEC FAIRVIEW OREGON CORE

FAIRVIEW, OR

Stone Project ID: 14-080

MobiLab™
DEFENSIBLE REAL-TIME ANALYTICS

DATES OF PERFORMANCE: June 11-13, 2014
REPORT DATE: August 25, 2014 (Revision 1)

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MobiLab™

DEFENSIBLE REAL-TIME ANALYTICS

STONE ENVIRONMENTAL, INC. LABORATORY

NARRATIVE – REVISION 1

August 25, 2014

This data package presents the analytical results for rock samples analyzed by Stone Environmental, Inc. Laboratory (Stone) on June 11-13, 2014 at Stone's fixed laboratory facility in Barre, VT. Samples in this sample delivery group (SDG-1) were collected at the Geosyntec Fairview Site in Fairview, Oregon by Stone personnel on June 2-4, 2014 and include samples with lab IDs of SEI-1 through SEI-35. A total of 35 samples were collected during this period from locations CU1-B1, CU1-B2, and CU1-B3. This total sample number includes one field duplicate sample, one matrix spike/matrix spike duplicate (MS/MSD) pair, six equipment blanks (EB), and two trip blank (TB) samples. Via email correspondence on June 9, 2014, Geosyntec selected the following subset of samples for analysis:

Lab ID	Location ID	Sample Name
SEI-1	CU1-B1	CU1-B1-16.00-VOC
SEI-5	CU1-B1	CU1-B1-26.30-VOC
SEI-6	CU1-B1	CU1-B1-29.80-VOC
SEI-8	CU1-B1	CU1-B1-38.30-VOC
SEI-12	CU1-B2	CU1-B2-20.80-VOC
SEI-13	CU1-B2	CU1-B2-23.00-VOC
SEI-14	CU1-B2	CU1-B2-27.50-VOC
SEI-19	CU1-B2	CU1-B2-34.60-VOC
SEI-20	CU1-B3	CU1-B3-16.50-VOC
SEI-21	CU1-B3	CU1-B3-19.90-VOC
SEI-24	CU1-B3	CU1-B3-28.00-VOC
SEI-27	CU1-B3	CU1-B3-36.60-VOC

All samples were shipped overnight to the laboratory on June 4, 2014 and were received by laboratory staff on June 5, 2014. Temperatures of samples were measured between 11-12 degrees Celsius at receipt, which is just slightly above the threshold receipt temperature of 10 degrees Celsius. No data were qualified on this basis.

Copies of the chains of custody (COC) as well as a summary of samples logged into Stone's laboratory information management system (LIMS) are included in the Sample Login Summary Section of this report. A summary of sample weights is also included in this section. All sample results are reported in units of µg/kg on a wet weight basis. The total methanol volume for each rock sample was 20 mL. For each methanol blank sample (EBs and TBs), the total methanol volume was 15 mL. They are also reported in units of µg/kg, assuming a default rock mass of 15 g per sample.

Rock samples were extracted on June 10, 2014 via the microwave assisted extraction (MAE) technique in accordance with Stone's SOP SEI-10.17.1, "Microwave Assisted Extraction (MAE) of Volatile Organic Compounds from Rock Samples." Samples were extracted in batches of up to 10 samples. One Prep Blank (PBLK) was extracted along with each batch of rock samples and one Prep Laboratory Control Sample (PLCS) was extracted per extraction day. Subsequent to extraction, samples were analyzed by Stone according to SOP SEI-10.18.1, "The Determination of Volatile Organic Compounds By Gas Chromatography / Dual ECD Detectors in Rock Samples (Using Cool On Column Injection and Split Method Injection)" for chlorinated volatile organic compounds (VOCs).

Although this method is not provided under the National Environmental Laboratory Accreditation Program (NELAP) fields of testing, the analytical results associated with the samples presented in this test report were generated under a quality system that adheres to requirements specified in the NELAP standards. Results for the quality control (QC) samples (continuing calibration verification samples (VSTD), laboratory control samples (LCS), and laboratory volatile blank samples (VBLK)) are provided in the Quality Control Summaries Section of this report. All quality assurance/quality control (QA/QC) measures associated with these analyses were found to be within the tolerance set forth in the associated laboratory Standard Operating Procedures (SOPS) and the NELAP standards with the following exceptions:

- Initial Calibration (ICAL) Deficiencies:
    - No deficiencies.
- Continuing Calibration Verification (VSTD) Deficiencies:
    - No deficiencies.
- Laboratory Method Blank (VBLK) Deficiencies:
    - 1,1,2-Trichloro-1,2,2-trifluoroethane was present at 3ppb in VBLK AJ on June 11, 2014. There were no detections of this compound in any sample and no data were qualified on this basis.

- Tetrachloroethene (PCE) was detected at a level greater than ½ the reporting level (RL) in VBLK AM and VBLK AN. There were no detections of PCE in any samples analyzed within these QC batches and no samples were qualified on this basis.

- Laboratory Control Sample (LCS) Deficiencies:
  - No deficiencies.
- MAE Prep Batch Blank (PBLK) Deficiencies:
  - PCE was present at a level greater than its method detection limit (MDL) but less than ½ its RL in PBLK-A1-061014. A B qualifier was added to any detections of PCE for samples extracted in the same batch as PBLK-A1-061014.
- MAE Prep Laboratory Control Sample (PLCS) Deficiencies:
  - Cis-1,2-dichloroethene (cis-1,2-DCE) was present at a level marginally outside the acceptance criteria (>130% recovery) for PLCS-A12-061014. As cis-1,2-DCE was not detected in any sample, no data were qualified on this basis.
- Sample Collection Deficiencies:
  - Both trip blanks (TB-01 and TB-02) associated with this project were prepared using a low purity, wash grade methanol (MeOH). This constitutes a deviation from Stone's SOP 6.37.1, "Field Methods for Retrieval, Collection, Handling, and Preservation of Rock Samples to be Analyzed for VOCs and Physical Properties", which specifies all field QA/QC samples, including both equipment blanks and trip blanks, should be prepared with Purge and Trap grade MeOH. Aside from the TBs, all other samples were prepared with Purge and Trap grade MeOH and no samples were qualified.
  - The following samples were preserved in the field with just 10 mL of Purge and Trap grade MeOH as opposed to the 15 mL specified in Stone's SOP 6.37.1 "Field Methods for Retrieval, Collection, Handling, and Preservation of Rock Samples to be Analyzed for VOCs and Physical Properties": CU1-B3-28.00-VOC, CU1-B3-33.10-VOC, CU1-B3-35.00-VOC, and CU1-B3-36.60-VOC. Of these samples, only CU1-B3-33.10-VOC and CU1-B3-35.00-VOC were among those analyzed. During the prep step for MAE, those sample vials were rinsed with 10 mL of Purge and Trap MeOH instead of 5 mL, bringing the total volume of MeOH in the microwave vessel to 20 mL, as required by SOP SEI-10.17.1. Therefore, no data were qualified.
  - Teflon tape was not added to each vial after sample collection as specified in Stone's SOP 6.37.1 "Field Methods for Retrieval, Collection, Handling, and Preservation of Rock Samples to be Analyzed for VOCs and Physical Properties." Teflon tape is added to vials

to help prevent the vials from leaking during transport. No vials showed any obvious signs of leakage upon receipt and no data were qualified on this basis.

When applicable, the final results were annotated with the following codes:

U - Analyte was not detected and is reported as less than the reported quantitation limit.

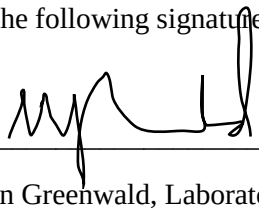
J - The reported result is an estimated value (e.g., matrix interference was observed or the analyte was positively identified, but the associated numerical value is between the method detection limit and reporting limit).

Q - One or more quality control criteria failed (e.g., LCS recovery, surrogate spike recovery or CCV)

B - Blank contamination. The recorded result is associated with a contaminated blank.

E - Estimated value, marginally above the calibration levels.

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Signature: 

Morgan Greenwald, Laboratory Quality Assurance Manager, Stone Environmental, Inc.

SAMPLE LOGIN SUMMARY

Sample Login Summary

Sample Weight Summary

Chain of Custody Records

14-080 Geosyntec OR CORE
Sample Login Summary
SDG-1

Lab ID	Location ID	Depth	Matrix	Sample Name	Sample Code	Quantity	Collected By	Collected Date	Collected Time	Collection Method	Received By	Received Date	Received Time	Received Temp	Temperature Units	Comments	Lab ID Parent	Custody ID
SEI-1	CU1-B1	016.00	Rock	CU1-B1-16.00-VOC	Normal Sample	1	TWM	6/2/2014	1:00 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-2	CU1-B1	018.80	Rock	CU1-B1-18.80-VOC	Normal Sample	1	TWM	6/2/2014	1:42 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD.		LLI_14-080_1_1406041321
SEI-3	CU1-B1	020.70	Rock	CU1-B1-20.70-VOC	Normal Sample	1	TWM	6/2/2014	2:26 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD.		LLI_14-080_1_1406041321
SEI-4	CU1-B1	024.00	Rock	CU1-B1-24.00-VOC	Normal Sample	1	TWM	6/2/2014	2:52 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD.		LLI_14-080_1_1406041321
SEI-5	CU1-B1	026.30	Rock	CU1-B1-26.30-VOC	Normal Sample	1	TWM	6/2/2014	3:09 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-6	CU1-B1	029.80	Rock	CU1-B1-29.80-VOC	Normal Sample	1	TWM	6/2/2014	3:17 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-7	CU1-B1	034.00	Rock	CU1-B1-34.00-VOC	Normal Sample	1	TWM	6/2/2014	4:31 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD.		LLI_14-080_1_1406041321
SEI-8	CU1-B1	038.30	Rock	CU1-B1-38.30-VOC	Normal Sample	1	TWM	6/2/2014	5:06 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-9	CU1-B2	014.60	Rock	CU1-B2-14.60-VOC	Normal Sample	1	TWM	6/3/2014	9:44 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD.		LLI_14-080_1_1406041321
SEI-10	CU1-B2	017.20	Rock	CU1-B2-17.20-VOC	Normal Sample	1	TWM	6/3/2014	11:41 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD.		LLI_14-080_1_1406041321
SEI-11	CU1-B2	019.40	Rock	CU1-B2-19.40-VOC	Normal Sample	1	TWM	6/3/2014	11:56 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD.		LLI_14-080_1_1406041321
SEI-12	CU1-B2	020.80	Rock	CU1-B2-20.80-VOC	Normal Sample	1	TWM	6/3/2014	12:13 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-13	CU1-B2	023.00	Rock	CU1-B2-23.00-VOC	Normal Sample	1	TWM	6/3/2014	12:34 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-14	CU1-B2	027.50	Rock	CU1-B2-27.50-VOC	Normal Sample	1	TWM	6/3/2014	12:58 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-15	CU1-B2	027.50	Rock	FD-01	Normal Sample	1	TWM	6/3/2014	12:58 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD.		LLI_14-080_1_1406041321
SEI-16	CU1-B2	029.00	Rock	CU1-B2-29.00-VOC	Normal Sample	1	TWM	6/3/2014	1:14 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD.	SEI-16	LLI_14-080_1_1406041321
SEI-16-MS	CU1-B2	029.00	Rock	CU1-B2-29.00-VOC-MS	Matrix Spike	1	TWM	6/3/2014	1:14 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD.	SEI-16	LLI_14-080_1_1406041321
SEI-16-MSD	CU1-B2	029.00	Rock	CU1-B2-29.00-VOC-MSD	Matrix Spike Duplicate	1	TWM	6/3/2014	1:14 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD.	SEI-16	LLI_14-080_1_1406041321
SEI-19	CU1-B2	034.60	Rock	CU1-B2-34.60-VOC	Normal Sample	1	TWM	6/3/2014	1:40 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-20	CU1-B3	016.50	Rock	CU1-B3-16.50-VOC	Normal Sample	1	TWM	6/4/2014	9:21 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321

14-080 Geosyntec OR CORE
Sample Login Summary
SDG-1

Lab ID	Location ID	Depth	Matrix	Sample Name	Sample Code	Quantity	Collected By	Collected Date	Collected Time	Collection Method	Received By	Received Date	Received Time	Received Temp	Temperature Units	Comments	Lab ID Parent	Custody ID
SEI-21	CU1-B3	019.90	Rock	CU1-B3-19.90-VOC	Normal Sample	1	TWM	6/4/2014	9:30 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-22	CU1-B3	020.80	Rock	CU1-B3-20.80-VOC	Normal Sample	1	TWM	6/4/2014	9:43 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD.		LLI_14-080_1_1406041321
SEI-23	CU1-B3	024.00	Rock	CU1-B3-24.00-VOC	Normal Sample	1	TWM	6/4/2014	9:54 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD.		LLI_14-080_1_1406041321
SEI-24	CU1-B3	028.00	Rock	CU1-B3-28.00-VOC	Normal Sample	1	TWM	6/4/2014	10:54 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	Preserved in 10 ml MeOH, not 15 ml		LLI_14-080_1_1406041321
SEI-25	CU1-B3	033.10	Rock	CU1-B3-33.10-VOC	Normal Sample	1	TWM	6/4/2014	11:18 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD. Preserved in 10 ml MeOH, not 15 ml		LLI_14-080_1_1406041321
SEI-26	CU1-B3	035.00	Rock	CU1-B3-35.00-VOC	Normal Sample	1	TWM	6/4/2014	11:48 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	HOLD. Preserved in 10 ml MeOH, not 15 ml		LLI_14-080_1_1406041321
SEI-27	CU1-B3	036.60	Rock	CU1-B3-36.60-VOC	Normal Sample	1	TWM	6/4/2014	11:45 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C	Preserved in 10 ml MeOH, not 15 ml		LLI_14-080_1_1406041321
SEI-28	EB	000.01	Rock	EB-01	Equipment Blank	1	TWM	6/4/2014	1:40 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-29	EB	000.02	Rock	EB-02	Equipment Blank	1	TWM	6/4/2014	5:21 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-30	EB	000.03	Rock	EB-03	Equipment Blank	1	TWM	6/3/2014	8:38 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-31	EB	000.04	Rock	EB-04	Equipment Blank	1	TWM	6/4/2014	3:58 PM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-32	EB	000.05	Rock	EB-05	Equipment Blank	1	TWM	6/4/2014	8:13 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-33	EB	000.06	Rock	EB-06	Equipment Blank	1	TWM	6/4/2014	11:52 AM	SEI-6.37.x	MDR	6/5/2014	12:00 PM	12	C			LLI_14-080_1_1406041321
SEI-34	TB	000.01	Rock	TB-01	Trip Blank	1	TWM	6/4/2014	3:00 PM	SEI-6.37.x	mdr	6/5/2014	12:00 PM	12	C	Used Decon MeOH rather than P&T		1
SEI-35	TB	000.02	Rock	TB-02	Trip Blank	1	TWM	6/4/2014	3:00 PM	SEI-6.37.x	mdr	6/5/2014	12:00 PM	12	C	Used Decon MeOH rather than P&T		1

Lab ID	Sample Name	Container ID	Initial Mass (g)	Final Vial Mass (g)	Final Sample Weight (g)
SEI-1	CU1-B1-16.00-VOC	VOC-0008	40.37	53.15	12.78
SEI-2	CU1-B1-18.80-VOC	VOC-0009	41.18	54.87	13.69
SEI-3	CU1-B1-20.70-VOC	VOC-0010	40.51	66.87	26.36
SEI-4	CU1-B1-24.00-VOC	VOC-0011	40.62	65.51	24.89
SEI-5	CU1-B1-26.30-VOC	VOC-0012	40.81	58.76	17.95
SEI-6	CU1-B1-29.80-VOC	VOC-0013	40.88	60.08	19.2
SEI-7	CU1-B1-34.00-VOC	VOC-0014	40.52	69.75	29.23
SEI-8	CU1-B1-38.30-VOC	VOC-0015	41.11	64.93	23.82
SEI-9	CU1-B2-14.60-VOC	VOC-0016	40.89	67.96	27.07
SEI-10	CU1-B2-17.20-VOC	VOC-0017	40.57	63.31	22.74
SEI-11	CU1-B2-19.40-VOC	VOC-0018	40.47	60.6	20.13
SEI-12	CU1-B2-20.80-VOC	VOC-0019	40.91	57.39	16.48
SEI-13	CU1-B2-23.00-VOC	VOC-0020	40.6	57.4	16.8
SEI-14	CU1-B2-27.50-VOC	VOC-0021	40.26	60.2	19.94
SEI-16	CU1-B2-29.00-VOC	VOC-0023	40.06	62.51	22.45
SEI-16-MS	CU1-B2-29.00-VOC-MS	VOC-0024	40.1	61.62	21.52
SEI-16-MSD	CU1-B2-29.00-VOC-MSD	VOC-0025	40.57	63.6	23.03
SEI-19	CU1-B2-34.60-VOC	VOC-0026	40.76	59.65	18.89
SEI-20	CU1-B3-16.50-VOC	VOC-0027	40.61	56.82	16.21
SEI-21	CU1-B3-19.90-VOC	VOC-0028	40.54	59.28	18.74
SEI-22	CU1-B3-20.80-VOC	VOC-0029	40.93	66.06	25.13
SEI-23	CU1-B3-24.00-VOC	VOC-0030	40.66	61.55	20.89
SEI-24	CU1-B3-28.00-VOC	VOC-0031	36.46	51.42	14.96
SEI-25	CU1-B3-33.10-VOC	VOC-0032	36.73	58.94	22.21
SEI-26	CU1-B3-35.00-VOC	VOC-0034	36.91	60.72	23.81
SEI-27	CU1-B3-36.60-VOC	VOC-0033	37.09	58.67	21.58
SEI-28	EB-01	VOC-0002	40.22		15
SEI-29	EB-02	VOC-0003	40.22		15
SEI-30	EB-03	VOC-0004	40.68		15
SEI-31	EB-04	VOC-0005	40.15		15
SEI-32	EB-05	VOC-0006	40.5		15
SEI-33	EB-06	VOC-0007	40.84		15
SEI-15	FD-01	VOC-0022	40.67	60.69	20.02
SEI-34	TB-01	VOC-0100	0		15
SEI-35	TB-02	VOC-0101	0		15

Chain of Custody Record

STONE ENVIRONMENTAL INC
Phone / 802.229.4541
Fax / 802.229.5417
Web Site / www.stone-env.com

Project #: 14-080
Project Name: Geosyntec OR
Project Manager: Will Waterstradt
Site: Fairview, OR

NOTE: No teflon tape on vials

Sample ID	Receipt Mass (g)	Sample Type	Vial ID	Container Type	# Containers	Sample Date	Sample Time	Sample Preservative	VOC Extraction	SEL #	Analyses Required
CU1-B1-16.00-VOC	53.15	Rock VOC	VOC-0008	40mL VOA	1	~~12/30/1899~~ 6/2/14	13:00	MeOH	MAE	1	VOCs Rock
CU1-B1-18.80-VOC	54.87	Rock VOC	VOC-0009	40mL VOA	1	~~12/30/1899~~ 6/2/14	13:42	MeOH	MAE	2	VOCs Rock
CU1-B1-20.70-VOC	66.87	Rock VOC	VOC-0010	40mL VOA	1	~~12/30/1899~~ 6/2/14	14:26	MeOH	MAE	3	VOCs Rock
CU1-B1-24.00-VOC	65.51	Rock VOC	VOC-0011	40mL VOA	1	~~12/30/1899~~ 6/2/14	14:52	MeOH	MAE	4	VOCs Rock
CU1-B1-26.30-VOC	58.76	Rock VOC	VOC-0012	40mL VOA	1	~~12/30/1899~~ 6/2/14	15:09	MeOH	MAE	5	VOCs Rock
CU1-B1-29.80-VOC	60.08	Rock VOC	VOC-0013	40mL VOA	1	~~12/30/1899~~ 6/2/14	15:17	MeOH	MAE	6	VOCs Rock
CU1-B1-34.00-VOC	69.75	Rock VOC	VOC-0014	40mL VOA	1	~~12/30/1899~~ 6/2/14	16:31	MeOH	MAE	7	VOCs Rock
CU1-B1-38.30-VOC	64.93	Rock VOC	VOC-0015	40mL VOA	1	~~12/30/1899~~ 6/2/14	17:06	MeOH	MAE	8	VOCs Rock
CU1-B2-14.60-VOC	67.96	Rock VOC	VOC-0016	40mL VOA	1	6/3/2014	09:44	MeOH	MAE	9	VOCs Rock
CU1-B2-17.20-VOC	63.31	Rock VOC	VOC-0017	40mL VOA	1	6/3/2014	11:41	MeOH	MAE	10	VOCs Rock
CU1-B2-19.40-VOC		Rock VOC	VOC-0018	40mL VOA	1	6/3/2014	11:56	MeOH	MAE	11	VOCs Rock
CU1-B2-20.80-VOC		Rock VOC	VOC-0019	40mL VOA	1	6/3/2014	12:13	MeOH	MAE	12	VOCs Rock
CU1-B2-23.00-VOC		Rock VOC	VOC-0020	40mL VOA	1	6/3/14 ~~12/30/1899~~ 6/4/14	12:34	MeOH	MAE	13	VOCs Rock
CU1-B2-27.50-VOC		Rock VOC	VOC-0021	40mL VOA	1	6/3/2014 MS 6/9/14	12:58	MeOH	MAE	14	VOCs Rock
FD-01		Rock VOC	VOC-0022	40mL VOA	1	6/3/2014	12:58	MeOH	MAE	15	VOCs Rock
TB-01 TB-02		Wash grade		40mL	1	6/4/14	1500	MeOH	—	34 35	Trip Blank
				Cooler ID	1						

14-080

Sample ID	sample mass (g) @ receipt	Sample Type	Vial ID	Container Type	# Containers	Sample Date	Sample Time	Sample Preservative	VOC Extraction	SEL #	Analyses Required
CU1-B2-29.00-VOC		Rock VOC	VOC-0023	40mL VOA	1	6/3/2014	13:14	MeOH	MAE	16	VOCs Rock
CU1-B2-29.00-VOC-MS		Rock VOC	VOC-0024	40mL VOA	1	6/3/2014	13:14	MeOH	MAE	16-MS	VOCs Rock
CU1-B2-29.00-VOC-MSD		Rock VOC	VOC-0025	40mL VOA	1	6/3/2014	13:14	MeOH	MAE	16-MSD	VOCs Rock
CU1-B2-34.60-VOC		Rock VOC	VOC-0026	40mL VOA	1	6/3/2014	13:40	MeOH	MAE	19	VOCs Rock
CU1-B3-16.50-VOC	56.82	Rock VOC	VOC-0027	40mL VOA	1	6/4/2014	09:21	MeOH	MAE	20	VOCs Rock
CU1-B3-19.90-VOC		Rock VOC	VOC-0028	40mL VOA	1	6/4/2014	09:30	MeOH	MAE	21	VOCs Rock
CU1-B3-20.80-VOC		Rock VOC	VOC-0029	40mL VOA	1	~~12/30/1899~~ 6/4/14	09:43	MeOH	MAE	22	VOCs Rock
CU1-B3-24.00-VOC		Rock VOC	VOC-0030	40mL VOA	1	6/4/2014	09:54	MeOH	MAE	23	VOCs Rock
CU1-B3-28.00-VOC	*	Rock VOC	VOC-0031	40mL VOA	1	6/4/2014	10:54	MeOH	MAE	24	VOCs Rock
CU1-B3-33.10-VOC	*	Rock VOC	VOC-0032	40mL VOA	1	6/4/2014	11:18	MeOH	MAE	25	VOCs Rock
CU1-B3-35.00-VOC	*	Rock VOC	VOC-0034	40mL VOA	1	6/4/2014	11:48	MeOH	MAE	26	VOCs Rock
CU1-B3-36.60-VOC	*	Rock VOC	VOC-0033	40mL VOA	1	6/4/2014	11:45	MeOH	MAE	27	VOCs Rock
EB-01		Equip Blank	VOC-0002	40mL VOA	1	~~12/30/1899~~ 6/4/14	13:40	MeOH	None	28	VOCs Rock
EB-02		Equip Blank	VOC-0003	40mL VOA	1	~~12/30/1899~~ 6/4/14	17:21	MeOH	None	29	VOCs Rock
EB-03		Equip Blank	VOC-0004	40mL VOA	1	6/3/2014	08:38	MeOH	None	30	VOCs Rock
EB-04		Equip Blank	VOC-0005	40mL VOA	1	~~12/30/1899~~ 6/4/14	15:58	MeOH	None	31	VOCs Rock
EB-05		Equip Blank	VOC-0006	40mL VOA	1	6/4/2014	08:13	MeOH	None	32	VOCs Rock
EB-06		Equip Blank	VOC-0007	40mL VOA	1	6/4/2014	11:52	MeOH	None	33	VOCs Rock

Relinquished By:	Date/Time: 6/4/14 / 1500	Sample Integrity:	Good
Received By:	Date/Time: 6/5/14	Temperature:	11-12°C
Relinquished By:	Date/Time:	In Tact:	✓
Received By:	Date/Time:	On Ice: ____ Ice Packs:	✓

* Samples collected in vials prepped for soil sampling. 10g MeOH instead of 15g. (as per conv. w/ TWM)

LABORATORY ANALYTICAL RESULTS

Stone Environmental Laboratory Results

Laboratory Unit:	FF			
Client:	Geosyntec	**Report Date:**	7/9/2014	
Location:	Fairview, OR	**Date(s) Sampled:**	06/02/2014 - 06/02/2014	
Project ID:	Geosyntec OR CORE	**Date(s) Analyzed:**	06/11/2014 - 06/11/2014	
SEI Project No.:	14-080	**Test Method:**	D6520	
Matrix:	Rock	**Results Given as:**	ug/kg	as wet weight
Location ID:	CU1-B1			

Depth	**CAS #**	016.00		026.30		029.80		038.30	
Sample Name		CU1-B1-16.00-VOC		CU1-B1-26.30-VOC		CU1-B1-29.80-VOC		CU1-B1-38.30-VOC	
Analysis Date		06/11/14 12:48	N	06/11/14 13:13	N	06/11/14 13:37	N	06/11/14 14:02	N
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.56	U	1.11	U	1.04	U	0.840	U
1,1-Dichloroethene	75-35-4	15.6	U	11.1	U	10.4	U	8.40	U
trans-1,2-Dichloroethene	156-60-5	15.6	U	11.1	U	10.4	U	8.40	U
cis-1,2-Dichloroethene	156-59-2	15.6	U	11.1	U	10.4	U	8.40	U
Chloroform	67-66-3	1.56	U	1.11	U	1.04	U	0.840	U
1,1,1-Trichloroethane	71-55-6	1.56	U	1.11	U	1.04	U	0.840	U
Carbon Tetrachloride	56-23-5	1.56	U	1.11	U	1.04	U	0.840	U
Trichloroethene	79-01-6	22.8		18.0		29.2		8.28	
Tetrachloroethene	127-18-4	1.56	U	0.602	JB	0.729	JB	0.840	U

U= Not detected above specified RL
J= Estimated value
Q= Associated with QC failure
E= Estimated value, marginally above calibration level
D= Analyzed at dilution
N= Normal sample
EB= Equip. Blank
B= Blank contam.

Stone Environmental Laboratory Results

Laboratory Unit:	FF			
Client:	Geosyntec	**Report Date:**	7/9/2014	
Location:	Fairview, OR	**Date(s) Sampled:**	06/03/2014 - 06/03/2014	
Project ID:	Geosyntec OR CORE	**Date(s) Analyzed:**	06/11/2014 - 06/11/2014	
SEI Project No.:	14-080	**Test Method:**	D6520	
Matrix:	Rock	**Results Given as:**	ug/kg	as wet weight
Location ID:	CU1-B2			

Depth	**CAS #**	020.80		023.00		027.50		034.60	
Sample Name		CU1-B2-20.80-VOC		CU1-B2-23.00-VOC		CU1-B2-27.50-VOC		CU1-B2-34.60-VOC	
Analysis Date		06/11/14 14:26	N	06/11/14 14:50	N	06/11/14 15:15	N	06/11/14 15:39	N
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.21	U	1.19	U	1.00	U	1.06	U
1,1-Dichloroethene	75-35-4	12.1	U	11.9	U	10.0	U	10.6	U
trans-1,2-Dichloroethene	156-60-5	12.1	U	11.9	U	10.0	U	10.6	U
cis-1,2-Dichloroethene	156-59-2	12.1	U	11.9	U	10.0	U	10.6	U
Chloroform	67-66-3	1.21	U	1.19	U	1.00	U	1.06	U
1,1,1-Trichloroethane	71-55-6	1.21	U	1.19	U	1.00	U	1.06	U
Carbon Tetrachloride	56-23-5	1.21	U	1.19	U	1.00	U	1.06	U
Trichloroethene	79-01-6	6.35		6.75		20.6		13.8	
Tetrachloroethene	127-18-4	1.21	U	1.19	U	1.00	U	1.06	U

U= Not detected above specified RL
J= Estimated value
Q= Associated with QC failure
E= Estimated value, marginally above calibration level
D= Analyzed at dilution
N= Normal sample
EB= Equip. Blank
B= Blank contam.

Stone Environmental Laboratory Results

Laboratory Unit:	FF			
Client:	Geosyntec	**Report Date:**	7/9/2014	
Location:	Fairview, OR	**Date(s) Sampled:**	06/04/2014 - 06/04/2014	
Project ID:	Geosyntec OR CORE	**Date(s) Analyzed:**	06/11/2014 - 06/11/2014	
SEI Project No.:	14-080	**Test Method:**	D6520	
Matrix:	Rock	**Results Given as:**	ug/kg	as wet weight
Location ID:	CU1-B3			

Depth	CAS #	016.50		019.90		028.00		036.60	
Sample Name		CU1-B3-16.50-VOC		CU1-B3-19.90-VOC		CU1-B3-28.00-VOC		CU1-B3-36.60-VOC	
Analysis Date		06/11/14 16:03	N	06/11/14 16:28	N	06/11/14 16:52	N	06/11/14 17:16	N
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.23	U	1.07	U	1.34	U	0.927	U
1,1-Dichloroethene	75-35-4	12.3	U	10.7	U	13.4	U	9.27	U
trans-1,2-Dichloroethene	156-60-5	12.3	U	10.7	U	13.4	U	9.27	U
cis-1,2-Dichloroethene	156-59-2	12.3	U	10.7	U	13.4	U	9.27	U
Chloroform	67-66-3	1.23	U	1.07	U	1.34	U	0.927	U
1,1,1-Trichloroethane	71-55-6	1.23	U	1.07	U	1.34	U	0.927	U
Carbon Tetrachloride	56-23-5	1.23	U	1.07	U	1.34	U	0.927	U
Trichloroethene	79-01-6	29.9		49.9		9.97		3.03	
Tetrachloroethene	127-18-4	0.703	JB	0.758	JB	1.34	U	0.927	U

U= Not detected above specified RL
J= Estimated value
Q= Associated with QC failure
E= Estimated value, marginally above calibration level
D= Analyzed at dilution
N= Normal sample
EB= Equip. Blank
B= Blank contam.

Stone Environmental Laboratory Results

Laboratory Unit:	FF		
Client:	Geosyntec	**Report Date:**	8/24/2014
Location:	Fairview, OR	**Date(s) Sampled:**	06/03/2014 - 06/04/2014
Project ID:	Geosyntec OR CORE	**Date(s) Analyzed:**	06/13/2014 - 06/13/2014
SEI Project No.:	14-080	**Test Method:**	D6520
Matrix:	Rock	**Results Given as:**	ug/kg as wet weight
Location ID:	EB	**Prep Method:**	Soils (SW), EPA 5035A0H/ASTM D62520-00 Ground Waters (NPW), ASTM D6520-00

All of the tests results were performed in accordance with the NELAP standards and meet all NELAP requirements for parameters for which accreditation is required or available. The reports were completed according to contract specific reporting requirements. Any exceptions to the NELAP standard requirements are noted and the data has been qualified accordingly.

Sample Name	CAS #	EB-01		EB-02		EB-03		EB-04		EB-05		EB-06	
Analysis Date		06/13/14 14:10	EB	06/13/14 14:34	EB	06/13/14 14:59	EB	06/13/14 15:23	EB	06/13/14 15:48	EB	06/13/14 16:12	EB
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
1,1-Dichloroethene	75-35-4	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
trans-1,2-Dichloroethene	156-60-5	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
cis-1,2-Dichloroethene	156-59-2	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
Chloroform	67-66-3	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
1,1,1-Trichloroethane	71-55-6	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Carbon Tetrachloride	56-23-5	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Trichloroethene	79-01-6	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Tetrachloroethene	127-18-4	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U

U= Not detected above specified RL
J= Estimated value
Q= Associated with QC failure
E= Estimated value, marginally above calibration level
D= Analyzed at dilution
N= Normal sample
EB= Equip. Blank
B= Blank contam.

Stone Environmental Laboratory Results

Laboratory Unit:	FF		
Client:	Geosyntec	**Report Date:**	8/24/2014
Location:	Fairview, OR	**Date(s) Sampled:**	06/04/2014 - 06/04/2014
Project ID:	Geosyntec OR CORE	**Date(s) Analyzed:**	06/13/2014 - 06/13/2014
SEI Project No.:	14-080	**Test Method:**	D6520
Matrix:	Rock	**Results Given as:**	ug/kg as wet weight
Location ID:	TB	**Prep Method:**	Soils (SW), EPA 5035A0H/ASTM D62520-00 Ground Waters (NPW), ASTM D6520-00

All of the tests results were performed in accordance with the NELAP standards and meet all NELAP requirements for parameters for which accreditation is required or available. The reports were completed according to contract specific reporting requirements. Any exceptions to the NELAP standard requirements are noted and the data has been qualified accordingly.

Sample Name	**CAS #**	TB-01		TB-02	
Analysis Date		06/13/14 13:21	TB	06/13/14 13:46	TB
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.00	U	1.00	U
1,1-Dichloroethene	75-35-4	10.0	U	10.0	U
trans-1,2-Dichloroethene	156-60-5	10.0	U	10.0	U
cis-1,2-Dichloroethene	156-59-2	10.0	U	10.0	U
Chloroform	67-66-3	6.68		6.87	
1,1,1-Trichloroethane	71-55-6	1.00	U	1.00	U
Carbon Tetrachloride	56-23-5	1.00	U	1.00	U
Trichloroethene	79-01-6	1.00	U	1.00	U
Tetrachloroethene	127-18-4	1.00	U	1.00	U

U= Not detected above specified RL
J= Estimated value
Q= Associated with QC failure
E= Estimated value, marginally above calibration level
D= Analyzed at dilution
N= Normal sample
EB= Equip. Blank
B= Blank contam.

QUALITY CONTROL SUMMARIES

Laboratory Method Blank Summaries (VBLK)

Laboratory Control Sample Summaries (LCS)

Prep Blank Summaries (PBLK)

Prep Laboratory Control Sample Summaries (PLCS)

Stone Environmental Inc. Project Number: 14-080
Laboratory Blank Sample Analysis Summary

Sample ID	VBLK AI
Date Analyzed	6/10/2014

Analyte	Result (ug/L)	
1,1,2-Trichloro-1,2,2-trifluoro	1.00	U
1,1-Dichloroethene	10.0	U
trans-1,2-Dichloroethene	10.0	U
cis-1,2-Dichloroethene	10.0	U
Chloroform	1.00	U
1,1,1-Trichloroethane	1.00	U
Carbon Tetrachloride	1.00	U
Trichloroethene	1.00	U
Tetrachloroethene	1.00	U

U = Not detected above the specified reporting limit.
J = Estimated value.

Stone Environmental Inc. Project Number: 14-080
Laboratory Blank Sample Analysis Summary

Sample ID	VBLK AK
Date Analyzed	6/11/2014

Analyte	Result (ug/kg)	
1,1,2-Trichloro-1,2,2-trifluoro	1.33	U
1,1-Dichloroethene	13.3	U
trans-1,2-Dichloroethene	13.3	U
cis-1,2-Dichloroethene	13.3	U
Chloroform	1.33	U
1,1,1-Trichloroethane	1.33	U
Carbon Tetrachloride	1.33	U
Trichloroethene	1.33	U
Tetrachloroethene	1.33	U

U = Not detected above the specified reporting limit.
J = Estimated value.

Stone Environmental Inc. Project Number: 14-080
Laboratory Blank Sample Analysis Summary

Sample ID	VBLK AL
Date Analyzed	6/11/2014

Analyte	Result (ug/kg)	
1,1,2-Trichloro-1,2,2-trifluoro	4.20	
1,1-Dichloroethene	13.3	U
trans-1,2-Dichloroethene	13.3	U
cis-1,2-Dichloroethene	13.3	U
Chloroform	1.33	U
1,1,1-Trichloroethane	1.33	U
Carbon Tetrachloride	1.33	U
Trichloroethene	1.33	U
Tetrachloroethene	1.33	U

U = Not detected above the specified reporting limit.
J = Estimated value.

Stone Environmental Inc. Project Number: 14-080
Laboratory Blank Sample Analysis Summary

Sample ID	VBLK AM
Date Analyzed	6/13/2014

Analyte	Result (ug/kg)	
1,1,2-Trichloro-1,2,2-trifluoro	1.33	U
1,1-Dichloroethene	13.3	U
trans-1,2-Dichloroethene	13.3	U
cis-1,2-Dichloroethene	13.3	U
Chloroform	1.33	U
1,1,1-Trichloroethane	1.33	U
Carbon Tetrachloride	1.33	U
Trichloroethene	1.33	U
Tetrachloroethene	1.05	J

U = Not detected above the specified reporting limit.
J = Estimated value.

Stone Environmental Inc. Project Number: 14-080
Laboratory Blank Sample Analysis Summary

Sample ID	VBLK AN
Date Analyzed	6/13/2014

Analyte	Result (ug/kg)	
1,1,2-Trichloro-1,2,2-trifluoro	1.33	U
1,1-Dichloroethene	13.3	U
trans-1,2-Dichloroethene	13.3	U
cis-1,2-Dichloroethene	13.3	U
Chloroform	1.33	U
1,1,1-Trichloroethane	1.33	U
Carbon Tetrachloride	1.33	U
Trichloroethene	1.33	U
Tetrachloroethene	0.933	J

U = Not detected above the specified reporting limit.
J = Estimated value.

Stone Environmental Inc. Project Number: 14-080
Laboratory Control Sample Summary

QC Batch: AK
Analysis Date: 06/11/2014
Method: D6520
Spike Amount: 66.7

Analyte	Lab Blank Conc. (ug/kg)	LCS Conc. (ug/kg)	LCS % Recovery	QC Limits (% Recovery)
1,1,2-Trichloro-1,2,2-trifluoroet	1.33 U	68.3	102	70-130
1,1-Dichloroethene	13.3 U	704	106	70-130
trans-1,2-Dichloroethene	13.3 U	709	106	70-130
cis-1,2-Dichloroethene	13.3 U	774	116	70-130
Chloroform	1.33 U	66.5	100	70-130
1,1,1-Trichloroethane	1.33 U	69.2	104	70-130
Carbon Tetrachloride	1.33 U	65.8	99	70-130
Trichloroethene	1.33 U	66.1	99	70-130
Tetrachloroethene	1.33 U	65.1	98	70-130

U = Not detected above the specified reporting limit.
J = Estimated value.
NA = Compound not present.
* = Percent Recovery outside QC Limits

Stone Environmental Inc. Project Number: 14-080
Laboratory Control Sample Summary

QC Batch: AM

Analysis Date: 06/13/2014

Method: D6520

Spike Amount: 66.7

Analyte	Lab Blank Conc. (ug/kg)	LCS Conc. (ug/kg)	LCS % Recovery	QC Limits (% Recovery)
1,1,2-Trichloro-1,2,2-trifluoroet	1.33 U	70.0	105	70-130
1,1-Dichloroethene	13.3 U	719	108	70-130
trans-1,2-Dichloroethene	13.3 U	738	111	70-130
cis-1,2-Dichloroethene	13.3 U	822	123	70-130
Chloroform	1.33 U	69.1	104	70-130
1,1,1-Trichloroethane	1.33 U	70.7	106	70-130
Carbon Tetrachloride	1.33 U	67.5	101	70-130
Trichloroethene	1.33 U	67.9	102	70-130
Tetrachloroethene	1.05 J	66.9	99	70-130

U = Not detected above the specified reporting limit.
J = Estimated value.
NA = Compound not present.
* = Percent Recovery outside QC Limits

Stone Environmental Inc. Project Number: 14-080
Prep Blank Sample Analysis Summary

Sample ID	PBLK A1 061014
Date Analyzed	6/11/2014

Analyte	Result (ug/kg)	
1,1,2-Trichloro-1,2,2-trifluoro	1.33	U
1,1-Dichloroethene	13.3	U
trans-1,2-Dichloroethene	13.3	U
cis-1,2-Dichloroethene	13.3	U
Chloroform	1.33	U
1,1,1-Trichloroethane	1.33	U
Carbon Tetrachloride	1.33	U
Trichloroethene	1.33	U
Tetrachloroethene	0.453	J

U = Not detected above the specified reporting limit.
J = Estimated value.

Stone Environmental Inc. Project Number: 14-080
Prep Blank Sample Analysis Summary

Sample ID	PBLK B1 061014
Date Analyzed	6/11/2014

Analyte	Result (ug/kg)	
1,1,2-Trichloro-1,2,2-trifluoro	1.33	U
1,1-Dichloroethene	13.3	U
trans-1,2-Dichloroethene	13.3	U
cis-1,2-Dichloroethene	13.3	U
Chloroform	1.33	U
1,1,1-Trichloroethane	1.33	U
Carbon Tetrachloride	1.33	U
Trichloroethene	1.33	U
Tetrachloroethene	1.33	U

U = Not detected above the specified reporting limit.
J = Estimated value.

Stone Environmental Inc. Project Number: 14-080
Prep Laboratory Control Sample Summary

QC Batch: PLCS A12 061014
Analysis Date: 06/11/2014
Method: D6520
Spike Amount: 66.7

Analyte	Prep Blank Conc. (ug/kg)	PLCS Conc. (ug/kg)	PLCS % Recovery	QC Limits (% Recovery)
1,1,2-Trichloro-1,2,2-trifluoroet	1.33 U	73.0	110	70-130
1,1-Dichloroethene	13.3 U	759	114	70-130
trans-1,2-Dichloroethene	13.3 U	802	120	70-130
cis-1,2-Dichloroethene	13.3 U	929	139 *	70-130
Chloroform	1.33 U	80.5	121	70-130
1,1,1-Trichloroethane	1.33 U	83.2	125	70-130
Carbon Tetrachloride	1.33 U	79.0	119	70-130
Trichloroethene	1.33 U	78.5	118	70-130
Tetrachloroethene	0.453 J	78.8	117	70-130

U = Not detected above the specified reporting limit.
J = Estimated value.
NA = Compound not present.
* = Percent Recovery outside QC Limits

SAMPLE RAW DATA

Stone Environmental Laboratory Results

Laboratory Unit:	FF		
Client:	Geosyntec	**Report Date:**	6/12/2014
Location:	Fairview, OR	**Date(s) Sampled:**	06/02/2014 - 06/02/2014
Project ID:	Geosyntec OR CORE	**Date(s) Analyzed:**	06/11/2014 - 06/11/2014
SEI Project No.:	14-080	**Test Method:**	GC/ECD Rock
Matrix:	Rock	**Results Given as:**	ug/kg as wet weight
Location ID:	CU1-B1	**Prep Method:**	Soils (SW), EPA 5035A0H/ASTM D62520-00 Ground Waters (NPW), ASTM D6520-00

Depth	CAS #	016.00		026.30		029.80		038.30	
Sample Name		CU1-B1-16.00-VOC		CU1-B1-26.30-VOC		CU1-B1-29.80-VOC		CU1-B1-38.30-VOC	
Analysis Date		06/11/14 12:48	N	06/11/14 13:13	N	06/11/14 13:37	N	06/11/14 14:02	N
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.56	U	1.11	U	1.04	U	0.840	U
1,1-Dichloroethene	75-35-4	15.6	U	11.1	U	10.4	U	8.40	U
trans-1,2-Dichloroethene	156-60-5	15.6	U	11.1	U	10.4	U	8.40	U
cis-1,2-Dichloroethene	156-59-2	15.6	U	11.1	U	10.4	U	8.40	U
Chloroform	67-66-3	1.56	U	1.11	U	1.04	U	0.840	U
1,1,1-Trichloroethane	71-55-6	1.56	U	1.11	U	1.04	U	0.840	U
Carbon Tetrachloride	56-23-5	1.56	U	1.11	U	1.04	U	0.840	U
Trichloroethene	79-01-6	22.8		18.0		29.2		8.28	
Tetrachloroethene	127-18-4	1.56	U	0.602	JB	0.729	JB	0.840	U

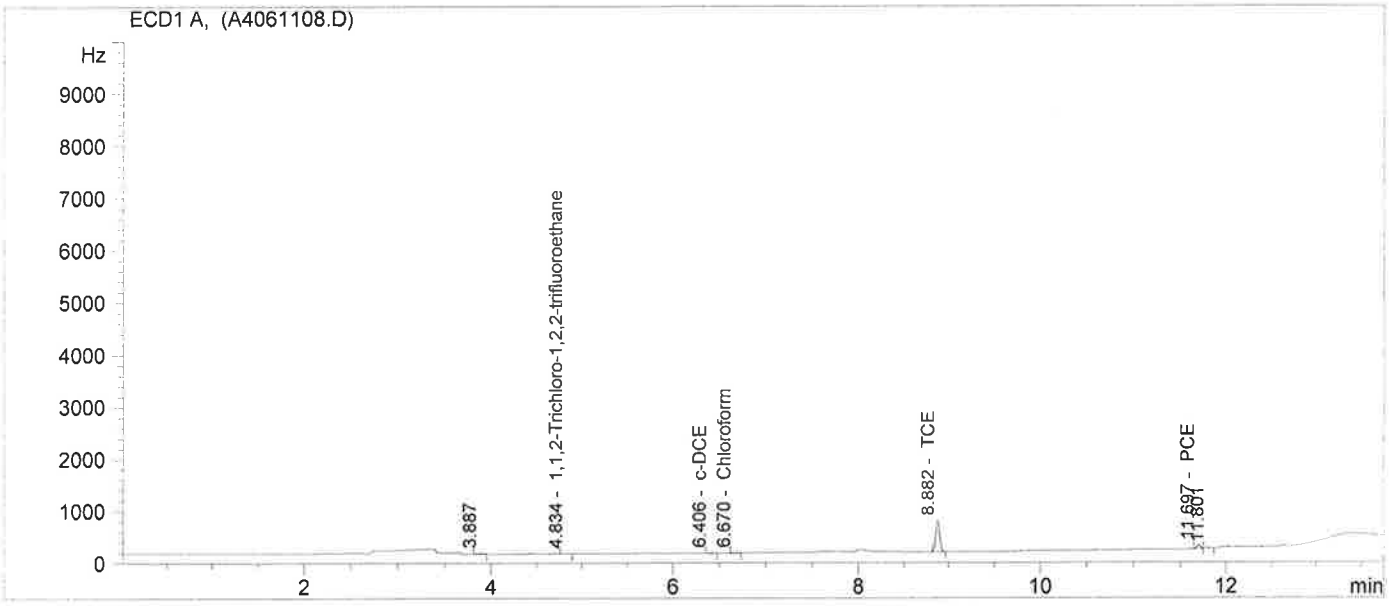
U= Not detected above specified RL
J= Estimated value
Q= Associated with QC failure
E= Estimated value, marginally above calibration level
D= Analyzed at dilution
N= Normal sample
EB= Equip. Blank
B= Blank contam

Data File: C:\HPCHEM\1\DATA\A4061108.D

Injection Date : 6/11/2014 12:48:45 PM 6/11/2014 12:48:45 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 14:39:15

Sample Info :
Lab ID : B1-16.00
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
4.834	4.838	MM	4.7	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
6.406	6.435	MM	7.2	0.00	c-DCE
6.670	6.709	MM	7.4	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.882	8.903	BP	1797.4	14.57	TCE
11.697	11.714	MM	168.7	0.09	PCE

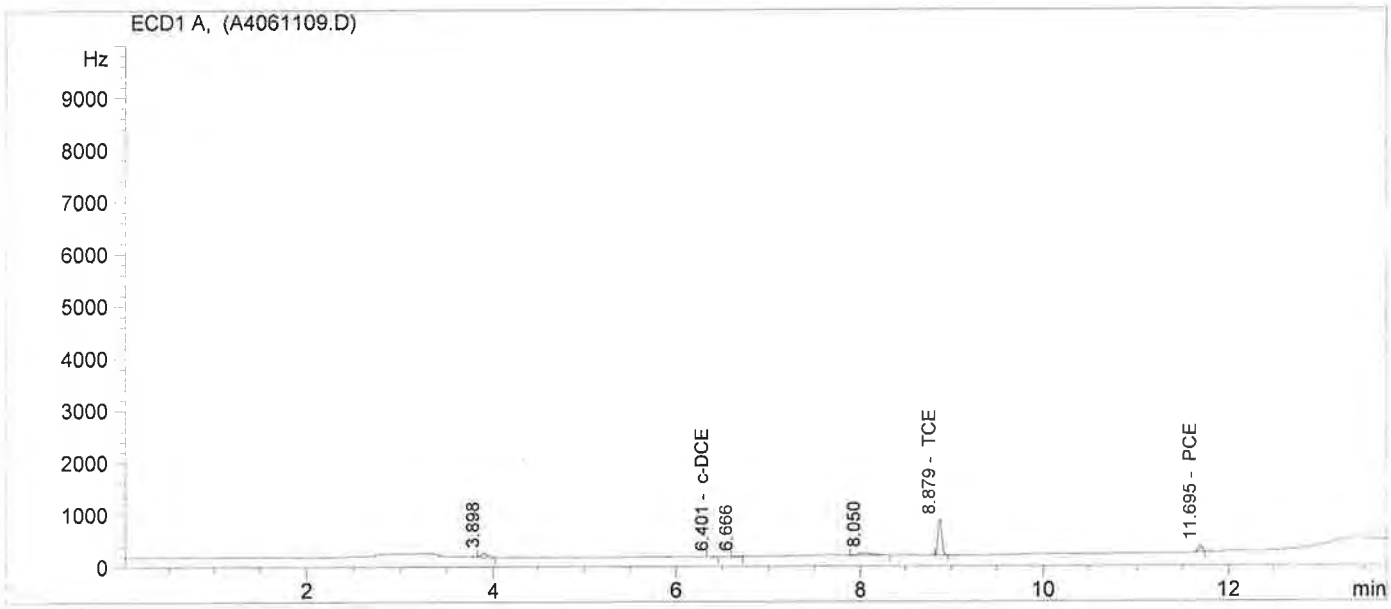
MJS 6/11/14

Data File: C:\HPCHEM\1\DATA\A4061109.D

Injection Date : 6/11/2014 1:13:11 PM 6/11/2014 1:13:11 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 14:40:37

Sample Info :
Lab ID : B1-26.30
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
6.401	6.435	MM	7.3	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.879	8.903	BP	1986.0	16.19	TCE
11.695	11.714	MM	329.7	0.54	PCE JB

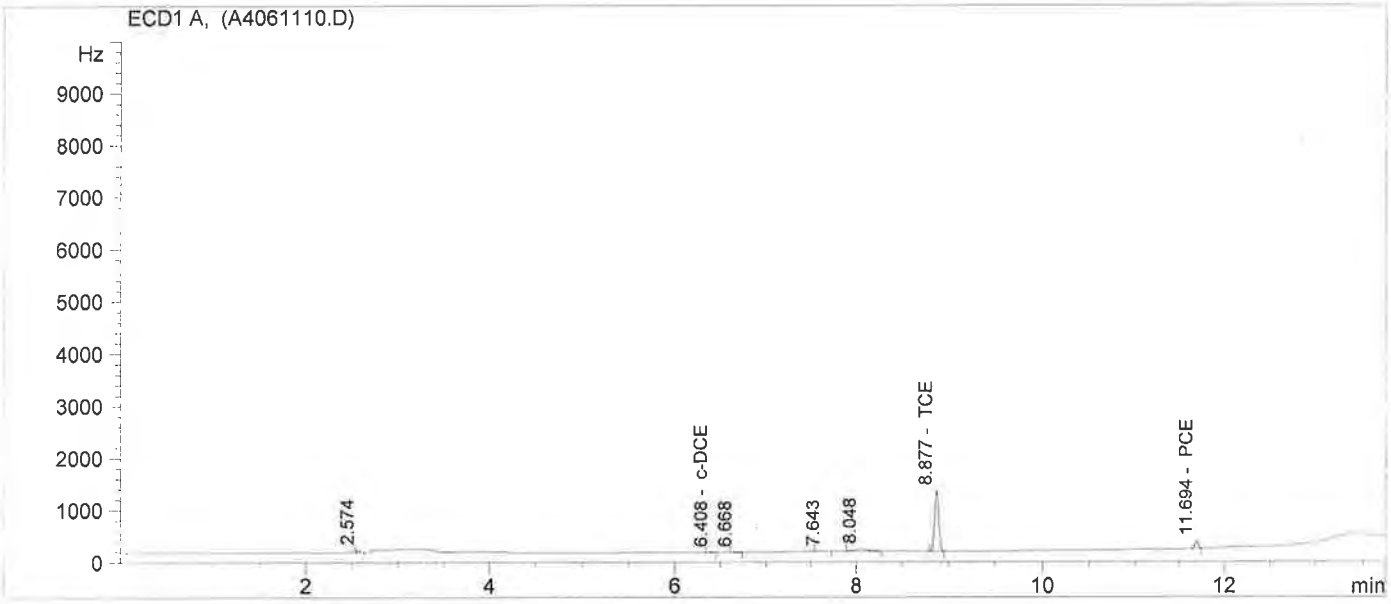
MJB 6/11/14

Data File: C:\HPCHEM\1\DATA\A4061110.D

Injection Date : 6/11/2014 1:37:38 PM 6/11/2014 1:37:38 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 14:43:25

Sample Info :
Lab ID : B1-29.80
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
6.408	6.435	MM	7.3	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.877	8.903	MM	3357.9	28.01	TCE
11.694	11.714	MM	383.8	0.70	PCE JB

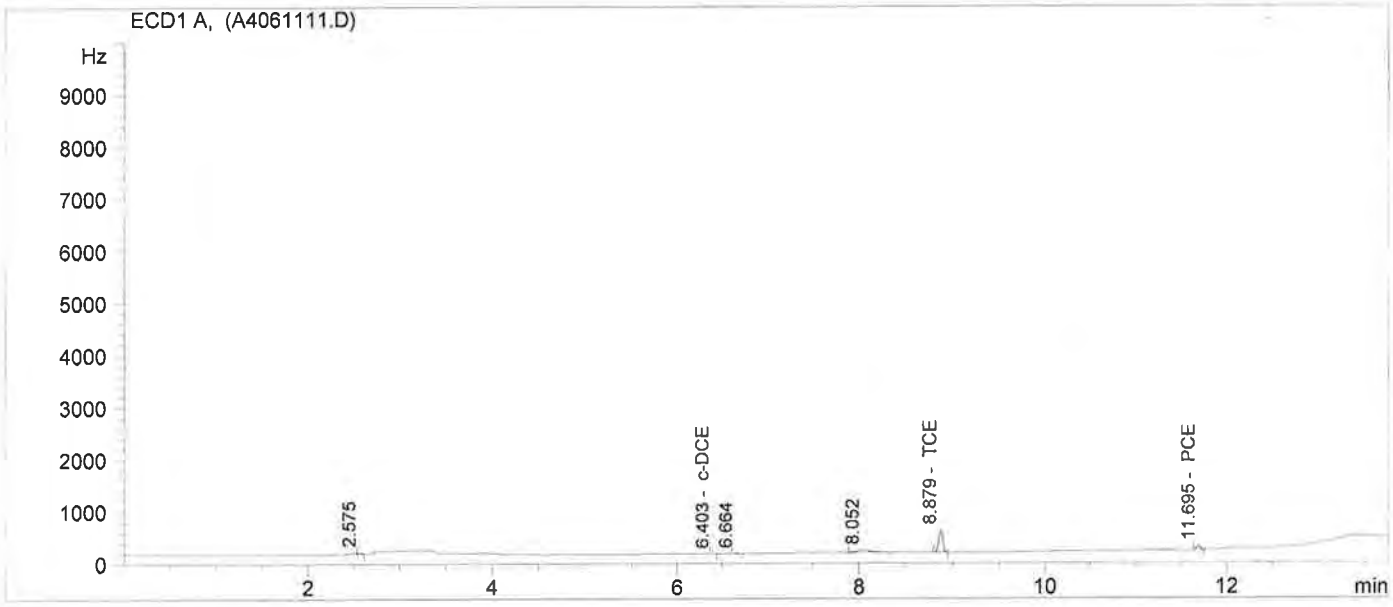
mjs 6/11/14

Data File: C:\HPCHEM\1\DATA\A4061111.D

Injection Date : 6/11/2014 2:02:01 PM 6/11/2014 2:02:01 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 14:52:28

Sample Info :
Lab ID : B1-38.30
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
6.403	6.435	MM	2.6	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.879	8.903	MM	1246.9	9.86	TCE
11.695	11.714	MM	184.5	0.13	PCE

mjb 6/11/14

Stone Environmental Laboratory Results

Laboratory Unit:	FF		
Client:	Geosyntec	**Report Date:**	6/12/2014
Location:	Fairview, OR	**Date(s) Sampled:**	06/03/2014 - 06/03/2014
Project ID:	Geosyntec OR CORE	**Date(s) Analyzed:**	06/11/2014 - 06/11/2014
SEI Project No.:	14-080	**Test Method:**	GC/ECD Rock
Matrix:	Rock	**Results Given as:**	ug/kg as wet weight
Location ID:	CU1-B2	**Prep Method:**	Soils (SW), EPA 5035A0H/ASTM D62520-00 Ground Waters (NPW), ASTM D6520-00

Depth	CAS #	020 80		023 00		027 50		034 60	
Sample Name		CU1-B2-20 80-VOC		CU1-B2-23 00-VOC		CU1-B2-27 50-VOC		CU1-B2-34 60-VOC	
Analysis Date		06/11/14 14:26	N	06/11/14 14:50	N	06/11/14 15:15	N	06/11/14 15:39	N
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.21	U	1.19	U	1.00	U	1.06	U
1,1-Dichloroethene	75-35-4	12.1	U	11.9	U	10.0	U	10.6	U
trans-1,2-Dichloroethene	156-60-5	12.1	U	11.9	U	10.0	U	10.6	U
cis-1,2-Dichloroethene	156-59-2	12.1	U	11.9	U	10.0	U	10.6	U
Chloroform	67-66-3	1.21	U	1.19	U	1.00	U	1.06	U
1,1,1-Trichloroethane	71-55-6	1.21	U	1.19	U	1.00	U	1.06	U
Carbon Tetrachloride	56-23-5	1.21	U	1.19	U	1.00	U	1.06	U
Trichloroethene	79-01-6	6.35		6.75		20.6		13.8	
Tetrachloroethene	127-18-4	1.21	U	1.19	U	1.00	U	1.06	U

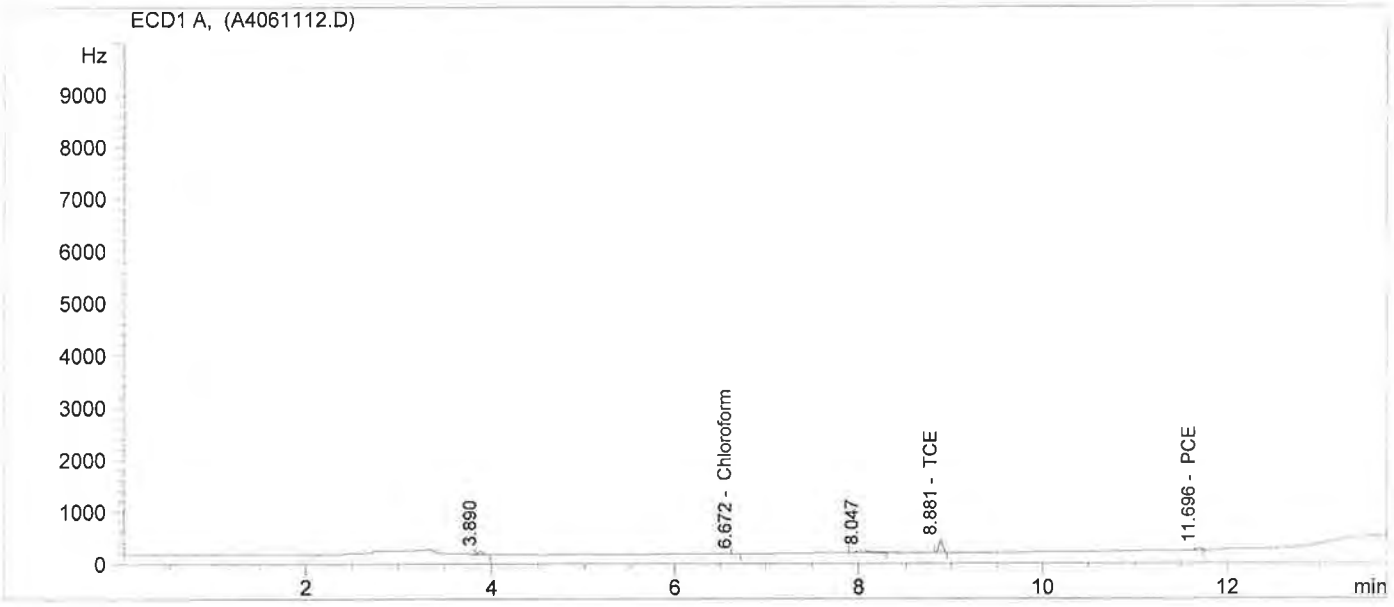
U= Not detected above specified RL
J= Estimated value
Q= Associated with QC failure
E= Estimated value, marginally above calibration level
D= Analyzed at dilution
N= Normal sample
EB= Equip Blank
B= Blank contam

Data File: C:\HPCHEM\1\DATA\A4061112.D

Injection Date : 6/11/2014 2:26:23 PM 6/11/2014 2:26:23 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 14:53:08

Sample Info :
Lab ID : B2-20.80
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
6.672	6.709	MM	6.4	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.881	8.903	MM	706.4	5.23	TCE
11.696	11.714	MM	109.0	0.00	PCE

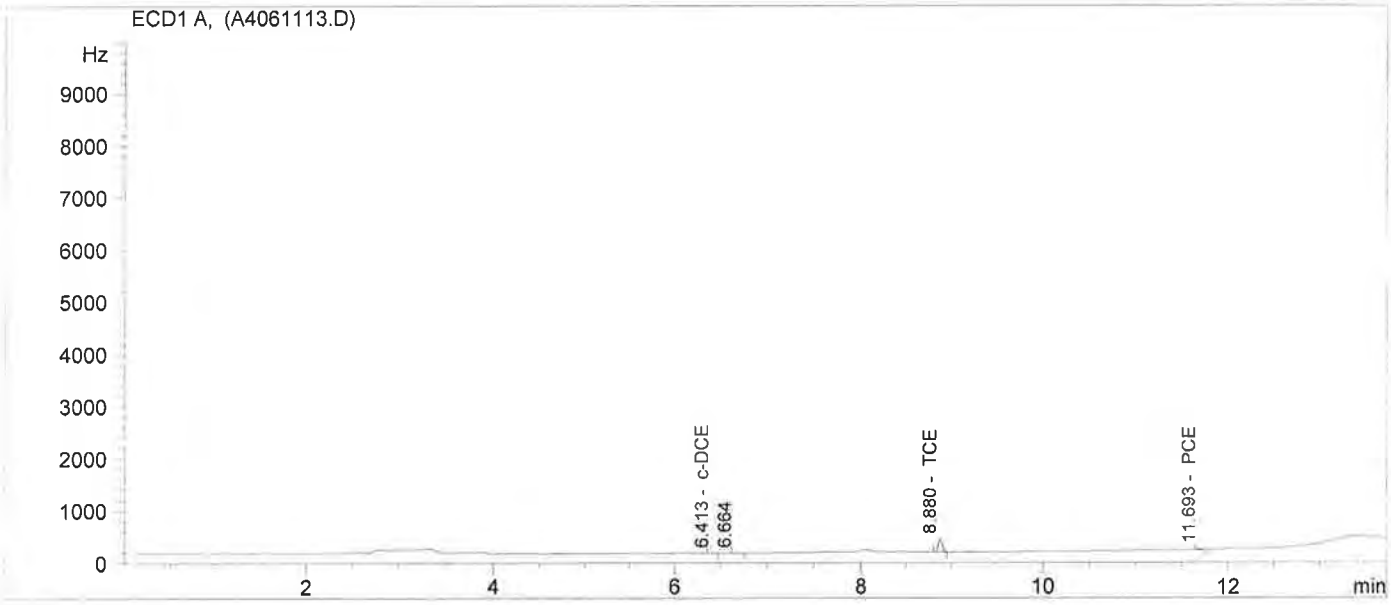
mjs 6/11/14

Data File: C:\HPCHEM\1\DATA\A4061113.D

Injection Date : 6/11/2014 2:50:47 PM 6/11/2014 2:50:47 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 15:05:22

Sample Info :
Lab ID : B2-23.00
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
6.413	6.435	MM	5.2	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.880	8.903	MM	757.7	5.67	TCE
11.693	11.714	MM	34.8	0.00	PCE

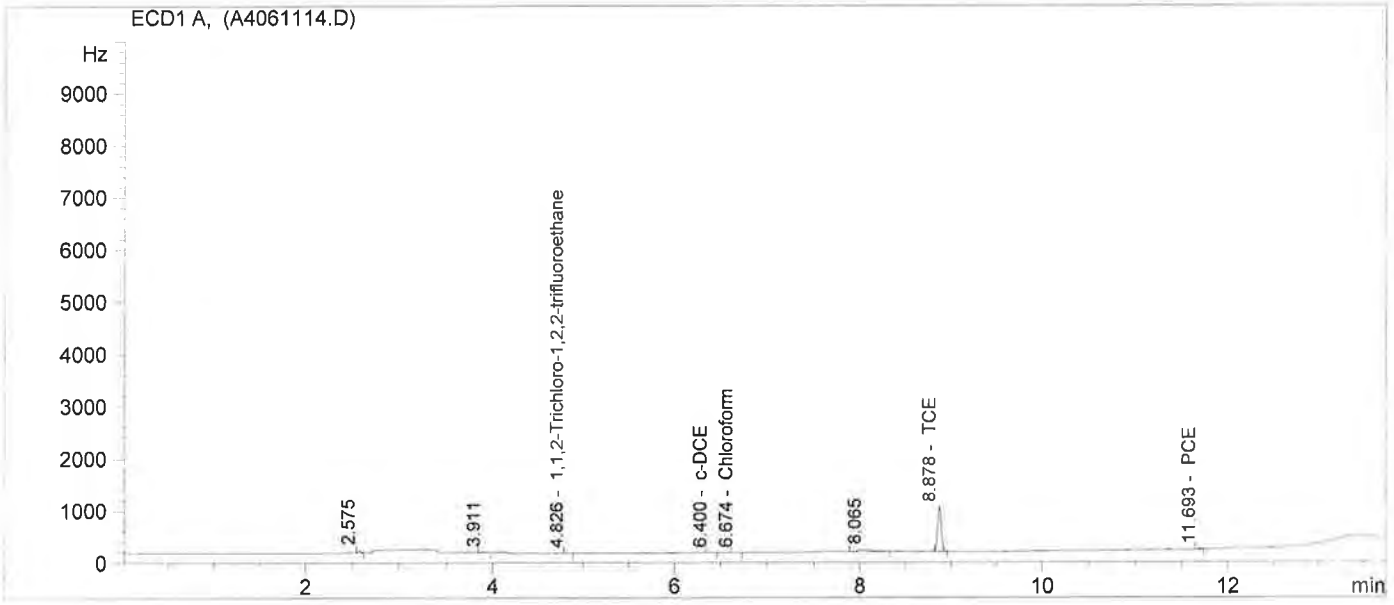
mj 6/11/14

Data File: C:\HPCHEM\1\DATA\A4061114.D

Injection Date : 6/11/2014 3:15:07 PM 6/11/2014 3:15:07 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 16:09:47

Sample Info :
Lab ID : B2-27.50
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
4.826	4.838	MM	3.4	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
6.400	6.435	MM	10.6	1.81	c-DCE
6.674	6.709	MM	8.8	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.878	8.903	BP	2491.5	20.54	TCE
11.693	11.714	MM	42.3	0.00	PCE

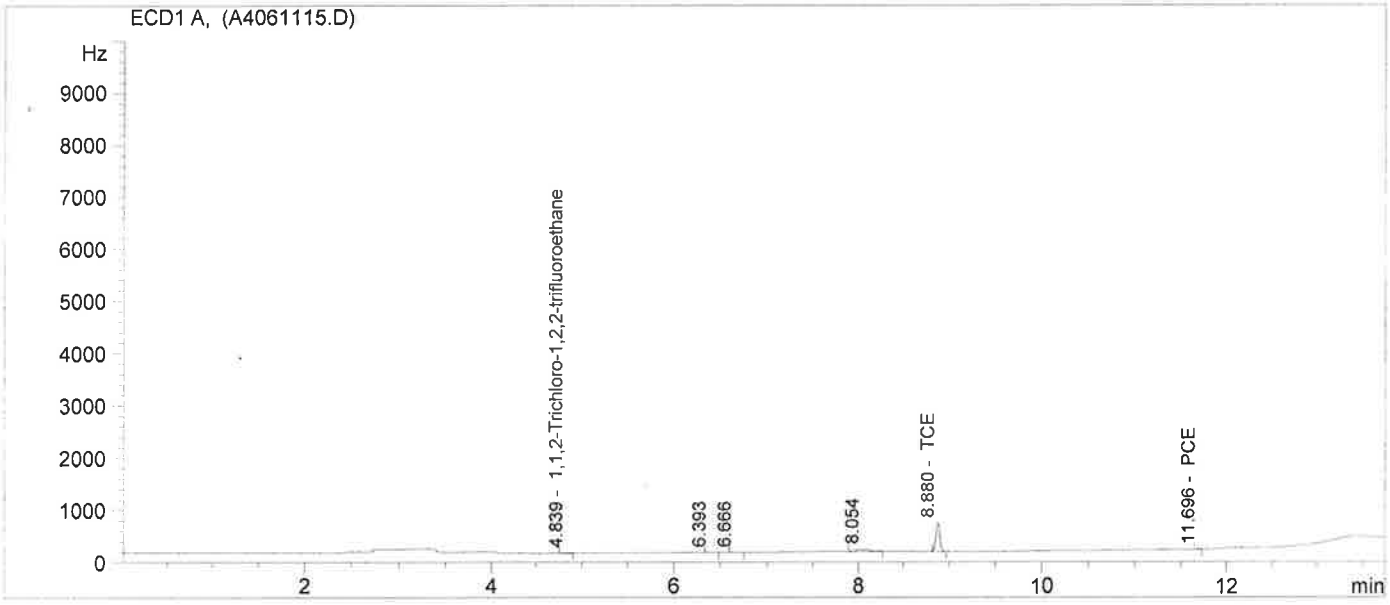
mjs 6/11/14

Data File: C:\HPCHEM\1\DATA\A4061115.D

Injection Date : 6/11/2014 3:39:28 PM 6/11/2014 3:39:28 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 16:10:21

Sample Info :
Lab ID : B2-34.60
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
4.839	4.838	MM	7.7	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.880	8.903	BP	1613.3	13.00	TCE
11.696	11.714	MM	23.5	0.00	PCE

mjs 6/11/14

Stone Environmental Laboratory Results

Laboratory Unit:	FF		
Client:	Geosyntec	**Report Date:**	6/12/2014
Location:	Fairview, OR	**Date(s) Sampled:**	06/04/2014 - 06/04/2014
Project ID:	Geosyntec OR CORE	**Date(s) Analyzed:**	06/11/2014 - 06/11/2014
SEI Project No.:	14-080	**Test Method:**	GC/ECD Rock
Matrix:	Rock	**Results Given as:**	ug/kg as wet weight
Location ID:	CU1-B3	**Prep Method:**	Soils (SW), EPA 5035A0H/ASTM D62520-00 Ground Waters (NPW), ASTM D6520-00

Depth	CAS #	016.50		019.90		028.00		036.60	
Sample Name		CU1-B3-16.50-VOC		CU1-B3-19.90-VOC		CU1-B3-28.00-VOC		CU1-B3-36.60-VOC	
Analysis Date		06/11/14 16:03	N	06/11/14 16:28	N	06/11/14 16:52	N	06/11/14 17:16	N
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.23	U	1.07	U	1.34	U	0.927	U
1,1-Dichloroethene	75-35-4	12.3	U	10.7	U	13.4	U	9.27	U
trans-1,2-Dichloroethene	156-60-5	12.3	U	10.7	U	13.4	U	9.27	U
cis-1,2-Dichloroethene	156-59-2	12.3	U	10.7	U	13.4	U	9.27	U
Chloroform	67-66-3	1.23	U	1.07	U	1.34	U	0.927	U
1,1,1-Trichloroethane	71-55-6	1.23	U	1.07	U	1.34	U	0.927	U
Carbon Tetrachloride	56-23-5	1.23	U	1.07	U	1.34	U	0.927	U
Trichloroethene	79-01-6	29.9		49.9		9.97		3.03	
Tetrachloroethene	127-18-4	0.703	JB	0.758	JB	1.34	U	0.927	U

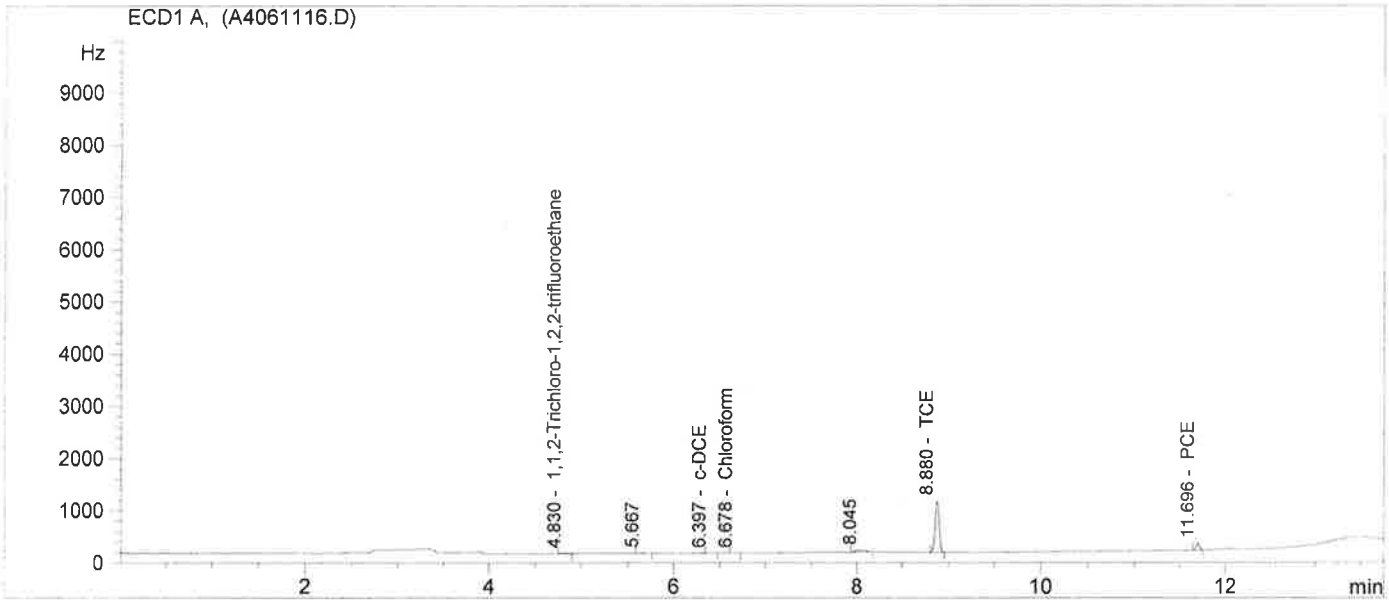
U= Not detected above specified RL
J= Estimated value
Q= Associated with QC failure
E= Estimated value, marginally above calibration level
D= Analyzed at dilution
N= Normal sample
EB= Equip. Blank
B= Blank contam

Data File: C:\HPCHEM\1\DATA\A4061116.D

Injection Date : 6/11/2014 4:03:49 PM 6/11/2014 4:03:49 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 17:10:27

Sample Info :
Lab ID : B3-16.50
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
4.830	4.838	MM	5.9	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
6.397	6.435	MM	8.2	0.00	c-DCE
6.678	6.709	MM	7.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.880	8.903	MM	2916.8	24.20	TCE
11.696	11.714	MM	341.0	0.57	PCE JK

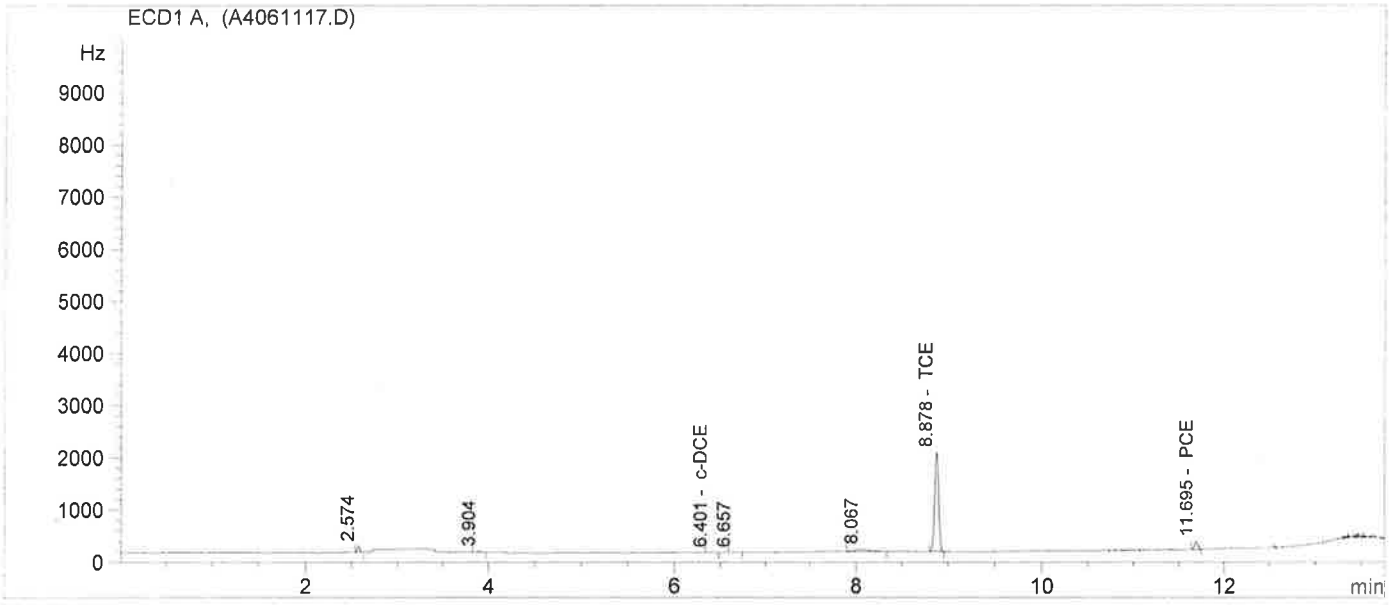
MJK 6/11/14

Data File: C:\HPCHEM\1\DATA\A4061117.D

Injection Date : 6/11/2014 4:28:10 PM 6/11/2014 4:28:10 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 17:11:07

Sample Info :
Lab ID : B3-19.90
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
6.401	6.435	MM	14.0	4.39	c-DCE N.D. < 10ppb, < MDL
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.878	8.903	MM	5517.6	46.73	TCE
11.695	11.714	MM	389.9	0.71	PCE JB

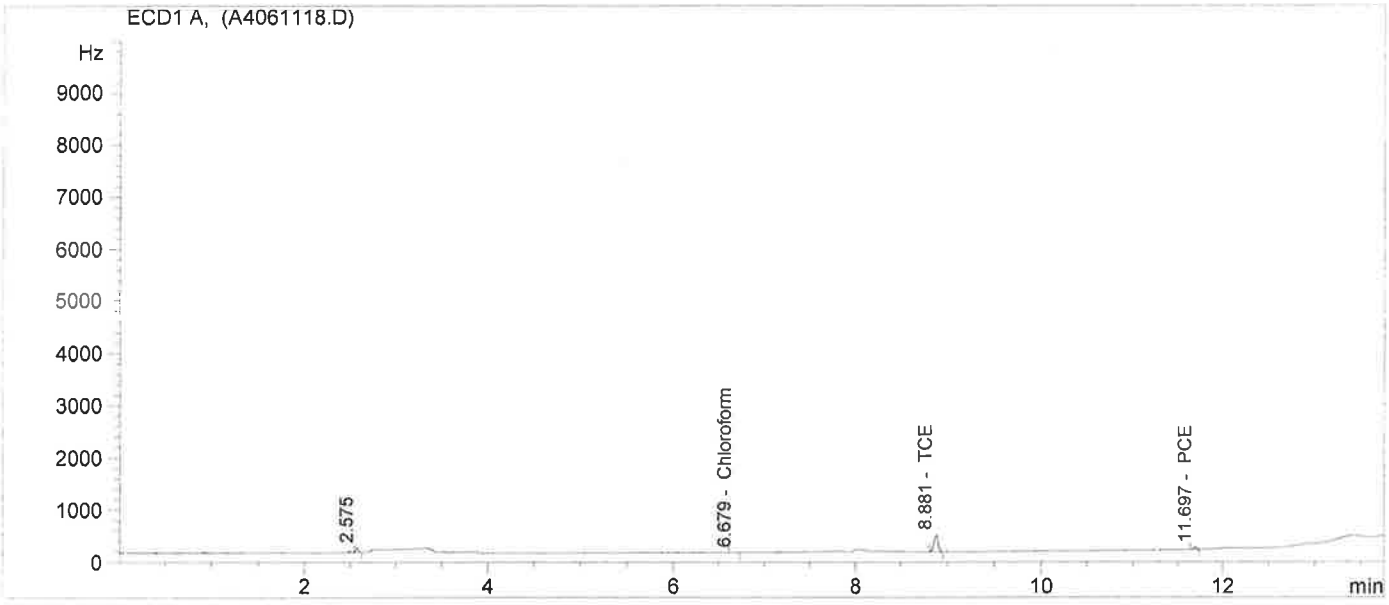
MJK 6/11/14

Data File: C:\HPCHEM\1\DATA\A4061118.D

Injection Date : 6/11/2014 4:52:32 PM 6/11/2014 4:52:32 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 17:11:51

Sample Info :
Lab ID : B3-28.00
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
6.679	6.709	MM	5.6	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.881	8.903	MM	966.5	7.46	TCE
11.697	11.714	MM	111.4	0.00	PCE

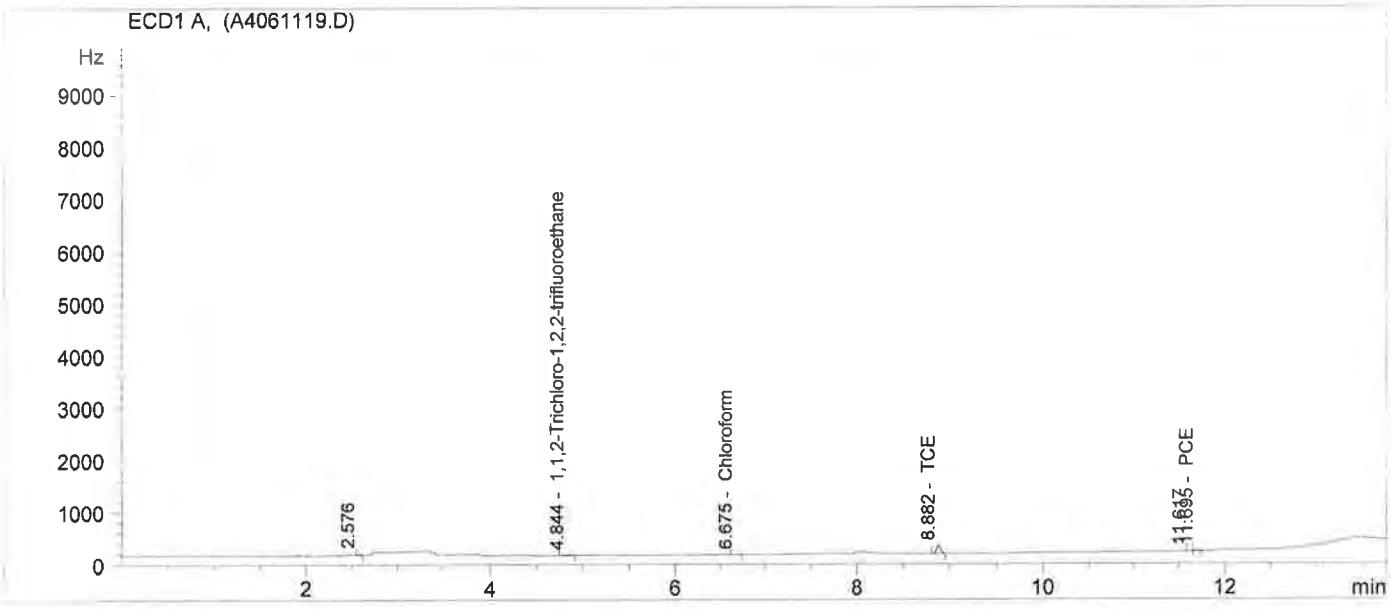
ejs 6/11/14

Data File: C:\HPCHEM\1\DATA\A4061119.D

Injection Date : 6/11/2014 5:16:59 PM 6/11/2014 5:16:59 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 17:31:34

Sample Info :
Lab ID : B3-36.60
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
4.844	4.838	MM	7.4	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
6.675	6.709	MM	7.3	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.882	8.903	MM	476.7	3.27	TCE
11.695	11.714	FM	49.7	0.00	PCE

MJ 6/11/14

Stone Environmental Laboratory Results

Laboratory Unit:	FF		
Client:	Geosyntec	**Report Date:**	8/24/2014
Location:	Fairview, OR	**Date(s) Sampled:**	06/04/2014 - 06/04/2014
Project ID:	Geosyntec OR CORE	**Date(s) Analyzed:**	06/13/2014 - 06/13/2014
SEI Project No.:	14-080	**Test Method:**	D6520
Matrix:	Rock	**Results Given as:**	ug/kg as wet weight
Location ID:	TB	**Prep Method:**	Soils (SW), EPA 5035A0H/ASTM D62520-00 Ground Waters (NPW), ASTM D6520-00

All of the tests results were performed in accordance with the NELAP standards and meet all NELAP requirements for parameters for which accreditation is required or available. The reports were completed according to contract specific reporting requirements. Any exceptions to the NELAP standard requirements are noted and the data has been qualified accordingly.

Sample Name	**CAS #**	TB-01		TB-02	
Analysis Date		06/13/14 13:21	TB	06/13/14 13:46	TB
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.00	U	1.00	U
1,1-Dichloroethene	75-35-4	10.0	U	10.0	U
trans-1,2-Dichloroethene	156-60-5	10.0	U	10.0	U
cis-1,2-Dichloroethene	156-59-2	10.0	U	10.0	U
Chloroform	67-66-3	6.68		6.87	
1,1,1-Trichloroethane	71-55-6	1.00	U	1.00	U
Carbon Tetrachloride	56-23-5	1.00	U	1.00	U
Trichloroethene	79-01-6	1.00	U	1.00	U
Tetrachloroethene	127-18-4	1.00	U	1.00	U

U= Not detected above specified RL
J= Estimated value
Q= Associated with QC failure
E= Estimated value, marginally above calibration level
D= Analyzed at dilution
N= Normal sample
EB= Equip. Blank
B= Blank contam.

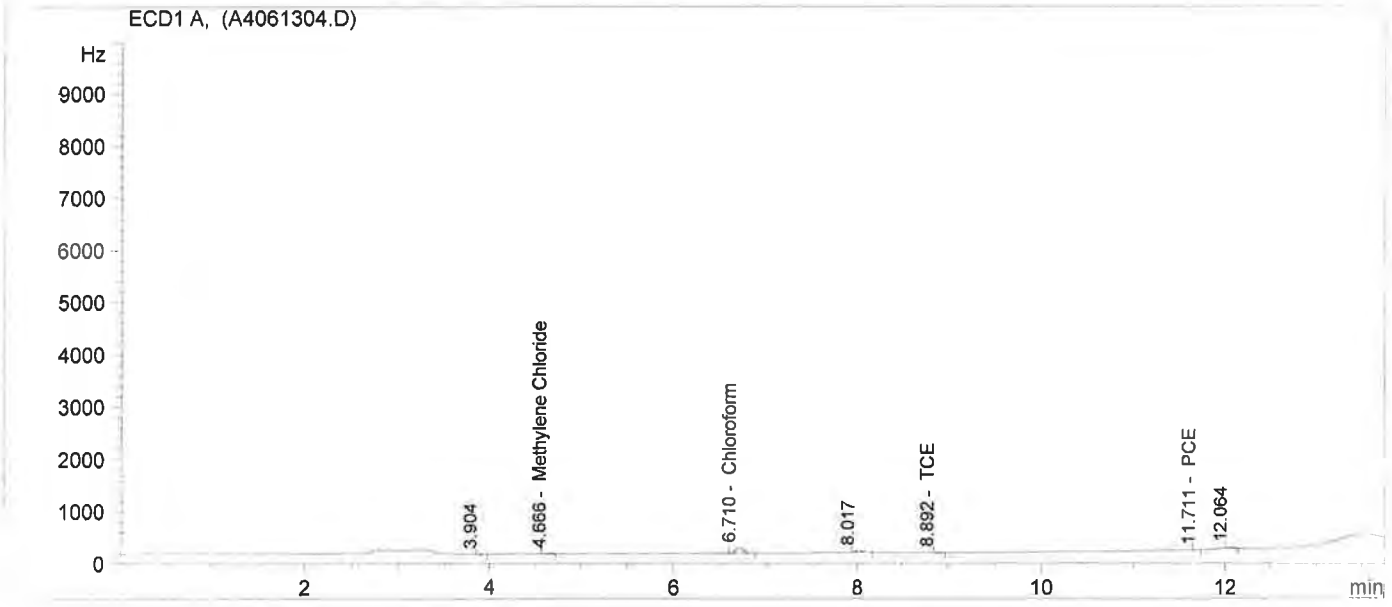
Data File: C:\HPCHEM\1\DATA\A4061304.D

Injection Date : 6/13/2014 1:21:36 PM 6/13/2014 1:21:36 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.18 15:17:22

Sample Info :
Lab ID : TB-01
Sample Amount : 0.0

Note: TBS prepared w/ Decon grade MeOH



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
4.666	4.660	MM	61.2	16.48	Methylene Chloride — not in list
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
6.710	6.709	PB	590.2	6.68	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.892	8.903	MM	19.2	0.00	TCE
11.711	11.714	MM	11.7	0.00	PCE

MJB 6/18/14

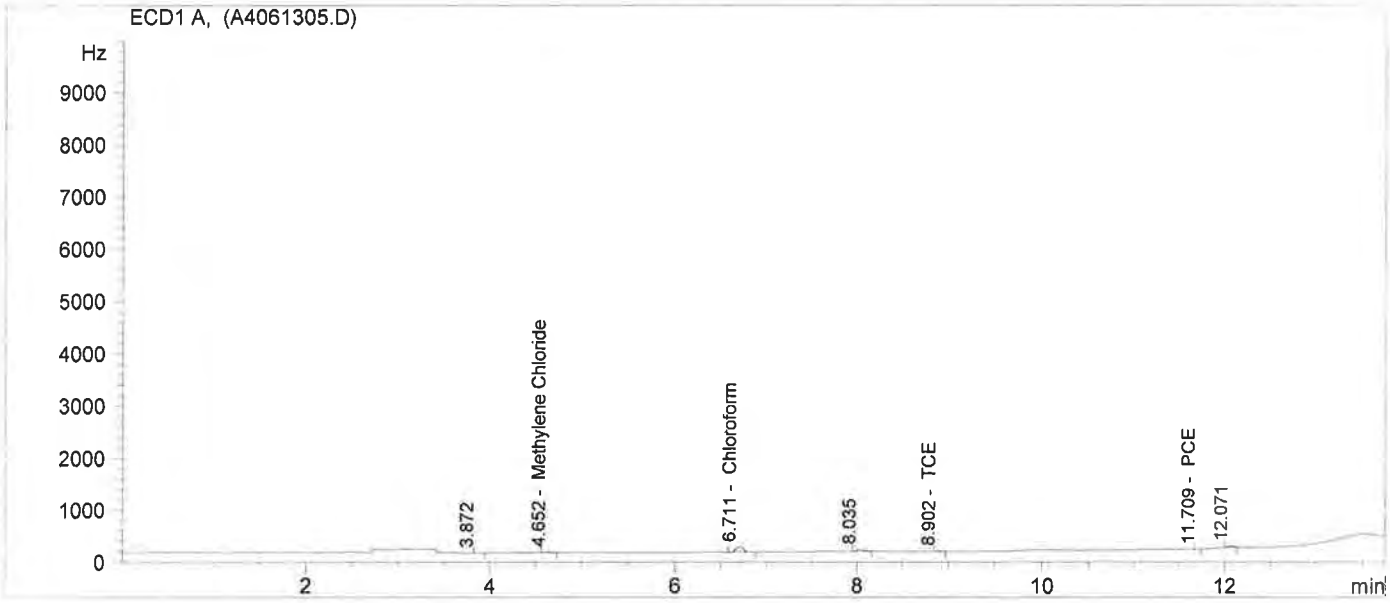
Data File: C:\HPCHEM\1\DATA\A4061305.D

Injection Date : 6/13/2014 1:46:01 PM 6/13/2014 1:46:01 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.18 15:17:58

Sample Info :
Lab ID : TB-02
Sample Amount : 0.0

Note: TBS prepped w/ MeOH Decon Grade



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
4.652	4.660	MM	68.6	19.51	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
6.711	6.709	PB	605.5	6.87	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.902	8.903	MM	15.9	0.00	TCE
11.709	11.714	MM	10.0	0.00	PCE

NA in test

dlj 6/18/14

Stone Environmental Laboratory Results

Laboratory Unit:	FF		
Client:	Geosyntec	**Report Date:**	8/24/2014
Location:	Fairview, OR	**Date(s) Sampled:**	06/03/2014 - 06/04/2014
Project ID:	Geosyntec OR CORE	**Date(s) Analyzed:**	06/13/2014 - 06/13/2014
SEI Project No.:	14-080	**Test Method:**	D6520
Matrix:	Rock	**Results Given as:**	ug/kg as wet weight
Location ID:	EB	**Prep Method:**	Soils (SW), EPA 5035A0H/ASTM D62520-00 Ground Waters (NPW), ASTM D6520-00

All of the tests results were performed in accordance with the NELAP standards and meet all NELAP requirements for parameters for which accreditation is required or available. The reports were completed according to contract specific reporting requirements. Any exceptions to the NELAP standard requirements are noted and the data has been qualified accordingly.

Sample Name	CAS #	EB-01		EB-02		EB-03		EB-04		EB-05		EB-06	
Analysis Date		06/13/14 14:10	EB	06/13/14 14:34	EB	06/13/14 14:59	EB	06/13/14 15:23	EB	06/13/14 15:48	EB	06/13/14 16:12	EB
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
1,1-Dichloroethene	75-35-4	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
trans-1,2-Dichloroethene	156-60-5	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
cis-1,2-Dichloroethene	156-59-2	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
Chloroform	67-66-3	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
1,1,1-Trichloroethane	71-55-6	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Carbon Tetrachloride	56-23-5	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Trichloroethene	79-01-6	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Tetrachloroethene	127-18-4	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U

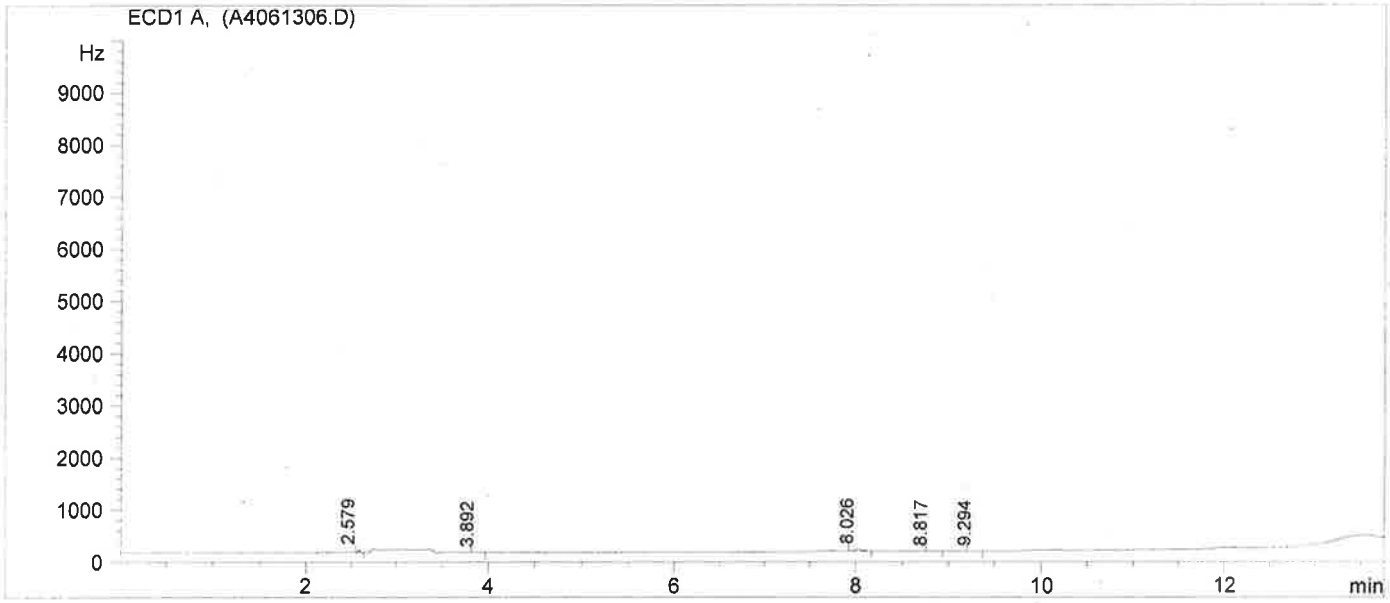
U= Not detected above specified RL
J= Estimated value
Q= Associated with QC failure
E= Estimated value, marginally above calibration level
D= Analyzed at dilution
N= Normal sample
EB= Equip. Blank
B= Blank contam.

Data File: C:\HPCHEM\1\DATA\A4061306.D

Injection Date : 6/13/2014 2:10:25 PM 6/13/2014 2:10:25 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.18 15:18:27

Sample Info :
Lab ID : EB-01
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
0.000	8.903		0.0	0.00	TCE
0.000	11.714		0.0	0.00	PCE

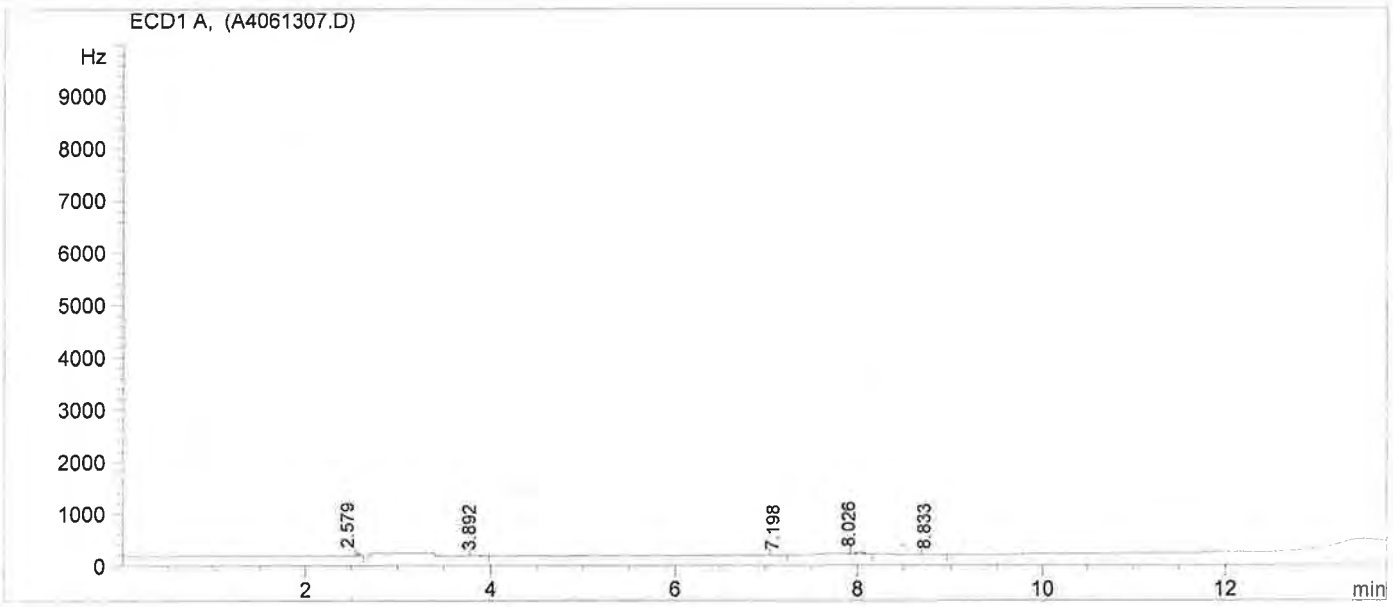
mjs 6/18/14

Data File: C:\HPCHEM\1\DATA\A4061307.D

Injection Date : 6/13/2014 2:34:53 PM 6/13/2014 2:34:53 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.18 15:19:00

Sample Info :
Lab ID : EB-02
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
0.000	8.903		0.0	0.00	TCE
0.000	11.714		0.0	0.00	PCE

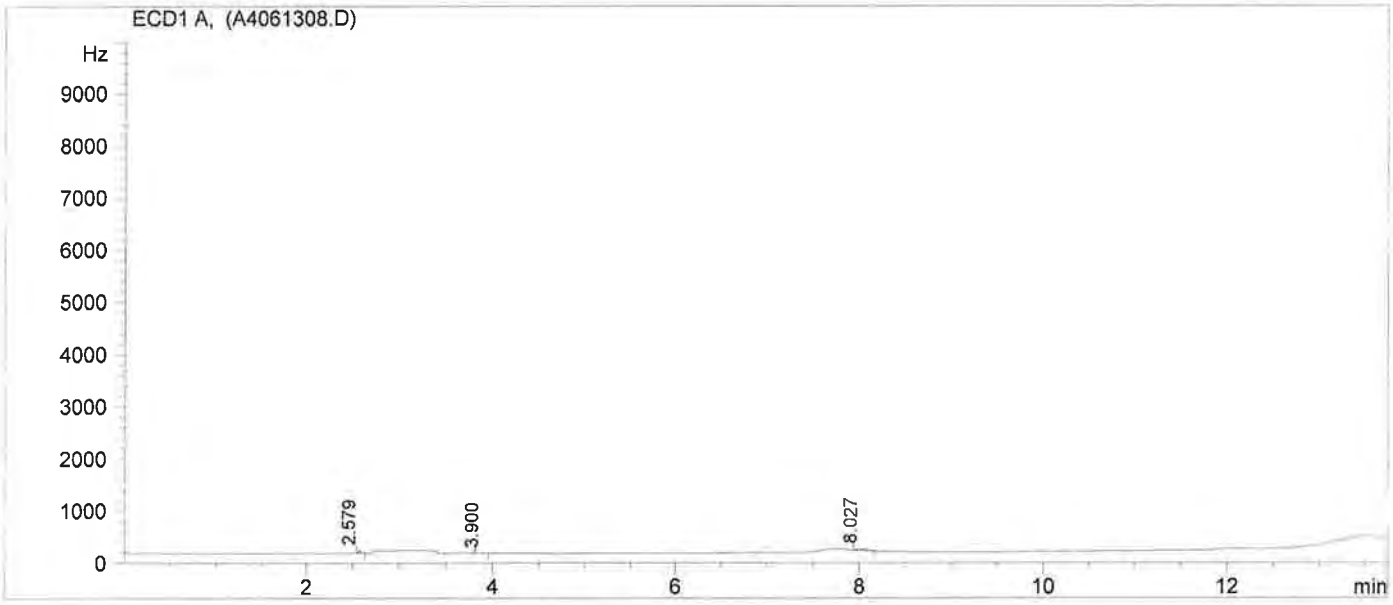
mjs 6/18/14

Data File: C:\HPCHEM\1\DATA\A4061308.D

Injection Date : 6/13/2014 2:59:17 PM 6/13/2014 2:59:17 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.18 15:19:29

Sample Info :
Lab ID : EB-03
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
0.000	8.903		0.0	0.00	TCE
0.000	11.714		0.0	0.00	PCE

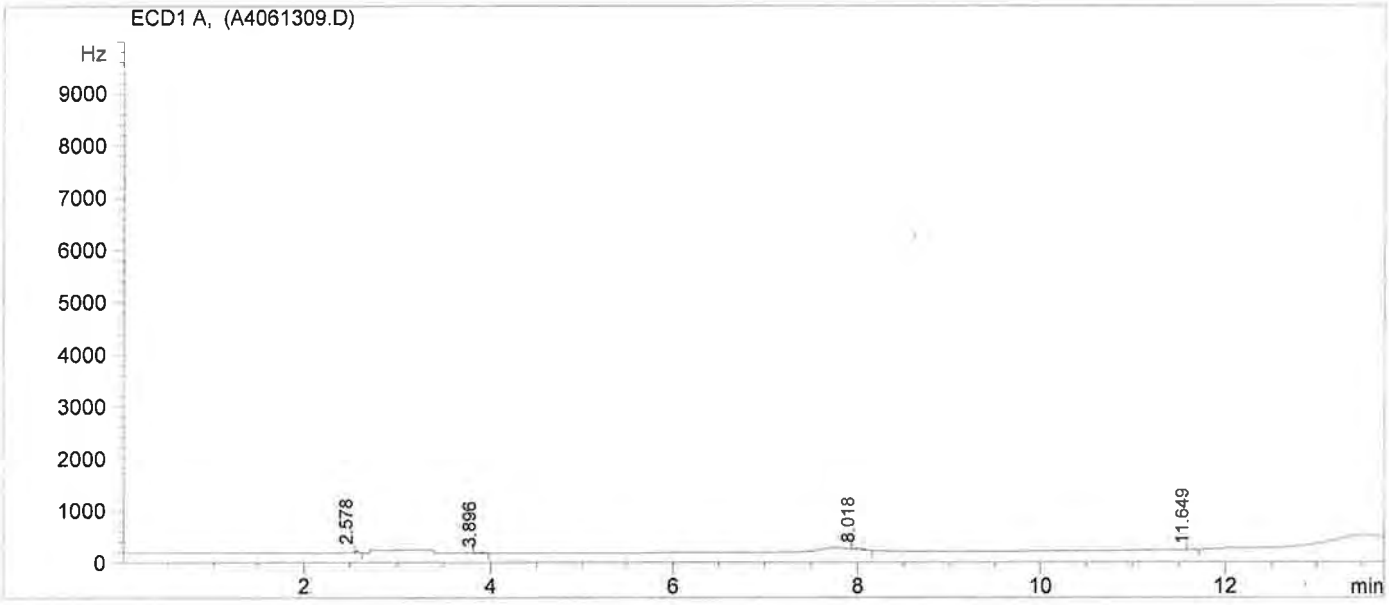
MJS 6/18/14

Data File: C:\HPCHEM\1\DATA\A4061309.D

Injection Date : 6/13/2014 3:23:43 PM 6/13/2014 3:23:43 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.18 15:19:52

Sample Info :
Lab ID : EB-04
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
0.000	8.903		0.0	0.00	TCE
0.000	11.714		0.0	0.00	PCE

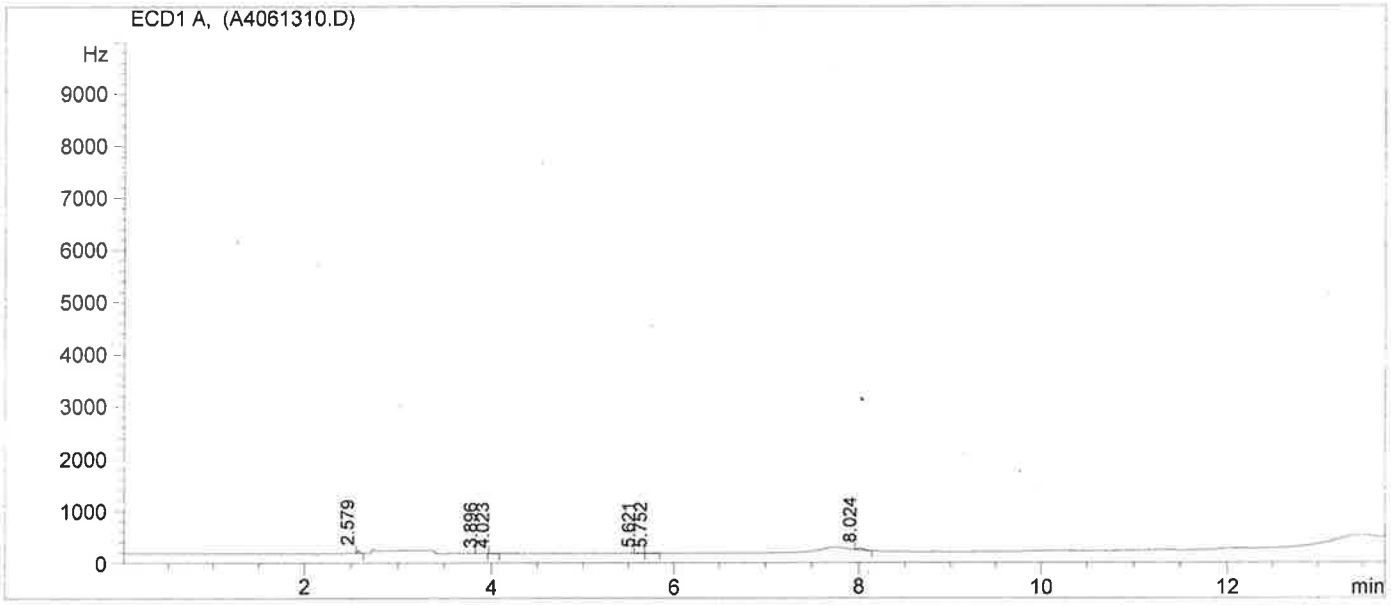
mjs 6/18/14

Data File: C:\HPCHEM\1\DATA\A4061310.D

Injection Date : 6/13/2014 3:48:09 PM 6/13/2014 3:48:09 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.18 15:20:29

Sample Info :
Lab ID : EB-05
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
0.000	8.903		0.0	0.00	TCE
0.000	11.714		0.0	0.00	PCE

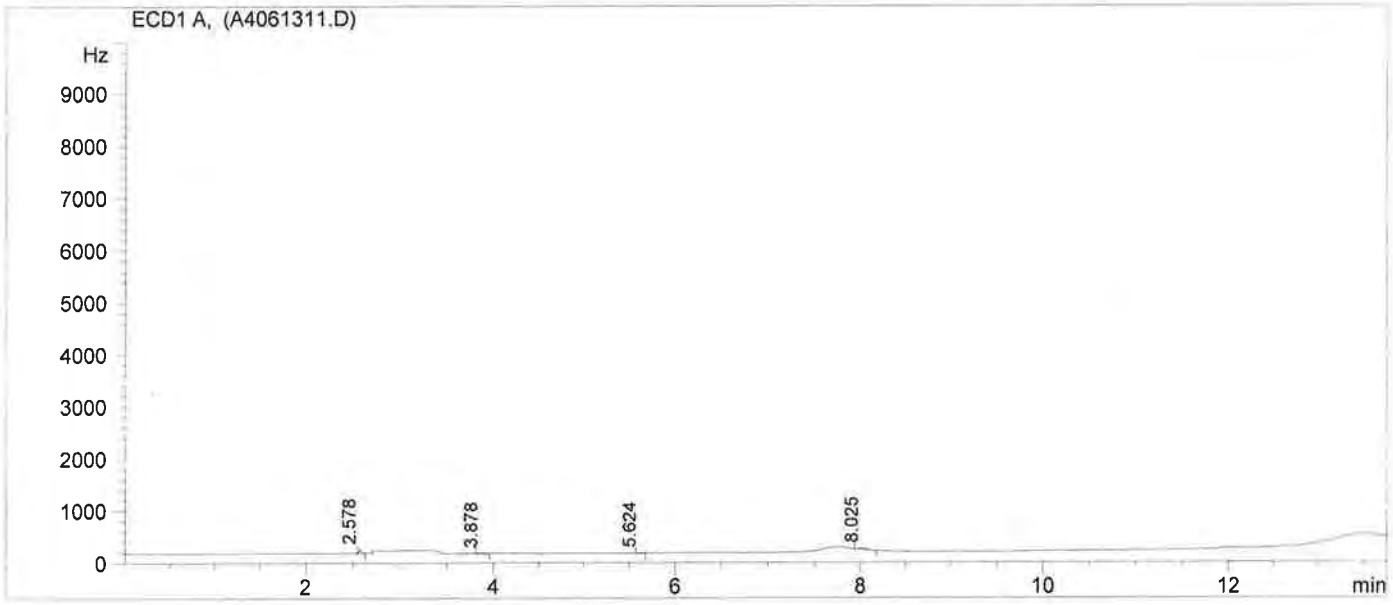
mjs 6/18/14

Data File: C:\HPCHEM\1\DATA\A4061311.D

Injection Date : 6/13/2014 4:12:37 PM 6/13/2014 4:12:37 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.18 15:20:51

Sample Info :
Lab ID : EB-06
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
0.000	8.903		0.0	0.00	TCE
0.000	11.714		0.0	0.00	PCE

MJS 6/18/14

CALIBRATION SUMMARIES

Initial Calibration

Initial Calibration Verification (ICV) Sample

Continuing Calibration Verification (VSTD) Samples

Calibration Table

Calib. Data Modified : 6/10/2014 3:24:15 PM

Calculate : External Standard
Based on : Peak Area

Rel. Reference Window : 0.000 %
Abs. Reference Window : 0.080 min
Rel. Non-ref. Window : 0.000 %
Abs. Non-ref. Window : 0.080 min
Multiplier : 1.0000
Dilution : 1.0000
Sample Amount : 0.00000
Use Multiplier & Dilution Factor with ISTDs
Uncalibrated Peaks : not reported
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

All ok mjs 6/11/14

Curve Type : Quadratic
Origin : Ignored
Weight : Linear (Amnt)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Signal 1: ECD1 A,

RetTime [min]	Sig	Lvl	Amount [ppb]	Area	Amt/Area	Ref	Grp	Name
4.537	1	1	10.00000	197.02325	5.07554e-2			1,1-DCE
		2	20.00000	363.63165	5.50007e-2			
		3	50.00000	752.25507	6.64668e-2			
		4	200.00000	2556.63135	7.82279e-2			
		5	500.00000	5583.75098	8.95455e-2			
		6	1000.00000	1.04859e4	9.53663e-2			
		7	2000.00000	1.99403e4	1.00299e-1			
		8	5000.00000	4.79016e4	1.04381e-1			
4.660	1	1	10.00000	37.10000	2.69542e-1			Methylene Chloride
		2	20.00000	72.33379	2.76496e-1			
		3	50.00000	155.93202	3.20653e-1			
		4	200.00000	588.69415	3.39735e-1			
		5	500.00000	1294.46594	3.86260e-1			
		6	1000.00000	2330.57349	4.29079e-1			
		7	2000.00000	4349.56934	4.59816e-1			
		8	5000.00000	1.02046e4	4.89976e-1			
4.838	1	1	1.00000	153.27348	6.52429e-3			1,1,2-Trichloro-1,2,2-trifluoroethane
		2	2.00000	284.73148	7.02416e-3			
		3	5.00000	610.26959	8.19310e-3			
		4	20.00000	2125.42358	9.40989e-3			
		5	50.00000	4749.63818	1.05271e-2			
		6	100.00000	9038.93945	1.10632e-2			
		7	200.00000	1.72728e4	1.15789e-2			
		8	500.00000	4.17203e4	1.19846e-2			
5.495	1	1	10.00000	31.37744	3.18700e-1			t-DCE

RetTime [min]	Sig	Lvl	Amount [ppb]	Area	Amt/Area	Ref	Grp	Name
		2	20.00000	59.57887	3.35690e-1			
		3	50.00000	127.21150	3.93046e-1			
		4	200.00000	484.34424	4.12929e-1			
		5	500.00000	1061.16382	4.71181e-1			
		6	1000.00000	1890.71838	5.28899e-1			
		7	2000.00000	3514.26758	5.69109e-1			
		8	5000.00000	8189.61816	6.10529e-1			
5.708	1	1	10.00000	13.50000	7.40741e-1			1,1-DCA
		2	20.00000	22.95262	8.71360e-1			
		3	50.00000	44.40490	1.12600			
		4	200.00000	150.71568	1.32700			
		5	500.00000	320.81931	1.55851			
		6	1000.00000	565.94141	1.76697			
		7	2000.00000	1084.95642	1.84339			
		8	5000.00000	2421.06714	2.06521			
6.435	1	1	10.00000	19.78379	5.05464e-1			c-DCE
		2	20.00000	34.95982	5.72085e-1			
		3	50.00000	68.86562	7.26052e-1			
		4	200.00000	315.69873	6.33515e-1			
		5	500.00000	708.32849	7.05887e-1			
		6	1000.00000	1242.62354	8.04749e-1			
		7	2000.00000	2343.28467	8.53503e-1			
		8	5000.00000	5320.46094	9.39768e-1			
6.709	1	1	1.00000	123.47652	8.09871e-3			Chloroform
		2	2.00000	229.93401	8.69815e-3			
		3	5.00000	468.92810	1.06626e-2			
		4	20.00000	1838.65991	1.08775e-2			
		5	50.00000	4157.44092	1.20266e-2			
		6	100.00000	7670.52051	1.30369e-2			
		7	200.00000	1.46848e4	1.36195e-2			
		8	500.00000	3.49328e4	1.43132e-2			
7.370	1	1	10.00000	38.35669	2.60711e-1			1,2-DCA
		2	20.00000	58.24381	3.43384e-1			
		3	50.00000	118.10663	4.23346e-1			
		4	200.00000	533.05481	3.75196e-1			
		5	500.00000	1200.98450	4.16325e-1			
		6	1000.00000	2096.70215	4.76939e-1			
		7	2000.00000	4007.56934	4.99056e-1			
		8	5000.00000	9248.22070	5.40645e-1			
7.581	1	1	1.00000	283.97940	3.52138e-3			1,1,1-TCA
		2	2.00000	501.84409	3.98530e-3			
		3	5.00000	957.83374	5.22011e-3			
		4	20.00000	3756.96655	5.32344e-3			
		5	50.00000	8721.90332	5.73269e-3			
		6	100.00000	1.66185e4	6.01739e-3			
		7	200.00000	3.23134e4	6.18938e-3			
		8	500.00000	7.79453e4	6.41475e-3			
8.120	1	1	1.00000	482.79724	2.07126e-3			Carbon Tetrachloride
		2	2.00000	910.42603	2.19677e-3			
		3	5.00000	1858.49255	2.69035e-3			
		4	20.00000	7693.03906	2.59975e-3			
		5	50.00000	1.85636e4	2.69344e-3			
		6	100.00000	3.63787e4	2.74886e-3			
		7	200.00000	7.10986e4	2.81300e-3			
		8	500.00000	1.73149e5	2.88768e-3			
8.903	1	1	1.00000	195.23241	5.12210e-3			TCE
		2	2.00000	356.23514	5.61427e-3			
		3	5.00000	610.67834	8.18762e-3			
		4	20.00000	2694.51831	7.42248e-3			
		5	50.00000	6127.21240	8.16032e-3			
		6	100.00000	1.14593e4	8.72651e-3			
		7	200.00000	2.19449e4	9.11374e-3			
		8	500.00000	5.23351e4	9.55382e-3			
11.714	1	1	1.00000	411.37820	2.43085e-3			PCE
		2	2.00000	797.93933	2.50646e-3			

Method C:\HPCHEM\1\METHODS\QA40609.M

RetTime [min]	Sig	Lvl	Amount [ppb]	Area	Amt/Area	Ref	Grp	Name
		3	5.00000	2362.24048	2.11663e-3			
		4	20.00000	7405.29297	2.70077e-3			
		5	50.00000	1.81435e4	2.75581e-3			
		6	100.00000	3.46497e4	2.88602e-3			
		7	200.00000	6.76598e4	2.95597e-3			
		8	500.00000	1.64523e5	3.03908e-3			

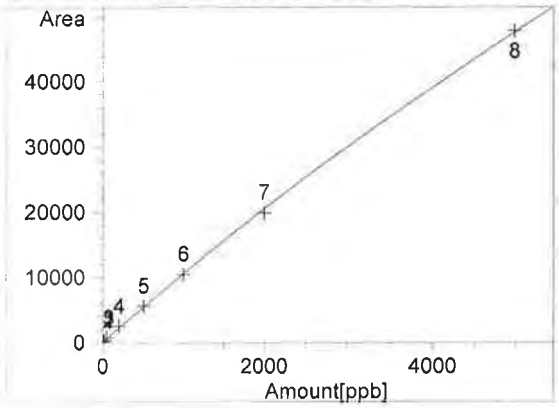
1 Warnings or Errors :

Warning : Cal. table open and changed while report was generated.

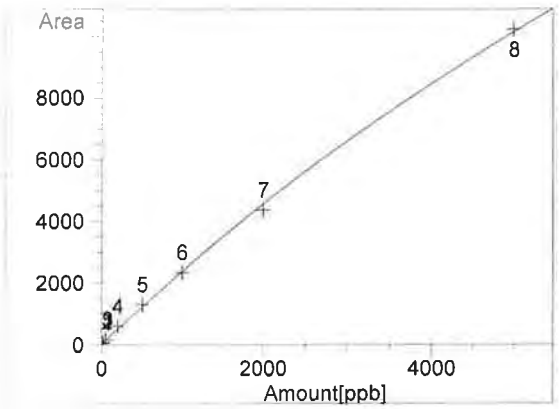
Peak Sum Table

No Entries in table

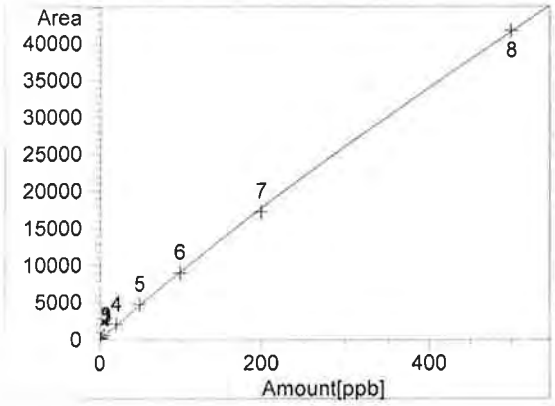
Calibration Curves



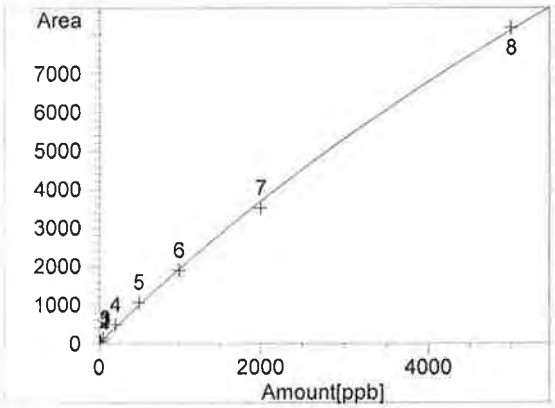
1,1-DCE at exp. RT: 4.537
ECD1 A,
Correlation: 0.99936
Residual Std. Dev.: 322.39722
Formula: $y = ax^2 + bx + c$
a: -2.42581e-4
b: 10.71590
c: 130.49044
x: Amount[ppb]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.05
Level 5 : 0.02
Level 6 : 0.01
Level 7 : 0.005
Level 8 : 0.002



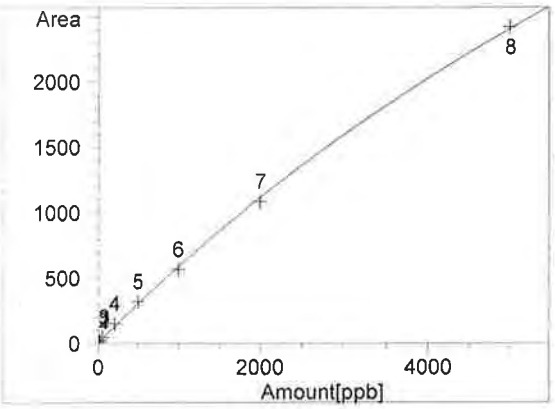
Methylene Chloride at exp. RT: 4.660
ECD1 A,
Correlation: 0.99893
Residual Std. Dev.: 103.82987
Formula: $y = ax^2 + bx + c$
a: -8.25041e-5
b: 2.43316
c: 21.16999
x: Amount[ppb]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.05
Level 5 : 0.02
Level 6 : 0.01
Level 7 : 0.005
Level 8 : 0.002



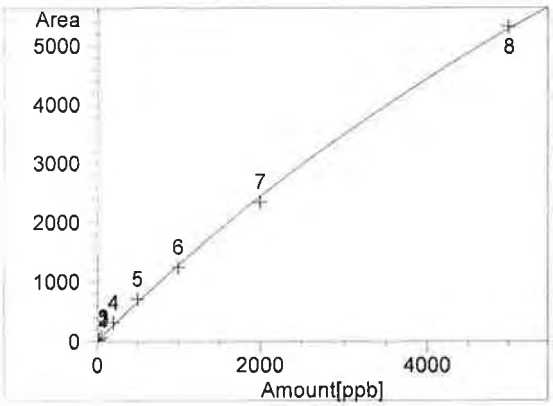
1,1,2-Trichloro-1,2,2-trifluoroethane at exp. RT: 4.838
ECD1 A,
Correlation: 0.99958
Residual Std. Dev.: 233.69370
Formula: $y = ax^2 + bx + c$
a: -1.80972e-2
b: 91.94014
c: 89.26660
x: Amount[ppb]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.05
Level 5 : 0.02
Level 6 : 0.01
Level 7 : 0.005
Level 8 : 0.002



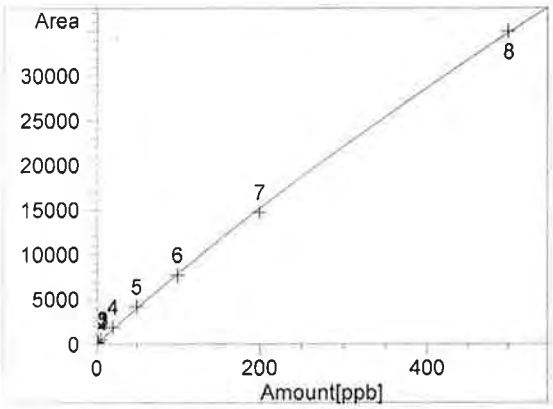
t-DCE at exp. RT: 5.495
ECD1 A,
Correlation: 0.99879
Residual Std. Dev.: 89.91257
Formula: $y = ax^2 + bx + c$
a: -7.23492e-5
b: 1.98219
c: 18.29011
x: Amount[ppb]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.05
Level 5 : 0.02
Level 6 : 0.01
Level 7 : 0.005
Level 8 : 0.002



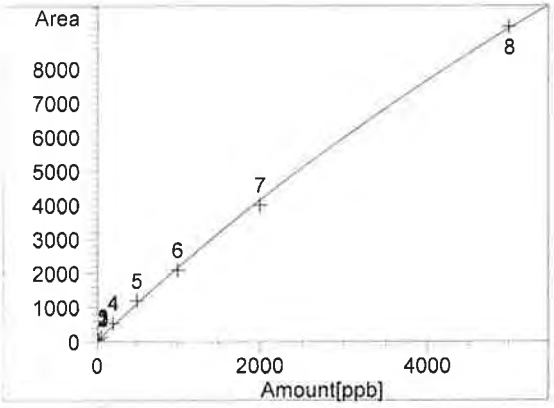
1,1-DCA at exp. RT: 5.708
ECD1 A,
Correlation: 0.99893
Residual Std. Dev.: 20.33315
Formula: $y = ax^2 + bx + c$
a: -2.48050e-5
b: 6.03275e-1
c: 9.87783
x: Amount[ppb]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.05
Level 5 : 0.02
Level 6 : 0.01
Level 7 : 0.005
Level 8 : 0.002



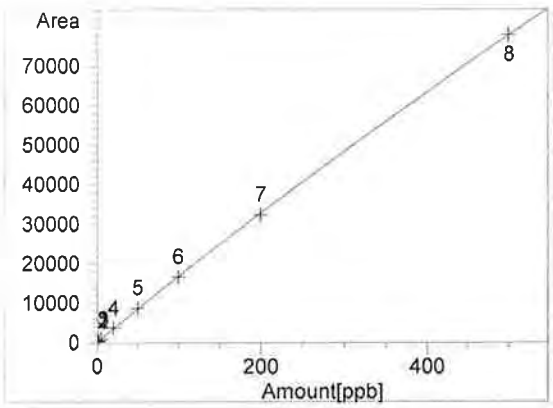
c-DCE at exp. RT: 6.435
ECD1 A,
Correlation: 0.99896
Residual Std. Dev.: 52.33550
Formula: $y = ax^2 + bx + c$
a: -5.33651e-5
b: 1.32172
c: 8.23716
x: Amount[ppb]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.05
Level 5 : 0.02
Level 6 : 0.01
Level 7 : 0.005
Level 8 : 0.002



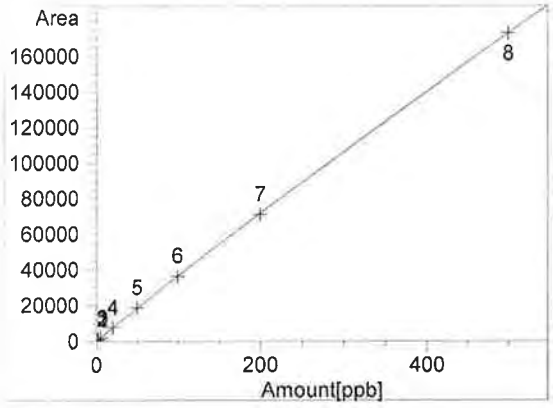
Chloroform at exp. RT: 6.709
ECD1 A,
Correlation: 0.99952
Residual Std. Dev.: 227.45215
Formula: $y = ax^2 + bx + c$
a: -1.97107e-2
b: 79.25110
c: 61.89325
x: Amount[ppb]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.05
Level 5 : 0.02
Level 6 : 0.01
Level 7 : 0.005
Level 8 : 0.002



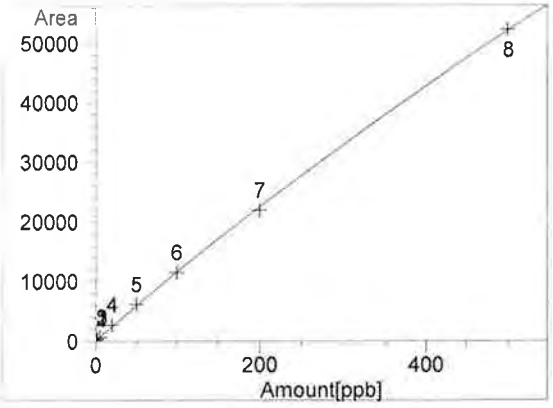
1,2-DCA at exp. RT: 7.370
ECD1 A,
Correlation: 0.99903
Residual Std. Dev.: 84.81722
Formula: $y = ax^2 + bx + c$
a: -7.79210e-5
b: 2.22398
c: 16.89816
x: Amount[ppb]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.05
Level 5 : 0.02
Level 6 : 0.01
Level 7 : 0.005
Level 8 : 0.002



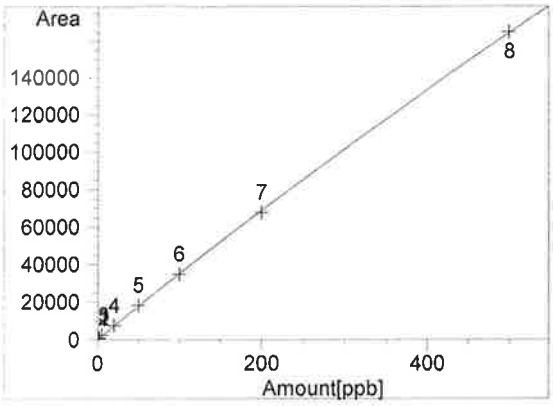
1,1,1-TCA at exp. RT: 7.581
ECD1 A,
Correlation: 0.99985 ✓
Residual Std. Dev.: 266.11752
Formula: $y = ax^2 + bx + c$
a: -2.73429e-2
b: 168.88908
c: 137.26448
x: Amount[ppb]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.05
Level 5 : 0.02
Level 6 : 0.01
Level 7 : 0.005
Level 8 : 0.002



Carbon Tetrachloride at exp. RT: 8.120
ECD1 A,
Correlation: 0.99995 ✓
Residual Std. Dev.: 311.86499
Formula: $y = ax^2 + bx + c$
a: -4.14681e-2
b: 366.32802
c: 132.62240
x: Amount[ppb]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.05
Level 5 : 0.02
Level 6 : 0.01
Level 7 : 0.005
Level 8 : 0.002



TCE at exp. RT: 8.903
ECD1 A,
Correlation: 0.99960 ✓
Residual Std. Dev.: 285.44366
Formula: $y = ax^2 + bx + c$
a: -2.64955e-2
b: 117.31690
c: 93.15709
x: Amount[ppb]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.05
Level 5 : 0.02
Level 6 : 0.01
Level 7 : 0.005
Level 8 : 0.002



PCE at exp. RT: 11.714
ECD1 A,
Correlation: 0.99966 ✓
Residual Std. Dev.: 588.94089
Formula: $y = ax^2 + bx + c$
a: -5.14391e-2
b: 353.56781
c: 137.88159
x: Amount[ppb]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.5
Level 3 : 0.2
Level 4 : 0.05
Level 5 : 0.02
Level 6 : 0.01
Level 7 : 0.005
Level 8 : 0.002

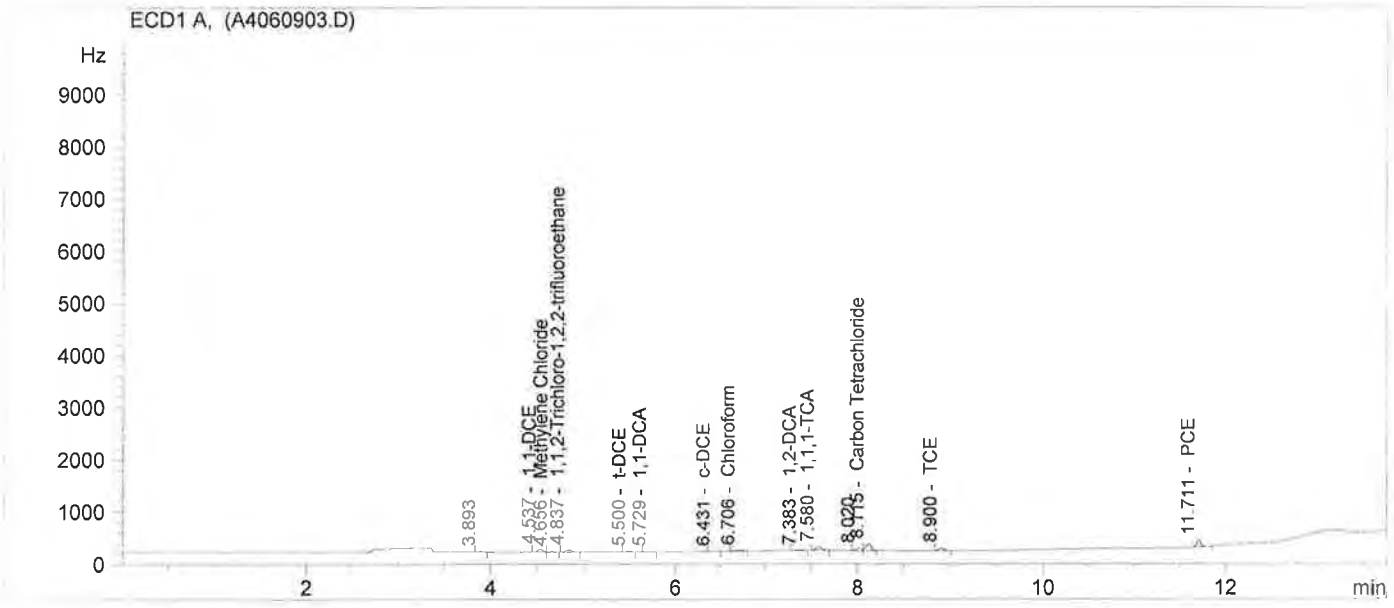
==========

Data File: C:\HPCHEM\1\DATA\A4060903.D

Injection Date : 6/9/2014 4:54:39 PM 6/9/2014 4:54:39 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 14:50:07

Report Created : 2014.06.10 14:51:51

Sample Info :
Lab ID : vstd 1
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.537	4.536	MF	197.0	5.31	1,1-DCE
4.656	4.659	FM	37.1	0.12	Methylene Chloride
4.837	4.836	PP	153.3	0.64	1,1,2-Trichloro-1,2,2-trifluo
5.500	5.498	MM	31.4	5.13	t-DCE
5.729	5.704	MM	13.5	2.58	1,1-DCA
6.431	6.434	MM	19.8	7.50	c-DCE
6.706	6.706	MM	123.5	0.62	Chloroform
7.383	7.369	MM	38.4	7.81	1,2-DCA
7.580	7.579	PB	284.0	0.64	1,1,1-TCA
8.115	8.115	FM	482.8	0.48	Carbon Tetrachloride
8.900	8.899	BB	195.2	0.65	TCE
11.711	11.709	MM	411.4	0.92	PCE

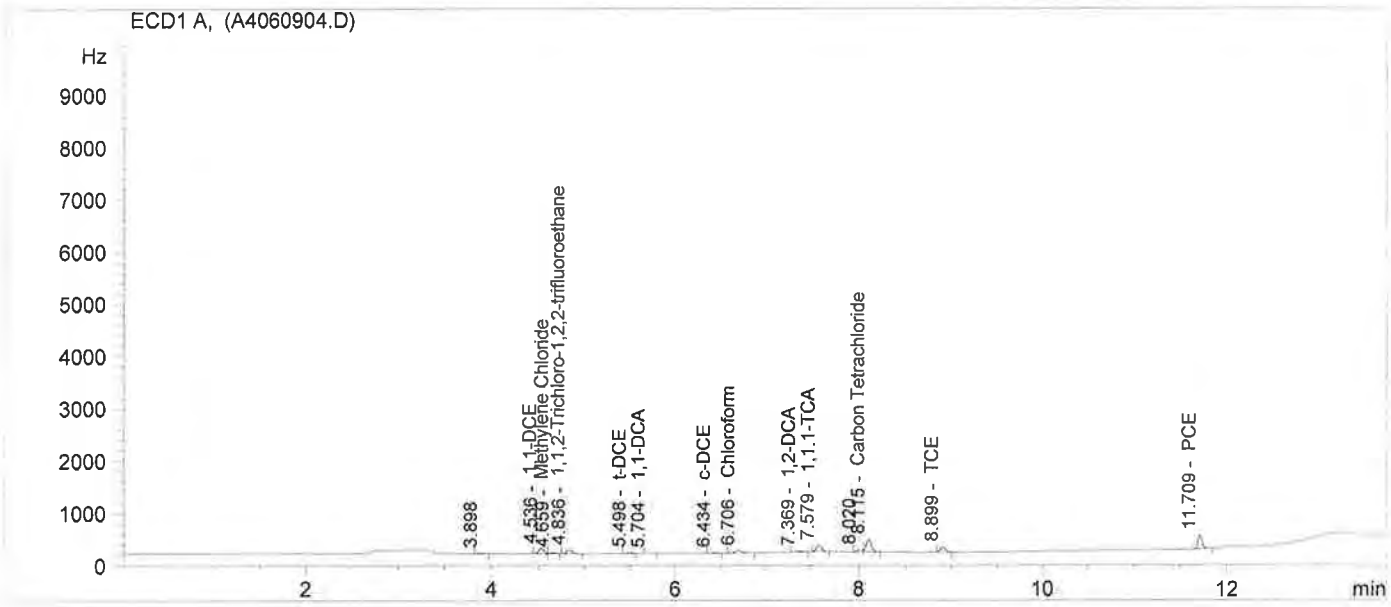
mjs 6/11/14

Data File: C:\HPCHEM\1\DATA\A4060904.D

Injection Date : 6/9/2014 5:19:14 PM 6/9/2014 5:19:14 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 14:48:54

Report Created : 2014.06.10 14:49:57

Sample Info :
Lab ID : vstd 2
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.536	4.537	MF	363.6	19.33	1,1-DCE
4.659	4.662	FM	72.3	22.47	Methylene Chloride
4.836	4.837	PB	284.7	2.12	1,1,2-Trichloro-1,2,2-trifluo
5.498	5.496	MM	59.6	18.21	t-DCE
5.704	5.707	MM	23.0	25.50	1,1-DCA
6.434	6.438	MM	35.0	17.44	c-DCE
6.706	6.709	PP	229.9	2.07	Chloroform
7.369	7.368	MM	58.2	15.00	1,2-DCA
7.579	7.580	PB	501.8	1.89	1,1,1-TCA
8.115	8.116	FM	910.4	1.61	Carbon Tetrachloride
8.899	8.900	BB	356.2	2.11	TCE
11.709	11.711	MM	797.9	2.20	PCE

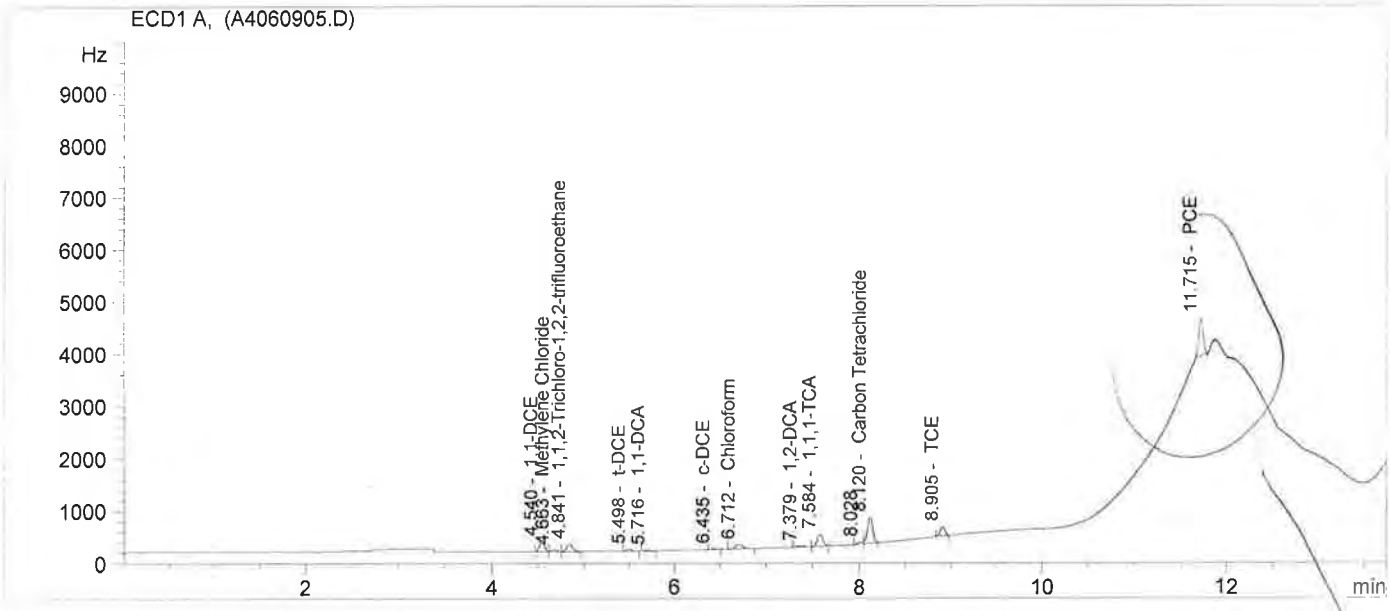
MJS 6/11/14

Data File: C:\HPCHEM\1\DATA\A4060905.D

Injection Date : 6/10/2014 8:42:02 AM 6/10/2014 8:42:02 AM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 14:52:00

Report Created : 2014.06.10 14:54:53

Sample Info :
Lab ID : vstd 5
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.540	4.537	BV	752.3	53.83	1,1-DCE
4.663	4.656	VV	155.9	47.02	Methylene Chloride
4.841	4.837	VP	610.3	5.47	1,1,2-Trichloro-1,2,2-trifluo
5.498	5.500	PP	127.2	51.45	t-DCE
5.716	5.729	MM	44.4	51.01	1,1-DCA
6.435	6.431	MM	68.9	42.13	c-DCE
6.712	6.706	PP	468.9	5.03	Chloroform
7.379	7.383	MM	118.1	41.66	1,2-DCA
7.584	7.580	MM	957.8	4.71	1,1,1-TCA
8.120	8.115	FM	1858.5	4.65	Carbon Tetrachloride
8.905	8.900	MM	610.7	4.38	TCE
11.715	11.711	MM	2362.2	6.93	PCE

mjs 6/11/14

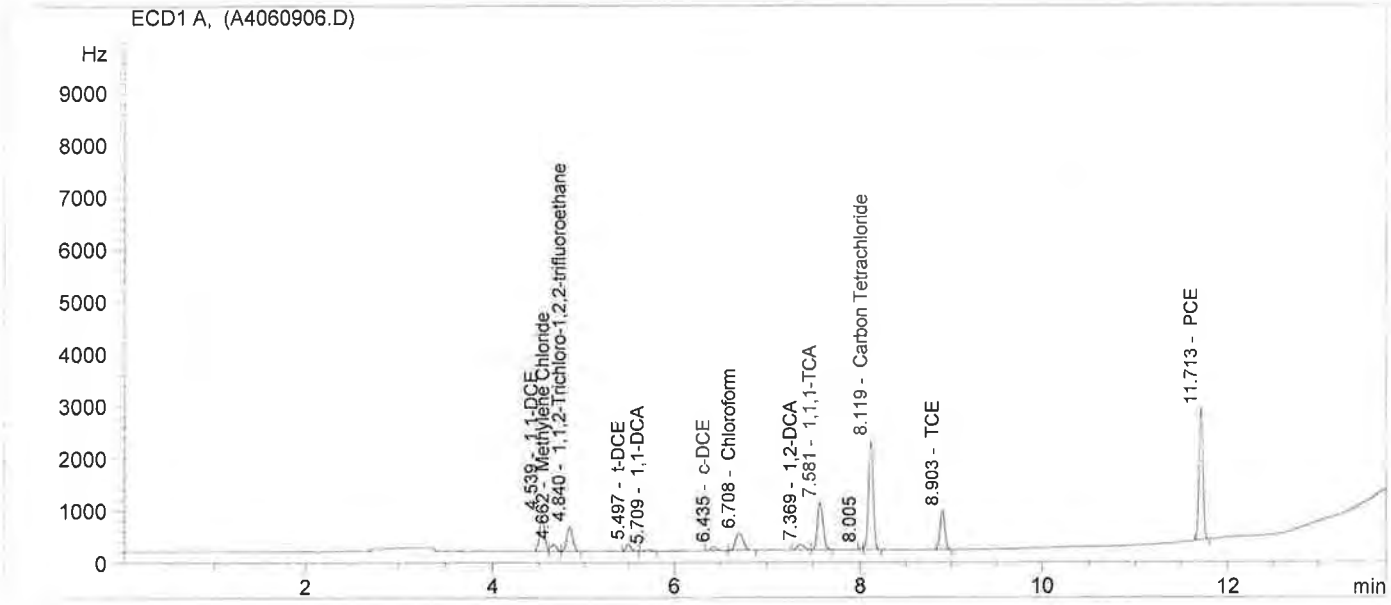
Baseline interference w/ PCE peak. However, peak area still in line w/ calibration points, cal still passes. Use this run in cal

Data File: C:\HPCHEM\1\DATA\A4060906.D

Injection Date : 6/10/2014 9:06:24 AM 6/10/2014 9:06:24 AM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 14:55:13

Report Created : 2014.06.10 14:56:09

Sample Info :
Lab ID : vstd 20
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.539	4.540	BV	2556.6	214.04	1,1-DCE
4.662	4.663	VV	588.7	220.46	Methylene Chloride
4.840	4.841	VP	2125.4	21.61	1,1,2-Trichloro-1,2,2-trifluo
5.497	5.498	BB	484.3	224.96	t-DCE
5.709	5.716	MM	150.7	217.44	1,1-DCA
6.435	6.435	PP	315.7	219.30	c-DCE
6.708	6.712	BP	1838.7	22.78	Chloroform
7.369	7.379	BP	533.1	223.97	1,2-DCA
7.581	7.584	VB	3757.0	21.87	1,1,1-TCA
8.119	8.120	FM	7693.0	21.14	Carbon Tetrachloride
8.903	8.905	BB	2694.5	23.46	TCE
11.713	11.715	BB	7405.3	22.26	PCE

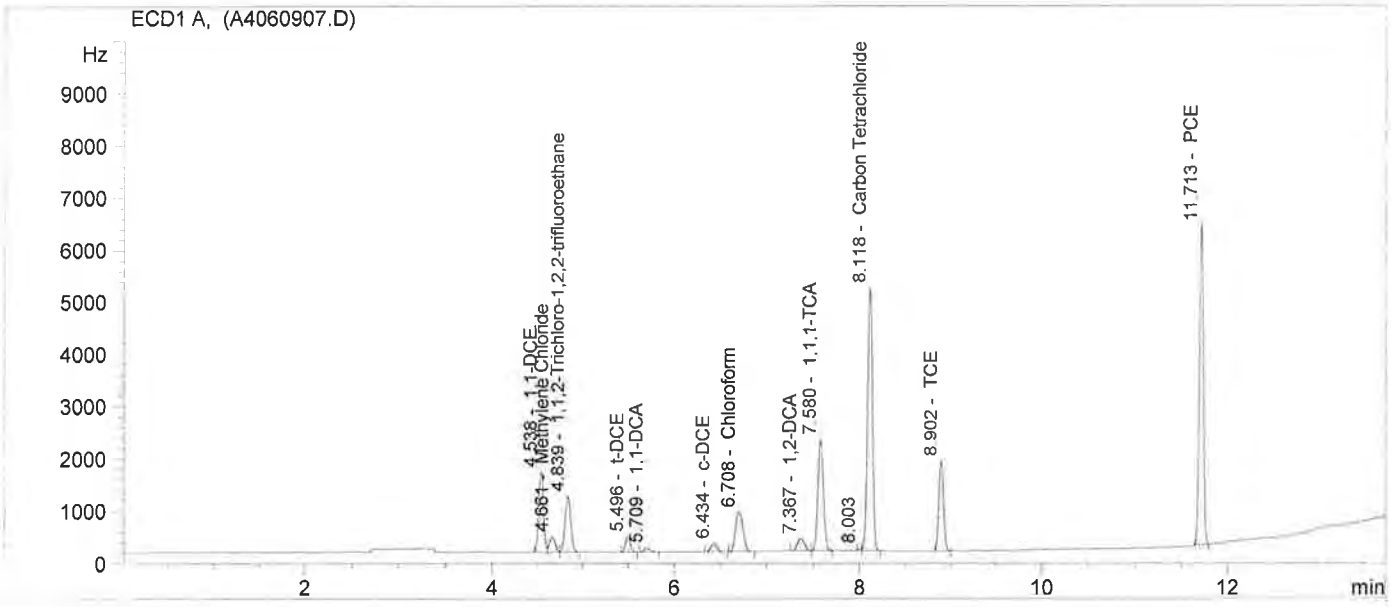
mjz 6/11/14

Data File: C:\HPCHEM\1\DATA\A4060907.D

Injection Date : 6/10/2014 9:30:46 AM 6/10/2014 9:30:46 AM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 14:56:36

Report Created : 2014.06.10 14:57:12

Sample Info :
Lab ID : vstd 50
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.538	4.539	BV	5583.8	487.16	1,1-DCE
4.661	4.662	VV	1294.5	505.90	Methylene Chloride
4.839	4.840	VP	4749.6	49.79	1,1,2-Trichloro-1,2,2-trifluo
5.496	5.497	BB	1061.2	512.69	t-DCE
5.709	5.709	BP	320.8	492.73	1,1-DCA
6.434	6.435	PP	708.3	506.64	c-DCE
6.708	6.708	BP	4157.4	53.23	Chloroform
7.367	7.369	BV	1201.0	522.64	1,2-DCA
7.580	7.581	VB	8721.9	52.39	1,1,1-TCA
8.118	8.119	FM	18563.6	51.73	Carbon Tetrachloride
8.902	8.903	BB	6127.2	54.73	TCE
11.713	11.713	BB S	18143.5	55.01	PCE

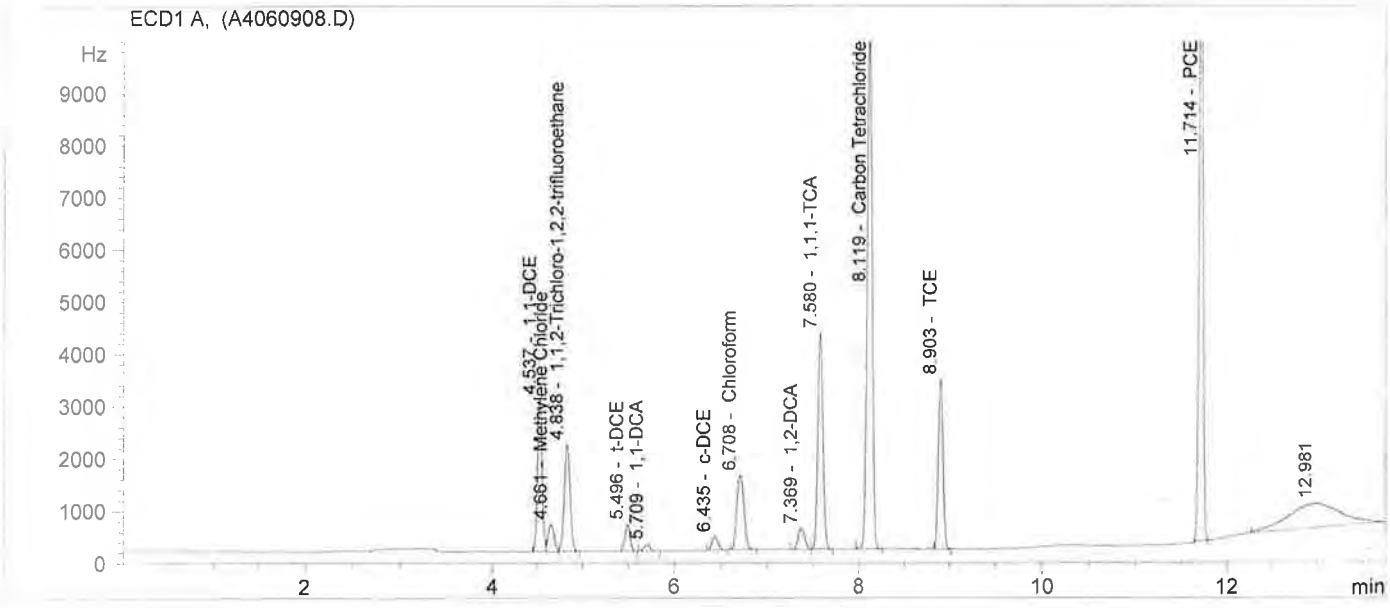
MJB 6/11/14

Data File: C:\HPCHEM\1\DATA\A4060908.D

Injection Date : 6/10/2014 11:38:16 AM 6/10/2014 11:38:16 AM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 14:40:22

Report Created : 2014.06.10 14:42:54

Sample Info :
Lab ID : vstd 100
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.537	4.537	BV	10485.9	899.88	1,1-DCE
4.661	4.661	VV	2330.6	892.79	Methylene Chloride
4.838	4.868	VP	9038.9	94.27	1,1,2-Trichloro-1,2,2-trifluo
5.496	5.496	BP	1890.7	902.86	t-DCE
5.709	5.709	BP	565.9	842.40	1,1-DCA
6.435	6.435	BB	1242.6	858.87	c-DCE
6.708	6.708	PB	7670.5	100.38	Chloroform
7.369	7.369	PP	2096.7	888.04	1,2-DCA
7.580	7.580	VB	16618.5	102.58	1,1,1-TCA
8.119	8.119	BB S	36378.7	104.25	Carbon Tetrachloride
8.903	8.903	BB	11459.3	108.74	TCE
11.714	11.714	PB S	34649.7	113.33	PCE

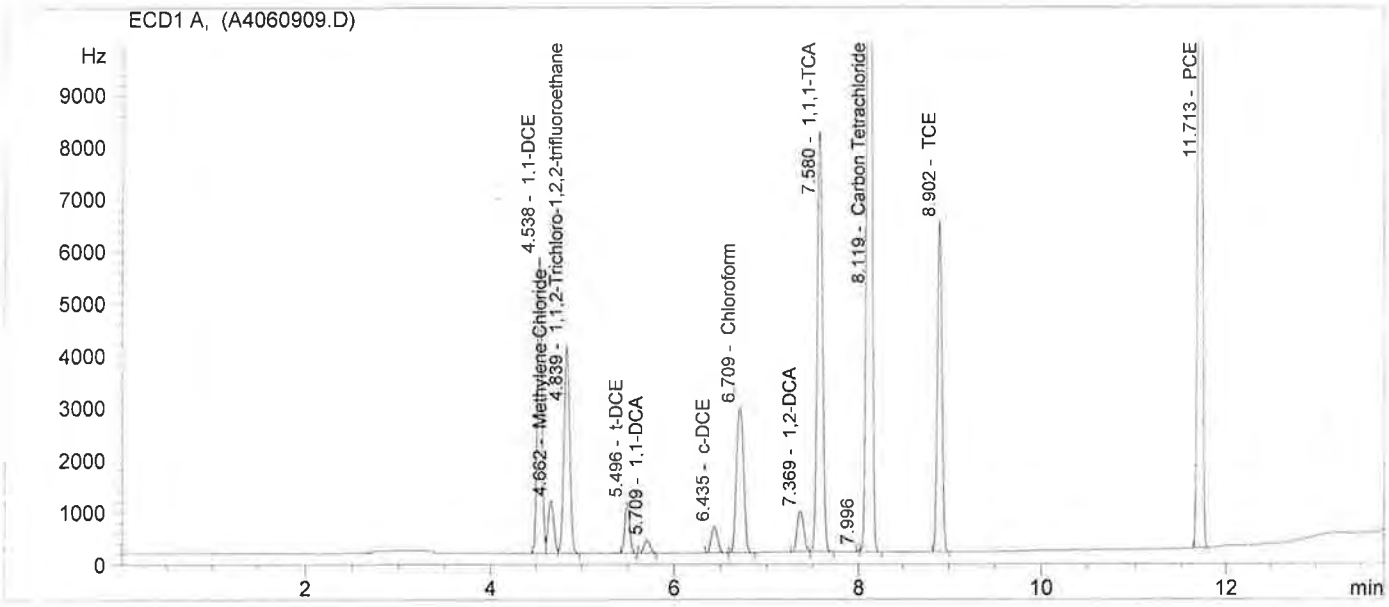
mjs 6/11/14

Data File: C:\HPCHEM\1\DATA\A4060909.D

Injection Date : 6/10/2014 12:02:42 PM 6/10/2014 12:02:42 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 14:57:22

Report Created : 2014.06.10 14:58:26

Sample Info :
Lab ID : vstd 200
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.538	4.538	BV	19940.3	1854.82	1,1-DCE
4.662	4.661	VV	4349.6	1816.64	Methylene Chloride
4.839	4.839	VB	17272.8	189.30	1,1,2-Trichloro-1,2,2-trifluo
5.496	5.496	BB	3514.3	1840.44	t-DCE
5.709	5.709	MM	1085.0	1839.25	1,1-DCA
6.435	6.434	PP	2343.3	1831.56	c-DCE
6.709	6.708	BP	14684.8	198.35	Chloroform
7.369	7.367	BV	4007.6	1865.36	1,2-DCA
7.580	7.580	VB S	32313.4	202.13	1,1,1-TCA
8.119	8.118	FM	71098.6	202.95	Carbon Tetrachloride
8.902	8.902	BB S	21944.9	206.20	TCE
11.713	11.713	BB S	67659.8	210.07	PCE

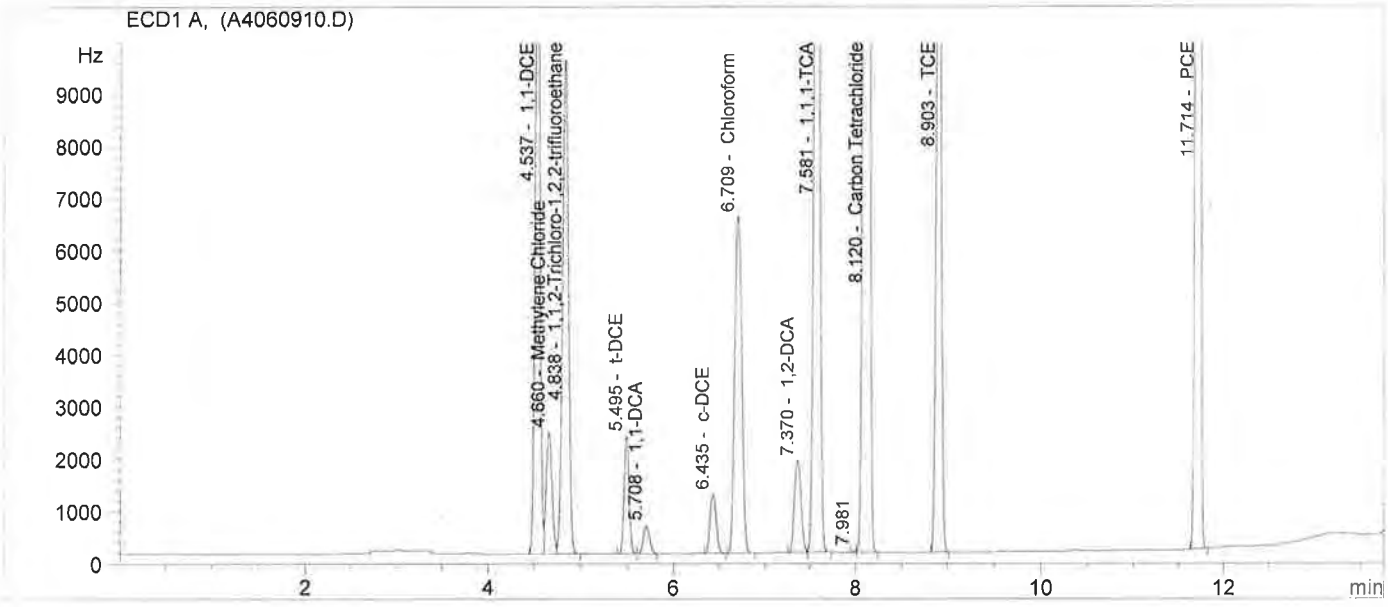
mjs 6/11/14

Data File: C:\HPCHEM\1\DATA\A4060910.D

Injection Date : 6/10/2014 12:29:32 PM 6/10/2014 12:29:32 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 14:58:35

Report Created : 2014.06.10 14:59:31

Sample Info :
Lab ID : vstd 500
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.537	4.538	BV S	47901.6	4695.07	1,1-DCE
4.660	4.662	VV S	10204.6	4514.13	Methylene Chloride
4.838	4.839	VB S	41720.3	470.94	1,1,2-Trichloro-1,2,2-trifluo
5.495	5.496	MF	8189.6	4815.13	t-DCE
5.708	5.709	FM	2421.1	4445.41	1,1-DCA
6.435	6.435	BB	5320.5	4572.95	c-DCE
6.709	6.709	BP	34932.8	507.98	Chloroform
7.370	7.369	BV	9248.2	4629.19	1,2-DCA
7.581	7.580	VB S	77945.3	510.90	1,1,1-TCA
8.120	8.119	FM	173149.5	512.16	Carbon Tetrachloride
8.903	8.902	BB S	52335.1	555.58	TCE
11.714	11.713	BB S	164523.3	561.74	PCE

mjs 6/11/14

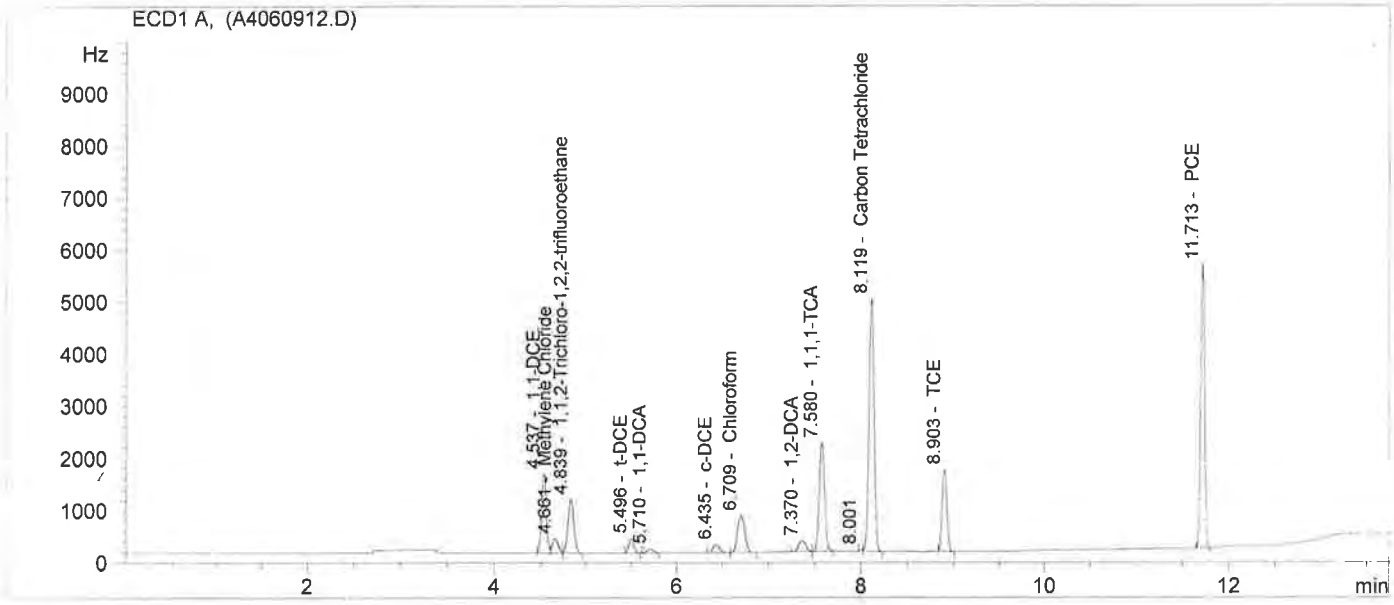
Data File: C:\HPCHEM\1\DATA\A4060912.D

Injection Date : 6/10/2014 1:45:36 PM 6/10/2014 1:45:36 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:01:30

Report Created : 2014.06.10 15:03:35

Sample Info :
Lab ID : icv 50
Sample Amount : 0.0

AI



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.537	4.537	BV	5499.5	506.85	1,1-DCE
4.661	4.660	VV	1244.1	511.67	Methylene Chloride
4.839	4.838	VP	4594.3	49.48	1,1,2-Trichloro-1,2,2-trifluo
5.496	5.495	BB	1012.7	511.22	t-DCE
5.710	5.708	MM	319.7	525.21	1,1-DCA
6.435	6.435	BP	734.3	562.10	c-DCE
6.709	6.709	PP	3856.1	48.46	Chloroform
7.370	7.370	BV	1129.0	509.13	1,2-DCA
7.580	7.581	VB	8539.4	50.16	1,1,1-TCA
8.119	8.120	FM	17757.5	48.38	Carbon Tetrachloride
8.903	8.903	BB	5595.9	47.41	TCE
11.713	11.714	BB S	16124.8	45.52	PCE

All PASS

OK - All pass
mjf 6/11/14

Stone Environmental Inc. Project Number: 14-080

Initial Calibration Verification (ICV) *Sample Summary*

QC Batch: AI

Analysis Date: 06/10/2014

Method: D6520

Spike Amount: 50.0

Analyte	Lab Blank Conc. (ug/L)	ICV Conc.(ug/L)	ICV % Recovery	QC Limits (% Recovery)
1,1,2-Trichloro-1,2,2-trifluoroet	1.00 U	49.5	99	70-130
1,1-Dichloroethene	10.0 U	507	101	70-130
trans-1,2-Dichloroethene	10.0 U	511	102	70-130
cis-1,2-Dichloroethene	10.0 U	562	112	70-130
Chloroform	1.00 U	48.5	97	70-130
1,1,1-Trichloroethane	1.00 U	50.2	100	70-130
Carbon Tetrachloride	1.00 U	48.4	97	70-130
Trichloroethene	1.00 U	47.4	95	70-130
Tetrachloroethene	1.00 U	45.5	91	70-130

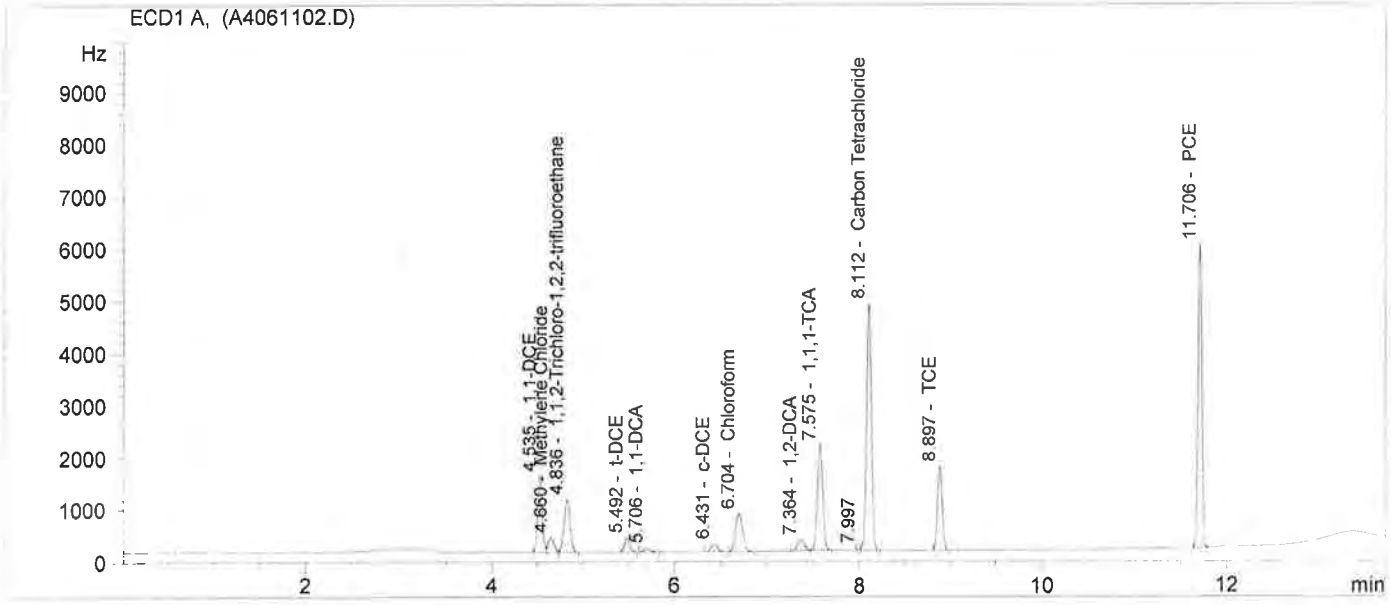
U = Not detected above the specified reporting limit.
J = Estimated value.
NA = Compound not present.
* = Percent Recovery outside QC Limits

Data File: C:\HPCHEM\1\DATA\A4061102.D

Injection Date : 6/11/2014 10:04:12 AM 6/11/2014 10:04:12 AM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 11:35:02

Sample Info :
Lab ID : vstd 50 AK
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.535	4.537	BV	5333.7	491.02	1,1-DCE
4.660	4.660	VV	1242.4	510.75	Methylene Chloride
4.836	4.838	VB	4523.5	48.70	1,1,2-Trichloro-1,2,2-trifluo
5.492	5.495	BB	1014.7	512.24	t-DCE
5.706	5.708	BP	310.5	508.91	1,1-DCA
6.431	6.435	BB	692.7	529.15	c-DCE
6.704	6.709	BB	3966.3	49.88	Chloroform
7.364	7.370	PV	1120.9	505.34	1,2-DCA
7.575	7.581	VB	8311.8	48.79	1,1,1-TCA
8.112	8.120	FM	17469.8	47.58	Carbon Tetrachloride
8.897	8.903	BB	5777.7	49.00	TCE
11.706	11.714	BB S	17355.6	49.05	PCE

All pass
MJS 6/11/14

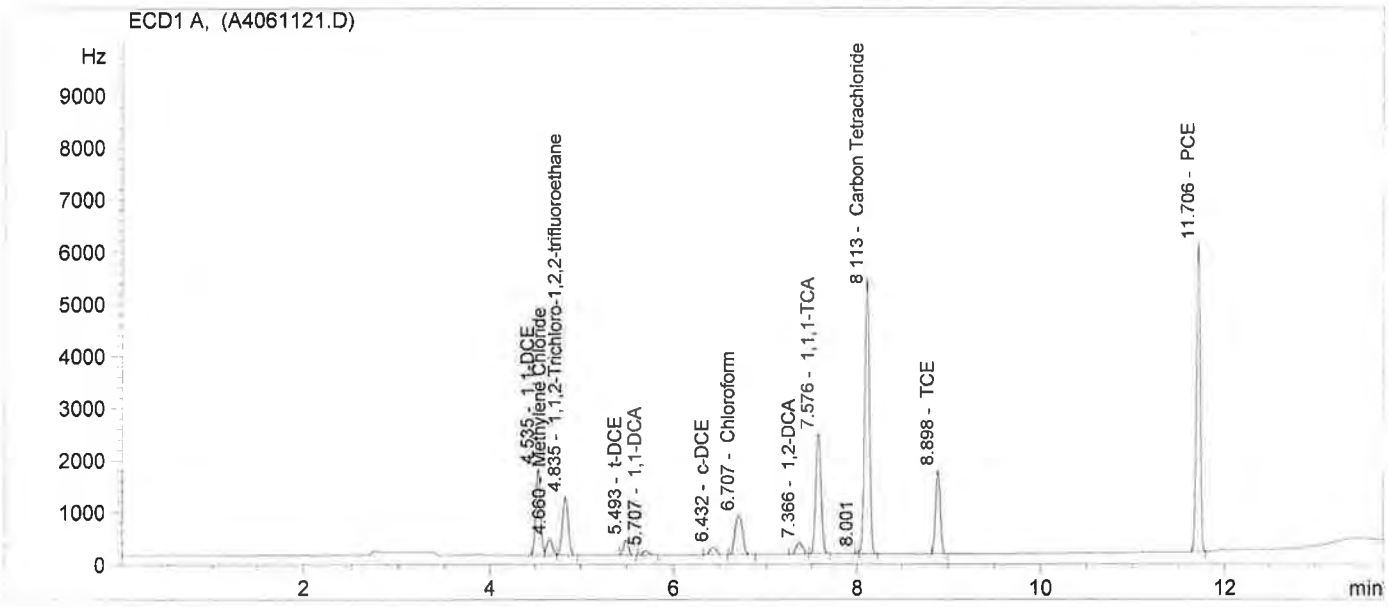
Data File: C:\HPCHEM\1\DATA\A4061121.D

Injection Date : 6/11/2014 6:05:39 PM 6/11/2014 6:05:39 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.13 10:28:37

Sample Info :
Lab ID : vstd 50
Sample Amount : 0.0

AJ AL mjs 8/13/14



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.535	4.537	BV	5899.5	545.08	1,1-DCE
4.660	4.660	VV	1321.8	544.59	Methylene Chloride
4.835	4.838	VP	4923.9	53.14	1,1,2-Trichloro-1,2,2-trifluo
5.493	5.495	BP	1055.3	533.56	t-DCE
5.707	5.708	BP	321.9	528.72	1,1-DCA
6.432	6.435	BP	692.6	529.12	c-DCE
6.707	6.709	BP	4096.3	51.57	Chloroform
7.366	7.370	PP	1113.2	501.75	1,2-DCA
7.576	7.581	VB	9252.5	54.45	1,1,1-TCA
8.113	8.120	FM	19257.0	52.52	Carbon Tetrachloride
8.898	8.903	BB	5637.8	47.78	TCE
11.706	11.714	BB S	17460.7	49.35	PCE

Ok mjs

Data File: C:\HPCHEM\1\DATA\A4061301.D

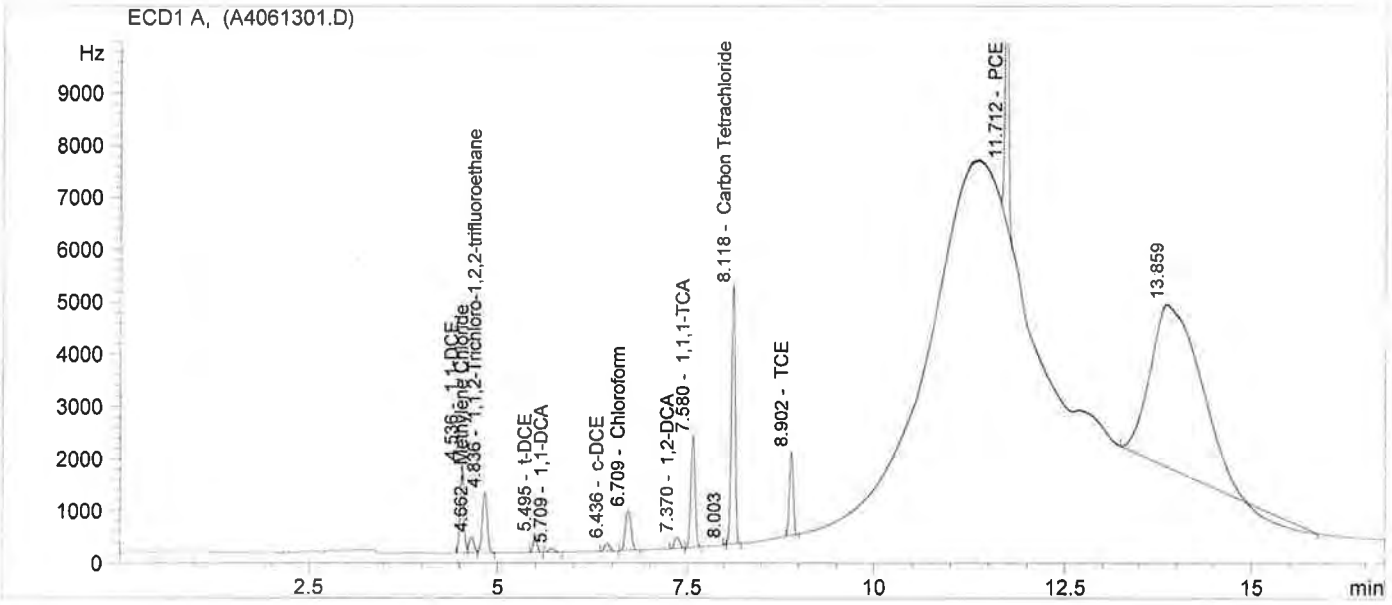
==========

Injection Date : 6/13/2014 11:58:47 AM 6/13/2014 11:58:47 AM
Acq. Method : AC11014L.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.18 15:15:55

Sample Info :
Lab ID : vstd 50 AM
Sample Amount : 0.0

==========



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.536	4.537	BV	6016.1	556.25	1,1-DCE
4.662	4.660	VV	1339.7	552.24	Methylene Chloride
4.836	4.838	VP	5108.0	55.19	1,1,2-Trichloro-1,2,2-trifluo
5.495	5.495	BP	1107.3	560.90	t-DCE
5.709	5.708	BP	324.3	532.86	1,1-DCA ✓
6.436	6.435	PP	697.0	532.54	c-DCE
6.709	6.709	PP	4093.5	51.53	Chloroform
7.370	7.370	PP	1088.7	490.36	1,2-DCA
7.580	7.581	VB	8532.1	50.11	1,1,1-TCA
8.118	8.120	FM	17948.0	48.90	Carbon Tetrachloride
8.902	8.903	BP	5602.5	47.47	TCE
11.712	11.714	MM	17178.2	48.54	PCE

OK (despite interference at PCE)

mjs 6/18/14

Data File: C:\HPCHEM\1\DATA\A4061312.D

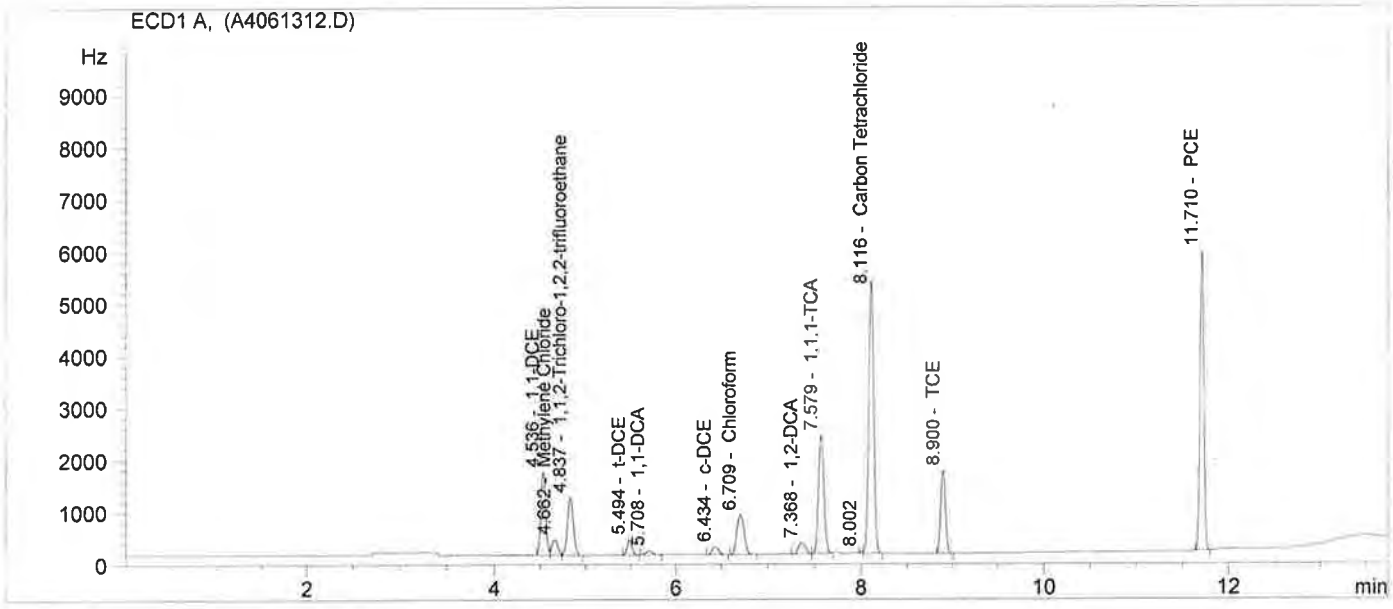
==========

Injection Date : 6/13/2014 4:37:04 PM 6/13/2014 4:37:04 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.18 15:21:42

Sample Info :
Lab ID : vstd 50
Sample Amount : 0.0 AN

==========



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.536	4.537	BV	5731.8	529.04	1,1-DCE
4.662	4.660	VV	1314.9	541.65	Methylene Chloride
4.837	4.838	VB	4893.5	52.80	1,1,2-Trichloro-1,2,2-trifluo
5.494	5.495	BB	1051.3	531.44	t-DCE
5.708	5.708	PP	322.2	529.26	1,1-DCA ✓
6.434	6.435	BB	699.8	534.74	c-DCE
6.709	6.709	BB	4113.8	51.79	Chloroform
7.368	7.370	PP	1128.9	509.08	1,2-DCA
7.579	7.581	VB	9214.5	54.22	1,1,1-TCA
8.116	8.120	FM	19280.5	52.58	Carbon Tetrachloride
8.900	8.903	BP	5653.9	47.92	TCE
11.710	11.714	BB S	17180.3	48.54	PCE

All pass
MJS 6/18/14

Stone Environmental Inc. Project Number: 14-080
Volatile Standard Analyses Summary

QC Batch: AK
Analysis Date: 06/11/2014
Spike Amount: 50

Analyte	VSTD Conc. (ug/L)	VSTD % Difference (Acceptable Limit <=20 %)
1,1,2-Trichloro-1,2,2-trifluoroet	48.7	2.6
1,1-Dichloroethene	491.02	1.8
trans-1,2-Dichloroethene	512.24	-2.4
cis-1,2-Dichloroethene	529.15	-5.8
Chloroform	49.88	.2
1,1,1-Trichloroethane	48.79	2.4
Carbon Tetrachloride	47.58	4.8
Trichloroethene	49	2.0
Tetrachloroethene	49.05	1.9

U = Not detected above the specified reporting limit.
J = Estimated value.
* = Outside acceptable limit

Stone Environmental Inc. Project Number: 14-080
Volatile Standard Analyses Summary

QC Batch: AL
Analysis Date: 06/11/2014
Spike Amount: 50

Analyte	VSTD Conc. (ug/L)	VSTD % Difference (Acceptable Limit <=20 %)
1,1,2-Trichloro-1,2,2-trifluoroet	53.14	-6.3
1,1-Dichloroethene	545.08	-9.0
trans-1,2-Dichloroethene	533.56	-6.7
cis-1,2-Dichloroethene	529.12	-5.8
Chloroform	51.57	-3.1
1,1,1-Trichloroethane	54.45	-8.9
Carbon Tetrachloride	52.52	-5.0
Trichloroethene	47.78	4.4
Tetrachloroethene	49.35	1.3

U = Not detected above the specified reporting limit.
J = Estimated value.
* = Outside acceptable limit

Stone Environmental Inc. Project Number: 14-080
Volatile Standard Analyses Summary

QC Batch: AM
Analysis Date: 06/13/2014
Spike Amount: 50

Analyte	VSTD Conc. (ug/L)	VSTD % Difference (Acceptable Limit <=20 %)
1,1,2-Trichloro-1,2,2-trifluoroet	55.19	-10.4
1,1-Dichloroethene	556.25	-11.3
trans-1,2-Dichloroethene	560.9	-12.2
cis-1,2-Dichloroethene	532.54	-6.5
Chloroform	51.53	-3.1
1,1,1-Trichloroethane	50.11	-.2
Carbon Tetrachloride	48.9	2.2
Trichloroethene	47.47	5.1
Tetrachloroethene	48.54	2.9

U = Not detected above the specified reporting limit.
J = Estimated value.
* = Outside acceptable limit

Stone Environmental Inc. Project Number: 14-080
Volatile Standard Analyses Summary

QC Batch: AN
Analysis Date: 06/13/2014
Spike Amount: 50

Analyte	VSTD Conc. (ug/L)	VSTD % Difference (Acceptable Limit <=20 %)
1,1,2-Trichloro-1,2,2-trifluoroet	52.8	-5.6
1,1-Dichloroethene	529.04	-5.8
trans-1,2-Dichloroethene	531.44	-6.3
cis-1,2-Dichloroethene	534.74	-6.9
Chloroform	51.79	-3.6
1,1,1-Trichloroethane	54.22	-8.4
Carbon Tetrachloride	52.58	-5.2
Trichloroethene	47.92	4.2
Tetrachloroethene	48.54	2.9

U = Not detected above the specified reporting limit.
J = Estimated value.
* = Outside acceptable limit

RAW QC DATA

Laboratory Volatile Blanks (VBLK)

Laboratory Control Samples (LCS)

Prep Blanks (PBLK)

Prep Laboratory Control Samples (PLCS)

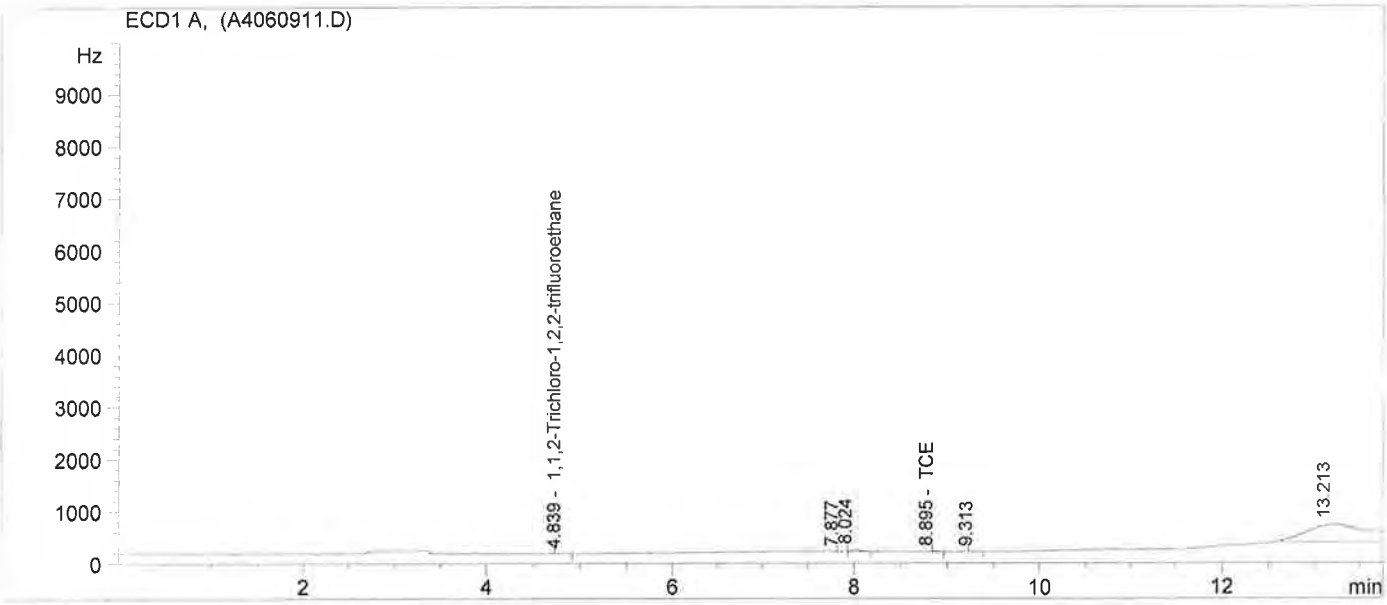
Data File: C:\HPCHEM\1\DATA\A4060911.D

Injection Date : 6/10/2014 1:21:05 PM 6/10/2014 1:21:05 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:01:30

Report Created : 2014.06.10 15:02:55

Sample Info :
Lab ID : vblk (syr)
Sample Amount : 0.0

AI



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
4.839	4.838	MM	15.7	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.895	8.903	MM	10.5	0.00	TCE
0.000	11.714		0.0	0.00	PCE

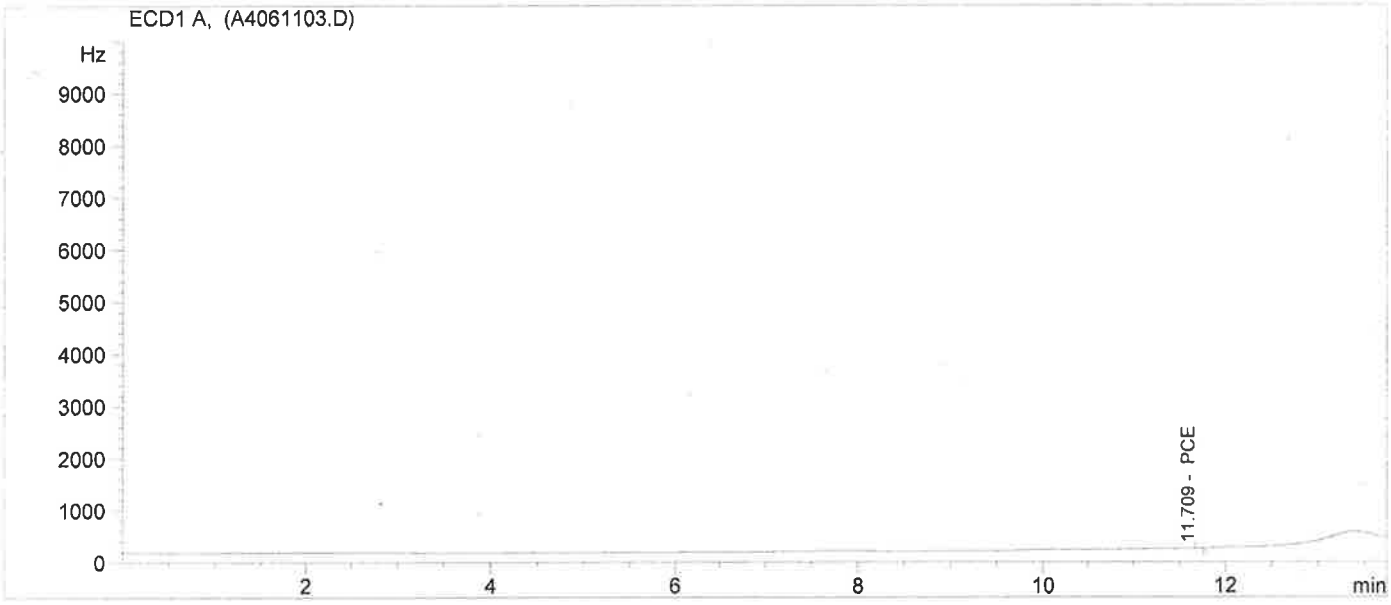
RK mjp 6/11/14

Data File: C:\HPCHEM\1\DATA\A4061103.D

Injection Date : 6/11/2014 10:28:59 AM 6/11/2014 10:28:59 AM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 11:36:01

Sample Info :
Lab ID : vblk AK
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
0.000	4.838		0.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
0.000	8.903		0.0	0.00	TCE
11.709	11.714	MM	13.8	0.00	PCE

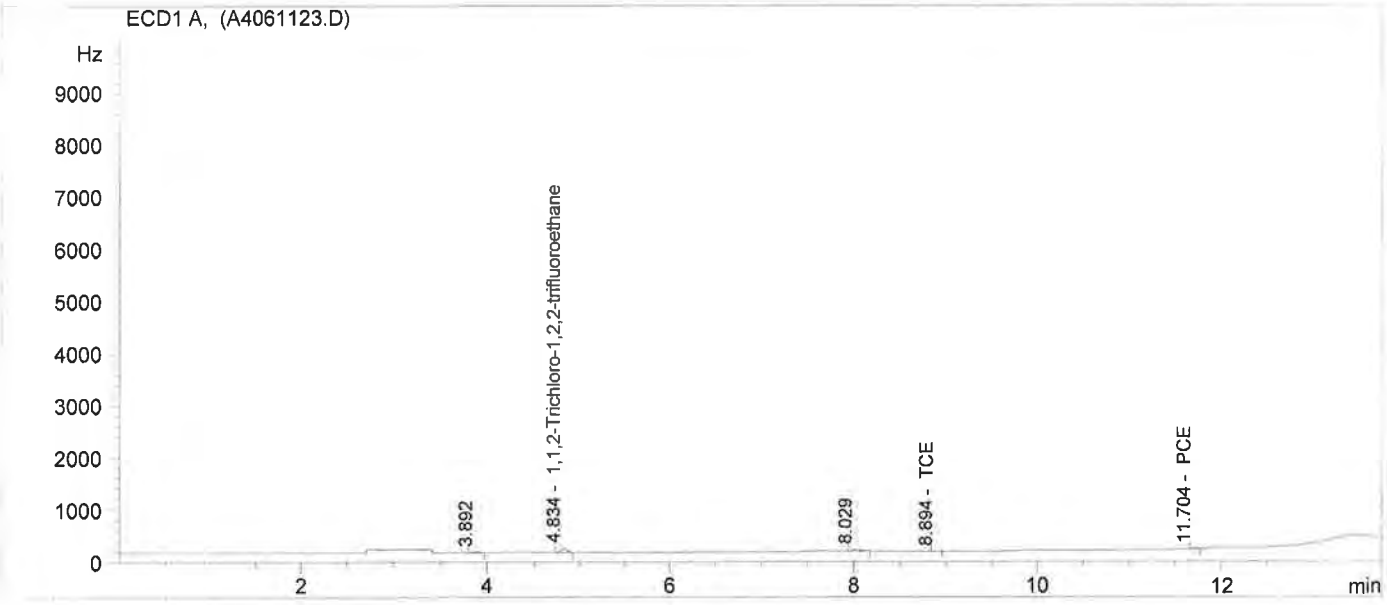
MJS 6/11/14 OK

Data File: C:\HPCHEM\1\DATA\A4061123.D

Injection Date : 6/11/2014 6:54:30 PM 6/11/2014 6:54:30 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.13 10:30:13

Sample Info :
Lab ID : vblk
Sample Amount : 0.0 ~~AJ~~ AL mjs 6/13/14



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
4.834	4.838	MM	379.1	3.15	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.894	8.903	MM	12.7	0.00	TCE
11.704	11.714	MM	75.6	0.00	PCE

mjs 6/13/14

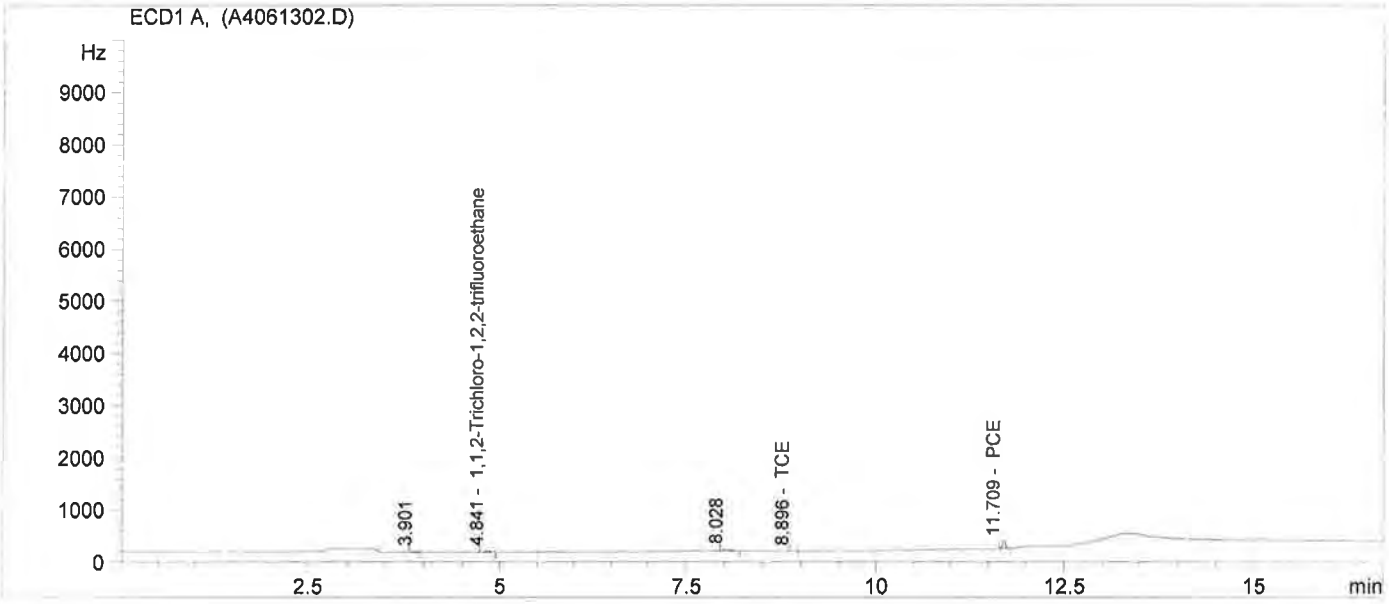
no detections in samples
no qual needed.

Data File: C:\HPCHEM\1\DATA\A4061302.D

Injection Date : 6/13/2014 12:26:19 PM 6/13/2014 12:26:19 PM
Acq. Method : AC11014L.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.18 15:16:24

Sample Info :
Lab ID : vblk AM
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
4.841	4.838	MM	67.2	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.896	8.903	MM	11.3	0.00	TCE
11.709	11.714	PP	416.1	0.79	PCE

PCE in BLK > ½ RL
& detections in samples
mjs 6/18/14

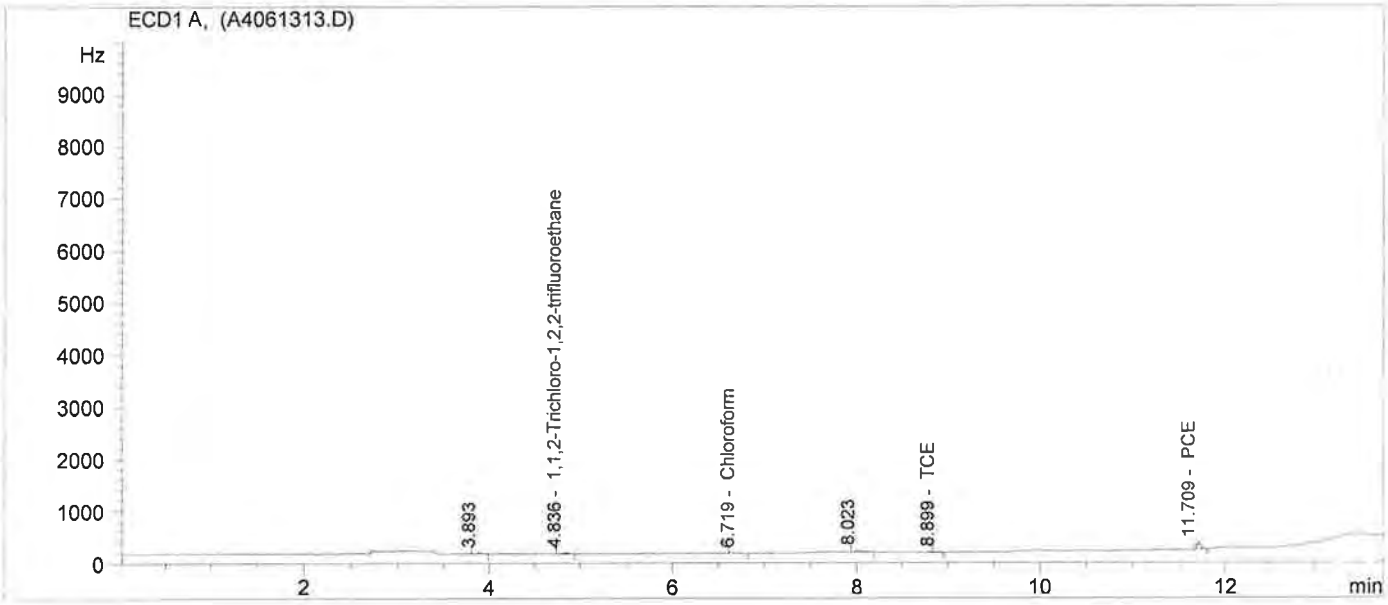
Data File: C:\HPCHEM\1\DATA\A4061313.D

Injection Date : 6/13/2014 5:01:31 PM 6/13/2014 5:01:31 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.18 15:21:21

Sample Info :
Lab ID : vblk
Sample Amount : 0.0

AN



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
4.836	4.838	MM	65.3	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
6.719	6.709	MM	11.7	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.899	8.903	MM	12.4	0.00	TCE
11.709	11.714	PP	386.7	0.70	PCE

✓

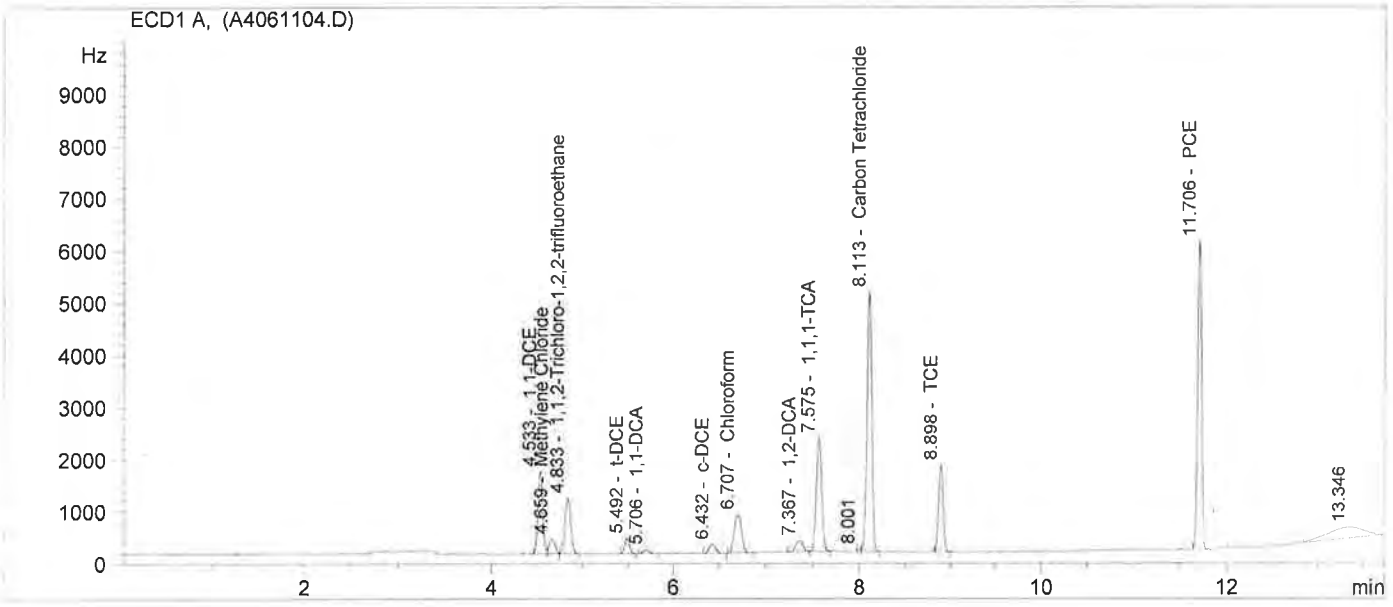
PCE > 1/2 RL
& any detections in Sample.
MJS 6/18/14

Data File: C:\HPCHEM\1\DATA\A4061104.D

Injection Date : 6/11/2014 11:10:51 AM 6/11/2014 11:10:51 AM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 11:36:33

Sample Info : LCS HE-719114
Lab ID : ~~10V~~ 50 AK
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.533	4.537	BV	5721.7	528.08	1,1-DCE
4.659	4.660	VV	1276.9	525.47	Methylene Chloride
4.833	4.838	VB	4749.0	51.20	1,1,2-Trichloro-1,2,2-trifluo
5.492	5.495	BB	1051.7	531.64	t-DCE
5.706	5.708	BP	321.6	528.13	1,1-DCA
6.432	6.435	BP	757.3	580.30	c-DCE
6.707	6.709	BP	3964.1	49.86	Chloroform
7.367	7.370	BV	1132.6	510.82	1,2-DCA
7.575	7.581	VB	8828.8	51.90	1,1,1-TCA
8.113	8.120	FM	18108.0	49.34	Carbon Tetrachloride
8.898	8.903	BB	5841.3	49.55	TCE
11.706	11.714	BB S	17267.0	48.79	PCE

✓

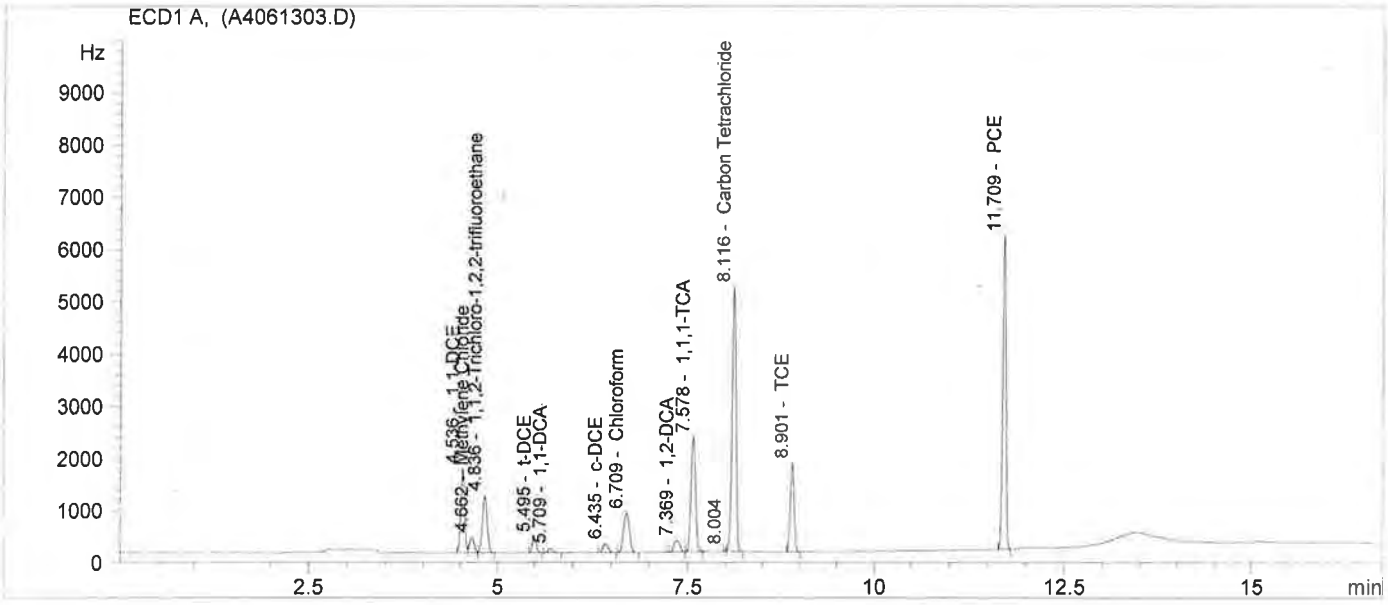
OK
MJB 6/11/14

Data File: C:\HPCHEM\1\DATA\A4061303.D

Injection Date : 6/13/2014 12:53:56 PM 6/13/2014 12:53:56 PM
Acq. Method : AC11014L.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.18 15:16:42

Sample Info :
Lab ID : lcs 50 AM
Sample Amount : 0.0



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.536	4.537	BV	5836.7	539.08	1,1-DCE
4.662	4.660	VV	1312.7	540.71	Methylene Chloride
4.836	4.838	VB	4864.1	52.48	1,1,2-Trichloro-1,2,2-trifluo
5.495	5.495	BP	1093.1	553.40	t-DCE
5.709	5.708	BP	334.1	549.86	1,1-DCA
6.435	6.435	BB	802.7	616.42	c-DCE
6.709	6.709	BB	4114.6	51.80	Chloroform
7.369	7.370	PP	1194.9	539.91	1,2-DCA
7.578	7.581	VB	9011.7	53.00	1,1,1-TCA
8.116	8.120	FM	18569.3	50.62	Carbon Tetrachloride
8.901	8.903	BB	6000.1	50.94	TCE
11.709	11.714	BB S	17758.1	50.20	PCE

ok ALL PASS
MJS 6/18/14

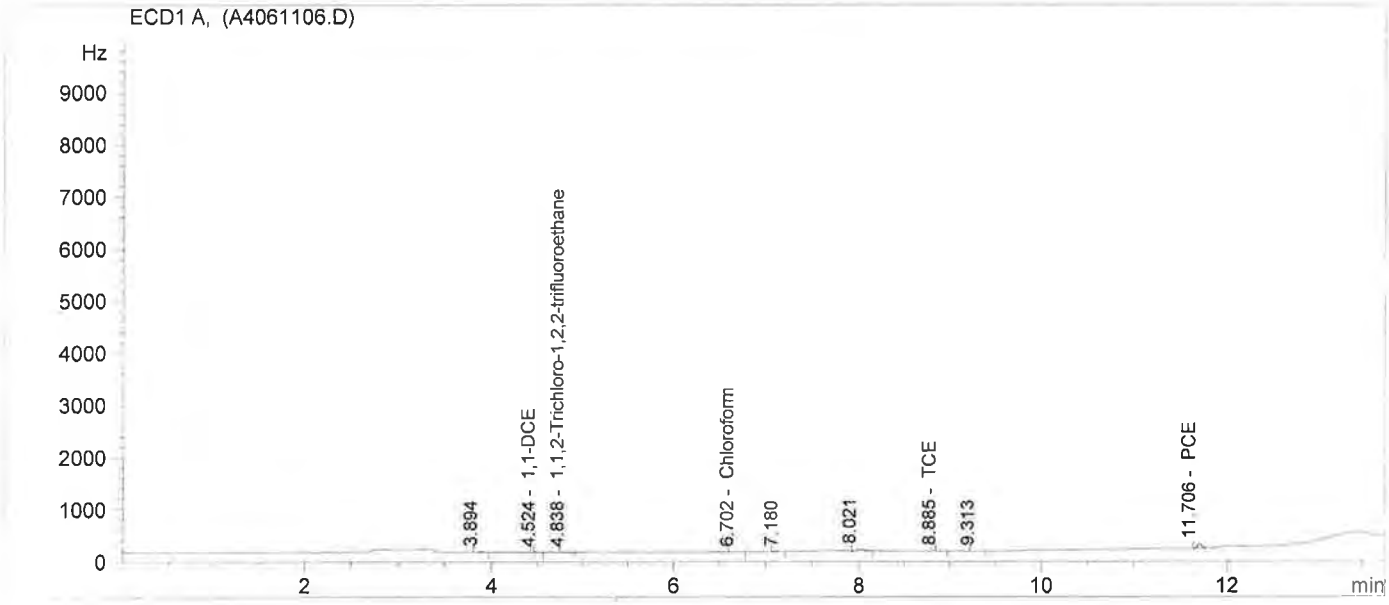
Data File: C:\HPCHEM\1\DATA\A4061106.D

Injection Date : 6/11/2014 11:59:47 AM 6/11/2014 11:59:47 AM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 14:31:02

Sample Info :
Lab ID : PBLK-A1-061014
Sample Amount : 0.0

In LIMS as VBLK A1



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.524	4.537	MM	3.3	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
4.838	4.838	MM	14.0	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
6.702	6.709	MM	7.9	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.885	8.903	MM	11.3	0.00	TCE
11.706	11.714	MM	258.0	0.34	PCE

>MDL, <1/2 RL - ok

B detections in samples - ok

mjs 6/11/14

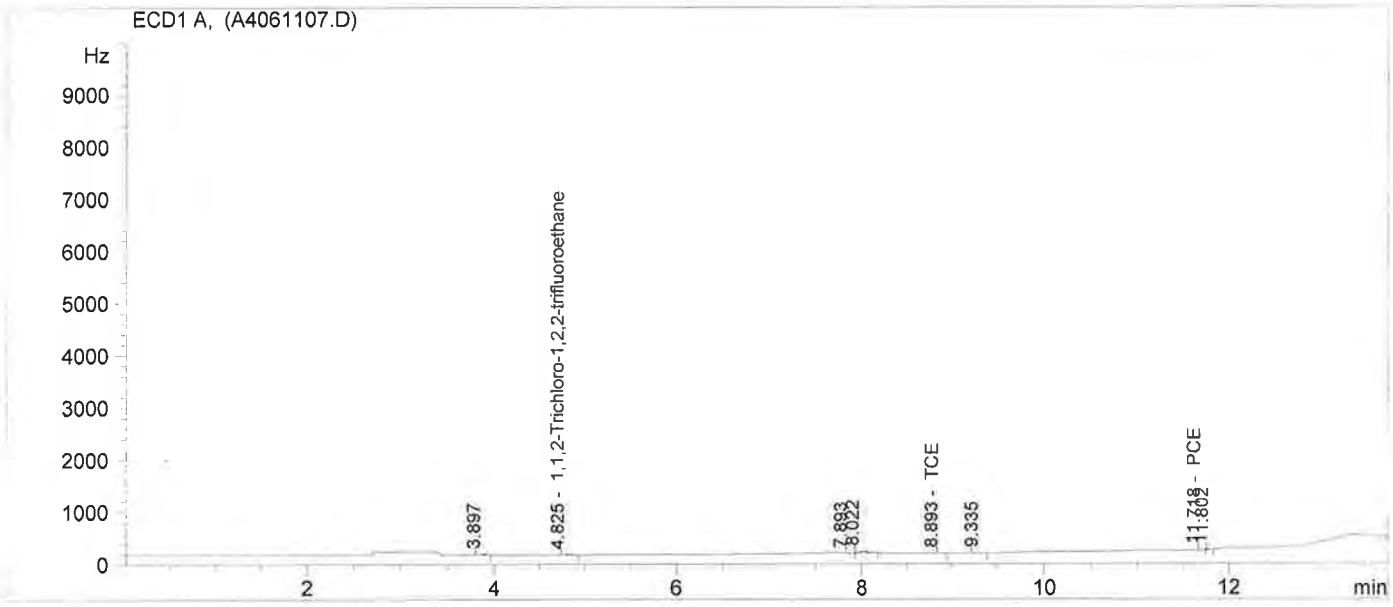
Data File: C:\HPCHEM\1\DATA\A4061107.D

Injection Date : 6/11/2014 12:24:18 PM 6/11/2014 12:24:18 PM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 14:34:30

Sample Info :
Lab ID : PBLK-B1-061014
Sample Amount : 0.0

IN LIMS as VBLK B1



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
0.000	4.537		0.0	0.00	1,1-DCE
0.000	4.660		0.0	0.00	Methylene Chloride
4.825	4.838	MM	19.7	0.00	1,1,2-Trichloro-1,2,2-trifluo
0.000	5.495		0.0	0.00	t-DCE
0.000	5.708		0.0	0.00	1,1-DCA
0.000	6.435		0.0	0.00	c-DCE
0.000	6.709		0.0	0.00	Chloroform
0.000	7.370		0.0	0.00	1,2-DCA
0.000	7.581		0.0	0.00	1,1,1-TCA
0.000	8.120		0.0	0.00	Carbon Tetrachloride
8.893	8.903	MM	8.8	0.00	TCE
11.718	11.714	MM	9.9	0.00	PCE

ok mp 6/11/14

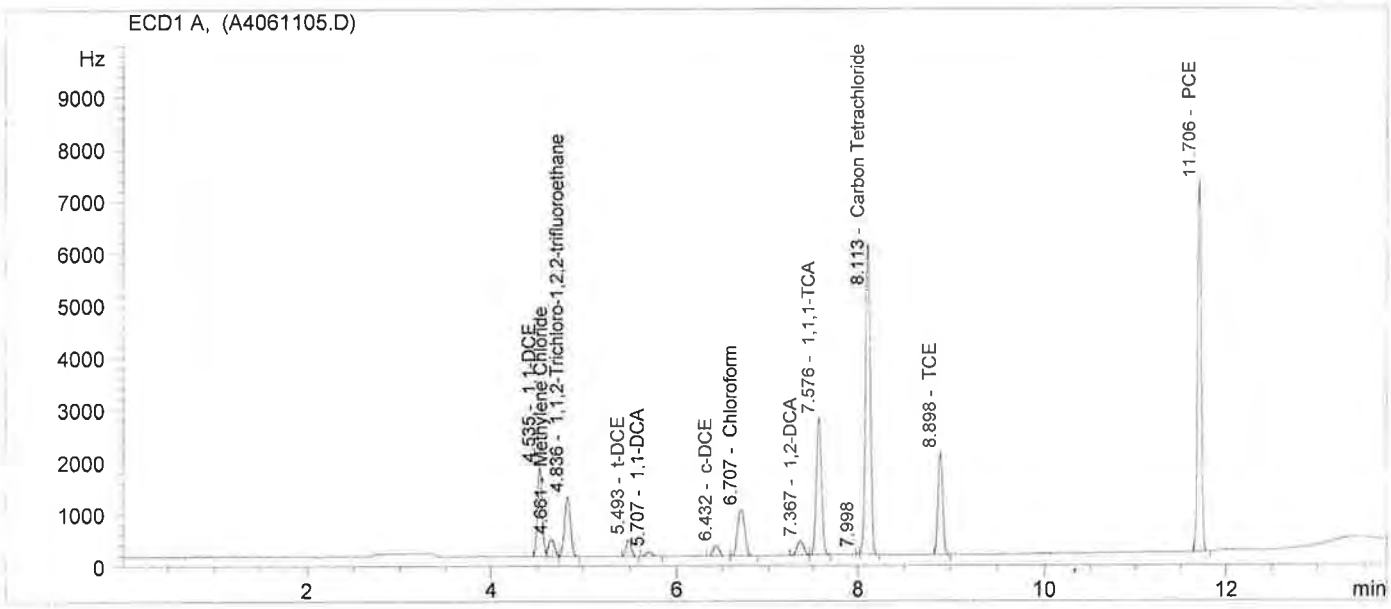
Data File: C:\HPCHEM\1\DATA\A4061105.D

Injection Date : 6/11/2014 11:35:20 AM 6/11/2014 11:35:20 AM
Acq. Method : AC11014.M
Quant Method : C:\HPCHEM\1\METHODS\QA40609.M
Last Changed : 2014.06.10 15:24:47

Report Created : 2014.06.11 11:53:41

Sample Info :
Lab ID : PLCS-A12-061014
Sample Amount : 0.0

In LIMS as LCS A1



Meas.	Exp. R	Peak T	Area	Amount	Compound Name
4.535	4.537	BV	6148.2	568.89	1,1-DCE
4.661	4.660	VV	1475.1	610.16	Methylene Chloride
4.836	4.838	VP	5070.0	54.76	1,1,2-Trichloro-1,2,2-trifluo
5.493	5.495	BB	1184.9	601.76	t-DCE
5.707	5.708	BP	377.8	625.91	1,1-DCA
6.432	6.435	BB	902.9	696.44	c-DCE — high
6.707	6.709	BP	4775.0	60.38	Chloroform
7.367	7.370	PV	1378.9	626.16	1,2-DCA
7.576	7.581	VB	10565.0	62.37	1,1,1-TCA
8.113	8.120	FM	21701.3	59.28	Carbon Tetrachloride
8.898	8.903	BB	6905.4	58.85	TCE
11.706	11.714	BB S	20844.9	59.07	PCE

MISCELLANEOUS

Microwave Extraction Logs

Instrument Run Logs

GC/MS Laboratory QA/QC Batch Checklists

Email Correspondence

STONE ENVIRONMENTAL INC

ROCK CORE LABORATORY MICROWAVE LOG

Project: 14-080 Geosyntec OR

Extraction Chemist(s): MJB

Date: 6/10/14

Time Started: 1030

Vessel Batch: A

Sample ID	Microwave Vessel ID	Pre-Microwave Weight (sample + teflon vessel and lid) (g)	Post-Microwave Weight (sample + teflon vessel and lid) (g)
VESBLK A1	1	242.39	242.40
CU1-B1-16.00-VOC	2	191.49	191.31
26.30	3	195.15	195.13
29.80	4	197.87	197.83
38.30	5	202.02	201.98
CU1-B2-20.80-VOC	6	194.81	194.80
23.00	7	195.46	195.45
27.50	8	198.29	198.27
34.60	9	197.05	196.92
CU1-B3-16.50-VOC	10	194.98	194.93
19.90	11	197.07	196.71
* PLCS-A12-10June14	12	174.89	174.86

* Spiked 20 mL of MeOH w/ 50 µL of Rock Ind (lot:06/09/2014-a2)

STONE ENVIRONMENTAL INC

ROCK CORE LABORATORY MICROWAVE LOG

Project: 14-080 Geosyntec OR

Extraction Chemist(s): MJS

Date: 10 June 2014

Time Started: 1340

Vessel Batch: B

Sample ID	Microwave Vessel ID	Pre-Microwave Weight (sample + teflon vessel and lid) (g)	Post-Microwave Weight (sample + teflon vessel and lid) (g)
VESBLK B1	1	241.67	255.40 → Top piece stuck on vessel, will remove later and weigh top piece
CU1-B1-18.80-Voc	2	191.84	191.67
CU1-B2-14.60-Voc	3	205.30	205.25
CU1-B2-17.20-Voc	4	200.92	200.72
* CU1-B3-28.00-Voc	5	192.72	192.65
* CU1-B3-33.10-Voc	6	200.38	200.15
* CU1-B3-35.00-Voc	7	202.33	201.73
* CU1-B3-36.60-Voc	8	199.74	199.54
NOT USED	9	—	
↓	10	—	
	11	—	
	12	—	

* Rinsed with 10 ml MeOH instead of 5ml for a final volume of 20ml (These Samples were preserved in the field w/ 10ml MeOH instead of 15 ml MeOH like the other samples)

GC RUN LOG SHEET

System A HP-6 — 3 run no. 6 @ end

Project ID: 14-080 Geosyntec OR
Project Location: Barre Shop VT
Start Date: 6/9/14

AS method: AC11014 + AC11014L
Quant Method(s): QA40609
Analyst: MJG

Sample ID	Lab ID	File ID	Dilution Factor	Comments
IBLK		A4060901		
VBLK		02		
vstd 1	QA40609	03		
2		04		AS hung up after this run. The rest of the runs happened on 6/10/14. restarted
5		05		interference in baseline near PCE - area ok
20		06		
50		07		
100		08		
200		09		
500		10		
vblk (syr)	AI	11		ok
ICV 50	AI	12		Reprepped on 6/10/14 - ok (all pass)
~~IBLK~~ vstd 50	AJ	A4061001	used method AC11014L for this run	
vstd 50 w/ freon		02		added trichlorofluoromethane for R+D
vblk	AJ	03		
LCS ~~ICV~~ 50	AJ	04		
PLCS-A12-061014		05	Rerun	After this run, AS hung up & no more samples analyzed. Rerun
~~PBLK-A1-061014~~		~~06~~		in morning using same sample
PBLK-B1-061014		07		vials (not pierced.) Note:
B1-16.00		08		opening CCV from 6/11 was
26.30		09		the one prepped for the 6/10
29.80		10		closer. Passed, so confident
38.30		11		in using sample vials prepped
B2-20.80		12		end of day on 6/10.
23.00		13		
27.50		14		
34.60		15		
B3-16.50		16		
19.90		17		
28.00		18		
36.60		19		
VStd 50		20		
VBLK		21		

Margin notes: injected 6/9; injected 6/10; 6/10/14; Did not remake stds because septa were not pierced.; to check for elution issues; samples not analyzed AS failure

Signed: mjg

Dated: 6/11/14

STONE ENVIRONMENTAL IN

C:\Forms\Analytical Forms\Forms HP-6\HP-6 GC Run Log.xls

Page 5

GC RUN LOG SHEET

mjs 6/11/14

System ~~A~~ B
HP-6

Project ID: 14-080 Geosyntec OR
Project Location: Barrett Shop
Start Date: 6/11/14

AC1104 + AC1104L
Quant Method(s): QA40609
Analyst: mjs

mjs 6/11/14

Sample ID	Lab ID	File ID	Dilution Factor	Comments
1BLK	~~AK~~	A4061101		used method AC11014L
VStd 50	AK	02		
VBLK	~~AK~~	03		
LCS 50	~~AK~~	04		
PLCS-A12-061014		05		"LCSA1"
PBLK ~~PLCS~~-A1-061014		06	"VBLKA1"	PCE present >MDL but <1/2 RL; B detections in this Prep batch
PBLK-B1-061014		07		"VBLK B1"
B1-16.00		08		
26.30		09		
29.80		10		
38.30		11		
B2-20.80		12		
23.00		13		
27.50		14		
34.60		15		
B3-16.50		16		
19.90		17		
28.00		18		
36.60		19		
~~VStd 50~~		~~20~~		
~~VBLK~~		~~21~~		
B2-27.50-LD		20	Lab Dup to confirm that vials prepped on 6/10 are ok - OK	
VSTD 50	~~AJ~~ AL	21		OK
~~VBLK~~		~~22~~		
VSTD 50		22		OK
VBLK	~~AJ~~ AL	23		OK

mjs 6/11/14

mjs 6/11/14

Signed: [signature] Dated: 6/11/14

STONE ENVIRONMENTAL IN

GC RUN LOG SHEET

System A
HP-6

AC11014, AC11014L

Project ID: 14-080 GeosyntecOR
Project Location: Barre, VT
Start Date: 6/13/14

Quant Method(s): QA40609
Analyst: MJG

Sample ID	Lab ID	File ID	Dilution Factor	Comments
Vstd 50	AM	A4061301		
VBLK	AM	02		
LCS 50	AM mjr 6/18/14	03		
TB-01		04		
TB-02		05		
EB-01		06		
02		07		
03		08		
04		09		
05		10		
06		11		
VSTD 50	AN	12		
VBLK	AN	13		

Signed: MJGreenwald Dated: 6/13/14

STONE ENVIRONMENTAL IN

DAILY LABORATORY QA/QC CHECKLIST - ROCK LAB

STONE ENVIRONMENTAL INC

Date: 6/9/14
Project: 14-080 Geosyntec OR
Instrument: HP-6
System: A

QC Runs	Frequency	Tolerance	Run # (File ID)	QC Batch ID	Pass/Fail
Initial Calibration:	Beginning of Program and as needed QA40609	Correlation ≥ 0.995	A4060903 -10	AI	Pass
CCV:	Once at beginning of day and then one every 20 samples	%D ± 20%			
Method Blank:	1 per day and after high concentration samples	< 1/2 Reporting Limit	A4060911	AI	Pass
~~LCS:~~ ICV mjs 6/11/14	Once at beginning of day and then one every 40 samples	70-130%	A4060912	AI	pass
Other (describe):					

Comments/Corrective Action:

A.S. hung up after run 04 (vstd 2). Just fixed the problem on morning of 6/10/14 and let this cal sequence finish with vials that were prepped evening of 6/9.

Note: Baseline interference w/ PCE peak in 5 ppb ICAL run. This hump shows up intermittently - need to increase temp at end of run, or at ~~least~~ hold time. Despite the interference, area of PCE in 5ppb point still in line with other levels, cal passes fine. Point was not rerun.

Prepared By: mjs-eenwald Date: 6/11/14

Reviewed By: [signature] Date: 6/11 7/9/14

DAILY LABORATORY QA/QC CHECKLIST - ROCK LAB

STONE ENVIRONMENTAL INC

Date: 6/11/14
Project: 14-080 Geosyntec OR
Instrument: HP-6
System: A

QC Runs	Frequency	Tolerance	Run # (File ID)	QC Batch ID	Pass/Fail
Initial Calibration:	Beginning of Program and as needed using QA40609	Correlation ≥ 0.995		mjs 8/12/14	
CCV:	Once at beginning of day and then one every 20 samples	%D ± 20%	A4061102 21	AK ~~AJ~~ AL	Pass PASS
Method Blank:	1 per day and after high concentration samples	< 1/2 Reporting Limit	A4061103 23	AK ~~AJ~~ AL mjs 8/12/14	pass ~~pass~~ * mjs 6/13/14
LCS:	Once at beginning of day and then one every 40 samples	70-130%	A4061104	AK	pass
Other (describe):	LABDUP (B2-27.50) PLCS-A12-061014 PBLK-A1-061014 PBLK-B1-061014		A4061120 05 06 *'' 07		ok ~~OK~~ *' cis-1,2-DCE out of limits; Q if detects PCE present PASS

Comments/Corrective Action:

* - 1,1,2-trichloro-1,2,2-trifluoroethane present @ 3ppb. No positive detections in samples, no Qualification necessary

*' cis-1,2-DCE is present outside control limits (<30%) in PLCS. Q if detects.
*'' PCE present >MDL but <1/2 RL. B detects.

Prepared By: [signature] Date: 6/11/14
Reviewed By: [signature] Date: 7/9/14

DAILY LABORATORY QA/QC CHECKLIST - ROCK LAB

STONE ENVIRONMENTAL INC

Date: 6/13/14
Project: 14-080 Geosyntec OR
Instrument: HP-6
System: A

QC Runs	Frequency	Tolerance	Run # (File ID)	QC Batch ID	Pass/Fail
Initial Calibration:	Beginning of Program and as needed using QA40609	Correlation ≥ 0.995			
CCV:	Once at beginning of day and then one every 20 samples	%D ± 20%	A4061301 12	AM AN	Pass PASS
Method Blank:	1 per day and after high concentration samples	< 1/2 Reporting Limit	A4061302 13	AM* AN*	PCE >1/2 RL in Both B-detections in samples
LCS:	Once at beginning of day and then one every 40 samples	70-130%	A4061303	AM	Pass
Other (describe):					

Comments/Corrective Action:

* PCE present in both VBLKs of the day; B any detects since detection is greater than 1/2 the RL.

Prepared By: [signature] Date: 6/18/14

Reviewed By: [signature] Date: 7/9/14

Morgan Greenwald

From: Cindy Bartlett <CBartlett@Geosyntec.com>
Sent: Monday, June 09, 2014 1:03 PM
To: Morgan Greenwald; Will Waterstrat
Cc: Todd Megan; Barbara Lary
Subject: RE: Stone's GC/ECD Compound List with MDLs and RLs

Hi Morgan,
Yes the samples in yellow are selected for extraction and analysis.

And yes, please keep the remaining samples on hold pending review of prelim results from the first set.
Thanks for clarifying.
-Cindy

From: Morgan Greenwald [mailto:morgan@stone-env.com]
Sent: Monday, June 09, 2014 10:00 AM
To: Cindy Bartlett; Will Waterstrat
Cc: Todd Megan; Barbara Lary
Subject: RE: Stone's GC/ECD Compound List with MDLs and RLs

Hello Cindy. Just wanted to clarify, you'd like us to extract and analyze the samples highlighted in yellow, right? We'll get those going and should have preliminary results to you this week. Based on those results, you may want us to run some of the others? I will hold off on extracting anymore until we hear from you. The hold times are 28 days on either side of extraction.

Thanks!
Morgan

From: Cindy Bartlett [mailto:CBartlett@Geosyntec.com]
Sent: Monday, June 09, 2014 11:51 AM
To: Will Waterstrat; Morgan Greenwald
Cc: Todd Megan; Barbara Lary
Subject: RE: Stone's GC/ECD Compound List with MDLs and RLs

Hi Will, Morgan,
The initial list of core samples selected for extraction and VOC testing is attached (4 per boring). For potential follow up testing, we'll wait to hear back from Morgan about hold times/extraction hold times.

Please let us know if you have any questions.
Thanks,
Cindy

From: Will Waterstrat [mailto:wwaterstrat@stone-env.com]
Sent: Thursday, June 05, 2014 9:45 AM
To: Cindy Bartlett
Cc: Todd Megan; Morgan Greenwald
Subject: RE: Stone's GC/ECD Compound List with MDLs and RLs

Hi Cindy,

Glad to hear Todd did a good job for you, he always does! Interesting that the rock was poorly consolidated. I spoke with the geotechnical lab (Golder), and they still think they'll be able to run the "physical properties" tests for us, which allows us to estimate porewater concentrations. We'll have to see if they still think that once they receive the samples.
In the meantime, I've created a table for you that lists information about the VOC samples. See attached.
We have already received the VOC samples here in Vermont, so the lab will need to know soon which ones you want to proceed with for analysis. Morgan has indicated they would like to begin with the extractions on Monday (6/9).
So please take a look at the attached list and let us know how to proceed. If there is any other information you need in order to help you decide, don't hesitate to ask.
Thanks very much,
WILL

From: Cindy Bartlett [mailto:CBartlett@Geosyntec.com]
Sent: Thursday, June 05, 2014 12:00 PM
To: Morgan Greenwald
Cc: Will Waterstrat
Subject: RE: Stone's GC/ECD Compound List with MDLs and RLs

Hi Morgan,
I received your voice mail, sorry for taking so long to get back to you! Yes, the compound list is fine for the rock samples.

We are sending the soil samples to another lab b/c we wanted to use the EPA 5035 collection method and get the standard lower reporting limit for the site.

Next step will be to select which samples to analyze and which to hold, so we will be talking soon.

Todd did a great job in the field, thanks again for all your assistance pulling off the sampling.
Thanks,
-Cindy

From: Morgan Greenwald [mailto:morgan@stone-env.com]
Sent: Thursday, May 29, 2014 12:46 PM
To: Cindy Bartlett
Cc: Will Waterstrat
Subject: Stone's GC/ECD Compound List with MDLs and RLs

Hello Cindy. I have attached the compound list for our GC/ECD Method.
Please let me know if this list meets your needs. Also, would you want the same list for your 8260 soils? Or do you require a more comprehensive list for the soils?
I spoke with Mike regarding the soils and your need to see RLs at 50 ug/kg. He suggested that, depending on the compounds in your list, we could calibrate down to 1 ppb rather than 2ppb and could then provide RLs of 40 ug/kg rather than 80 ug/kg. Another idea is to run your soils on the GC/ECD rather than GC/MS, but it sounded like you need to use 8260 for the soils. Let me know.

Thanks,
Morgan

Morgan Greenwald
Laboratory Quality Assurance Manager
Direct / 802.229.2197
Mobile / 570.660.2227
E-Mail / morgan@stone-env.com
Stone Environmental, Inc.
535 Stone Cutters Way, Montpelier, Vermont 05602
Tel / 802.229.4541 Fax / 802.229.5417
Web Site / www.stone-env.com

Boring	SampleTopDepthbgs	SampleBottomDepthbgs	SampleType	SamplePosition	RockType	FractureType	Wetness	ClientSampleID
CU1-B1	16	16.1	MAT	NA	unconsolidated deposits	NA	Wet	CU1-B1-16.00-VOC
CU1-B1	18.8	18.9	MAT	NA	unconsolidated deposits	NA	Wet	CU1-B1-18.80-VOC
CU1-B1	20.7	20.8	FS	NA	Sandstone	NA	Wet	CU1-B1-20.70-VOC
CU1-B1	24	24.1	FS	NA	Sandstone	NA	Wet	CU1-B1-24.00-VOC
CU1-B1	26.3	26.4	MAT	NA	unconsolidated deposits	NA	Wet	CU1-B1-26.30-VOC
CU1-B1	29.8	29.9	FS	BF	Sandstone	HF	Wet	CU1-B1-29.80-VOC
CU1-B1	34	34.1	FS	NA	Sandstone	NA	Moist	CU1-B1-34.00-VOC
CU1-B1	38.3	38.4	FS	NA	Sandstone	NA	Moist	CU1-B1-38.30-VOC
CU1-B2	14.6	14.7	FS	NA	bbasalt	NA	Wet	CU1-B2-14.60-VOC
CU1-B2	17.2	17.3	FS	NA	basalt	NA	Wet	CU1-B2-17.20-VOC
CU1-B2	19.4	19.5	FS	NA	sandstone	NA	Wet	CU1-B2-19.40-VOC
CU1-B2	20.8	20.9	MAT	NA	unconsolidated deposits	NA	Dry	CU1-B2-20.80-VOC
CU1-B2	23	23.1	FS	NA	unconsolidated deposits	NA	Wet	CU1-B2-23.00-VOC
CU1-B2	27.5	27.6	FS	NA	welded tuff	NA	Dry	CU1-B2-27.50-VOC
CU1-B2	29	29.1	FS	NA	Sandstone	NA	Dry	CU1-B2-29.00-VOC
CU1-B2	34.6	34.8	FS	NA	Sandstone	NA	Moist	CU1-B2-34.60-VOC
CU1-B3	16.5	16.6	MAT	NA	unconsolidated deposits	NA	Wet	CU1-B3-16.50-VOC
CU1-B3	19.9	20	FS	NA	Sandstone	NA	Wet	CU1-B3-19.90-VOC
CU1-B3	20.8	20.9	FS	NA	Sandstone	NA	Wet	CU1-B3-20.80-VOC
CU1-B3	24	24.1	FS	NA	basalt	NA	Wet	CU1-B3-24.00-VOC
CU1-B3	28	28.1	FS	NA	Sandstone	NA	Moist	CU1-B3-28.00-VOC
CU1-B3	33.1	33.2	FS	NA	tuff	NA	Dry	CU1-B3-33.10-VOC
CU1-B3	36.6	36.7	FS	NA	Sandstone	NA	Wet	CU1-B3-36.60-VOC
CU1-B3	35	35.1	FS	NA	Sandstone	NA	Dry	CU1-B3-35.00-VOC

Notes:

Sample Type

MAT = Matrix, FS = Feature Surface

Sample Position

BF = Below Feature

Fracture Type

HF = Horizontal Fracture

July 17, 2014

Project No. 1403861 (3000)

14-080

Will Waterstrat
Stone Environmental Inc.
535 Stone Cutters Way
Montpelier, Vermont
05602

GEOTECHNICAL LABORATORY TESTING

Dear Sir,

This letter reports the results of laboratory testing carried out on the samples received at our office in Mississauga. The results of the tests are summarized in the attached tables.

The testing services reported herein have been performed in accordance with the indicated recognized standard, unless noted otherwise. This report is for the sole use of the designated client. This report constitutes a testing service only and does not represent any results interpretation or opinion regarding specification compliance or material suitability.

We trust that the results are sufficient for your current requirements. If you have any questions, please do not hesitate to call us.

Regards

GOLDER ASSOCIATES LTD.

Marijana Manojlovic
Laboratory Manager

MM/lg

n:\admin\lab\2014\1403861 stone (102308)\phase 3000\letter.docx

Golder Associates Ltd.
2900 Argentia Road, Unit 15, Mississauga, Ontario, Canada L5N 7X9
Tel: +1 (905) 567 4444 Fax: +1 (905) 567 6561 www.golder.com
Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

TOTAL ORGANIC CARBON CONTENT (TOC)

PROJECT NUMBER	1403861 (3000)
PROJECT NAME	Stone / Testing / 14-080
DATE TESTED	July, 2014

Sample No.	Soil Passing 0.6mm (%)	Grain Size Distribution Passing Gravel (%)	Sand (%)	Silt (%)	Clay (%)	TOC <0.6mm (%)
CU1-B1-25.0-26.0-PHY	-	-	-	-	-	0.14
CU1-B2-20.0-21.0-PHY	-	-	-	-	-	0.10
CU1-B3-21.0-22.0-PHY	-	-	-	-	-	0.05
CU1-B3-21.0-22.0-PHY (Repeat)	-	-	-	-	-	<0.01
CU1-B3-36.0-37.0-PHY	-	-	-	-	-	<0.01
CU1-B3-36.0-37.0-PHY (Repeat)	-	-	-	-	-	0.02

Notes:

1. Samples dried at 110 degree centigrade prior to testing.
2. Test performed on minus 600 micron soil fraction, using the method of Walkley and Black (Walkley, 1946)

Checked By: 

DENSITY AND POROSITY DETERMINATIONS OF IRREGULAR SHAPE SAMPLES
ASTM D 4531-86 TEST METHOD B

Sample Number	CU1-B1-25.0-26.0-PHY (A)	CU1-B1-25.0-26.0-PHY (B)
Wet Mass of Rock in Air, g	164.06	989.84
Wet Mass of Rock + Wax in Air, g	173.61	1023.89
Wet Mass of Rock + Wax in Water, g	75.81	469.95
Weight of Wax, g	9.55	34.05
Displaced Volume, cm^3	97.80	553.94
Displaced Wax, cm^3	10.52	37.50
Volume of Rock, cm^3	87.28	516.44
Specific Gravity, measured	2.61	2.61
Volume of Solids, cm^3	47.87	288.84
Volume of Voids, cm^3	39.41	227.60
Porosity	0.45	0.44
Water Content, %	31.30	31.30
Unit Weight, kN/m^3	18.43	18.80
Dry Unit Weight, kN/m^3	14.04	14.32

Sample Number	CU1-B2-20.0-21.0-PHY (A)	CU1-B2-20.0-21.0-PHY (B)
Wet Mass of Rock in Air, g	44.24	38.08
Wet Mass of Rock + Wax in Air, g	48.07	40.83
Wet Mass of Rock + Wax in Water, g	20.23	18.53
Weight of Wax, g	3.83	2.75
Displaced Volume, cm^3	27.84	22.30
Displaced Wax, cm^3	4.22	3.03
Volume of Rock, cm^3	23.62	19.27
Specific Gravity, measured	2.59	2.59
Volume of Solids, cm^3	13.82	11.90
Volume of Voids, cm^3	9.80	7.38
Porosity	0.41	0.38
Water Content, %	23.60	23.60
Unit Weight, kN/m^3	18.37	19.38
Dry Unit Weight, kN/m^3	14.86	15.68

Project Number	1403861 (3000)	Tested By	Rui
Reference Number	14-080	Checked By	
Date Tested	7/3/2014		

DENSITY AND POROSITY DETERMINATIONS OF IRREGULAR SHAPE SAMPLES
ASTM D 4531-86 TEST METHOD B

Sample Number	CU1-B2-20.0-21.0-PHY (C)	CU1-B3-21.0-22.0-PHY (A)
Wet Mass of Rock in Air, g	35.90	79.69
Wet Mass of Rock + Wax in Air, g	37.82	86.70
Wet Mass of Rock + Wax in Water, g	17.01	33.06
Weight of Wax, g	1.92	7.01
Displaced Volume, cm^3	20.81	53.64
Displaced Wax, cm^3	2.11	7.72
Volume of Rock, cm^3	18.70	45.92
Specific Gravity, measured	2.59	2.48
Volume of Solids, cm^3	11.21	22.97
Volume of Voids, cm^3	7.48	22.95
Porosity	0.40	0.50
Water Content, %	23.60	39.90
Unit Weight, kN/m^3	18.83	17.02
Dry Unit Weight, kN/m^3	15.24	12.16

Sample Number	CU1-B3-21.0-22.0-PHY (B)	CU1-B3-21.0-22.0-PHY (C)
Wet Mass of Rock in Air, g	71.82	56.36
Wet Mass of Rock + Wax in Air, g	77.48	58.90
Wet Mass of Rock + Wax in Water, g	29.16	23.71
Weight of Wax, g	5.66	2.54
Displaced Volume, cm^3	48.32	35.19
Displaced Wax, cm^3	6.23	2.80
Volume of Rock, cm^3	42.09	32.39
Specific Gravity, measured	2.48	2.48
Volume of Solids, cm^3	20.70	16.24
Volume of Voids, cm^3	21.39	16.15
Porosity	0.51	0.50
Water Content, %	39.90	39.90
Unit Weight, kN/m^3	16.73	17.06
Dry Unit Weight, kN/m^3	11.96	12.20

Project Number	1403861 (3000)	Tested By	Rui
Reference Number	14-080	Checked By	
Date Tested	7/3/2014		

DENSITY AND POROSITY DETERMINATIONS OF IRREGULAR SHAPE SAMPLES
ASTM D 4531-86 TEST METHOD B

Sample Number	CU1-B3-36.0-37.0-PHY (A)	CU1-B3-36.0-37.0-PHY (B)
Wet Mass of Rock in Air, g	97.37	81.12
Wet Mass of Rock + Wax in Air, g	104.71	85.06
Wet Mass of Rock + Wax in Water, g	46.83	39.52
Weight of Wax, g	7.34	3.94
Displaced Volume, cm^3	57.88	45.54
Displaced Wax, cm^3	8.08	4.34
Volume of Rock, cm^3	49.80	41.20
Specific Gravity, measured	2.60	2.60
Volume of Solids, cm^3	29.91	24.92
Volume of Voids, cm^3	19.88	16.28
Porosity	0.40	0.40
Water Content, %	25.20	25.20
Unit Weight, kN/m^3	19.18	19.31
Dry Unit Weight, kN/m^3	15.32	15.42

Sample Number	CU1-B3-36.0-37.0-PHY (C)
Wet Mass of Rock in Air, g	32.43
Wet Mass of Rock + Wax in Air, g	34.98
Wet Mass of Rock + Wax in Water, g	16.39
Weight of Wax, g	2.55
Displaced Volume, cm^3	18.59
Displaced Wax, cm^3	2.81
Volume of Rock, cm^3	15.78
Specific Gravity, measured	2.60
Volume of Solids, cm^3	9.96
Volume of Voids, cm^3	5.82
Porosity	0.37
Water Content, %	25.20
Unit Weight, kN/m^3	20.15
Dry Unit Weight, kN/m^3	16.10

Project Number	1403861 (3000)	Tested By	Rui
Reference Number	14-080	Checked By	
Date Tested	7/3/2014		

SPECIFIC GRAVITY TEST RESULTS

ASTM D 854-06 TEST METHOD A

PROJECT NUMBER	1403861 (3000)
PROJECT NAME	Stone / Testing / 14-037
DATE TESTED	July, 2014

Sample No.	Specific Gravity
CU1-B1-25.0-26.0-PHY	2.61
CU1-B2-20.0-21.0-PHY	2.59
CU1-B3-21.0-22.0-PHY	2.48
CU1-B3-36.0-37.0-PHY	2.60

Note: Test carried out on crushed rock particles <4.75mm using distilled water.

Checked By: MM

Golder Associates

SUMMARY OF WATER CONTENT DETERMINATIONS

ASTM D 2216-10

PROJECT NUMBER	1403861 (3000)
PROJECT NAME	Stone / Testing / 14-080
DATE TESTED	July, 2014

Sample No.	Water Content (%)	Atterberg Limits LL, PL, PI
CU1-B1-25.0-26.0-PHY	31.3%	
CU1-B2-20.0-21.0-PHY	23.6%	
CU1-B3-21.0-22.0-PHY	39.9%	
CU1-B3-36.0-37.0-PHY	25.2%	

Checked By: 

Golder Associates

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Barb Lary / Cindy Bartlett
GeoSyntec - Portland, OR
621 SW Morrison St., Suite 600
Portland, OR 97205

Report Summary

Wednesday June 11, 2014

Report Number: L702895
Samples Received: 06/05/14
Client Project: PNG0564S14

Description: Cascade

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Alan Harvill

T. Alan Harvill , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

Barb Lary / Cindy Bartlett
GeoSyntec - Portland, OR
621 SW Morrison St., Suite 600
Portland, OR 97205

June 11,2014

ESC Sample # : L702895-01

Site ID :

Project # : PNG0564S14

Date Received : June 05, 2014
Description : Cascade

Sample ID : CUI-B1/11-12 FT

Collected By : Barb Lary
Collection Date : 06/02/14 10:20

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	75.6		%	2540 G-2011	06/09/14	1
Volatile Organics						
Acetone	BDL	0.066	mg/kg	8260B	06/11/14	1
Acrylonitrile	BDL	0.013	mg/kg	8260B	06/11/14	1
Benzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
Bromobenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
Bromodichloromethane	BDL	0.0013	mg/kg	8260B	06/11/14	1
Bromoform	BDL	0.0013	mg/kg	8260B	06/11/14	1
Bromomethane	BDL	0.0066	mg/kg	8260B	06/11/14	1
n-Butylbenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
sec-Butylbenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
tert-Butylbenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
Carbon tetrachloride	BDL	0.0013	mg/kg	8260B	06/11/14	1
Chlorobenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
Chlorodibromomethane	BDL	0.0013	mg/kg	8260B	06/11/14	1
Chloroethane	BDL	0.0066	mg/kg	8260B	06/11/14	1
2-Chloroethyl vinyl ether	BDL	0.066	mg/kg	8260B	06/11/14	1
Chloroform	BDL	0.0066	mg/kg	8260B	06/11/14	1
Chloromethane	BDL	0.0033	mg/kg	8260B	06/11/14	1
2-Chlorotoluene	BDL	0.0013	mg/kg	8260B	06/11/14	1
4-Chlorotoluene	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,2-Dibromo-3-Chloropropane	BDL	0.0066	mg/kg	8260B	06/11/14	1
1,2-Dibromoethane	BDL	0.0013	mg/kg	8260B	06/11/14	1
Dibromomethane	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,2-Dichlorobenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,3-Dichlorobenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,4-Dichlorobenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
Dichlorodifluoromethane	BDL	0.0066	mg/kg	8260B	06/11/14	1
1,1-Dichloroethane	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,2-Dichloroethane	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,1-Dichloroethene	BDL	0.0013	mg/kg	8260B	06/11/14	1
cis-1,2-Dichloroethene	0.0045	0.0013	mg/kg	8260B	06/11/14	1
trans-1,2-Dichloroethene	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,2-Dichloropropane	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,1-Dichloropropene	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,3-Dichloropropane	BDL	0.0013	mg/kg	8260B	06/11/14	1
cis-1,3-Dichloropropene	BDL	0.0013	mg/kg	8260B	06/11/14	1
trans-1,3-Dichloropropene	BDL	0.0013	mg/kg	8260B	06/11/14	1
2,2-Dichloropropane	BDL	0.0013	mg/kg	8260B	06/11/14	1
Di-isopropyl ether	BDL	0.0013	mg/kg	8260B	06/11/14	1
Ethylbenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
Hexachloro-1,3-butadiene	BDL	0.0013	mg/kg	8260B	06/11/14	1
Isopropylbenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted

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REPORT OF ANALYSIS

Barb Lary / Cindy Bartlett
GeoSyntec - Portland, OR
621 SW Morrison St., Suite 600
Portland, OR 97205

June 11,2014

ESC Sample # : L702895-01

Site ID :

Project # : PNG0564S14

Date Received : June 05, 2014
Description : Cascade

Sample ID : CUI-B1/11-12 FT

Collected By : Barb Lary
Collection Date : 06/02/14 10:20

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
p-Isopropyltoluene	BDL	0.0013	mg/kg	8260B	06/11/14	1
2-Butanone (MEK)	BDL	0.013	mg/kg	8260B	06/11/14	1
Methylene Chloride	BDL	0.0066	mg/kg	8260B	06/11/14	1
4-Methyl-2-pentanone (MIBK)	BDL	0.013	mg/kg	8260B	06/11/14	1
Methyl tert-butyl ether	BDL	0.0013	mg/kg	8260B	06/11/14	1
Naphthalene	BDL	0.0066	mg/kg	8260B	06/11/14	1
n-Propylbenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
Styrene	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,1,1,2-Tetrachloroethane	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,1,2,2-Tetrachloroethane	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,1,2-Trichlorotrifluoroethane	BDL	0.0013	mg/kg	8260B	06/11/14	1
Tetrachloroethene	BDL	0.0013	mg/kg	8260B	06/11/14	1
Toluene	BDL	0.0066	mg/kg	8260B	06/11/14	1
1,2,3-Trichlorobenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,2,4-Trichlorobenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,1,1-Trichloroethane	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,1,2-Trichloroethane	BDL	0.0013	mg/kg	8260B	06/11/14	1
Trichloroethene	0.012	0.0013	mg/kg	8260B	06/11/14	1
Trichlorofluoromethane	BDL	0.0066	mg/kg	8260B	06/11/14	1
1,2,3-Trichloropropane	BDL	0.0033	mg/kg	8260B	06/11/14	1
1,2,4-Trimethylbenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,2,3-Trimethylbenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
1,3,5-Trimethylbenzene	BDL	0.0013	mg/kg	8260B	06/11/14	1
Vinyl chloride	BDL	0.0013	mg/kg	8260B	06/11/14	1
Xylenes, Total	BDL	0.0040	mg/kg	8260B	06/11/14	1
Surrogate Recovery						
Toluene-d8	106.		% Rec.	8260B	06/11/14	1
Dibromofluoromethane	103.		% Rec.	8260B	06/11/14	1
a,a,a-Trifluorotoluene	99.0		% Rec.	8260B	06/11/14	1
4-Bromofluorobenzene	102.		% Rec.	8260B	06/11/14	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

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REPORT OF ANALYSIS

Barb Lary / Cindy Bartlett
GeoSyntec - Portland, OR
621 SW Morrison St., Suite 600
Portland, OR 97205

June 11,2014

ESC Sample # : L702895-02

Site ID :

Project # : PNG0564S14

Date Received : June 05, 2014
Description : Cascade

Sample ID : CUI-B2/13-14 FT

Collected By : Barb Lary
Collection Date : 06/02/14 09:40

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	63.5		%	2540 G-2011	06/09/14	1
Volatile Organics						
Acetone	BDL	0.079	mg/kg	8260B	06/06/14	1
Acrylonitrile	BDL	0.016	mg/kg	8260B	06/06/14	1
Benzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
Bromobenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
Bromodichloromethane	BDL	0.0016	mg/kg	8260B	06/06/14	1
Bromoform	BDL	0.0016	mg/kg	8260B	06/06/14	1
Bromomethane	BDL	0.0079	mg/kg	8260B	06/06/14	1
n-Butylbenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
sec-Butylbenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
tert-Butylbenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
Carbon tetrachloride	BDL	0.0016	mg/kg	8260B	06/06/14	1
Chlorobenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
Chlorodibromomethane	BDL	0.0016	mg/kg	8260B	06/06/14	1
Chloroethane	BDL	0.0079	mg/kg	8260B	06/06/14	1
2-Chloroethyl vinyl ether	BDL	0.079	mg/kg	8260B	06/06/14	1
Chloroform	BDL	0.0079	mg/kg	8260B	06/06/14	1
Chloromethane	BDL	0.0039	mg/kg	8260B	06/06/14	1
2-Chlorotoluene	BDL	0.0016	mg/kg	8260B	06/06/14	1
4-Chlorotoluene	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,2-Dibromo-3-Chloropropane	BDL	0.0079	mg/kg	8260B	06/06/14	1
1,2-Dibromoethane	BDL	0.0016	mg/kg	8260B	06/06/14	1
Dibromomethane	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,2-Dichlorobenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,3-Dichlorobenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,4-Dichlorobenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
Dichlorodifluoromethane	BDL	0.0079	mg/kg	8260B	06/06/14	1
1,1-Dichloroethane	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,2-Dichloroethane	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,1-Dichloroethene	BDL	0.0016	mg/kg	8260B	06/06/14	1
cis-1,2-Dichloroethene	BDL	0.0016	mg/kg	8260B	06/06/14	1
trans-1,2-Dichloroethene	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,2-Dichloropropane	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,1-Dichloropropene	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,3-Dichloropropane	BDL	0.0016	mg/kg	8260B	06/06/14	1
cis-1,3-Dichloropropene	BDL	0.0016	mg/kg	8260B	06/06/14	1
trans-1,3-Dichloropropene	BDL	0.0016	mg/kg	8260B	06/06/14	1
2,2-Dichloropropane	BDL	0.0016	mg/kg	8260B	06/06/14	1
Di-isopropyl ether	BDL	0.0016	mg/kg	8260B	06/06/14	1
Ethylbenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
Hexachloro-1,3-butadiene	BDL	0.0016	mg/kg	8260B	06/06/14	1
Isopropylbenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted

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REPORT OF ANALYSIS

Barb Lary / Cindy Bartlett
GeoSyntec - Portland, OR
621 SW Morrison St., Suite 600
Portland, OR 97205

June 11,2014

ESC Sample # : L702895-02

Site ID :

Project # : PNG0564S14

Date Received : June 05, 2014
Description : Cascade

Sample ID : CUI-B2/13-14 FT

Collected By : Barb Lary
Collection Date : 06/02/14 09:40

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
p-Isopropyltoluene	BDL	0.0016	mg/kg	8260B	06/06/14	1
2-Butanone (MEK)	BDL	0.016	mg/kg	8260B	06/06/14	1
Methylene Chloride	BDL	0.0079	mg/kg	8260B	06/06/14	1
4-Methyl-2-pentanone (MIBK)	BDL	0.016	mg/kg	8260B	06/06/14	1
Methyl tert-butyl ether	BDL	0.0016	mg/kg	8260B	06/06/14	1
Naphthalene	BDL	0.0079	mg/kg	8260B	06/06/14	1
n-Propylbenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
Styrene	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,1,1,2-Tetrachloroethane	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,1,2,2-Tetrachloroethane	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,1,2-Trichlorotrifluoroethane	BDL	0.0016	mg/kg	8260B	06/06/14	1
Tetrachloroethene	BDL	0.0016	mg/kg	8260B	06/06/14	1
Toluene	BDL	0.0079	mg/kg	8260B	06/06/14	1
1,2,3-Trichlorobenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,2,4-Trichlorobenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,1,1-Trichloroethane	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,1,2-Trichloroethane	BDL	0.0016	mg/kg	8260B	06/06/14	1
Trichloroethene	BDL	0.0016	mg/kg	8260B	06/06/14	1
Trichlorofluoromethane	BDL	0.0079	mg/kg	8260B	06/06/14	1
1,2,3-Trichloropropane	BDL	0.0039	mg/kg	8260B	06/06/14	1
1,2,4-Trimethylbenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,2,3-Trimethylbenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
1,3,5-Trimethylbenzene	BDL	0.0016	mg/kg	8260B	06/06/14	1
Vinyl chloride	BDL	0.0016	mg/kg	8260B	06/06/14	1
Xylenes, Total	BDL	0.0047	mg/kg	8260B	06/06/14	1
Surrogate Recovery						
Toluene-d8	104.		% Rec.	8260B	06/06/14	1
Dibromofluoromethane	115.		% Rec.	8260B	06/06/14	1
a,a,a-Trifluorotoluene	96.3		% Rec.	8260B	06/06/14	1
4-Bromofluorobenzene	96.5		% Rec.	8260B	06/06/14	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
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REPORT OF ANALYSIS

Barb Lary / Cindy Bartlett
GeoSyntec - Portland, OR
621 SW Morrison St., Suite 600
Portland, OR 97205

June 11,2014

ESC Sample # : L702895-03

Date Received : June 05, 2014
Description : Cascade

Site ID :

Sample ID : CUI-B3/8-9 FT

Project # : PNG0564S14

Collected By : Barb Lary
Collection Date : 06/02/14 16:00

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	66.6		%	2540 G-2011	06/09/14	1
Volatile Organics						
Acetone	BDL	0.075	mg/kg	8260B	06/11/14	1
Acrylonitrile	BDL	0.015	mg/kg	8260B	06/11/14	1
Benzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
Bromobenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
Bromodichloromethane	BDL	0.0015	mg/kg	8260B	06/11/14	1
Bromoform	BDL	0.0015	mg/kg	8260B	06/11/14	1
Bromomethane	BDL	0.0075	mg/kg	8260B	06/11/14	1
n-Butylbenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
sec-Butylbenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
tert-Butylbenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
Carbon tetrachloride	BDL	0.0015	mg/kg	8260B	06/11/14	1
Chlorobenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
Chlorodibromomethane	BDL	0.0015	mg/kg	8260B	06/11/14	1
Chloroethane	BDL	0.0075	mg/kg	8260B	06/11/14	1
2-Chloroethyl vinyl ether	BDL	0.075	mg/kg	8260B	06/11/14	1
Chloroform	BDL	0.0075	mg/kg	8260B	06/11/14	1
Chloromethane	BDL	0.0038	mg/kg	8260B	06/11/14	1
2-Chlorotoluene	BDL	0.0015	mg/kg	8260B	06/11/14	1
4-Chlorotoluene	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,2-Dibromo-3-Chloropropane	BDL	0.0075	mg/kg	8260B	06/11/14	1
1,2-Dibromoethane	BDL	0.0015	mg/kg	8260B	06/11/14	1
Dibromomethane	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,2-Dichlorobenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,3-Dichlorobenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,4-Dichlorobenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
Dichlorodifluoromethane	BDL	0.0075	mg/kg	8260B	06/11/14	1
1,1-Dichloroethane	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,2-Dichloroethane	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,1-Dichloroethene	BDL	0.0015	mg/kg	8260B	06/11/14	1
cis-1,2-Dichloroethene	0.0080	0.0015	mg/kg	8260B	06/11/14	1
trans-1,2-Dichloroethene	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,2-Dichloropropane	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,1-Dichloropropene	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,3-Dichloropropane	BDL	0.0015	mg/kg	8260B	06/11/14	1
cis-1,3-Dichloropropene	BDL	0.0015	mg/kg	8260B	06/11/14	1
trans-1,3-Dichloropropene	BDL	0.0015	mg/kg	8260B	06/11/14	1
2,2-Dichloropropane	BDL	0.0015	mg/kg	8260B	06/11/14	1
Di-isopropyl ether	BDL	0.0015	mg/kg	8260B	06/11/14	1
Ethylbenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
Hexachloro-1,3-butadiene	BDL	0.0015	mg/kg	8260B	06/11/14	1
Isopropylbenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted

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REPORT OF ANALYSIS

Barb Lary / Cindy Bartlett
GeoSyntec - Portland, OR
621 SW Morrison St., Suite 600
Portland, OR 97205

June 11,2014

ESC Sample # : L702895-03

Site ID :

Project # : PNG0564S14

Date Received : June 05, 2014
Description : Cascade

Sample ID : CUI-B3/8-9 FT

Collected By : Barb Lary
Collection Date : 06/02/14 16:00

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
p-Isopropyltoluene	BDL	0.0015	mg/kg	8260B	06/11/14	1
2-Butanone (MEK)	BDL	0.015	mg/kg	8260B	06/11/14	1
Methylene Chloride	BDL	0.0075	mg/kg	8260B	06/11/14	1
4-Methyl-2-pentanone (MIBK)	BDL	0.015	mg/kg	8260B	06/11/14	1
Methyl tert-butyl ether	BDL	0.0015	mg/kg	8260B	06/11/14	1
Naphthalene	BDL	0.0075	mg/kg	8260B	06/11/14	1
n-Propylbenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
Styrene	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,1,1,2-Tetrachloroethane	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,1,2,2-Tetrachloroethane	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,1,2-Trichlorotrifluoroethane	BDL	0.0015	mg/kg	8260B	06/11/14	1
Tetrachloroethene	BDL	0.0015	mg/kg	8260B	06/11/14	1
Toluene	BDL	0.0075	mg/kg	8260B	06/11/14	1
1,2,3-Trichlorobenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,2,4-Trichlorobenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,1,1-Trichloroethane	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,1,2-Trichloroethane	BDL	0.0015	mg/kg	8260B	06/11/14	1
Trichloroethene	0.056	0.0015	mg/kg	8260B	06/11/14	1
Trichlorofluoromethane	BDL	0.0075	mg/kg	8260B	06/11/14	1
1,2,3-Trichloropropane	BDL	0.0038	mg/kg	8260B	06/11/14	1
1,2,4-Trimethylbenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,2,3-Trimethylbenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
1,3,5-Trimethylbenzene	BDL	0.0015	mg/kg	8260B	06/11/14	1
Vinyl chloride	BDL	0.0015	mg/kg	8260B	06/11/14	1
Xylenes, Total	BDL	0.0045	mg/kg	8260B	06/11/14	1
Surrogate Recovery						
Toluene-d8	104.		% Rec.	8260B	06/11/14	1
Dibromofluoromethane	106.		% Rec.	8260B	06/11/14	1
a,a,a-Trifluorotoluene	98.5		% Rec.	8260B	06/11/14	1
4-Bromofluorobenzene	101.		% Rec.	8260B	06/11/14	1

Results listed are dry weight basis.
BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/11/14 15:25 Printed: 06/11/14 15:25

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REPORT OF ANALYSIS

Barb Lary / Cindy Bartlett
GeoSyntec - Portland, OR
621 SW Morrison St., Suite 600
Portland, OR 97205

June 11,2014

ESC Sample # : L702895-04

Site ID :

Project # : PNG0564S14

Date Received : June 05, 2014
Description : Cascade

Sample ID : TRIP BLANK

Collected By : Barb Lary
Collection Date : 06/02/14 15:25

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Volatile Organics						
Acetone	BDL	50.	ug/l	8260B	06/08/14	1
Acrolein	BDL	50.	ug/l	8260B	06/08/14	1
Acrylonitrile	BDL	10.	ug/l	8260B	06/08/14	1
Benzene	BDL	1.0	ug/l	8260B	06/08/14	1
Bromobenzene	BDL	1.0	ug/l	8260B	06/08/14	1
Bromodichloromethane	BDL	1.0	ug/l	8260B	06/08/14	1
Bromoform	BDL	1.0	ug/l	8260B	06/08/14	1
Bromomethane	BDL	5.0	ug/l	8260B	06/08/14	1
n-Butylbenzene	BDL	1.0	ug/l	8260B	06/08/14	1
sec-Butylbenzene	BDL	1.0	ug/l	8260B	06/08/14	1
tert-Butylbenzene	BDL	1.0	ug/l	8260B	06/08/14	1
Carbon tetrachloride	BDL	1.0	ug/l	8260B	06/08/14	1
Chlorobenzene	BDL	1.0	ug/l	8260B	06/08/14	1
Chlorodibromomethane	BDL	1.0	ug/l	8260B	06/08/14	1
Chloroethane	BDL	5.0	ug/l	8260B	06/08/14	1
2-Chloroethyl vinyl ether	BDL	50.	ug/l	8260B	06/08/14	1
Chloroform	BDL	5.0	ug/l	8260B	06/08/14	1
Chloromethane	BDL	2.5	ug/l	8260B	06/08/14	1
2-Chlorotoluene	BDL	1.0	ug/l	8260B	06/08/14	1
4-Chlorotoluene	BDL	1.0	ug/l	8260B	06/08/14	1
1,2-Dibromo-3-Chloropropane	BDL	5.0	ug/l	8260B	06/08/14	1
1,2-Dibromoethane	BDL	1.0	ug/l	8260B	06/08/14	1
Dibromomethane	BDL	1.0	ug/l	8260B	06/08/14	1
1,2-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/08/14	1
1,3-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/08/14	1
1,4-Dichlorobenzene	BDL	1.0	ug/l	8260B	06/08/14	1
Dichlorodifluoromethane	BDL	5.0	ug/l	8260B	06/08/14	1
1,1-Dichloroethane	BDL	1.0	ug/l	8260B	06/08/14	1
1,2-Dichloroethane	BDL	1.0	ug/l	8260B	06/08/14	1
1,1-Dichloroethene	BDL	1.0	ug/l	8260B	06/08/14	1
cis-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/08/14	1
trans-1,2-Dichloroethene	BDL	1.0	ug/l	8260B	06/08/14	1
1,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/08/14	1
1,1-Dichloropropene	BDL	1.0	ug/l	8260B	06/08/14	1
1,3-Dichloropropane	BDL	1.0	ug/l	8260B	06/08/14	1
cis-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/08/14	1
trans-1,3-Dichloropropene	BDL	1.0	ug/l	8260B	06/08/14	1
2,2-Dichloropropane	BDL	1.0	ug/l	8260B	06/08/14	1
Di-isopropyl ether	BDL	1.0	ug/l	8260B	06/08/14	1
Ethylbenzene	BDL	1.0	ug/l	8260B	06/08/14	1
Hexachloro-1,3-butadiene	BDL	1.0	ug/l	8260B	06/08/14	1
Isopropylbenzene	BDL	1.0	ug/l	8260B	06/08/14	1
p-Isopropyltoluene	BDL	1.0	ug/l	8260B	06/08/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

Barb Lary / Cindy Bartlett
GeoSyntec - Portland, OR
621 SW Morrison St., Suite 600
Portland, OR 97205

June 11,2014

ESC Sample # : L702895-04

Site ID :

Project # : PNG0564S14

Date Received : June 05, 2014
Description : Cascade

Sample ID : TRIP BLANK

Collected By : Barb Lary
Collection Date : 06/02/14 15:25

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
2-Butanone (MEK)	BDL	10.	ug/l	8260B	06/08/14	1
Methylene Chloride	BDL	5.0	ug/l	8260B	06/08/14	1
4-Methyl-2-pentanone (MIBK)	BDL	10.	ug/l	8260B	06/08/14	1
Methyl tert-butyl ether	BDL	1.0	ug/l	8260B	06/08/14	1
Naphthalene	BDL	5.0	ug/l	8260B	06/08/14	1
n-Propylbenzene	BDL	1.0	ug/l	8260B	06/08/14	1
Styrene	BDL	1.0	ug/l	8260B	06/08/14	1
1,1,1,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/08/14	1
1,1,2,2-Tetrachloroethane	BDL	1.0	ug/l	8260B	06/08/14	1
1,1,2-Trichlorotrifluoroethane	BDL	1.0	ug/l	8260B	06/08/14	1
Tetrachloroethene	BDL	1.0	ug/l	8260B	06/08/14	1
Toluene	BDL	5.0	ug/l	8260B	06/08/14	1
1,2,3-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/08/14	1
1,2,4-Trichlorobenzene	BDL	1.0	ug/l	8260B	06/08/14	1
1,1,1-Trichloroethane	BDL	1.0	ug/l	8260B	06/08/14	1
1,1,2-Trichloroethane	BDL	1.0	ug/l	8260B	06/08/14	1
Trichloroethene	BDL	1.0	ug/l	8260B	06/08/14	1
Trichlorofluoromethane	BDL	5.0	ug/l	8260B	06/08/14	1
1,2,3-Trichloropropane	BDL	2.5	ug/l	8260B	06/08/14	1
1,2,4-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/08/14	1
1,2,3-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/08/14	1
1,3,5-Trimethylbenzene	BDL	1.0	ug/l	8260B	06/08/14	1
Vinyl chloride	BDL	1.0	ug/l	8260B	06/08/14	1
Xylenes, Total	BDL	3.0	ug/l	8260B	06/08/14	1
Surrogate Recovery						
Toluene-d8	108.		% Rec.	8260B	06/08/14	1
Dibromofluoromethane	122.		% Rec.	8260B	06/08/14	1
4-Bromofluorobenzene	103.		% Rec.	8260B	06/08/14	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 06/11/14 15:25 Printed: 06/11/14 15:25

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L702895-04	WG724917	SAMP	Bromodichloromethane	R2938174	J4
	WG724917	SAMP	1,2-Dibromo-3-Chloropropane	R2938174	J3
	WG724917	SAMP	Methyl tert-butyl ether	R2938174	J4
	WG724917	SAMP	Dibromofluoromethane	R2938174	J1

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
06/11/14 at 15:25:36

TSR Signing Reports: 358
R5 - Desired TAT

Log ALL samples from Miltons Dry Cleaners under the *MILTONSWA* account.

Sample: L702895-01 Account: GEOSYNPOR Received: 06/05/14 09:00 Due Date: 06/12/14 00:00 RPT Date: 06/11/14 15:25
06-0023 = hold samples
Sample: L702895-02 Account: GEOSYNPOR Received: 06/05/14 09:00 Due Date: 06/12/14 00:00 RPT Date: 06/11/14 15:25

Sample: L702895-03 Account: GEOSYNPOR Received: 06/05/14 09:00 Due Date: 06/12/14 00:00 RPT Date: 06/11/14 15:25

Sample: L702895-04 Account: GEOSYNPOR Received: 06/05/14 09:00 Due Date: 06/12/14 00:00 RPT Date: 06/11/14 15:25

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GeoSyntec - Portland, OR
Barb Lary / Cindy Bartlett
621 SW Morrison St., Suite 600

Portland, OR 97205

Quality Assurance Report
Level II

L702895

June 11, 2014

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
1,1,1,2-Tetrachloroethane	< .001	mg/kg			WG724939	06/06/14 12:44
1,1,1-Trichloroethane	< .001	mg/kg			WG724939	06/06/14 12:44
1,1,2,2-Tetrachloroethane	< .001	mg/kg			WG724939	06/06/14 12:44
1,1,2-Trichloroethane	< .001	mg/kg			WG724939	06/06/14 12:44
1,1,2-Trichlorotrifluoroethane	< .001	mg/kg			WG724939	06/06/14 12:44
1,1-Dichloroethane	< .001	mg/kg			WG724939	06/06/14 12:44
1,1-Dichloroethene	< .001	mg/kg			WG724939	06/06/14 12:44
1,1-Dichloropropene	< .001	mg/kg			WG724939	06/06/14 12:44
1,2,3-Trichlorobenzene	< .001	mg/kg			WG724939	06/06/14 12:44
1,2,3-Trichloropropane	< .0025	mg/kg			WG724939	06/06/14 12:44
1,2,3-Trimethylbenzene	< .001	mg/kg			WG724939	06/06/14 12:44
1,2,4-Trichlorobenzene	< .001	mg/kg			WG724939	06/06/14 12:44
1,2,4-Trimethylbenzene	< .001	mg/kg			WG724939	06/06/14 12:44
1,2-Dibromo-3-Chloropropane	< .005	mg/kg			WG724939	06/06/14 12:44
1,2-Dibromoethane	< .001	mg/kg			WG724939	06/06/14 12:44
1,2-Dichlorobenzene	< .001	mg/kg			WG724939	06/06/14 12:44
1,2-Dichloroethane	< .001	mg/kg			WG724939	06/06/14 12:44
1,2-Dichloropropane	< .001	mg/kg			WG724939	06/06/14 12:44
1,3,5-Trimethylbenzene	< .001	mg/kg			WG724939	06/06/14 12:44
1,3-Dichlorobenzene	< .001	mg/kg			WG724939	06/06/14 12:44
1,3-Dichloropropane	< .001	mg/kg			WG724939	06/06/14 12:44
1,4-Dichlorobenzene	< .001	mg/kg			WG724939	06/06/14 12:44
2,2-Dichloropropane	< .001	mg/kg			WG724939	06/06/14 12:44
2-Butanone (MEK)	< .01	mg/kg			WG724939	06/06/14 12:44
2-Chloroethyl vinyl ether	< .05	mg/kg			WG724939	06/06/14 12:44
2-Chlorotoluene	< .001	mg/kg			WG724939	06/06/14 12:44
4-Chlorotoluene	< .001	mg/kg			WG724939	06/06/14 12:44
4-Methyl-2-pentanone (MIBK)	< .01	mg/kg			WG724939	06/06/14 12:44
Acetone	< .05	mg/kg			WG724939	06/06/14 12:44
Acrylonitrile	< .01	mg/kg			WG724939	06/06/14 12:44
Benzene	< .001	mg/kg			WG724939	06/06/14 12:44
Bromobenzene	< .001	mg/kg			WG724939	06/06/14 12:44
Bromodichloromethane	< .001	mg/kg			WG724939	06/06/14 12:44
Bromoform	< .001	mg/kg			WG724939	06/06/14 12:44
Bromomethane	< .005	mg/kg			WG724939	06/06/14 12:44
Carbon tetrachloride	< .001	mg/kg			WG724939	06/06/14 12:44
Chlorobenzene	< .001	mg/kg			WG724939	06/06/14 12:44
Chlorodibromomethane	< .001	mg/kg			WG724939	06/06/14 12:44
Chloroethane	< .005	mg/kg			WG724939	06/06/14 12:44
Chloroform	< .005	mg/kg			WG724939	06/06/14 12:44
Chloromethane	< .0025	mg/kg			WG724939	06/06/14 12:44
cis-1,2-Dichloroethene	< .001	mg/kg			WG724939	06/06/14 12:44
cis-1,3-Dichloropropene	< .001	mg/kg			WG724939	06/06/14 12:44
Di-isopropyl ether	< .001	mg/kg			WG724939	06/06/14 12:44
Dibromomethane	< .001	mg/kg			WG724939	06/06/14 12:44
Dichlorodifluoromethane	< .005	mg/kg			WG724939	06/06/14 12:44
Ethylbenzene	< .001	mg/kg			WG724939	06/06/14 12:44
Hexachloro-1,3-butadiene	< .001	mg/kg			WG724939	06/06/14 12:44
Isopropylbenzene	< .001	mg/kg			WG724939	06/06/14 12:44
Methyl tert-butyl ether	< .001	mg/kg			WG724939	06/06/14 12:44
Methylene Chloride	< .005	mg/kg			WG724939	06/06/14 12:44
n-Butylbenzene	< .001	mg/kg			WG724939	06/06/14 12:44
n-Propylbenzene	< .001	mg/kg			WG724939	06/06/14 12:44
Naphthalene	< .005	mg/kg			WG724939	06/06/14 12:44
p-Isopropyltoluene	< .001	mg/kg			WG724939	06/06/14 12:44
sec-Butylbenzene	< .001	mg/kg			WG724939	06/06/14 12:44
Styrene	< .001	mg/kg			WG724939	06/06/14 12:44
tert-Butylbenzene	< .001	mg/kg			WG724939	06/06/14 12:44
Tetrachloroethene	< .001	mg/kg			WG724939	06/06/14 12:44

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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GeoSyntec - Portland, OR
Barb Lary / Cindy Bartlett
621 SW Morrison St., Suite 600

Portland, OR 97205

Quality Assurance Report
Level II

L702895

June 11, 2014

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Toluene	< .005	mg/kg			WG724939	06/06/14 12:44
trans-1,2-Dichloroethene	< .001	mg/kg			WG724939	06/06/14 12:44
trans-1,3-Dichloropropene	< .001	mg/kg			WG724939	06/06/14 12:44
Trichloroethene	< .001	mg/kg			WG724939	06/06/14 12:44
Trichlorofluoromethane	< .005	mg/kg			WG724939	06/06/14 12:44
Vinyl chloride	< .001	mg/kg			WG724939	06/06/14 12:44
Xylenes, Total	< .003	mg/kg			WG724939	06/06/14 12:44
4-Bromofluorobenzene		% Rec.	99.20	71-126	WG724939	06/06/14 12:44
Dibromofluoromethane		% Rec.	97.90	78.3-121	WG724939	06/06/14 12:44
Toluene-d8		% Rec.	103.0	88.5-111	WG724939	06/06/14 12:44
a,a,a-Trifluorotoluene		% Rec.	100.0	85-114	WG724939	06/06/14 12:44
Total Solids	< .1	%			WG725009	06/09/14 08:53
Total Solids	< .1	%			WG725010	06/09/14 09:01
1,1,1,2-Tetrachloroethane	< .001	mg/l			WG724917	06/08/14 12:20
1,1,1-Trichloroethane	< .001	mg/l			WG724917	06/08/14 12:20
1,1,2,2-Tetrachloroethane	< .001	mg/l			WG724917	06/08/14 12:20
1,1,2-Trichloroethane	< .001	mg/l			WG724917	06/08/14 12:20
1,1,2-Trichlorotrifluoroethane	< .001	mg/l			WG724917	06/08/14 12:20
1,1-Dichloroethane	< .001	mg/l			WG724917	06/08/14 12:20
1,1-Dichloroethene	< .001	mg/l			WG724917	06/08/14 12:20
1,1-Dichloropropene	< .001	mg/l			WG724917	06/08/14 12:20
1,2,3-Trichlorobenzene	< .001	mg/l			WG724917	06/08/14 12:20
1,2,3-Trichloropropane	< .001	mg/l			WG724917	06/08/14 12:20
1,2,3-Trimethylbenzene	< .001	mg/l			WG724917	06/08/14 12:20
1,2,4-Trichlorobenzene	< .001	mg/l			WG724917	06/08/14 12:20
1,2,4-Trimethylbenzene	< .001	mg/l			WG724917	06/08/14 12:20
1,2-Dibromo-3-Chloropropane	< .005	mg/l			WG724917	06/08/14 12:20
1,2-Dibromoethane	< .001	mg/l			WG724917	06/08/14 12:20
1,2-Dichlorobenzene	< .001	mg/l			WG724917	06/08/14 12:20
1,2-Dichloroethane	< .001	mg/l			WG724917	06/08/14 12:20
1,2-Dichloropropane	< .001	mg/l			WG724917	06/08/14 12:20
1,3,5-Trimethylbenzene	< .001	mg/l			WG724917	06/08/14 12:20
1,3-Dichlorobenzene	< .001	mg/l			WG724917	06/08/14 12:20
1,3-Dichloropropane	< .001	mg/l			WG724917	06/08/14 12:20
1,4-Dichlorobenzene	< .001	mg/l			WG724917	06/08/14 12:20
2,2-Dichloropropane	< .001	mg/l			WG724917	06/08/14 12:20
2-Butanone (MEK)	< .01	mg/l			WG724917	06/08/14 12:20
2-Chloroethyl vinyl ether	< .05	mg/l			WG724917	06/08/14 12:20
2-Chlorotoluene	< .001	mg/l			WG724917	06/08/14 12:20
4-Chlorotoluene	< .001	mg/l			WG724917	06/08/14 12:20
4-Methyl-2-pentanone (MIBK)	< .01	mg/l			WG724917	06/08/14 12:20
Acetone	< .05	mg/l			WG724917	06/08/14 12:20
Acrolein	< .025	mg/l			WG724917	06/08/14 12:20
Acrylonitrile	< .01	mg/l			WG724917	06/08/14 12:20
Benzene	< .001	mg/l			WG724917	06/08/14 12:20
Bromobenzene	< .001	mg/l			WG724917	06/08/14 12:20
Bromodichloromethane	< .001	mg/l			WG724917	06/08/14 12:20
Bromoform	< .001	mg/l			WG724917	06/08/14 12:20
Bromomethane	< .005	mg/l			WG724917	06/08/14 12:20
Carbon tetrachloride	< .001	mg/l			WG724917	06/08/14 12:20
Chlorobenzene	< .001	mg/l			WG724917	06/08/14 12:20
Chlorodibromomethane	< .001	mg/l			WG724917	06/08/14 12:20
Chloroethane	< .005	mg/l			WG724917	06/08/14 12:20

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Quality Assurance Report
Level II

L702895

June 11, 2014

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Chloroform	< .005	mg/l			WG724917	06/08/14 12:20
Chloromethane	< .0025	mg/l			WG724917	06/08/14 12:20
cis-1,2-Dichloroethene	< .001	mg/l			WG724917	06/08/14 12:20
cis-1,3-Dichloropropene	< .001	mg/l			WG724917	06/08/14 12:20
Di-isopropyl ether	< .001	mg/l			WG724917	06/08/14 12:20
Dibromomethane	< .001	mg/l			WG724917	06/08/14 12:20
Dichlorodifluoromethane	< .005	mg/l			WG724917	06/08/14 12:20
Ethylbenzene	< .001	mg/l			WG724917	06/08/14 12:20
Hexachloro-1,3-butadiene	< .001	mg/l			WG724917	06/08/14 12:20
Isopropylbenzene	< .001	mg/l			WG724917	06/08/14 12:20
Methyl tert-butyl ether	< .001	mg/l			WG724917	06/08/14 12:20
Methylene Chloride	< .005	mg/l			WG724917	06/08/14 12:20
n-Butylbenzene	< .001	mg/l			WG724917	06/08/14 12:20
n-Propylbenzene	< .001	mg/l			WG724917	06/08/14 12:20
Naphthalene	< .005	mg/l			WG724917	06/08/14 12:20
p-Isopropyltoluene	< .001	mg/l			WG724917	06/08/14 12:20
sec-Butylbenzene	< .001	mg/l			WG724917	06/08/14 12:20
Styrene	< .001	mg/l			WG724917	06/08/14 12:20
tert-Butylbenzene	< .001	mg/l			WG724917	06/08/14 12:20
Tetrachloroethene	< .001	mg/l			WG724917	06/08/14 12:20
Toluene	< .005	mg/l			WG724917	06/08/14 12:20
trans-1,2-Dichloroethene	< .001	mg/l			WG724917	06/08/14 12:20
trans-1,3-Dichloropropene	< .001	mg/l			WG724917	06/08/14 12:20
Trichloroethene	< .001	mg/l			WG724917	06/08/14 12:20
Trichlorofluoromethane	< .005	mg/l			WG724917	06/08/14 12:20
Vinyl chloride	< .001	mg/l			WG724917	06/08/14 12:20
Xylenes, Total	< .003	mg/l			WG724917	06/08/14 12:20
4-Bromofluorobenzene		% Rec.	106.0	71-126	WG724917	06/08/14 12:20
Dibromofluoromethane		% Rec.	120.0	78.3-121	WG724917	06/08/14 12:20
Toluene-d8		% Rec.	108.0	88.5-111	WG724917	06/08/14 12:20
a,a,a-Trifluorotoluene		% Rec.	108.0	85-114	WG724917	06/08/14 12:20
1,1,1,2-Tetrachloroethane	< .001	mg/kg			WG725704	06/10/14 20:28
1,1,1-Trichloroethane	< .001	mg/kg			WG725704	06/10/14 20:28
1,1,2,2-Tetrachloroethane	< .001	mg/kg			WG725704	06/10/14 20:28
1,1,2-Trichloroethane	< .001	mg/kg			WG725704	06/10/14 20:28
1,1,2-Trichlorotrifluoroethane	< .001	mg/kg			WG725704	06/10/14 20:28
1,1-Dichloroethane	< .001	mg/kg			WG725704	06/10/14 20:28
1,1-Dichloroethene	< .001	mg/kg			WG725704	06/10/14 20:28
1,1-Dichloropropene	< .001	mg/kg			WG725704	06/10/14 20:28
1,2,3-Trichlorobenzene	< .001	mg/kg			WG725704	06/10/14 20:28
1,2,3-Trichloropropane	< .0025	mg/kg			WG725704	06/10/14 20:28
1,2,3-Trimethylbenzene	< .001	mg/kg			WG725704	06/10/14 20:28
1,2,4-Trichlorobenzene	< .001	mg/kg			WG725704	06/10/14 20:28
1,2,4-Trimethylbenzene	< .001	mg/kg			WG725704	06/10/14 20:28
1,2-Dibromo-3-Chloropropane	< .005	mg/kg			WG725704	06/10/14 20:28
1,2-Dibromoethane	< .001	mg/kg			WG725704	06/10/14 20:28
1,2-Dichlorobenzene	< .001	mg/kg			WG725704	06/10/14 20:28
1,2-Dichloroethane	< .001	mg/kg			WG725704	06/10/14 20:28
1,2-Dichloropropane	< .001	mg/kg			WG725704	06/10/14 20:28
1,3,5-Trimethylbenzene	< .001	mg/kg			WG725704	06/10/14 20:28
1,3-Dichlorobenzene	< .001	mg/kg			WG725704	06/10/14 20:28
1,3-Dichloropropane	< .001	mg/kg			WG725704	06/10/14 20:28
1,4-Dichlorobenzene	< .001	mg/kg			WG725704	06/10/14 20:28
2,2-Dichloropropane	< .001	mg/kg			WG725704	06/10/14 20:28
2-Butanone (MEK)	< .01	mg/kg			WG725704	06/10/14 20:28
2-Chloroethyl vinyl ether	< .05	mg/kg			WG725704	06/10/14 20:28
2-Chlorotoluene	< .001	mg/kg			WG725704	06/10/14 20:28

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Level II

L702895

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Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
4-Chlorotoluene	< .001	mg/kg			WG725704	06/10/14 20:28
4-Methyl-2-pentanone (MIBK)	< .01	mg/kg			WG725704	06/10/14 20:28
Acetone	< .05	mg/kg			WG725704	06/10/14 20:28
Acrylonitrile	< .01	mg/kg			WG725704	06/10/14 20:28
Benzene	< .001	mg/kg			WG725704	06/10/14 20:28
Bromobenzene	< .001	mg/kg			WG725704	06/10/14 20:28
Bromodichloromethane	< .001	mg/kg			WG725704	06/10/14 20:28
Bromoform	< .001	mg/kg			WG725704	06/10/14 20:28
Bromomethane	< .005	mg/kg			WG725704	06/10/14 20:28
Carbon tetrachloride	< .001	mg/kg			WG725704	06/10/14 20:28
Chlorobenzene	< .001	mg/kg			WG725704	06/10/14 20:28
Chlorodibromomethane	< .001	mg/kg			WG725704	06/10/14 20:28
Chloroethane	< .005	mg/kg			WG725704	06/10/14 20:28
Chloroform	< .005	mg/kg			WG725704	06/10/14 20:28
Chloromethane	< .0025	mg/kg			WG725704	06/10/14 20:28
cis-1,2-Dichloroethene	< .001	mg/kg			WG725704	06/10/14 20:28
cis-1,3-Dichloropropene	< .001	mg/kg			WG725704	06/10/14 20:28
Di-isopropyl ether	< .001	mg/kg			WG725704	06/10/14 20:28
Dibromomethane	< .001	mg/kg			WG725704	06/10/14 20:28
Dichlorodifluoromethane	< .005	mg/kg			WG725704	06/10/14 20:28
Ethylbenzene	< .001	mg/kg			WG725704	06/10/14 20:28
Hexachloro-1,3-butadiene	< .001	mg/kg			WG725704	06/10/14 20:28
Isopropylbenzene	< .001	mg/kg			WG725704	06/10/14 20:28
Methyl tert-butyl ether	< .001	mg/kg			WG725704	06/10/14 20:28
Methylene Chloride	< .005	mg/kg			WG725704	06/10/14 20:28
n-Butylbenzene	< .001	mg/kg			WG725704	06/10/14 20:28
n-Propylbenzene	< .001	mg/kg			WG725704	06/10/14 20:28
Naphthalene	< .005	mg/kg			WG725704	06/10/14 20:28
p-Isopropyltoluene	< .001	mg/kg			WG725704	06/10/14 20:28
sec-Butylbenzene	< .001	mg/kg			WG725704	06/10/14 20:28
Styrene	< .001	mg/kg			WG725704	06/10/14 20:28
tert-Butylbenzene	< .001	mg/kg			WG725704	06/10/14 20:28
Tetrachloroethene	< .001	mg/kg			WG725704	06/10/14 20:28
Toluene	< .005	mg/kg			WG725704	06/10/14 20:28
trans-1,2-Dichloroethene	< .001	mg/kg			WG725704	06/10/14 20:28
trans-1,3-Dichloropropene	< .001	mg/kg			WG725704	06/10/14 20:28
Trichloroethene	< .001	mg/kg			WG725704	06/10/14 20:28
Trichlorofluoromethane	< .005	mg/kg			WG725704	06/10/14 20:28
Vinyl chloride	< .001	mg/kg			WG725704	06/10/14 20:28
Xylenes, Total	< .003	mg/kg			WG725704	06/10/14 20:28
4-Bromofluorobenzene		% Rec.	107.0	71-126	WG725704	06/10/14 20:28
Dibromofluoromethane		% Rec.	99.00	78.3-121	WG725704	06/10/14 20:28
Toluene-d8		% Rec.	104.0	88.5-111	WG725704	06/10/14 20:28
a,a,a-Trifluorotoluene		% Rec.	101.0	85-114	WG725704	06/10/14 20:28

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Total Solids	%	78.7	77.6	1.43	5	L702886-02	WG725009
Total Solids	%	62.2	63.5	2.07	5	L702895-02	WG725010

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
1,1,1,2-Tetrachloroethane	mg/kg	.025	0.0253	101.	72.9-124	WG724939
1,1,1-Trichloroethane	mg/kg	.025	0.0246	98.5	73.7-124	WG724939
1,1,2,2-Tetrachloroethane	mg/kg	.025	0.0247	98.7	69.4-122	WG724939

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Quality Assurance Report
Level II

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Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
1,1,2-Trichloroethane	mg/kg	.025	0.0249	99.5	79.1-118	WG724939
1,1,2-Trichlorotrifluoroethane	mg/kg	.025	0.0254	102.	70-146	WG724939
1,1-Dichloroethane	mg/kg	.025	0.0250	99.8	75-124	WG724939
1,1-Dichloroethene	mg/kg	.025	0.0244	97.5	70.4-129	WG724939
1,1-Dichloropropene	mg/kg	.025	0.0248	99.1	74.9-124	WG724939
1,2,3-Trichlorobenzene	mg/kg	.025	0.0264	106.	69.3-131	WG724939
1,2,3-Trichloropropane	mg/kg	.025	0.0237	94.9	71.4-123	WG724939
1,2,3-Trimethylbenzene	mg/kg	.025	0.0252	101.	73.6-113	WG724939
1,2,4-Trichlorobenzene	mg/kg	.025	0.0260	104.	71.9-137	WG724939
1,2,4-Trimethylbenzene	mg/kg	.025	0.0259	104.	75.5-122	WG724939
1,2-Dibromo-3-Chloropropane	mg/kg	.025	0.0234	93.4	62.8-133	WG724939
1,2-Dibromoethane	mg/kg	.025	0.0246	98.4	78.6-120	WG724939
1,2-Dichlorobenzene	mg/kg	.025	0.0246	98.3	78.3-118	WG724939
1,2-Dichloroethane	mg/kg	.025	0.0252	101.	70.1-124	WG724939
1,2-Dichloropropane	mg/kg	.025	0.0252	101.	77.9-119	WG724939
1,3,5-Trimethylbenzene	mg/kg	.025	0.0257	103.	75.9-124	WG724939
1,3-Dichlorobenzene	mg/kg	.025	0.0250	100.	72-126	WG724939
1,3-Dichloropropane	mg/kg	.025	0.0247	98.6	79.1-117	WG724939
1,4-Dichlorobenzene	mg/kg	.025	0.0250	99.9	78.3-117	WG724939
2,2-Dichloropropane	mg/kg	.025	0.0232	92.9	61.3-136	WG724939
2-Butanone (MEK)	mg/kg	.125	0.111	88.5	53.7-153	WG724939
2-Chloroethyl vinyl ether	mg/kg	.125	0.0962	77.0	37.7-157	WG724939
2-Chlorotoluene	mg/kg	.025	0.0251	100.	75.6-121	WG724939
4-Chlorotoluene	mg/kg	.025	0.0250	100.	77.3-120	WG724939
4-Methyl-2-pentanone (MIBK)	mg/kg	.125	0.123	98.3	70.4-137	WG724939
Acetone	mg/kg	.125	0.108	86.2	35.1-175	WG724939
Acrylonitrile	mg/kg	.125	0.116	93.0	56.4-128	WG724939
Benzene	mg/kg	.025	0.0242	96.8	77.1-121	WG724939
Bromobenzene	mg/kg	.025	0.0247	98.7	78.2-115	WG724939
Bromodichloromethane	mg/kg	.025	0.0238	95.0	74.9-115	WG724939
Bromoform	mg/kg	.025	0.0237	94.8	65.9-132	WG724939
Bromomethane	mg/kg	.025	0.0289	116.	48.7-165	WG724939
Carbon tetrachloride	mg/kg	.025	0.0244	97.5	70-124	WG724939
Chlorobenzene	mg/kg	.025	0.0253	101.	79.1-119	WG724939
Chlorodibromomethane	mg/kg	.025	0.0252	101.	73.5-121	WG724939
Chloroethane	mg/kg	.025	0.0268	107.	66.2-132	WG724939
Chloroform	mg/kg	.025	0.0241	96.4	76.7-122	WG724939
Chloromethane	mg/kg	.025	0.0220	88.0	63.4-131	WG724939
cis-1,2-Dichloroethene	mg/kg	.025	0.0246	98.6	78.2-119	WG724939
cis-1,3-Dichloropropene	mg/kg	.025	0.0250	99.8	79.6-120	WG724939
Di-isopropyl ether	mg/kg	.025	0.0254	101.	70.4-133	WG724939
Dibromomethane	mg/kg	.025	0.0240	96.1	79.4-120	WG724939
Dichlorodifluoromethane	mg/kg	.025	0.0245	98.0	57.1-137	WG724939
Ethylbenzene	mg/kg	.025	0.0253	101.	79.7-122	WG724939
Hexachloro-1,3-butadiene	mg/kg	.025	0.0246	98.6	68.2-123	WG724939
Isopropylbenzene	mg/kg	.025	0.0254	102.	80-135	WG724939
Methyl tert-butyl ether	mg/kg	.025	0.0247	99.0	73-129	WG724939
Methylene Chloride	mg/kg	.025	0.0229	91.5	72.6-120	WG724939
n-Butylbenzene	mg/kg	.025	0.0259	104.	77.5-126	WG724939
n-Propylbenzene	mg/kg	.025	0.0254	102.	77.9-123	WG724939
Naphthalene	mg/kg	.025	0.0249	99.5	69.8-128	WG724939
p-Isopropyltoluene	mg/kg	.025	0.0257	103.	75.8-129	WG724939
sec-Butylbenzene	mg/kg	.025	0.0254	102.	75.8-126	WG724939
Styrene	mg/kg	.025	0.0259	103.	82.4-126	WG724939
tert-Butylbenzene	mg/kg	.025	0.0248	99.3	76.4-126	WG724939
Tetrachloroethene	mg/kg	.025	0.0249	99.6	73.9-125	WG724939
Toluene	mg/kg	.025	0.0241	96.5	79.7-118	WG724939
trans-1,2-Dichloroethene	mg/kg	.025	0.0238	95.2	73.8-122	WG724939
trans-1,3-Dichloropropene	mg/kg	.025	0.0247	98.7	75.9-124	WG724939

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Tax I.D. 62-0814289

Est. 1970

GeoSyntec - Portland, OR
Barb Lary / Cindy Bartlett
621 SW Morrison St., Suite 600

Portland, OR 97205

Quality Assurance Report
Level II

L702895

June 11, 2014

Analyte	Units	Laboratory Control Sample Known Val	Result	% Rec	Limit	Batch
Trichloroethene	mg/kg	.025	0.0250	99.9	77.9-118	WG724939
Trichlorofluoromethane	mg/kg	.025	0.0256	103.	67.7-131	WG724939
Vinyl chloride	mg/kg	.025	0.0257	103.	66.7-130	WG724939
Xylenes, Total	mg/kg	.075	0.0763	102.	78.8-121	WG724939
4-Bromofluorobenzene				101.0	71-126	WG724939
Dibromofluoromethane				101.0	78.3-121	WG724939
Toluene-d8				103.0	88.5-111	WG724939
a,a,a-Trifluorotoluene				99.40	85-114	WG724939
Total Solids	%	50	50.0	100.	85-115	WG725009
Total Solids	%	50	50.0	100.	85-115	WG725010
1,1,1,2-Tetrachloroethane	mg/l	.025	0.0271	108.	74.2-124	WG724917
1,1,1-Trichloroethane	mg/l	.025	0.0302	121.	73.2-123	WG724917
1,1,2,2-Tetrachloroethane	mg/l	.025	0.0281	112.	70.7-122	WG724917
1,1,2-Trichloroethane	mg/l	.025	0.0263	105.	77.7-118	WG724917
1,1,2-Trichlorotrifluoroethane	mg/l	.025	0.0293	117.	67.2-143	WG724917
1,1-Dichloroethane	mg/l	.025	0.0299	120.	70.7-126	WG724917
1,1-Dichloroethene	mg/l	.025	0.0272	109.	67.8-129	WG724917
1,1-Dichloropropene	mg/l	.025	0.0280	112.	73.1-125	WG724917
1,2,3-Trichlorobenzene	mg/l	.025	0.0274	110.	64.9-135	WG724917
1,2,3-Trichloropropane	mg/l	.025	0.0278	111.	71.8-121	WG724917
1,2,3-Trimethylbenzene	mg/l	.025	0.0258	103.	72.3-116	WG724917
1,2,4-Trichlorobenzene	mg/l	.025	0.0280	112.	69.7-136	WG724917
1,2,4-Trimethylbenzene	mg/l	.025	0.0284	114.	75-123	WG724917
1,2-Dibromo-3-Chloropropane	mg/l	.025	0.0268	107.	65.4-128	WG724917
1,2-Dibromoethane	mg/l	.025	0.0251	100.	76.6-121	WG724917
1,2-Dichlorobenzene	mg/l	.025	0.0259	104.	78.4-117	WG724917
1,2-Dichloroethane	mg/l	.025	0.0289	116.	68.8-124	WG724917
1,2-Dichloropropane	mg/l	.025	0.0284	114.	76.5-119	WG724917
1,3,5-Trimethylbenzene	mg/l	.025	0.0281	112.	75.6-124	WG724917
1,3-Dichlorobenzene	mg/l	.025	0.0274	110.	70.8-128	WG724917
1,3-Dichloropropane	mg/l	.025	0.0243	97.2	77.4-117	WG724917
1,4-Dichlorobenzene	mg/l	.025	0.0255	102.	78.8-115	WG724917
2,2-Dichloropropane	mg/l	.025	0.0326	131.	62.4-133	WG724917
2-Butanone (MEK)	mg/l	.125	0.153	123.	55-149	WG724917
2-Chloroethyl vinyl ether	mg/l	.125	0.134	107.	43.8-150	WG724917
2-Chlorotoluene	mg/l	.025	0.0274	109.	74.7-122	WG724917
4-Chlorotoluene	mg/l	.025	0.0277	111.	77.5-120	WG724917
4-Methyl-2-pentanone (MIBK)	mg/l	.125	0.164	131.	70.5-133	WG724917
Acetone	mg/l	.125	0.128	102.	35.6-163	WG724917
Acrolein	mg/l	.125	0.142	113.	10-190	WG724917
Acrylonitrile	mg/l	.125	0.144	115.	55.2-130	WG724917
Benzene	mg/l	.025	0.0279	112.	74.8-121	WG724917
Bromobenzene	mg/l	.025	0.0260	104.	77.5-116	WG724917
Bromodichloromethane	mg/l	.025	0.0293	117.*	75.1-116	WG724917
Bromoform	mg/l	.025	0.0273	109.	67.5-130	WG724917
Bromomethane	mg/l	.025	0.0295	118.	49.9-162	WG724917
Carbon tetrachloride	mg/l	.025	0.0289	116.	70.2-123	WG724917
Chlorobenzene	mg/l	.025	0.0254	102.	78.1-119	WG724917
Chlorodibromomethane	mg/l	.025	0.0259	104.	74-121	WG724917
Chloroethane	mg/l	.025	0.0292	117.	61.7-135	WG724917
Chloroform	mg/l	.025	0.0298	119.	76-121	WG724917
Chloromethane	mg/l	.025	0.0228	91.3	61.5-129	WG724917
cis-1,2-Dichloroethene	mg/l	.025	0.0295	118.	76-119	WG724917

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Level II

L702895

June 11, 2014

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
cis-1,3-Dichloropropene	mg/l	.025	0.0287	115.	78.2-120	WG724917
Di-isopropyl ether	mg/l	.025	0.0308	123.	65.6-132	WG724917
Dibromomethane	mg/l	.025	0.0274	110.	79.5-118	WG724917
Dichlorodifluoromethane	mg/l	.025	0.0269	108.	54.8-135	WG724917
Ethylbenzene	mg/l	.025	0.0270	108.	78.8-122	WG724917
Hexachloro-1,3-butadiene	mg/l	.025	0.0269	108.	64.7-129	WG724917
Isopropylbenzene	mg/l	.025	0.0282	113.	78.6-132	WG724917
Methyl tert-butyl ether	mg/l	.025	0.0319	128.*	71.2-126	WG724917
Methylene Chloride	mg/l	.025	0.0270	108.	70.3-120	WG724917
n-Butylbenzene	mg/l	.025	0.0294	118.	76.2-126	WG724917
n-Propylbenzene	mg/l	.025	0.0274	110.	78.2-122	WG724917
Naphthalene	mg/l	.025	0.0277	111.	68.4-128	WG724917
p-Isopropyltoluene	mg/l	.025	0.0302	121.	74-131	WG724917
sec-Butylbenzene	mg/l	.025	0.0290	116.	74.4-127	WG724917
Styrene	mg/l	.025	0.0285	114.	80.4-126	WG724917
tert-Butylbenzene	mg/l	.025	0.0286	115.	75.3-126	WG724917
Tetrachloroethene	mg/l	.025	0.0236	94.3	72.6-126	WG724917
Toluene	mg/l	.025	0.0263	105.	79.7-116	WG724917
trans-1,2-Dichloroethene	mg/l	.025	0.0261	104.	72.6-121	WG724917
trans-1,3-Dichloropropene	mg/l	.025	0.0279	112.	74.3-123	WG724917
Trichloroethene	mg/l	.025	0.0261	104.	77.7-118	WG724917
Trichlorofluoromethane	mg/l	.025	0.0294	118.	63.5-135	WG724917
Vinyl chloride	mg/l	.025	0.0257	103.	65.9-128	WG724917
Xylenes, Total	mg/l	.075	0.0812	108.	78.7-121	WG724917
4-Bromofluorobenzene				106.0	71-126	WG724917
Dibromofluoromethane				111.0	78.3-121	WG724917
Toluene-d8				109.0	88.5-111	WG724917
a,a,a-Trifluorotoluene				107.0	85-114	WG724917
1,1,1,2-Tetrachloroethane	mg/kg	.025	0.0264	106.	72.9-124	WG725704
1,1,1-Trichloroethane	mg/kg	.025	0.0275	110.	73.7-124	WG725704
1,1,2,2-Tetrachloroethane	mg/kg	.025	0.0259	104.	69.4-122	WG725704
1,1,2-Trichloroethane	mg/kg	.025	0.0266	106.	79.1-118	WG725704
1,1,2-Trichlorotrifluoroethane	mg/kg	.025	0.0274	109.	70-146	WG725704
1,1-Dichloroethane	mg/kg	.025	0.0280	112.	75-124	WG725704
1,1-Dichloroethene	mg/kg	.025	0.0275	110.	70.4-129	WG725704
1,1-Dichloropropene	mg/kg	.025	0.0280	112.	74.9-124	WG725704
1,2,3-Trichlorobenzene	mg/kg	.025	0.0288	115.	69.3-131	WG725704
1,2,3-Trichloropropane	mg/kg	.025	0.0253	101.	71.4-123	WG725704
1,2,3-Trimethylbenzene	mg/kg	.025	0.0278	111.	73.6-113	WG725704
1,2,4-Trichlorobenzene	mg/kg	.025	0.0289	116.	71.9-137	WG725704
1,2,4-Trimethylbenzene	mg/kg	.025	0.0270	108.	75.5-122	WG725704
1,2-Dibromo-3-Chloropropane	mg/kg	.025	0.0257	103.	62.8-133	WG725704
1,2-Dibromoethane	mg/kg	.025	0.0259	104.	78.6-120	WG725704
1,2-Dichlorobenzene	mg/kg	.025	0.0272	109.	78.3-118	WG725704
1,2-Dichloroethane	mg/kg	.025	0.0274	110.	70.1-124	WG725704
1,2-Dichloropropane	mg/kg	.025	0.0284	114.	77.9-119	WG725704
1,3,5-Trimethylbenzene	mg/kg	.025	0.0271	108.	75.9-124	WG725704
1,3-Dichlorobenzene	mg/kg	.025	0.0263	105.	72-126	WG725704
1,3-Dichloropropane	mg/kg	.025	0.0270	108.	79.1-117	WG725704
1,4-Dichlorobenzene	mg/kg	.025	0.0271	108.	78.3-117	WG725704
2,2-Dichloropropane	mg/kg	.025	0.0253	101.	61.3-136	WG725704
2-Butanone (MEK)	mg/kg	.125	0.136	109.	53.7-153	WG725704
2-Chloroethyl vinyl ether	mg/kg	.125	0.182	146.	37.7-157	WG725704
2-Chlorotoluene	mg/kg	.025	0.0260	104.	75.6-121	WG725704
4-Chlorotoluene	mg/kg	.025	0.0274	110.	77.3-120	WG725704
4-Methyl-2-pentanone (MIBK)	mg/kg	.125	0.145	116.	70.4-137	WG725704
Acetone	mg/kg	.125	0.126	101.	35.1-175	WG725704

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Level II

L702895

June 11, 2014

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Acrylonitrile	mg/kg	.125	0.141	113.	56.4-128	WG725704
Benzene	mg/kg	.025	0.0278	111.	77.1-121	WG725704
Bromobenzene	mg/kg	.025	0.0266	106.	78.2-115	WG725704
Bromodichloromethane	mg/kg	.025	0.0259	104.	74.9-115	WG725704
Bromoform	mg/kg	.025	0.0240	95.9	65.9-132	WG725704
Bromomethane	mg/kg	.025	0.0234	93.7	48.7-165	WG725704
Carbon tetrachloride	mg/kg	.025	0.0269	107.	70-124	WG725704
Chlorobenzene	mg/kg	.025	0.0265	106.	79.1-119	WG725704
Chlorodibromomethane	mg/kg	.025	0.0256	102.	73.5-121	WG725704
Chloroethane	mg/kg	.025	0.0277	111.	66.2-132	WG725704
Chloroform	mg/kg	.025	0.0266	106.	76.7-122	WG725704
Chloromethane	mg/kg	.025	0.0272	109.	63.4-131	WG725704
cis-1,2-Dichloroethene	mg/kg	.025	0.0271	108.	78.2-119	WG725704
cis-1,3-Dichloropropene	mg/kg	.025	0.0279	112.	79.6-120	WG725704
Di-isopropyl ether	mg/kg	.025	0.0298	119.	70.4-133	WG725704
Dibromomethane	mg/kg	.025	0.0269	108.	79.4-120	WG725704
Dichlorodifluoromethane	mg/kg	.025	0.0286	115.	57.1-137	WG725704
Ethylbenzene	mg/kg	.025	0.0265	106.	79.7-122	WG725704
Hexachloro-1,3-butadiene	mg/kg	.025	0.0274	110.	68.2-123	WG725704
Isopropylbenzene	mg/kg	.025	0.0268	107.	80-135	WG725704
Methyl tert-butyl ether	mg/kg	.025	0.0290	116.	73-129	WG725704
Methylene Chloride	mg/kg	.025	0.0260	104.	72.6-120	WG725704
n-Butylbenzene	mg/kg	.025	0.0282	113.	77.5-126	WG725704
n-Propylbenzene	mg/kg	.025	0.0266	107.	77.9-123	WG725704
Naphthalene	mg/kg	.025	0.0282	113.	69.8-128	WG725704
p-Isopropyltoluene	mg/kg	.025	0.0271	108.	75.8-129	WG725704
sec-Butylbenzene	mg/kg	.025	0.0266	106.	75.8-126	WG725704
Styrene	mg/kg	.025	0.0272	109.	82.4-126	WG725704
tert-Butylbenzene	mg/kg	.025	0.0263	105.	76.4-126	WG725704
Tetrachloroethene	mg/kg	.025	0.0261	104.	73.9-125	WG725704
Toluene	mg/kg	.025	0.0269	108.	79.7-118	WG725704
trans-1,2-Dichloroethene	mg/kg	.025	0.0269	108.	73.8-122	WG725704
trans-1,3-Dichloropropene	mg/kg	.025	0.0268	107.	75.9-124	WG725704
Trichloroethene	mg/kg	.025	0.0273	109.	77.9-118	WG725704
Trichlorofluoromethane	mg/kg	.025	0.0269	108.	67.7-131	WG725704
Vinyl chloride	mg/kg	.025	0.0301	120.	66.7-130	WG725704
Xylenes, Total	mg/kg	.075	0.0808	108.	78.8-121	WG725704
4-Bromofluorobenzene				101.0	71-126	WG725704
Dibromofluoromethane				103.0	78.3-121	WG725704
Toluene-d8				104.0	88.5-111	WG725704
a,a,a-Trifluorotoluene				100.0	85-114	WG725704

Laboratory Control Sample Duplicate

Analyte	Units	Result	Ref	%Rec	Limit	RPD	Limit	Batch
1,1,1,2-Tetrachloroethane	mg/kg	0.0242	0.0253	97.0	72.9-124	4.46	20	WG724939
1,1,1-Trichloroethane	mg/kg	0.0250	0.0246	100.	73.7-124	1.62	20	WG724939
1,1,2,2-Tetrachloroethane	mg/kg	0.0223	0.0247	89.0	69.4-122	10.1	20	WG724939
1,1,2-Trichloroethane	mg/kg	0.0234	0.0249	94.0	79.1-118	5.96	20	WG724939
1,1,2-Trichlorotrifluoroethane	mg/kg	0.0251	0.0254	100.	70-146	1.36	20	WG724939
1,1-Dichloroethane	mg/kg	0.0249	0.0250	100.	75-124	0.0600	20	WG724939
1,1-Dichloroethene	mg/kg	0.0244	0.0244	97.0	70.4-129	0.0500	20	WG724939
1,1-Dichloropropene	mg/kg	0.0249	0.0248	100.	74.9-124	0.500	20	WG724939
1,2,3-Trichlorobenzene	mg/kg	0.0261	0.0264	104.	69.3-131	1.11	20	WG724939
1,2,3-Trichloropropane	mg/kg	0.0219	0.0237	87.0	71.4-123	8.15	20	WG724939
1,2,3-Trimethylbenzene	mg/kg	0.0254	0.0252	102.	73.6-113	0.750	20	WG724939
1,2,4-Trichlorobenzene	mg/kg	0.0261	0.0260	104.	71.9-137	0.370	20	WG724939
1,2,4-Trimethylbenzene	mg/kg	0.0245	0.0259	98.0	75.5-122	5.62	20	WG724939
1,2-Dibromo-3-Chloropropane	mg/kg	0.0209	0.0234	84.0	62.8-133	10.9	20	WG724939

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L702895

June 11, 2014

Analyte	Units	Laboratory Control Sample Result	Ref	%Rec	Limit	Duplicate RPD	Limit	Batch
1,2-Dibromoethane	mg/kg	0.0227	0.0246	91.0	78.6-120	7.99	20	WG724939
1,2-Dichlorobenzene	mg/kg	0.0248	0.0246	99.0	78.3-118	0.800	20	WG724939
1,2-Dichloroethane	mg/kg	0.0247	0.0252	99.0	70.1-124	2.06	20	WG724939
1,2-Dichloropropane	mg/kg	0.0252	0.0252	101.	77.9-119	0.220	20	WG724939
1,3,5-Trimethylbenzene	mg/kg	0.0246	0.0257	98.0	75.9-124	4.28	20	WG724939
1,3-Dichlorobenzene	mg/kg	0.0241	0.0250	96.0	72-126	3.64	20	WG724939
1,3-Dichloropropane	mg/kg	0.0230	0.0247	92.0	79.1-117	6.86	20	WG724939
1,4-Dichlorobenzene	mg/kg	0.0250	0.0250	100.	78.3-117	0.140	20	WG724939
2,2-Dichloropropane	mg/kg	0.0232	0.0232	93.0	61.3-136	0.0300	20	WG724939
2-Butanone (MEK)	mg/kg	0.103	0.111	82.0	53.7-153	7.64	21.2	WG724939
2-Chloroethyl vinyl ether	mg/kg	0.0963	0.0962	77.0	37.7-157	0.0700	20	WG724939
2-Chlorotoluene	mg/kg	0.0239	0.0251	96.0	75.6-121	4.82	20	WG724939
4-Chlorotoluene	mg/kg	0.0246	0.0250	98.0	77.3-120	1.68	20	WG724939
4-Methyl-2-pentanone (MIBK)	mg/kg	0.115	0.123	92.0	70.4-137	6.61	20	WG724939
Acetone	mg/kg	0.0968	0.108	77.0	35.1-175	10.6	26.1	WG724939
Acrylonitrile	mg/kg	0.109	0.116	87.0	56.4-128	6.72	20	WG724939
Benzene	mg/kg	0.0244	0.0242	98.0	77.1-121	0.950	20	WG724939
Bromobenzene	mg/kg	0.0237	0.0247	95.0	78.2-115	4.00	20	WG724939
Bromodichloromethane	mg/kg	0.0243	0.0238	97.0	74.9-115	2.40	20	WG724939
Bromoform	mg/kg	0.0218	0.0237	87.0	65.9-132	8.49	20	WG724939
Bromomethane	mg/kg	0.0264	0.0289	106.	48.7-165	8.88	20	WG724939
Carbon tetrachloride	mg/kg	0.0245	0.0244	98.0	70-124	0.690	20	WG724939
Chlorobenzene	mg/kg	0.0244	0.0253	97.0	79.1-119	3.69	20	WG724939
Chlorodibromomethane	mg/kg	0.0235	0.0252	94.0	73.5-121	6.89	20	WG724939
Chloroethane	mg/kg	0.0251	0.0268	100.	66.2-132	6.56	20	WG724939
Chloroform	mg/kg	0.0241	0.0241	96.0	76.7-122	0.0500	20	WG724939
Chloromethane	mg/kg	0.0225	0.0220	90.0	63.4-131	2.27	20	WG724939
cis-1,2-Dichloroethene	mg/kg	0.0246	0.0246	98.0	78.2-119	0.0200	20	WG724939
cis-1,3-Dichloropropene	mg/kg	0.0248	0.0250	99.0	79.6-120	0.450	20	WG724939
Di-isopropyl ether	mg/kg	0.0254	0.0254	102.	70.4-133	0.270	20	WG724939
Dibromomethane	mg/kg	0.0240	0.0240	96.0	79.4-120	0.200	20	WG724939
Dichlorodifluoromethane	mg/kg	0.0241	0.0245	96.0	57.1-137	1.64	20	WG724939
Ethylbenzene	mg/kg	0.0242	0.0253	97.0	79.7-122	4.34	20	WG724939
Hexachloro-1,3-butadiene	mg/kg	0.0260	0.0246	104.	68.2-123	5.20	20	WG724939
Isopropylbenzene	mg/kg	0.0244	0.0254	98.0	80-135	4.27	20	WG724939
Methyl tert-butyl ether	mg/kg	0.0242	0.0247	97.0	73-129	2.38	20	WG724939
Methylene Chloride	mg/kg	0.0235	0.0229	94.0	72.6-120	2.54	20	WG724939
n-Butylbenzene	mg/kg	0.0264	0.0259	106.	77.5-126	1.99	20	WG724939
n-Propylbenzene	mg/kg	0.0244	0.0254	97.0	77.9-123	4.17	20	WG724939
Naphthalene	mg/kg	0.0244	0.0249	98.0	69.8-128	1.95	20	WG724939
p-Isopropyltoluene	mg/kg	0.0250	0.0257	100.	75.8-129	3.03	20	WG724939
sec-Butylbenzene	mg/kg	0.0246	0.0254	98.0	75.8-126	3.38	20	WG724939
Styrene	mg/kg	0.0250	0.0259	100.	82.4-126	3.28	20	WG724939
tert-Butylbenzene	mg/kg	0.0240	0.0248	96.0	76.4-126	3.25	20	WG724939
Tetrachloroethene	mg/kg	0.0237	0.0249	95.0	73.9-125	4.84	20	WG724939
Toluene	mg/kg	0.0243	0.0241	97.0	79.7-118	0.760	20	WG724939
trans-1,2-Dichloroethene	mg/kg	0.0239	0.0238	95.0	73.8-122	0.300	20	WG724939
trans-1,3-Dichloropropene	mg/kg	0.0240	0.0247	96.0	75.9-124	2.76	20	WG724939
Trichloroethene	mg/kg	0.0247	0.0250	99.0	77.9-118	0.890	20	WG724939
Trichlorofluoromethane	mg/kg	0.0254	0.0256	102.	67.7-131	0.960	20	WG724939
Vinyl chloride	mg/kg	0.0258	0.0257	103.	66.7-130	0.130	20	WG724939
Xylenes, Total	mg/kg	0.0732	0.0763	98.0	78.8-121	4.15	20	WG724939
4-Bromofluorobenzene				96.90	71-126			WG724939
Dibromofluoromethane				99.90	78.3-121			WG724939
Toluene-d8				104.0	88.5-111			WG724939
a,a,a-Trifluorotoluene				101.0	85-114			WG724939
1,1,1,2-Tetrachloroethane	mg/l	0.0230	0.0271	92.0	74.2-124	16.2	20	WG724917

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Portland, OR 97205

Quality Assurance Report
Level II

L702895

June 11, 2014

Analyte	Units	Laboratory Control Sample Result	Ref	%Rec	Limit	Duplicate RPD	Limit	Batch
1,1,1-Trichloroethane	mg/l	0.0260	0.0302	104.	73.2-123	15.2	20	WG724917
1,1,2,2-Tetrachloroethane	mg/l	0.0239	0.0281	96.0	70.7-122	16.1	20	WG724917
1,1,2-Trichloroethane	mg/l	0.0219	0.0263	88.0	77.7-118	17.9	20	WG724917
1,1,2-Trichlorotrifluoroethane	mg/l	0.0249	0.0293	100.	67.2-143	16.4	20	WG724917
1,1-Dichloroethane	mg/l	0.0253	0.0299	101.	70.7-126	16.9	20	WG724917
1,1-Dichloroethene	mg/l	0.0229	0.0272	92.0	67.8-129	17.2	20	WG724917
1,1-Dichloropropene	mg/l	0.0236	0.0280	94.0	73.1-125	17.1	20	WG724917
1,2,3-Trichlorobenzene	mg/l	0.0245	0.0274	98.0	64.9-135	11.5	20	WG724917
1,2,3-Trichloropropane	mg/l	0.0235	0.0278	94.0	71.8-121	16.5	20	WG724917
1,2,3-Trimethylbenzene	mg/l	0.0222	0.0258	89.0	72.3-116	14.8	20	WG724917
1,2,4-Trichlorobenzene	mg/l	0.0252	0.0280	101.	69.7-136	10.3	20	WG724917
1,2,4-Trimethylbenzene	mg/l	0.0253	0.0284	101.	75-123	11.6	20	WG724917
1,2-Dibromo-3-Chloropropane	mg/l	0.0218	0.0268	87.0	65.4-128	20.4*	20	WG724917
1,2-Dibromoethane	mg/l	0.0212	0.0251	85.0	76.6-121	16.6	20	WG724917
1,2-Dichlorobenzene	mg/l	0.0221	0.0259	88.0	78.4-117	15.9	20	WG724917
1,2-Dichloroethane	mg/l	0.0246	0.0289	98.0	68.8-124	16.2	20	WG724917
1,2-Dichloropropane	mg/l	0.0240	0.0284	96.0	76.5-119	16.8	20	WG724917
1,3,5-Trimethylbenzene	mg/l	0.0250	0.0281	100.	75.6-124	11.5	20	WG724917
1,3-Dichlorobenzene	mg/l	0.0243	0.0274	97.0	70.8-128	11.8	20	WG724917
1,3-Dichloropropane	mg/l	0.0209	0.0243	83.0	77.4-117	15.2	20	WG724917
1,4-Dichlorobenzene	mg/l	0.0214	0.0255	86.0	78.8-115	17.5	20	WG724917
2,2-Dichloropropane	mg/l	0.0297	0.0326	119.	62.4-133	9.27	20	WG724917
2-Butanone (MEK)	mg/l	0.126	0.153	101.	55-149	19.2	20	WG724917
2-Chloroethyl vinyl ether	mg/l	0.111	0.134	89.0	43.8-150	19.0	20	WG724917
2-Chlorotoluene	mg/l	0.0234	0.0274	93.0	74.7-122	15.7	20	WG724917
4-Chlorotoluene	mg/l	0.0246	0.0277	98.0	77.5-120	11.9	20	WG724917
4-Methyl-2-pentanone (MIBK)	mg/l	0.134	0.164	107.	70.5-133	20.0	20	WG724917
Acetone	mg/l	0.110	0.128	88.0	35.6-163	15.2	23.9	WG724917
Acrolein	mg/l	0.119	0.142	95.0	10-190	17.0	28.1	WG724917
Acrylonitrile	mg/l	0.124	0.144	99.0	55.2-130	15.3	20	WG724917
Benzene	mg/l	0.0236	0.0279	94.0	74.8-121	17.0	20	WG724917
Bromobenzene	mg/l	0.0224	0.0260	90.0	77.5-116	14.8	20	WG724917
Bromodichloromethane	mg/l	0.0246	0.0293	98.0	75.1-116	17.5	20	WG724917
Bromoform	mg/l	0.0235	0.0273	94.0	67.5-130	14.9	20	WG724917
Bromomethane	mg/l	0.0249	0.0295	100.	49.9-162	16.8	20	WG724917
Carbon tetrachloride	mg/l	0.0244	0.0289	98.0	70.2-123	17.0	20	WG724917
Chlorobenzene	mg/l	0.0221	0.0254	88.0	78.1-119	14.1	20	WG724917
Chlorodibromomethane	mg/l	0.0221	0.0259	88.0	74-121	15.8	20	WG724917
Chloroethane	mg/l	0.0249	0.0292	100.	61.7-135	15.8	20	WG724917
Chloroform	mg/l	0.0252	0.0298	101.	76-121	17.0	20	WG724917
Chloromethane	mg/l	0.0194	0.0228	78.0	61.5-129	16.0	20	WG724917
cis-1,2-Dichloroethene	mg/l	0.0251	0.0295	100.	76-119	16.3	20	WG724917
cis-1,3-Dichloropropene	mg/l	0.0243	0.0287	97.0	78.2-120	16.6	20	WG724917
Di-isopropyl ether	mg/l	0.0266	0.0308	106.	65.6-132	14.6	20	WG724917
Dibromomethane	mg/l	0.0230	0.0274	92.0	79.5-118	17.7	20	WG724917
Dichlorodifluoromethane	mg/l	0.0236	0.0269	94.0	54.8-135	13.2	20	WG724917
Ethylbenzene	mg/l	0.0229	0.0270	91.0	78.8-122	16.5	20	WG724917
Hexachloro-1,3-butadiene	mg/l	0.0251	0.0269	100.	64.7-129	7.14	20	WG724917
Isopropylbenzene	mg/l	0.0246	0.0282	98.0	78.6-132	13.9	20	WG724917
Methyl tert-butyl ether	mg/l	0.0272	0.0319	109.	71.2-126	15.7	20	WG724917
Methylene Chloride	mg/l	0.0230	0.0270	92.0	70.3-120	16.4	20	WG724917
n-Butylbenzene	mg/l	0.0252	0.0294	101.	76.2-126	15.5	20	WG724917
n-Propylbenzene	mg/l	0.0240	0.0274	96.0	78.2-122	13.1	20	WG724917
Naphthalene	mg/l	0.0238	0.0277	95.0	68.4-128	15.0	20	WG724917
p-Isopropyltoluene	mg/l	0.0273	0.0302	109.	74-131	10.1	20	WG724917
sec-Butylbenzene	mg/l	0.0261	0.0290	104.	74.4-127	10.5	20	WG724917
Styrene	mg/l	0.0248	0.0285	99.0	80.4-126	14.1	20	WG724917
tert-Butylbenzene	mg/l	0.0253	0.0286	101.	75.3-126	12.5	20	WG724917
Tetrachloroethene	mg/l	0.0204	0.0236	81.0	72.6-126	14.6	20	WG724917

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Quality Assurance Report
Level II

June 11, 2014

L702895

Analyte	Units	Laboratory Control Sample Result	Ref	%Rec	Limit	Duplicate RPD	Limit	Batch
Toluene	mg/l	0.0221	0.0263	88.0	79.7-116	17.3	20	WG724917
trans-1,2-Dichloroethene	mg/l	0.0222	0.0261	89.0	72.6-121	16.2	20	WG724917
trans-1,3-Dichloropropene	mg/l	0.0237	0.0279	95.0	74.3-123	16.2	20	WG724917
Trichloroethene	mg/l	0.0221	0.0261	88.0	77.7-118	16.6	20	WG724917
Trichlorofluoromethane	mg/l	0.0247	0.0294	99.0	63.5-135	17.5	20	WG724917
Vinyl chloride	mg/l	0.0216	0.0257	86.0	65.9-128	17.6	20	WG724917
Xylenes, Total	mg/l	0.0704	0.0812	94.0	78.7-121	14.2	20	WG724917
4-Bromofluorobenzene				109.0	71-126			WG724917
Dibromofluoromethane				112.0	78.3-121			WG724917
Toluene-d8				110.0	88.5-111			WG724917
a,a,a-Trifluorotoluene				108.0	85-114			WG724917
1,1,1,2-Tetrachloroethane	mg/kg	0.0254	0.0264	102.	72.9-124	4.01	20	WG725704
1,1,1-Trichloroethane	mg/kg	0.0258	0.0275	103.	73.7-124	6.12	20	WG725704
1,1,2,2-Tetrachloroethane	mg/kg	0.0254	0.0259	102.	69.4-122	1.98	20	WG725704
1,1,2-Trichloroethane	mg/kg	0.0257	0.0266	103.	79.1-118	3.49	20	WG725704
1,1,2-Trichlorotrifluoroethane	mg/kg	0.0260	0.0274	104.	70-146	5.19	20	WG725704
1,1-Dichloroethane	mg/kg	0.0268	0.0280	107.	75-124	4.23	20	WG725704
1,1-Dichloroethene	mg/kg	0.0261	0.0275	104.	70.4-129	5.23	20	WG725704
1,1-Dichloropropene	mg/kg	0.0265	0.0280	106.	74.9-124	5.36	20	WG725704
1,2,3-Trichlorobenzene	mg/kg	0.0271	0.0288	108.	69.3-131	5.93	20	WG725704
1,2,3-Trichloropropane	mg/kg	0.0250	0.0253	100.	71.4-123	0.970	20	WG725704
1,2,3-Trimethylbenzene	mg/kg	0.0262	0.0278	105.	73.6-113	6.20	20	WG725704
1,2,4-Trichlorobenzene	mg/kg	0.0269	0.0289	108.	71.9-137	7.10	20	WG725704
1,2,4-Trimethylbenzene	mg/kg	0.0264	0.0270	106.	75.5-122	2.05	20	WG725704
1,2-Dibromo-3-Chloropropane	mg/kg	0.0231	0.0257	92.0	62.8-133	10.7	20	WG725704
1,2-Dibromoethane	mg/kg	0.0256	0.0259	102.	78.6-120	1.11	20	WG725704
1,2-Dichlorobenzene	mg/kg	0.0256	0.0272	102.	78.3-118	6.16	20	WG725704
1,2-Dichloroethane	mg/kg	0.0258	0.0274	103.	70.1-124	6.03	20	WG725704
1,2-Dichloropropane	mg/kg	0.0265	0.0284	106.	77.9-119	6.77	20	WG725704
1,3,5-Trimethylbenzene	mg/kg	0.0265	0.0271	106.	75.9-124	2.15	20	WG725704
1,3-Dichlorobenzene	mg/kg	0.0258	0.0263	103.	72-126	2.20	20	WG725704
1,3-Dichloropropane	mg/kg	0.0258	0.0270	103.	79.1-117	4.53	20	WG725704
1,4-Dichlorobenzene	mg/kg	0.0259	0.0271	104.	78.3-117	4.45	20	WG725704
2,2-Dichloropropane	mg/kg	0.0237	0.0253	95.0	61.3-136	6.50	20	WG725704
2-Butanone (MEK)	mg/kg	0.126	0.136	100.	53.7-153	8.05	21.2	WG725704
2-Chloroethyl vinyl ether	mg/kg	0.168	0.182	134.	37.7-157	8.45	20	WG725704
2-Chlorotoluene	mg/kg	0.0254	0.0260	101.	75.6-121	2.64	20	WG725704
4-Chlorotoluene	mg/kg	0.0265	0.0274	106.	77.3-120	3.25	20	WG725704
4-Methyl-2-pentanone (MIBK)	mg/kg	0.135	0.145	108.	70.4-137	7.16	20	WG725704
Acetone	mg/kg	0.117	0.126	93.0	35.1-175	7.91	26.1	WG725704
Acrylonitrile	mg/kg	0.132	0.141	105.	56.4-128	6.69	20	WG725704
Benzene	mg/kg	0.0264	0.0278	105.	77.1-121	5.23	20	WG725704
Bromobenzene	mg/kg	0.0255	0.0266	102.	78.2-115	4.07	20	WG725704
Bromodichloromethane	mg/kg	0.0247	0.0259	99.0	74.9-115	4.78	20	WG725704
Bromoform	mg/kg	0.0230	0.0240	92.0	65.9-132	4.28	20	WG725704
Bromomethane	mg/kg	0.0225	0.0234	90.0	48.7-165	4.03	20	WG725704
Carbon tetrachloride	mg/kg	0.0253	0.0269	101.	70-124	5.83	20	WG725704
Chlorobenzene	mg/kg	0.0257	0.0265	103.	79.1-119	2.91	20	WG725704
Chlorodibromomethane	mg/kg	0.0255	0.0256	102.	73.5-121	0.590	20	WG725704
Chloroethane	mg/kg	0.0254	0.0277	102.	66.2-132	8.47	20	WG725704
Chloroform	mg/kg	0.0251	0.0266	100.	76.7-122	5.67	20	WG725704
Chloromethane	mg/kg	0.0256	0.0272	102.	63.4-131	6.02	20	WG725704
cis-1,2-Dichloroethene	mg/kg	0.0258	0.0271	103.	78.2-119	4.67	20	WG725704
cis-1,3-Dichloropropene	mg/kg	0.0262	0.0279	105.	79.6-120	6.39	20	WG725704
Di-isopropyl ether	mg/kg	0.0282	0.0298	113.	70.4-133	5.63	20	WG725704
Dibromomethane	mg/kg	0.0254	0.0269	102.	79.4-120	5.76	20	WG725704
Dichlorodifluoromethane	mg/kg	0.0270	0.0286	108.	57.1-137	5.73	20	WG725704

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Quality Assurance Report
Level II

L702895

June 11, 2014

Analyte	Units	Laboratory Control Sample Duplicate Result	Ref	%Rec	Limit	RPD	Limit	Batch
Ethylbenzene	mg/kg	0.0258	0.0265	103.	79.7-122	2.76	20	WG725704
Hexachloro-1,3-butadiene	mg/kg	0.0255	0.0274	102.	68.2-123	7.24	20	WG725704
Isopropylbenzene	mg/kg	0.0261	0.0268	104.	80-135	2.59	20	WG725704
Methyl tert-butyl ether	mg/kg	0.0270	0.0290	108.	73-129	7.08	20	WG725704
Methylene Chloride	mg/kg	0.0250	0.0260	100.	72.6-120	3.92	20	WG725704
n-Butylbenzene	mg/kg	0.0264	0.0282	106.	77.5-126	6.66	20	WG725704
n-Propylbenzene	mg/kg	0.0258	0.0266	103.	77.9-123	3.15	20	WG725704
Naphthalene	mg/kg	0.0268	0.0282	107.	69.8-128	5.08	20	WG725704
p-Isopropyltoluene	mg/kg	0.0264	0.0271	106.	75.8-129	2.48	20	WG725704
sec-Butylbenzene	mg/kg	0.0259	0.0266	103.	75.8-126	2.76	20	WG725704
Styrene	mg/kg	0.0268	0.0272	107.	82.4-126	1.40	20	WG725704
tert-Butylbenzene	mg/kg	0.0254	0.0263	102.	76.4-126	3.43	20	WG725704
Tetrachloroethene	mg/kg	0.0252	0.0261	101.	73.9-125	3.63	20	WG725704
Toluene	mg/kg	0.0255	0.0269	102.	79.7-118	5.28	20	WG725704
trans-1,2-Dichloroethene	mg/kg	0.0258	0.0269	103.	73.8-122	4.47	20	WG725704
trans-1,3-Dichloropropene	mg/kg	0.0254	0.0268	102.	75.9-124	5.49	20	WG725704
Trichloroethene	mg/kg	0.0257	0.0273	103.	77.9-118	6.33	20	WG725704
Trichlorofluoromethane	mg/kg	0.0247	0.0269	99.0	67.7-131	8.38	20	WG725704
Vinyl chloride	mg/kg	0.0282	0.0301	113.	66.7-130	6.38	20	WG725704
Xylenes, Total	mg/kg	0.0777	0.0808	104.	78.8-121	3.98	20	WG725704
4-Bromofluorobenzene				102.0	71-126			WG725704
Dibromofluoromethane				104.0	78.3-121			WG725704
Toluene-d8				105.0	88.5-111			WG725704
a,a,a-Trifluorotoluene				100.0	85-114			WG725704

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
1,1,1,2-Tetrachloroethane	mg/kg	0.552	0.0	.025	93.0	64-128	L702753-01	WG724939
1,1,1-Trichloroethane	mg/kg	0.549	0.0	.025	92.0	58.7-134	L702753-01	WG724939
1,1,2,2-Tetrachloroethane	mg/kg	0.543	0.0	.025	91.0	56-132	L702753-01	WG724939
1,1,2-Trichloroethane	mg/kg	0.539	0.0	.025	91.0	66.3-125	L702753-01	WG724939
1,1,2-Trichlorotrifluoroethane	mg/kg	0.550	0.0	.025	93.0	54.8-154	L702753-01	WG724939
1,1-Dichloroethane	mg/kg	0.566	0.0	.025	95.0	58.5-132	L702753-01	WG724939
1,1-Dichloroethene	mg/kg	0.530	0.0	.025	89.0	51.1-140	L702753-01	WG724939
1,1-Dichloropropene	mg/kg	0.528	0.0	.025	89.0	57.3-136	L702753-01	WG724939
1,2,3-Trichlorobenzene	mg/kg	0.622	0.0	.025	100.	59.1-138	L702753-01	WG724939
1,2,3-Trichloropropane	mg/kg	0.531	0.0	.025	89.0	61.4-128	L702753-01	WG724939
1,2,3-Trimethylbenzene	mg/kg	0.569	0.0	.025	96.0	61.3-122	L702753-01	WG724939
1,2,4-Trichlorobenzene	mg/kg	0.630	0.0	.025	110.	63.6-143	L702753-01	WG724939
1,2,4-Trimethylbenzene	mg/kg	0.571	0.0	.025	96.0	57.4-137	L702753-01	WG724939
1,2-Dibromo-3-Chloropropane	mg/kg	0.494	0.0	.025	83.0	57.3-136	L702753-01	WG724939
1,2-Dibromoethane	mg/kg	0.521	0.0	.025	88.0	67.1-125	L702753-01	WG724939
1,2-Dichlorobenzene	mg/kg	0.564	0.0	.025	95.0	68.2-123	L702753-01	WG724939
1,2-Dichloroethane	mg/kg	0.573	0.0	.025	97.0	60-126	L702753-01	WG724939
1,2-Dichloropropane	mg/kg	0.563	0.0	.025	95.0	64.2-123	L702753-01	WG724939
1,3,5-Trimethylbenzene	mg/kg	0.570	0.0	.025	96.0	63.6-132	L702753-01	WG724939
1,3-Dichlorobenzene	mg/kg	0.574	0.0	.025	97.0	63.1-131	L702753-01	WG724939
1,3-Dichloropropane	mg/kg	0.535	0.0	.025	90.0	67.9-121	L702753-01	WG724939
1,4-Dichlorobenzene	mg/kg	0.577	0.0	.025	97.0	68.6-123	L702753-01	WG724939
2,2-Dichloropropane	mg/kg	0.526	0.0	.025	88.0	50.5-144	L702753-01	WG724939
2-Butanone (MEK)	mg/kg	2.65	0.0285	.125	88.0	22.4-138	L702753-01	WG724939
2-Chloroethyl vinyl ether	mg/kg	2.36	0.0	.125	80.0	10-155	L702753-01	WG724939
2-Chlorotoluene	mg/kg	0.553	0.0	.025	93.0	63.6-128	L702753-01	WG724939
4-Chlorotoluene	mg/kg	0.570	0.0	.025	96.0	65.7-127	L702753-01	WG724939
4-Methyl-2-pentanone (MIBK)	mg/kg	2.75	0.0	.125	93.0	60.8-140	L702753-01	WG724939
Acetone	mg/kg	2.54	0.271	.125	76.0	10-130	L702753-01	WG724939
Acrylonitrile	mg/kg	2.72	0.0	.125	92.0	49.4-133	L702753-01	WG724939
Benzene	mg/kg	0.544	0.000717	.025	92.0	54.3-133	L702753-01	WG724939

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Est. 1970

GeoSyntec - Portland, OR
Barb Lary / Cindy Bartlett
621 SW Morrison St., Suite 600

Portland, OR 97205

Quality Assurance Report
Level II

June 11, 2014

L702895

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Bromobenzene	mg/kg	0.553	0.0	.025	93.0	63.9-124	L702753-01	WG724939
Bromodichloromethane	mg/kg	0.524	0.0	.025	88.0	63.9-121	L702753-01	WG724939
Bromoform	mg/kg	0.501	0.0	.025	84.0	59.5-134	L702753-01	WG724939
Bromomethane	mg/kg	0.400	0.0	.025	67.0	41.7-155	L702753-01	WG724939
Carbon tetrachloride	mg/kg	0.518	0.0	.025	87.0	55.7-134	L702753-01	WG724939
Chlorobenzene	mg/kg	0.548	0.0	.025	92.0	67-125	L702753-01	WG724939
Chlorodibromomethane	mg/kg	0.532	0.0	.025	90.0	64.3-125	L702753-01	WG724939
Chloroethane	mg/kg	0.0594	0.0	.025	10.0*	51.5-136	L702753-01	WG724939
Chloroform	mg/kg	0.546	0.0	.025	92.0	63-129	L702753-01	WG724939
Chloromethane	mg/kg	0.497	0.0	.025	84.0	42.4-135	L702753-01	WG724939
cis-1,2-Dichloroethene	mg/kg	0.546	0.0	.025	92.0	59.2-129	L702753-01	WG724939
cis-1,3-Dichloropropene	mg/kg	0.556	0.0	.025	94.0	66.4-125	L702753-01	WG724939
Di-isopropyl ether	mg/kg	0.586	0.0	.025	99.0	56.9-136	L702753-01	WG724939
Dibromomethane	mg/kg	0.541	0.0	.025	91.0	68.2-124	L702753-01	WG724939
Dichlorodifluoromethane	mg/kg	0.197	0.0	.025	33.0*	40.6-144	L702753-01	WG724939
Ethylbenzene	mg/kg	0.540	0.0	.025	91.0	61.4-133	L702753-01	WG724939
Hexachloro-1,3-butadiene	mg/kg	0.585	0.0	.025	98.0	55.1-136	L702753-01	WG724939
Isopropylbenzene	mg/kg	0.553	0.0	.025	93.0	66.8-141	L702753-01	WG724939
Methyl tert-butyl ether	mg/kg	0.577	0.0	.025	97.0	57.7-134	L702753-01	WG724939
Methylene Chloride	mg/kg	0.518	0.0	.025	87.0	58.1-122	L702753-01	WG724939
n-Butylbenzene	mg/kg	0.583	0.0	.025	98.0	62.7-140	L702753-01	WG724939
n-Propylbenzene	mg/kg	0.560	0.0	.025	94.0	10-176	L702753-01	WG724939
Naphthalene	mg/kg	0.563	0.0	.025	95.0	58-135	L702753-01	WG724939
p-Isopropyltoluene	mg/kg	0.576	0.0	.025	97.0	63.2-139	L702753-01	WG724939
sec-Butylbenzene	mg/kg	0.565	0.0	.025	95.0	62.2-136	L702753-01	WG724939
Styrene	mg/kg	0.576	0.0	.025	97.0	66.8-133	L702753-01	WG724939
tert-Butylbenzene	mg/kg	0.549	0.0	.025	92.0	63.3-134	L702753-01	WG724939
Tetrachloroethene	mg/kg	0.520	0.0	.025	88.0	53-139	L702753-01	WG724939
Toluene	mg/kg	0.536	0.00149	.025	90.0	61.4-130	L702753-01	WG724939
trans-1,2-Dichloroethene	mg/kg	0.507	0.0	.025	85.0	56.5-129	L702753-01	WG724939
trans-1,3-Dichloropropene	mg/kg	0.539	0.0	.025	91.0	64.1-128	L702753-01	WG724939
Trichloroethene	mg/kg	0.538	0.0	.025	91.0	44.1-149	L702753-01	WG724939
Trichlorofluoromethane	mg/kg	0.0337	0.0	.025	5.70*	49.6-145	L702753-01	WG724939
Vinyl chloride	mg/kg	0.556	0.0	.025	94.0	47.8-137	L702753-01	WG724939
Xylenes, Total	mg/kg	1.64	0.00149	.075	92.0	63.3-131	L702753-01	WG724939
4-Bromofluorobenzene					101.0	71-126		WG724939
Dibromofluoromethane					103.0	78.3-121		WG724939
Toluene-d8					104.0	88.5-111		WG724939
a,a,a-Trifluorotoluene					99.20	85-114		WG724939
1,1,1,2-Tetrachloroethane	mg/l	0.0298	0.0	.025	120.	64-128	L702942-06	WG724917
1,1,1-Trichloroethane	mg/l	0.0376	0.0	.025	150.*	58.7-134	L702942-06	WG724917
1,1,2,2-Tetrachloroethane	mg/l	0.0323	0.0	.025	130.	56-132	L702942-06	WG724917
1,1,2-Trichloroethane	mg/l	0.0296	0.0	.025	120.	66.3-125	L702942-06	WG724917
1,1,2-Trichlorotrifluoroethane	mg/l	0.0378	0.0	.025	150.	54.8-154	L702942-06	WG724917
1,1-Dichloroethane	mg/l	0.0364	0.0	.025	140.*	58.5-132	L702942-06	WG724917
1,1-Dichloroethene	mg/l	0.0375	0.0	.025	150.*	51.1-140	L702942-06	WG724917
1,1-Dichloropropene	mg/l	0.0376	0.0	.025	150.*	57.3-136	L702942-06	WG724917
1,2,3-Trichlorobenzene	mg/l	0.0301	0.0	.025	120.	59.1-138	L702942-06	WG724917
1,2,3-Trichloropropane	mg/l	0.0328	0.0	.025	130.*	61.4-128	L702942-06	WG724917
1,2,3-Trimethylbenzene	mg/l	0.0281	0.0	.025	110.	61.3-122	L702942-06	WG724917
1,2,4-Trichlorobenzene	mg/l	0.0291	0.0	.025	120.	63.6-143	L702942-06	WG724917
1,2,4-Trimethylbenzene	mg/l	0.0331	0.0	.025	130.	57.4-137	L702942-06	WG724917
1,2-Dibromo-3-Chloropropane	mg/l	0.0319	0.0	.025	130.	57.3-136	L702942-06	WG724917
1,2-Dibromoethane	mg/l	0.0301	0.0	.025	120.	67.1-125	L702942-06	WG724917
1,2-Dichlorobenzene	mg/l	0.0278	0.0	.025	110.	68.2-123	L702942-06	WG724917
1,2-Dichloroethane	mg/l	0.0345	0.0	.025	140.*	60-126	L702942-06	WG724917
1,2-Dichloropropane	mg/l	0.0324	0.0	.025	130.*	64.2-123	L702942-06	WG724917

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Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
1,3,5-Trimethylbenzene	mg/l	0.0329	0.0	.025	130.	63.6-132	L702942-06	WG724917
1,3-Dichlorobenzene	mg/l	0.0305	0.0	.025	120.	63.1-131	L702942-06	WG724917
1,3-Dichloropropane	mg/l	0.0286	0.0	.025	120.	67.9-121	L702942-06	WG724917
1,4-Dichlorobenzene	mg/l	0.0271	0.0	.025	110.	68.6-123	L702942-06	WG724917
2,2-Dichloropropane	mg/l	0.0410	0.0	.025	160.*	50.5-144	L702942-06	WG724917
2-Butanone (MEK)	mg/l	0.200	0.0	.125	160.*	22.4-138	L702942-06	WG724917
2-Chloroethyl vinyl ether	mg/l	0.0412	0.0	.125	33.0	10-155	L702942-06	WG724917
2-Chlorotoluene	mg/l	0.0311	0.0	.025	120.	63.6-128	L702942-06	WG724917
4-Chlorotoluene	mg/l	0.0315	0.0	.025	130.	65.7-127	L702942-06	WG724917
4-Methyl-2-pentanone (MIBK)	mg/l	0.198	0.0	.125	160.*	60.8-140	L702942-06	WG724917
Acetone	mg/l	0.173	0.00902	.125	130.*	10-130	L702942-06	WG724917
Acrolein	mg/l	0.188	0.0	.125	150.	10-200	L702942-06	WG724917
Acrylonitrile	mg/l	0.194	0.0	.125	160.*	49.4-133	L702942-06	WG724917
Benzene	mg/l	0.0354	0.0	.025	140.*	54.3-133	L702942-06	WG724917
Bromobenzene	mg/l	0.0297	0.0	.025	120.	63.9-124	L702942-06	WG724917
Bromodichloromethane	mg/l	0.0327	0.0	.025	130.*	63.9-121	L702942-06	WG724917
Bromoform	mg/l	0.0313	0.0	.025	120.	59.5-134	L702942-06	WG724917
Bromomethane	mg/l	0.0420	0.0	.025	170.*	41.7-155	L702942-06	WG724917
Carbon tetrachloride	mg/l	0.0368	0.0	.025	150.*	55.7-134	L702942-06	WG724917
Chlorobenzene	mg/l	0.0303	0.0	.025	120.	67-125	L702942-06	WG724917
Chlorodibromomethane	mg/l	0.0294	0.0	.025	120.	64.3-125	L702942-06	WG724917
Chloroethane	mg/l	0.0406	0.0	.025	160.*	51.5-136	L702942-06	WG724917
Chloroform	mg/l	0.0347	0.0	.025	140.*	63-129	L702942-06	WG724917
Chloromethane	mg/l	0.0357	0.0	.025	140.*	42.4-135	L702942-06	WG724917
cis-1,2-Dichloroethene	mg/l	0.0386	0.00280	.025	140.*	59.2-129	L702942-06	WG724917
cis-1,3-Dichloropropene	mg/l	0.0327	0.0	.025	130.*	66.4-125	L702942-06	WG724917
Di-isopropyl ether	mg/l	0.0355	0.0	.025	140.*	56.9-136	L702942-06	WG724917
Dibromomethane	mg/l	0.0326	0.0	.025	130.*	68.2-124	L702942-06	WG724917
Dichlorodifluoromethane	mg/l	0.0382	0.0	.025	150.*	40.6-144	L702942-06	WG724917
Ethylbenzene	mg/l	0.0323	0.0	.025	130.	61.4-133	L702942-06	WG724917
Hexachloro-1,3-butadiene	mg/l	0.0317	0.0	.025	130.	55.1-136	L702942-06	WG724917
Isopropylbenzene	mg/l	0.0335	0.0	.025	130.	66.8-141	L702942-06	WG724917
Methyl tert-butyl ether	mg/l	0.0367	0.0	.025	150.*	57.7-134	L702942-06	WG724917
Methylene Chloride	mg/l	0.0337	0.000722	.025	130.*	58.1-122	L702942-06	WG724917
n-Butylbenzene	mg/l	0.0324	0.0	.025	130.	62.7-140	L702942-06	WG724917
n-Propylbenzene	mg/l	0.0323	0.0	.025	130.	65.9-131	L702942-06	WG724917
Naphthalene	mg/l	0.0307	0.0	.025	120.	58-135	L702942-06	WG724917
p-Isopropyltoluene	mg/l	0.0354	0.0	.025	140.*	63.2-139	L702942-06	WG724917
sec-Butylbenzene	mg/l	0.0343	0.0	.025	140.*	62.2-136	L702942-06	WG724917
Styrene	mg/l	0.0331	0.0	.025	130.	66.8-133	L702942-06	WG724917
tert-Butylbenzene	mg/l	0.0336	0.0	.025	130.	63.3-134	L702942-06	WG724917
Tetrachloroethene	mg/l	0.0645	0.0371	.025	110.	53-139	L702942-06	WG724917
Toluene	mg/l	0.0326	0.000333	.025	130.	61.4-130	L702942-06	WG724917
trans-1,2-Dichloroethene	mg/l	0.0363	0.0	.025	140.*	56.5-129	L702942-06	WG724917
trans-1,3-Dichloropropene	mg/l	0.0317	0.0	.025	130.	64.1-128	L702942-06	WG724917
Trichloroethene	mg/l	0.0337	0.00102	.025	130.	44.1-149	L702942-06	WG724917
Trichlorofluoromethane	mg/l	0.0396	0.0	.025	160.*	49.6-145	L702942-06	WG724917
Vinyl chloride	mg/l	0.0378	0.0	.025	150.*	47.8-137	L702942-06	WG724917
Xylenes, Total	mg/l	0.0979	0.0	.075	130.	63.3-131	L702942-06	WG724917
4-Bromofluorobenzene					109.0	71-126		WG724917
Dibromofluoromethane					112.0	78.3-121		WG724917
Toluene-d8					109.0	88.5-111		WG724917
a,a,a-Trifluorotoluene					107.0	85-114		WG724917
1,1,1,2-Tetrachloroethane	mg/kg	0.125	0.0	.025	100.	64-128	L702905-01	WG725704
1,1,1-Trichloroethane	mg/kg	0.125	0.0	.025	100.	58.7-134	L702905-01	WG725704
1,1,2,2-Tetrachloroethane	mg/kg	0.122	0.0	.025	98.0	56-132	L702905-01	WG725704
1,1,2-Trichloroethane	mg/kg	0.122	0.0	.025	98.0	66.3-125	L702905-01	WG725704

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Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
1,1,2-Trichlorotrifluoroethane	mg/kg	0.124	0.0	.025	99.0	54.8-154	L702905-01	WG725704
1,1-Dichloroethane	mg/kg	0.127	0.0	.025	100.	58.5-132	L702905-01	WG725704
1,1-Dichloroethene	mg/kg	0.126	0.0	.025	100.	51.1-140	L702905-01	WG725704
1,1-Dichloropropene	mg/kg	0.126	0.0	.025	100.	57.3-136	L702905-01	WG725704
1,2,3-Trichlorobenzene	mg/kg	0.125	0.0	.025	100.	59.1-138	L702905-01	WG725704
1,2,3-Trichloropropane	mg/kg	0.126	0.0	.025	100.	61.4-128	L702905-01	WG725704
1,2,3-Trimethylbenzene	mg/kg	0.124	0.0	.025	99.0	61.3-122	L702905-01	WG725704
1,2,4-Trichlorobenzene	mg/kg	0.126	0.0	.025	100.	63.6-143	L702905-01	WG725704
1,2,4-Trimethylbenzene	mg/kg	0.125	0.0	.025	100.	57.4-137	L702905-01	WG725704
1,2-Dibromo-3-Chloropropane	mg/kg	0.113	0.0	.025	90.0	57.3-136	L702905-01	WG725704
1,2-Dibromoethane	mg/kg	0.122	0.0	.025	98.0	67.1-125	L702905-01	WG725704
1,2-Dichlorobenzene	mg/kg	0.121	0.0	.025	97.0	68.2-123	L702905-01	WG725704
1,2-Dichloroethane	mg/kg	0.127	0.0	.025	100.	60-126	L702905-01	WG725704
1,2-Dichloropropane	mg/kg	0.126	0.0	.025	100.	64.2-123	L702905-01	WG725704
1,3,5-Trimethylbenzene	mg/kg	0.124	0.0	.025	99.0	63.6-132	L702905-01	WG725704
1,3-Dichlorobenzene	mg/kg	0.122	0.0	.025	98.0	63.1-131	L702905-01	WG725704
1,3-Dichloropropane	mg/kg	0.124	0.0	.025	100.	67.9-121	L702905-01	WG725704
1,4-Dichlorobenzene	mg/kg	0.124	0.0	.025	99.0	68.6-123	L702905-01	WG725704
2,2-Dichloropropane	mg/kg	0.116	0.0	.025	93.0	50.5-144	L702905-01	WG725704
2-Butanone (MEK)	mg/kg	0.604	0.00136	.125	96.0	22.4-138	L702905-01	WG725704
2-Chloroethyl vinyl ether	mg/kg	0.860	0.0	.125	140.	10-155	L702905-01	WG725704
2-Chlorotoluene	mg/kg	0.122	0.0	.025	97.0	63.6-128	L702905-01	WG725704
4-Chlorotoluene	mg/kg	0.126	0.0	.025	100.	65.7-127	L702905-01	WG725704
4-Methyl-2-pentanone (MIBK)	mg/kg	0.651	0.0	.125	100.	60.8-140	L702905-01	WG725704
Acetone	mg/kg	0.563	0.103	.125	74.0	10-130	L702905-01	WG725704
Acrylonitrile	mg/kg	0.637	0.0	.125	100.	49.4-133	L702905-01	WG725704
Benzene	mg/kg	0.126	0.0	.025	100.	54.3-133	L702905-01	WG725704
Bromobenzene	mg/kg	0.122	0.0	.025	98.0	63.9-124	L702905-01	WG725704
Bromodichloromethane	mg/kg	0.116	0.0	.025	93.0	63.9-121	L702905-01	WG725704
Bromoform	mg/kg	0.111	0.0	.025	89.0	59.5-134	L702905-01	WG725704
Bromomethane	mg/kg	0.111	0.0	.025	89.0	41.7-155	L702905-01	WG725704
Carbon tetrachloride	mg/kg	0.124	0.0	.025	99.0	55.7-134	L702905-01	WG725704
Chlorobenzene	mg/kg	0.125	0.0	.025	100.	67-125	L702905-01	WG725704
Chlorodibromomethane	mg/kg	0.123	0.0	.025	98.0	64.3-125	L702905-01	WG725704
Chloroethane	mg/kg	0.124	0.0	.025	100.	51.5-136	L702905-01	WG725704
Chloroform	mg/kg	0.123	0.0	.025	99.0	63-129	L702905-01	WG725704
Chloromethane	mg/kg	0.121	0.0	.025	97.0	42.4-135	L702905-01	WG725704
cis-1,2-Dichloroethene	mg/kg	0.125	0.0	.025	100.	59.2-129	L702905-01	WG725704
cis-1,3-Dichloropropene	mg/kg	0.126	0.0	.025	100.	66.4-125	L702905-01	WG725704
Di-isopropyl ether	mg/kg	0.133	0.0	.025	110.	56.9-136	L702905-01	WG725704
Dibromomethane	mg/kg	0.122	0.0	.025	97.0	68.2-124	L702905-01	WG725704
Dichlorodifluoromethane	mg/kg	0.129	0.0	.025	100.	40.6-144	L702905-01	WG725704
Ethylbenzene	mg/kg	0.126	0.0	.025	100.	61.4-133	L702905-01	WG725704
Hexachloro-1,3-butadiene	mg/kg	0.114	0.0	.025	91.0	55.1-136	L702905-01	WG725704
Isopropylbenzene	mg/kg	0.124	0.0	.025	100.	66.8-141	L702905-01	WG725704
Methyl tert-butyl ether	mg/kg	0.130	0.0	.025	100.	57.7-134	L702905-01	WG725704
Methylene Chloride	mg/kg	0.117	0.0	.025	94.0	58.1-122	L702905-01	WG725704
n-Butylbenzene	mg/kg	0.122	0.0	.025	97.0	62.7-140	L702905-01	WG725704
n-Propylbenzene	mg/kg	0.123	0.0	.025	98.0	10-176	L702905-01	WG725704
Naphthalene	mg/kg	0.123	0.000675	.025	98.0	58-135	L702905-01	WG725704
p-Isopropyltoluene	mg/kg	0.124	0.0	.025	99.0	63.2-139	L702905-01	WG725704
sec-Butylbenzene	mg/kg	0.121	0.0	.025	97.0	62.2-136	L702905-01	WG725704
Styrene	mg/kg	0.128	0.0	.025	100.	66.8-133	L702905-01	WG725704
tert-Butylbenzene	mg/kg	0.121	0.0	.025	97.0	63.3-134	L702905-01	WG725704
Tetrachloroethene	mg/kg	0.121	0.0	.025	97.0	53-139	L702905-01	WG725704
Toluene	mg/kg	0.123	0.0	.025	98.0	61.4-130	L702905-01	WG725704
trans-1,2-Dichloroethene	mg/kg	0.125	0.0	.025	100.	56.5-129	L702905-01	WG725704
trans-1,3-Dichloropropene	mg/kg	0.123	0.0	.025	98.0	64.1-128	L702905-01	WG725704
Trichloroethene	mg/kg	0.125	0.0	.025	100.	44.1-149	L702905-01	WG725704

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Quality Assurance Report
Level II

L702895

June 11, 2014

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Trichlorofluoromethane	mg/kg	0.121	0.0	.025	97.0	49.6-145	L702905-01	WG725704
Vinyl chloride	mg/kg	0.137	0.0	.025	110.	47.8-137	L702905-01	WG725704
Xylenes, Total	mg/kg	0.377	0.000440	.075	100.	63.3-131	L702905-01	WG725704
4-Bromofluorobenzene					103.0	71-126		WG725704
Dibromofluoromethane					103.0	78.3-121		WG725704
Toluene-d8					103.0	88.5-111		WG725704
a,a,a-Trifluorotoluene					98.80	85-114		WG725704

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
1,1,1,2-Tetrachloroethane	mg/kg	0.528	0.552	89.0	64-128	4.29	20	L702753-01	WG724939
1,1,1-Trichloroethane	mg/kg	0.571	0.549	96.2	58.7-134	4.05	20	L702753-01	WG724939
1,1,2,2-Tetrachloroethane	mg/kg	0.504	0.543	84.8	56-132	7.49	22.2	L702753-01	WG724939
1,1,2-Trichloroethane	mg/kg	0.540	0.539	90.9	66.3-125	0.100	20	L702753-01	WG724939
1,1,2-Trichlorotrifluoroethane	mg/kg	0.561	0.550	94.4	54.8-154	1.96	22.5	L702753-01	WG724939
1,1-Dichloroethane	mg/kg	0.616	0.566	104.	58.5-132	8.42	20	L702753-01	WG724939
1,1-Dichloroethene	mg/kg	0.559	0.530	94.1	51.1-140	5.32	20.2	L702753-01	WG724939
1,1-Dichloropropene	mg/kg	0.570	0.528	96.0	57.3-136	7.65	20	L702753-01	WG724939
1,2,3-Trichlorobenzene	mg/kg	0.613	0.622	103.	59.1-138	1.55	23.7	L702753-01	WG724939
1,2,3-Trichloropropane	mg/kg	0.480	0.531	80.8	61.4-128	10.0	22.4	L702753-01	WG724939
1,2,3-Trimethylbenzene	mg/kg	0.595	0.569	100.	61.3-122	4.36	20	L702753-01	WG724939
1,2,4-Trichlorobenzene	mg/kg	0.619	0.630	104.	63.6-143	1.77	21.9	L702753-01	WG724939
1,2,4-Trimethylbenzene	mg/kg	0.561	0.571	94.4	57.4-137	1.86	20	L702753-01	WG724939
1,2-Dibromo-3-Chloropropane	mg/kg	0.480	0.494	80.9	57.3-136	2.85	27	L702753-01	WG724939
1,2-Dibromoethane	mg/kg	0.497	0.521	83.6	67.1-125	4.87	20	L702753-01	WG724939
1,2-Dichlorobenzene	mg/kg	0.563	0.564	94.8	68.2-123	0.160	20	L702753-01	WG724939
1,2-Dichloroethane	mg/kg	0.613	0.573	103.	60-126	6.67	20	L702753-01	WG724939
1,2-Dichloropropane	mg/kg	0.612	0.563	103.	64.2-123	8.25	20	L702753-01	WG724939
1,3,5-Trimethylbenzene	mg/kg	0.559	0.570	94.1	63.6-132	1.96	20.5	L702753-01	WG724939
1,3-Dichlorobenzene	mg/kg	0.542	0.574	91.4	63.1-131	5.61	20	L702753-01	WG724939
1,3-Dichloropropane	mg/kg	0.535	0.535	90.1	67.9-121	0.0900	20	L702753-01	WG724939
1,4-Dichlorobenzene	mg/kg	0.567	0.577	95.4	68.6-123	1.89	20	L702753-01	WG724939
2,2-Dichloropropane	mg/kg	0.549	0.526	92.5	50.5-144	4.42	21.9	L702753-01	WG724939
2-Butanone (MEK)	mg/kg	2.76	2.65	91.9	22.4-138	3.87	27	L702753-01	WG724939
2-Chloroethyl vinyl ether	mg/kg	2.80	2.36	94.4	10-155	17.1	40	L702753-01	WG724939
2-Chlorotoluene	mg/kg	0.535	0.553	90.1	63.6-128	3.26	20	L702753-01	WG724939
4-Chlorotoluene	mg/kg	0.558	0.570	94.0	65.7-127	2.03	20	L702753-01	WG724939
4-Methyl-2-pentanone (MIBK)	mg/kg	2.77	2.75	93.2	60.8-140	0.510	25.1	L702753-01	WG724939
Acetone	mg/kg	2.67	2.54	80.7	10-130	4.90	27.9	L702753-01	WG724939
Acrylonitrile	mg/kg	2.93	2.72	98.8	49.4-133	7.37	25.3	L702753-01	WG724939
Benzene	mg/kg	0.586	0.544	98.6	54.3-133	7.38	20	L702753-01	WG724939
Bromobenzene	mg/kg	0.562	0.553	94.6	63.9-124	1.57	20	L702753-01	WG724939
Bromodichloromethane	mg/kg	0.543	0.524	91.5	63.9-121	3.54	20	L702753-01	WG724939
Bromoform	mg/kg	0.437	0.501	73.6	59.5-134	13.6	20.8	L702753-01	WG724939
Bromomethane	mg/kg	0.410	0.400	69.0	41.7-155	2.49	20.5	L702753-01	WG724939
Carbon tetrachloride	mg/kg	0.548	0.518	92.2	55.7-134	5.47	20.3	L702753-01	WG724939
Chlorobenzene	mg/kg	0.538	0.548	90.7	67-125	1.83	20	L702753-01	WG724939
Chlorodibromomethane	mg/kg	0.505	0.532	85.1	64.3-125	5.07	20	L702753-01	WG724939
Chloroethane	mg/kg	0.0590	0.0594	9.93*	51.5-136	0.730	20.8	L702753-01	WG724939
Chloroform	mg/kg	0.586	0.546	98.6	63-129	6.98	20	L702753-01	WG724939
Chloromethane	mg/kg	0.557	0.497	93.8	42.4-135	11.4	20	L702753-01	WG724939
cis-1,2-Dichloroethene	mg/kg	0.591	0.546	99.5	59.2-129	7.84	20	L702753-01	WG724939
cis-1,3-Dichloropropene	mg/kg	0.584	0.556	98.4	66.4-125	4.92	20	L702753-01	WG724939
Di-isopropyl ether	mg/kg	0.668	0.586	112.	56.9-136	13.1	20	L702753-01	WG724939
Dibromomethane	mg/kg	0.530	0.541	89.3	68.2-124	1.90	20	L702753-01	WG724939
Dichlorodifluoromethane	mg/kg	0.248	0.197	41.7	40.6-144	22.9*	20.2	L702753-01	WG724939
Ethylbenzene	mg/kg	0.530	0.540	89.2	61.4-133	2.01	20	L702753-01	WG724939
Hexachloro-1,3-butadiene	mg/kg	0.564	0.585	94.9	55.1-136	3.65	23.6	L702753-01	WG724939

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Quality Assurance Report
Level II

L702895

June 11, 2014

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Isopropylbenzene	mg/kg	0.542	0.553	91.3	66.8-141	1.93	20	L702753-01	WG724939
Methyl tert-butyl ether	mg/kg	0.625	0.577	105.	57.7-134	7.89	20	L702753-01	WG724939
Methylene Chloride	mg/kg	0.563	0.518	94.9	58.1-122	8.37	20	L702753-01	WG724939
n-Butylbenzene	mg/kg	0.607	0.583	102.	62.7-140	3.94	20	L702753-01	WG724939
n-Propylbenzene	mg/kg	0.547	0.560	92.1	10-176	2.49	26.6	L702753-01	WG724939
Naphthalene	mg/kg	0.586	0.563	98.8	58-135	3.99	25.5	L702753-01	WG724939
p-Isopropyltoluene	mg/kg	0.556	0.576	93.7	63.2-139	3.56	20.4	L702753-01	WG724939
sec-Butylbenzene	mg/kg	0.554	0.565	93.3	62.2-136	2.02	20.3	L702753-01	WG724939
Styrene	mg/kg	0.571	0.576	96.2	66.8-133	0.840	20	L702753-01	WG724939
tert-Butylbenzene	mg/kg	0.533	0.549	89.8	63.3-134	2.99	20.3	L702753-01	WG724939
Tetrachloroethene	mg/kg	0.482	0.520	81.2	53-139	7.65	20	L702753-01	WG724939
Toluene	mg/kg	0.548	0.536	92.1	61.4-130	2.23	20	L702753-01	WG724939
trans-1,2-Dichloroethene	mg/kg	0.537	0.507	90.4	56.5-129	5.77	20	L702753-01	WG724939
trans-1,3-Dichloropropene	mg/kg	0.557	0.539	93.9	64.1-128	3.34	20	L702753-01	WG724939
Trichloroethene	mg/kg	0.532	0.538	89.6	44.1-149	1.21	20	L702753-01	WG724939
Trichlorofluoromethane	mg/kg	0.0366	0.0337	6.16*	49.6-145	8.31	21.2	L702753-01	WG724939
Vinyl chloride	mg/kg	0.604	0.556	102.	47.8-137	8.43	20	L702753-01	WG724939
Xylenes, Total	mg/kg	1.62	1.64	91.1	63.3-131	1.25	20	L702753-01	WG724939
4-Bromofluorobenzene				98.90	71-126				WG724939
Dibromofluoromethane				104.0	78.3-121				WG724939
Toluene-d8				106.0	88.5-111				WG724939
a,a,a-Trifluorotoluene				98.20	85-114				WG724939
1,1,1,2-Tetrachloroethane	mg/l	0.0286	0.0298	114.	64-128	4.00	20	L702942-06	WG724917
1,1,1-Trichloroethane	mg/l	0.0360	0.0376	144.*	58.7-134	4.26	20	L702942-06	WG724917
1,1,2,2-Tetrachloroethane	mg/l	0.0303	0.0323	121.	56-132	6.62	22.2	L702942-06	WG724917
1,1,2-Trichloroethane	mg/l	0.0281	0.0296	112.	66.3-125	5.43	20	L702942-06	WG724917
1,1,2-Trichlorotrifluoroethane	mg/l	0.0356	0.0378	142.	54.8-154	6.12	22.5	L702942-06	WG724917
1,1-Dichloroethane	mg/l	0.0350	0.0364	140.*	58.5-132	3.89	20	L702942-06	WG724917
1,1-Dichloroethene	mg/l	0.0355	0.0375	142.*	51.1-140	5.46	20.2	L702942-06	WG724917
1,1-Dichloropropene	mg/l	0.0359	0.0376	144.*	57.3-136	4.57	20	L702942-06	WG724917
1,2,3-Trichlorobenzene	mg/l	0.0285	0.0301	114.	59.1-138	5.67	23.7	L702942-06	WG724917
1,2,3-Trichloropropane	mg/l	0.0306	0.0328	122.	61.4-128	6.84	22.4	L702942-06	WG724917
1,2,3-Trimethylbenzene	mg/l	0.0274	0.0281	110.	61.3-122	2.76	20	L702942-06	WG724917
1,2,4-Trichlorobenzene	mg/l	0.0283	0.0291	113.	63.6-143	2.80	21.9	L702942-06	WG724917
1,2,4-Trimethylbenzene	mg/l	0.0315	0.0331	126.	57.4-137	4.97	20	L702942-06	WG724917
1,2-Dibromo-3-Chloropropane	mg/l	0.0288	0.0319	115.	57.3-136	10.2	27	L702942-06	WG724917
1,2-Dibromoethane	mg/l	0.0286	0.0301	114.	67.1-125	5.22	20	L702942-06	WG724917
1,2-Dichlorobenzene	mg/l	0.0267	0.0278	107.	68.2-123	3.90	20	L702942-06	WG724917
1,2-Dichloroethane	mg/l	0.0335	0.0345	134.*	60-126	3.04	20	L702942-06	WG724917
1,2-Dichloropropane	mg/l	0.0314	0.0324	126.*	64.2-123	3.05	20	L702942-06	WG724917
1,3,5-Trimethylbenzene	mg/l	0.0314	0.0329	125.	63.6-132	4.73	20.5	L702942-06	WG724917
1,3-Dichlorobenzene	mg/l	0.0291	0.0305	116.	63.1-131	4.78	20	L702942-06	WG724917
1,3-Dichloropropane	mg/l	0.0272	0.0286	109.	67.9-121	5.12	20	L702942-06	WG724917
1,4-Dichlorobenzene	mg/l	0.0259	0.0271	103.	68.6-123	4.52	20	L702942-06	WG724917
2,2-Dichloropropane	mg/l	0.0393	0.0410	157.*	50.5-144	4.30	21.9	L702942-06	WG724917
2-Butanone (MEK)	mg/l	0.181	0.200	145.*	22.4-138	9.96	27	L702942-06	WG724917
2-Chloroethyl vinyl ether	mg/l	0.0342	0.0412	27.4	10-155	18.5	20	L702942-06	WG724917
2-Chlorotoluene	mg/l	0.0296	0.0311	118.	63.6-128	4.86	20	L702942-06	WG724917
4-Chlorotoluene	mg/l	0.0305	0.0315	122.	65.7-127	3.20	20	L702942-06	WG724917
4-Methyl-2-pentanone (MIBK)	mg/l	0.185	0.198	148.*	60.8-140	6.73	25.1	L702942-06	WG724917
Acetone	mg/l	0.150	0.173	113.	10-130	14.1	27.9	L702942-06	WG724917
Acrolein	mg/l	0.174	0.188	139.	10-200	7.48	27.7	L702942-06	WG724917
Acrylonitrile	mg/l	0.175	0.194	140.*	49.4-133	10.0	25.3	L702942-06	WG724917
Benzene	mg/l	0.0337	0.0354	135.*	54.3-133	4.68	20	L702942-06	WG724917
Bromobenzene	mg/l	0.0281	0.0297	112.	63.9-124	5.37	20	L702942-06	WG724917
Bromodichloromethane	mg/l	0.0311	0.0327	124.*	63.9-121	4.93	20	L702942-06	WG724917
Bromoform	mg/l	0.0297	0.0313	119.	59.5-134	5.29	20.5	L702942-06	WG724917

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June 11, 2014

L702895

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Bromomethane	mg/l	0.0401	0.0420	160.*	41.7-155	4.73	21.9	L702942-06	WG724917
Carbon tetrachloride	mg/l	0.0350	0.0368	140.*	55.7-134	4.95	20	L702942-06	WG724917
Chlorobenzene	mg/l	0.0286	0.0303	114.	67-125	5.83	20	L702942-06	WG724917
Chlorodibromomethane	mg/l	0.0280	0.0294	112.	64.3-125	5.11	20.8	L702942-06	WG724917
Chloroethane	mg/l	0.0389	0.0406	156.*	51.5-136	4.12	40	L702942-06	WG724917
Chloroform	mg/l	0.0332	0.0347	133.*	63-129	4.46	20	L702942-06	WG724917
Chloromethane	mg/l	0.0339	0.0357	136.*	42.4-135	5.17	20	L702942-06	WG724917
cis-1,2-Dichloroethene	mg/l	0.0370	0.0386	137.*	59.2-129	4.10	20	L702942-06	WG724917
cis-1,3-Dichloropropene	mg/l	0.0313	0.0327	125.	66.4-125	4.37	20	L702942-06	WG724917
Di-isopropyl ether	mg/l	0.0346	0.0355	138.*	56.9-136	2.46	20	L702942-06	WG724917
Dibromomethane	mg/l	0.0313	0.0326	125.*	68.2-124	4.08	20	L702942-06	WG724917
Dichlorodifluoromethane	mg/l	0.0361	0.0382	144.	40.6-144	5.67	20.2	L702942-06	WG724917
Ethylbenzene	mg/l	0.0305	0.0323	122.	61.4-133	6.02	20	L702942-06	WG724917
Hexachloro-1,3-butadiene	mg/l	0.0300	0.0317	120.	55.1-136	5.59	23.6	L702942-06	WG724917
Isopropylbenzene	mg/l	0.0317	0.0335	127.	66.8-141	5.44	20	L702942-06	WG724917
Methyl tert-butyl ether	mg/l	0.0361	0.0367	144.*	57.7-134	1.87	20	L702942-06	WG724917
Methylene Chloride	mg/l	0.0326	0.0337	128.*	58.1-122	3.44	20	L702942-06	WG724917
n-Butylbenzene	mg/l	0.0304	0.0324	122.	62.7-140	6.19	20.3	L702942-06	WG724917
n-Propylbenzene	mg/l	0.0306	0.0323	122.	65.9-131	5.60	20	L702942-06	WG724917
Naphthalene	mg/l	0.0300	0.0307	120.	58-135	2.36	25.5	L702942-06	WG724917
p-Isopropyltoluene	mg/l	0.0334	0.0354	134.	63.2-139	5.77	20.4	L702942-06	WG724917
sec-Butylbenzene	mg/l	0.0327	0.0343	131.	62.2-136	4.92	20.3	L702942-06	WG724917
Styrene	mg/l	0.0313	0.0331	125.	66.8-133	5.50	20	L702942-06	WG724917
tert-Butylbenzene	mg/l	0.0318	0.0336	127.	63.3-134	5.30	21	L702942-06	WG724917
Tetrachloroethene	mg/l	0.0609	0.0645	95.0	53-139	5.76	20	L702942-06	WG724917
Toluene	mg/l	0.0312	0.0326	124.	61.4-130	4.22	20	L702942-06	WG724917
trans-1,2-Dichloroethene	mg/l	0.0347	0.0363	139.*	56.5-129	4.65	20	L702942-06	WG724917
trans-1,3-Dichloropropene	mg/l	0.0299	0.0317	120.	64.1-128	5.66	20	L702942-06	WG724917
Trichloroethene	mg/l	0.0325	0.0337	126.	44.1-149	3.70	20	L702942-06	WG724917
Trichlorofluoromethane	mg/l	0.0373	0.0396	149.*	49.6-145	5.79	21.2	L702942-06	WG724917
Vinyl chloride	mg/l	0.0363	0.0378	145.*	47.8-137	4.16	20	L702942-06	WG724917
Xylenes, Total	mg/l	0.0922	0.0979	123.	63.3-131	6.00	20	L702942-06	WG724917
4-Bromofluorobenzene				108.0	71-126				WG724917
Dibromofluoromethane				113.0	78.3-121				WG724917
Toluene-d8				109.0	88.5-111				WG724917
a,a,a-Trifluorotoluene				106.0	85-114				WG724917
1,1,1,2-Tetrachloroethane	mg/kg	0.123	0.125	98.7	64-128	0.960	20	L702905-01	WG725704
1,1,1-Trichloroethane	mg/kg	0.123	0.125	98.2	58.7-134	1.98	20	L702905-01	WG725704
1,1,2,2-Tetrachloroethane	mg/kg	0.119	0.122	95.2	56-132	2.63	22.2	L702905-01	WG725704
1,1,2-Trichloroethane	mg/kg	0.120	0.122	96.3	66.3-125	1.33	20	L702905-01	WG725704
1,1,2-Trichlorotrifluoroethane	mg/kg	0.120	0.124	95.6	54.8-154	3.45	22.5	L702905-01	WG725704
1,1-Dichloroethane	mg/kg	0.127	0.127	102.	58.5-132	0.320	20	L702905-01	WG725704
1,1-Dichloroethene	mg/kg	0.125	0.126	99.9	51.1-140	0.980	20.2	L702905-01	WG725704
1,1-Dichloropropene	mg/kg	0.125	0.126	100.	57.3-136	0.660	20	L702905-01	WG725704
1,2,3-Trichlorobenzene	mg/kg	0.123	0.125	98.4	59.1-138	1.29	23.7	L702905-01	WG725704
1,2,3-Trichloropropane	mg/kg	0.115	0.126	92.2	61.4-128	8.96	22.4	L702905-01	WG725704
1,2,3-Trimethylbenzene	mg/kg	0.123	0.124	98.7	61.3-122	0.530	20	L702905-01	WG725704
1,2,4-Trichlorobenzene	mg/kg	0.122	0.126	97.8	63.6-143	3.33	21.9	L702905-01	WG725704
1,2,4-Trimethylbenzene	mg/kg	0.122	0.125	97.2	57.4-137	2.75	20	L702905-01	WG725704
1,2-Dibromo-3-Chloropropane	mg/kg	0.106	0.113	84.9	57.3-136	5.91	27	L702905-01	WG725704
1,2-Dibromoethane	mg/kg	0.119	0.122	95.5	67.1-125	2.51	20	L702905-01	WG725704
1,2-Dichlorobenzene	mg/kg	0.118	0.121	94.0	68.2-123	3.11	20	L702905-01	WG725704
1,2-Dichloroethane	mg/kg	0.125	0.127	99.7	60-126	1.54	20	L702905-01	WG725704
1,2-Dichloropropane	mg/kg	0.127	0.126	102.	64.2-123	1.14	20	L702905-01	WG725704
1,3,5-Trimethylbenzene	mg/kg	0.122	0.124	97.7	63.6-132	1.43	20.5	L702905-01	WG725704
1,3-Dichlorobenzene	mg/kg	0.119	0.122	95.5	63.1-131	2.48	20	L702905-01	WG725704
1,3-Dichloropropane	mg/kg	0.122	0.124	97.4	67.9-121	2.15	20	L702905-01	WG725704

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Portland, OR 97205

Quality Assurance Report
Level II

L702895

June 11, 2014

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
1,4-Dichlorobenzene	mg/kg	0.119	0.124	95.4	68.6-123	3.98	20	L702905-01	WG725704
2,2-Dichloropropane	mg/kg	0.114	0.116	91.3	50.5-144	1.68	21.9	L702905-01	WG725704
2-Butanone (MEK)	mg/kg	0.590	0.604	94.1	22.4-138	2.41	27	L702905-01	WG725704
2-Chloroethyl vinyl ether	mg/kg	0.806	0.860	129.	10-155	6.48	40	L702905-01	WG725704
2-Chlorotoluene	mg/kg	0.119	0.122	95.5	63.6-128	2.00	20	L702905-01	WG725704
4-Chlorotoluene	mg/kg	0.123	0.126	98.1	65.7-127	2.57	20	L702905-01	WG725704
4-Methyl-2-pentanone (MIBK)	mg/kg	0.628	0.651	100.	60.8-140	3.67	25.1	L702905-01	WG725704
Acetone	mg/kg	0.543	0.563	70.5	10-130	3.56	27.9	L702905-01	WG725704
Acrylonitrile	mg/kg	0.631	0.637	101.	49.4-133	0.950	25.3	L702905-01	WG725704
Benzene	mg/kg	0.124	0.126	99.2	54.3-133	1.37	20	L702905-01	WG725704
Bromobenzene	mg/kg	0.120	0.122	95.9	63.9-124	1.88	20	L702905-01	WG725704
Bromodichloromethane	mg/kg	0.114	0.116	91.4	63.9-121	1.91	20	L702905-01	WG725704
Bromoform	mg/kg	0.110	0.111	87.9	59.5-134	0.850	20.8	L702905-01	WG725704
Bromomethane	mg/kg	0.111	0.111	89.1	41.7-155	0.180	20.5	L702905-01	WG725704
Carbon tetrachloride	mg/kg	0.124	0.124	99.0	55.7-134	0.360	20.3	L702905-01	WG725704
Chlorobenzene	mg/kg	0.121	0.125	97.0	67-125	2.77	20	L702905-01	WG725704
Chlorodibromomethane	mg/kg	0.120	0.123	95.7	64.3-125	2.68	20	L702905-01	WG725704
Chloroethane	mg/kg	0.123	0.124	98.1	51.5-136	1.54	20.8	L702905-01	WG725704
Chloroform	mg/kg	0.121	0.123	97.1	63-129	1.71	20	L702905-01	WG725704
Chloromethane	mg/kg	0.120	0.121	96.0	42.4-135	1.12	20	L702905-01	WG725704
cis-1,2-Dichloroethene	mg/kg	0.124	0.125	99.1	59.2-129	1.25	20	L702905-01	WG725704
cis-1,3-Dichloropropene	mg/kg	0.126	0.126	100.	66.4-125	0.310	20	L702905-01	WG725704
Di-isopropyl ether	mg/kg	0.135	0.133	108.	56.9-136	0.940	20	L702905-01	WG725704
Dibromomethane	mg/kg	0.117	0.122	93.6	68.2-124	3.92	20	L702905-01	WG725704
Dichlorodifluoromethane	mg/kg	0.123	0.129	98.2	40.6-144	4.71	20.2	L702905-01	WG725704
Ethylbenzene	mg/kg	0.122	0.126	97.5	61.4-133	3.67	20	L702905-01	WG725704
Hexachloro-1,3-butadiene	mg/kg	0.114	0.114	91.0	55.1-136	0.0300	23.6	L702905-01	WG725704
Isopropylbenzene	mg/kg	0.122	0.124	97.4	66.8-141	2.13	20	L702905-01	WG725704
Methyl tert-butyl ether	mg/kg	0.128	0.130	102.	57.7-134	1.28	20	L702905-01	WG725704
Methylene Chloride	mg/kg	0.118	0.117	94.6	58.1-122	0.690	20	L702905-01	WG725704
n-Butylbenzene	mg/kg	0.118	0.122	94.6	62.7-140	2.80	20	L702905-01	WG725704
n-Propylbenzene	mg/kg	0.120	0.123	96.2	10-176	2.06	26.6	L702905-01	WG725704
Naphthalene	mg/kg	0.122	0.123	96.8	58-135	1.09	25.5	L702905-01	WG725704
p-Isopropyltoluene	mg/kg	0.121	0.124	96.6	63.2-139	2.55	20.4	L702905-01	WG725704
sec-Butylbenzene	mg/kg	0.119	0.121	95.0	62.2-136	2.23	20.3	L702905-01	WG725704
Styrene	mg/kg	0.127	0.128	101.	66.8-133	1.01	20	L702905-01	WG725704
tert-Butylbenzene	mg/kg	0.120	0.121	95.8	63.3-134	1.28	20.3	L702905-01	WG725704
Tetrachloroethene	mg/kg	0.118	0.121	94.3	53-139	2.99	20	L702905-01	WG725704
Toluene	mg/kg	0.120	0.123	95.9	61.4-130	2.52	20	L702905-01	WG725704
trans-1,2-Dichloroethene	mg/kg	0.122	0.125	97.4	56.5-129	2.99	20	L702905-01	WG725704
trans-1,3-Dichloropropene	mg/kg	0.120	0.123	95.8	64.1-128	2.32	20	L702905-01	WG725704
Trichloroethene	mg/kg	0.121	0.125	96.8	44.1-149	3.28	20	L702905-01	WG725704
Trichlorofluoromethane	mg/kg	0.118	0.121	94.7	49.6-145	2.43	21.2	L702905-01	WG725704
Vinyl chloride	mg/kg	0.135	0.137	108.	47.8-137	0.980	20	L702905-01	WG725704
Xylenes, Total	mg/kg	0.369	0.377	98.2	63.3-131	2.36	20	L702905-01	WG725704
4-Bromofluorobenzene				102.0	71-126				WG725704
Dibromofluoromethane				104.0	78.3-121				WG725704
Toluene-d8				103.0	88.5-111				WG725704
a,a,a-Trifluorotoluene				99.50	85-114				WG725704

Batch number /Run number / Sample number cross reference

WG724939: R2936107: L702895-
WG725009: R2936948: L702895-01
WG725010: R2936954: L702895-02 03
WG724917: R2938174: L702895-04
WG725704: R2938561: L702895-01 03

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Portland, OR 97205

Quality Assurance Report
Level II

L702895

June 11, 2014

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

06-0023 A129

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Billing Information:
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Report to: Barb Lary / Cindy Bartlett
Email to: cbartlett@geosyntec.com

Project Description: Cascade
City/Sate Collected:
Phone: (503) 956-2983
FAX:
Client Project #: PNG0564 9/14
ESC Key:
Collected by: BARB LARY
Site/Facility ID#:
P.O.#:
Collected by (signature): Barb Lary
Immediately Packed on Ice N Y X

Rush? (Lab MUST Be Notified)
____ Same Day. 200%
____ Next Day. 100%
____ Two Day 50%
____ Three Day 25%

Date Results Needed:
Email? __No__Yes
FAX? __No__Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	V8260	Trip Blanks – EPA Meth 8260	Remarks/Contaminant	Sample # (lab only)
CU1-B1/11-12	GRAB	SOIL	11-12	10:20	6/2/14	5	X			L702895-01
CU1-B1/14-15			14-15	1215	6/2/14		X	Bel	HOLD	
CU1-B2/13-14			13-14	940	6/3/14		X			L702895-02
CU1-B2/14-15			14-15	945	6/3/14		X	Bel	HOLD	
CU1-B3/8-9			8-9	1600	6/3/14		X			03
CU1-B3/11-12	↓	↓	11-12	1525	6/3/14	↓	X	Bel	HOLD	
TRIP BLANK	—	water				2		X		04

Chain of Custody
Page 1 of 1

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Fax: (615) 758-5859

CoCode GEOSYNPO (lab use only)
Template/Prelogin
Shipped Via:

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____

Remarks:

6051242429 82

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____	Condition: (lab use only)
Barb Lary	6/4/14	1443	B. Hall		ok IWS
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.1 / Bottles Received: 32	CoC Seals Intact: ___ Y ___ N ___ NA
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 6-5-14 / Time: 0900	pH Checked: / NCF:

Geosyntec consultants

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Knoxville, TN 37919
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Memorandum

Date: 25 August 2014

To: Cindy Bartlett, RG, LG, Geosyntec Consultants, Portland, Oregon

From: Geosyntec Quality Assurance Group, Knoxville, Tennessee

Subject: Stage 2A Data Validation - Level II Data Deliverables – ESC Lab Sciences Work Orders: L702895 and L703332

SITE: Cascade Corp, Fairview, Oregon; Job No: PNG0564S14

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of six soil samples and one trip blank collected on June 2-6, 2014 as part of the site investigation activities for the Cascade Corp, Utah project. ESC Lab Sciences (ESC), Mt. Juliet, Tennessee provided the analytical services.

The samples were analyzed for the following test:

EPA Method 8260B - Volatile Organic Compounds (VOCs)

EXECUTIVE SUMMARY

The samples were handled, prepared, and measured in the same manner under similar prescribed conditions.

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data are usable for meeting project objectives.

The organic data were reviewed based on USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008 (USEPA-540-R-08-01), as well as by the pertinent methods referenced by the data package and professional judgment.

The following samples were analyzed in the data set:

Laboratory ID	Sample ID
L702895-01	CU1-B1/11-12 FT
L702895-02	CU1-B2/13-14 FT
L702895-03	CU1-B3/8-9 FT
L702895-04	TRIP BLANK

Laboratory ID	Sample ID
L703332-01	SOIL BIN #1
L703332-02	SOIL BIN #2
L703332-03	SOIL BIN #3

The samples were received at the laboratory within the criteria 0-6^{o}C.

Incorrect error corrections were observed on the chain of custody (COC). The proper procedure of a single strike-through correction and initials and date of the person making the corrections was not followed (the date of the strike-through is missing).

Laboratory report L702895 had samples on the COC listed on hold; these samples were not reported.

No time of collection was listed for the trip blank; however, there was no impact on the data.

1.0 VOLATILE ORGANIC COMPOUNDS

Six soil samples and one trip blank were analyzed for VOCs per EPA Method 8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment (Completeness)
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Trip Blank
- ✓ Equipment Blank
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

1.1 Overall Assessment (Completeness)

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the project is 100%.

1.2 Holding Time

The holding time for the VOC analysis of a preserved water sample and soil sample is 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four method blanks (batches WG724939, WG724917, WG725704, and WG725291) were reported with the data sets. VOCs were not detected in the method blanks above the detection limits (DLs, i.e. reporting limits).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Matrix spikes/matrix spike duplicate pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported using sample SOIL BIN #1. The results for the sample set specific MS/MSD pair were within the laboratory specified acceptance criteria for recovery and relative percent difference (RPD), with the following exceptions.

The RPDs for hexachloro-1,3-butadiene, 1,2,3-trichlorobenzene, and 1,2,4-trichlorobenzene were high and outside of the laboratory specified acceptance criteria in the MS/MSD pair using sample SOIL BIN #1. Since hexachloro-1,3-butadiene, 1,2,3-trichlorobenzene, and 1,2,4-trichlorobenzene were not detected in SOIL BIN #1, no qualifications were applied to the data.

Three batch MS/MSD pairs were reported with the data set. Since these are batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four LCS/LCS duplicate (LCSD) pairs were reported with the data

sets. The results for the LCS/LCSD pairs were within the laboratory specified acceptance criteria for recovery and RPD, with the following exceptions.

For batch WG724917, the recoveries of bromodichloromethane and methyl tert-butyl ether in the LCS and the RPD of 1,2-dibromo-3-chloropropane in the LCS/LCSD pair were high and outside the laboratory specified acceptance criteria. Since bromodichloromethane, methyl tert-butyl ether, and 1,2-dibromo-3-chloropropane was not detected in the associated sample; no qualifications were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses, with the following exception.

The recovery of dibromofluoromethane was high in sample TRIP BLANK. Since there were no compound detections in the sample, no qualifications were applied to the sample.

1.7 Field Duplicate

Field duplicates were not collected with the samples.

1.8 Trip Blank

One trip blank, TRIP BLANK, accompanied the sample shipments. VOCs were not detected in the trip blank above DLs.

1.9 Equipment Blank

Equipment blanks were not collected with the samples.

1.10 Sensitivity

The sample results were reported to the DLs. No elevated non-detect values were reported.

1.11 Electronic Data Deliverables (EDDs) Review

Results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. It was noted that the samples were reported to the DLs in the hardcopy laboratory reports; both the DLs and the MDLs were listed in the EDDs. It was also noted that the trip blank was reported using the units parts per million (mg/L) in the EDDs, while the sample data were reported using the

units parts per billion (µg/L) and the water batch QC samples to mg/L in the level II laboratory reports. This did not affect the quality of the data. No other discrepancies were identified between the level II reports and the EDDs.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits and RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference